



**Arab American University
Faculty of Graduate Studies**

**Water Diplomacy for Water security –
Jordan Valley “Dead Sea” as a case study**

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**This thesis was submitted in partial fulfillment of the
requirements for a Master's degree in
Conflict Resolution and Development
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This Thesis was successfully defended on December 20th 2021 and approved by

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Signature

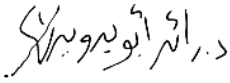
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Declaration

I, Eng. Bashar Majed Bahjat Al Shawwa, declare that this thesis and the work presented in it are my work and has been generated by me as the result of my original research:

Water Diplomacy for Water security – Jordan Valley “Dead Sea” as a case study

The work provided in this thesis, unless otherwise referenced, has not been submitted by others elsewhere for any other degree or qualification.

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Acknowledgment

I want to express my gratitude to my supervisors, Dr. Ayman Yousef and Dr. Subhi Samhan, who guided me during this master thesis project. I have learned different things from the preparation period until final submission. I am also thankful to Dr. Raed Abu Badawia and Dr. Shaddad Attili for the fruitful comments and valuable discussions regarding this thesis. I am grateful to the lecturers of the Conflict Resolution program at Arab American University; mainly Dr. Ayman Yousef, who introduced the idea of researching water security during the Human Security lecture, Dr. Manar Faraj during the Alternative Dispute Resolution course, Dr. Rose Othman during the development course and Dr. Adel Al Atawenh for the complete support about the Researching method.

Dedication

I dedicate this work to my family, colleagues, classmates, and friends who encouraged me to complete this Thesis. My thanks to my father, mother, and sisters for their continued support, and my wife who always supported and advised me.

Abstract

The importance of the study is: due to the fact that it seeks to study the case of the Dead Sea by standing on the challenges of water security in the Jordan River Valley and the efforts of Palestinian water diplomacy in this regard. This study aims to achieve: To assess the effectiveness of Palestinian water diplomacy in serving water security in the country. To critically review the Palestinian national strategy in connection with water diplomacy. To explore the main features of the Palestinian water diplomacy to the multilateral talks over cross-border water resources. To understand the interaction of Palestinian water diplomacy with the regional cross-border environment. To discuss the impact of water diplomacy and water security in sustaining peace and development in the region.

The study methodology is based: In dealing with the issue of water security and Palestinian water diplomacy in the Jordan Valley (Dead Sea case study), this study will depend on a number of the following two approaches: The descriptive approach, though, Review of relevant previous studies. Defining the legal framework regulating Palestinian rights in the waters of Jordan (Johnston Agreement 1956), Description and analysis of the phenomena under study. Interpreting the existing situation and identifying the conditions and relationships that exist between the variables, to analyze the links and interpretation of these variables, classify them, and measure and conclude them.

The study concluded that: water diplomacy, regional water diplomacy and external actors play an important and significant role in achieving water security and resolving disputes related to regional water. The study suggested some recommendations that can

be used in water diplomacy, achieving water security, and resolving disputes and conflicts between the countries concerned with water.

Key words: Palestinian water diplomacy, regional water diplomacy, water security, external actors

List of Abbreviation

PWA- Palestinian Water Authority

EQA – Environment Quality Authority

MOA- Ministry of Agriculture

PWD -Palestinian Water Diplomacy

RWD - Regional Water Diplomacy

FAO - Food and Agriculture Organization

SMAC -State Museum of Archaeology Chemnitz

WS - Water Security

WD -Water diplomacy

EA -External actors

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Chapter I

Introductory Chapter on Water Diplomacy and Water Security

1.1 Introduction

the Dead Sea, one of the main drains of the Jordan River, it is a closed Salt Lake located on the borderline between Jordan and historical Palestine. The Dead Sea is also famous for being the lowest point on the surface of the globe, as its shore level is about 400 meters below sea level According to records from 2013¹. Although the State of Palestine has a part overlooking the Dead Sea, the Israeli authorities do not allow the Palestinians to exploit their resources from the sea, but rather prevent them completely from going to the coast of the Dead Sea under the pretext of security. The rights of the Palestinians to exploit their share of the Dead Sea constitute an important point in the peace talks, in addition to their rights to drinking water². Since the tributaries of the Jordan River are the only source of water in Palestine, the water diplomacy of the State of Palestine is based on a vision whose main focus is to find a fair and just solution to the conflict between countries over water. The Palestinian Authority believes in this regard that no viable independent state can be achieved without obtaining Fair and equitable shared sharing of shared water resources, as well as full control over these resources³. The Palestinian Authority also believes that achieving security, stability, and prosperity for Palestine and Israel and all other neighboring countries depends largely

¹ Martin Peilstöcker, Sabine Wolfram, Life at the Dead Sea: Proceedings of the International Conference Held at the State Museum of Archaeology Chemnitz (smac), February 21-24, 2018, Chemnitz, Münster: Zaphon, 2020, p: 36

² Hillel Shuval, Hassan Dweik, Water Resources in the Middle East: Israel-Palestinian Water Issues – From Conflict to Cooperation, Berlin: Springer Science & Business Media, 2007, p: 403

³ Country Profile: Israel, Palestinian Territories, The Unit, 2001, p: 76

on the final solution to water issues, which determines Palestinian-Israeli relations in this regard.⁴

The Concept of Water Diplomacy: is defined as the theory of the practice of implementing adaptive water management for complex water issues, and it is one of the patterns of modern diplomacy that relies on the approach of practicing diplomacy in a more intense manner towards water crises specifically, that the negotiator diagnoses water problems, identifies points of intervention, and also suggests Sustainable solutions that take into account diverse perspectives, target values, ambiguities and uncertainties, as well as emerging variables in the level of competition between countries in the areas of water, while being aware of the needs that each case requires⁵.

Water diplomacy is also defined as a set of negotiating and diplomatic activities and events that target a specific water issue, so that cadres and human efforts are mobilized, and material and symbolic capabilities are allocated, during a specific period of time, to achieve strategic goals at the international water level, and so that there is a strategic water plan that diplomatic bodies seek Through its movements and external activities to achieve its goals⁶.

Water diplomacy focuses on creating innovative solutions based on a scientific basis that is sensitive to the societal constraints of a wide range of water problems, and it is understood from the term water diplomacy that: the mechanism that includes the tools of diplomats towards water problems and environmental policies, water management strategy, and engineering solutions that come together and apply in a context The water

⁴ Palestinian Water Authority, brochure on the occasion of the World Water Day and Sustainable Development, March 22, 2015, p: 17.

⁵ Jonathan Lautze, Key Concepts in Water Resource Management: A Review and Critical Evaluation, London: Routledge, 2014, p: 119

⁶ Lawrence Susskind, Shafiqul Islam, Water Diplomacy Creating Value and Building Trust in Transboundary Water Negotiations, Science & Diplomacy.org, 22/ 8/ 2012. Available via the link: <https://www.sciencediplomacy.org/perspective/2012/water-diplomacy>

problem to provide political and procedural negotiating solutions at the appropriate level for each case⁷.

Water diplomacy is also the sum of processes, mechanisms and resources that can be used flexibly to focus on building and enhancing trust between countries participating in rivers, lakes and seas. Countries experiencing water conflicts can reach agreements that satisfy the water needs of their citizens as well as their national interests, through those Mechanisms, by coming up with innovative techniques and collaborative management through which not only problems can be facilitated, but also an important means of promoting sustainable solutions that are acceptable to all parties to achieve national interests can be introduced⁸.

Water diplomacy is one of the new and unconventional diplomacy that has recently become popular in international relations practices⁹. More recently, the need to activate water diplomacy has emerged more urgently, with the intensification of debate over water distribution issues¹⁰. As for the Jordan River Valley, it includes an area of about 18,300 square kilometers on both banks of the Jordan River. The Jordan River Valley basin is divided into five main sub-basins: Upper Jordan, Yarmouk River, Lower Jordan, East Dead Sea, and Southern Dead Sea¹¹.

The Concept of Water Security: is among the many concepts in circulation, and this, if indicated, indicates its importance, as this concept appeared and spread to confirm

⁷ Omid Bozorg-Haddad, *Economical, Political, and Social Issues in Water Resources*, Amsterdam: Elsevier, 2021, p: 277

⁸ Selina Ho, *A River Flows Through It: A Comparative Study of Transboundary Water Disputes and Cooperation in Asia*, London: Routledge, 2020, p: 161

⁹ Jean Cahan, *Water Security in the Middle East: Essays in Scientific and Social Cooperation*, London: Anthem Press, 2017, p: 199

¹⁰ Shafiqul Islam, Lawrence Susskind, *Water Diplomacy: A Negotiated Approach to Managing Complex Water Networks*, London: Routledge, 2013, p: 323

¹¹ Clive Lipchin, Deborah Sandler, Emily Cushman, *The Jordan River, and Dead Sea Basin: Cooperation Amid Conflict*, Berlin: Springer, 2009, p: 19

that water is one of the elements that life cannot continue without it. Without water, there is no agriculture, no industry, no technology, and even no continuous development. Without this substance, which seems to some of them to remain continuous, and that there is no fear of its deficiency¹².

Water security means preserving the available water resources and using them in the best way, not polluting them, rationalizing their use in drinking, irrigation, and industry, and striving, by all means, to search for suitable water sources¹³.

Water security is defined as sustainably achieving water self-sufficiency according to the recognized rates¹⁴. Other authors view the concept of water security as a stable and reassuring state of water resources, in which the supply of water responds to the demand for it¹⁵. What a third party of the authors defined as sufficiency and guarantee across time and place, that is, it means meeting different water needs in quantity and quality, while ensuring the continuation of this sufficiency without affecting¹⁶.

By reviewing those definitions, we can define water security as achieving quantitative and qualitative balance in time and space between the available water resources and the different water needs in the present and the future, which means that the state of water security for any country, and in any given period, is a function In the water balance of this country and a direct reflection of it, the water balance comes in three forms or three

¹² Claudia Pahl-Wostl, Anik Bhaduri, Joyeeta Gupta, Handbook on Water Security, Cheltenham: Edward Elgar Publishing, 2016, p: 15

¹³ Bruce Lankford, Karen Bakker, Mark Zeitoun, Water Security: Principles, Perspectives, and Practices, Berlin: Routledge, 2013, p: 26

¹⁴ Zine El-Din Abdel-Maqsoud Ghoneimy, Alternative Energy and the National Security System for the State of Kuwait and the Arab Gulf States: An Evaluative Case Study, Kuwait Research and Studies Center, Kuwait, 2008, p.: 45

¹⁵ Munther Khaddam, Arab Water Security: Reality and Challenges, Beirut: Center for Arab Unity Studies, 2001, p.: 21

¹⁶ Mishkan Muhammad Al-Awar, The Water Security Industry. A point of view, a research paper presented to the Water Security Symposium held in Dubai on February 14, 2008, Research and Studies Center, Dubai Police Academy, United Arab Emirates, 2008, p.: 212

cases: Water balance: when the demand for water equals the volume of its supply, water surplus: when the volume of resources is greater than the volume of needs, and the water deficit: When the volume of resources is less than the volume required to meet the necessary needs, then a so-called water crisis occurs¹⁷.

Therefore, the concept of water security is relative and not absolute, as there is usually talk about different levels of water security in different countries or a single country according to its stages of development¹⁸. On the other hand, we find that the concept of water security is closely related to other concepts, namely food security, economic and social security, environmental security, political and military security, and then national security, which has a synthesis concept of various other partial concepts of security¹⁹.

This leads us to say that the concept of water security is not independent in itself, but rather is derived from another concept that has the character of comprehensiveness, breadth, and containment, which is national security. Ahmed Kamal Abul-Magd said: "There is no military security for a nation outside its economic security, and the peak of economic security is food security, and the essence of food security and its product is water"²⁰.

Of course, then, water scarcity, whether caused by internal or external factors, affects food security on the one hand, and leads to economic, social, and environmental damage on the other hand, and thus threatens the basis of the existence of society, the structure of the state and its political stability in general²¹.

¹⁷ Muhammad Salman Taya, *The International Conflict over Water: The Environment of the Nile Basin*, Cairo: Center for Political Research and Studies, 2007, p.: 29

¹⁸ Munther Khaddam, *Arab Water Security: Reality and Challenges*, previously quoted reference, p.: 21

¹⁹ Khaled Ali Al Mahjoubi, *Economic Analysis of Arab Water Security*, Tripoli: The General People's Committee for Culture and Information, 2006, pp.: 22-23

²⁰ Abdullah Morsi Al-Aqali, *Arab Waters between Signs of Impotence and the Dangers of Dependency*, Abu Dhabi: The Arab Civilization Center for Media and Publishing, 1996, p.: 45

²¹ *Information Bulletin*, Volumes 23 - 24, Progress Books, 1985, p: 8

The Jordan River: is the only permanent source of surface water in the West Bank and Palestine in general, and its waters flow from the far north, at an altitude of 2,200 meters above sea level, all the way to the Dead Sea, at an estimated altitude of about 350 meters below sea level²² (Figure No.: (1). (

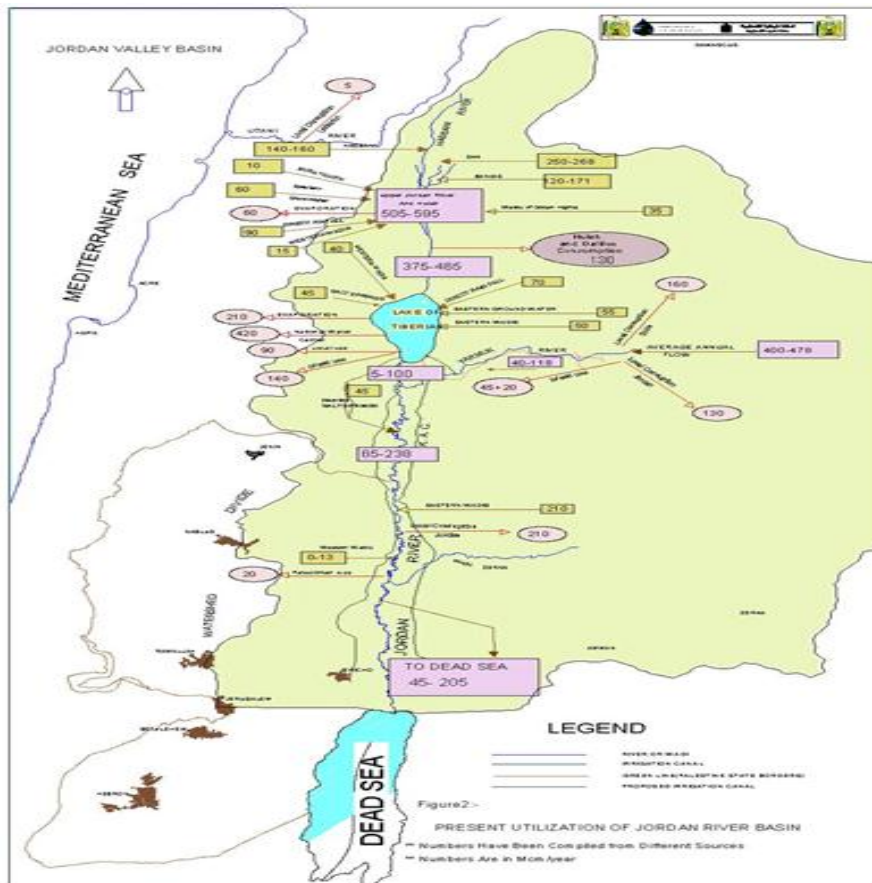


Figure No.: (1) the water balance of the Jordan River and its uses by the countries participating in the Jordan River Basin²³

The Jordan River flows into Lake Tiberias and descends south towards the Dead Sea after it meets the Yarmouk River at the bend of the Yarmouk Triangle, known as the confluence of the two rivers, south of Lake Tiberias²⁴.

²² Water Resources and Irrigated Agriculture in the West Bank, The Institute, 1998, p: 41

²³ Source: Palestinian Water Authority website, available via the link: http://www.pwa.ps/ar_page.aspx?id=LYYyP9a2699171508aLYYyP9

The waters of the Jordan River are shared by five riparian countries: Palestine, Jordan, Syria, Lebanon, and Israel, which in turn exploit most of its waters. The river, as it is known, forms the eastern border of the West Bank with Jordan. The length of this river in a straight line is about 140 km, while its real length is Its various meanders are about 350 km, while the total area of its basin is about 43,500 km², of which 12,000 km² area located in Palestine and the rest are in Lebanon, Syria, and Jordan.

Historically, the amount of water flowing from the Jordan River to the Dead Sea was estimated to be about 1400 million cubic meters annually, but this amount has decreased dramatically during the past six decades to now reach about 30 million cubic meters annually, and this huge decrease in the amount of water flowing is mainly due to Essential for diverting the upper river course by Israel through the Israeli national carrier, where Israel pumps about 500 million cubic meters of river water through this carrier down to the south in the Negev, This is in addition to the presence of many dams built on the upper course of the river. Natural factors, lack of rain, and periods of drought play a role in this decrease. Moreover, the Jordan River threatens the problem of water pollution, as large quantities of untreated wastewater flow from the Israeli settlements located along the length of the river. Southern slopes of Lake Tiberias²⁵.

And around the Dead Sea, which is the subject of this study, and one of the main drains of the Jordan River, it is a closed Salt Lake located on the borderline between Jordan and historical Palestine. The Dead Sea is also famous for being the lowest point on the

²⁴ Camille Gaskin-Reyes, *Water Planet: The Culture, Politics, Economics, and Sustainability of Water on Earth: The Culture, Politics, Economics, and Sustainability of Water on Earth*, California: ABC-CLIO, 2016, p: 93

²⁵ Paul Robbins, *Encyclopedia of Environment and Society: FIVE-VOLUME SET*, California: SAGE Publications, 2007, p: 1765

surface of the globe, as its shore level is about 400 meters below sea level According to records from 2013²⁶.

Although the State of Palestine has a part overlooking the Dead Sea, the Israeli authorities do not allow the Palestinians to exploit their resources from the sea, but rather prevent them completely from going to the coast of the Dead Sea under the pretext of security. The rights of the Palestinians to exploit their share of the Dead Sea constitute an important point in the peace talks, in addition to their rights to drinking water²⁷.

Since the tributaries of the Jordan River are the only source of water in Palestine, the water diplomacy of the State of Palestine is based on a vision whose main focus is to find a fair and just solution to the conflict between countries over water. The Palestinian Authority believes in this regard that no viable independent state can be achieved without obtaining Fair and equitable shared sharing of shared water resources, as well as full control over these resources²⁸.

The Palestinian Authority also believes that achieving security, stability, and prosperity for Palestine and Israel and all other neighboring countries depends largely on the final solution to water issues, which determines Palestinian-Israeli relations in this regard, and this depends on three main things²⁹:

1. Recognition of Palestinian water rights and access to water in appropriate quantities and good quality.

²⁶ Martin Peilstöcker, Sabine Wolfram, *Life at the Dead Sea: Proceedings of the International Conference Held at the State Museum of Archaeology Chemnitz (smac), February 21-24, 2018, Chemnitz, Münster: Zaphon, 2020, p: 36*

²⁷ Hillel Shuval, Hassan Dweik, *Water Resources in the Middle East: Israel-Palestinian Water Issues – From Conflict to Cooperation*, Berlin: Springer Science & Business Media, 2007, p: 403

²⁸ *Country Profile: Israel, Palestinian Territories, The Unit, 2001, p: 76*

²⁹ *Palestinian Water Authority, brochure on the occasion of the World Water Day and Sustainable Development, March 22, 2015, p: 17*

2. Adopting an international mechanism to resolve the conflict.
3. Adopting administrative procedures that encourage accuracy, transparency, and cooperation with partners.

It is important in this regard to also draw attention to the fact that international agreements are among the means of water diplomacy that the Palestinian Authority relies on, and it is recognized that international agreements are a tool for facilitating the process of dialogue and helping neighboring countries to share common water resources based on justice, equality and resource management. In wise ways without conflict³⁰.

For its part, the International Court of Justice referred in several cases to the relevant convention in this regard, which is the United Nations Water Convention in 1997, as this agreement reflects the current status of international law between states³¹.

Hence, the official Palestinian position on the water file in the negotiations is based on³²:

- International law directs, informs, and governs Palestinian water rights and related issues.
- Neighboring countries can develop new resources bilaterally and regionally for the Jordan River Basin.
- The main principles of international law that must be upheld: no significant damages, advance notice.

It was not surprising that water disputes were secured with political and strategic implications³³, It is known that "securitization" - in the sense of making an object secure

³⁰ Shlomo Hasson, Disengagement and what After?, Floersheimer Institute for Policy Studies, 2005, p: 35

³¹ Flavia Rocha Loures, Alistair Rieu-Clarke, The UN Watercourses Convention in Force: Strengthening International Law for Transboundary Water Management, London: Routledge, 2013, p: 42

³² Palestinian Water Authority, brochure on the occasion of the World Water and Sustainable Development Day, aforementioned reference, p: 17

³³ Environment Abstracts Annual, Volume 22, Issue 1, EIC Intelligence Incorporated, 1992, p: 1886

- is linked to the international security approach by the well-known Copenhagen School, where researchers at the Danish Institute for Peace Research have been looking for alternative explanations for the emergence of conflicts, regardless of the explanations based on power politics that it was common during the Cold War period, and instead, with their critical approach to conflict, they looked for ways to suddenly make neutral issues a security problem, and then presented "securitization" as a process in which the main actor refers to an issue as an existential threat, and tries to persuade the public should take exceptional measures to contain the problem³⁴.

Calling something a security issue and mobilizing the population behind an existential threat is a deliberate act. It is a deliberate way of masking political motives that cannot be expressly expressed. Acceptance of this complex threat by the public is essential and remains essential to the success of the concept of "securitization"³⁵.

The problem of "securitization" raised a serious question to solve the possibility of de-security issues of water and turn it into a source of cooperation instead of conflict³⁶.

Indeed, this proposition has attracted the attention of researchers and specialists in security and water issues, as the countries that share the river basin form a very complex and interconnected hydro-political system, and its dynamics closely intertwine in terms of environment, economy, politics, and security, so water policy has become an important area in international politics³⁷.

There are more than 260 international rivers in the world that are used by two or more riparian countries, so it is easy to imagine the number of potential international conflicts

³⁴ Mely Caballero - Anthony, *An Introduction to Non-Traditional Security Studies: A Transnational Approach*, California: Sage, 2015, p: 16

³⁵ Frank J. Fabozzi, Vinod Kothari, *Introduction to Securitization*, New Jersey: Wiley, 2008, p: 24

³⁶ Nawal Ali Taalabi, *Global Environmental Governance*, Amman: Academic Book Center, 2015, p.: 24

³⁷ Food and Agriculture Organization (FAO), *The State of Agricultural Commodity Markets 2018* (Arabic language), United Nations, 2018, p: 41

over water, as many countries depend on water resources that flow from outside their territories, so any attempt to develop the river becomes economic and benefit from Its resources, such as hydroelectric production, are always a contentious issue, yet the argument for water wars can be eliminated by de-security of blue gold, and replaced by water diplomacy³⁸.

The 1997 United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses provides a general framework for the use of international rivers by riverine countries. This convention was adopted, with 103 countries voting in favor, 27 abstaining, while three other countries, Turkey and Burundi, opposed it. and the People's Republic of China, all of which are river countries³⁹.

The agreement stipulates three basic principles of international water law: the principle of equitable and reasonable utilization, the obligation not to cause significant harm, and the duty to cooperate with riparian states. A water scheme by any of the upstream countries, and the non-objection rule that requires the unanimity of the riverine countries to implement the project⁴⁰.

Two approaches to skillful water diplomacy can be noted⁴¹:

1. Water diplomacy in river basin countries: It focuses on transboundary freshwater resources, such as lakes, rivers, and groundwater basins, and here it is possible to distinguish between several levels, the first in terms of geographical scope, where the negotiation can be bilateral, or at the level of the basin

³⁸ Anoulak Kittikhoun, Susanne Schmeier, *River Basin Organizations in Water Diplomacy*, London: Routledge, 2020, p: 19

³⁹ *Environment and Development in Kenya*, Kenya National Academy of Sciences, 2001, p: 35

⁴⁰ Neveling I. Pachova, Mikiyasu Nakayama, Libor Jansky, *International Water Security: Domestic Threats and Opportunities*, Washington: United Nations University Press, 2008, p: 241

⁴¹ Shafiqul Islam, Lawrence Susskind, *Water Diplomacy: A Negotiated Approach to Managing Complex Water Networks*, London: Routledge, 2013, p: 34

countries, and secondly at the regional level such as the Economic Community Water Directives, and thirdly at the global level.

One of the salient features of water diplomacy is the involvement of various technical actors from engineers, hydrologists, and economists in the negotiation process to obtain a scientific framework for the sources of disputed waters. On core topics⁴².

Water diplomacy from a third-party perspective: where the focus is on assisting or persuading riparian countries, as part of the national interest of countries, international organizations, or foreign development policy of donor countries, to protect and manage water resources. The roles played by states and international organizations in diplomacy vary according to the geographical scope, the nature of the water conflict, and the degree of involvement in the negotiating process.

It should be noted that diplomatic dialogue and comprehensive negotiations between countries participating in water resources are still the only way forward to build trust and cooperation for a sustainable future for their natural resources. Ultimately, skilled water diplomacy, with de-security and getting rid of populist rhetoric, can transform water from a source of conflict to a driving force for cooperation and development for all peoples⁴³

1.2 The Study Problem

After the previous introduction and presentation of the problem of water security, water diplomacy, as well as the waters of the Jordan River, the legitimate Palestinian rights in

⁴² Shafiqul Islam, Kevin M. Smith, *Interdisciplinary Collaboration for Water Diplomacy: A Principled and Pragmatic Approach*, London: Routledge, 2019, p: 58

⁴³ OECD, *G20/OECD Principles of Corporate Governance (Arabic version)*, OECD Publishing, 2017, p: 100

the tributaries of the Jordan River, and Palestinian water diplomacy, the problem of the study can be identified as follows:

Palestinian Water Diplomacy Approach towards Water Security in the Jordan Valley (Dead Sea Case Study).

1.3 The Objectives of the Study

This study aims to achieve the following objectives:

- To assess the effectiveness of Palestinian water diplomacy in serving water security in the country.
- To critically review the Palestinian national strategy in connection with water diplomacy.
- To explore the main features of the Palestinian water diplomacy to the multilateral talks over cross-border water resources.
- To understand the interaction of Palestinian water diplomacy with the regional cross-border environment.
- To discuss the impact of water diplomacy and water security in sustaining peace and development in the region.

1.4 Study Theories

The current study will be based on the following two theories:

The theory of the entrance of human needs and relative deprivation in the interpretation of the conflict⁴⁴:

⁴⁴ Thomas Spira, Nationalism and Ethnicity Terminologies: An Encyclopedic Dictionary and Research Guide, Volume 3, Academic International Press, 2004, p: 185, and beyond

Burton came up with this theory in 1990, where he based his development on Maslow's theory of human needs, and the main argument for this theory is that conflict cannot be resolved constructively unless the basic human needs of the parties are presented and dealt with to satisfy each party.

Needs are the reasons behind every human behavior, and every person has several needs that compete with each other, with the strongest need or the strongest motive that determines the behavior, the strongest need at a certain time leads to a certain behavior, and the satisfied needs decrease in intensity and often do not push the person to achieve the goals expected of him and the needs that the person finds impossible to achieve weaken over time.

The author of this theory also believes that some may think that the reason for the emergence of the conflict to the stage of confrontation is the motives of revenge, revenge or loss, or the scales of profit and loss, or because of the political system, or intellectual orientation, but a sound and deep analysis of the motives of these conflicts may indicate that the reasons The real thing is the fulfillment of these human needs or the real factor in the emergence and development of these conflicts.

At the international level, borders and security are an essential part of the entrance to humanitarian needs. Dozens of international conflicts have erupted as a result of border and security issues, such as the conflict between Mauritania and Senegal, India and Pakistan, Ecuador and Peru, Eritrea and Ethiopia, and many other conflicts that have claimed the lives of millions of people.

It can be noted that despite the tendency of the parties to the conflict to destructive war and the use of excessive force to express their needs, many of these conflicts have found their way to a solution through peaceful settlement through the Security Council and

mediators or resorting to arbitration, and the international community is making a double effort in settling these conflicts through Peaceful means such as preventive diplomacy.

Structured Negotiation Theory⁴⁵:

Roger Fisher and William Ury defined the theory of structured negotiation as the process that helps negotiators reach a wise agreement that achieves the legitimate interests of each of the parties concerned to the maximum extent possible, and this agreement resolves the points of disagreement fairly with the possibility of continuity of these solutions and taking into account the interests of the community with which you are dealing The negotiating parties, and this process does not require the time that takes successive concessions to the classical method, nor does it spoil the future relations of the negotiating parties.

Fischer and Ury have listed four essential elements to a successful structured negotiation process:

1. Separating people from the problem: The negotiators should see each other as working side by side and attacking the problem and not each other.
2. Focus on the interests of the concerned parties and not on a single position that does not change. Focusing on one position and merely repeating it without taking into account the interests of the other parties and the possibility of achieving them leads the negotiations to dead ends or to compromise solutions, after which the dispute and conflict quickly return to the dissatisfaction of the parties with what they reached in the negotiations.

⁴⁵ Feniosky Pena-Mora, Carlos E. Sosa, D. Sean McCone, Introduction to Construction Dispute Resolution, New Jersey: Prentice-Hall, 2003, p: 132

3. Finding different possibilities and options before trying to reach an agreement.
4. Choosing an objective criterion to measure the validity of the agreement that has been reached. This objective criterion could be a law or the opinion of experts or others.

The negotiation theory based on the interests of the concerned parties is the prevailing theory now for its mentioned advantages, and most management scholars have relied on it in their writings

The most important considerations that must be adhered to in the negotiation process:

- Fair dealing between the concerned parties.
- Honest dealings between the concerned parties.

If one of the parties tries to cheat to reach an agreement, this is considered unfair and dishonest and does not lead to the desired purpose of the negotiation. The negotiation in question here is a wise and continuous solution that does not spoil the relationship of the parties, as dishonest dealings when discovered spoil the relationship and spoil the agreement in itself.

1.5 Study Signs and Justifications:

No further studies were made in the past to determine the Palestinian Water Diplomacy regarding Water security especially in the Jordan valley, so the researcher trying in this thesis to evaluate the effectiveness of the Palestinian water diplomacy in serving water security in the targeted region.

1.6 Study Hypotheses:

The following are the hypotheses that the study seeks to prove their validity:

H1. There is a relationship between water diplomacy and water security.

H2. There is a link between negotiations on water, peacekeeping, and development.

H3. There are implications for water diplomacy for water security and the overall peace process.

1.7 Study Questions:

Below are the questions that this study attempts to answer:

1. What is the relationship between water diplomacy and water security?
2. Is there a link between negotiations on water, peacekeeping, and development?
3. What are the implications of water diplomacy on water security on the comprehensive peace process?
4. Does official Palestinian diplomacy meet the requirements of active water diplomacy?
5. Is there a model suitable for official Palestinian water diplomacy?

1.8 Study Methodology:

In dealing with the issue of water security and Palestinian water diplomacy in the Jordan Valley (Dead Sea case study), this study will depend on a number of the following two approaches:

The descriptive approach, through:

- Review of relevant previous studies.
- Defining the legal framework regulating Palestinian rights in the waters of Jordan (Johnston Agreement 1956)⁴⁶.

⁴⁶ For more on the legal framework regulating water quotas in the Jordan basin, see: Ayman Labbad, Ghadeer Arafa, Walaa Jarrar, a policy analysis paper entitled: Towards effective policies to ensure the

- Description and analysis of the phenomena under study.
- Interpreting the existing situation and identifying the conditions and relationships that exist between the variables, to analyze the links and interpretation of these variables, classify them, and measure and conclude them.

Case study approach, through:

One-unit study (Dead Sea Case).

1.9 Literature Review:

Study: Zubari (2019), tagged with water governance and cooperation around it at the regional level in the Arab region:

This study aimed at researching water governance and cooperation around it at the regional level in the Arab region, where facing water challenges requires focusing cooperation between Arab countries on two areas: strengthening national capacities to achieve efficiency and sustainability in water resource management, and addressing the achievement of regional strategic goals, including food security. And local development of desalination and water treatment technologies and management of shared water resources. The study issued several recommendations, including The Arab countries are facing extremely difficult challenges in terms of water scarcity, and these challenges are exacerbated because more than half of the renewable water resources originate from outside the region without the existence of signed agreements regarding them, which

restoration of water rights and the achievement of water justice within the Palestinian territories, among the productions of the participants in the training program. Preparing Public Policies and Strategic Thinking, The Palestinian Center for Policy Research and Strategic Studies (Masarat), November 2016, p. 7. Available in PDF format via the link: https://www.masarat.ps/files/content_files/thlyl_syst_-_lmyh_0.pdf

threatens regional stability and food security. Two exist for regional cooperation, and many of the objectives contained therein are compatible with each other, namely: the Arab Strategy for Water Security in the Arab World to meet the challenges and future requirements of sustainable development 2010-2030, and the sixth goal of sustainable development.

Study: Institute for National Security Studies (INSS) and Ecopeace (2018), tagged with Israeli water diplomacy and national security concerns:

This study dealt with ideas about water security and visualized the state of water security in Israel, Jordan, and the Palestinian territories. The study also presented several proposals to leaders related to Israeli-Palestinian water security, and common national security concerns. The study concluded that water security has a key role in ensuring the transformation of events and political and social stability in Israel and therefore should be viewed as an issue of national needs. Uncertainties about water can lead to social tensions and even lead to uprisings and thus represent an internal danger to Israeli society. The study suggested that by advancing the water strategy, countries can raise the level of water security, create local cooperation, and reach an advanced stage of harmony and strength. The study also presented a review of the Israeli-Palestinian water relations. The study also indicated that Israel's understanding of Jordan encouraged the latter's active participation and achieved an exemplary understanding by advancing a mutual water security plan that serves the national advantages of each country.

Study: Gray and Sadoff (2017), tagged with drowning or swimming?

This study is an article in which the authors summarize many definitions of water security that were found in the political and academic literature by achieving basic water security, both of which overburden the beneficial capabilities of water and limit its harmful impact. The study also indicated that water security is characterized by the possibility of access to water. A stage that suits well-being, functions, biological and creative systems together with an adequate degree of water-related risk to individuals, situations, and economies. The study also dealt with those countries that have reached the stage of water security, the methods chosen by those countries and the costs they paid, and those countries that have not achieved water security. The study distinguished between three types: countries that have been burdened by hydrology, countries that have been hampered by hydrology, and countries that have become hostage to hydrology, and found that countries that have been held hostage by hydrology are usually among the worst countries.

Study: Muhammad and Muhammad (2013), tagged with the economic resources available for economic development in the Nile Basin countries and the extent of the possibility of cooperation between them:

This study aimed to study the economic resources available for economic development in the Nile Basin countries and the extent of the possibility of cooperation between them by reviewing the general, social and economic development indicators of the basin countries, as well as energy problems and the level of water scarcity. The study reached several results, most notably that the opportunities and possibilities of cooperation between Egypt and the Nile Basin countries are available and possible. It also found that the per capita GDP in the Nile Basin countries except Egypt is classified as among the

low-income countries and the average per capita share It has about 1540 dollars per year, while the global average is about 10,715 dollars.

Study: Club (2009), tagged with population growth and water security in the Hashemite Kingdom of Jordan: reality and prospects (1979 - 2025):

This study aimed to track the status of population growth and the factors affecting this growth in terms of fertility, mortality, and migration, with the study of water from all sources (rain, groundwater, surface water, unconventional water), in addition to studying the impact of population growth on the current reality and implementing a set of From future expectations of both population and water to arrive at a package of practical results that are the basis for constructive proposals that contribute to alleviating the severity of the worsening crisis in Jordan over time. This study recommended several recommendations, including limiting population growth, which is still high, as well as developing a long-term national strategy aimed at directing the urban tide and population expansion towards the eastern regions of Amman and Zarqa governorates. The study also recommended the optimal investment of rainwater through water harvesting. Household, as well as the establishment of a national water center with an independent body.

Study: Al-Taweel (2009) tagged with the Arab water and food security crisis:

This study aimed to examine the political and economic dimensions of the water crisis and its relationship to food security. Food security has become part of the policy of pressures exerted by Western countries to influence decision-makers and peoples and their political choices. The importance of water is highlighted not only as a vital material related to human survival, but Because it constitutes the basic basis for industrial development, economic development, social and political stability, and

civilized growth in its various fields. The study recommended the introduction of water extension as a major component of agricultural extension, as well as the inclusion of water policy in any agricultural strategy, as well as the development of non-traditional water sources such as desalination of seawater, purification of sewage, heavy water, and agricultural drainage. The study also recommended activating Arab agricultural cooperation agreements with encouragement. Sectoral agreements for resource exploitation.

Study: Rabaa'a (2001), tagged with the water dilemma in the Middle East:

This study aimed to identify the causes of the water crisis in the Middle East, which is represented in the population growth in the Middle East, as well as the region's lack of sufficient water resources to meet its increasing water needs, and the misuse of the water resources available in these countries and the use of some of them huge amounts of water compared to their need's aquatic. The study also dealt with the political, economic, and legal dimensions of the water crisis, and also aimed at clarifying the future of the water crisis in the Middle East. The study recommended the need to adhere to the historical and legal Arab rights in water resources and not to neglect and defend them. The study also recommended encouraging the governments of the Middle East region to produce new, more efficient forms of water resource management and water storage strategies. The study also recommended that countries benefiting from rivers Jordan, the Nile, and the Euphrates reach agreements between them on the sharing of water.

Study: Akl (2000), tagged with the water deficit in Jordan and its impact on the industrial sector:

This study aimed to identify the causes of the water deficit in Jordan and its impact on the industrial sector and to achieve the economic efficiency of water use in industry. This study included several recommendations, including prioritizing water use between sectors and choosing the best alternative that achieves the goal of preserving the water stock, as well as using freshwater for other purposes of drinking and industry. The study also recommended the need to find better ways to save water where the necessity seems urgent. To rely on crops that need less irrigation water, and finally to establish a national center for water information that serves researchers in this field and helps decision-makers in developing policies, strategies, and future vision on scientific grounds based on accurate and documented information.

- **Commenting on previous studies:**

The current study differs from the previous studies indicated that it seeks to study the case of the Dead Sea by standing on the challenges of water security in the Jordan River Valley and the efforts of Palestinian water diplomacy in this regard, through the use of the descriptive approach to describe and analyze the phenomena under study, and to explain the existing situation and identify Conditions and relationships between variables to analyze the links and interpretation of these variables, classify them, measure and draw conclusions from them.

Possible drawbacks:

The following are the most prominent potential limitations that the researcher expects to hinder during the study:

- Lack of resources.

- The difficulty of finding the appropriate theory.
- Inability to access official documents.

The Limits of the Study:

1. Time Limits:

The period allocated for the study from the beginning of approval of the study proposal and work plan until its completion.

2. Spatial Boundaries:

The case of the Dead Sea.

1.10 The Study Plan

It is proposed that the division of study classes be as follows:

Chapter One:

Introduction

Hypothesis

Objective

Methodology

Literature review

Chapter Plan

Chapter Two:

Theoretical Framework

Water Security

Water Diplomacy

Conflict Resolution

Chapter Three:

Case Study

Jordan Valley

Dead Sea

Chapter Four:

Palestinian Water Diplomacy

Regional Water Diplomacy

External Actors

Chapter Five:

Conclusion

Recommendations

Chapter II

Theoretical Framework for Water Diplomacy and Water Security

This chapter (the second chapter of the study) deals with the theoretical framework of the study, which includes the main concepts of the study, namely water security, water diplomacy, and water conflict resolution.

2.1 Water Security:

The term water security has become among the ringing phrases in political analyzes in a number of regions of the world, especially the global south and the water-scarce Arab region⁴⁷. Commentators often predict that the global south will witness future wars over water, and such claims are often made in newspaper columns and report preambles as a result of simple arithmetic⁴⁸.

Only about 2.5% of the world's water resources are fresh water, and only 1% of it is easily accessible⁴⁹. But this on its own does not allow anyone to conclude that there is a state of water scarcity, or that there is a state of water insecurity, as it is meaningless without more information about factors such as needs for water supply and use or rates of consumption⁵⁰.

⁴⁷ David Reed, *Water, Security and U.S. Foreign Policy*, London: Routledge, 2017, p: 44

⁴⁸ Bruce Lankford, Karen Bakker, Mark Zeitoun, Declan Conway, *Water Security: Principles, Perspectives and Practices*, London: Routledge, 2013, p: 29

⁴⁹ International Energy Agency, *World Energy Outlook 2012*, Paris: OECD/ IEA, 2012, p: 502

⁵⁰ World Water Council, *Global Water Security: Lessons Learnt and Long-Term Implications*, Berlin: Springer, 2018, p: 137

It is also not clear whether water insecurity necessarily stems from water scarcity, and this debate undoubtedly illustrates the need for clearer definitions of what is meant when such terms are used⁵¹.

2.1.1. History and Development of The Concept of Water Security:

Water security is a pervasive and popular but controversial concept, and because there is no agreed global definition, it has also been referred to as a battlefield of ideas, and although there is no linear evolution of the concept certain trends can be observed⁵². Until the 1990s, the term water security was largely used to describe the presence of sufficient water supplies to meet the needs of the population of a particular country, and then applied to water the thesis of Thomas Malthus from the eighteenth century, which states that increasing the size of the population will lead to starvation, disease and a decline in living standards. In conjunction with the increasing competition for food resources, water security is now seen as a state of adequate and safe supply just like food security⁵³.

While the significance of such a case was nothing new, the writings of Swedish hydrologist Malin Falkenmark in the 1970s gave new impetus to academic debate⁵⁴. In 1989 Falkenmark established thresholds for water stress, water scarcity and absolute water stress, so this absolute water scarcity index as a measure of supply relative to population size, which has come to be referred to as the Falkenmark Index, becomes the basis of most water security analyzes. Hence, water scarcity will be seen as equal to

⁵¹ Water Policy: Official Journal of the World Water Council, Volume 10, Elsevier Science Limited, 2008, p: 139

⁵² Bhaswati Ray, Rajib Shaw, Urban Drought: Emerging Water Challenges in Asia, Berlin: Springer, 2018, p: 55

⁵³ Ole Kristian Fauchald, David Hunter, Wang Xi, Yearbook of International Environmental Law 2008: Volume 19, 2010, Oxford: Oxford University Press, p: 105

⁵⁴ Malin Falkenmark, Gunnar Lindh, Water For a Starving World, London: Routledge, 2019, p: 19

water insecurity, and this concept applies to a number of regions in the world, which are areas that fall below the water scarcity threshold⁵⁵.

This term also emphasized social demands for water versus physical water stress, which is more symbolic in expressing water overcrowding, which measures the number of people dependent on the presence of certain resources. Water for a particular country, not for each of its inhabitants⁵⁶.

At the same time, studies linking environmental stress to the violent conflicts that emerged in the 1980s/90s extended to water resources. Given the centrality of water in human life, it has been argued that the scarcity of safe water will become a matter of national security, and that water-scarce nations will be ready to fight over resources as water overcrowding escalates and resource availability decreases⁵⁷. In particular, transboundary water resources will increase tensions between riparian countries and may even lead to interstate wars⁵⁸.

Thus, an issue was raised not only about the scarcity of resources, but also about the dependence on the resources and on the policies of other countries in which they have a stake, and this is the case in particular with regard to the Arab region, since the majority of the available fresh water resources are transboundary in nature, and thus the dependency was viewed on outflows as a major security problem⁵⁹.

More recent studies have concluded that there are in fact more cases of cooperation over shared water resources than there are cases of conflict, and that the transboundary nature

⁵⁵ Michael Cohen, *Falkenmark Water Stress Index/ Water Competition Index (1980s and 1990s)*, In author: *The World's Water 2002-2003: The Biennial Report On Freshwater Resources*, Washington: Island Press, 2002, p: 98

⁵⁶ Julie Gjortz Howden, *The Community of Interest Approach in International Water Law*, Boston: Brill, 2020, p: 57

⁵⁷ Jacques Ganoulis, I.L. Murphy, Mitja Brilly *Transboundary Water Resources in the Balkans*, Berlin: Springer, 2000, p: 215

⁵⁸ Maurice Jones, *Healing the Nation*, London: Troubador Publishing Ltd, 2010, p: 116

⁵⁹ K. Santhanam, *Eurasian Security Matters*, New Delhi: Allied Publishers, 2010, p: X

of these resources enhances the ability to pursue a peacebuilding approach, even in the Middle East⁶⁰. And policymakers are slowly adopting this view⁶¹.

In 2001, the former Secretary-General of the United Nations, Kofi Annan, stated that the fierce competition for fresh water might become a source of conflict and wars in the future, but he returned a year later to say that the water problems in our world should not only be a cause of tension, but can also be a catalyst for cooperation if we work together, and a safe and sustainable water future can be our future⁶².

This view is generally prevalent today, although there is still some perceived urgency from the idea that water wars loomed⁶³. Thus, although shared water issues are still often mentioned in the literature, they are rarely mentioned when defining water security⁶⁴.

The greater degree of cooperation over shared international water resources does not diminish the importance of these resources to water security or its relevance to it and its definition, and even if it is true that there is cooperation between states, the existence of such cooperation within states has not yet been confirmed. The different tribes, communities, or groups that use water, or between regions within a country⁶⁵.

Thus, these arguments support integrating the dimensions of conflict over water into the definition of water security. Some, such as Grey and W. Sadoff, have avoided explicitly mentioning conflict and violence over water resources as factors of water insecurity by

⁶⁰ Lena Salame, *Handbook of Water Resources Management: Discourses, Concepts and Examples*, Berlin: Springer, 2021, p: 187

⁶¹ Robert C. Brears, *Urban Water Security*, New Jersey: Wiley, 2016, p: 23

⁶² Cecilia Tortajada, Asit K. Biswas, *Improving Water Policy and Governance*, London: Routledge, 2013, p: 3

⁶³ Marwa Daoudy, *The Origins of the Syrian Conflict: Climate Change and Human Security*, Cambridge: Cambridge University Press, 2020, p: 38

⁶⁴ Asit K. Biswas, Cecilia Tortajada, *Water Security, Climate Change and Sustainable Development*, Berlin: Springer, 2015, p: 79

⁶⁵ Guy J-P. Schumann, Paul D. Bates, *Global Flood Hazard: Applications in Modeling, Mapping, and Forecasting*, New Jersey: Wiley, 2018, p: 127

noting that water security is accompanied by an acceptable level of water-related risk, and therefore an additional benefit is the inclusion of risks related to floods and other water disasters⁶⁶.

However, the question remains whether the dimensions of national water independence should be included as a water security criterion, as in the concept of food sovereignty⁶⁷.

While written definitions of water security rarely include factors such as independence, some attempts to create water security indices have done so. For example, Lautze and Manthritilake argue that water security at the national level consists of five components: basic household needs, food production, environmental flows Risk management, independence⁶⁸. Similarly, global risk analysis company Maplecroft has developed a water security risk index, consisting of access to improved drinking water and sanitation, availability of renewable water and dependence on external supplies, the relationship between water demand and supply, and the water dependency of a country's economy⁶⁹.

The use of these components of water security indices can be interpreted as defining the concept of water security, but there are problems with these definitions⁷⁰.

While the two indices leave no room for self-criticism, Lautze and Manthritilake point out several flaws in the way they measure, and thus implicitly, in their definitions of

⁶⁶ Anoulak Kittikhoun, Susanne Schmeier, *River Basin Organizations in Water Diplomacy*, London: Routledge, 2020, p: 93

⁶⁷ Anjula Gurtoo, Colin Williams, *Developing Country Perspectives on Public Service Delivery*, Berlin: Springer, 2015, p: 133

⁶⁸ Pradip K. Sikdar, *Environmental Management: Issues and Concerns in Developing Countries*, Berlin: Springer, 2021, p: 156

⁶⁹ Michael Kidd, Loretta Feris, Tumai Murombo, Alejandro Iza, *Water and the Law: Towards Sustainability*, Cheltenham: Edward Elgar Publishing, 2014, p: 27

⁷⁰ Maxi Scherer, *International Arbitration in the Energy Sector*, Oxford: Oxford University Press, 2018, p: 115

water security⁷¹. Accordingly, their five components can allow for results related to water security, but they are not sufficient because the ultimate security in these areas depends on factors beyond those specific to water security, such as economic factors⁷².

Furthermore, the specific indicators chosen as measures for each component of the indices may not be fully representative or indicative of their sub-sectors, and Lautze and Manthrilake further argue that the assessment of water security conditions at the country level conflicts with the practice of water management that is often carried out on basin levels and at different time scales⁷³.

Typically, hydrologists focus on basin levels in their analyzes while politicians focus on country-level analyses⁷⁴. The aforementioned authors caution that although a particular country may not have sufficient storage or internal streaming, it may have international agreements with neighboring countries⁷⁵. Hence, while it may be useful to include the concept of independence in the definition of water security, in practice it is difficult to define this concept⁷⁶.

⁷¹ Christian Bréthaut, Rémi Schweizer, *A Critical Approach to International Water Management Trends: Policy and Practice*, Berlin: Springer, 2017, p: 210

⁷² R. Quentin Grafton, Paul Wyrwoll, *Global Water: Issues and Insights*,

⁷³ Jonathan Lautze, Herath Manthrilake, Water security: Old concepts, new package, what value?, 12 *Natural Resources Forum* 36, (2), Pp: 26 – 27, DOI:[10.1111/j.1477-8947.2012.01448.x](https://doi.org/10.1111/j.1477-8947.2012.01448.x)

⁷⁴ William Young, Nagaraja Rao, *Managing Water Resources in Large River Basins*, Basel: MDPI Books, 2021, p: 72

⁷⁵ Jonathan Lautze, Herath Manthrilake, Water security: Old concepts, new package, what value?, The aforementioned reference, p.: 30

⁷⁶ Town and city water security definition and diagnostic Public report prepared for the Department of Agriculture, Water and Environment, Prepared by Aither, February 2021, p: 6. Available in PDF format via the following link: <https://www.agriculture.gov.au/sites/default/files/documents/town-city-water-security-definition-diagnostic.pdf>

2.1.2. The Shift Towards Human Security:

While most of the definitions covered so far revolve around national water security, traditional notions of security are increasingly declining as attention shifts towards individual water security⁷⁷.

Following the end of the Cold War in 1991, security studies liberated from limiting its focus almost exclusively on the state to approaches that focus instead on the security of the individual or ecosystems⁷⁸. This was prompted by the release of the United Nations Development Program - the 1994 World Human Development Report which introduced the concept of human security, the argument being that regional security, while important, was insufficient because it did not necessarily imply the security of all individuals or population groups in a particular country⁷⁹.

This new approach broadened the security agenda not only to consider military threats to territorial integrity and national sovereignty, but to look at security from the perspective of a broad spectrum of risks⁸⁰. The United Nations Development Program classified security into economic security, food security, health security, environmental security, personal security and societal security. and political security⁸¹. Water has a relationship with most of these categories of security, as well as with many of the

⁷⁷ Hugh Turrall, Jacob Burke, Jean-Marc Faures, Climate change, water and food security, FAO WATER REPORTS, FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS Rome, 2011, p: 91

⁷⁸ Jean-Louis Martin, Virginie Maris, Daniel S. Simberloff, The need to respect nature and its limits challenges society and conservation science, PNAS, vol. 113, no. 22, May 31, 2016, p: 6106

⁷⁹ HUMAN DEVELOPMENT REPORT 1994, Published for the United Nations Development Programme (UNDP), New York, 1994, p: 77

⁸⁰ OSCAR A. GOMEZ, DES GASPER, Human Security: A Thematic Guidance Note for Regional and National Human Development Report Teams, United Nations Development Programme Human Development Report Office, 2013, p: 5. Available via the link: http://hdr.undp.org/sites/default/files/human_security_guidance_note_r-nhdrs.pdf

⁸¹ L. Hens, Bhaskar Nath, The World Summit on Sustainable Development: The Johannesburg Conference, Berlin: Springer Science & Business Media, 2006, p: 91

Sustainable Development Goals, and because of its centrality to human security, water is now seen as a security issue as well⁸².

Water security, defined narrowly, can mean different areas of focus, for example, studies in the field of agriculture focus on its impact on agricultural production and food security, while studies in the field of public health define it as the security of supplies and access to safe water, focused on prevention Without pollution and assess its extent in distribution systems⁸³. Although these narrow and ad hoc definitions are not necessarily related to human security, most of them are, except perhaps those relating to protection from terrorist attacks or contamination of drinking water, hence they evoke more traditional notions of security⁸⁴.

Several parties have attempted to develop a comprehensive and integrated definition of water security by including as many aspects as possible under its umbrella, dealing with different levels of security from regional security to household security⁸⁵.

Here are the most common and representative definitions:

I. Defining water security as stated in the Hague Ministerial Declaration on Water Security in the Twenty-first Century (March 22, 2000)⁸⁶:

⁸² Food and Agriculture Organization of the United Nations, *The State of Food and Agriculture 2020: Overcoming water challenges in Agriculture*, Food and Agriculture Organization of the United Nations, Rome, 2020, p: 3

⁸³ Marco Noordeloos, Catherine Ragasa, *Engendering Agricultural Research, Development and Extension*, Washington: IFPRI, 2011, p: 107

⁸⁴ Food and Agriculture Organization of the United Nations, *The Water-Energy-Food Nexus A new approach in support of food security and sustainable agriculture*, Food and Agriculture Organization of the United Nations Rome, 2014, p: 11

⁸⁵ Water security framework, Framework, water Aid, the document should be cited as WaterAid (2012) *Water security framework*. WaterAid, London, p: 10. Available in PDF format via the following link: <https://washmatters.wateraid.org/sites/g/files/jkxoof256/files/download-our-water-security-framework.pdf>

⁸⁶ Ministerial Declaration of The Hague on Water Security in the 21st Century, Agreed to on Wednesday 22 March, 2000, In The Hague, The Netherlands. To view the aforementioned announcement in PDF format, follow the link:

Water security is ensuring the protection and improvement of freshwater and coastal and related ecosystems, promoting sustainable development and political stability, so that everyone can have access to enough safe water at an affordable cost to lead a healthy and productive life and that vulnerable people are protected from water-related risks.

II. Global Water Partnership (2000)⁸⁷:

Water security means, at any level from the household to the world, that everyone can have access to enough safe water at an affordable cost to lead a clean, healthy and productive life, while ensuring that the natural environment is protected and enhanced.

III. Gery and Sadoff (2007)⁸⁸:

The availability of an acceptable quantity and quality of water for health, livelihoods, ecosystems and production, in conjunction with an acceptable level of water-related risk to people, the environment and economies.

IV. UN Definition of Water (2013)⁸⁹:

The ability of people to sustainably maintain access to sufficient quantities of water of acceptable quality to maintain livelihoods, human well-being and social and economic development, to ensure protection against waterborne pollution and water-related disasters, and to maintain ecosystems in a climate of peace and political stability.

Obviously, these definitions are not in line with the traditional concept of security, as they relate to the security of the individual (every person) and people (the population),

https://www.worldwatercouncil.org/fileadmin/world_water_council/documents/world_water_forum_2/The_Hague_Declaration.pdf

⁸⁷ Ferrier, Robert C, Martin-Ortega, Water ecosystem services: a global perspective, Cambridge: University of Cambridge Press, 2015, p: 51

⁸⁸ David Devlaeminck, Zafar Adeel, Robert Sandford, The Human Face of Water Security, Berlin: Springer, 2017, p: 199

⁸⁹ Wilson, Lynn A.Stevenson, Carolyn N, Building Sustainability Through Environmental Education, Pennsylvania: IGI Global, 2018, p: 47

rather than the security of the state⁹⁰. Non-military demographic risks are also seen as related to more than just quantity and quality, but also health, economy, industry and ecosystems, as clearly expressed in the language used the multidisciplinary elements of security and its multisector dependence, and in addition, the centrality of water security emerges as a prerequisite for development⁹¹.

Some definitions also include fairness and equitable access as one of the criteria, but that is the exception, and almost none of them refer to the concepts of national independence or self-sufficiency. However, human security as a concept does not mean that national security is less important, but it is just not sufficient in itself. A country can be considered secure at the national level even though it hosts unsafe individuals, and vice versa, and because national security remains important, it can be argued that such factors are included in an overall definition of water security, or at least a reference to national water security⁹².

2.1.3. Human Security and Human Rights in Water:

A clear shift can be seen over the years away from traditional security themes related to water security, such as interstate violence and conflict, and towards the concept of human security⁹³. Today, NGOs, think tanks, international organizations and academia

⁹⁰ Najdat Sabri, *The Legal Framework for National Security: An Analytical Study*, Dubai: Al Manhal for Electronic Publishing and Distribution, 2011, p: 40

⁹¹ UNESCO, ICOMOS, IUCN, ICCROM, *Disaster Risk Management for World Heritage*, UNESCO Publications, 2016: p. 112

⁹² United Nations, *Core International Human Rights Treaties*, Washington: United Nations Publications, 2006, p. 48

⁹³ Ali Abdul Karim Hussein Al Jabri, *The Role of the State in Achieving Sustainable Human Development in Egypt and Jordan*, Dubai: Al Manhal for Publishing and Electronic Distribution, 2012, p. 66

that use the term water security are primarily concerned with the security of the individual rather than the security of the nation state⁹⁴.

This may have been influenced by the push for the recognition of water as a human right, which began in the 1970s and culminated in July 2010 with the UN General Assembly formally dedicating the human right to clean and safe drinking water and sanitation in Resolution 64/ 292⁹⁵.

The 1977 United Nations Conference on Water in Mar del Plata, Argentina, also recognized water as a right for the first time, as the action plan adopted by the conference declared that all peoples, regardless of their stage of development and their social and economic conditions, have the right to obtain drinking water in quantity and quality equivalent to their basic needs. Water is essential for life and full development, both at the individual level and as an integral part of society⁹⁶.

It should also be noted that an earlier declaration by the United Nations Conference on Human Settlements held in Vancouver, Canada in 1979, recognized clean water as a basic human need⁹⁷.

I. Conventions:

The Indigenous and Tribal Peoples Convention, 1989:

is an International Labor Organization Convention, also known as ILO Convention 169, or C169. It is the major binding international convention concerning indigenous

⁹⁴ Muhammad Salman Taya, *International Conflict over Water: The Environment of the Nile Basin*, Cairo: Center for Political Research and Studies, 2007, p.: 406

⁹⁵ United Nations General Assembly, Sixty-fourth Session, Agenda Item No. 48, Resolution adopted by the General Assembly on July 28, 2010, to view the resolution through the link: <https://undocs.org/ar/A/RES/64/292>

⁹⁶ Adly Mansour, *Water Resources in the Middle East: Conflict or Cooperation under the Rules of International Law*, Cairo: Dar Al-Nahda Al-Arabiya, 1996, p.: 181

⁹⁷ F. T. Last M. C. B. Hotz B. G. Bell, *Land and its Uses — Actual and Potential: An Environmental Appraisal*, Berlin: Springer Science & Business Media, 2013, p: 508

peoples and tribal peoples, and a forerunner of the Declaration on the Rights of Indigenous Peoples. It was established in 1989, with the preamble stating:⁹⁸ Noting the international standards contained in the Indigenous and Tribal Populations Convention and Recommendation, 1957, and Recalling the terms of the Universal Declaration of Human Rights, the International Covenant on Economic, Social and Cultural Rights, the International Covenant on Civil and Political Rights, and the many international instruments on the prevention of discrimination, and Considering that the developments which have taken place in international law since 1957, as well as developments in the situation of indigenous and tribal peoples in all regions of the world, have made it appropriate to adopt new international standards on the subject with a view to removing the assimilationist orientation of the earlier standards, and Recognizing the aspirations of these peoples to exercise control over their own institutions, ways of life and economic development and to maintain and develop their identities, languages and religions, within the framework of the States in which they live, and Noting that in many parts of the world these peoples are unable to enjoy their fundamental human rights to the same degree as the rest of the population of the States within which they live, and that their laws, values, customs and perspectives have often been eroded, and...

The convention is made of a Preamble, followed by forty-four articles, divided in ten parts. These are⁹⁹:

Part I. General Policy

Part II. Land

⁹⁸ ILO Convention C169

⁹⁹ ILO (April 1, 2020). "Convention No. C169". *ilo.org*. Retrieved April 1, 2020.

Part III. Recruitment and Conditions of Employment

Part IV. Vocational Training, Handicrafts and Rural Industries

Part V. Social Security and Health

Part VI. Education and Means Of Communication

Part VII. Contacts and Co-operation Across Borders

Part VIII. Administration

Part IX. General Provisions

Part X. Final Provisions

This Convention revised Convention C107, the Indigenous and Tribal Populations Convention, 1957. Some of the nation's ratifying the 1989 Convention "denounced" the 1957 Convention.

The ILO 169 convention is the most important operative international law guaranteeing the rights of indigenous and tribal peoples. Its strength, however, is dependent on a high number of ratifications among nations.^{100 101102}

The revision to the Convention 107 forbade governments from pursuing approaches deemed integrationist and assimilationist¹⁰³. It asserts the rights of indigenous and tribal peoples to choose to integrate or to maintain their cultural and political independence.

Articles 8–10 recognize the cultures, traditions, and special circumstances of indigenous tribal peoples.

¹⁰⁰ Netheim, Garth (2002). *Indigenous Peoples and Governance Structures: A Comparative Analysis of Land and Resource Management Rights*. Aboriginal Studies Press. ISBN 0-85575-379-X.

¹⁰¹ . Zillman, Donald (2002). *Human Rights in Natural Resource Development: Public Participation in the Sustainable Development of Mining and Energy Resources*. Oxford University Press. ISBN 0-19-925378-1.

¹⁰² Survival International website – ILO 169 Archived October 18, 2016, at the Wayback Machine

¹⁰³ Bunn-Livingstone, Sandra (2002). *Juricultural Pluralism Vis-a-Vis Treaty Law: State Practice and Attitudes*. Springer. ISBN 90-411-1801-2.

In November 2009, a court decision in Chile, considered to be a landmark in indigenous rights concerns, made use of the ILO convention law. The court ruled unanimously in favor of granting a water flow of 9 liters per second to Chusmiza and Usmagama communities. The legal dispute had dragged for 14 years, and centers on community water rights in one of the driest deserts on the planet. The Supreme Court decision on Aymara water rights upholds rulings by both the Pozo Almonte tribunal and the Iquique Court of Appeals, and marks the first judicial application of ILO Convention 169 in Chile¹⁰⁴. Prior to this decision, some protests had escalated over the failure to respect the Convention 169 in Chile. Mapuche leaders filed an injunction against Michelle Bachelet and minister of the presidency José Antonio Viera Gallo, who is also coordinator of indigenous affairs, with the argument that the government had failed to fully comply with the Convention 169 clause on the right to "prior consultation", which must be carried out "in good faith and in a form appropriate to the circumstances, with the objective of achieving agreement or consent to the proposed measures," such as logging, agribusiness or mining projects in indigenous territories. There were already several examples of the successful use of the ILO Convention in Chile, like the case of a Machi woman who brought legal action to protect a plot of land with herbs used for medicinal purposes, which was threatened by the forest industry. Some concerns were however raised at the time over the political framework of the government being brought in line with the convention, and not the other way around.¹⁰⁵

¹⁰⁴ "Chile's Supreme Court Upholds Indigenous Water Use Rights". *The Santiago Times*. 2009-11-30. Retrieved 2010-03-02.

¹⁰⁵ "CHILE: Indigenous Protests on Several Fronts". *IPS*. 2009-10-07. Archived from the original on 2009-10-27. Retrieved 2010-03-02.

II. Conferences:

In 1992, two important conferences on sustainable development were held in Dublin and Rio¹⁰⁶. The Dublin Communiqué on Water and Sustainable Development referred to four guiding principles, the fourth of which includes a text that states that it is important to first recognize the fundamental right of all people to clean water and to affordable sanitation for all¹⁰⁷. This was alerted by the United Nations Conference on Environment and Development in Rio de Janeiro, which also endorsed in Chapter 18 of Agenda 21 the Mar del Plata Resolution that all people have the right to have access to drinking water, adding to this the consensus premise¹⁰⁸.

The Dublin and Rio Conference was followed by the United Nations International Conference on Population and Development held in Cairo in 1994, which recognized in its Program of Action that all individuals have the right to an adequate standard of living for themselves and their families, including adequate food, clothing, housing, water and sanitation¹⁰⁹.

It also declared the interdependence between water and development in the General Assembly resolution on the right to development in 2000. Article 12 affirmed that the full realization of the right to development includes, inter alia: The right to food and the right to clean water are fundamental human rights and are considered Promoting them is a moral imperative for both national governments and the international community¹¹⁰.

¹⁰⁶ Sharad K. Jain, V.P. Singh, *Water Resources Systems Planning and Management*, Amsterdam: Elsevier, 2003, p: 838

¹⁰⁷ Stefano Burchi, Kerstin Mechlem, Unesco, *Groundwater in International Law: Compilation of Treaties and Other Legal Instruments*, Rome: FAO, 2005, p: 498

¹⁰⁸ Suhair Hajim Al-Hiti, *International Responsibility for Environmental Damage*, Dubai: Al-Manhal for Publishing and Electronic Distribution, 2008, p.: 84

¹⁰⁹ Fouad Batayneh, Beirut: The Arab Foundation for Studies and Publishing, 2003, p.: 366

¹¹⁰ Abdul Rahim Qassem Kenawy, *Community Participation in Urban Planning*, Dubai: Al Manhal for Electronic Publishing and Distribution, 2018, p. 33

III. United Nations Instruments:

General Comment No. 15 of the United Nations in 2002 helped clarify the scope of the right to water¹¹¹. This comment interprets the 1966 International Covenant on Economic, Social and Cultural Rights, which affirms the right to water in international law, and provides guidelines for the interpretation of the right to water, setting it in the framework of two articles, Article 11 of the right to an adequate standard of living, and Article 12 of the right the highest attainable level of physical health¹¹².

More precisely, when defining the legal grounds for the right to water, the commentary refers to ensuring access to water resources for agricultural purposes in order to realize the right to adequate food, referring specifically to women farmers. The commentary lists factors applicable to all circumstances, including availability, quality, acceptability, physical accessibility, affordability, participation, non-discrimination, and access to information on water issues for the purpose of accountability¹¹³.

Under the heading of discrimination and equality, it stresses that women should not be excluded from decision-making processes related to water resources or rights related to it. Moreover, it clearly defines the obligation of states parties to uphold the right, identifies actions that constitute a violation and describes the means of implementation at the national level¹¹⁴.

Several steps followed that led to the recognition of the right to water and sanitation. In 2004, the Sub-Commission on the Promotion and Protection of Human Rights requested

¹¹¹ Office of the United Nations High Commissioner for Human Rights, The Right to Water, Fact Sheet No. 35 (no date), p. 14. Available from the link: <https://www.ohchr.org/Documents/Publications/FactSheet35ar.pdf>

¹¹² Amer Al-Jubouri, *Transitional Justice and the Role of United Nations Agencies in Establishing Their Curricula*, Dubai: Al-Manhal for Electronic Publishing and Distribution, 2018, p. 52

¹¹³ Malcolm Langford, Anna F. S. Russell, *The Human Right to Water*, Cambridge: Cambridge University Press, 2017, p: 121

¹¹⁴ Amer Al-Jubouri, *Transitional Justice and the Role of United Nations Agencies in Establishing Their Curricula*, The aforementioned reference, p.: 35

UN Economic and Social Council Rapporteur to prepare draft guidelines for the implementation of the right to drinking water supply and sanitation¹¹⁵.

In 2006, the Human Rights Council, in its resolution No. 142/2, adopted the quest for official recognition. It requested the Office of the United Nations High Commissioner for Human Rights to conduct further study on the scope and content of human rights obligations related to equitable access to drinking water and sanitation in accordance with international human rights instruments. The report, completed in 2007, concluded that the time had come to consider access to drinking water and sanitation as a human right, defined as the right to have access, on an equal basis with others and without discrimination, to an adequate quantity of safe drinking water for personal and domestic uses to ensure Stay and keep health¹¹⁶.

IV. United Nations Resolutions:

In July 2010, for the first time, the United Nations General Assembly formally recognized in Resolution A/RES/64/292 that universal access to safe and clean drinking water and sanitation is an integral part of the realization of all human rights. The resolution called upon countries and international organizations to provide financial resources, capacity-building and technology transfer through assistance, especially to developing countries, with the aim of realizing this right for all. Furthermore, the resolution mandated the independent expert to submit an annual report on the main challenges to the realization of this right and its impact on the achievement of the

¹¹⁵ Justin D. Brooks and Kelan C. Carey, Objective 6 - Ensure availability and sustainable management of water and sanitation for all, United Nations website (Arabic version). Available via the link: <https://www.un.org/ar/chronicle/article/20267>

¹¹⁶ United Nations, Report of the Human Rights Council, Second session (18 September-6 October and 27-29 November 2006), General Assembly Official Records Sixty-second session Supplement No. 53 (A/62/53), United Nations, New York, 2007, p: 24

Millennium Development Goals, highlighting once again the links between the development agenda and all human rights¹¹⁷.

The Human Rights Council affirmed in October 2012 that the human right to safe drinking water and sanitation derives from the right to an adequate standard of living and is inextricably linked with the right to the highest attainable standard of physical and mental health, as well as the right to life. And in human dignity. This was followed by several resolutions of both the General Assembly and the Human Rights Council that emphasized the full realization of obligations relating to access to safe drinking water and sanitation and their importance to the development agenda¹¹⁸.

In 2015, the United Nations General Assembly adopted a resolution stating that access to safe drinking water and the right to sanitation are inextricably linked, albeit with distinct features, that require that they be addressed independently to address the specific challenges that they face. It objected to their implementation, and recognized that sanitation when taken with water remains neglected at all times, and that the sanitation component of Goal No. 7 of the Millennium Development Goals has not been achieved. The resolution also stressed the importance of strengthening the leadership role of women and the need for their full, effective and equal participation in decision-making in managing Water and sanitation services¹¹⁹.

¹¹⁷ United Nations General Assembly, The human right to water and sanitation, 64th session Agenda Item 48, August 3, 2010, pp: 3 - 4. Available in Arabic via the link: <https://www.refworld.org/cgi-bin/texis/vtx/rwmain/opendocpdf.pdf?reldoc=y&docid=4cc926c92>

¹¹⁸ Report of the United Nations Human Rights Council, twenty-first session (10-28 September and 5 November 2012), General Assembly Sixty-seventh Session Supplement No. 53A, United Nations, New York, 2012, p. 19

¹¹⁹ WWAP, The United Nations world water development report 2019: leaving no one behind, Washington: UNESCO Publications, 2019, p. 39

Regional and National Right to Water Instruments:

At the regional level, the Arab Charter on Human Rights refers to the right to water in Articles 38 and 39 as follows¹²⁰:

- **Article 38:** Every person has the right to an adequate standard of living for himself and his family, and provides luxury and a decent living in terms of food, clothing, housing and services, and has the right to a healthy environment, and the states parties must take the necessary measures according to their capabilities to implement these rights.
- **Article No. 39 - Parts 2 e and 2 f:** The steps to be taken by the States Parties shall include the following measures: Providing basic food and clean drinking c

The charter entered into force in 2004 after the seventh member of the League of Arab States ratified it, and it is currently ratified by 13 Arab countries (Jordan - United Arab Emirates - Bahrain - Algeria - Syrian Arab Republic - Sudan - State of Palestine - Qatar - Kuwait - Lebanon - Libya - Saudi Arabia - Yemen)¹²¹.

At the national level, several countries have recognized the right to water in their constitutions, such as:

- **Morocco (2011) - Chapter 31¹²²:** The state, public institutions and territorial collectivities are working to mobilize all available means to facilitate the reasons for equal access to water and the right to live in a healthy environment for male and female citizens.

¹²⁰ Fatima Itani, Nizam Ataya, *The Suffering of the Environment and the Palestinian Farmer under the Israeli Occupation*, Beirut: Al-Zaytouna Center for Studies and Consultations, first edition, 2013, p.: 14

¹²¹ The decision of the Council of the League of Arab States to ratify The Arab Charter on Human Rights, available in Arabic via the link:

https://eos.cartercenter.org/uploads/document_file/path/328/ACHR2004_ARA.pdf

¹²² For more, see the 2011 Constitution of the Kingdom of Morocco. Available at:

https://www.constituteproject.org/constitution/Morocco_2011.pdf?lang=ar

- **Egypt (2014) - Article 79¹²³**: Every citizen has the right to adequate and healthy food, and clean water.
- **Tunisia (2014) - Chapter 44¹²⁴**: The Right to Water is Guaranteed. Conserving water and rationalizing its use is a duty of the state and society.

Other countries have also included this right in the law. For example, the State of Palestine decided in Article No. 5 of Law No. 14 of 2014 regarding water that every person has the right to obtain his need of drinking water of appropriate quality for use at specific prices in accordance with a tariff system issued by the Council of Ministers¹²⁵.

2.2 Water Diplomacy:

The concept of Water Diplomacy is defined as the theory of the practice of implementing adaptive water management for complex water issues, and it is one of the patterns of modern diplomacy that relies on the approach of practicing diplomacy in a more intense manner towards water crises specifically, that the negotiator diagnoses water problems, identifies points of intervention, and also suggests Sustainable solutions that take into account diverse perspectives, target values, ambiguities and uncertainties, as well as emerging variables in the level of competition between countries in the areas of water, while being aware of the needs that each case requires¹²⁶.

¹²³ For more, see the 2014 Constitution of the Arab Republic of Egypt. Available at: https://www.constituteproject.org/constitution/Egypt_2014.pdf?lang=ar

¹²⁴ For more, see the 2014 Constitution of Tunisia. Available at: https://www.constituteproject.org/constitution/Tunisia_2014.pdf?lang=ar

¹²⁵ Resolution of the President of the State of Palestine by Law No. (14) of 2014 regarding water. Available via the link: <http://muqtafi.birzeit.edu/pg/getleg.asp?id=16597>

¹²⁶ Jonathan Lautze, Key Concepts in Water Resource Management: A Review and Critical Evaluation, London: Routledge, 2014, p: 119

Water diplomacy is also defined as a set of negotiating and diplomatic activities and events that target a specific water issue, so that cadres and human efforts are mobilized, and material and symbolic capabilities are allocated, during a specific period of time, to achieve strategic goals at the international water level, and so that there is a strategic water plan that diplomatic bodies seek Through its movements and external activities to achieve its goals¹²⁷.

Water diplomacy focuses on creating innovative solutions based on a scientific basis that is sensitive to the societal constraints of a wide range of water problems, and it is understood from the term water diplomacy that: the mechanism that includes the tools of diplomats towards water problems and environmental policies, water management strategy, and engineering solutions that come together and apply in a context The water problem to provide political and procedural negotiating solutions at the appropriate level for each case¹²⁸.

Water diplomacy is also the sum of processes, mechanisms and resources that can be used flexibly to focus on building and enhancing trust between countries participating in rivers, lakes and seas. Countries experiencing water conflicts can reach agreements that satisfy the water needs of their citizens as well as their national interests, through those Mechanisms, by coming up with innovative techniques and collaborative management through which not only problems can be facilitated, but also an important means of

¹²⁷ Lawrence Susskind, Shafiqul Islam, Water Diplomacy Creating Value and Building Trust in Transboundary Water Negotiations, Science & Diplomacy.org, 22/ 8/ 2012. Available via the link: <https://www.sciencediplomacy.org/perspective/2012/water-diplomacy>

¹²⁸ Omid Bozorg-Haddad, Economical, Political, and Social Issues in Water Resources, Amsterdam: Elsevier, 2021, p: 277

promoting sustainable solutions that are acceptable to all parties to achieve national interests can be introduced¹²⁹.

Water diplomacy is one of the new and unconventional diplomacy that has recently become popular in international relations practices¹³⁰. More recently, the need to activate water diplomacy has emerged more urgently, with the intensification of debate over water distribution issues¹³¹.

Professor Shafiq al-Islam believes that the tools of water diplomacy are concentrated in the group of auxiliary sciences that constitute the knowledge of diplomats, and negotiators in the areas of water diplomacy must surround them, because science has a major role in changing the negotiation paths. Scientific and technical knowledge is important in water negotiations, but not in the ways in which it is often used. It is counterproductive to use scientific information to justify arbitrary political decisions, for example: scientific information has increased dramatically over the past few decades, but the ability of countries to manage water has not improved relatively¹³².

Agrees with Professor Lawrence Susskind who believes that there is a difference between knowledge about water as a fungal organism, and knowledge about water as a multifaceted resource, for example: the assimilation and understanding of atmospheric and hydrological processes related to water (as a substance) has improved significantly,

¹²⁹ Selina Ho, *A River Flows Through It: A Comparative Study of Transboundary Water Disputes and Cooperation in Asia*, London: Routledge, 2020, p: 161

¹³⁰ Jean Cahan, *Water Security in the Middle East: Essays in Scientific and Social Cooperation*, London: Anthem Press, 2017, p: 199

¹³¹ Shafiqul Islam, Lawrence Susskind, *Water Diplomacy: A Negotiated Approach to Managing Complex Water Networks*, London: Routledge, 2013, p: 323

¹³² Enamul Choudhury, Shafiqul Islam, *Complexity of Transboundary Water Conflicts*, London: Anthem Press, 2018, p: 203

but thousands of people die and billions are lost annually due to the inability to predict when floods and droughts will occur¹³³.

Also, according to Susskind, connecting experts, creating more scientific knowledge, developing more model capabilities, and sharing data, is not enough to improve water management. Humanity needs more effective ways (means) of creating actionable knowledge that is trustworthy, accessible, and used by all parties to promote policy and program implementation¹³⁴.

In order to obtain reliable and sustainable scientific and technical information, it must be collected in cooperation between the negotiating parties, and scientific results related to water usually depend in part on subjective and value-laden judgments, such as: What do you measure? How do you evaluate competing uses? (such as conserving water for use in agriculture), and how do you establish a scope for the study? (Example: What geographic and time horizons do you use), what indicators and models do you use? and what do you do about missing data?¹³⁵.

Judgments like these must be transparent, must be made in consultation with those who will be affected by the results, and scientific and technical analyzes can help create value, but only when viewed as mutually beneficial¹³⁶.

It can be said that joint work in the field of measuring current flows and planning projects, remains a great confidence building measure (CBM) during the years of the negotiation process, and the examination of the accuracy and validity of the data provided by one party, has been constantly questioned and scrutinized by the other

¹³³ Shafiqul Islam, Lawrence Susskind, *Water Diplomacy: A Negotiated Approach to Managing Complex Water Networks*, The aforementioned reference, p. 317

¹³⁴ *Ibid*, p: 271

¹³⁵ Iqbal M. Mujtaba, Thokozani Majozi, Mutiu Kolade Amosa, *Water Management: Social and Technological Perspectives*, Florida: CRC Press, 2018, p: 16

¹³⁶ Lloyd Davis, Robert G Patman, *Science Diplomacy: New Day Or False Dawn?*, Singapore: World Scientific, 2014, p: 78

party, but this did not undermine Mutual trust between them, as indicated by Uri Shamir, an Israeli negotiator who worked on the 1994 water agreement, between Jordan and Israel¹³⁷.

While trust in the process of data collection and knowledge creation is particularly important when parties make constructive, creative options aimed at increasing value, it is beneficial to have a skilled coordinator of water negotiations at every scale and stage, in cases where negotiating points or technical/technical issues, It is also necessary for there to be a negotiator with a great scientific and technical background, so that he can inform the stakeholders (political administration/public opinion) of the facts of the matter¹³⁸.

With this technical support the negotiating parties can create value by identifying changes in practice or policy that would be mutually beneficial, for example: changing the price of water can change demand, which in turn may change supply in the short term, similarly, identifying technologies New, cost, benefits, practical, and insights into all water negotiations, but not only to justify decisions made by one party, and instead should use reliable scientific input during the invention phase that stakeholders can use reliable information to collaboratively formulate fruitful agreements¹³⁹.

In addition, the negotiator in the issues of water diplomacy is in dire need of tools through which they can exercise the art of the possible to achieve national interests well, and on top of these tools is a set of auxiliary sciences that enable the diplomat at the negotiating table to reach effective solutions in this regard, water diplomacy is a hard

¹³⁷ Ahmed Abukhater, *Water as a Catalyst for Peace: Transboundary Water Management and Conflict Resolution*, London: Routledge, 2013, p: 87

¹³⁸ Hongzhou Zhang, Mingjiang Li, *China and Transboundary Water Politics in Asia*, London: Routledge, 2017, p: 116

¹³⁹ P. Pashardes, T.M. Swanson, A. Xepapadeas, *Current Issues in the Economics of Water Resource Management: Theory, Applications and Policies*, Berlin: Springer Science & Business Media, 2013, p:

work that requires patience and requires a lot of effort and diligent work through a serious and diverse knowledge acquisition¹⁴⁰.

Likewise, the negotiator must be well aware that water diplomacy, like other types of diplomatic work, needs human and scientific knowledge that is intertwined with each other, and he cannot only cover water sciences alone¹⁴¹, but he must besides that a number of other knowledge and sciences, namely:

A. Languages:

The negotiator must be well versed in the English language, at least, and be aware of the language of the opposing party in the corridors of negotiation¹⁴². On social networking sites (Facebook - Twitter - Instagram - Google Plus) to monitor and verify these goals¹⁴³.

B. Philology:

It is important for negotiators who are dealing with rounds of water talks to be familiar with philology, not just language, because understanding texts written in the language of another requires knowledge of philology because language is a living organism that changes, moves and develops according to the conditions of time and place, and in some cases the linguistic expression denotes a completely specific meaning, and at other times the term indicates a number of relative meanings that correspond to his own narrative, including that the negotiator who wants to return to the texts of the old historical agreements regarding the shares of the upstream and downstream countries,

¹⁴⁰ Raymond F. Smith, *The Craft of Political Analysis for Diplomats*, Washington: Potomac Books, 2011, p: 59

¹⁴¹ Aḥmad ibn al-Mahdī al-Ghazzāl, *The Fruits of the Struggle in Diplomacy and War: Moroccan Ambassador al-Ghazzal and His Diplomatic Retinue in Eighteenth-Century Andalusia*, Pennsylvania: Bucknell University Press, 2016, p: 17

¹⁴² Marc Burbridge, *Executive Diplomacy and the Art of Strategic Negotiations*, Pennsylvania: Dorrance Publishing, 2020, p: 145

¹⁴³ Mauro Galluccio, *Handbook of International Negotiation: Interpersonal, Intercultural, and Diplomatic Perspectives*, Berlin: Springer, 2014, p: 37

must surround the circumstances of signing those agreements, so that he can understand Exactly what it is¹⁴⁴.

C. Diplomatic:

It is one of the sciences that a negotiator absolutely needs, not only in order to understand the history and sequence of the issue under negotiation, but also to be aware while negotiating and agreeing on the terms of agreements that the meanings of words interpreted by historians and researchers in the short, medium and long term may constitute a fundamental difference if written in a manner The significance is not clear, and the negotiator in this regard must be well aware of the outcome of past agreements and analyze them carefully, in order to be aware of what the present agreements may lead to¹⁴⁵.

D. Geography:

One of the most important sciences in the issues of water diplomacy is geography with its ramifications: human geography, geo-geography, political geography, topography and climate sciences, because it is not reasonable for a diplomat to sit at the negotiating table to negotiate a water crisis, and not be fully aware of the nature of water Which he negotiates about, and the surrounding lands, and he is not aware of the dynamics of its sources, its estuaries, droughts and floods alike¹⁴⁶.

E. Cartography:

Cartography is one of the most important negotiating tools in the affairs of water diplomacy, as the written negotiator who has success in this regard must be familiar

¹⁴⁴ Sheldon Pollock, Benjamin A. Elman, *World Philology*, Harvard: Harvard University Press, 2015, p: 60

¹⁴⁵ Tracey A. Sowerby, Jan Hennings, *Practices of Diplomacy in the Early Modern World c.1410-1800*, London: Routledge, 2017, p: 41

¹⁴⁶ Arndt Brendecke, *The Empirical Empire: Spanish Colonial Rule and the Politics of Knowledge*, Berlin: Walter de Gruyter GmbH & Co KG, 2016, p: 88

with cartography, which helps in determining the inputs well, and then reaching outputs within the framework of the agreement to achieve the desired purpose of the diplomatic talks. It is illogical for the diplomat to sit at the negotiating table without realizing the nature of the maps of the subject being talked about, for example in the case of dams: the negotiator must be well aware of how the dam is drawn, its height, the land surrounding it and its exact position from the watersheds and its location from the border areas, in order to accurately identify the risks, benefits and challenges¹⁴⁷.

In view of this multiplicity of tasks and experiences, and with the precise specialization in the fields of science and knowledge, and thus the difficulty of having one person combine these tasks, the most appropriate option would be to form negotiating teams that combine all of these experiences, with teams of consultants and technicians specialized in these exact sciences¹⁴⁸.

2. 2.1. Water Policy:

The countries that share the river basin constitute a very complex and interdependent hydro-political system, the dynamics of which are closely intertwined in terms of environment, economy, politics and security, so water policy has become an important area in international politics, there are more than 260 international rivers in the world used by two or more riparian countries, so it is easy to imagine the number of potential international conflicts over water, many countries depend on water resources that flow from outside their territories, therefore, any attempt to develop the river economically and benefit from its resources, such as the production of hydroelectric power, always

¹⁴⁷ Elri Liebenberg, Imre Josef Demhardt, Soetkin Vervust, *History of Military Cartography: 5th International Symposium of the ICA Commission on the History of Cartography*, 2014, Berlin: Springer, 2016, p: 179

¹⁴⁸ Daily Report: East Europe, Numbers 51-62, The Service, 1992, p: 25

becomes a contentious issue, however, it can be disposed of from the argument of water wars through the de-security of water¹⁴⁹.

The 1997 United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses provides a general framework for the use of international rivers by riverine nations. This agreement was adopted, with 103 countries voting in favor, 27 abstaining, while three other countries, Turkey, Burundi and the People's Republic of China, all of which are riverine countries, opposed it¹⁵⁰.

The agreement stipulates three basic principles of international water law: the principle of equitable and reasonable utilization, the obligation not to cause significant harm, and the duty to cooperate with riparian states. In addition to this, there are two other important principles, namely the principle of prior notification that requires notification of other riparian states when carrying out any planned water project by any of the upstream countries, and the non-objection rule that requires the unanimous river states to implement the project¹⁵¹.

These Guiding Principles form the basis of a set of bilateral and multilateral agreements on shared watercourses and many international and regional organizations that take a broader approach to water diplomacy. These institutions contribute significantly to the prevention, management and resolution of water-related conflicts, and cooperation rather than conflict should be the hallmark. The main focus of international water policy, which will enhance water diplomacy, can be referred to two approaches of skilled water diplomacy, namely: water diplomacy in river basin countries, and water

¹⁴⁹ Binayak Ray, *Climate Change: IPCC, Water Crisis, and Policy Riddles with Reference to India and Her Surroundings*, Kentucky: Lexington Books, 2011, p: 31

¹⁵⁰ Ibrahim Ali Ghanem, *Egypt's Water Security: Geography, Hydrology, Legal and Politics*, Dubai: Al-Manhal Publishing and Electronic Distribution, 2016, p.: 148

¹⁵¹ Maghawry Shehata Diab, *River Nile: Between Challenges and Opportunities*, Dubai: Al Manhal for Electronic Publishing and Distribution, 2012, p.: 129

diplomacy from a third-party perspective¹⁵². The following is an overview of these two approaches in a more detailed and comprehensive way:

2.2.2. Water Diplomacy in River Basin Countries:

Water diplomacy in river basin states focuses on transboundary freshwater resources, such as lakes, rivers, and aquifers. Here, a distinction can be made between several levels, the first in terms of the geographical scope, where the negotiation can be bilateral, or at the level of the basin countries, and the second at the regional level, such as the water directives of some regional countries, and the third at the global level, such as the United Nations Convention on the Law of Watercourses¹⁵³.

One of the salient features of water diplomacy is the involvement of various technical actors from engineers, hydrologists, and economists in the negotiation process for the purpose of obtaining a scientific framework for the disputed water resources. core topics¹⁵⁴.

For millennia, the amount of water on the Earth's surface has remained constant while there has been a massive increase in the types of people who use it. Global dynamics, such as population growth, urbanization, changes in land use, and the resulting global pressures are becoming competitive, the amount of water available to each person is increasing and decreasing greatly¹⁵⁵.

¹⁵² Korwa Gombe Adar, Nicasius A. Check, *Cooperative Diplomacy, Regional Stability and National Interests*, Oxford: African Books Collective, 2011, p: 156

¹⁵³ Anoulak Kittikhoun, Susanne Schmeier, *River Basin Organizations in Water Diplomacy*, London: Routledge, 2020, p: 171

¹⁵⁴ Aysegül Kibaroglu, *Turkeys Water Diplomacy: Analysis of Its Foundations, Challenges and Prospects*, London: Anthem Press, 2021, p: 6

¹⁵⁵ UNESCO, *Managing Water Under Uncertainty and Risk*, Washington: UNESCO Publications, 2021, p. 385

The reality of political geography further complicates these trends, as rivers, lakes and water reservoirs do not respect national borders, as nearly half of the land surface area drains its water into transboundary basins, and large freshwater catchments move silently under the aquifers under the aquifers¹⁵⁶.

It is expected that the challenges related to transboundary waters such as climate change and population growth, competition for water has become more intense in areas of bickering over water, sometimes leading to serious tensions between different user groups¹⁵⁷.

As each country seeks to meet its needs of limited water resources, some predict a future full of conflicts, and some even talk about “water wars” in the future, although water conflicts are more likely to occur within countries than among them¹⁵⁸.

However, it is important to remember that water does not need to become a source of conflict and competition, and if humanity follows a rational and equitable way in the ways it uses and shares the water resources available to it, then water can also become a factor in the unjust and unhappy world. Conflict is the most common response in the field of transboundary water management¹⁵⁹.

Water should be seen as a multifaceted resource that offers opportunities for new benefits to be shared, to solve the problems of stakeholders and achieve their respective interests, and when matters of common water are managed by appropriate means - that is, through cooperation, tolerance and mutual respect - it paves a safe path towards sustainable development. and peaceful in all aspects: social, economic, political, cultural

¹⁵⁶ Peter Jackson, Walter E.L. Spiess, Farhana Sultana, Eating, Drinking: Surviving: The International Year of Global Understanding - IYGU, Berlin: Springer, 2016, p: 45

¹⁵⁷ Douglas D. Parker, Yacov Tsur, Decentralization and Coordination of Water Resource Management, Berlin: Springer, 2012, p: 411

¹⁵⁸ Maude Barlow, Blue Future: Protecting Water for People and the Planet Forever, New York: The New Press, 2014, p: 276

¹⁵⁹ Huong Ha, Land and Disaster Management Strategies in Asia, Berlin: Springer, 2014, p: 221

and ecological, and that the benefits that accrue from cooperation in the field of water can and should go much further than the management of the resources itself¹⁶⁰.

Past experiences confirm that parties with divergent interests can use a common resource harmoniously. The important thing is to learn how to equitably manage the shared resources by means of ensuring the quality of water and the adequacy of its quantities to meet the needs of each individual¹⁶¹.

Over the past 60 years, more than 200 international agreements on water have been concluded, and it is essential to continue to take advantage of the opportunities for peace and security that cooperation on transboundary waters can provide, as nations share responsibility for the global management of transboundary waters for present and future generations. The primary responsibility for cooperation on transboundary waters lies with Member States¹⁶².

2.2.3. Challenges Facing Cooperation:

About 40 percent of the world's population lives in river basins or lakes shared between two or more countries. Even more importantly, more than 90 percent live in countries that share basins with others¹⁶³.

The 2,632 transboundary lake and river basins cover nearly half of the land area and represent an estimated 60 percent of the Earth's surface fresh water flows. A total of 145 countries include territories within these basins, and 30 countries are entirely located

¹⁶⁰ Nicolas Ahouissoussi, James E. Neumann, Jitendra P. Srivastava, *Building Resilience to Climate Change in South Caucasus Agriculture*, Washington: World Bank Publications, 2014, p: 9

¹⁶¹ International Law Commission, *Yearbook of the International Law Commission 2008*, Vol. II, Part 1 (Arabic), Washington: United Nations Publications, 2019, p: 70

¹⁶² Benny The, Cheng Guan, *Human Security: Securing East Asia's Future*, Berlin: Springer, 2012, p: 178

¹⁶³ Spiro N. Pollalis, *Planning Sustainable Cities: An infrastructure-based approach*, London: Routledge, 2016, p: 115

within these basins. In addition, there are 2 billion people worldwide who depend on groundwater, which includes nearly 300 networks of transboundary aquifers¹⁶⁴.

Aquifers not only contain good quality water and represent a large global capital cache, but also support terrestrial and aquatic ecosystems. And their overexploitation can lead to serious problems such as the depletion of groundwater, the encroachment of saline water on coastal areas, and the movement of toxic substances such as arsenic and fluorine. The pollution can also affect the aquifers, and then the population who depend on them¹⁶⁵.

Transboundary water basins and aquifers connect peoples of different countries and support the incomes and livelihoods of hundreds of millions of people worldwide. Waterlogged lands such as lakes and floodplains that are often shared between neighboring countries also provide services to ecosystems of high value to humans, such as providing food and reducing the effects of floods and pollution¹⁶⁶.

All transboundary water bodies create hydrological, social and economic interdependence between societies. It is vital for economic development, poverty reduction and contribution to the achievement of the Millennium Development Goals. Although it involves contention and conflict, it provides opportunities for cooperation and advancement and to promote regional peace and security as well as economic growth¹⁶⁷.

¹⁶⁴ MEREDITH A. GIORDANO, *Managing the Quality of International Rivers: Global Principles and Basin Practice*, *Natural Resources Journal*, Vol. 43, No. 1 (Winter 2003), Pp. 111 - 112

¹⁶⁵ *Global Environment Outlook 3 - Arabic Paperback*, UNEP/Earthprint, 2016, p: 2016

¹⁶⁶ *United Nations, Principles and Recommendations for Population and Housing Censuses*, United Nations Publications, 2010, p: 166

¹⁶⁷ *UNESCO, The United Nations World Water Development Report – N° 3 - 2009 – Water*, UNESCO Publications, 2009, p: 24

2.2.4. Collaboration Potential and Benefits for Human Security:

A growing number of countries are experiencing increasing or even persistent water stress, and the consequences of climate change will increase the number of countries with significant inequalities in the availability of water resources, including more frequent or severe floods. Competition for water can often exacerbate tensions and even lead to open conflict. An assessment of past water-related conflicts shows that water scarcity, dam construction, and chronic industrial or accidental extraction and uptake of water from their Tensions caused by water¹⁶⁸.

Since population growth, urbanization and economic development all require more water for agricultural, municipal and industrial uses, this poses more risks, however, and usually what constitutes an increase in tension is the element that is outside the scope of the water¹⁶⁹.

Indeed, history has often shown that the vital nature of fresh water is a powerful incentive for cooperation, as it forces stakeholders to reconcile even the most divergent viewpoints. Water unites peoples and societies more than it divides them¹⁷⁰.

Since 1948, history shows only 37 acute water disputes, while during the same period, more than 295 international water agreements were negotiated and signed. There is no doubt that avoiding conflicts is often a strong political incentive to initiate cooperation in the area of transboundary waters, as riparian states recognize that they must safeguard their broader common interests¹⁷¹.

¹⁶⁸ Kit Sadgrove, *The Complete Guide to Business Risk Management: Edition 3*, London: Routledge, 2016, p: 182

¹⁶⁹ Dante A. Caponera, Marcella Nanni, *Principles of Water Law and Administration: National and International*, 3rd Edition, Edition 3, London: Routledge, 2019, p: xxiii

¹⁷⁰ Josefina Maestu, *Water Trading and Global Water Scarcity: International Experiences*, London: Routledge, 2012, p: 248

¹⁷¹ United Nations, *Atlas of International Freshwater Agreements*, UNEP/Earthprint, 2002, p: 3

Climate change is expected to increase pressures on transboundary water resources in many regions experiencing fluctuations in water availability and quality. It will also magnify regional differences in the world's natural resources and assets, and lead to increased risks of inland flash floods, coastal floods, more frequent droughts, and so on. However, the necessity of adapting to climate change will also provide new opportunities for cooperation in developing adaptation strategies. However, cooperation in the development of adaptation strategies is almost non-existent at present¹⁷².

2.2.5. Water Diplomacy from A Third-Party Perspective:

where the focus is on assisting or persuading riparian countries, as part of the national interest of countries, international organizations, or the foreign development policy of donor countries, to protect and manage water resources, and the roles played by countries and international organizations in diplomacy vary according to Geographical scope, nature of the water conflict, and degree of involvement in the negotiating process¹⁷³.

Diplomatic dialogue and inclusive negotiations between states participating in water resources remains the only way forward to build trust and cooperation for a sustainable future for their natural resources, where skillful water diplomacy can eventually, with desecurity and populist rhetoric, transform water from a source of conflict To a driving force for cooperation and development for all peoples¹⁷⁴.

¹⁷² United Nations Economic Commission for Europe, Water and Climate Change Adaptation in Transboundary Basins, Washington: United Nations Publications, 2015, p. 20

¹⁷³ Shafiqul Islam, Lawrence Susskind, Water Diplomacy: A Negotiated Approach to Managing Complex Water Networks, The aforementioned reference, p. 197

¹⁷⁴ Wouter T. Lincklaen Arriëns, Jeremy Bird, Towards Effective Water Policy in the Asian and Pacific Region--: Overview of issues and recommendations, Mandaluyong: Asian Development Bank, 1996, p: 274

Mediation methods and model agreements have proven their usefulness in mediating disputes over water resources. In terms of evaluating the benefits of cooperation on water management and achieving the greatest amount of them, mediation in disputes over the allocation of water resources can be successful, as the parties must be persuaded to shift from the focus on sharing Water itself to focus on sharing the benefits of water resources¹⁷⁵.

This method may include managing water resources to achieve the maximum benefit and then allocating them equitably. The direct benefits are divided into four categories: economic production and asset protection (i.e. increased agricultural production, power generation and transport, reduced risk of flooding to urban infrastructure, and reduced cost of water supply), and social benefits (i.e. avoiding casualties due to water-related disasters and water pollution and improving living conditions thanks to extension of water and electricity networks), environmental benefits (tourism, improved fisheries and biodiversity protection), and geopolitical benefits (satisfaction with public policies, improved cooperation, confidence-building and mitigation of the possibility of armed conflict)¹⁷⁶.

As for the evaluation of benefits, it includes qualitative evaluation, physical estimation, and monetary estimation (by commercial and non-commercial methods). It is important that the evaluation not only identify the benefits but also identify the beneficiaries. Once the benefits and beneficiaries are clarified, policies that consider all the elements can be formulated and translated into reality sequentially¹⁷⁷.

¹⁷⁵ United Nations Environment Programme, *Natural Resources and Conflict: A Guide for Mediation*, United Nations, 2016, p: 41

¹⁷⁶ *Ibid*, Pp: 41 - 42

¹⁷⁷ Andrew J. Jordan, John R. Turnpenny, *The Tools of Policy Formulation: Actors, Capacities, Venues and Effects*, Cheltenham: Edward Elgar Publishing, 2015, p: 188

Also, with regard to water diplomacy from a third-party perspective, IWRM tools can be used, and IWRM tools and approaches complement the benefits assessment process. Integrated Water Resources Management calls for coordinating efforts to develop and manage water, land and related resources in a way that promotes economic and social well-being in an equitable manner and without compromising the sustainability of vital ecosystems. Fragmentation and assessment of demand and impacts on all sectors and participation of all stakeholders¹⁷⁸.

Mediation uses IWRM tools and approaches in a four-stage process: (1) assessment of the current situation through joint assessments and information sharing in conjunction with training workshops that contribute to building confidence, (2) removing administrative boundaries from the map and demand To the parties to seek maximum benefit through integrated planning and development, (3) request the parties to propose potential solutions to settling disputes based on mutual benefit, and (4) redraw administrative boundaries on the map and seek to formalize the proposed solutions¹⁷⁹.

In general, what provokes a flare-up in mediation is that each party resorts to different terms and methodologies for calculating water use, while often forgetting to count many sources of direct and indirect consumption, and thus the role of third party diplomacy in order to adopt a common language and methodology to calculate the direct and indirect benefits of water use¹⁸⁰.

It would be desirable to adopt a common language and methodology based on recognized international standards from the early stages of mediation, and the

¹⁷⁸ UNESCO, Van der Gun, Jac, *Conjunctive Water Management: A powerful contribution to achieving the Sustainable Development Goals*, UNESCO, 2020, p: 6

¹⁷⁹ United Nations Environment Programme, *Natural Resources and Conflict: A Guide for Mediation*, The aforementioned reference, p. 47

¹⁸⁰ Stephen Spender, A Center of Critical Values, In a magazine: *Bulletin of the Atomic Scientists*, October 1972, p: 2

assessment of the water footprint is one methodology for obtaining data to compare the situation of each stakeholder and to assess the degree of sustainability of existing methods of use¹⁸¹.

In the face of the scarcity of water resources, there are two potential solutions that provoke more crowding between user groups and economic sectors: solutions affecting supply, which are based on providing more resources to meet new needs, and solutions affecting demand, which seek to manage consumption so that the need for more water is postponed. resources or avoid them¹⁸².

In the past, the preferred solution was to give preference to solutions affecting the supply, which was translated into new water projects in the form of water collection and storage facilities, and a short time ago, the focus began on the development of water resources by reforming the ecosystem and improving watershed management, but the trend cannot be ignored. The obvious contrast is to choose supply-affecting solutions that focus on increasing efficiency in water use, conservation and demand management, all of which are vital measures to ensure the sustainability of water and environmental resources as well as economic efficiency and social development¹⁸³.

2.3 Conflict Resolution:

Mechanisms for cooperation on transboundary waters may not always prevent political tensions and armed conflicts, but over time they provide a meaningful path toward peace. An example is the Mekong River Commission, which continued its activities

¹⁸¹ UN-Water Policy Brief, Climate Change and Water, UN-Water Technical Advisory Unit, Geneva, September 2019, p: 9

¹⁸² Francois Guerquin, World Water Actions: Making Water Flow for All, London: Routledge, 2010, p: 6

¹⁸³ Jane K. Turpie, Yonika M. Ngaga, Francis K. Karanja, Catchment ecosystems and downstream water : the value of water resources in the Pangani Basin, Tanzania, IUCN, 2005, p: 56

during the armed conflict in Vietnam and explored the path to peaceful cooperation in the post-conflict period in Southeast Asia¹⁸⁴.

The 1960 Indus Water Treaty also remained in force and the Permanent Indus Committee established under that treaty continued to serve as a channel of communication between India and Pakistan during the armed hostilities between the two parties in the 1960s and 1970s¹⁸⁵. In the Senegal Basin, when relations between Senegal and Mauritania were strained due to the demarcation of the border in the late 1980s and early 1990s, the joint administration of the river basin, which had been there since the 1970s, won¹⁸⁶.

When relations between riparian states are in hot crises or even when characterized by violence, joint river mechanisms and committees formed under water agreements may serve as an entry point for geographic communication and dialogue, and in these situations water cooperation serves the broader cause of peace¹⁸⁷.

There is a long history of cooperation on the world's transboundary rivers and lakes and has resulted in a set of standards embodied in treaties and practices on globally shared rivers, lakes and groundwater resources. Over time, a number of treaties were concluded at the basin level, which usually reflect the characteristics of individual river basins and aquifers¹⁸⁸.

¹⁸⁴ United States, Congress, Congressional Record, Congress, 2011, p: 3265

¹⁸⁵ Eric Wolanski, John W. Day, Mike Elliott, Ramachandran Ramesh, *Coasts and Estuaries: The Future*, Amsterdam: Elsevier, 2019, p: 219

¹⁸⁶ John V. Magistro, *Crossing Over: Ethnicity and Transboundary Conflict in the Senegal River Valley*, (article), *Cahiers d'Études africaines*, 1993, Vol. 130, Pp. 201-202

¹⁸⁷ Colin Flint, *The Geography of War and Peace: From Death Camps to Diplomats*, Oxford: Oxford University Press, 2004, p: 262

¹⁸⁸ Olli Varis, Cecilia Tortajada Asit K. Biswas, *Management of Transboundary Rivers and Lakes*, Berlin: Springer Science & Business Media, 2008, p: 34

It should be noted here that in many cases these treaties lack sufficient comprehensive coverage, and do not cover all riparian countries, and some treaties on transboundary waters are devoid of the standards necessary for the effective implementation of these treaties¹⁸⁹.

2.3.1. Conflict Factors:

Conflicts intensified with the increase in competition over water resources. These conflicts occur between countries, livelihood groups, and sectors of the economy whenever sudden changes occur in the quantity and quality of water. These changes come from human activities (dam construction, irrigation, pollution and over-exploitation), natural change, extreme events (floods and droughts), or climate change, and conflicts are manifested at the local, regional, national or international levels¹⁹⁰.

The scarcer the water resources available to the parties and the uneven balance of power between them without being able to find any alternative or coping method, the greater the possibility of an escalation of the conflict. On the other hand, the shared water resources can be used as a starting point for laying the foundations for cooperation between the conflicting parties, and what the water resources generate from the conflict or the opportunity for cooperation between the competing beneficiaries depends on the nature of the governance institutions¹⁹¹.

The main factors affecting water disputes are as follows:

¹⁸⁹ Economic Commission for Europe, Environmental Performance Review: Mongolia - First Review, United Nations Publications, 2019, p: 161

¹⁹⁰ Peter H. Gleick, The World's Water 2000-2001: The Biennial Report On Freshwater Resources, Washington: Island Press, 2000, p: 36

¹⁹¹ Natural Resources and Conflict, A Guide for Mediation Practitioners, United Nations Department of Political Affairs and United Nations Environment Programme, UNEP, 2015, p: 51

- **Increased pressure on water resources and climate change:** The pressure on limited fresh water resources continues to rise as a result of population growth, economic growth, industrial pollution and the loss of forested watersheds. It is likely that the expected climate change will cause scarcity of water resources in some regions of the world as well as modify the factors of natural change and geographical distribution¹⁹².

The increasing demand for these resources and the intense competition for them have made some countries reach the limits of their water potential. And cases of water stress appear between and within countries, and at the internal level, friction occurs between the urban and rural areas, sectors of the economy and livelihood groups. Therefore, water gradually turns into a purely political issue. It is necessary to understand the basic processes of change to contain the factors of conflict and to propose durable solutions to settle conflicts¹⁹³.

- **Construction of Major Infrastructure:** Major infrastructure projects are a cause of contention if they compromise the amount of water available or modify access to water bodies. For example, dam construction and agricultural irrigation affect the amount of water downstream, flood risk, transport and fish stocks. The decline of the water flow may increase the salinity of the water and the concentration of pollutants at the bottom of the river, in addition to the fact that the great dams on the upper course of the river allow control of the amount of water that reaches the bottom and constitutes a potential friction point¹⁹⁴.

¹⁹² Sangam Shrestha, Mukand S. Babel, Vishnu Prasad Pandey, *Climate Change and Water Resources*, Florida: CRC Press, 2014, p: 6

¹⁹³ Sener Akinci, *Responses of Organisms to Water Stress*, BoD - Books on Demand, 2013, p: 7

¹⁹⁴ Water Infrastructure and Investment, HIGH LEVEL PANEL ON WATER, p: 2, Available via the link: <https://sustainabledevelopment.un.org/content/documents/hlpwater/08-WaterInfrastInvest.pdf>

- **Change in Water Availability:** The amount of water available to stakeholders is affected by natural change in rainfall or by extreme events such as drought or floods. When water becomes scarce for any of these reasons, overcrowding increases, the potential for conflict increases, and the risk is greater when institutional mechanisms are absent, especially those across borders, in order to address the change in the amount of water available and contribute to settling related disputes¹⁹⁵.
- **Impact of pollution:** Water quality deteriorates under the influence of various pollutants, industrial, agricultural and those resulting from municipal waste, and when it affects local livelihoods from farming, fishing and fishing, disturbances occur. Since pollution does not distinguish between fresh water in lakes, rivers, aquifers, and sea water, its effects are likely to cross national borders¹⁹⁶.
- **Modification of international borders:** Cases of separation or division result in a modification of international borders and subsequently lead to the fragmentation of a water basin that formed a cohesive unit before that. Examples are many such as the Aral Sea Basin after the dissolution of the Soviet Union, the Indus River Basin after the partition and Pakistan or the Nile Basin after the establishment of the Republic South Sudan¹⁹⁷.
- **Pricing and privatizing water:** Conflicts may arise when states or local authorities attempt to privatize water management and impose fees on water consumption or sanitation services, and in cases where water has long been a free public resource,

¹⁹⁵ Jan Cassin, John H. Matthews, Elena Lopez Gunn, Nature-Based Solutions and Water Security: An Action Agenda for the 21st Century, The aforementioned reference, p.: 44

¹⁹⁶ David A. Pietz, Dorothy Zeisler-Vralsted, Water and Human Societies: Historical and Contemporary Perspectives, Berlin: Springer Nature, 2021, p: 207

¹⁹⁷ Dietrich Schmidt-Vogt, et al, The Aral Sea Basin: Water for Sustainable Development in Central Asia, The aforementioned reference, p.: 171

these initiatives are likely to create friction between affected groups, public authorities and the sector the private¹⁹⁸.

- **Ambiguity in the rights to use and access water:** A conflict in the interests of water users appears in the absence of a clear definition of the rights to use and access water in customary and statutory systems or when the water body is subject to different jurisdictions. Also, the water needs of large agricultural or mining facilities are large and often undocumented and may affect the rights of use of neighboring groups, and conflict is inevitable when water is not sufficient to exercise various legal rights, especially in cases of major natural change¹⁹⁹.
- **Conflict between water management and information interests:** A conflict may occur when the competent authorities in the management of a water body, especially transboundary water bodies, resort to conflicting methods or measures. For example, one entity may adopt an integrated management approach while another prefers a narrow sectoral approach that focuses on managing water flow and quality, hence the variation in systems for managing transboundary waters, monitoring their quality and quantity, and sharing relevant data²⁰⁰.
- **Variation in the interpretation of international legal obligations and agreements:** States that have become party to certain water agreements, bilateral or multilateral, may differ on the interpretation of certain provisions or on the face of a change in the flow of water, as is usually the case between riparian states that exercise their sovereignty over a river, lake or A transnational sea. What makes it

¹⁹⁸ Ronald C. Griffin, *Water Resource Economics: The Analysis of Scarcity, Policies, and Projects*, Massachusetts: MIT Press, 2006, p: 308

¹⁹⁹ Marc Edelman, Carlos Oya, *Global Land Grabs: History, Theory and Method*, London: Routledge, 2016, p: 97

²⁰⁰ Geoffrey Gooch, Per Stalnacke, *Science, Policy and Stakeholders in Water Management: An Integrated Approach to River Basin Management*, London: Routledge, 2010, p: 131

even more difficult is the focus on allocating specific water quotas on the basis of absolute quantities rather than percentages of the available water flow²⁰¹.

- **The disparity in the balance of power:** What makes the conflict worse is the gross disparity in the balance of power between countries or regions at the top of the stream and countries and regions at the bottom, especially when the upstream countries are prone to unilateral solutions and are reluctant to cooperate on water management with parties downstream when it is not clear Have the benefit to derive from this cooperation²⁰².

²⁰¹ Catherine A. Rogers, Roger P. Alford, *The Future of Investment Arbitration*, Oxford: Oxford University Press, 2009, p: 353

²⁰² Stefan Schmutz, Jan Sendzimir, *Riverine Ecosystem Management: Science for Governing Towards a Sustainable Future*, Berlin: Springer, 2018, p: 366

Chapter III

Jordan Valley and Dead Sea

This chapter (the third chapter of the study) is a continuation of the theoretical framework of the study, as it deals with defining the conceptual framework of the Jordan Valley and the Dead Sea.

The third chapter dealt with an applied case study on water diplomacy achieve water security by studying the case of the Jordan Valley and the Dead Sea. The case of the Jordan Valley was reviewed through the historical narrative of the Jordan Valley, its geography, and Israel's plan to include the Alwan plan and Netanyahu's plan, the most important cities in the Jordan Valley and its natural characteristics. its eight sections, the climate that characterizes it, the animals that live in it, the plants that are grown in its fertile land, the role of the authorities in managing the Jordan Valley, the role of water diplomacy in facing the escalating water crises, and water diplomacy, the conflicting areas in the Jordan River Basin and the Blue Nile Basin, as well as reviewing the state of the Dead Sea, its geography, climate, geological features, its feeding tributaries, the Dead Sea's economic and tourism importance, and its role in achieving water security. Finally, the most important lessons learned from a study were presented. Applied cases, Jordan valley and the Dead Sea, and presented policies to achieve water security in most countries of the world, especially the Arab region.

3.1 Jordan Valley



Figure No.: (2) The Jordan River at one of its narrowest points, Jordan, 1992.²⁰³

The Jordan Valley is a fertile plain with an area of about 400 square kilometers located along the Jordan River, and its level ranges between 200 and more than 400 m below sea level, reaching the Dead Sea, which is the lowest point in the world below sea level. The Jordan Valley or the Jordan Valley is the valley of the Lower Jordan River extending from the south of the Sea of Galilee to the Dead Sea. Together with the upper Jordan River, the Dead Sea, and Wadi Araba, it represents what is known as the Jordan Valley Canyon. It forms the Jordan Valley with the Dead Sea and Wadi Araba Jordan Valley Canyon Which in turn forms part of the Dead Sea rift and the great rift valley. Passes through the Jordan Valley, the border area separating the Hashemite Kingdom of Jordan On the eastern bank of the Jordan River on the one hand and part of the northern region of Israel It extends along the West Bank, which was occupied by Israel in 1967 On the other hand. The Jordan Valley and the northern Dead Sea area extend over an area of 1.6 million dunums, along the Jordanian borders, and constitute approximately 30 percent of the area of the West Bank, and the majority of its residents

²⁰³ Ed Kashi/VII.

are Palestinians. Israel seeks to annex the lands of the Jordan Valley ²⁰⁴.)Figure No.: (2)(.

The Jordan River Valley covers an area of about 18,300 square kilometers on both banks of the Jordan River. The Jordan River Valley Basin is divided into five main sub-basins: The Upper Jordan, the Yarmouk River, the Lower Jordan, the Eastern Dead Sea and the Southern Dead Sea. The Jordan River is the only permanent source of surface water in the West Bank and Palestine in general, and its waters flow from the far north, at an altitude of 2,200 meters above sea level, all the way to the Dead Sea, at an estimated rate. It is about 350 meters below surface sea level and The waters of the Jordan River are shared by five riparian countries: Palestine, Jordan, Syria, Lebanon and Israel, which in turn exploit most of its waters. The river, as it is known, forms the eastern border of the West Bank with Jordan. The length of this river in a straight line is about 140 km, while the real length of its various meanders is about 350 km², while the total area of its basin is about 43,500 km², of which 12,000 km² are located in Palestine and the rest are in Lebanon, Syria and Jordan. The Jordan River flows into Lake Tiberias and descends south towards the Dead Sea after it meets the Yarmouk River at the bend of the Yarmouk Triangle known as the Confluence of Two Rivers south of Lake Tiberias. And historically, the amount of water flowing from the Jordan River to the Dead Sea was estimated at 1400 million cubic meters per year, but this amount has decreased dramatically over the past six decades to now reach about 30 million cubic meters per year, which is huge. The decrease in the amount of water flowing is mainly due to the necessity of diverting the upper river course by Israel

²⁰⁴ Sohaib Hani Abu Aboud, Economics of Citrus Production in the Jordan Valley, Amman: University of Jordan Press, 1991, p.: 12

through the Israeli national carrier, as Israel pumps about 500 million cubic meters of river water through this carrier down to the south in the Negev, and this is in addition to the presence of many dams Built on the upper course of the river. Natural factors, lack of rain and periods of drought play a role in this decline. Moreover, the Jordan River threatens the water pollution problem, as large amounts of untreated sewage flow from Israeli settlements located along the river. Southern slopes of Lake Tiberias ²⁰⁵. (Figure No.: (2) (

²⁰⁵ Atta Fahd Abdul Rahman Al-Manasir, *Jordanian Water Security: Challenges and Dangers*, Master's Thesis in Political Science, College of Arts and Sciences, Middle East University, Amman, Jordan, 2012, p . 28.

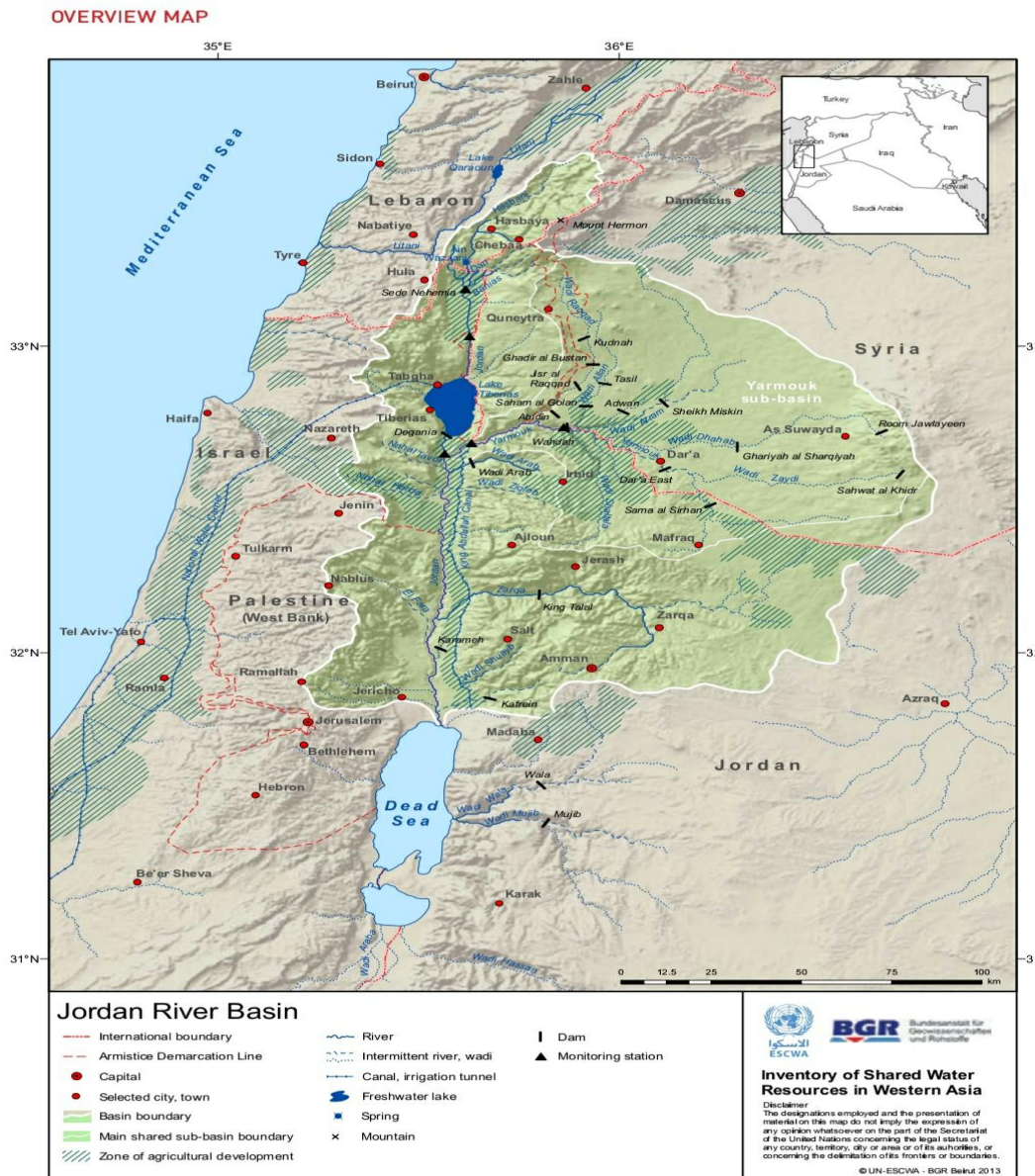


Figure No.: (2) The Jordan River: overview map²⁰⁶

The Jordan Valley, due to its narrow area and the scarcity of water in its interior compared to the major rivers of the world, is considered one of the most important valleys in Southwest Asia, and this is placed by its geographical features, geological composition, historical importance, and the mineral resources and agricultural and

²⁰⁶ Ed Kashi/VII.

industrial capabilities of its basin in Meter the few rivers that must have the greatest impact on the future of the world²⁰⁷.

The basin of this river expands to include the wide sides of four Arab countries, in addition to Israel: Palestine, the Hashemite Kingdom of Jordan, Lebanon, and Syria. Its basin connects in the north with Wadi Al-Asi, whose flow almost penetrates Lebanon and Syria from the south and north, and is about to touch from the south the Gulf of Aqaba connected to the Red Sea and the African series of canyons²⁰⁸.

The surface of the earth decreases in the area that includes most of the eastern borders of Palestine on the one hand, the western borders of the Hashemite Jordan and Syria on the other hand, and at the bottom of this depression runs the Jordan Valley, whose length extends from its maximum source in the mountains of southern Lebanon, penetrating the lakes of Hula and Tiberias until it drains into the Dead Sea. 157 miles down a steep slope, with no equal on earth²⁰⁹.

The magnitude of this slope appears in the height of Mount Hermon, from which one of the sources of the river emits to 11,901 feet above sea level, and in the Dead Sea's low level to 1286 feet below sea level²¹⁰.

For their part, researchers and authors differed about the name of the Jordan Basin. Some of them call it the Dead Sea Basin, claiming that the latter is the hermit in which Jordan empties its water, and that it does not exceed it, and that it is the estuary in which all the rivers and their tributaries entering it finally gather, that the Jordan River is only a part of This great water cycle, and they are almost confined to giving this name to the

²⁰⁷ Munther Haddadin, *Diplomacy on the Jordan River: The Evolution of the Conflict and Attempts to Settlement*, Beirut: Publications Company for Distribution and Publishing, 2004, p. 19

²⁰⁸ Ahmed Hassan Arabiyat, *Poverty among Farmers in Jordan*, Amman: University of Jordan Press, 1996, p.: 30

²⁰⁹ Sohaib Hani Abu Aboud, *Economics of Citrus Production in the Jordan Valley*, Amman: University of Jordan Press, 1991, p.: 12

²¹⁰ *Ibid*, p: 23

side that begins without Lake Tiberias until the Dead Sea, which is what is known today as the Sharia River²¹¹.

In this case, the motive seems to be the geographic-geological discoveries in which the Dead Sea has been a field since the beginning of this century, as well as the emergence of its economic importance and the organization of the exploitation of its resources by world-renowned companies²¹².

However, the majority of researchers and authors preferred to call this comprehensive water cycle of the sources and streams of Jordan (the Jordan Valley Basin), because they believed that without Jordan as a water source, the Dead Sea would not have this importance²¹³.

On the other hand, he found encouragement to give the name Jordan itself to the sources of the river and its course, where the word Jordan means in Hebrew: descending or slope, and in this sense it accommodates all the water resources that pour and descend into the course of the river and its lakes from the north, east, south and west²¹⁴.

Thus, the name of the Jordan Basin came to be applied to those areas whose water drains into its course, and it is united by a crater starting from Hasbaya in southern Lebanon, heading south in the middle of the Galilee region to the west of Lakes Al-Houla and Tiberias in northern Palestine, crossing Marj Ibn Amer, passing through Jerusalem and Hebron and heading south From the west to the northeastern outskirts of Sinai, then back to the northeast, crossing Wadi Araba, including Wadi Al-Hassa²¹⁵.

²¹¹ Tariq Yusef Qassem, *The Zionist Settlement in the Jordan Valley*, Amman: University of Jordan Press, 1982, p. 37

²¹² Ahmed Owaidi Al-Abadi, *Jordan Valley and Petra*, Amman: Al-Ahlia Press, (undated), p.: 185

²¹³ *Ibid*, p: 189

²¹⁴ Fatima Abdel Halim Abu Sardaneh, *Peasants and Bureaucracy in the Jordan Valley*, Amman: University of Jordan Press, 1994, p.: 23

²¹⁵ Abdul Rahman Abu Arafa, *The Jordan Valley: An Analytical Study of the Environmental, Economic and Political Properties*, Beirut: Association for Arab Studies, 1984, p.: 40

From there it heads north in a zigzag line that almost parallels the Hijaz Railway and goes with it to the city of Amman, and from there it goes east and then to the north, passing through the middle of Jabal al-Druze, then to the northwest, including the Yarmouk Valley, and finally in the middle of Mount Hermon at the Syrian-Lebanese border to connect to a point Its inception there²¹⁶.

Thus, the Jordan Basin includes the Yarmouk and Zarqa river basins, the Dead Sea Basin, Lake Tiberias, Al-Houla, and others, with a total area of 40,650 square kilometers, of which 21,910 square kilometers are located in the Hashemite Kingdom of Jordan alone²¹⁷.

Many have divided the Jordan Valley, according to its geographical location, into three sections: the upper Jordan, which includes its sources as far as Houla, the middle Jordan, which includes Lake Tiberias and a little less, and the lower Jordan, which includes the rest of the riverbed to the Dead Sea, while others added to those three sections. The other two parts are the Dead Sea and Wadi Araba²¹⁸.

As for the sources of the Jordan Valley, including the Banias River, which starts from the southern slope of Mount Hermon, and at the beginning of the confluence of the eastern borders of Lebanon with the Syrian borders, there is an ancient spot known as Banias, in reference to the Greek god of pastures. East direction, and a length of four and a half miles²¹⁹.

²¹⁶ Ibed, p: 42

²¹⁷ Munther Haddadin, *Diplomacy on the Jordan River: The Evolution of the Conflict and Attempts to Settlement*, aforementioned reference, p. 38

²¹⁸ Salti Ibrahim Nasr, *The Gap between Planning and Implementing Environmental Policies in Jordan (The Jordan Valley Case Study)*, Amman: University of Jordan Press, 1996, p.: 61

²¹⁹ Abdul Rahman Ali Al-Kurdi, *The Jordan Valley, its Privileges and Projects: A Constructional Economic Study*, Cairo: Al-Tawakkol Press, 1949, p.: 10

Including the Dan River, which is not more than 3 miles to the west, and is located in the middle of a mountainous area called Ain El-Dan, and near it is a height known by this name also²²⁰.

Likewise, the Hasbani River, located to the west of the Dan, where the Hasbani River flows, which is the longest source in the Jordan Valley. The Jordan Valley itself²²¹.

Before Al-Hasbani meets the two previous rivers, at a distance of three quarters of a mile, the Brigit River connects to it from its right, coming from the Lebanese plains of Marjayoun. Thus, the river has four sources, converging to form its main course, which then takes its course in the lands of Hula, which are low lands, a lot of moisture, and high temperatures, in which swamps abound because of the basalt rocks that cover the soil, preventing the ease of water leaving, and to the south of these plains gathers The water forms Lake Al-Hula, which the river reaches after seven miles from the beginning of its course. East and West are 3000 feet in elevation²²².

Also, from between the Jordan Valley, the middle Jordan River. After the Jordan River leaves Lake Hula, it travels slowly and moderately for a distance of no more than two miles in flat ground, after which the river rolls in black basalt gorges for a distance of seven miles, then soon becomes even its course and runs in A small delta that he created for himself, one mile long, after which he enters the Sea of Galilee²²³.

It should be noted that the distance between the two lakes is 10 miles long, and it is almost a continuous waterfall in which the river level drops from 230 feet above sea level at Lake Hula to 636 feet below sea level at Lake Tiberias. from the east, and the

²²⁰ Nizar Abu Jaber, *Jordan and the Environmental Challenge*, Dubai: Al Manhal for Electronic Publishing and Distribution, 2011, p: 27

²²¹ Ibed, p: 28

²²² The General Secretariat of the National Population Committee in the Hashemite Kingdom of Jordan, *Summary of Population Studies for Jordan, Volume Nine*, 1991, p. 127

²²³ Mustafa Muhammad Abu Ajima, *Economic, Social and Agricultural Changes in the Jordan Valley for the Period (1977 - 1996)*, Baghdad: House of Books and Ethnic Documents, 1998, p.: 100

heights of Hittin, rising to 2000 feet from the west, and there is hardly a wide coastline around this lake, except for the Al-Ghuwair region, which is located to its northwest, the length of that lake is 13 miles, and its width in the widest place is 8 miles, and its water is fresh, its depth in some places reaches 150 feet. A column from the northwest and its rabia from the west, and what the first carries to it annually exceeds 20 million cubic meters, and what the second carries annually exceeds 15 million cubic meters²²⁴.

Among the rivers that feed the Jordan Valley is the Lower Jordan River, which is the part of the river that lies between Lake Tiberias and the Dead Sea. Many torsion and torsion, from a level of 696 feet below sea level when it exits from Lake Tiberias, it reaches the Dead Sea at a level of 1286 feet below sea level, and the distance between Tiberias and the Dead Sea is 65 miles, which the river travels in 200 miles²²⁵.

To the east of the valley lies the plateau of Transjordan, whose height ranges between 1800-2400 feet, from which the river receives the waters of a large number of rivers, the most important of which are Yarmouk and Zarqa, and to the west lies a lower plateau in Palestine that includes the Samaria hills and the plains of Marj Ibn Amer, and the height here ranges between 200 - 1800 feet²²⁶.

The Lower Jordan River Exits Lake Tiberias and travels four miles through fertile, sloped lands, after which it meets the Yarmouk River, which takes its waters from Hauran in northeastern Jordan and southern Syria. When it connects with the valley, it becomes a fertile plain. They carry water in a year, so while what Yarmouk carries is estimated at 480 million cubic meters, what the lower Jordan carries when it exits Lake

²²⁴ Ibed, p: 102 - 103

²²⁵ Abdul-Wadud Rebhi Maatouq, Analytical Study on the Technological Change of Cultivation of the Most Important Vegetable Crops in the Jordan Valley and its Economic Effects for the Period Between 1984 - 1992, Amman: University of Jordan Press, 1989, p.: 48

²²⁶ Amin Al Mashaqbeh, On National Education: The Jordanian Political System and the Democratic March, Amman: Dar Al-Hamid for Publishing and Distribution, 2002, p.: 213

Tiberias is estimated at 540 million cubic meters (other estimates indicate that Yarmouk gives 510 million cubic meters, and the lower Jordan gives 511 million cubic meters)²²⁷.

After that, the river travels for several miles, with which the land of the valley expands from the east to receive the waters of the Arab River from the Jordanian plateau, and its annual discharge is estimated at 150 million cubic meters. The annual discharge is 8 million cubic metres, Wadi Jeram and its annual discharge is 11 million, Wadi Al Yabis and its annual discharge is 5 million cubic metres, Wadi Kafranja and its annual discharge is 6 million cubic metres, and Wadi Rajeb and its annual discharge is 5 million cubic metres. In addition, the valley expands from the mouth of these tributaries. Each of them creates a small delta²²⁸.

In the middle of the distance between Tiberias and the Dead Sea, the valley widens from the eastern side, and its width on both sides reaches 10 miles, where the Zarqa River flows into it, which carries its water from the middle of the Jordanian plateau and forms a delta that is wide in comparison to other valleys, and the annual drain volume is estimated at 45 million cubic meters. And here the valley (the eastern side of it) shrinks a little and then continues on its capacity in a distance of 16 miles long, free of rivers and hardly any wells. and Wadi al-Kafrin and al-Ram about 18 million cubic meters in an area that was once one of the most fertile and prosperous parts of the Near East²²⁹.

As for the western side, after ten miles from Lake Tiberias, the river receives the water of Wadi al-Bireh, which springs from the mountains of southern Galilee. Al-Harid, which originates near Beisan itself (the water of Beisan is estimated at 123 million

²²⁷ Jeroen Kool, *Sustainable Development in the Jordan Valley: Final Report of the Regional NGO Master Plan*, Berlin: Springer, 2016, p: 82

²²⁸ Jeroen Kool, *Sustainable Development in the Jordan Valley: Final Report of the Regional NGO Master Plan*, Berlin: Springer, 2016, p: 82

²²⁹ Mohamed F. Tarawneh, *Rural Capitalist Development in The Jordan Valley*, London: E – Book, 2014, p: 38

cubic meters, of which only a few go to the Jordan Valley). To the water of the river itself corresponds to a similar shrinkage in the width of the valley on the eastern side²³⁰.

Here, the valley opens to pour into the Fara'a River, which collects its water from the Samaria hills (it is estimated that it carries 45-62 million cubic meters per year) with a width of 8 miles. These bear it all at about 50 cubic meters per year), and the width of the valley here reaches a maximum of 14 miles on both sides until it reaches the edges of the Dead Sea, where the valley narrows and is about to touch the coast of this sea²³¹.

The rivers on the eastern side are more numerous, richer in water, and of greater importance. Some of them, such as Zarqa and Yarmouk, reach the edges of the desert. These rivers divide the plateau east of the valley into rectangular parts that are almost independent, and this matter had the greatest impact on its history²³².

With regard to the area of Al-Ghor and Al-Zour, in this part of the valley the land is divided into three longitudinal sections in a southern direction, where there is the Al-Zour area: The river water is adjacent to the thicket of trees and plants that often overwhelm the river water and obscure it from view, and its width ranges between 1200 feet to one mile, while the width of the river (its water) ranges between 60-180 feet, and the river water expands when the winter time is overflowing between September and March of the year²³³.

There is also the Ghor region: it is 150 feet higher than the first, separated and distinguished from each other by hills of gray soil on which almost nothing grows,

²³⁰ Fahmi Al-Katout, *Economic and Social Transformations in Jordan (1950 - 1967)*, Beirut: Now for Publishing and Distribution, 2016, p.: 167

²³¹ Muhammad Khasawneh, *Irrigation Water and Agriculture in the Jordan Valley: The Possibility of Cultivating Alternative Crops*, Amman: Center for International Studies of the Royal Scientific Society, 1993, p.: 46

²³² Eitan Tchernov, *The Pleistocene Birds of 'Ubeidiya, Jordan Valley*, Jerusalem: Israel Academy of Sciences and Humanities, 1980, p: 22

²³³ Abdul Rahman Al Mashaqbeh, *Agricultural Life in Jordan (1929 - 1950)*, Amman: Now Publishers and Distributors, 2019, p.: 78

which is called the valley until now, because it is in fact the base of the entire Jordan Valley, and its width on both sides varies between 4-14 miles, and each side of the valley has a special name, which is not limited to the lower Jordan, but includes the areas adjacent to the Dead Sea²³⁴.

In contrast to the above, there is also the highlands region: the highlands ascend to the east Jordan plateau from the east and to the Palestine plateau from the west, and are crossed by valleys and rivers on their way to the river²³⁵.

And all the way to the Dead Sea, which is the subject of this study, although the researcher will deal with it briefly here as one of the topics related to the Jordan Valley, provided that he expands more on it in another place of the study. The Dead Sea is a vast inland lake, located in a deep chasm, touched from the east by mountains ranging in height between 1800-4500 feet, and from the west by heights of not less than 1800 feet, and from the south the land rises gradually until it reaches a height of 1200 feet at a distance of 70 miles. From the Dead Sea, where the land then takes a slope south towards Aqaba²³⁶.

The Dead Sea derives its water from the Jordan Valley, which pours into it daily about 6 million tons of water, as well as other tributaries that it receives from the east, south and west, and its length does not exceed 47 miles, and its width in the widest place is 10 miles and its total area is 360 square miles, and it is rectangular in shape. Almost the entire outcrop of the saline peninsula extends from the lower third of its eastern coast and

²³⁴ Eitan Tchernov, *The Pleistocene Birds of Ubeidiya Jordan Valley*, Reference previously quoted, p.: 44

²³⁵ Isaac Schattner, *The Lower Jordan Valley: A Study in the Fluvimorphology of an Arid Region*, Jerusalem: Magnes Press, Hebrew University, 1962, p: 35

²³⁶ Steven Mithen, Emily Black, *Water, Life and Civilisation: Climate, Environment and Society in the Jordan*, Cambridge: Cambridge University Press, 2011, p: 60

almost joins its western shore, and at its deepest point is 1,310 ft, while in the south of the tongue it is 3-30 ft²³⁷.

Finally, Wadi Al-Araba, as the Jordan Basin extends to the south of the Dead Sea for a distance of 70 miles, in which the land gradually rises, and the slope of the land then turns south towards Aqaba, half this distance, and Wadi Al-Araba runs in it towards the Dead Sea from the south and Wadi Faqra from the southwest, and these valleys have secondary valleys. Others feed it from the mountains of Palestine, the Negev, the northern outskirts of Sinai, and the Jordanian mountains of Shara²³⁸.

3.1.1. Water Management and Consumption in the Jordan Valley:

Economic and demographic developments during the twentieth century put mounting pressures on water resources in the Jordan Valley, as the per capita water supply is very little and announces a water crisis²³⁹. (Table 1).

²³⁷ Munther J. Haddadin, *Water Resources in Jordan: Evolving Policies for Development, the Environment, and Conflict Resolution*, London: Routledge, 2010, p: 86

²³⁸ Eitan Tchernov, *Les mammifères du pléistocène inférieur de la vallée du Jourdain à Oubeidiyeh*, Paris: Association Paléorient, 1986, p: 38

²³⁹ Omar Kamel Hassan, *The Middle Eastern System and Its Impact on Arab Water Security*, Dubai: Al Manhal for Electronic Publishing and Distribution, 2008, p.: 253

Table 1: Proposed riparian water allocations in selected Jordan River basin development plans²⁴⁰

YEAR	NAME	COMMISSION	WATER ALLOCATION (MCM)				TOTAL (MCM)	BACKGROUND INFORMATION
			LEBANON	SYRIA	ISRAEL	JORDAN		
1913	Frangia Plan	Ottoman				-	-	Diversions channel from the Yarmouk to Lake Tiberias. Irrigation on both sides of the Jordan Valley; 21 hydropower plants.
1943/44	Lowdermilk proposals	USA				-	-	Development of the Jordan-Yarmouk Basin and the Litani River in Lebanon. A Mediterranean-Dead Sea canal; hydropower development.
1948	Hays Plan	Israel			50% of Yarmouk River water, 100% from Jordan River	50% of Yarmouk River	-	Diversions channel from the Yarmouk to Lake Tiberias to replace water diversions from the Upper Jordan River. Supply of 2 BCM of water to Israel for the irrigation of 240,000 ha; hydropower development.
1952	Bunger Plan	UNRWA/ Jordan/Syria					-	Construction of the Maqarin Dam on the Yarmouk River; irrigation of 43,500 ha in Jordan and 6,000 ha in Syria; diversion dam at Addasiya; hydropower development.
1953	Main Plan (Unified Plan)	USA	-	45	394	774	1,213	Integrated basin approach with regard to irrigation. Irrigation of 41,000 ha in Israel, 49,000 ha in Jordan and 3,000 ha in Syria. ²⁴¹
1954	Arab Plan	Arab League	35	132	289	975	1,431	Water storage on the Yarmouk at Maqarin and Addasiya; water diversions for irrigation of 25,400 ha in Israel, 49,000 ha in Jordan, 3,500 ha in Lebanon and 11,900 ha in Syria; hydropower development for Arab countries only.
1954	Cotton Plan	Israel	451	30	1,290	575	2,346	Use of the Litani River; hydropower development; diversions for irrigation of 179,400 ha in Israel, 41,600 ha in Jordan, 36,400 ha in Lebanon and 2,600 ha in Syria.
1955	Johnston Plan	USA	35	132	616 ^a	720 ^a	1,503	A dam on the Yarmouk; Lake Tiberias as storage for the Jordan and Yarmouk Rivers; diversion dam at Addasiya; feeder canal from Lake Tiberias to the East Ghor Canal; a siphon across the Jordan to convey water from the East Ghor Canal to the west.

3.1.2. The First Stages of the Development of the River Basin: The Situation Prevailing before the 50s:

The situation and consumption of water resources in the Jordan Valley basin before the founding of Israel was significantly different, as agriculture was influenced by the traditional farming model of the nomads, and the cities were small in size and supplied with water from nearby springs, and besides that, the surface water coming from the Yarmouk River and the side valley The Jordan River itself allows irrigating the small areas along the rivers and in the flood plains of the valleys. It is estimated that an area of about 13,000 hectares used to consume about 125 million cubic meters of water per year. At the same time, there are no indications of attempts to exploit groundwater in the basin area. During that period²⁴¹

²⁴⁰ Compiled by ESCWA BGR based on Phillips et al., 2007; Kliot, 1994.

²⁴¹ Authors Group, Investing in Jordan: Opportunities and Prospects, Dubai: Al-Manhal for Publishing and Electronic Distribution, 2002, p.: 37

3.1.3. Investment Phase: Situation in the Mid-70s:

The Jordan basin's water consumption witnessed significant changes during the 1970s, when Israel transferred approximately 440 million cubic meters per year through its national water company from Lake Tiberias to its cities located on the Mediterranean coast and to some irrigated areas in the Negev desert southwest of the Dead Sea²⁴².

This prevented the hypothetical flow of water from the upper Jordan River, as it reduced the flow of water from Lake Tiberias from 605 to 65 million cubic meters annually, and normal amounts of water no longer reached the lower Jordan River basin except in the winter rainy season²⁴³.

In addition, Israel diverted the salty spring water from the north of Lake Tiberias to the lower Jordan River in the lower part of the lake to maintain the water quality in it and to use it mainly as a reservoir for potable water²⁴⁴.

At the same time, the Israelis pumped water from Yarmouk in order to fill the lake and irrigate the surrounding areas²⁴⁵.

Between 1958 and 1966, the Jordan Valley witnessed a rapid development of irrigation with the construction of the King Abdullah Canal, and thousands of small farms based on the intensive farming system specialized in the production of fruits and vegetables were established to supply the rapidly expanding cities. hectares with approximately 115 cubic millimeters per year, and in the south, the water coming from several side

²⁴² Group of Authors, Rules and Prospects of Modernization in Jordan, Amman: Abdul Hameed Shoman Foundation, first edition, 2005, p.: 59

²⁴³ Muhammad Jamal Barout, The Modern Historical Formation of the Syrian Jazeera: Questions and Problems of the Transition from Bidun to Theoretical Urbanism, Daayen: The Arab Center for Research and Policy Studies, 2013, p.: 91

²⁴⁴ Awad Mansour Ahmed, trafficking in Thirst: International Financial Institutions and the Right to Water in the Arab Region, Dubai: Al Manhal Publishing and Electronic Distribution, 2018, p.: 138

²⁴⁵ Raad Al-Zein, Jordan's National Security Challenges, Amman: Dar Al-Jalil for Publishing, Palestinian Studies and Research, 2011, p.: 99

valleys, which is pumped from the aquifers, allowed the irrigation of approximately 4,200 hectares with 55 cubic millimeters per year²⁴⁶.

In the highlands, the development of agricultural irrigation in Jordan and the Palestinian territories was accompanied by a high exploitation of groundwater (about 70 cubic mm per year), while traditional agriculture remained in the side valleys and valleys of the Zarqa River²⁴⁷.

This period is characterized by an important development of urban areas in Jordan and the Palestinian territories, and at the same time, Syria also began to use the waters of the upper Yarmouk River for agricultural purposes (about 90 million cubic meters per year), so that the minimum flow of the Yarmouk River to the Jordan River decreased to a level of 380 cubic millimeters. per year, and then diverted the flow to the total amount used, and since there were no reservoirs in most of the lower tributaries of the Jordan River, only one third of the historical flow of the Jordan River reached the Dead Sea, which is 505 cubic millimeters per year²⁴⁸.

3.1.4. Exacerbation of Water Scarcity Problems: The Water Situation in Early 2000:

The exploitation of water resources increased significantly in the Jordan Valley region during the period from 1975 to 1995, while only a small change appeared in the way these resources were managed until the mid-nineties, and during this period water was

²⁴⁶ Muhammad Jamal Barout, *The Modern Historical Formation of the Syrian Jazira: Questions and Problems of the Transition from Bedouneh to Theoretical Urbanism*, p. 96

²⁴⁷ Jaafar Hassan, *The Jordanian Political Economy. Building in the Womb of Crises*, Amman: Now for Publishing and Distribution, 2020, p.: 23

²⁴⁸ Ibrahim Badran, *Rural and Desert Development in Jordan*, Amman: Now for Publishing and Distribution, 2016, p.: 119

considered one of the “dormant resources” until effective and efficient techniques were used. to find and exploit it²⁴⁹.

The 1990s witnessed an important turning point represented in the awareness that the water crisis had begun to spread among consumers, and in the face of the inevitability of water scarcity, the Jordanian government, for its part, tried to re-approach its approach to managing water resources through the publication of the 1995 Water Strategy Policy, and other sectoral policies, including the establishment of the Ministry of Water and irrigation, and put in place many plans aimed at reducing water consumption in the agricultural sector and improving the supply of water to urban areas²⁵⁰.

As for the Syrian government, it has also escalated the exploitation of the waters of the upper Yarmouk basin (200 cubic millimeters per year). 270 cubic millimeters per year, of which 110 cubic millimeters per year flows uncontrollably to the Dead Sea, while the total of these flows to the Dead Sea does not exceed 315 cubic millimeters per year)²⁵¹.

In 1994, Jordan and Israel signed a peace treaty defining the joint sharing and allocation of water resources in Yarmouk and Lake Tiberias²⁵².

After the signing of this treaty, irrigation expanded in the south of the Jordan Valley through the extension of the King Abdullah Canal and the use of a mixture of fresh and used water. The use of pressurized underground irrigation allowed optimum efficiency and water control in the irrigated farms in the Jordan Valley, in addition to building

²⁴⁹ Hamdi Al-Tahri, *The Future of Water in the Arab World*, Cairo: Egypt's Renaissance House for Publishing and Distribution, 2017, p.: 87

²⁵⁰ Group of Authors, *The Question of Palestine and the Future of the Palestinian National Project (Part Two): Settler Colonialism and Reimagining the Future of the National Project*, Daayen: The Arab Center for Research and Policy Studies, 2016, p.: 50

²⁵¹ Omar Al-Omari, *Jordan's position on the solutions proposed for the Palestinian cause*, Abu Dhabi: Gulf House for Publishing and Distribution, 2017, p.: 1916

²⁵² A group of authors, *The Jordanian Scene in the New Era*, Amman: Abdul Hameed Shoman Foundation for Publishing and Distribution, first edition, 2009, p.: 182

dams in the Zarqa River. and other internal valleys for irrigation purposes and to ensure the continuity of some water reaching the Jordan River in winter²⁵³.

3.1.5 Short History of Water-Related Conflicts in the Jordan River Basin

Following the 1948 Arab-Israeli War and the signing of the General Armistice Agreements in 1949, Jordan and Israel launched several initiatives to develop water resources in their areas of control. In 1951, Jordan announced a plan to irrigate the Jordan Valley's East Ghor region by diverting water from the Yarmouk River through the East Ghor Canal. In response, Israel launched in the same year the first part of the All Israel Plan to drain the Hula Marshes, a wetland area that was partly located in the demilitarized zone created after the 1949 armistice agreement between Israel and Syria. Israel's initiative led to the first of many military clashes between Israel and Syria in 1951. Two years later, Israel embarked on the construction of the National Water Carrier, a project to divert water from Lake Tiberias to urban centers and agricultural areas farther south in Israel. In the early stages of the project, Israel planned the outlet in the demilitarized zone between Israel and Syria. However, Syria thwarted the plans by attacking the construction and lodging a formal complaint at the United Nations against Israel's unilateral move to transfer water out of the Jordan River basin. As a result, Israel was forced to relocate the works to the north-western shore of Lake Tiberias. The regional tensions prompted the United States Government to appoint Eric Johnston as a special ambassador to the region, with the task of devising a unified water allocation plan for the Jordan Valley. The outcome, known as the Johnston Plan, was issued in 1955 and proposed annual allocations of 616 MCM to Israel, 720 MCM to Jordan, 35 MCM to Lebanon and 132 MCM to Syria. A While the plan was never ratified, it remains a point of reference for water management in the basin and riparian countries often use it as a basis for negotiations. Some scholars claim that water-related conflict in the basin was a major cause of the Six-Day War in June 1967. Following the

²⁵³ Akram Karmoul, *The Evolution of the Economic and Investment Sectors in the History of Jordan*, Amman: Dar Al Falah for Publishing and Distribution, 2008, p.: 50

inauguration of the National Water Carrier and the first water diversions from the Jordan River in 1964, the Arab states decided to launch the Headwater Diversion Project to transfer water from the Hasbani and Baniyas Rivers to the Yarmouk. Israel bombed the site of this diversion project in 1965 soon after the works started and further military attacks followed. These events are seen by some as one of the triggers of the 1967 Six-Day War, through which Israel gained effective control of the Golan Heights, the West Bank and the Gaza Strip, as well as the headwaters of the Jordan River and significant groundwater resources. In the following decade, Israel confronted both Jordan and Lebanon in armed conflicts over the control of Jordan River water. In 1969, Israel launched raids in the area of the East Ghor Canal (currently known as the King Abdullah Canal) in Jordan after it suspected Jordan of diverting excess amounts of water. Nine years later, Israel invaded Lebanon, gaining and maintaining control over the Wazzani Springs in the Jordan River headwaters region until it withdrew its troops in 2000. Tensions persisted in this area though, especially when Lebanon announced plans to build a pumping station at the Wazzani Springs in 2002²⁵⁴ Figure No.: (3).



Figure No.: (3) The Hasbani River, Lebanon, 2003. By: Ralf Klingbeil

²⁵⁴ Compiled by ESCWA-BGR based on Murakami, 1995; Amery and Wolf, 2000; FAO, 2009; Zeitoun et al., 2012; Phillips et al., 2007. (a) Phillips et al., 2007.

3.1.6 The Wazzani Dispute

After the Israeli withdrawal from Lebanon in May 2000, Lebanon launched a reconstruction and development program for southern Lebanon. In a bid to develop water resources in the region, the Council of the South installed two small pumps at the Wazzani Springs in March 2001. This immediately sparked protests from Israel, which threatened to intervene militarily if any water was withdrawn from the Hasbani River. Tensions subsided until the Council of the South announced the construction of a pumping station at the Wazzani Springs in August 2002. The project was part of the Lebanese Government's plan to rebuild the South and ensure the reintegration of the local population by meeting domestic water needs in 13 villages in the region and creating jobs in the agricultural sector. The Wazzani Water Supply Project featured two components: the construction of two pumping stations at the Wazzani Springs and Maysat Junction and the construction of a pipe network from the Maysat pumping station to the Ibl al Saqi Reservoir and other village reservoirs in the area. The Wazzani pumping station was designed to operate at a capacity of 12,000 m³, which results in a total capacity of 4.4 MCM/yr. Already before its inauguration, the Wazzani Project caused tensions to rise as Israel declared that any water abstractions from the Hasbani were a casus belli. Analysts explained Israel's statement in the broader context of the Jordan River basin and said Lebanon's move to abstract water from the river could set a precedent for future water infrastructure projects in the Hasbani region, which would affect water flow to Lake Tiberias. Lebanon retorted that the planned abstraction was only a fraction of the share of Jordan River basin water allocated to Lebanon in the Johnston Plan (35 MCM/yr.). The dispute attracted extensive media coverage. Mediation efforts by the United States, the United Nations and the European Union

failed to resolve the dispute or address future abstraction quotas and water rights. Though Lebanon was able to complete the pumping station and officially inaugurate it in 2002, the incident demarcated clear de facto limits to the country's plans for further water development schemes on the Hasbani River and at the Wazzani Springs. Since then, to avoid confrontation with Israel, Lebanon has not further developed the Wazzani pumping project or any other project in the Hasbani/Wazzani region. Donor countries providing support to the Lebanese water sector have remained similarly reserved on the issue. The Wazzani pumping station has probably never reached its design capacity of 4.4 MCM/yr. Constant power shortages and a lack of maintenance mean that annual abstractions from the Wazzani pumping station are 2.45 MCM at most, assuming that the two generator-operated pumps run 24 hours per day.²⁵⁵ Figure No.: (4).



Figure No.: (4) The Wazzani pumping station, Lebanon, 2006. By: Eileen Maternowski

²⁵⁵ Zeitoun, M., Eid-Sabbagh, K., Dajani, M. and Talhami, M. 2012. Hydro-political Baseline of the Upper Jordan River. Published by Association of the Friends of Ibrahim Abd el Al. Beirut.

3.1.7 Israel's National Water Carrier ²⁵⁶

Israel's National Water Carrier (NWC) was designed to divert runoff from the upper catchment of the Jordan River to highly populated areas and agriculturally productive regions in other parts of the country. This complex water conveyance system pumps water from the north-western shore of Lake Tiberias to the southern part of the country, through more than 120 km of tunnels and open canals and across an elevation of 370 m. The system, which supplies cities along the Mediterranean coast and irrigated land in the coastal plain and the Negev (Al Naqab) Desert, has an annual capacity of 450 MCM. Originally Israel had planned to divert water from an intake near the Jordan River headwaters, but Syria's vehement opposition to the plan forced it to relocate the diversion site to the Upper Jordan River at Jisr Banat Yaqub in 1949. However, Syria once again voiced objections and Israel established the NWC intake site on the north-western shore of Lake Tiberias. In 1964, NWC was officially inaugurated and started to abstract water from the lake ²⁵⁷. The project is Israel's largest water management scheme and today forms the backbone of the country's water distribution system as various other, smaller water supply and distribution schemes are linked to the NWC network. The volume of water conveyed through the system has gradually increased from 172 MCM in 1964/65 to 379 MCM in 1970/71 with an average of 329 MCM/yr. between 1969 and 2007. Water abstracted from Lake Tiberias enters NWC through an underground pipeline. It is then split into two parts: one conveyor transfers water to the Negev, while the other directs water to Jerusalem and the Dan region. On its way to the country's south, NWC also transfers water from other sources, including admixed groundwater and treated wastewater. In the future, Israel plans to transfer desalinated

²⁵⁶ Ed Kashi/VII.

²⁵⁷ Dreizin, Y., Tenne, A. and Hoffman, D. 2008. Integrating Large Scale Seawater Desalination Plants Within Israel's Water Supply System. *Desalination*, 220(1-3): p. 132-149.

water from the Mediterranean Sea to the east and south of the country. Israel's current water development strategy prioritizes the expansion of the country's desalination capacity, which is currently estimated at 315 MCM/yr and expected to increase to 650 MCM/yr by 2020.^e While desalination activities are mostly located outside the Jordan River basin, the increase in desalinated water availability is likely to impact the basin's water balance. In the long term, desalination may replace water transfer from Lake Tiberias as the main source of water in Israel. ²⁵⁸Figure No.: (5).



The National Water Carrier in the Galilee, Israel, 1992. Source: Ed Kashi/VII.

Figure No.: (5) The National Water Carrier in the Galilee, Israel, 1992²⁵⁹

3.1.8 Planned Infrastructure Projects to Save The Dead Sea

The Dead Sea is severely affected by large-scale mismanagement and over-exploitation of the scarce water resources in the Jordan River basin. In addition to the alarming drop in water levels in the Dead Sea, surface and groundwater bodies in the basin have been severely affected in

²⁵⁸ Mekorot. 2012. The National Water Carrier. Available at:

<http://www.mekorot.co.il/Eng/Pages/default.aspx>. Accessed on December 12, 2012

²⁵⁹ Ed Kashi/VII

terms of quantity and quality. The public debate on the shrinking of the Dead Sea tends to bypass the root causes of the crisis, and governments are keen to focus on large-scale infrastructural solutions without examining the legacy of past and current water management strategies in the region. For instance, Israel's use of the National Water Carrier, which transfers significant amounts of water out of the Jordan River basin, is largely overlooked in the current debate. By contrast, technical solutions to the decline of the Dead Sea and water shortage in the basin at large are capturing media attention and generating a lively debate in the region. One of these projects is the Jordan Red Dead Sea Project (JRDP). The idea of connecting the Dead Sea to the Red Sea or the Mediterranean goes back to the mid-19th century. In Jordan it has been under discussion since the 1980s in response to Israel's Mediterranean-Dead Sea projects. Concrete discussions about the construction of a conduit connecting the Red Sea to the Dead Sea started only after Israel and Jordan signed a peace treaty in 1994.²⁶⁰ The ambitious Red Sea-Dead Sea Conduit Project has since then received extensive international attention as a solution to the decline of the Dead Sea and a regional cooperation project. Covering a distance of approximately 200 km, the proposed conduit would pump seawater from Aqaba on the Red Sea coast through the Arava Valley in Jordan where it would then be carried down to the Dead Sea through gravity. The project includes water desalination plants and a hydropower plant. Part of the Red Sea water would be desalinated and transported to Amman. The remaining brine, the by-product of desalination, would be released into the Dead Sea, with the aim of replenishing the rapidly shrinking sea. In 2005 Israel, Jordan and the Palestinian Authority signed an agreement to proceed with a project feasibility study, which was administered by the World Bank and financed by various donors. The USD 15.5 million study comprises a technical, environmental and social assessment, and was expanded in December 2007 to include a study of alternatives. The study program was scheduled for completion in 2012.c with an estimated

²⁶⁰ World Bank. 2005. Red Sea-Dead Sea Water Conveyance Study Environmental and Social Assessment: Terms of Reference. Available at: http://siteresources.worldbank.org/MENAEXT/Resources/RDS-TOR_18_July2007.pdf. Accessed on June 11, 2012.

cost of USD 4.2 billion, excluding the costs of transferring the desalinated water to urban centers, the project is extremely expensive in comparison to other, less drastic proposals to reverse the decline of the Dead Sea. Besides issues of cost, the project has also raised serious environmental and technical concerns over potential damage to the marine environment in the Gulf of Aqaba and the risk of damage to the 200 km conduit in this area of high tectonic activity. The mixing of waters with two different chemical compositions and salinities can negatively influence the sea's biological environment. The change in the sea's chemical composition could also damage the potash industry on the southern shores as well as the tourism industry in Israel and Jordan. Furthermore, raising the water level of the Dead Sea might reverse hydrostatic gradients and contaminate surrounding groundwater tables. Following Jordan's announcement of the Jordan Red Sea Project (JRSP) in 2009, the three-way cooperation between Israel, Jordan and Palestine has taken a back seat. According to the Jordanian Government, JRSP can be regarded as the first phase of the Red Sea-Dead Sea Conduit Project. The project is designed to abstract about 400 MCM/yr. of seawater from the Red Sea, and desalinate about 200 MCM/yr. The additional seawater and brine from desalination will be discharged into the Dead Sea. The project also includes the development of a series of residential and commercial areas, industrial centers, tourist resorts and other business support functions between the Red Sea and the Dead Sea in Jordan. Israel is said to be participating in the coordination and planning of JRSP, and will become more closely involved at a later stage.²⁶¹ Figure No.: (6).

²⁶¹ World Bank. 2011. Red Sea-Dead Sea Water Conveyance Study Program: Question and Answer Sheet. Available at: http://siteresources.worldbank.org/INTREDSEADEADSEA/Resources/RDSQ&A13Dec2011_final.pdf. Accessed on May 12, 2012.



The Dead Sea, 2009. Source: Marc Haering.

Figure No.: (6) The Dead Sea, 2009. by: Marc Haering

3.1.9 Headwaters of the Upper Jordan River

The Jordan River headwaters contain high quality water along their entire course. Sampling of water from the Dan and Baniyas Springs between 2002 and 2004 showed a mean salinity of 343 $\mu\text{S}/\text{cm}$ and 397 $\mu\text{S}/\text{cm}$ as Electrical Conductivity (EC) respectively. The three upper tributaries (Hasbani, Baniyas and Dan Rivers) also have low salinity values ranging from 310 to 420 $\mu\text{S}/\text{cm}$. While low salinity values are maintained until the confluence of the headwaters, agricultural activities in the Dan and Hasbani sub-basins are likely to expose the rivers to contamination from agricultural runoff. In particular, the Hasbani sub-basin is threatened by several types of pollution, including domestic wastewater and olive oil production residues. As it flows south, the Upper Jordan River passes through the Hula Valley and discharges into Lake Tiberias. The

intensive agricultural activities in this region clearly impact water quality, with a noticeable increase in salinity values to 610 $\mu\text{S}/\text{cm}$ at the inlet to Lake Tiberias²⁶².

Table 2. Mean salinity values of the Upper Jordan River and Yarmouk River²⁶³

STATION	TDS (mg/L)	EC ($\mu\text{S}/\text{cm}$)	Cl (mg/L)	YEAR	SOURCE
Hasbani River	..	391	..	2006 (March)	Barinova and Nevo, 2010.
	287	410	25	2009 (Jan-Apr)	
Dan Spring	230-320	..	..	1996-2000	Gur et al., 2003.
	..	343	..	2002-2004	Brielmann, 2008.
Dan River	..	336	..	2006 (March)	Barinova and Nevo, 2010.
	244	340	14	2009 (Jan-Apr)	
Baniyas Spring	247-408	..	..	1996-2000	Gur et al., 2003.
	..	397	..	2002-2004	Brielmann, 2008.
Baniyas River	..	389	..	2006 (March)	Barinova and Nevo, 2010.
	297	420	15	2009 (Jan-Apr)	
Confluence of upper tributaries	..	371	..	2006 (March)	Barinova and Nevo, 2010.
	240	340	13	2009 (Jan-Apr)	
Jordan River at the inlet to Lake Tiberias	..	406	..	2006 (March)	Barinova and Nevo, 2010.
	431	610	25.2	2009 (Jan-Apr)	
Lake Tiberias	≤ 400	Pre-1964	Hambright et al., 2000.
	..	..	204-221	1980-1985	Hambright et al., 2000.
	..	..	300	Mid-1990s-2002	Siebert et al., 2009.
	..	..	250	2003-2004	
	..	..	236	2006	Kiperwas, 2011.
	..	1,081	..	2006	Ministry of Water and Irrigation in Jordan, 2002b.
Yarmouk River	571-901	..	..	1996	Howari and Banat, 2002.
	749	..	134	2001-2002	Farber et al., 2004.
	580	906	..	..	Ministry of Water and Irrigation in Jordan, 2002b ^a .
Yarmouk Springs ^b	347-1,234	..	..	2006	Batayneh, 2011.
Wahdah Dam	541	845	..	1997-2002	Ministry of Water and Irrigation in Jordan, 2002b.
	..	704-717	143	2010	Al-Taani, 2011.

²⁶² Barinova, S. S. and Nevo, E. 2010. The Upper Jordan Algal Communities are Evidence of Long-Term Climatic and Anthropogenic Impacts. *Journal of Water Resource and Protection*, 2: p. 507-526.

²⁶³ Compiled by ESCWA-BGR.



Polluted water in the Jordan Valley, Jordan, 2008. Source: Eileen Maternowski.

3.1.10 Agreements

Riparian cooperation on water resources management in the Jordan River basin is tragically entwined with the regional conflict. Despite a range of multilateral initiatives to reach a basin-wide agreement on water resources allocation,¹⁴⁷ riparian countries have still not reached a consensus. The 1991 Madrid Conference sought to initiate a regional peace process and find a comprehensive solution to the Arab-Israeli conflict. The meeting paved the way for a series of bilateral and multilateral negotiations on various issues, including shared water resources in the region. Lebanon and Syria refused to take part in the multilateral meetings before tangible progress was made on the Israeli-Lebanese and Israeli-Syrian bilateral level. Today, there are a number of bilateral agreements between riparian countries in the basin (Table 12), which can be divided into two categories: agreements between Jordan and Syria on the Yarmouk River

without any third-party involvement, and agreements negotiated in the aftermath of the Madrid Conference (peace treaty between Israel and Jordan and the Oslo. Table 3.

Table 3. Water agreements in the Jordan River basin²⁶⁴

YEAR	NAME	SIGNIFICANCE	SIGNATORIES
1920	Franco-British Convention	Article 8 states that the signatories will undertake joint examination of the Upper Jordan and Yarmouk for the production of hydroelectric power.	Great Britain (Israel, Jordan, Palestine), France (Lebanon, Syria)
1923	Exchange of notes constituting an agreement between the British and French Governments	The agreement focuses on water rights.	Great Britain (Israel, Jordan, Palestine), France (Lebanon, Syria)
1926	Agreement I of Good Neighbourly Relations Concluded Between the British and French Governments	Article III focuses on water rights.	Great Britain (Israel, Jordan, Palestine), France (Lebanon, Syria)
1953	Agreement between the Republic of Syria and the Hashemite Kingdom of Jordan Concerning the Utilization of the Yarmouk Waters	Cooperative use and management of the Yarmouk River, including construction of the Wahdah Dam.	Jordan, Syria
1987	Agreement Concerning the Utilization of the Yarmouk Waters	Cooperative use and management of the Yarmouk River, including construction of the Wahdah Dam.	Jordan, Syria
1974	Treaty of Peace between the State of Israel and the Hashemite Kingdom of Jordan	Annex II outlines the principles of cooperative use and management on the Yarmouk River and the Jordan River.	Israel, Jordan
1995	Israeli-Palestinian Interim Agreement on the West Bank and the Gaza Strip	Annex III, Article 40 comprises the interim arrangement for water management in the West Bank and Gaza Strip.	Israel, Palestine (PLO)

Source: Compiled by ESCWA-BGR based on Oregon State University, 2010.

Agreements: Israel & Palestine

Officially referred to as the Declaration of Principles on Interim Self-Government Arrangements (DOP), the 1993 Oslo Accords between Israel and the Palestine Liberation Organization (PLO) were the result of extensive negotiations in the aftermath of the Madrid Conference. They were followed in 1995 by the Israeli-Palestinian Interim Agreement on the West Bank and the Gaza Strip or Oslo II, which addresses the topic of water in Article 40 of the Protocol on Civil Affairs. In Israel, this agreement is widely seen as a turning point that shifted responsibility for the Palestinian water sector to the Palestinian Authority. Yet in practice the interim agreement did not change the scope of Israeli control. The Interim Agreement includes

²⁶⁴ ESCWA-BGR based on Oregon State University, 2010.

provisions for both parties to establish a permanent Joint Water Committee for the interim period. This body is charged with regulating water resources use in the West Bank.²⁶⁵

Agreements: Israel & Jordan

In the framework of the Madrid Conference, Israel and Jordan concluded the Treaty of Peace between the State of Israel and the Hashemite Kingdom of Jordan in October 1994. Annex II of the treaty deals with shared water resources, detailing water allocation, storage, water quality and protection, groundwater in Wadi Araba and the establishment of a Joint Water Committee.¹⁵⁶ The agreement specifies that Israel is to receive an annual 25 MCM (12 MCM in summer, 13 MCM in winter)¹⁵⁷ from the Yarmouk River, while Jordan is to receive the rest of the flow.¹⁵⁸ The two countries also agreed that Israel can abstract an additional 20 MCM/yr from the Yarmouk River in winter, and in exchange transfers 20 MCM/yr of Jordan River water to Jordan in summertime.¹⁵⁹ In addition, Jordan is entitled to an annual 10 MCM of desalinated water from saline springs diverted to the Lower Jordan River. However, the treaty does not specify the exact amount of water to be supplied to Jordan.¹⁶⁰ Besides ambiguities in the text,¹⁶¹ several provisions have not been implemented as outlined in the agreement,¹⁶² placing pressure on Israeli-Jordanian cooperation in the domain of water.²⁶⁶

Division of the West Bank into Three Administrative Sectors

Following the Oslo Accords, the West Bank was divided into three administrative sectors, and most of the Jordan Valley – the area with the most fertile lands in the Palestinian part of the basin – was placed under Israeli control and administration (Area C, which covers about 60% of the West Bank). The land along the western banks of the Jordan River was declared “closed

²⁶⁵ Zeitoun, M. 2008. *Power and Water in the Middle East: The Hidden Politics of the Palestinian-Israeli Water Conflict*. Published by I.B. Tauris. London/New York.

²⁶⁶ Dombrowsky, I. 2003. *Water Accords in the Middle East Peace Process: Moving towards Cooperation?* In *Security and Environment in the Mediterranean: Conceptualising Security and Environmental Conflicts*. Published by Springer. New York

military areas". The only water resources in the Jordan River basin that Palestinians can use are inflows to the Jordan River and precipitation falling in the part of the basin that is controlled and administered by the Palestinian Authority (Area A). Even in this area, however, Israel can exercise its veto power over any water-related project. As a result, Palestinian project proposals for water development and maintenance regularly encounter years of delay or are rejected entirely.²⁶⁷ Figure No: (8).



Wadi Shihab, a tributary of the Yarmouk River in Dera'a Governorate, Syria, 2009. Source: Adel Samara.

Figure No.: (8) Lake Hula, Israel, 2008. Source: Itamar Grinberg.

²⁶⁷ UN-OCHA (United Nations Office for the Coordination of Humanitarian Affairs). 2012b. The Humanitarian Impact of the Takeover of Palestinian Water Springs by Israeli Settlers Special Focus: How Dispossession Happens. Available at: http://www.ochaopt.org/documents/ocha_opt_springs_report_march_2012_english.pdf. Accessed on March 19, 2012.

3.1.11 Cooperation

Cooperation: Israel & Palestine

In accordance with the Interim Agreement, the parties established in 1994 the Joint Water Committee (JWC), which comprises an equal number of representatives from Israel and the Palestinian Authority. It is charged with overseeing water resources management in the West Bank, excluding Gaza and the Jordan River. Hailed as a success story for Israeli and Palestinian cooperation, the committee's work had limited impact. Thus while it was set up to make all decisions in consensus, it lacks a mechanism to settle disputes. This has allowed Israel to veto Palestinian requests to drill new wells and obtain the additional water resources stipulated in the agreement. As a result, JWC has been criticized as a means of "dressing up domination as cooperation". The Israeli minister of environment and the Palestinian minister of water conceded in December 2011 that JWC is ineffective. While they disagreed on how this could be remedied, they both called for the re-examination of the committee's structure and operational mechanism.²⁶⁸

Cooperation: Israel & Jordan

The Israeli-Jordanian Joint Water Committee (JWC) was established to implement the treaty between Israel and Jordan and facilitate joint development cooperation in the basin. The committee is made up of three high-ranking government officials from each state and members communicate directly in regular meetings.²⁶⁹ Committee meetings are reportedly professional, but not always free of disputes. Decisions are made unanimously and at the end of each meeting minutes are compiled and submitted to the respective governments. Members are said to focus

²⁶⁸ Selby, J. 2003. *Water, Power and Politics in the Middle East : The Other Israeli-Palestinian Conflict*. In *Library of Modern Middle East Studies*. Published by I.B. Tauris. London.

²⁶⁹ Kramer, A. 2008. *Regional Water Cooperation and Peace Building in the Middle East*. In *IFP Regional Cooperation on Environment, Economy and Natural Resources Management Cluster*. Published by Adelphi Research and IFP (Initiative for Peacebuilding). Available at: http://www.initiativeforpeacebuilding.eu/pdf/Regional_Water_Cooperation_and_Peacebuilding_in_the_Middle_East.pdf. Accessed on June 10, 2012

on technical issues in order to avoid discussion of sensitive political issues. The agreement mandates the committee to undertake monitoring inspections, but in practice it depends largely on the permission of member states to visit specific locations. In addition to the weak monitoring powers, JWC lacks a proper conflict-resolution mechanism. In case a dispute erupts but fails to be resolved in the committee, it can therefore negatively impact interstate



Lake Hula, Israel, 2008. Source: Itamar Grinberg.

Figure No.: (9) Lake Hula, Israel, 2008. By: Itamar Grinberg

3.1.12 The Johnston Plan

The equitable sharing of water resources in the increasingly densely populated and water-scarce Jordan River basin has been problematic for more than a century. In the first half of the 20th century, the United States, Israel, Arab countries and the international community put forward a number of basin development plans, which outlined different approaches to water allocation and management in the Jordan River basin. Following the 1948 war between Arab states and Israel, the United States attempted to develop a scheme to guarantee the availability of irrigation water for all populations sharing the Jordan River, including Palestinian refugees. US Ambassador

Eric Johnston subsequently developed such a scheme following a series of visits to the region between 1953 and 1955. While it was never implemented, the Johnston Plan continues to be the most authoritative scheme and still forms the basis for discussions over water allocation in the basin. It is also often referred to as a base for a “tacit” understanding among riparian countries. The plan assumes a total annual water availability of 1,503 MCM in the basin and allocates 616 MCM to Israel, 720 MCM to Jordan, 35 MCM to Lebanon and 132 MCM to Syria, while all riparian’s accepted the plan on a technical level it failed politically after the Council of the League Arab States voted against its ratification in October 1955, arguing that it constituted a formal recognition of the state of Israel. Israel also had its reservations towards the plan as politicians feared it would set a precedent and encourage Arab states to make claims to water resources from the Upper Jordan River.²⁷⁰

- **The Jordan River Basin: Clarification of the Allocations in the Johnston Plan**

Presently, the basin of the Jordan River covers parts of four States and one international entity (Lebanon, Syria, Israel, Jordan and the West Bank). The River and its tributaries constitute an important source of water to all of these entities, in part because of the generally arid nature of the region as a whole. The five co-riparian’s all suffer from serious water deficiencies, as determined by either the water stress index or the water poverty index proposed more recently (Falkenmark and Widstrand, 1992). Many development plans were produced prior to the 1950s for the Jordan River valley region. These extended from the efforts of Abraham Bourcart in the late 1890s, through work by Franghia in 1913 and by Mavromatis and Henriques of Britain in the 1920s, to the Ionides Plan of 1939, the Lowdermilk proposals from 1944, and the work by Hays in the late 1940s . All of these authors investigated aspects of the use of the regional water resources for irrigation in particular, as the production of crops was considered to constitute the primary need for water in the region. However, a particularly intensive effort occurred in the

²⁷⁰ Phillips, D. J. H., Attili, S., McCaffrey, S. and Murray, J. S. 2007. The Jordan River Basin: 1. Clarifications of the Allocations in the Johnston Plan. *Water International*, 32(1): p. 16-38.

mid-1950s to develop a consensus for the use of the water resources of the Jordan River basin, and that period is the focus of the present paper. The essential trigger for the development of the Johnston Plan was the 1948 war following the partition of Palestine to create both a Jewish State and an Arab State, according to the United Nations General Assembly resolution No. 181 (II) of 29 November 1947 (United Nations, 1947). This gave rise in 1949 to the establishment of the United Nations Relief Works Agency for Palestinian Refugees (UNRWA), which was charged with assisting the Palestinians displaced by the 1948 hostilities. One of the key demands of both the refugees and the other populations in the region involved the need for adequate supplies of water. In 1953, United States President Dwight D. Eisenhower designated Eric Johnston as his personal representative with the rank of an Ambassador, with responsibility for attempting to forge an agreement between the co-riparians of the Jordan River basin relating to the use of the water resources within the catchment. It is clear from documents recently declassified by the United States Government that the key objective for Johnston was the attainment of an agreement which guaranteed the availability of water for the irrigation of crops by the populations surrounding the Jordan River (including refugees from Palestine, in particular). By today's standards this is an unusual approach to the allocation of water supplies from international watercourses, as the use of water for domestic (and often also industrial) needs is now generally considered the primary imperative, rather than satisfying agricultural demands for water. Johnston drew initially on the plan commissioned by the UNRWA and developed by the company Chas. T. Main under the direction of the Tennessee Valley Authority (commonly known as the Main Plan, released in August 1953). However, various further Plans were produced through the mid-1950s, and Johnston used all of these to a greater or lesser degree to develop his own proposals for the allocation of water to the co-riparians within the Jordan River basin.²⁷¹ These proposals were discussed with the Israeli Government and Arab

²⁷¹ Helsinki Rules, 1966. The Helsinki Rules on the Uses of the Waters of International Rivers (Adopted by the International Law Association at the fifty-second conference, held at Helsinki in August 1966). London, UK: Report of the Committee on the Uses of the Waters of International Rivers, International Law Association, London.

league representatives during four visits by Johnston to the region, extending from October 1953 to October 1955. The Johnston Plan which was eventually considered for adoption by the regional authorities was dated 30 September 1955. Thereafter, records show that the US State Department organized the production of a summary of the Johnston Plan, this being drafted by Oliver Troxel (a member of the team assisting Johnston in the negotiations) and being dated 31 January 1956. The Troxel Summary was distributed informally to the concerned parties in the region by the Department of State, in early 1956. This paper provides a critical analysis of the Johnston Plan and the Troxel Summary, based in large part on recently declassified documents located in the US National Archives and Records Administration (USNARA), College Park, Maryland. It addresses the allocations of water proposed by Johnston to the co-riparians of the Jordan River basin, with an emphasis on the allocation proposed for Israel. A second paper in this series considers the future use of water by the co-riparian's.²⁷² Figure No: (10) , Table 4, Table 5.

²⁷² Falkenmark, M. and C. Widstrand. 1992. Population and water resources: A delicate balance. Washington, DC: Population Bulletin Vol. 47 No. 3, Population Reference Bureau.

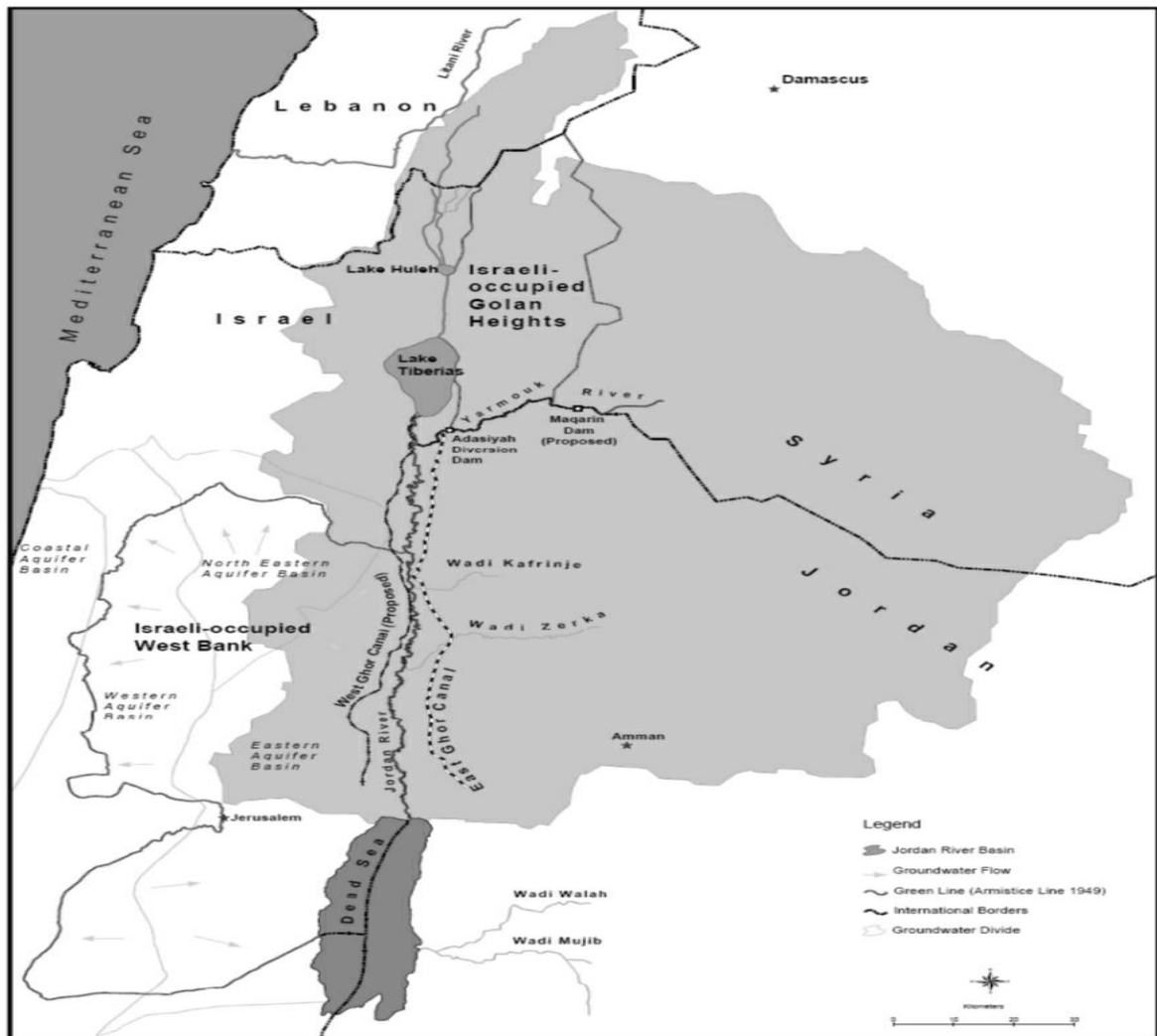


Figure No.(10): The Jordan River basin²⁷³

²⁷³ David J.H. Phillips (2007), The Jordan River Basin: Clarification of the Allocations in the Johnston Plan, International Water Resources Association Water International, Volume 32, Number 1, Pg. 16-38, March 2007.

Table 4: The Jordan River Basin: 1. Clarification of the Allocations in the Johnston Plan²⁷⁴

<i>Year</i>	<i>Document</i>	<i>Area of Focus</i>
1901	Abraham Bourcart proposals	Development of the regional water resources.
1913	Franghia Plan	Relationship between flows in the Yarmouk, the Jordan and Lake Tiberias; hydropower.
1922	Mavromatis proposals	Relationship between the Yarmouk and Lake Tiberias; the East and West Ghors; hydropower.
1926	The Rutenberg concession	Hydropower generation.
1928	Henriques Plan	Extension of the work by Mavromatis; irrigation of the Yarmouk triangle.
1939	Ionides Plan	Diversion of Yarmouk flows to the East Ghor; storage of surplus flows in Lake Tiberias.
1944	Lowdermilk proposals	Diversion of the Litani River; a Mediterranean-Dead Sea canal; hydropower; a TVA-style authority.
1948	Hays Plan	Establishment of a TVA-style authority; irrigation and hydropower development proposals.
1951	Proposals of MacDonald & Partners	Development of the Ionides Plan; irrigation requirements in Syria and Jordan.
1952	Bunger Plan	The Maqarin Dam on the Yarmouk River; diversion dam at Adasiyah; hydropower development.
1953	Main Plan	Irrigation requirements within the Jordan River basin in all areas, regardless of political boundaries.
1953	Israeli Seven-Year Plan	Drainage of the Huleh area; development schemes both within and outside the Jordan River basin.
1954	Arab Plan	Many elements of water utilization and storage, emphasizing irrigation requirements.
1954	Cotton Plan	Use of the Litani River; irrigation requirements both within and outside the Jordan River basin.
1955	Baker-Harza proposals	Master Plan for the development of the Jordan River valley; detailed irrigation requirements in Jordan.
1955	Johnston Plan	Released on 30 September 1955 in its only full version; proposed allocations to the co-riparians.
1956	Troxel Summary	Released in January 1956, including extended and somewhat amended text of the Johnston Plan.

²⁷⁴ Ibid p:90

Table 5. The proposed allocation of water from the Jordan River basin to various areas within the basin, as cited by the Main Plan. Note the lack of any reference to the co-riparian's involved, for each land area.²⁷⁵

<i>Location</i>	<i>Area to be Irrigated</i> (thousand dunums)	<i>Water Duty</i> (m ³ /dunum/year)	<i>Annual Average Water Demand</i> (MCM/year)		
			From Rivers	From Wadis/ Wells	Total
Upper Huleh	71	770	55	0	55
Ayelet Hashahar	30	890	27	0	27
Yavneel Valley	22	930	0	20	20
Lower Galilee	113	780	88	0	88
Afula-Beit Alfa	91	930	86	0	86
West Ghor, north	107	1,330	53	89	142
East Ghor, north	85	1,330	44	69	113
West Ghor, centre	67	1,440	42	55	97
East Ghor, centre	127	1,440	112	71	183
West Ghor, south	98	1,860	141	40	181
East Ghor, south	95	1,860	138	38	176
Yarmuk Plateau	30	1,500	45	0	45
Totals	936		831	382	1,213

A Summary of the Key Plans Considered by Johnston

The Main Plan: The Main Plan (1953) envisaged a series of dams in the upper and middle reaches of the tributaries of the River Jordan, coupled to gravity flow through a complex system of feeder networks to irrigable land areas throughout the basin. Hydroelectric facilities were included (the Tel Hai plant on the Hasbani River and the Adasiyah facility on the lower Yarmouk River), and lake Tiberias (also known as lake Kinneret and the Sea of Galilee) was proposed as the principal natural storage facility within the basin as a whole. The Maqarin Dam on the Yarmouk River was also included, although the Main Plan envisaged that it should not be constructed to its full height of 150 metres as was later suggested (an initial height of construction of 58 metres being preferred, with possible raising to 95 metres at a later time, if this were found to be justified by further investigation). The entire water resources of the Jordan

²⁷⁵ Ibid p:90

River basin were involved. A total area of 936,000 dunums (one dunum is 1,000m² in area, or 0.1 hectare) of irrigable land was addressed, with the water duty (i.e. the annual requirement for irrigating crops) varying between 770 m³/dunums/year and 1,860 m³ /dunums/year, depending on location. The Main Plan recognized the need for a continuing inflow to the Dead Sea to maintain its elevation at that time, and estimated this to amount to 990 MCM/year. However, the source of this water was not specifically stated. As noted by many commentators, the Main Plan effectively disregarded political boundaries between the co-riparian's to the basin (considered at that time to include Syria, Lebanon, Israel and Jordan), seeking simply to optimize the use of water for irrigation in the basin as a whole. This is particularly evident from the contents of Table 2, which are cited directly from the Main Plan, as published. However, recalculation of the allocations proposed by the Main Plan on the basis of the national boundaries between the co-riparian's as at 1953 reveals the following: no allocation to Lebanon; 45 MCM/year to Syria, to irrigate 30,000 dunums; 394 MCM/year to Israel, to irrigate 416,000 dunums; and 774 MCM/year to Jordan (including the current West Bank of Palestine), to irrigate 490,000 dunums. The broad cost of the developments cited in the Main Plan was estimated at US\$121 million (as in 1953), with a possible US\$14 million additional expenditure to raise the Maqarin Dam to 95 metres in height.²⁷⁶Table 6.

²⁷⁶ Feitelson, E. 2000. "The ebb and flow of Arab-Israeli water conflicts: Are past confrontations likely to resurface?". *Water Policy*, 2000 (2): 343-363.

Table 6. The proposed allocations of water from the Jordan River basin in the Arab Plan of 1954²⁷⁷

<i>Co-riparian</i>	<i>Site to be Irrigated</i>	<i>Area</i> (1,000 dunums)	<i>Water Duty</i> (m ³ /dunum/ year)	<i>Source of Water</i>		<i>Total Water Volume</i>
				<i>River</i>	<i>Wadis, etc.</i>	
Lebanon	Hasbani basin	35	900	35	-	35
	Totals, Lebanon	35				35
Syria	Banias basin	20	900	20	-	20
	Boteiha farms	22	900	22	-	22
	Yarmouk Plateau	68	1,070	80	-	80
	Lower Yarmouk	9	1,070	10	-	10
	Totals, Syria	119				132
Israel	Upper Huleh	78	770	66	-	66
	Ayelet Hashahar	30	890	30	-	30
	Yavneel Valley	22	930	-	22	22
	Yarmouk Triangle	26	1,560	45	-	45
	West Ghor	78	1,560	41	85	126
	Totals, Israel	234				289
Jordan	North, Eastern Ghor	74	1,560	51	69	120
	Centre, Eastern Ghor	127	1,690	158	71	229
	South, Eastern Ghor	95	2,190	187	38	225
	<i>Sub-total, Eastern Ghor</i>	<i>296</i>				<i>574</i>
	North, Western Ghor	29	1,560	45	4	49
	Centre, Western Ghor	67	1,690	64	55	119
	South, Western Ghor	98	2,190	193	40	233
	<i>Sub-total, Western Ghor</i>	<i>194</i>				<i>401</i>
	Totals, Jordan	490				975
	Totals, all four co-riparians	878			1,047	384	1,431

The Arab Plan: By direct contrast to the Main Plan, the Arab Plan (1954) recognized political boundaries as a prime constraint to any development initiative. Four basic elements were proposed in the Plan, which was released in March 1954: utilization of the Yarmouk River flows for irrigation and hydroelectric schemes; use of the waters of the Jordan River and headwaters or tributaries north of lake Tiberias for the same purposes; utilization of the waters of the Jordan River to the south of lake Tiberias mainly for irrigation; and the optimization of the use of water derived from wadis (stream beds) and wells. In the early 1950s, the Kingdom of Jordan extended across the Jordan River to include the current West Bank of Palestine (Jordan had annexed the West Bank in 1950), with the so-called East Ghor and West Ghor regions

²⁷⁷ Ibid p:90

along the middle and lower reaches of the basin being prime cultivable land.²⁷⁸ The Arab Plan cited the Syria-Jordan Agreement (1953) as the general basis for the development of storage, power generation and irrigation in the Yarmouk catchment. The storage of Yarmouk flows in Lake Tiberias was not preferred, as Israel controlled the latter area at the time (and concerns were also raised over water losses through evaporation, with resulting increases in salinity of the stored volume). The planned alternative storage of water within the Yarmouk system (at Maqarin, and also at Adasiyah) was claimed to involve much smaller losses through evaporation of about 15 MCM/year, whereas storage of the same volume at lake Tiberias was stated to result in annual evaporation of 300 MCM. In addition, the Arab Plan stated that the capacity of lake Tiberias was insufficient to retain the Yarmouk waters in high-flow periods, resulting in water being “wasted downstream” three times in each 20-year period.²⁷⁹ Table 7.

²⁷⁸ IMFA, 1953. Israel Water Rights (statement to the Knesset by Foreign Minister Sharett, 30 November 1953). [online] URL: [http://www.mfa.gov.il/MFA/Foreign Relations/ Israels+Foreign +Relations+since+1947/1947-1974/3+Israel+Water+Rights+-+Statement+to+the+Knesset+by.htm](http://www.mfa.gov.il/MFA/Foreign_Relations/Israels+Foreign+Relations+since+1947/1947-1974/3+Israel+Water+Rights+-+Statement+to+the+Knesset+by.htm) (accessed July 12, 2007).

²⁷⁹ Feitelson, E. 2000. “The ebb and flow of Arab-Israeli water conflicts: Are past confrontations likely to resurface?”. *Water Policy*, 2000 (2): 343-363.

Table 7. The proposed allocation of the waters of the Litani River and the Jordan River amongst the co-riparian's, as stated in the Cotton Plan of February 1954.²⁸⁰

<i>State</i>	<i>Region</i>	<i>Area Irrigated</i> (1,000 dunums)	<i>Water Duty</i> (m ³ /dunum)	<i>Annual Requirement</i>
Lebanon	Litani (Baqua plain/ Coastal plain)	350	800	451^a
	<i>Totals, Lebanon</i>	<i>350</i>		<i>451^a</i>
Syria	Yarmouk	30	800	30
	<i>Totals, Syria</i>	<i>30</i>		<i>30</i>
Israel	Huleh (including fish ponds)	130	1,000	130
	Tiberias – Beisan	190	1,150	220
	Esdraelon	120	500	60
	Losses, Battauf Reservoir	-	-	60
	Losses, other reservoirs	-	-	10
	Export from the Jordan River basin	1,350 [plus]	600 [average]	810
	<i>Totals, Israel</i>	<i>1,790</i>		<i>1,290</i>
Jordan	Ghor	428	1,200	575
	<i>Totals, Jordan</i>	<i>428</i>		<i>575</i>
	Totals	2,598	-	2,346

It may be concluded that the general approach of Johnston to allocating the Jordan River was essentially a rights-based methodology, at least as this may relate to the Arab co-riparian's and on the basis of the understanding of water rights at that time. However, the approach used does not reflect the present-day thinking on the allocation of international watercourses. Three principal reasons exist for this: (a) the fact that Johnston failed to take other water sources available to the co-riparians into account; (b) the consideration by Johnston of agricultural demand only as the basis for determining allocations (or water rights, as then perceived); and (c) the allocation of residual flows to Israel, coupled to tacit approval of the use of water outside the Jordan River basin only in the case of Israel. On the basis of the materials cited here, it is clear that the actual allocation from the Jordan River system which was proposed by Johnston for Israel was 616 MCM/year. The confusion of previous authors in relation to this figure was

²⁸⁰ Ibid p:90

generated by the omission of a specific flow for Israel within the Johnston Plan itself. Even the Troxel Summary only permits the derivation of the magnitude of the allocation to Israel through the use of a footnote, coupled to further calculations. The available documentation (much of which has been declassified only very recently) shows clearly that the efforts of Johnston and his team were almost successful. It is notable that the parties accepted Johnston's proposals at the technical level, although this was not repeated at the political level of the Arab league (at least). It appears altogether possible that greater success may have eventuated, in the absence of other events (unconnected to water allocation) in the Middle East shortly after the release of the Johnston Plan. It is remarkable that the co-riparian's of the Jordan River basin have still not yet reached agreement on their respective allocations or water rights, some five decades after Johnston's work. The second paper in this series considers the present water rights of the co-riparian's (and how these may be satisfied in the future) in greater detail.²⁸¹

3.2 Dead Sea

The Dead Sea is a rare geological and natural phenomenon. It is located on the longest continental displacement fault in the world, with an extension of more than 1,000 km, accompanied by a lateral displacement of about 105 km. It is a closed sea that does not connect to the surrounding external seas in the region (the sea Mediterranean and Red Sea)²⁸².

²⁸¹ Dr. David J.H. Phillips (Freelance Consultant, Adam Smith International, 3 Albert Embankment, London SE1 7SP, England; djhphillips@hotmail.com) has been active in environmental and water-related issues throughout the world for over 30 years. He presently advises Governments and other international bodies in a wide range of geographies.

²⁸² Abdel Qader Abed, *Geology of the Dead Sea: Its Origin, Water, Salt and Bahrain Canal*, Beirut: Dar Al-Arqam for Printing, Publishing and Distribution, 1985, p.: 19



Figure No: (11) : Dead Sea²⁸³



Figure No: (12) : Dead Sea²⁸⁴

²⁸³ Abdel Qader Abed, *Geology of the Dead Sea: Its Origin, Water, Salt and Bahrain Canal*, Beirut: Dar Al-Arqam for Printing, Publishing and Distribution, 1985, p.: 19

²⁸⁴ Ibid

The water of the Dead Sea is characterized by its high salinity, which reaches 340 grams / liter in its depths, which is a very large percentage, as its salinity is ten times the salinity of the seas and oceans. Many modern industries (fertilizers - building materials - medicines - cosmetics - and others)²⁸⁵. Figure 11, Figure 12.

The Dead Sea is bounded on the east by the Madaba and Karak mountains in Jordan, on the west by the heights of Hebron and Jerusalem in Palestine, on the north by the Dead



Figure :No(13) : Red Sea–Dead Sea Water Conveyance²⁸⁶

Sea depression and the mouth of the Jordan River, and on the south by the Khanzira cliff, which is the beginning of Wadi Araba. Palestine is in line with the Jordan River in the north, and Wadi Araba and in the south, and other than this as well, the Dead Sea is located between latitudes: 31.05 - 31.45 North, and between longitudes: 35.21 - 35.35 East²⁸⁷.

²⁸⁵ Mahasin Youssef Hamdan, *The Bahrain Canal Project: The Mediterranean and the Dead Sea*, Cairo: Dar Al-Furqan for Publishing and Distribution, 1985, p.: 27

²⁸⁶ Niemi, Tina M., Zvi Ben-Avraham and Joel Gat, eds., *The Dead Sea: the lake and its setting*, 1997, Oxford University Press, p. 251 ISBN 978-0-19-508703-1

²⁸⁷ Group of Authors, *Israel and the Dead Sea Canal Project to Connect the Mediterranean and Red Seas via the Dead Sea*, Abu Dhabi: Zayed Center for Coordination and Follow-up, 2001, p.: 55

The total area of the Dead Sea before 1960 was about 1,000 square kilometers, and its surface was at an altitude of - 397.5 meters below the surface of the average sea level. Its narrowest point is located at the tongue strait with a width of 2 km, and its deepest points are located 5 km southwest of the mouth of Wadi Zarqa Ma'in and its depth is 399 meters. The average and the deepest point in the Dead Sea is about 794 meters²⁸⁸.

The beginning of the geological formation of the Dead Sea most likely dates back to the late Triassic period, about 3-7 million years ago. It covers most of the lands of the Arab region, After its decline and retreat and its arrival to the current form of the Mediterranean Sea through the Jezreel Valley and then the Middle Jordan Valley until the Miocene era, and after the Miocene era, the connection of the ancient Jordanian lake (Lake After Asdam) to the Mediterranean Sea was cut off, and it began to be reduced badly and gradually as a result of the high level of evaporation in the region due to the temperatures. The scientists believe that the lake was subjected to a second subsidence due to the great pressure placed on it as a result of the concentration of salts at its bottom until it was the Dead Sea in its current form²⁸⁹. Figure 13.

The planned Red Sea–Dead Sea Water Conveyance, whose first phase will begin construction in 2021, will work towards stabilizing the falling levels of the Dead Sea.

3.2.1 Dead Sea Climate:

The average temperature in the Dead Sea in winter is 19.2 degrees Celsius, and in summer it is 37.7 degrees Celsius, while the highest temperature ever recorded in the region reached 51 degrees Celsius, and the temperature of its beaches in winter does not

²⁸⁸ Awwad Ayed Nawasra, *The Dead Sea: A Historical Geographical Study*, Amman: Dar Fadaat for Publishing and Distribution, 2009, p.: 60

²⁸⁹ Amer Abdul Latif Hussein, *The Dead Sea Region: A Study of its Political, Economic and Social Conditions for the Period (1500-500 BC)*, Amman: Dijla Publishing and Distribution House, 2017, p. 18

drop below 24 degrees Celsius during the day and 15.5 degrees Celsius. °C at night²⁹⁰.

Table 8.

The temperature of the Dead Sea water also varies from one depth to another. The highest surface water temperature reached 45 degrees Celsius, at a depth of 36 cm from the surface, and the lowest temperature recorded was 10 degrees Celsius, and the two measurements were taken from approximately the same place²⁹¹.

The amount of rain falling on the Dead Sea varies from year to year, as the maximum amount of rain recorded in 1990 - 1991 was about 300 mm, while this percentage may drop in some years to 50 mm²⁹².

The average general humidity in the Dead Sea region fluctuates around 57%, while the highest humidity was recorded in December and January, reaching 75%, and the lowest recorded in June and July, reaching 45%²⁹³.

²⁹⁰ Shaif Muhammad Qassem Saleh, Determining the extent of pollution of the Dead Sea coast sediments with heavy metals using atomic absorption spectroscopy, Amman: University of Jordan, 1997, p.: 33

²⁹¹ Awwad Ayed Nawasra, Sodom and Gomorrah: A Study in the Formation of the Dead Sea and the Incident of Lashes, Amman: Dar Fadaat for Printing, Publishing and Distribution, 2010, p.: 43

²⁹² Ashraf Allam, Bahrain Canal Project and Arab Security, Cairo: Arab Nile Group for Publishing and Distribution, 2008, p.: 29

²⁹³ Johnny Mansour, Reading in the Water Sharing Agreement between Israel and the Palestinian Authority, Middle East Journal, Center for Middle East Studies, Amman, January 2014, p. 11

Table 8: Climate data for Dead Sea, Sedom (390 m below sea level)²⁹⁴

Climate data for Dead					
Month	Jan	Feb	Mar	Apr	May
Record high °C (°F)	26.4 (79.5)	30.4 (86.7)	33.8 (92.8)	42.5 (108.5)	45.0 (113.0)
Average high °C (°F)	20.5 (68.9)	21.7 (71.1)	24.8 (76.6)	29.9 (85.8)	34.1 (93.4)
Daily mean °C (°F)	16.6 (61.9)	17.7 (63.9)	20.8 (69.4)	25.4 (77.7)	29.4 (84.9)
Average low °C (°F)	12.7 (54.9)	13.7 (56.7)	16.7 (62.1)	20.9 (69.6)	24.7 (76.5)
Record low °C (°F)	5.4 (41.7)	6.0 (42.8)	8.0 (46.4)	11.5 (52.7)	19.0 (66.2)
Average precipitation mm (inches)	7.8 (0.31)	9.0 (0.35)	7.6 (0.30)	4.3 (0.17)	0.2 (0.01)
Average precipitation days	3.3	3.5	2.5	1.3	0.2
Average relative humidity (%)	41	38	33	27	24

²⁹⁴ Israel Meteorological Service.

3.2.2 Historical Fluctuation of The Dead Sea Level:

It seems that the ancient Jordanian lake kept decreasing and receding until the Jordan River began feeding it with fresh water with a group of neighboring valleys to begin the phase of relative stability of the level of the historical Dead Sea, which was circulating at - 393 meters below the surface of the Mediterranean Sea, in addition to the studies and historical evidence indicating the existence of a change The level of the Dead Sea is permanent, whether it rises or falls more and faster than the 25-meter drop that occurred in the last four decades of its surface level²⁹⁵.

The historical record indicates that the average level of the Dead Sea level reached 70 meters over the past years, and this fluctuation was only a result of a change in climatic conditions and an increase in rainfall. This difference occurred between rise and fall between 100 BC to AD 40, During that period, the water level in the Dead Sea rose to 330 meters below the level of the Mediterranean, and its area expanded to 1440 km. It appears that the Khirbet Qumran area has sunk under its waters²⁹⁶.

After this rise, which lasted for 76 years, the surface of the Dead Sea fell again, and returned to its normal level at - 390 meters below sea level, and its area returned to about 1000 km, but it does not prove and quickly changes, as historical evidence indicates that the second rise A major event occurred between the tenth and eleventh centuries AD, when the level of the Dead Sea reached - 350 meters below the surface of the Mediterranean, and then returned to decline close to its natural level²⁹⁷.

²⁹⁵ Hashem Ali Al-Rawashdeh, *The Geostrategic Importance of the Dead Sea*, Amman: University of Jordan, 1989, p.: 58

²⁹⁶ hn Joseph Collins, Robert A. Kugler, John J. Collins, *Religion in the Dead Sea Scrolls*, Michigan: Wm. B. Eerdmans Publishing, 2000, p: 138

²⁹⁷ David Noel Freedman, Pam Fox Kuhlken, *What Are the Dead Sea Scrolls and Why Do They Matter?*, Michigan: Wm. B. Eerdmans Publishing, 2007, p: 131

3.2.3 Dead Sea Level Fluctuation in The Modern Era (1935 - 2005):

It appears from what was presented above that the level of the Dead Sea was constantly fluctuating between rise and fall, but this fluctuation was going on within the limits of the natural level, which is estimated at about - 393 meters below sea level, but it began to decline since 1964 after Israel seized the waters of the Jordan River, As a result of the insufficient amounts of water reaching the Dead Sea since 1980, which was compensating for what was lost by evaporation, the decline increased to more than 80 cm per year²⁹⁸.

3.2.4 Dead Sea water sources:

There are many sources of water that feed the Dead Sea, and among these sources are:

- **The Jordan River and its tributaries:** On top of the sources that feed the Dead Sea with water, the Jordan River and its tributaries, and due to the great difference between studies on the quantities of water in the river basin, the World Bank study of 1994 is the most accurate study that estimated the final amount of the water of the Jordan River and its tributaries that feed the sea Dead, and the final amount of this water is estimated at about 1300 million cubic meters²⁹⁹.
- **Jordan Valleys and Springs:** It is estimated that the Jordanian valleys and springs provide water in the Dead Sea between 150-200 million cubic meters annually³⁰⁰.

²⁹⁸ Matthew A. Collins, *The Use of Sobriquets in the Qumran Dead Sea Scrolls*, London: Bloomsbury Publishing, 2009, p: 250

²⁹⁹ Shani Tzoref, Adolfo D. Roitman, *The Dead Sea Scrolls and Contemporary Culture*, Boston: Brill, 2011, p: 627

³⁰⁰ James VanderKam, *The Dead Sea Scrolls Today*, Rev. Ed, Michigan: Wm. B. Eerdmans Publishing, 2010, p: 236

- **Palestinian valleys and springs:** It is estimated that the Palestinian valleys and springs supply water in the Dead Sea between 100-150 million cubic meters annually³⁰¹.
- **Groundwater:** The rain falling on the western heights is the main source of groundwater recharge in the eastern basin adjacent to the Dead Sea. The estimated amount of water feeding the eastern basin is between 125-172 million meters annually, of which 70 million cubic meters annually seep into the Dead Sea water³⁰².
- **Rain:** The amount of direct rainwater that falls on the Dead Sea and its vicinity is estimated at about 80 million cubic meters annually³⁰³

3.2.5 The Water Balance of The Dead Sea from 1955 To 2005:

The water balance is generally divided into two parts: the amount of incoming water and the amount of lost water. By reviewing these two sections, it is possible to determine the budget situation with a deficit or a surplus, bearing in mind that the water balance of the Dead Sea was balanced between the inside and the outside before the emergence of the problem of drought and recession³⁰⁴.

- **Water incoming to the budget:** The amount of water entering the Dead Sea is estimated at about 1,750 million cubic meters annually, as the Dead Sea receives about 1,300 million meters from the Jordan River basin and its tributaries, and about 175 million meters from the Jordanian valleys and springs that flow directly into the Dead Sea, and about 125 One million meters of Palestinian valleys and

³⁰¹ Fitzmyer, Joseph A., SJ, *Impact of the Dead Sea Scrolls*, New Jersey: Paulist Press, 2009, p: 110

³⁰² Gregory F. Maassen, Chris Grant, *hiking in Jordan - Dead Sea Area - E-Book - Abbreviated Version*, Amman: Hiking in Jordan Website, 2014, p: 45

³⁰³ James VanderKam, Peter Flint, *The Meaning of the Dead Sea Scrolls: Their Significance For Understanding the Bible, Judaism, Jesus, and Christianity*, London: Harper Collins, 2004, p: 190

³⁰⁴ Jonathan S. Nkhoma, *Significance of the Dead Sea Scrolls and other Essays*, Oxford: African Books Collective, 2013, p: 37

springs that also flow directly into it, about 80 million meters of groundwater, and about 70 million meters of rain that falls directly on it, and a total of about 1,750 million cubic meters annually, as previously mentioned³⁰⁵.

- **The water lost from the balance:** the water lost from the water balance of the Dead Sea recedes in the waste by evaporation, and as previously mentioned, the general situation of the water balance was balanced between inside and outside before the problem appeared, and from here it is clear that the amount of water lost by evaporation is equal to or greater than the amount of incoming A little, and this is what Israeli studies say³⁰⁶.

Through some other Arab studies (Jordanian - Palestinian) of the fluctuation in the level of the Dead Sea level during previous periods, it was found that the Dead Sea was suffering from a chronic drought problem as a result of the high rate of evaporation estimated at about 2,200 million meters annually, which is a very high amount compared to the average rainfall. Which is estimated at about 80 million meters per year, where the average evaporation increases over the precipitation level by at least 27 times for the period between 1955 - 2005³⁰⁷.

After calculating the percentage of decrease in the level of the Dead Sea, the volume of the water balance between the incoming and the lost will be as follows³⁰⁸:

³⁰⁵ Lawrence H. Schiffman, *Qumran and Jerusalem: Studies in the Dead Sea Scrolls and the History of Judaism*, Michigan: Wm. B. Eerdmans Publishing, 2010, p: 74

³⁰⁶ Philip R. Davies, George J. Brooke, *The Complete World of the Dead Sea Scrolls*, London: Thames & Hudson, 2002, p: 99

³⁰⁷ John J. Collins, *Scriptures and Sectarianism*, Michigan: Wm. B. Eerdmans Publishing, 2014, p: 40

³⁰⁸ Martin G. Abegg, *The Dead Sea Scrolls Concordance: The non-biblical texts from Qumran*, Leiden: Brill, 2003, p: 159

A. The amount of water received: 1750 million cubic meters annually.

B. The volume of water lost by evaporation: 1755 million cubic meters annually.

This means that the Dead Sea's water balance was suffering from a water deficit estimated at about 5 million cubic meters annually, resulting from the climatic factors of the region, which is the indirect cause of the problem of drought and decline that the Dead Sea suffers from³⁰⁹.

It should also be taken into account that the figures for the volume of the budget referred to are approximate and not definitive, and the calculation of these figures was calculated after taking the averages of the total figures concerned with the budget, and the amount of water drained by the extractive industries was not taken into account in this budget because it was not effective³¹⁰.

3.2.6 Water Balance of The Dead Sea Since 2006:

- Water incoming to the budget: The quantities of water that reach the Dead Sea from 2006 to the present are only about 400 million cubic meters annually, out of the 1,750 million meters it received during the period from 1955 until the beginning of this century³¹¹.

It is possible to total up to the Dead Sea water since 2006 in about 100 million cubic meters of the remains of the discharge of the Jordan River, and about another 100 million cubic meters of the remains of the discharge of Jordanian valleys and springs, in addition to the third 100 million cubic meters of the remains of the discharge of

³⁰⁹ Ian Young, Robert Rezetko, *Historical Linguistics and Biblical Hebrew*, Atlanta: Sbl Press, 2014, p: 132

³¹⁰ Shem Miller, *Dead Sea Media: Orality, Textuality, and Memory in the Scrolls from the Judean Desert*, Leiden: Brill, 2019, 203

³¹¹ James C. VanderKam, *Calendars in the Dead Sea Scrolls: Measuring Time*, London: Routledge, 2002, p: 29

Palestinian valleys and springs. , in addition to 50 million cubic meters of direct rain, and about 50 million cubic meters of groundwater, with a total of 400 million cubic meters³¹².

From the foregoing, it appears that there is a difference in some of the numbers mentioned in this budget with the first budget, and this difference is limited to the amount of direct rain and the amount of groundwater, while the amount of rainwater has decreased from 80 million cubic meters to 50 million cubic meters as a result of the shrinking of the Dead Sea area, which It reached 660 square kilo metres, and the same reason behind the decrease in the amount of groundwater³¹³.

3.2.7 Waste Water in the Budget:

The total water loss in the 2006 budget is estimated at about 1,000 million cubic meters annually, as losses due to evaporation range between 700-750 million cubic meters, while losses due to extractive industries range between 250-300 million cubic meters³¹⁴.

It should be noted that the reason for the decrease in the amount of water lost by evaporation is due to the shrinkage of the area of the Dead Sea as previously mentioned, which means a decrease in the area of water surfaces exposed to the sun. The total water

³¹² Serita Stevens, Rayanne Moore, Red Sea, Dead Sea, Massachusetts: Hard Shell Word Factory, 2004, p: 85

³¹³ Joseph Seckbach, Enigmatic Microorganisms and Life in Extreme Environments, Berlin: Springer Science & Business Media, 2013, p: 360

³¹⁴ Ali Sadek, Geology of the Arab World: Proceedings of the First International Conference on Geology of the Arab World, Cairo University, January 1992, Volume 1, p: 254

balance between incoming and outgoing water can be summarized in³¹⁵:

- A. Incoming water quantities: 400 million cubic meters annually.
- B. Amounts of water lost by evaporation and extractive industries: 1000 million cubic meters annually.
- C. Water resources suffer from a water deficit estimated between 600-650 million cubic meters annually.

3.2.8 The Economic Importance of the Dead Sea

The Dead Sea began in the early twentieth century by attracting the interest of chemists, who in turn concluded that the sea contains huge natural resources of potash (potassium chloride) and bromine. Therefore, in 1929, the Palestinian Potash Company established the first plant to produce potash on the northern coast of the Dead Sea, where production was carried out through solar evaporation in aqueous solutions. The factory was employed by Arab and Jewish workers, as it was an oasis of peace in difficult times. In 1934, the company established its second factory on the southern coast near Mount Sodom, but it was badly damaged by the events of the Nakba. 1948. The factory, located in the north of the Dead Sea in the West Bank, was closed. After the 1948 war, it was dismantled by the Palmach Zionism before its withdrawal. Operations at the Sodom factory in the south were also restarted in 1952, which has continued to the present. The remains of the Palestinian Potash Company Ltd. were seized by Israel after its establishment, and another state-owned company was established in its place in 1952 to extract potash and other minerals from

³¹⁵ group of authors, *Encyclopedia of the Dead Sea Scrolls: 1*, Oxford: Oxford University Press, 2000, p: 191

the Dead Sea. The company was privatized in 1995 and is currently owned by Israel Chemicals.³¹⁶

The Palestinian coast stretches On the Dead Sea in the West Bank About 40 km, but the Palestinian economy does not benefit from the chemical industries in the Dead Sea because of the Israeli occupation measures The closed areas imposed by Israel after its occupation of the West Bank in 1967. The World Bank Estimates to the chemical industry Palestinian refugees from the Dead Sea could generate \$918 million in value added annually, which is equivalent to almost all the contribution of the manufacturing sector in the Palestinian Territories Today. The World Bank estimates that the Palestinian tourism industry The Dead Sea could generate \$290 million in revenue annually and 2,900 jobs. However, Palestinians cannot obtain building permits for tourism-related investments on the Dead Sea due to the Israeli occupation measures. The Dead Sea is considered a strategic asset for the Palestinian economy, because it contains quantities of salts and minerals of high value, which are seized by Israel. By extracting and selling it, and preventing any Palestinian economic activity in that area. The annual losses to the Palestinian economy as a result of not exploiting the resources of the Dead Sea are estimated at \$1.1 billion, equivalent to 13.6% of the GDP.³¹⁷

On the Jordanian side, From the Dead Sea, the Arab Potash Company was established in 1956, which produces about two million tons of potash Annually, in addition to sodium chloride and bromine. The factory is located in Ghor Al Safi, in the Southern

³¹⁶ Muhammad Abdul-Qader Al-Khatib, *The Water Crisis in Jordan with a Focus on Irbid Governorate Water Management*, unpublished MA thesis, Yarmouk University, Amman, 1996, p. 79.

³¹⁷ Munther Khaddam, *Arab Water Security and Challenges*, Center for Arab Unity Studies, Beirut 2001, p. 34.

Jordan Valley Brigade, in the Karak Governorate. Jordan earns about \$1.2 billion from the metal industries in the Dead Sea (equivalent to 4% of national income). for the Kingdom). About 5 major hotels classified as five or four stars are located on the Jordanian beach, which brought in revenues to the Kingdom in 2012 of about \$128 million. The Dead Sea Panorama was visited by 12,000 visitors in 2013.

Jordan has begun constructing the Dead Sea Development Zone, 55 km from the capital, Amman to provide investment opportunities for real estate development. The area extends over about 40 km² on the shores of the northern and eastern coasts of the Dead Sea, surrounded by mountains and terrain sloping to the east of the Jordan River Valley. to the north. The area has good infrastructure, and it connects with Amman Through the main highway plus attractions. Investment opportunities in the tourism and hotel sector are focused on developing international hotels with four- and five-star services, developing three-star hotels, environmental facilities and facilities, residential complexes, community services, recreational facilities, resorts, restaurants, conference and exhibition centers.

As for Israel, it produced from the brine of the Dead Sea in 2001, about 1.7 million tons of potash, about 206,000 tons of bromine, 44,900 tons of caustic soda, and about 25,000 tons of magnesium minerals, and sodium chloride. Israeli companies make about \$3 billion annually from selling Dead Sea minerals (primarily potash and bromine) and other products derived from Dead Sea minerals. Israel owns 15 hotels along the western Dead Sea coast. These hotels had returns on the Israeli Economy in 2012, it amounted to about \$291 million. Most of these hotels are located in the southern part of the West Coast.

3.2.9 The Tourist Importance of the Dead Sea

The Dead Sea area is one of the most important tourist areas for ecological healing in the world, as it is characterized by a group of natural factors, which made it enjoy a competitive position in the region in the field of medical tourism. And hospitalization due to its unique climatic characteristics, whether it is free of moisture and contains sulfur eyes. It made him qualified to treat many diseases, especially skin ones, which are widespread, as the number of people infected with it reaches Europe to 25 million patients, in addition to the treatment of rheumatoid arthritis, and thus possessed the Dead Sea area are important elements of the tourist attraction not only in tourism recovery, but also in tourism entertainment uniqueness and eco - tourism. The selection of the Dead Sea region through the World Health Organization as a global center for the treatment of many skin diseases in 2011, it indicates the importance of the region in the field of medical tourism. Many hotels located on the coast of the Dead Sea depend on providing natural treatments based on taking advantage of the unique natural characteristics of the area without using any chemical drugs at all. Several studies confirm that the Dead Sea region, by possessing these therapeutic advantages, can achieve the largest financial return for tourism to Jordan, as the incidence of skin diseases ranges between 1 :3% of the population.³¹⁸ Figure No:14.

Conference tourism in the Dead Sea has witnessed a remarkable development recently, and the Dead Sea region has become specialized in this type of tourism, through the organization of conferences, seminars and meetings at all local, regional and global levels. The official aspect of the conference, but also includes the provision of tourism and recreational services to the participants. Jordan established the Dead Sea Company

³¹⁸ Mustafa Suleiman, Water and the Natural Environment in the Arab World and the Story of Water in the Arab-Israeli Conflict, Dar Al-Kitab Al-Hadith, Cairo, 1999, p. 65.

for Conferences and Exhibitions in 2003 with the participation of a group of Jordanian and Arab investors. The first project of this company was the establishment of the King Hussein Bin Talal Convention Center to host the most important regional and international events and conferences. This project contributed to placing Jordan on the global map for business and investment forums, as the center hosted the World Economic Forum more than once.

Jordan organizes Annual Marathon to run in the Dead Sea with the participation of thousands of citizens and tourists from Amman and ending with Amman's tourist beach overlooking the Dead Sea. This event is held to support brain and neurological patients in the Kingdom³¹⁹



Figure: No (14). The tourist importance of the Dead Sea³²⁰

3.2.10 Dead Sea Products.

The Dead Sea laboratories also produce a lot of cosmetics Made of minerals extracted from its clay, it is available in markets across Jordan, or it can be ordered online and

³¹⁹ Muhammad Ahmed Rashid, Water Population Growth in the Hashemite Kingdom of Jordan: Reality and Future Prospects, 1979-2025, published PhD thesis, Damascus University, 2009, p. 57.

³²⁰ Mustafa Suleiman, Water and the Natural Environment in the Arab World and the Story of Water in the Arab-Israeli Conflict, Dar Al-Kitab Al-Hadith, Cairo, 1999, p. 65.

delivered to anywhere in the world, so that visitors can continue to enjoy the benefits of the Dead Sea, long after they return home.

On the other hand, in 2012 the Israeli government allocated \$220 million for what it called "the development and rehabilitation of the Dead Sea." Most of the budget will cover the development of the two tourist areas on the Dead Sea called "Tami Zohar" and "Ain Bouqiq" and between them, as well as the rehabilitation and treatment of areas and infrastructure. damaged or overwhelmed by danger. Upon completion of the project, the Israeli government expects to increase the number of offered hotel rooms from 4000 to 6500. The Israeli project aims, primarily, to transform the Dead Sea into one of the world's leading tourist sites; It does not touch, from near or far, the problem of the Israeli factories' depletion of the natural salt resources in the sea, knowing that the Israeli factories drain annually more than 250 million cubic meters of Dead Sea water.

3.2.11 An International Project to Solve the Water Security Crisis

Studying the theory of human needs and their interaction with conflict, this theory can be used in part despite the fact that ideas of human needs, conflict, and harmony are interrelated and affect all parts of human life, and scholars and professionals in general have tended to them in a somewhat divided manner. Where the theory of human needs suggests that all people have some universal basic needs, and that when these needs are not met, conflict or conflict is likely to occur, so by implementing water diplomacy for water security, it will lead to peace by satisfying the need, also from the perspective of resolving diplomatic disputes leads to peace.³²¹

³²¹ Hazem Al-Nasser, Future Needs in Industry and Drinking, the third Jordanian scientific week under the slogan "The Land towards Optimal Use", Volume 3, Scientific Papers, Amman, p. 87.

A project would Red-Dead to put a solution to this problem. Within the framework of this project, a canal will be dug from the Red Sea to the Dead Sea, and water can flow from the Red Sea through the 177-kilometer pipeline, to feed the Dead Sea, whose waters are decreasing. At the same time, hydroelectric power will be generated, as the Red Sea is 417 meters higher than the Dead Sea, in the hope that the project will succeed in killing two birds with one stone. The waters of the Red Sea are in stations erected for this purpose. But it is not clear whether new problems will arise between the governments of the region against the background of this huge project, and feasibility studies will reveal this. However, fears prevail about the occurrence of further environmental imbalances in the Dead Sea due to its different composition from the waters of the Red Sea, according to the Israeli Geological Survey. On the other hand, Palestinian water expert Amjad Alawi believes that the construction of the canal does not represent a solution, but rather "is just circumventing the real problem." There is also another potential problem, which is that the course of the canal passes through the earthquake zone, and if an earthquake occurs, this may result in the canal explosion, which means that the groundwater is polluted with salt water³²²

3.2.12 The Dead Sea and the Problem of Drought:

The problem of drought and recession in the Dead Sea has appeared since 1964, after Israel seized the waters of the Jordan River, the main tributary of the Dead Sea, and transferred it to its national carrier. The problem increased year after year until it reached dangerous stages threatening the Dead Sea to recede to the utmost limits. The average decrease in the level of the Dead Sea since 1955 has been about 50 cm per year,

³²² Mustafa Suleiman, *Water and the Natural Environment in the Arab World and the Story of Water in the Arab-Israeli Conflict*, Dar Al-Kitab Al-Hadith, Cairo, 1999, p. 45.

and this negative fluctuation has led to the drying up of parts of the Dead Sea, including the region of the tongue and the southern basin, until its area became about 660 square kilometers, instead of 1000 square kilometers. precedent³²³.

This decline had a clear impact on the shores of the Dead Sea, as its shores receded as a result of the decrease in the level of the water column to about a meter annually in the steep areas, while the average decline was 30 cm in the areas of low slope, and therefore it was natural for the Dead Sea area to shrink annually at a rate of 5 - 6 square kilometers, and experts agree that the level of the Dead Sea will continue to decline by 2025 by about 18 meters³²⁴.

In a study prepared by the Israeli Ministry of Regional Cooperation, on the development of the drought problem in the Dead Sea, the results of the study warned that the decrease in its surface level will increase dramatically based on the current data, as Israeli experts say that if the problem continues in this state without developing solutions, The level of the Dead Sea will drop to -610 meters in the next 500 years, but it will not dry up completely³²⁵.

3.2.13 Causes of Drying Up and Receding of The Dead Sea:

The causes of drought and recession in the Dead Sea are divided into two main categories:

- **Natural causes:**

The natural causes are the dry climate of the region in general, which is represented by the lack of rain and the high rate of evaporation as a result of high temperatures. It is

³²³ Group of authors, History of the Earth Sciences: Journal of the History of the Earth Sciences Society, Volume 17, The Society 1998, p: 82

³²⁴ Sven Erik Jorgensen, Encyclopedia of Environmental Management, Ohio: CRC Press, 2012, p: 1437

³²⁵ Jutta Metzger, Wind Systems and Energy Balance in the Dead Sea Valley, KIT Scientific Publishing, 2017, p: 48

estimated that the rate of evaporation in the Dead Sea area reaches more than 2,200 million cubic meters per year, which is a very high percentage that leads to the amount of waste of its water has increased, and the amount of waste by evaporation in the Dead Sea has been estimated at about 1775 million cubic meters annually³²⁶.

- **Human causes:**

Human causes like water policies of the countries in the region were the policies pursued by the countries of the region played a major role in the emergence of the problem of drought and decline, and the most important of these policies was the Israeli water policy based on the approach of force and usurpation of the rights of others, and was represented in the draining of Lake Hula and the seizure of the waters of the Jordan River, which were emerging from Lake Tiberias to flow into the Dead Sea. and transferring it to its national carrier line in order to supply the settlements with the necessary water in the Negev and the coastal plain, and as a result of this policy, both Jordan and Syria searched for what remained of their water rights in the Jordan River Basin after Israel seized the greater part of it, especially since these two countries are suffering from a large water deficit³²⁷.

Where Syria built some earth dams on the tributaries of the Yarmouk River and used more than 200 million cubic meters annually to irrigate its agricultural lands. The Hasbani River (one of the tributaries of the Jordan River) and from it - Lebanon - used the equivalent of 20 million cubic meters annually, making the Jordan River semi-arid in its lower basin until its mouth in the Dead Sea³²⁸.

³²⁶ V. Arad, M. Beyth, Y. Bartov, The Dead Sea and Its Surroundings: Bibliography of Geological Research, Ministry of Energy and Infrastructure, Geological Survey of Israel, 1984, p: 60

³²⁷ Interview of the researcher with: Ehab Al-Barghouti - Water Expert - President of Prince Muhammad Bin Fahd University

³²⁸ Johnny Mansour, Reading in the Water Division Agreement between Israel, Jordan and the Palestinian Authority, aforementioned reference, p. 51

In a joint study prepared by Israel with the World Bank on the extent to which the participating countries in the Jordan River Basin exploit part of its waters and its tributaries. According to this study, the total benefit from the waters of the Jordan River is about 1080 million cubic meters annually out of 1300 million cubic meters annually is the amount of water discharge For the basin of this river, and if it is accepted that the figures of this study are correct, with the exception of the Eastern Ghor Canal (Yarmouk), which takes 120 million cubic meters annually from the Yarmouk River, is there water in Lake Tiberias that was not exploited by Israel to reach the Dead Sea? The working and declared water from the Jordanian and Syrian sides are close to the numbers mentioned in the Israeli study, but the number that is somewhat far from the truth is what Israel uses³²⁹.

As previously mentioned in the figures in the Jordan River water resources accounts, the usable water in Lake Tiberias is 670 million cubic meters annually, in addition to these 70 million cubic meters annually that Israel takes from the lower Yarmouk River, bringing the total consumption by Israel to about 740 million cubic meters Annually, and if it does not consume it, it controls and seizes it, and it does not reach the Dead Sea³³⁰.

3.2.14 Red Dead Agreement

In 2002 at the World Summit for Sustainable Development held in Johannesburg, South Africa, the governments of Israel, Jordan and the Palestinian Authority advanced the

³²⁹ Shlomi Dinar, Ariel Dinar, *International Water Scarcity and Variability: Managing Resource Use Across Political Boundaries*, California: Univ of California Press, 2016, p: 148

³³⁰ Jutta Metzger, *Wind Systems and Energy Balance in the Dead Sea Valley*, The aforementioned reference, p.: 50

idea of building a water conveyance linking the Red Sea to the Dead Sea ³³¹. On December 9, 2013 at the World Bank senior officials from the Israeli, Jordanian, and Palestinian governments signed a Memorandum of Understanding (MoU) to jointly manage the shared water resources of the Red Sea, Jordan River, and the Sea of Galilee (commonly known as Lake Tiberias or the Kinneret). The agreement lays out the framework for the following: a joint desalination plant in Aqaba, Jordan at the head of the Red Sea where the water will be distributed to Israel and Jordan; the release of water from Lake Tiberias to Jordan; and the sale of 20-30 million cubic meters of desalinated water per year by Israel to the Palestinian Authority. It goes even further to link the brine produced from the desalination plant to the Dead Sea in an ecological experiment hoping to save the Dead Sea from destruction.³³²

This MoU is a government-to-government water sharing agreement between countries that are hard-pressed to agree on much of anything, and this formal diplomatic overture is commendable. However, this agreement, water security, and the economic investments that will come with it have the power to build bridges between Israelis, Palestinians and Jordanians. That is if the governments choose to approach this water-sharing agreement as not merely an investment in future water security and tourism, but as a touchstone for peace. During CPD's 2012 research conference, *Water Diplomacy: A Foreign Policy Imperative* and through our Initiative, we discussed the opportunities water diplomacy affords the government-foreign public relationship. Our research stressed that water issues should focus on the publics through:³³³

³³¹ Jordan Red Sea Project: Jordan Red Sea Project Description Archived 2012-03-24 at the Wayback Machine, retrieved on May 11, 2011.

³³²

³³³ "Red Sea – Dead Sea - Study Program Reports". World Bank. Archived from the original on 3 December 2013. Retrieved 31 July 2021.

- strategic partnerships,
- mutuality in water relationships,
- technical training and assistance, and
- local community engagement.

The MoU begins with addressing these first three points, but has not gone as far as to engage with the local communities. The governments involved can easily speak to their publics through local leader engagement and the established NGOs working in this sector, such as Friends of the Earth Middle East. The leaders in the local villages and towns in and around Aqaba, Tiberias, along the Jordan River Valley, and on both sides of the Dead Sea, should be approached by the governments and brought into this conversation. Town halls can be held to emphasize how this water sharing agreement positively impacts individual lives through better access to stable water resources and economic growth opportunities. A joint publicity campaign sponsored by all three governments through traditional and social media could garner public support for this water agreement, while at the same time socialize the three publics to understand that their governments are working together for the benefit of the people. Simple actions which require relatively minimal resources that stress these mutually beneficial relationships can only bolster the current diplomatic discussions taking place between Israel and the Palestinian Authority. If water stress can easily create conflict, water relief should be leveraged to create peace. Israel, Jordan, and the Palestinian Authority must not let this historic agreement be relegated to the history books, but to bring it to the people to ensure not only a water-secure future for the Levant, but to facilitate stable relationships between the governments and encourage peace between the peoples.³³⁴

(Figure 15).

³³⁴ World Bank (13 December 2011). "Red Sea–Dead Sea Water Conveyance Study Program: Question and Answer Sheet" (PDF). Retrieved 17 January 2012

The Red Sea–Dead Sea Conveyance (RSDSC) : sometimes called the **Two Seas Canal**, was a planned pipeline to run from the coastal city of Aqaba by the Red Sea to the Lisan area in the Dead Sea. Its abandonment was reported in June 2021. It was to provide potable water to Jordan, Israel and the Palestinian territories, bringing water with a high concentration of salts resulting from the desalination process (reject brine) to stabilize the Dead Sea water level, and generate electricity to support the energy needs of the project. The project was planned to be carried out by Jordan and is entirely in Jordanian territory. It was to be financed by the governments of Jordan, Israel, and a number of international donors. The water level in the Dead Sea is shrinking at a rate of more than one meter per year, and its surface area has shrunk by about 33% since the 1960s. This is largely due to the diversion of most of the flow into the Dead Sea from the Jordan River, much of which originates in the Sea of Galilee. The completion of the National Water Carrier scheme in 1964 diverted water for Israel, Jordan and Syria to use for irrigation and drinking water. The decline of the Dead Sea level is causing major local environmental problems, including sinkholes and receding shorelines. Other routes for a conduit for the same objectives as the RSDSC, including the Mediterranean–Dead Sea Canal, were proposed in Israel in the 1980s, but were discarded. The project had a tentative \$10 billion price tag, with the first phase—slated to begin construction in 2021—costing \$1.1 billion.³³⁵

³³⁵ US Welcomes Israeli-Palestinian Deal to Implement Red-Dead Water Agreement – White House Statement ,The White House ,Office of the Press Secretary For Immediate ,Release July 13, 2017 : <https://www.whitehouse.gov/the-press-office/2017/07/13/donald-j-trump-administration-welcomes-israeli-palestinian-deal>



Figure: No: (15) The planned Red Sea–Dead Sea Canal, shown in red, lies entirely in Jordan and will be implemented by Jordan.³³⁶

History:

The connection of the seas by canal was first suggested in the mid-19th century by British officers who were looking for ways to circumvent the French-built Suez Canal and had not realized that the level of the Dead Sea is much lower. Later on, at the end of the 19th century, planners thought of ways to use water from the Jordan River, which originates in the Sea of Galilee, for irrigation and to bring sea water to the Dead Sea to create energy from its position of -390 m below sea level. One of those planners was the Zionist leader Theodor Herzl.

The completion of the National Water Carrier scheme in 1964, diverted water for Israel, Jordan and Syria to use for irrigation and drinking water. The Red Sea–Dead Sea conduit (RSDSC) was proposed at the end of the 1960s and was analysed as part of the peace process between Israel and Jordan. In the late 1990s a team headed by Refael (Rafi) Benvenisti working with Minister Shimon Peres as the Minister of Regional Cooperation suggested to establish the stabilization of the Dead Sea water level ('Saving the Dead Sea') as a major objective of the project. It suggested building the project in stages in order to test the mixing of the two seas water phasing the big investment

³³⁶ Fitzgerald, Sunny (8 April 2020). "The super-corals of the Red Sea". *BBC*. Retrieved 31 July 2021

associated with the project. The project was called "the Peace conduit" and was proposed to be located on Jordanian territory for financial and implementation reasons. On 9 May 2005, Jordan, Israel and the Palestinian Authority signed an agreement to go ahead with a feasibility study for the RSDSC. The agreement was signed on the Dead Sea by Jordanian Water Minister Raed Abu Soud, Israeli Infrastructure Minister Binyamin Ben-Eliezer and Palestinian Planning Minister Ghassan al-Khatib.³³⁷ (Figure 16).

In June 2009, after a meeting with World Bank President Robert Zoellick, the Israeli Regional Cooperation Minister, Silvan Shalom, announced a pilot project to build a "pilot" pipe 180 km long from the Red Sea to the Dead Sea. The pipe would pump 200



Figure: No: (16) The dwindling water level of the Dead Sea from 1960 to 2007³³⁸

³³⁷ Ora Coren, Jordan Won't Budge on Red Sea-Dead Sea Project - and Israel Will Pay the Price, Haaretz, 27 January 2019.

³³⁸ Fitzgerald, Sunny (8 April 2020). "The super-corals of the Red Sea". *BBC*.

million cubic metres per year. Half of this would be desalinated for Jordanian consumption and half put into the Dead Sea. In October 2009 the Jordanian government announced that it would unilaterally tender a Jordan Red Sea Project. According to the government, this project could be considered as the first phase of the RSDSC project. The Jordan project was to be implemented by a private company under authority granted by the government. The project would also serve as an economic development project to create housing for 1.36 million people south of Amman, at the Southern end of the Dead Sea, north of Aqaba and in gated communities. Several tourist resorts would be created. It is divided into five phases. The first phase would include extraction of 400 million cubic metres of seawater per year, resulting in 210 million cubic metres/year (MCM/yr) of freshwater and 190 million cubic metres/year for discharge into the Dead Sea. The construction of the first phase is expected to take 7 years. In March 2011, the Ministry of Water and Irrigation short-listed six firms for the first phase of the project.

The World Bank has announced that it would release a feasibility study of water conveyance from the Red Sea to the Dead Sea together with an environmental and social assessment as well as a study of alternatives in early 2012. The alternatives studied include a restoration of the Jordan River to its natural flow and taking no action, as well as numerous other alternatives.³³⁹

In August 2013, Jordanian government announced that it would move ahead with the first phase of a project.[10] On December 9, 2013, an agreement to build the pipeline was signed by Israel, Jordan, and Palestine. On June 21, 2016, Jordan announced that it

³³⁹ "5 alliances shortlisted to execute Red-Dead's phase I". The Jordan Times. 27 November 2016. Retrieved 3 December 2016.

received 17 bids from international firms to construct the canal. On 27 November 2016, it was announced that the Jordanian government is shortlisting five consortiums to implement the project. Jordan's ministry of Water and Irrigation said that the \$100 million first phase of the project will begin construction in the first quarter of 2018, and will be completed by 2021. In June 2021, it was reported that the water level in the Dead Sea is shrinking at a rate of more than one meter per year, and its surface area has shrunk by about 33% since the 1960s. This is largely due to the diversion of most of the flow into the Dead Sea from the Jordan River. In June 2021, the project was reportedly abandoned by the Jordanian government, citing a lack of interest by Israel.³⁴⁰

Project Features and Benefits

The proposed conveyance would pump seawater 230 meters uphill from the Red Sea's Gulf of Aqaba through the Arabah Valley in Jordan. The water would then flow down gravitationally through multiple pipelines to the area of the Dead Sea, followed by a drop through a penstock to the level of the Dead Sea near its shore, and then an open canal to the Sea itself, which lies about 420 meters below sea level. The project would utilize about 225 km of pipelines for seawater and brine, parallel to the Arabah Valley in Jordan. The project would also have about 178 km of freshwater pipelines to the Amman area. It also would include several water desalination plants and at least one hydroelectric plant. In its final phase, it would produce about 850 million cubic meters of freshwater per year. The project would require electric power from the Jordanian power grid, but it would also provide some electricity through hydroelectric power. In the sum, this project would probably be a large net user of energy.[7] The net power demand would have to be satisfied through other power projects whose costs are not included in the project costs.

³⁴⁰ "Archived copy". Archived from the original on 17 December 2013. Retrieved 12 March 2014.

The Kingdom of Jordan plans to build a large nuclear power plant that might make up the difference.³⁴¹

Costs and Financing

The project cost estimates vary from two to more than ten billion dollars depending on its structure and stages. The first phase of the Jordan Red Sea Project is expected to cost US\$2.5 billion. It is expected to be financed to a large extent from commercial sources, including debt and equity and from soft international financing.[citation needed] As of January 2019, Israel is expected to contribute over one billion dollars over a period of 25 years³⁴²

Environmental Impact

The transfer of mass volumes of water from one sea to another can bear drastic consequences on the unique natural characteristics of each of the two seas, as well as the desert valley which separates them, the Arabah. Some of these characteristics, especially in the Dead Sea area, are unique on a global perspective, and therefore crucially important for conservation. The environmental group EcoPeace Middle East has protested against the allegedly premature approval of the project. By the mid-noughties, the group listed several potential hazardous effects of the project on the unique natural systems of the Red Sea, the Dead Sea, and the Arabah. Some have argued that these risks are serious enough to necessitate further discussion, or feel that their effects are negligible. In August 2011, the World Bank published a study based on environmental assessments carried out under its supervision. A letter to the World Bank

³⁴¹ World Bank (13 December 2011). "Red Sea–Dead Sea Water Conveyance Study Program: Question and Answer Sheet" (PDF). Retrieved 17 January 2012

³⁴²

is included in its introduction, in which the science team's leader explains that "it is preferable to study and mitigate unexpected impacts and phenomena which may arise once seawater first mixes in the Dead Sea, before a full scale RSDSC is implemented."³⁴³

Dead Sea Composition

Damage to the unique natural system of the Dead Sea, due to mixing its water with Red Sea water, or brines created from the process of desalinating Red Sea water which has a different chemical composition. This includes changes in water salinity, massive formation of gypsum, formation of volatile toxic compounds, change in water evaporation rates, changes in the composition of bacteria and algae which inhabit the sea surface, chemical changes in the rocks which surround the water, and loss of unique health benefits that account for much of the tourist attraction to the Dead Sea area.³⁴⁴

The report of: Tahal Group, the Geological Survey of Israel, Portland State University, Oregon, USA and Institute of Life Sciences at the Hebrew University of Jerusalem, states:

- In order to stabilize the Dead Sea level, more than 700 MCM/yr (million cubic metres/year) of additional water is needed.
- The present conditions of the Dead Sea will be maintained at least up to inflow volume of about 400 MCM/yr".
- Potential for biological blooming exists only when stratification develops and the upper mixed layer is diluted by at least 10% "

³⁴³ "Archived copy". Archived from the original on 17 December 2013. Retrieved 12 March 2014.

- Once stratification develops and mixing occurs in the upper water column, there is a potential for "whitening"
- Stratification may develop above inflow of 500–600 MCM/yr.

Gulf of Aqaba Coral Reefs

Damage to the coral reefs of the Gulf of Aqaba, due to water pumping. The coral reefs have so far resisted bleaching despite climate change, but the conveyance could upset this balance. The report of, Thetis Spa, the Interuniversity Institute For Marine Sciences In Eilat, Marine Science Station University of Jordan and Yarmouk University, Aqaba and Israel Oceanographic and Limnological Research institute, states:

- "The exchanges of water between the Gulf and the northern Red Sea through the Strait of Tiran are several orders of magnitude larger than those that would be induced by the proposed abstraction flows, such that the latter would likely be imperceptible except in the immediate vicinity of the sink. The expected effect of the abstraction on the heat budget of the gulf is also expected to be negligible".
- "Based on above assessments our findings are for a 'go' decision, as long as the intake configuration, location, and depth are selected properly".

Arabah Ecosystem

Damage to the natural landscape and ecosystem of the Arabah, due to the construction, and the increase in humidity caused by the open canal segments. According to the preferred scenario of the World Bank Study the conduit will be multiple buried

pipelines and not canals. Special care will be taken to minimize the environmental and archeological damage.³⁴⁵

Arabah Aquifer

Damage to the aquifer of the Arabah, due to contamination of groundwater with water from the Red Sea. The alluvial deposits in Wadi Araba contain important supplies of fresh water. In the event that the pipeline ruptures (due to earthquake risk given the location in the Jordan Rift Valley), these aquifers will be irreparably damaged. This can have fatal consequences to both the agriculture and ecosystem of the Arabah. The planning and construction of the pipelines will include measures to minimize the potential for pipeline ruptures.³⁴⁶

Archeological Heritage

Threats to archeological heritage. The pipeline will cross areas of important cultural heritage, such as Wadi Finan, where the earliest copper mining and extraction in the world took place.³⁴⁷

³⁴⁵ "Archived copy". Archived from the original on 17 December 2013. Retrieved 12 March 2014.

³⁴⁶ "5 alliances shortlisted to execute Red-Dead's phase I". *The Jordan Times*. 27 November 2016. Retrieved 3 December 2016.

³⁴⁷ "Archived copy". Archived from the original on 17 December 2013. Retrieved 12 March 2014.

Chapter IV

Role of Water Diplomacy in Achieving Water Security

This chapter deals with the role of water diplomacy and its role in achieving water security by reviewing the role of Palestinian water diplomacy and regional water diplomacy, and holding some personal interviews with the concerned water diplomacy authorities in the city of Ramallah. Some questions related to water diplomacy were presented, which are as follows:

What is the relationship between water diplomacy and water security?

Is there a link between the negotiation over water and the peace and development plan?

What are the implications of water diplomacy on water security on the comprehensive peace process?

Does official Palestinian diplomacy meet the requirements of active water diplomacy?

Is there a suitable model for Palestinian water diplomacy?

Attached at the end of the chapter is a summary of these interviews and the opinion of the concerned authorities on water diplomacy and its role in achieving water security.

4.1 Palestinian Water Diplomacy³⁴⁸

Water is the nerve of life, and its artery, and any deficiency of this important and dangerous thing in our life leads to a real catastrophe, or its interruption or interruption of life or death. The powers of the United Nations General Assembly are spreading the last century, as a result of the steady population growth, and the great development in

³⁴⁸ Abu-Hussein, H. (2021). Analysis: Is environmental change driving political change in Iraq? BBC Monitoring. Retrieved on 18 June, 2021 from. <https://monitoring.bbc.co.uk/>

the industrial and agricultural fields, the demand for water increased dramatically, at a time when the land began to witness the depletion of water sources, for many reasons, the most important of which is the lack of water stock in underground reservoirs, and the occurrence of climatic changes that led to The drying up of many rivers and water bodies, in addition to pollution.. All this led to the emergence of real water crises in many regions of the world, including the Middle East. These crises may constitute a direct cause of wars in the future³⁴⁹

Since Water Diplomacy is defined to be an approach that diagnoses water problems, identifies intervention points, and proposes sustainable resolutions that incorporate diverse viewpoints and uncertainty as well as changing and competing demands, therefore is closely related to water security and conflict resolution. Is there a lack of life in the aforementioned solutions for facilities.³⁵⁰

This was confirmed by many specialized international studies, which indicated that the issue of water shortage and the low quality of the available water is one of the most important environmental and economic issues that occupy the Middle East region, and therefore it is seen as one of the most important issues in the final status negotiations between the Palestinians and the Israelis. the implications of water diplomacy can accommodate the water security by creation of mechanisms to solve problems or to deal with complaints, the diplomacy can prevent the conflict by creation a joint monitoring committees, this is the request of Egypt and Sudan for the management of Al Nahada

³⁴⁹ Abu-Hussein, H. (2021). Analysis: Is environmental change driving political change in Iraq? BBC Monitoring. Retrieved on 18 June, 2021 from <https://monitoring.bbc.co.uk/>

³⁵⁰ Dr. Ihab Barghuthi - Head of PMU, Special Advisor to Minister, Ramallah, 2 September 2021.

dam The organic relationship between diplomacy and water diplomacy leads to the reduction of conflicts, and Palestinian diplomacy does not meet water diplomacy ³⁵¹.

The issue of water will be one of the most important challenges facing the Palestinian state, which forces the Palestinian political leadership to insist and adhere firmly to restore the Palestinian water rights usurped by the Israelis. The next Palestinian state will be born thirsty, and its veins may dry up early and die of thirst. ³⁵²

Many experts stress that in the next four decades, the rate of water consumption in all of historical Palestine will increase, until the demand for water becomes higher than the supply, (regardless of the political situation at the time), which means that the solution to the water crisis (currently and in the future) is to reach water tanks Underground water freely will not be enough, and it may mean postponing the problem for a few more years. Therefore, developing long-term water strategies is a very important issue for everyone who will live on this land, as these strategies combine just and radical political solutions on the one hand, and water conservation techniques, and on the moderation in its consumption, and techniques for reusing treated gray water on the other hand. ³⁵³

This paper argues that the search for alternatives does not nullify the right of the Palestinians to their full and undiminished water resources, and that adhering to these rights does not prevent the search for solutions and alternatives, even if the two parties reach equitable solutions in the future, as expectations indicate that after several decades

³⁵¹ Dr. Abed Rahman Tamimi, GM of the Palestinian Hydrology group, Ramallah, 1 September 2021.

³⁵² Aggestam, K. (2018). Depoliticisation, water, and environmental peacebuilding. In Routledge Handbook of Environmental Conflict and Peacebuilding (pp. 97-107). Routledge
[. https://doi.org/10.4324/9781315473772](https://doi.org/10.4324/9781315473772)

³⁵³ Food and Agriculture Organization. (2016). Collaboration programme Euphrates and Tigris
[. http://www.fao.org/family-farming/detail/en/c/445077/](http://www.fao.org/family-farming/detail/en/c/445077/)

the demand for water will begin to increase steadily until it becomes higher than the existing quantities. Therefore, planning for the future, and safeguarding the rights of future generations of water, requires us to be moderation in water consumption and the application of technologies that contribute to alleviating its depletion, our way of living and our way of thinking and planning for development.³⁵⁴

Water diplomacy plays an important role in achieving comprehensive peace, and diplomacy in the event of a reactivation. The acute water security challenges regarding conflict resolution over water and water rights, and the urgent need for effective transboundary water management calls for the creation of an argument to focus attention on the theories and practices of water diplomacy operations.³⁵⁵ and there a link between negotiations on water, peacekeeping, and development?

One of the main challenges of peacekeeping projects in any part of the world is how to manage the vital natural resource base such as fresh water as well as how to formulate policies in order to pursue a sustainable policy for growth and development.

4.1.1 Water Crisis in Palestine ³⁵⁶

Water sources in Palestine vary between surface and underground, where rain is one of the most important sources, and the period of its fall from October to April. Ground water is the main source of drinking water in Palestine, which is mainly formed from the intrusion of rain into the ground. The percentage of rain infiltrated into the ground is estimated at about 30% of the amount of rain. Palestine, like the countries of the region,

³⁵⁴ Food and Agriculture Organization. (2016). Collaboration programme Euphrates and Tigris . <http://www.fao.org/family-farming/detail/en/c/445077/>

³⁵⁵ Imad khleif- ministry of agriculture, Ramallah, 3 September 2021.

³⁵⁶ Aggestam, K. (2018). Depoliticisation, water, and environmental peacebuilding. In Routledge Handbook of Environmental Conflict and Peacebuilding (pp. 97-107). Routledge . <https://doi.org/10.4324/9781315473772>

is greatly affected by water crises, but it suffers from an additional problem that deepens the crisis, to the point of making it suffocating. by the grace of the water, or even by disposing of the minimum of their natural right to it; Which is supposed to be guaranteed by laws, international agreements, human rights organizations and peace treaties.

In his book "The Last Lip", German geologist Clemens Messerschmid describes the water crisis in Palestine as artificial, and says that it is a political matter par excellence. He stressed that Palestine is one of the countries that have good renewable water sources in the region. Where meteorological data indicate that in the past 150 years, the country has not witnessed a single year in which rain was trapped, and the average rainfall in Jerusalem, for example, was 564 mm per year, which is more than what falls in Berlin, and also that the rate of rain in Ramallah is more than in Paris.

In addition, the West Bank has an exceptionally high rate of groundwater recharge, and a low rate of runoff. This means that Palestine has a good stock of groundwater, but "Israel" prevents access to it. The expert, Messerschmid, says that no "deep" underground well has been drilled since the occupation of the West Bank in 1967, and what has been dug are some small wells that do not reach the main water basins in the ground. Even surface wells, "Israel" prevents them from drilling, and does not give permits for them³⁵⁷

The transitional period agreement in Oslo referred to the Israeli side's recognition of Palestinian water rights. From the text of the agreement: "Israel recognizes the water rights of the Palestinians in the West Bank, and those rights will be negotiated to reach a

³⁵⁷ Abu-Hussein, H. (2021). Analysis: Is environmental change driving political change in Iraq? BBC Monitoring. Retrieved on 18 June, 2021 from <https://monitoring.bbc.co.uk/>

settlement in the final status agreement.” However, the definition of these rights was postponed to final status negotiations.

The second article of the thirty-first paragraph of the Gaza-Jericho Agreement dealt with the issue of water, and specific powers over water were transferred to the Palestinian Authority, without the agreement dealing with water rights in detail. In the Second Oslo Agreement, Article 40 (Water and Sewage Agreement) included the basis on which plans for the water sector and projects would be developed during the transitional phase until a final settlement is reached in the final settlement negotiations.³⁵⁸

But the agreement is devoid of an explicit text that affirms the Palestinians’ control over the water, including the designated areas.” A”, What applies to the land? B” And “C” applied to lands.” A”. That is, it is necessary to obtain Israeli approval, which is always the answer in the negative, because the Joint Water Council is conditional on its unanimous decisions.

The Palestinian Authority established the “Water Authority” under Law No. 2 of 1996 to take over the restructuring of the water sector, management of water resources, implementation of water policies, and supervision and control.³⁵⁹

On water projects in the West Bank and Gaza Strip, follow up the implementation of Article 40, and exploit the water quantities allocated in the agreement to the Palestinians, and it was also entrusted with preparing for final status negotiations to

³⁵⁸ Food and Agriculture Organization. (2016). Collaboration programme Euphrates and Tigris . <http://www.fao.org/family-farming/detail/en/c/445077/>

³⁵⁹ Hofste, R.W., Reig, P., & Schleifer, L. (2019). 17 countries, home to one-quarter of the world's population, face extremely high water stress. World Resources Institute . <https://www.wri.org/insights/17-countries-home-one-quarter-worlds-population-face-extremely-high-water-stress>

ensure and maintain Palestinian water rights stipulated in the Interim Phase Agreement³⁶⁰

4.1.2 Israel, Confiscation Of Water ³⁶¹

The problem is not only that the agreements did not give the Palestinians their natural right to their water; In fact, in the fact that Israel does not abide even within those unfair minimum limits that the Palestinian side agreed to compulsively, in the hope of changing the situation and addressing the issue in the final-status negotiations, Israel, which before the Oslo Accord was plundering and controlling water and depriving the Palestinian population of it, has become after Oslo is doing That is, but under the heading of the Palestinian-Israeli partnership, and the international community has begun to accept these practices, or turn a blind eye to them, on the pretext that it wants the peace process to succeed. In comparison with the water situation in the West Bank, before and after Oslo, it is clear that things deteriorated further.³⁶²

Studies indicate that 85% of the water in the aquifer is controlled by Israel; Which is equivalent to "500-600 million cubic meters". In addition, 70% of the settlements in the West Bank are located on the eastern reservoir basin in the West Bank, and that 45% of these settlements are located on areas that are very sensitive to feeding the mountain

³⁶⁰ Abu-Hussein, H. (2021). Analysis: Is environmental change driving political change in Iraq? BBC Monitoring. Retrieved on 18 June, 2021 from <https://monitoring.bbc.co.uk/>

³⁶¹ Aggestam, K. (2018). Depoliticisation, water, and environmental peacebuilding. In Routledge Handbook of Environmental Conflict and Peacebuilding (pp. 97-107). Routledge . <https://doi.org/10.4324/9781315473772>

³⁶² Hofste, R.W., Reig, P., & Schleifer, L. (2019). 17 countries, home to one-quarter of the world's population, face extremely high water stress. World Resources Institute . <https://www.wri.org/insights/17-countries-home-one-quarter-worlds-population-face-extremely-high-water-stress>

reservoir in the West Bank, and these settlements unjustly monopolize a large proportion of the groundwater, and deprive Palestinian farmers of irrigate their lands.³⁶³

The problem began mainly when Israel annexed in 1948 most of the water-rich areas (outside the boundaries of the partition resolution), and after occupying the West Bank in 1967, Israel occupied the Syrian Baniyas River, which feeds the Jordan River, and the water-rich Golan Heights. In the same year, the Israeli military resolution No. (92) was issued.) to transfer the authority over the water resources to the military commander in the region, followed by Resolution (158), which prohibits the unauthorized construction of any water infrastructure, and the permit system prevented the drilling of any of the new wells in the Western Basin, or the drainage of springs, or the extension of Pipelines, or drilling rainwater harvesting wells, or even maintenance of existing wells.

Noting that Israel started its aggression on water from an early age. Since 1964, it has started to exploit the waters of the Jordan River Basin, without taking into account the rights of the countries participating in the river. According to international law "Johnston Plan 1955", the Palestinians have the right to about 250 million cubic meters of the Jordan River.³⁶⁴

In fact, what they get is almost nothing, from which Israel pumps about 700 million cubic meters annually. It also drained Lake Hula and diverted the river's water through the so-called "national water carrier" to the Negev desert, under the pretext of greening the desert; In fact, it was confiscating millions of dunums from its Palestinian owners under the pretext of making the desert bloom; Knowing that 97% of the Negev desert

³⁶³ Aggestam, K. (2018). Depoliticisation, water, and environmental peacebuilding. In Routledge Handbook of Environmental Conflict and Peacebuilding (pp. 97-107). Routledge . <https://doi.org/10.4324/9781315473772>

³⁶⁴ Food and Agriculture Organization. (2016). Collaboration programme Euphrates and Tigris . <http://www.fao.org/family-farming/detail/en/c/445077/>

remained uncultivated, and even today it still prevents Palestinians from cultivating their lands, and destroys thousands of cultivated dunums annually on the pretext that it belongs to an unrecognized Bedouin population.³⁶⁵

The Israeli occupation, after the 1967 war, established many Israeli settlements on areas of Palestinian lands in the West Bank and Gaza Strip, which are characterized by abundant and fresh groundwater, thus depriving the residents of access to water.³⁶⁶ to their water sources.

According to the recommendations of the World Health Organization, the individual needs about 100 liters of drinking water per day, provided that it is available and at reasonable prices. While the Palestinian citizen gets only a percentage ranging between 30~60 liters per day depending on the region and season, and in some areas he gets 100 liters, while the settler gets double this percentage. According to estimates by the Palestinian Central Bureau of Statistics, the average daily consumption per capita in Israel has reached 353 liters per day, and this percentage increases to reach about 900 liters per day for the Israeli settler in the West Bank.

In the Gaza Strip, the quantity of potable water, according to the specifications of the World Health Organization, has decreased in a way that is threatening, for several reasons behind the Israeli occupation; Where Israel stopped the methods of washing the aquifer, by placing dams on the northeastern areas, to prevent the arrival of water from the West Bank, and to intercept the groundwater coming to the Strip, and to drain it before it reaches the eastern Gaza Strip, by digging high-efficiency wells to attract water

³⁶⁵ Hofste, R.W., Reig, P., & Schleifer, L. (2019). 17 countries, home to one-quarter of the world's population, face extremely high water stress. World Resources Institute
<https://www.wri.org/insights/17-countries-home-one-quarter-worlds-population-face-extremely-high-water-stress>

³⁶⁶ Abu-Hussein, H. (2021). Analysis: Is environmental change driving political change in Iraq? BBC Monitoring. Retrieved on 18 June, 2021 from
<https://monitoring.bbc.co.uk/>

to it. It also stopped the flow of Wadi Gaza completely due to the increase in the population, which created a problem in the provision of quantity and good quality of water.³⁶⁷

The second reason for lowering the groundwater level is the lack of rain, and the scarcity of land that allows groundwater to be stored in it, due to the increase in residential facilities on it.³⁶⁸

In the context of the increasing consumption of water in the Gaza Strip, and the unevenness of the water supply from the reservoir with the consumer from it, this increase is not matched by the development of water sources, in addition to the Israeli control over the groundwater resources in all areas. Experts expect that all of the water in the Gaza Strip will become unfit for human use by 2020, and a report issued by the United Nations stated that the residents of the Gaza Strip are on the brink of thirst, as the underground water resources on which 1.7 million Palestinians depend for drinking and agriculture could collapse as a result of Years of overuse and pollution.

The report indicated that salinity levels for most parts of the Gaza Strip are now above the World Health Organization's indicative limits of 250 milligrams per liter, meaning that "the level of pollution has reached such a point that Gaza children are at risk of nitrate poisoning."

Regarding the pollution of groundwater in Gaza, the German expert "Messerschmid" denies the saying that it is the excessive pumping of water by the Palestinians, which led to the intrusion of sea water into it and made it unusable, stressing that the maps in

³⁶⁷ Aggestam, K. (2018). Depoliticisation, water, and environmental peacebuilding. In Routledge Handbook of Environmental Conflict and Peacebuilding (pp. 97-107). Routledge
. <https://doi.org/10.4324/9781315473772>

³⁶⁸ Food and Agriculture Organization. (2016). Collaboration programme Euphrates and Tigris
. <http://www.fao.org/family-farming/detail/en/c/445077/>

the past and the present show that the flow of salty water mainly into Gaza comes from the southeast; That is, because of Israel and not from sea water, as Israel is dangerously over-pumping groundwater.³⁶⁹

4.1.3 The Most Prominent Headlines of the Water Crisis in Palestine³⁷⁰

1. Palestine suffers from a scarcity of natural water sources such as fresh rivers and lakes. The problem in the West Bank is less severe than in Gaza. The reasons for this relate to preventing access to groundwater aquifers; The problem in the Gaza Strip is more serious, as the Gaza Strip is the most densely populated in the world, and comes second after Kuwait in the list of countries most deprived of water sources.
2. Water imbalance in the Palestinian territories, meaning that the amount of water consumed and drained is “130 million cubic meters” compared to “80 million cubic meters” of annual feeding water, meaning that the annual rate of decrease is 2.5 percent.³⁷¹
3. Israel places many restrictions on the Palestinians' use of water, for example restricting the use of agricultural artesian wells, and not granting licenses to dig new wells. In cases of (rare) approval to dig wells for the Palestinians, it obliges them not to exceed 140 meters in depth. Israel deprives Palestinians of using the waters of the Jordan River and impedes water supplies to Palestinian municipalities. In return, it

³⁶⁹ Hofste, R.W., Reig, P., & Schleifer, L. (2019). 17 countries, home to one-quarter of the world's population, face extremely high water stress. World Resources Institute
<https://www.wri.org/insights/17-countries-home-one-quarter-worlds-population-face-extremely-high-water-stress>

³⁷⁰ Abu-Hussein, H. (2021). Analysis: Is environmental change driving political change in Iraq? BBC Monitoring. Retrieved on 18 June, 2021 from
<https://monitoring.bbc.co.uk/>

³⁷¹ Aggestam, K. (2018). Depoliticisation, water, and environmental peacebuilding. In Routledge Handbook of Environmental Conflict and Peacebuilding (pp. 97-107). Routledge
<https://doi.org/10.4324/9781315473772>

allows the settlements to dig agricultural wells without any restrictions. Where settlers control 40 wells producing 44 million cubic meters.

4. Israel is destroying the existing water facilities, including ponds, basins and wells, under the pretext of not having a permit, especially those located in designated areas C. In 2002, water facilities worth seven million dollars were destroyed, and in the last five years alone, Israel carried out 100 demolitions of water facilities in the West Bank, including 44 reservoirs, 5 springs, 28 wells, and one pipeline. In most cases, they did not provide any justifications. ³⁷²
5. Violation of what was agreed upon in Oslo, where the volume of the underground water reservoir is “734 million cubic meters” and the Palestinians’ share of it, according to the Oslo Agreement, is “235 million cubic meters,” or 32% of the amount of water, and what the Palestinians take does not exceed 130 million meters. Cube. Also, the Israelis did not fulfill what was agreed upon regarding the Palestinians' access to additional quantities of water from the eastern basin, estimated at about 80 million cubic meters per year.
6. An unfair imbalance between consumption rates between Palestinians and Israelis; The average Palestinian per capita consumption ranges from 60~100 liters compared to 350 liters for the Israeli, and double this number for the settlers.
7. Israel constantly refuses to talk about the western basin, which includes a large and high-quality fresh water reserve, capable of pumping 400 million cubic meters annually.

³⁷² Food and Agriculture Organization. (2016). Collaboration programme Euphrates and Tigris . <http://www.fao.org/family-farming/detail/en/c/445077/>

8. The Israeli Water Company (Mekorot) withdraws large quantities of aquifers from the West Bank, or from wells located directly on the armistice line (without charge) and then sells this water again to West Bank municipalities.
9. There is often a severe shortage of water for Palestinians, especially in the summer, which pushes citizens to buy water from water sellers in tankers, and this increases the burdens of life and economic costs, especially since most of them are from marginalized and weak areas. The reason for this is that the Israeli company cuts off the water from the Palestinians and gives it to the Israelis, because Israel uses water as a tool for pressure, blackmail and collective punishment.
10. The water networks in the West Bank and Gaza suffer from wear and tear, as a result of their old age, and the failure to perform maintenance operations in the required manner, and this leads to a loss of 38% of water, which is lost as a result of leakage from pipes before it reaches the citizen.³⁷³
11. There are about 200 villages and residential communities that do not have water networks at all in all the governorates of the country, whose population is estimated at more than fifty thousand people. People in these areas depend on local spring water, home wells and expensive tanker water. The average per capita consumption in those areas is the lowest at 30 liters, a percentage equivalent to the recommendations of the Red Cross in case of emergency. The classified areas area C), It is one of the poorest Palestinian areas for water projects, as a result of the Israeli control over it.
12. The construction of the apartheid wall led to the confiscation of many water wells, and deprived the Palestinians of an important source of groundwater. Palestinians

³⁷³ Food and Agriculture Organization. (2016). Collaboration programme Euphrates and Tigris . <http://www.fao.org/family-farming/detail/en/c/445077/>

lose approximately 10 million cubic meters of water annually behind the wall. In the long run, this leads to the separation of Palestinians from their areas of future production along the lands swallowed by the wall, which are key areas of potential additional water in the West Bank, which may contain approximately 90 million cubic meters of potential additional water, so that the 10 million cubic meters that Existing wells lose marginal.³⁷⁴

13. When donor countries submit projects that contribute to solving the water crisis, these projects are stopped shortly after their start due to Israeli obstacles, and donor countries do not exert any pressure against Israel, and sometimes even collude with it; Which means they take responsibility for what happens. Donor countries' money is spent on water projects with purely technical interventions, such as establishing networks, reservoirs, and household collection wells, while the Palestinians need to increase access to groundwater, which means that they do not seek to address the root political causes, but rather focus on formal projects designed to suit Israeli desires.

During the negotiations, Israel presented incorrect numbers in terms of the capacity of the groundwater basins and the maximum allowed in each basin, as the numbers were manipulated, especially in the eastern and western basins, which served the Israeli interest in naming the basins: the northeastern and western with closed basins, and not allowing the drilling of any Palestinian wells. over there.

The percentage of salt in the waters of the Jordan River reached five thousand parts per million, after it did not exceed 600 parts in 1925. The percentage of chloride increased

³⁷⁴ Aggestam, K. (2018). Depoliticisation, water, and environmental peacebuilding. In Routledge Handbook of Environmental Conflict and Peacebuilding (pp. 97-107). Routledge . <https://doi.org/10.4324/9781315473772>

to 1365 mg per liter in the Jericho area during the past twenty years, after it was 24 mg. In Gaza, the levels of salinity in groundwater reached levels above the limits permitted by the World Health Organization, which are set at 250 milligrams per liter

4.1.4 The Role Of Water Diplomacy In The Face Of Escalating Water Crises

Water security has been described as “strong access to a good quantity and nature of water for well-being, advocacy and creativity, along with a satisfactory degree of water-related risk”, in the same way that the chains of water security brought about by environmental change can. Direct impact on human security and their jobs. Earth affects all parts of human security from food shortages to catastrophic events. The repercussions of natural corruption are multidimensional. In addition, the natural change is evident in different regions of the world. Water diplomacy can be described as the use of restorative tools for existing or developing contradictions and clashes over shared water assets to understand or mitigate those related to participation, territorial integrity, and harmony³⁷⁵

Water diplomacy is related to the application of restorative rather than specialized tools. Discretionary tools for water assessment may include exchanges, competition goal systems, foundations for meeting stages, and consolidation of joint truth-discovery missions. Specialized tools, for example, building extensive bowl management plans or shared monitoring systems are not part of water prowess. Whereas political and niche tools often expand upon each other and can be legitimately linked³⁷⁶

³⁷⁵ Hazem Al-Nasser, Future Needs in Industry and Drinking, the third Jordanian scientific week under the slogan “The Land towards Optimal Use”, Volume 3, Scientific Papers, Amman, p. 59.

³⁷⁶ Munther Khaddam, Arab Water Security and Challenges, Center for Arab Unity Studies, Beirut 2001, p. 35.

4.1.5 Diplomacy Is Jordan's Choice To Confront The Escalating Water Crises

Fears are growing of threats to water security in Jordan and many countries in the Middle East, amid the challenges of interruption of water supplies that surround the region from all sides, and water crises that escalate in more than one country in the region. While water constitutes a catalyst and a potential factor for instability in the already semi-arid Middle East, it is necessary to take all diplomatic means, especially among the riparian countries in the shared water basins, as a lifeline to overcome any potential crises. While the political crises that have surrounded the region in general and Jordan in particular are still imposing themselves on the possibility of completing the necessary water dialogues, within the shared water basins, the water file has become the most prominent and important issue at the local and regional levels. This challenge, whose features have become a difficult reality and Jordanians are trying to coexist with, is intensifying amid the factors of climate change that have had heavy repercussions on the Kingdom, especially with regard to the rise in temperatures and fluctuations in rainfall, which during the last season decreased by 60% from the long-term annual average of 8196.8 million. While this paradox was recorded, it may seem at first glance simple, groundwater reserves are declining globally, regionally and locally due to the increasing reliance on them to meet water needs due to population growth, which has become a worrying factor for Jordan specifically as a result of the Syrian refugee crisis and the high demand, and during the meeting The last royal with the US administration, received positive indications about US President Joe Biden's support of the United States to serve the agreement on providing fresh water to Jordan, at a time when consultation, defining broad lines and drawing a common road map between the

riparian countries is no longer an option, but rather an urgent need for the benefit of various parties involved³⁷⁷.

Today, after the water crises in the region between Egypt, Sudan and Ethiopia, and in other regions such as Iran, which witnessed popular protests against the lack of clean water following drought, low water levels and poor water management, the water issue has turned into an existential issue whose price is to continue on the planet of humanity or not, which necessitates that Jordan gave priority to this issue. It is expected that Jordan's urgent need for water will be 1,350 million cubic meters annually by 2025, with a per capita share of about 120 cubic meters annually, according to academic experts. In terms of water resources in the Middle East and North Africa region, 11 riparian countries share the Nile, along with the Tigris-Euphrates between Turkey, Syria and Iraq, the Yarmouk river between Syria, Jordan and Israel, and the Jordan river between Lebanon, Syria, Jordan and Palestine, and Israel, which it applies to large transboundary aquifers, such as the Disi aquifer between Jordan and in the water sector Jordanian-Syrian relations following the political gifts that swept both the last period, "has not been reflected until today on Jordan's water share from the Yarmouk basin," stressing the importance of intensifying official efforts regarding the necessity of "acquiring the side." The Jordanians are entitled to their water rights from the waters of the Al-Wahda dam, which has a 110 million cubic meters, "or to achieve the water yield expected from it according to the joint agreement with Syria." The country's status report related to the water sector for the year 2020, countries, and work on the use of current resources³⁷⁸

³⁷⁷ Muhammad Ahmed Rashid, *Water Population Growth in the Hashemite Kingdom of Jordan: Reality and Future Prospects, 1979-2025*, published PhD thesis, Damascus University, 2009, p. 35.

³⁷⁸ Muhammad Ahmed Rashid, *Water Population Growth in the Hashemite Kingdom of Jordan: Reality and Future Prospects, 1979-2025*, published PhD thesis, Damascus University, 2009, p. 35.

4.1.6 Palestine's Position on the Final Reports of the Red Sea - Dead Sea Water Conveyance Study PProgra³⁷⁹

Palestine's position on issues that were addressed or should have been addressed in the final reports is presented below. Palestine carefully studied the reports and their findings and decided its position on whether to participate and support the implementation of the Project proposed under the Study, a part or a variation thereof, or an alternative thereto, taking into consideration the overall feasibility, desirability, possible alternatives, and foremost, Palestinian rights and interests.³⁸⁰

1. The Study Program was a major and complex undertaking to study the various aspects of a Red Sea - Dead Sea Water Conveyance, including the economic and engineering feasibility, social and environmental impact, and possible alternatives.
2. Notwithstanding the detailed study of these aspects, the final reports of the Study Program fail to address important issues related to the study area which have direct bearing to the three objectives of the proposed project: 1. Saving the Dead Sea from degradation 2. Providing additional potable water to the region 3. Building a symbol of peace and cooperation.
3. Namely, the studies put little emphasis on the root causes for the degradation of the Dead Sea; how these causes could be addressed as part of the effort to restore the Dead Sea; the relation of the Dead Sea to the Jordan River Basin, of which it is an integral part; the legal status of the Dead Sea, the rights of the riparian parties to it, and the legal framework governing relations between the riparian parties

³⁷⁹ State of Palestine (2020), Palestine's Position on the Final Reports of the Red Sea - Dead Sea Water Conveyance Study Pprogra· www.pwa.ps.

³⁸⁰ State of Palestine (2020), Palestine's Position on the Final Reports of the Red Sea - Dead Sea Water Conveyance Study Pprogra· www.pwa.ps.

themselves and vis-à-vis the Dead Sea and the Jordan River Basin; the current inequitable utilization, control and access to water resources in general and the Dead Sea and the Jordan River in particular, and denial of Palestinian rights in this regard; and the ability of each of the riparian countries to contribute to restoring the Dead Sea considering water availability therein, and access and control over water resources, or lack thereof in the case of Palestine due to Israel's occupation.

Causes for the Dead Sea Degradation ³⁸¹:

4. The Study Program lists two main causes for the degradation and decline of the Dead Sea. The first is diversion of flows from the Jordan River, and the second abstraction of Dead Sea water by chemical industries. However, the reports fail to address who is responsible for these measures and fail to determine whether the full or partial reversal of these measures could contribute to stabilizing or restoring the Dead Sea.
5. Assigning such responsibility is not a matter of historical record, but has a direct bearing on the current status of the Dead Sea, its continued decline, and the efforts and options for stabilizing or restoring it.
6. Furthermore, it has a direct bearing on the responsibilities and obligations of the riparian parties to each other and to the Dead Sea. In particular, Palestine did not contribute to the degradation of the Dead Sea and does not directly utilize water from the Dead Sea for activities such as mineral extraction. Instead, Palestine was and remains subject to considerable harm resulting from the diversion of the flows from the Jordan River Basin by other riparians, as well as others' use of the Dead

³⁸¹ State of Palestine (2020), Palestine's Position on the Final Reports of the Red Sea - Dead Sea Water Conveyance Study Program, www.pwa.ps.

Sea's water resources that further draw down the body of water. Moreover, Palestine will continue to suffer from the prior and ongoing degradation of the Dead Sea when its control over its rightful part of the Dead Sea is restored.

The Legal Status of the Dead Sea, its relation to the Jordan River and legal obligations³⁸²:

7. The Studies fail to address the legal status of the Dead Sea under international law. A legal analysis is essential for the construction of any project, not least a mega project as the one at the center of the Study Program. Therefore, a legal analysis into the status of the Dead Sea and the rights of riparian parties should have been an integral part of the Studies, underpinning the proposed project and its governance structure.
8. The Dead Sea is a lake that is an integral part of the Jordan River system. The lower Jordan River receives volumes from the tributaries comprising the upper Jordan River system and its flows discharge into the Dead Sea, which is the terminus of that river. As such, it is part of an international watercourse, as that term is defined in the 1997 United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses (UN Convention), which reflects customary international law.
9. The Jordan River is a watercourse that flows into a common terminus, the Dead Sea. Parts of it are situated in different States: each of its principal headwaters, the Hasbani, the Dan and the Baniyas, rises in a different state (Lebanon, Israel and

³⁸² State of Palestine (2020), Palestine's Position on the Final Reports of the Red Sea - Dead Sea Water Conveyance Study Program, www.pwa.ps.

Syria, respectively), and the Lower Jordan River, below Lake Tiberias, forms a portion of the border between Israel and Jordan, and between Palestine and Jordan, and thus parts of it are “situated” in these countries. These five countries are all riparian to the Jordan River.

10. The Dead Sea, which is fed by the Jordan River, is in its own right an international watercourse since “parts of it are situated in different States” – namely, Jordan, Israel and Palestine, where the border between the latter two countries is delineated by the 1949 Armistice Line, also known as the Green Line.
11. Considering that the Jordan River and the Dead Sea constitute an integral part of the Jordan River system and part of an international watercourse, their use is governed by the law of the non-navigational uses of international watercourses. This branch of international law has been codified by the International Law Association (ILA) in the 1966 Helsinki Rules on the Waters of International Rivers; in the ILA’s 2004 Berlin Rules; and by the International Law Commission (ILC) in the 1994 final report of the ILC on the Law of the Non-Navigational Uses of International Watercourses. It is also reflected in the 1997 United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses, which the International Court of Justice has recognized in the *Gabcikovo-Nagymaros Project case* as embodying fundamental principles of customary international law in the field.
12. The most basic principles of customary international water law confided in the UN Convention are: (1) equitable and reasonable utilization; (2) prevention of significant harm; and (3) prior notification and consultation regarding proposed new uses.

13. Each of the three riparian's specifically sharing the Dead Sea are under an obligation to use that water body, and its resources, in a manner that is equitable and reasonable vis-à-vis the other riparian's (Article 5 of the UN Convention); to prevent the causing of significant harm to either of the other riparian's (Article 7 of the UN Convention); and to provide prior notification of any planned use that might significantly adversely affect the other riparian's (Articles 11-19 of the UN Convention).
14. Due its unique characteristics, the Dead Sea is also a shared trans-boundary natural resource, in addition to being an international water course. Therefore, the 1978 United Nations Environment Program (UNEP) Environmental Law Guidelines and Principles on Shared Natural Resource, which were recommended by the U.N. General Assembly in its resolution 34/186 of 18 December 1979 as guidelines for bilateral and multilateral conventions regarding natural resources, are also applicable to the Dead Sea. The UNEP Guidelines contain 15 principles, many of which are applicable to the sharing of the resources of the Dead Sea by Jordan, Israel and Palestine.
15. The main principle that is directly applicable to the Dead Sea is Principle 1, which provides for the "harmonious utilization of natural resources shared by two or more States" and for cooperation "consistent with the concept of equitable utilization of shared natural resources" with a view to "controlling, preventing, reducing or eliminating adverse environmental effects which may result from the utilization of such resources". Principle 1 of the UNEP Guidelines also provides that "such co-operation is to take place on an equal footing and taking into account the sovereignty, rights and interests of the States concerned".

16. Under this principle, states have to cooperate in the ways specified with regard to the utilization of such resources, in addition to the obligation under international water law. Thus any measure by a riparian that can do harm to the Dead Sea and the rights of other riparian to it or their parts of it, has to be coordinated and agreed between all riparian parties. Clearly the disposal of reject brine from a desalination plant has a very high potential of damaging the Dead Sea, as indicated, among others, in the Dead Sea Study and the Environmental and Social Impact Study. Hence it requires the approval and participation of all Riparian countries
17. The Dead Sea also has special characteristics, chiefly, its high level of salinity. This feature makes the Dead Sea more capable than an ordinary freshwater lake of receiving the highly saline discharges of desalination plants. Depositing saline water into a system that is already highly saline does less harm than if the “waste” salts from desalination plants were deposited into a freshwater stream or lake. Therefore, the assimilative or absorptive capacity of the Dead Sea, in respect of effluent from desalination plants, is a resource that is shared by the three riparian states. Each of the riparian countries has a basic right to an equitable and reasonable share of this capacity. Moreover, use of this capacity by one of the riparian countries would require the agreement of the other two, in view of the fact that brine effluent from desalination deposited into the lake will inevitably spread to the territories of all three riparian countries’.

Need for potable water and the current inequitable utilization of trans-boundary water resources:³⁸³

18. The Studies emphasize the need for producing additional potable water to the region considering regional water deficit. However, in doing so, it groups the three Beneficiary Countries (Palestine, Jordan and Israel) together, masking the reality on the ground, differences between them, and most importantly the highly inequitable water situation in each of these riparian countries due to disproportionate and inequitable use of trans-boundary resources, in particular between Israel and Palestine. In the case of Palestine, the implicit assumption is that water deficit is due to its semi-arid climate disregarding the denial of Palestinian water rights by Israel which is, by and large, the reason for Palestinian water shortages. By disregarding this reality, the Studies were able to present the proposed Project, or a variation or part thereof, as the solution for water shortages in the three Beneficiary Countries, including Palestine. This sidesteps the need for addressing the current inequitable utilization of trans-boundary water resources by Israel and the denial of Palestine's water rights as a primary means of resolving Palestinian water deficits, prior to or in tandem to cooperation in regional projects aimed at producing new water.
19. Moreover, the Studies focus on the water situation in Jordan and the Project as an option for resolving that deficit. The water deficit in Jordan is chronic and should rightly be addressed and resolved. However, the Studies should have also put emphasis on the medium- and long-term water demand in Palestine, and the

³⁸³ State of Palestine (2020), Palestine's Position on the Final Reports of the Red Sea - Dead Sea Water Conveyance Study Program, www.pwa.ps.

feasibility and suitability, or lack thereof, of the proposed Project for resolving the current water deficit and meeting future demands.

20. In a related matter, the Studies fail to identify the particular Israeli demand centers which will benefit from the proposed Project. In this regard, it should have been made clear in the Studies, that Israeli settlements in the occupied Palestinian territory, which are illegal under international law, cannot be served or benefit from the proposed Project under any circumstances. In particular, considering that one of the objectives of the proposed project is to foster cooperation and build a symbol of peace.
21. The studies also fail to address socio economic issues, in particular the affordability of potable water from the proposed project to the Palestinian population, following decades of occupation.

Pilot or Prototype Project: ³⁸⁴

22. The section concerning the pilot or prototype project in the Feasibility Study leaves many issues unaddressed in a manner that does not enable clear conclusions and recommendations. Some of the issues unaddressed include: how will the brine discharged to the Dead Sea from the Pilot be isolated, if at all. What will become of it? Will it be mixed with Dead Sea water? And if so, what are the consequences of such mixing of waters?
23. Moreover, the role of all riparian countries in such a prototype project is not clear; and neither is the setup of the project, its governance, and benefits to the riparian

³⁸⁴ State of Palestine (2020), Palestine's Position on the Final Reports of the Red Sea - Dead Sea Water Conveyance Study Program, www.pwa.ps.

countries. Other fundamental issues that remain vague include the operation period, the future of such a pilot, is it temporary or permanent and what will become of it if the general project is not implemented. Moreover, the Feasibility Study fails to adequately address other, less expensive and permanent alternatives, to examining the impact of mixing brine with Dead Sea. In particular, since the declared aim of the pilot project is primarily to examine the impact on the Dead Sea, and not to produce potable water.

24. Lastly, it should have been made clear, that any pilot project, and for that matter any project which will discharge water to the Dead Sea, must be approved by all three riparian countries of the Dead Sea, if not further following from satisfactory prior notification of all riparians to the Jordan River Basin of which the Dead Sea is an integral part.

Tangible and intangible benefits of the project other than potable water:³⁸⁵

25. Some of the assumptions made in the Feasibility Study with regards to the tangible and intangible benefits of the proposed project are vague. In particular, it is not clear whether the baseline for calculating these economic benefits fully takes into consideration the fact of Israel's occupation of Palestinian territory and in particular the denial of access and control over Palestine's share of the Dead Sea. For example, in examining benefits for tourism, the current reality under which Palestinians are denied access to the Dead Sea and development of tourism facilities is not analyzed or taken into consideration. Similarly, it is not clear how the projected benefits take into consideration Israeli restrictions and occupation and

³⁸⁵ State of Palestine (2020), Palestine's Position on the Final Reports of the Red Sea - Dead Sea Water Conveyance Study Program, www.pwa.ps.

whether such benefits to Palestine can be derived from the removal of these factors alone without the proposed Project.

26. The Feasibility Study attributes the largest benefits from the proposed project to intangibles. These projected benefits are not substantiated, putting into doubt the economic feasibility of the proposed project as a whole. In particular, a significant part of the intangible benefits is attributed to peaceful cooperation and the peace dividend. However, the benefits of such cooperation should not have been assumed as a given under the study. Rather it should have been made clear that they are questionable unless Israeli occupation of Palestinian territory, and the denial of the Palestinian right to self-determination, come to an end with the realization of an independent Palestinian state.

Possible alternatives³⁸⁶

27. The Study of Alternatives (SoA) addresses a wide range of alternatives. However, and despite the fact that Palestine is a full Beneficiary Party and a riparian to the Jordan River Basin, some of the alternatives discussed in the SoA mainly address Jordan and Israel while excluding Palestine, as well as other riparian's to the Jordan River, Lebanon and Syria. This is particularly apparent with regards to the supply of potable water to the region, where the focus is often on the supply of potable water to Amman. The supply of potable water to Palestine at affordable costs under any alternative should have also been addressed from various aspects. Moreover, the current and future access to and management of Palestine's water resources is not included in the analysis. Such inclusion is important for a comprehensive

³⁸⁶ State of Palestine (2020), Palestine's Position on the Final Reports of the Red Sea - Dead Sea Water Conveyance Study Pprogra' www.pwa.ps.

analysis and examination of the various alternatives and for determining which of them meets the declared objectives of the study program, in particular the supply of potable water.

28. The third objective of the Study Program, building a symbol of peace and cooperation, should have been given more consideration in examining the various alternatives included in the SoA. In particular, since several of the options (mainly those which are located within the territories of all three Beneficiary Parties as opposed to only one or two of them) have more potential of meeting the above objective than other alternatives.
29. Moreover, the concept of “virtual water” was not fully addressed in the SoA. This concept is highly relevant for discussing and evaluating alternatives as it may
30. contribute to the overall water balance by replacing the use of internal water sources.

4.2 Regional Water Diplomacy³⁸⁷

The relationship between water diplomacy and water security, both are interlinked. Security is a vast terminology on which hydro diplomacy plays major role on the following:

It enhances security within the country, having different players reach consensus on within-country management, allocation and benefit sharing, within the basin addressing riparian needs and basin wise management. Usually diplomacy is used for water security. Diplomacy sets the rules and standards for water management and allocation,

³⁸⁷ Abu-Hussein, H. (2021). Analysis: Is environmental change driving political change in Iraq? BBC Monitoring. Retrieved on 18 June, 2021 from <https://monitoring.bbc.co.uk/>

benefit sharing and conflict resolution. Recently decision makers are getting the attention to be educated more on water diplomacy addressing risks and threats on national and wide basin security issues with its impact on stability and demand meeting. And there a link between negotiations on water, peacekeeping, and development, especially when it comes to transboundary water. Water basin mismanagement and control lead to conflict and instability. Development without agreement increase tension , reduce benefit sharing and lead to catastrophic situations, example, lack of wide basin agreement on Jordan river basin due to occupation of hydro hegemon country led to dead sea shrinkage, long historic political conflict with Syria and Lebanon as Israel maintain occupation of Golan highest for water and security issues, deprived Palestinians from their water rights and access to the basin, unilateral development led to war as the JRB diversion. Another example is the tension on tiger and Euphrates as Turkey developed massive dams (GAP and Aliso dam), created instability in Iraq, threatened food security and internal migration. Development and construction of the Ethiopian renaissance dam and its operation with no consensus with Sudan and Egypt brought huge tension and possible war with Sudan and Egypt if no agreement between the three countries.in conclusion, while a country can proceed with unilateral development in the international basin, such development will lead to conflict and will undermine great benefits of concerned parties specially on nexus matters³⁸⁸.

After these territorial waters, what is known as contiguous waters begins It stretches 12 miles and over which states exercise less sovereignty and apply their own laws on customs, tax, immigration and pollution control. In the third stage, comes the exclusive economic waters It is another area over which states do not exercise full sovereignty,

³⁸⁸ Dr. Shaddad Atili - former minister of Palestinian Water Authority, Ramallah, 4 September 2021.

but they have the right to exploit wealth and resources, and it extends to a maximum of two hundred miles from the base line. Countries have the right to exploit marine resources, fishing, exploration and extraction of oil and minerals, and can be divided based on the mid-line between the riparian countries. What falls outside these waters, international waters, is considered a right for all countries that have rights, and the law of the sea is regulated. Territorial waters water areas seas and the oceans that owns a country What is the right of sovereignty? These rights include: Control of hunting, Navigation and shipping, in addition to investing marine resources and exploiting the natural water resources found in them. Most of the 120 countries that have borders on the seas have defined seas between 12 nautical miles to several nautical miles the territorial waters of their countries.

The territorial waters of a country include: its internal waters and its territorial seas. Inland waters include: lakes, rivers, and waters in coastal areas and bays. The territorial sea of a country is located beyond its shore, or beyond the borders of its internal waters. Also, the territorial waters are subject to international border agreements so that each country has a number of miles away from its shores and these miles are under the sovereignty of the state and these miles are specific and known according to the agreements³⁸⁹

Blue Peace, the international organization working in the field of reducing conflicts over water in the world, defines water diplomacy, as the art or practice of using water as a tool for managing international relations. Water diplomacy can be bilateral, between two parties involved, or involve the participation of a third party. Throughout the ages,

³⁸⁹ Abu-Hussein, H. (2021). Analysis: Is environmental change driving political change in Iraq? BBC Monitoring. Retrieved on 18 June, 2021 from <https://monitoring.bbc.co.uk/>

water has rarely been tagged as the direct cause of armed conflict, and there is little evidence of formal water wars. However, transboundary water basins are often located in areas characterized by interstate tensions or armed conflict. Conflicts may not arise in the form of A direct result of water issues, but direct confrontation over water and the use of water resources as a tactic of intimidation can lead to wider conflicts. Similarly, water shortages negatively affect international peace and security Drought in a region can lead to higher food prices and deteriorating social conditions Water can and does fundamentally affect the landscape of domestic, regional and international relations, exacerbating tensions and provoking conflict. Population growth has led Worldwide, industrialization and expanding levels of urbanization are increasing the demand for water beyond the available quantities. Combined with water abuse and waste, the increasing demand for water has left more than half of the world's population facing “extremely high” or “high” levels of water stress. As infection and death rates from the coronavirus continue to rise, the pandemic highlights the urgency of addressing rising water insecurity around the world. Big cities are close to depleting their water resources. South Africa narrowly avoided such a "zero-day" scenario in 2018, while the Indian city of Chennai saw most of its reservoirs dry up. From Havana to São Paulo, cities across Latin America are struggling to provide a steady supply of clean water to citizens. Meanwhile, Ethiopia, Egypt and Sudan are clashing over the Blue Nile Dam project. These water crises will become more and more destructive as climate change exacerbates existing water stress. With more than two billion people worldwide lacking safe drinking water and doubling that number without safely managed sanitation, reducing water stress and scarcity has made it a priority for the United Nations this decade, when water crises will be one of the top five threats to security. Globally due to

the impact of its wide spread, as is the case with food security, agriculture, sanitation and health.

Thus, water diplomacy - the process of negotiating sustainable water sharing, management, and governance practices for transboundary resources - is vital to promoting a safer water world and reducing regional instability. Water has long been a source of international conflict and cooperation. Transboundary water basins cover nearly half of the world's land area and 153 countries share rivers, lakes, and aquifers. While countries are likely to cooperate more when it comes to shared water resources, some evidence points to a possible recent rise in water-based conflict. One study, published in the *Journal of Global Environmental Change* in 2018, identified five basins as "hotspots" for future water-related conflicts: The Nile, the Ganges/Brahmaputra, the Indus, the Tigris/Euphrates, and the Colorado. Water diplomacy can be an effective tool in promoting cooperation between countries with shared water resources. Water-sharing agreement mechanisms, such as management meetings and prior notification of projects that may affect shared waters, require constant communication between states. By facilitating more dialogue between states at all levels—government, private industry, and civil society—water diplomacy can forge deeper connections between people and among experts. In addition, water diplomacy agreements can serve as negotiating frameworks that can be used to address other potential conflicts and as a confidence-building measure between states, allowing them to continue even in the presence of other regional tensions. For example, the 1960 Indus Waters Treaty between India and Pakistan remained in force despite the strained relations between the two countries.

Water diplomacy can also support sustainable development and resilience across societies by integrating multi-level stakeholders and developing sustainable shared water practices and technologies. Addressing water stress and its impact in an appropriate form requires states to recognize the interdependence of water, energy, food, and environmental management. The United Nations even links improved water cooperation to the achievement of each of the 2030 Sustainable Development Goals.

Despite their benefits, 40 percent of transboundary water basins worldwide lack operational water-sharing agreements, and transnational aquifer agreements remain scarce. As global water stress worsens, priority must be given to encouraging and facilitating water-sharing agreements as part of the international sustainable development and climate goals. With the global water crisis expected to worsen, water diplomacy can serve as a tool for promoting national and regional stability and sustainable development. Water diplomacy opens the door to greater cooperation between states beyond sharing water. The multi-stakeholder dialogue built through water diplomacy can help societies create durable and sustainable management and governance systems. Investing in and promoting water diplomacy now can ease the coming political and environmental pressure as the climate crisis worsens by building resilience within societies and strengthening systemic cooperation to meet the challenges of tomorrow.

4.2.1 Transboundary Water Cooperation in the Middle East

The Middle East and North Africa region includes 12 of the 17 countries suffering from water shortages in the world, and water scarcity leads to further consequences in terms of food security, employment security and broader human security, where vulnerable

communities are the most affected. Political conflicts and geopolitical rivalries in the Nile and Jordan river basins are hampering opportunities for a productive technical dialogue on reaching basin-wide solutions to address the worsening water scarcity. For example, the process of negotiating the Grand Ethiopian Renaissance Dam (Renaissance Dam), which is officially led by water ministers, has suffered from many “intrusive” issues and grievances that go beyond the purely technical points of filling and managing the dam. This should be seen in the context of the lack of a safe space, and no platform for dialogue, for non-water actors from Ethiopia, Sudan and Egypt to hold discussions on regional security, economic cooperation and resilience to climate threats. Political and security cooperation does not always extend to other important issues such as the issue of water. For example, there is no existing dialogue mechanism focusing on the challenges related to shared water and climate between Iran and Iraq in the Tigris and Euphrates basin, despite the advanced political and security cooperation between the two countries. Progress has been made between Turkey and Iraq in the same basin, following Turkey's ratification of the 2014 joint Memorandum of Understanding on capacity building and scientific exchange in March 2021. This is taking place in light of the growing water insecurity in the region and the unprecedented drought in Iraq and a decrease in the flow of water in the Tigris and Euphrates rivers by up to 50 percent.³⁹⁰

Underlying historical and political grievances affect the relations of riparian countries in transboundary basins located in geopolitically contested areas. Therefore, these basins would benefit from having additional platforms for dialogue focused on discussing

³⁹⁰ Hofste, R.W., Reig, P., & Schleifer, L. (2019). 17 countries, home to one-quarter of the world's population, face extremely high water stress. World Resources Institute . <https://www.wri.org/insights/17-countries-home-one-quarter-worlds-population-face-extremely-high-water-stress>

issues that technical dialogues on water fail to address. Dialogues on water can, in fact, provide entry points for conversations that go well beyond the issue of water. At the same time, these dialogues cannot be expected to also automatically address historical and political grievances. There is a need for effective communication across the various paths of dialogue, but efforts should be made to prevent processes from being derailed by excessive politicization. When the dialogue process is analyzed, it will be important to ensure that the process design puts the right people on the right paths of dialogue. This includes individuals who can make decisions and create the political will needed to achieve sustainable water cooperation, as well as technical experts who can work towards a viable technical solution.

4.2.2 Building political will versus politicization³⁹¹

The Art of Diplomacy focuses on finding sustainable solutions based on cooperation and reframing the thinking that one side must win and the rest lose in the conflict narrative. Thus, one of the most pressing issues in water diplomacy is how to build sufficient political will to support the compromises needed to cooperate, without politicizing the disputed issue. This means ensuring that there is an effective connection between the technical and political tracks, free from the negative impact of political differences outside the waters. Conversely, the purely technical framing of the transnational dispute limits the focus on the underlying political and power dynamics. Moreover, political will to support sustainable agreements and long-term cooperation is necessary in order to create space for joint technical studies, data

³⁹¹ Abu-Hussein, H. (2021). Analysis: Is environmental change driving political change in Iraq? BBC Monitoring. Retrieved on 18 June, 2021 from <https://monitoring.bbc.co.uk/>

exchange, and exploration of mutual benefits for collective management of shared water resources. Ongoing negotiations on the filling and management of the Grand Ethiopian Renaissance Dam need a safe space in the form of a platform for dialogue through which the negotiating parties can discuss non-water issues, such as political and historical grievances, regional extra-water cooperation, regional trade, resilience to climate change, and economic co-benefits resulting from cooperation in water field. A forum of this kind could serve as a forum for discussing newly emerging challenges such as the increasing vulnerability of small farmers to the climate. Likewise, the over-politicization of water cooperation in the Jordan River Basin impedes effective cooperation in finding solutions within the basin to mitigate current and future climate crises, including exacerbating water scarcity. The question, then, is: How can governments talk about building and supporting political will without politicizing and/or securing the water issue?

Depending on their perception of the conflict, different stakeholders can expect different outcomes of water diplomacy processes. While some see the main benefit of water diplomacy as raising awareness about the status of a particular set of stakeholders, others view water diplomacy as an opportunity to pave the way for an agreement. Water diplomacy tools can also support mobilizing public support for transboundary water cooperation, while highlighting the benefits of transboundary cooperation. There is rarely overall coordination and linkage between the various tracks, and this can be supported by external actors who often fund parts of the various dialogue initiatives. This would encourage the exchange of information, as well as highlight the effects of water scarcity on the most vulnerable and prevent the escalation of political tensions or violence at the local level. The conflict between the countries east of the

Nile is often described as a dispute over everything but water. Thus, it is worth exploring whether the technical dialogue on water would benefit from having a different dialogue platform to give stakeholders an opportunity to discuss issues related to regional cooperation, security and co-benefits from regional trade in a safe space, and in the form of confidential dialogue and similar forums.

4.3 External Actors³⁹²

All water diplomacy processes are highly context specific, and thus, external actors – from facilitators, mediators, support providers to technical fact-finding missions, observers and monitors, countries and organizations providing development assistance – must design their engagement on the basis of what is needed and what each can third party to provide it. The negotiating parties must ask who is best suited to take an active role in facilitating the dialogue and who is best suited to provide technical support. This could range from steering countries away from win-lose thinking, addressing power imbalances between actors, making evidence-based decisions, and helping countries identify mutual benefits. In the course of the political dialogue, it is ultimately left to the negotiating parties to determine the mandate to be given to the facilitator of the dialogue. This should be clearly defined, along with the main objective of the operation. This does not necessarily mean reaching a framework agreement on the management of shared water resources, but the goal could be to define a cooperative mechanism on how to deal with the uncertain future of all basin countries. A mechanism of this kind could provide a platform for early warning of drought, flood

³⁹² Hofste, R.W., Reig, P., & Schleifer, L. (2019). 17 countries, home to one-quarter of the world's population, face extremely high water stress. World Resources Institute . <https://www.wri.org/insights/17-countries-home-one-quarter-worlds-population-face-extremely-high-water-stress>

monitoring, strategic planning for basin-wide investments and migration flows due to climate change, and a common strategy to enhance resilience. There is also a wide range of roles for external actors to play in the form of supporting informal pathways that create an enabling environment for water cooperation. This could include pathways that focus on raising public awareness by working with journalists and other opinion-builders, as well as supporting the creation of research networks, cross-border youth engagement groups, and women's networks. Negotiating countries can benefit from these types of groups and networks. The relationships, and sometimes the trust, that is built in these platforms can help support high-level operations. At the same time, all streams of water diplomacy will benefit from empowering citizens and broadening public participation in enhancing regional resilience to climate change. It will be easier for Track One negotiators (diplomacy within official government channels) to gain public support for cross-border dialogues about water if citizens are well informed about and prepared for the upcoming climate and water challenges.

4.4 Future Prospects for The Water Safety Limit in The Region

In a study on the future of water in the Arab region, the Arab Organization for Education, Culture and Science and the Arab Center for Studies of Arid Zones and Arid Lands expected the emergence of a water deficit in the region estimated at about 261 billion cubic meters in 2030. 1488 billion m³ at a rate of 300 mm on areas that constitute 20% of the area of the Arab world and about 406 billion m³ of rain fall on drier areas whose rainfall ranges between 100 and 300 mm, while this rate does not exceed 100 mm in other areas. The study, which was discussed by the Arab Ministers of Agriculture and Water, showed that the Arab world possesses a huge stock of non-

renewable water resources, which is considered a strategic reserve, and about 5% is currently invested in it. The quantity of treated and desalinated water is estimated at 10.9 billion m³ annually, of which 4.5 billion m³ are desalinated water and 6.4 billion m³ is sewage, agricultural and industrial water. As for the future water needs, they are linked to the rates of population increase in the Arab world, which have become among the highest in the world. It is expected to reach 735 million people in 2030 compared to 221 million people in 1991. To narrow the gap between the available water resources and future needs, the study suggested two axes for the solution: The first is the development of new water resources and the investment of groundwater resources represented in the basins of several countries. The second solution is to rationalize the use of water and protect it.

From this, it is clear that the Arab Countries to give the issue of developing and preserving water resources the highest priority when developing its security strategy, and the issue of “water security” must be at the top of the list of priorities, due to the lack of traditional water resources, which calls for serious work to preserve these resources and try to develop them, as well as finding water resources New. Especially since most of the sources of rivers are in the hands of non-Arab countries, which does not give them the status of a safe resource, and groundwater, in most Arab countries, is limited and most of it is non-renewable (depleted) due to the lack of renewable natural resources such as rain based on feeding these reservoirs and increasing their resources. Therefore, those responsible for managing water resources must focus on

preserving groundwater resources and increasing their quantities, and even improving their quality and considering them as a strategic stockpile in safe reservoirs³⁹³.

³⁹³Nadia Hassan Muhammad Akl, *The Water Deficit in Jordan and Its Impact on the Industrial Sector*, unpublished MA thesis, University of Jordan, Amman 2000, p. 97.

Chapter V

Conclusion & Recommendations:

5.1 Conclusion

Water is the essential element of life, Cannot dispense live with him objects for a long time, waters cover seven - tenths of the earth, suggesting human abundance, but 89% of them in the sea and ocean any salt water, not suitable for human use in its natural state, and keeps 2% water fresh ones 1 , 7% frozen at the poles or after deep from the surface of the earth and cannot be exploited for man, hence inferred that the amount of water available to humans is not more than 0.3% of the total aggregate. The issue of water is of particular importance in the Arab World Given the limited availability of it as drinking water and according to the indicator that leads to any country in which the average per capita share of water annually is less than 1000-2000 cubic meters is considered a country suffering from water scarcity, and, 13 Arab countries fall within the category of countries with water scarcity. This water scarcity is constantly exacerbated by high population growth rates.

The World Bank report explains for the year 1993, the average annual per capita share of renewable and renewable water resources in the Arab world (Excluding the underlying stocks of water in the soles of the ground) will reach 667 cubic meters in the year 2025 after it was 3,430 cubic meters in 1960, a decrease of 80%. As for the annual rate of renewable water resources in the Arab region, it amounts to about 350 billion cubic meters, and 35% of it is covered by river flows coming from outside the region, as it comes through the Nile River. 56 billion cubic meters, and through the Euphrates River 25 billion cubic meters, and through the Tigris River and its branches 38 billion

cubic meters. Irrigated agriculture obtains the lion's share of water resources in the Arab world, with an average of 88%, compared to 6.9% for domestic use, and 5.1% for the industrial sector. The World Resources Institute has identified the Middle East as the region where the water shortage has reached the point of crisis, and it has become a prominent political issue, especially along the international river basins.

The issue of water has become a candidate to ignite wars in the Middle East. According to the analysis of international political circles, especially since most Arab countries do not have full control over their water sources. Ethiopia and Turkey and Guinea and Iran and Senegal and Kenya and Uganda and maybe Zaire. They are also countries that control about 60% of the water resources of the Arab world. There is now talk about the connection of peace in the Middle East with water after the rape of Israel. Most of the countries share the Arab ring of water. Also, some countries are adopting a very dangerous proposal represented in attempts to persuade the international community to implement the water pricing proposal, and thus the sale of international waters. Located at the head of these countries Turkey and Israel. More seriously, some international organizations (such as the World Bank and FAO) have adopted these proposals, forgetting the fact that there is a close link between water security and food security on the one hand, and Arab national security on the other.

The Jordan Valley is deliberately important to Palestinian individuals, due to its recorded political, social, financial, and geographic value and its ordinary assets including water. The Jordan Valley is important to the travel industry, but in addition to its rich land, natural origins, and warm ambiance, it is suitable for a wide range of rural creativity. The area covers the largest holding of land for progress because it is rich in its assets of land and water, making it suitable for agriculture and animal husbandry. In

any case, at present, agricultural land and carving land are not open to Palestinians, which makes about 60% of Palestinians in the Jordan Valley live below the extreme poverty line or extreme poverty. The economy of the Jordan Valley is mainly based on agriculture, animal handling, and the travel industry. The area remains subject to urban focus in Jericho, Nablus, and Tubas for educational administrations, particularly elective and undergraduate training, and over urban areas in Jericho, Jenin, Nablus, Jerusalem and Bethlehem for welfare administrations. The Jordan Valley is an extraordinary region that offers opportunities in all major financial areas.

The study dealt with an applied case study on water diplomacy achieve water security by studying the case of the Jordan Valley and the Dead Sea. The case of the Jordan Valley was reviewed through the historical narrative of the Jordan Valley, its geography, and Israel's plan to include the Alwan plan and Netanyahu's plan, the most important cities in the Jordan Valley and its natural characteristics. its eight sections, the climate that characterizes it, the animals that live in it, the plants that are grown in its fertile land, the role of the authorities in managing the Jordan Valley, the role of water diplomacy in facing the escalating water crises, and water diplomacy. The conflicting areas in the Jordan River Basin and the Blue Nile Basin, as well as reviewing the state of the Dead Sea, its geography, climate, geological features, its feeding tributaries, the Dead Sea's economic and tourism importance, and its role in achieving water security. Finally, the most important lessons learned from a study were presented. Applied cases, Jordan valley and the Dead Sea, and presented policies to achieve water security in most countries of the world, especially the Arab region.

5.2 Water Security Conclusion

Water security has been described as “strong access to a good quantity and nature of water for well-being, advocacy and creativity, along with a satisfactory degree of water-related risk”, in the same way that the chains of water security brought about by environmental change can. Direct impact on human security and their jobs. Earth affects all parts of human security from food shortages to catastrophic events. The repercussions of natural corruption are multidimensional. In addition, the natural change is evident in different regions of the world. Water diplomacy can be described as the use of restorative tools for existing or developing contradictions and clashes over shared water assets to understand or mitigate those related to participation, territorial integrity, and harmony³⁹⁴

Water diplomacy is related to the application of restorative rather than specialized tools. Discretionary tools for water assessment may include exchanges, competition goal systems, foundations for meeting stages, and consolidation of joint truth-discovery missions. Specialized tools, for example, building extensive bowl management plans or shared monitoring systems are not part of water prowess. Whereas political and niche tools often expand upon each other and can be legitimately linked³⁹⁵

5.3 Water Diplomacy Conclusion³⁹⁶

There is sometimes a misunderstanding about water diplomacy, as it is seen as a comprehensive solution to resolve tensions and disputes over shared water

³⁹⁴ Hazem Al-Nasser, Future Needs in Industry and Drinking, the third Jordanian scientific week under the slogan “The Land towards Optimal Use”, Volume 3, Scientific Papers, Amman, p. 59.

³⁹⁵ Munther Khaddam, Arab Water Security and Challenges, Center for Arab Unity Studies, Beirut 2001, p. 35.

³⁹⁶ Abu-Hussein, H. (2021). Analysis: Is environmental change driving political change in Iraq? BBC Monitoring. Retrieved on 18 June, 2021 from. <https://monitoring.bbc.co.uk/>

resources. The concept of water diplomacy does not provide a comprehensive blueprint for reaching agreements on shared waters, as its main feature lies in providing various tools for dialogue between stakeholders who share a water resource. At best, water diplomacy works on linking and exchanging information, enhancing inclusion, and designing spaces for solutions, by linking various platforms for dialogue, participation paths, and the scientific community. There are technical cooperation programs, including joint technical studies and fact-finding missions, as well as civil society networks and policy dialogues. Technical cooperation could include, for example, the development of common basin-wide models of how much water will be available and how much water will be needed over the coming decades, taking into account population and industrial growth in all basin countries and future infrastructure investment needs. The countries that share the Tigris and Euphrates rivers have tried to do such a process through the Cooperative Program of the Tigris and Euphrates.

Some experts believe that linking technical tracks and civil society participation with political dialogues, both formal and informal, can lead to politicization and stagnation, while others believe that the exchange of information across the different tracks will help provide more scope for possible solutions, as cross-border basins in fragile and affected areas. Conflicts or those geopolitically contested for which there is no agreement on the management of shared water resources often need solutions outside the water sector. More specifically, water-scarce regions, where water security is a national security issue, need political will to build a regional mechanism for sustainable water cooperation. This mechanism will enable dialogue and implementation of joint technical solutions, as well as economic investments in water infrastructure. Thus, the question remains, can shared waters and climate-related risks also be associated with

shared opportunities for basin-wide cooperation? Can cooperation and investment on environmental issues represent no regrets/win-win solutions that can benefit governments across borders and (optimally) build confidence and momentum in the political process? Or is political trust a prerequisite for creating a secure space for dialogue on technical cooperation and ultimately for joint investments

5.4. Water Diplomacy Towards The Dead Sea

Water diplomacy in river basin countries: It focuses on transboundary freshwater resources, such as lakes, rivers, and groundwater basins, and here it is possible to distinguish between several levels, the first in terms of geographical scope, where the negotiation can be bilateral, or at the level of the basin countries, and secondly at the regional level such as the Economic Community Water Directives, and thirdly at the global level.

One of the salient features of water diplomacy is the involvement of various technical actors from engineers, hydrologists, and economists in the negotiation process to obtain a scientific framework for the sources of disputed waters. On core topics³⁹⁷.

Water diplomacy from a third-party perspective: where the focus is on assisting or persuading riparian countries, as part of the national interest of countries, international organizations, or foreign development policy of donor countries, to protect and manage water resources. The roles played by states and international organizations in diplomacy vary according to the geographical scope, the nature of the water conflict, and the degree of involvement in the negotiating process.

³⁹⁷ Shafiqul Islam, Kevin M. Smith, *Interdisciplinary Collaboration for Water Diplomacy: A Principled and Pragmatic Approach*, London: Routledge, 2019, p: 58

It should be noted that diplomatic dialogue and comprehensive negotiations between countries participating in water resources are still the only way forward to build trust and cooperation for a sustainable future for their natural resources. Ultimately, skilled water diplomacy, with de-security and getting rid of populist rhetoric, can transform water from a source of conflict to a driving force for cooperation and development for all peoples³⁹⁸

5.5 Recommendations:

The study reached some policies and strategies that must be followed to achieve water diplomacy and achieve water security, among which we mention the following:

1. Rationalize the consumption of available water.
2. Develop the available water resources.
3. Addition of new traditional water resources such as surface water and groundwater, and unconventional artificial resources such as the exploitation of sewage and desalinated water.
4. Development and management of water resources and the search for new alternative, and facing the challenges facing water, such as the issue of the waters of the Tigris and Euphrates rivers between Turkey, Syria and Iraq, and between Syria and Iraq on the other hand.
5. Developing solutions to the water problem in the Middle East and North Africa.
6. Transforming threats into opportunities by accelerating the development of innovation for sustainable water management.

³⁹⁸ OECD, G20/OECD Principles of Corporate Governance (Arabic version), OECD Publishing, 2017, p: 100

7. Increasing the role of investments in treating wastewater, such as sewage, with advanced modern treatments.
8. Water diplomacy plays a major role in achieving water security by resolving conflicts and disputes between different countries and the need to confront the Israeli side in not assigning the Jordan Valley and Dead Sea project to them firmly.
9. Water diplomacy and water security has a major role in maintaining peace and development in the target region, which may lead to turning the conflict problem into a good solution tool for all conflicting countries.
10. Emphasizing that the water issue is a vital issue of great importance, and it is a national and humanitarian issue that concerns all sectors of the people, and is not the responsibility of the negotiator alone, and that the distribution of water must be equitable.
11. Negotiators from the two sides, decision-makers, influencers, donor countries, countries sponsoring the peace process, the international community and all the parties and parties to which we previously referred that the water crisis in Palestine is not a technical problem.
12. Emphasizing that the sustainable solution is to drill wells that reach deep groundwater, in the shared mountain basins disputed with Israel, and this is the cheapest, best, most self-reliant, and most permanent solution; Whereas, under international law, Palestinians have the right to develop water resources in their own water basins.
13. Emphasizing that the Dead Sea-Red Sea Canal project is nothing but a trap that will make the Palestinians imagine the possibility of obtaining additional water, instead

of their fair share in the existing water resources, and this will weaken the Palestinian negotiating position.

14. Desalination of sea water in Gaza is one of the partial solutions on the table, but it is not the only solution to save Gaza, as desalination is not a sustainable solution. It uses non-renewable resources, which is a very costly and ineffective solution,
15. Providing the Gaza Strip with its water share as a right from the coastal basin or as compensation for it from the Jordan River, at a minimum rate of 200 million cubic meters annually, will lead to a solution to the water crisis in Gaza.
16. Finally, emphasizing that water may be (today or in the future) a strong reason for the outbreak of war and the perpetuation of conflict between the peoples of the region.

5.6 Suggested Solutions To Solve The Palestinian Water Problem³⁹⁹

5.6.1 In The Near Term⁴⁰⁰

1. Rationalizing water consumption: saving water consumption in homes, following the correct methods, using drip irrigation systems in agriculture, and reusing treated marginal water in industries and in irrigation. In the face of these solutions, two views have emerged that may be on opposite sides. The first says that water consumption in Palestine is already low, and there is no room for more rationalization. Rather, rationalization is a form of submission to the unfair policy

³⁹⁹ Abu-Hussein, H. (2021). Analysis: Is environmental change driving political change in Iraq? BBC Monitoring. Retrieved on 18 June, 2021 from <https://monitoring.bbc.co.uk/>

⁴⁰⁰ Hofste, R.W., Reig, P., & Schleifer, L. (2019). 17 countries, home to one-quarter of the world's population, face extremely high water stress. World Resources Institute <https://www.wri.org/insights/17-countries-home-one-quarter-worlds-population-face-extremely-high-water-stress>

pursued by Israel in distributing water. This current is any attempt to adapt to the restrictions imposed by the occupation authorities. On the other hand, the other view says that rationalizing water consumption is a civilized behavior, and it should be a way of life, regardless of the quantities of water currently available. In both cases, the water crisis remains, for which the Palestinians pay dearly, and until a comprehensive and just political solution is reached, ensuring that the Palestinians obtain their natural right to their water resources, the Palestinian decision-maker will remain in front of two options, the best of which is bitter: either adapt to the restrictions imposed by the occupation, and thus accept With the current abnormal situation, or rejecting all alternatives and insisting that the Palestinians obtain their full right, and thus the continuation of the daily suffering of the people from water scarcity.

2. The annual renewable water resources in the Palestinian territories are currently estimated at about 400 m³. Relying on United Nations population statistics, projections for 2025 show a scarcity scenario for the per capita share of water resources at 40 m.³ A value 10 times less than the average per capita share of annual renewable water resources. In the Palestinian territories, the agricultural sector is the largest user of water (61% of the total water used), followed by the household uses sector (36%), then the industrial sector (3%). This means that utilizing treated wastewater and greywater as a source of irrigation adds value to improving productivity, and efforts to preserve the environment under conditions of Palestinian fresh water scarcity.
3. Digging household collection wells to cover the needs of the house, and to irrigate home gardens. Knowing that digging wells to collect rainwater in homes and farms

does not completely solve the crisis, it may ease a little burden, but it is an agriculturally useless policy; Because there is no rain in the summer, and these wells run dry in the first seasons of summer and sometimes run out in May, and thus the problem remains.⁴⁰¹

4. Implementation of projects by municipalities and civil institutions in villages that do not have water networks, where these programs cover the expenses of water brought in tanks to alleviate the financial burden suffered by these marginalized areas. And also the establishment or construction of ponds, basins and tanks to collect rainwater suitable for agriculture and close to agricultural lands or greenhouses.
5. Implementation of sustainable and advanced development projects in everything related to infrastructure in general, and infrastructure related to water networks through the establishment of modern water networks and linking population centers with them, and maintenance of old networks, where 15% of the waste can be saved by repairing pipes, and building huge tanks to collect Water and its redistribution, by directing development projects undertaken by donor countries, the Palestinian Authority, and NGOs to make the water problem a priority concern for these and future projects.
6. Work to rehabilitate the Jordan River, and prevent pollution in groundwater, artesian wells and collection wells.

⁴⁰¹Hofste, R.W., Reig, P., & Schleifer, L. (2019). 17 countries, home to one-quarter of the world's population, face extremely high water stress. World Resources Institute . <https://www.wri.org/insights/17-countries-home-one-quarter-worlds-population-face-extremely-high-water-stress>

7. Establishment of natural and artificial dams at the streams of torrents and valleys to benefit from the rain water that evaporates and a large part of it is lost without benefiting from it.
8. Digging deep artesian wells in each region separately, to cover the needs of the population in cities, villages and gatherings, after obtaining the equitable water share determined for the Palestinians.

5.6.2. Long Term Solutions⁴⁰²

- Devoting all efforts and mechanisms and mobilizing energies to reach a radical solution to the water problem in Palestine in general, by asking the Israeli side to implement what was agreed upon in the Oslo Accords and the joint water committee emanating from them, and the need to amend the agreements in the final status negotiations, so that the water quotas for the Palestinians are increased , according to the increases in the population rate, and in accordance with what is determined by international treaties on human rights, and what is stipulated by international law with regard to the rights of occupied peoples and the duties of the occupying state, until the Palestinians obtain their full right to absolute sovereignty over their water resources, because it is their natural right.
- Taking actions at the local, regional and global levels to stir up public opinion and international conscience to protect the Palestinian people from the practices of the occupation and deprive them of their most basic rights to life, and to raise this water problem at the highest local, regional and international levels, in conferences, seminars, international organizations and in the Security Council, to draw the world's

⁴⁰² Abu-Hussein, H. (2021). Analysis: Is environmental change driving political change in Iraq? BBC Monitoring. Retrieved on 18 June, 2021 from <https://monitoring.bbc.co.uk/>

attention to this crisis And his definition of its size and how dangerous it is now, in the near and far future, and for subsequent generations.

- Movements and meetings must include all the countries of the region, especially Jordan, where Jordan shares with Palestine and Israel by sharing the Jordan River, and each party has a certain share of the river. The issues of the environment, sanitation and waste of all kinds are common issues of concern to and affect all parties, and they are topics on Deep and direct contact with water.
- All mega environmental and water projects must be carried out in consultation and agreement between the countries of the region, so that these projects do not harm any country, and that no country dominates and monopolizes water as Israel does.
- Working to establish separate Palestinian and Israeli public advisory councils that handle water issues, and due to the transnational nature of water, this requires the professional institutionalization of the work of the councils, which must be composed of political leaders, academic figures, business and civil society. And to bear in mind the need to reach positive results that can be built upon, leading to the adoption of a common vision for the future of water in the region on just bases.

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الملخص

ترجع أهمية الدراسة : في أنها تسعى إلى دراسة حالة البحر الميت من خلال الوقوف على تحديات الأمن المائي في وادي نهر الأردن وجهود الدبلوماسية المائية الفلسطينية في هذا الصدد. و تهدف هذه الدراسة إلى تحقيق : تقييم فاعلية دبلوماسية المياه الفلسطينية في خدمة الأمن المائي في البلاد ، مراجعة الإستراتيجية الوطنية الفلسطينية بشكل نقدي فيما يتعلق بدبلوماسية المياه ، استكشاف السمات الرئيسية لدبلوماسية المياه الفلسطينية في المحادثات متعددة الأطراف حول الموارد المائية العابرة للحدود: لفهم تفاعل دبلوماسية المياه الفلسطينية مع البيئة الإقليمية العابرة للحدود ، لمناقشة تأثير دبلوماسية المياه والأمن المائي في الحفاظ على السلام والتنمية في المنطقة.

تقوم منهجية الدراسة: في التعامل مع قضية الأمن المائي ودبلوماسية المياه الفلسطينية في وادي الأردن (دراسة حالة البحر الميت) ، ستعتمد هذه الدراسة على عدد من المنهجين التاليين: المنهج الوصفي ، من خلال ، مراجعة الدراسات السابقة ذات الصلة. تحديد الإطار القانوني الذي ينظم حقوق الفلسطينيين في مياه الأردن (اتفاقية جونستون 1956) ، وصف وتحليل الظواهر قيد الدراسة. تفسير الوضع القائم وتحديد الشروط والعلاقات القائمة بين المتغيرات وتحليل روابط هذه المتغيرات وتفسيرها وتصنيفها وقياسها واستنتاجها. وقد توصلت الدراسة إلى أن: دبلوماسية المياه ودبلوماسية المياه الإقليمية والجهات الخارجية تلعب دوراً مهماً وهاماً في تحقيق الأمن المائي وحل النزاعات المتعلقة بالمياه الإقليمية. واقترحت الدراسة بعض التوصيات التي يمكن الاستفادة منها في الدبلوماسية المائية وتحقيق الأمن المائي وحل الخلافات والصراعات بين الدول المعنية بالمياه.

الكلمات المفتاحية : دبلوماسية المياه الفلسطينية، دبلوماسية المياه الإقليمية، الأمن المائي ، الجهات الخارجية.