

Regional water cooperation in the Arab – Israeli Conflict:

A case study of the West Bank

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Declaration

I hereby declare that this dissertation is my own original work.

Lutine F. de Boer

Alkmaar, The Netherlands, November 2014

Dedication

I dedicate this dissertation to my parents, Dirk de Boer and Iemkje de Boer – Boomsma, my brother Michiel de Boer, as well as to Harris Moore, Margriet Zuiderbaan and Elisabeth Messing, while thanking them for their never-ending love and support.

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Abstract

The conflict between Israel and Arab countries, with several devastating wars, is about territory and land, and maybe just as crucially on the water that flows through that land. This dissertation, an analysis of the management of water in the West Bank, as a case study, seeks to underline the possibility of using soft power diplomacy, in addition to mediation and water cooperation, for a more collaborative kind of approach to the conflict.

The key argument of this dissertation is that a review of the management of the water dispute component in the Arab – Israeli conflict, in particular in the West Bank, points to the possibility of engaging in soft power diplomacy, mediation, and (better structured) water cooperation, in a more cooperative kind of water conflict management. In its methodology, this study proposes the use of the Barrier Analysis, as it performs a short examination of possible stumbling blocks towards effective water cooperation in the West Bank.

Next to the Barrier Analysis, the Transboundary Opportunity Analysis (TWO), in combination with the Strategic Environmental Assessment, provides participants with objective instruments to identify opportunities for development. A Strategic Environmental Assessment, preferably performed by a third, neutral, party, would provide Israel and Palestine with objective knowledge of the physiological opportunities of the Mountain Aquifer, making a positive-sum solution for parties very much possible.

List of abbreviations and acronyms

List of abbreviations/ acronyms	
CAC	Joint Civil Affairs Coordination and Cooperation Committee
DOP	Declaration of Principles on Interim Self-Government Arrangements or Declaration of Principles
FoEME	Regional environmental organization Friends of the Earth Middle East
GDP	Gross Domestic Product
INSS	Institute for National Security Studies
JWC	Joint Water Committee
Lcpd	Liters per person per day
MCM	Million Cubic Meters
Mekorot	national water company of Israel and the country's top agency for water management
NGO	Non-governmental organisation
NPA	National Palestinian Authority
OPT	Occupied Palestinian Territories
PAPFAM	Pan Arab Project for Family Health
PLO	Palestinian Liberation Organisation
PWA	Palestinian Water Authority
RFNW	renewable fresh natural water
TWO	Transboundary Water Opportunity Analysis
UN	United Nations
UNDESA	United Nations Department for Economic and Social Affairs

UNECE	United Nations Economic Commission for Europe
UNGA	United Nations General Assembly
WBWD	West Bank Water Department

List of tables, figures and diagrams

<i>fig. 1</i>	<i>Aquifers in the West Bank (Israel Water Blog, 2009)</i>
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Chapter 1: An interpretative overview

Water resources, in an arid region like the Middle East, are of great political and economic consideration. They triggered disputes between Israel and Arab countries like Syria and Jordan, and the use of water has long been highly contentious between the Palestinians and the Israeli, in particular in the West Bank, a landlocked territory near the Mediterranean coast, forming the bulk of the Palestinian territories, which together with Gaza Strip, came under the jurisdiction of the Palestinian National Authority in 1993, following the Oslo Accords. Under the title, 'World Water Wars: In The West Bank, Water Is Just Another Conflict Issue,' the International business Times reported in 2013 that skirmishes between Palestinians and at least 75,000 Jewish settlers living in an expanding cluster of communities, have become a daily routine.

The complex issues surrounding water usage and supply often feature prominently in political agenda, diplomacy and peace negotiations between Israel and the Palestinian Authority, and the division of groundwater forms an integral part of the Oslo II accords. The UN stresses the need to strike a balance between the different interests and priorities and to manage water resources equitably, using this resource as an instrument of peace, not a cause for war and conflict (UNESCO, 2013). To emphasize the importance of cooperative processes, the UNGA designated 2013 as the UN International Year of Water Cooperation (with the 22nd of March appointed as World Water Day 2013 on Water Cooperation), on the heels of UNDESA's Water for Life Decade programme (2005 – 2015) (UNDESA, 2005).

A statement of the central problematique

Amid the drastic increase in consumption and depletion of resources, along with bad management, water would most likely take over the role oil has played in recent decades as a major cause for armed conflicts and wars. What could be referred to as 'hydro-conflicts' is expected to become the

main underlying cause for many intra-state disputes, and conflicts over energy and water may take place within states, between regions that share sources and supplies.

In the conflict between Israel and the Palestinians, the water dispute component is critical. Israel and the Palestinians share the Mountain Aquifer – a network of groundwater reserves that spans the border between Israel and the West Bank. It supplies about one quarter of Israeli water usage, mostly for domestic and urban use, and serves as the major water resource for Palestinians in the West Bank for all purposes: domestic, urban, industrial and agricultural.

Israel controls water supply to the West Bank, and discrimination on water supply between Palestinians and Israeli settlers is evident. The Israeli Information Center for Human Rights in the Occupied Territories pointed out in a report published in January 2014 that approximately 86% of water extracted from the Mountain Aquifer goes to Israel and settlements, leaving 14% to the Palestinians (B'Tselem, 2014). In the West Bank, the amount of water supplied to the settlements is greater by far than that supplied to the Palestinians, and while Israelis enjoy a regular water supply at all times, Palestinians throughout the West Bank receive water on rotation, facing particularly long breaks in supply in summer. The Palestinians in the West Bank receive only 77% of their requirements, to be shared for a population of about 2.3 million.

Analysis of the water management situation in the West Bank shows that water scarcity is used as a military tool. Although the legal framework concerning the water distribution between Israeli and Palestinians provides the basis for cooperative management of available resources, in practice the joint water management is not handled efficiently from the viewpoint of effective water cooperation, with shared benefits for both parties.

The Palestinians managed to successfully push through a bid for formal recognition of non-member state status at the General Assembly on November 2012. They sought non-member state status for Palestine, an elevation from its standing as a permanent observer 'entity', after a failed bid to gain

full UN membership in 2011, as they were unable to garner enough support in the UN Security Council, and faced the threat of veto from the US.

Against this background, the dispute between the Palestinians¹ and the Israeli on water resources, as a sub-national water conflict, is difficult to deal with within the context of international law.

Historically, international peace-building efforts have primarily been directed at interstate conflicts, and international law has primarily served to deal with wars and disputes between different states, not between regions within one state. Moreover, traditional mechanisms (like bilateral and multilateral treaties) to deal with such conflicts have not been very effective.

Aim of the dissertation

The author concerned herself with how cooperation could become the key to finding solutions for mutual gain in order to satisfy opposing parties, and eliminate the possibility of the use of force and turning to armed conflicts. The aim is to identify the possibilities for a more collaborative way of water conflict management, between the Israeli and Arabs, by means of mediation, soft power diplomacy and water cooperation. The focus is on the conflict on the West Bank's Mountain Aquifer, which is of critical importance for both sides. This study uses conceptual models the Barrier Analysis, the Transboundary Water Opportunity Analysis as well as the Strategic Environmental Assessment as prime examples to demonstrate that a more holistic approach would provide both Israel and Palestine with multiple opportunities to create a 'basket of benefits', which, stemming from a true water cooperative process, could accompany economic growth with a sustainable peace. The study elaborates on the general study done on this subject by Philips (2008) and a shorter Master thesis

¹ Israel has been a member of the UN since 1949. Since 2012, the UN has allowed Palestine to represent itself as 'The Permanent Observer Mission of the State of Palestine to the United Nations'. The Palestinian Authority has instructed its official representatives to use the name 'The State of Palestine', relinquishing the old moniker 'Palestine National Authority (PLO)'. In addition, in 2012 UN Chief of Protocol Yeocheol Yoon stated that from then on the Secretariat would use 'State of Palestine' in all official UN documents. As of September 2013, almost 70% of the 193 member states of the UN have recognised the State of Palestine as sovereign over both West Bank and the Gaza Strip. Generally, the countries that do not accept the name State of Palestine do, however, recognise the PLO as the 'representative of the Palestinian people'. In line with the UN, which recognizes the PLO-proclaimed State of Palestine as being sovereign over the territories of Palestine, this dissertation refers to those areas as Palestine, unless otherwise substantiated.

based on Philips' work by Baltutis (2009). Their research also pointed in the direction of soft power as a better option in comparison to traditional negotiation tactics, without identifying opportunities specifically for the West Bank. This study hopes to add some awareness of existing opportunities for better water management in this already troubled area.

The main hypothesis, key argument and thesis statement

The key argument of this dissertation is that a review of the management of the water dispute component in the Arab – Israeli conflict, in particular in the West Bank, points to the possibility of engaging in soft power diplomacy, mediation, and (better structured) water cooperation, in a more cooperative kind of water conflict management.

Analysis of the water management situation in the West Bank shows that water scarcity is used as a military tool. Although the legal framework concerning the water distribution between Israeli and Palestinians provides the basis for cooperative management of available resources, in practice the joint water management is not handled efficiently from the viewpoint of effective water cooperation, lacking shared benefits for both parties.

Organisation of the study

Following this introductory chapter, Chapter 2 reviews available literature on the subject of water cooperation in the Arab-Israeli conflict. It highlights, in relevant studies and surveys, the way water cooperation was used as an instrument in the negotiations during the Oslo process as well in the interim period that followed, and looks into what have been the most important factors that have positively and/or negatively impacted the process of negotiations, and what could have been done better. This chapter also examines the 2013 regional water sharing agreement.

Chapter 3 expounds on the theoretical foundation of the research study, including a description of the major conceptual and analytical approaches to the management of the water conflict component in the Arab-Israeli conflict, and the West Bank in particular. Chapter 4 elaborates on the methodology which is used to structure the author's thinking and subsequent conclusions, reflecting

on models and particular perspectives on the West Bank case study. Chapter 5 explores the trans-boundary water management issues in Arab – Israeli water conflict and identifies the key factors ('barriers') that have contributed to the status quo, followed by Chapter 6 that underlines the possibility for more effective water cooperation in the region through application of the Transboundary Water Opportunity Analysis, complemented with a proposal for a Strategic Environmental Assessment, before Chapter 7 presents the main concluding notes.

Chapter 2: Literature review

It is necessary to define the different principles of water cooperation, and to characterize the role of water management in politically already vulnerable areas like the Middle East. The Pacific Institute (2014) offers an overview on how water resources may serve as root of a conflict:

- “control of water resources as the root of the conflict;
- water resources or water systems are used as a military tool;
- terrorism: water resources or water systems are used as targets or tools of violence or coercion;
- water resource systems are used as targets for military actions;
- development disputes: water resources or water systems are a major source of dispute in the context of economic and social development.”

Acknowledging the (future) importance of water supplies as the possible root of conflict, the United Nations Department of Economic and Social Affairs (UNDESA, 2005) stresses in its declaration of the International Decade for Action ‘WATER FOR LIFE’ 2005 -2015 the need to strike a balance between the different interests and priorities and to manage water resources equitably, using this resource as an instrument of peace, instead of one of war and conflict (UNESCO, 2013). It warns that it is not enough to be committed to the principle of cooperation: participants in water cooperation need to take concrete actions, “for the benefit of people, ecosystems and the biosphere” as a complementary system. For stakeholders to be able to do so, it is vital that opportunities are cultivated for all parties, to build mutual respect, promote peace and sustainable economic growth.

UNDESA offers a couple of guidelines to set up an effective cooperative process: first of all it is necessary to approach water cooperation at multiple levels, including all stakeholders. The government, international organizations, the private sector, civil society as well as academia have to

be involved. Secondly, parties should use innovative approaches: forward thinking and a readiness to employ innovative techniques, while promoting strong citizen participation and a culture of consultation, will encourage cooperative action, political commitment and collaborative water management. According to the UN, water can be a great incentive for cooperation, and has proven to unite people more than it divides, forcing them to reconcile their often very divergent views.

Zooming in on water aspects of the Arab- Israeli conflict, Selby acknowledges in his book 'Water, Power and Politics in the Middle East – The Other Israeli-Palestinian Conflict' (2003) that the Oslo II Agreement brought about very important changes in the management and development of the West Bank's resources. Breaking with hydro-political tradition, Israeli – Palestinian relations in the West Bank were suddenly presented as being 'cooperative', rather than 'oppressive'. Selby sees cooperation within this particular agreement not as a practical and material set of relations which were supposed to be the antithesis of 'domination'. Cooperation of any kind presumes contributing parties as being juridically free and equal parties. In this case, the Palestinians were vastly less free than the Israelis, Selby argues, in their actual (military, political, institutional and economical) capabilities. Although one could argue that the Oslo II Accord was only a transitional agreement, which was not necessarily absolutely just, Selby concludes that the accords were a transition in name only, and occupation has not been substituted by cooperation. Cooperation has often been only slightly different from the occupation and domination that went before it.

Cooperation, Selby continues, has been above all an internationally pleasing and acceptable signifier which obscures rather than elucidates the nature of Israeli – Palestinian relations. The conception of the Oslo Accords is already to blame for the failure of true cooperation, and as a result is a dressing up of domination as cooperation. The agreement is the outcome of negotiations between a well-coordinated Israeli team with well-worked negotiating positions, backed-up with facts, files and institutions, while the Palestinian team lacked developed proposals and strategies and a stable decision-making hierarchy. The Declaration of Principles was negotiated by Palestinian politicians, without legal counsel and (technical) water experts. It is essential, while recognizing that negotiators

will always want to present their arguments in the national interest or for the common good, or both, to negotiate an agreement that has powers, freedoms and responsibilities fairly structured and divided, which, according to Selby, is not the case in the Oslo Accords' stipulations on water cooperation (Selby, 2003).

With Selby's criticism in mind, it is key to identify which factors contribute to successful cooperative partnerships. Jägerskog (*et al.*) proposes in his article 'Addressing Transboundary Water Management Challenges: Getting it right' (2008) that making transboundary water resources management truly effective is very important, for "evidence of cooperation that exists globally suggest a comforting trend towards stability and wealth". He identifies criteria which could serve as a benchmark for effective transboundary water management. He derives these criteria from lessons learnt from passed cooperative processes, for example with regard to the Jordan river basin. Although he speaks of cooperation and water management of river basins as well as 'co-riparians', his theory is very applicable on the shared use of the aquifers of Israel and Palestine. A summary of the criteria he proposes:

- "There is benefit in establishing a definition of 'cooperation'. Some cooperation can be coercive. Cooperation should not be seen as a goal in and of itself;
- Effective cooperation is required to meet the goals of (all) co-riparians;
- Cooperation at a community level can lead to cooperation at the municipal level. It may lead to cooperation at an international level;
- The potential for cooperation and for opportunities is unique for each basin;
- A range of development opportunities exists in all basins. Key is to identify these benefits as well as the potential barriers that may hinder realising these benefits;
- States may cooperate when the net economic and political benefits outweigh the benefits of unilateral action. Actions taken to broaden the basket of benefits have potential to drive effective water cooperation;
- States may even be more likely to cooperate to reduce common water-related risks;

- Economic inequity and power asymmetry are among the most important barriers to cooperation. The asymmetry may be confronted through strategies to influence a powerful state with ‘win-win’ solutions, or by transforming the ‘basin bully’ into a basin leader;
- Capacity-building of weaker state and creation of objective and fair water-sharing standards can be effective ways to challenge power asymmetry and increase equity in transboundary water management;
- Long-term and flexible support from third parties encourages effective cooperation. This is particularly important to support dialogue and institutional arrangements.”

Zeitoun and Jägerskog (2009) acknowledge in their study ‘Confronting Power: Strategies to Support Less Powerful States’ that power asymmetry may be unavoidable, although its negative effects may not. They therefore add to Jägerskog’s above-mentioned criteria two strategies on how to confront power asymmetry in transboundary water management. They propose that this asymmetry can be influenced and/ or challenged, by existing and newer forms of ‘soft power’.

Power asymmetry can, according to the authors, be influenced through two different ways. The first is to negotiate positive-sum results for all parties. To identify the possibility of a ‘win-win’ outcome could be very encouraging for parties involved. An example of such an approach is ‘benefit-sharing’, in order to seek optimal use of the water supply at hand. The idea is to share the benefits derived from the water, even if the water cannot be divided equitably. A second theory on how to deal with power asymmetry is to influence ‘basin bullies’ into ‘basin leaders’, possibly through international diplomacy.

Zeitoun and Jägerskog suggest that the stronger party participating in the cooperative process may be susceptible to persuasion and be less inclined to force the other party into a less beneficial agreement if there are objective standards it can be held accountable to. It is key to invite stronger parties to be part of the solution instead of allowing them to be part of the problem. Independent (international) mediators are essential in this approach.

To challenge power asymmetry, one could try to either 'level the players' or 'level the playing field'. A way to make parties more equal, to give the weaker party more bargaining power, is to invest in capacity-building. This would provide the underdog not only with increased technical, administrative and legal leverage, it would also allow him to take on a larger role in the process, to assume more responsibilities and to come up with solutions for the water issue at hand. This would strengthen the (formerly) weaker party's position, and would gain him respect.

It is also fundamental to examine the 'playing field', for a 'cooperative' situation or agreement coerced by the stronger party is not sustainable, according to Zeitoun and Jägerskog. How does one level that playing field? Again, the role of the international community is important in cases of inequity. To avoid the 'law of the jungle' taking over, the international community should back-up the weaker parties and place a larger burden on the stronger party. The international community should therefore be watchful and recognize situations of power asymmetry, inequity in bargaining power as well as coercion, in order to accomplish successful transboundary water management.

In their article 'A Path Towards Realising Tangible Benefits in Transboundary River Basins' (2009), Granit and Claassen present a conceptual model which could serve as a lay-out for effective cooperation. They offer the concept of 'benefit-sharing', through the Transboundary Water Opportunity Analysis (TWO), in order to invent a number of different solutions (for a basin). The TWO is complemented through two other models: next to the Strategic Environmental Assessment (SEA), the Barrier Analysis summarizes possible barriers to development in transboundary river basins, to highlight possible cumulative, economic, environmental and social consequences for (local) communities which could result from the cooperative process:

- "A high level of inequality between (riparian) states (e.g. GDP per capita);
- Major difference in political systems (authoritarian vs. democratic);
- A strong geopolitical influence (in a basin) by certain States;
- Difference in (riparian) State's religious views and ethnic composition;

- A large difference between (riparian) States' legal systems;
- Difference in access to investment markets by (riparian) States;
- The existence of civil strife (in a basin);
- Difference and/ or low levels of in-country infrastructure;
- The absence of regional cooperative frameworks, for example a Regional Economic Commission or a transboundary water institution;
- A basin that is closed, i.e. with limited water resources or water quality constraints;
- Limited in-country capacity to manage water resources and to effectively participate in regional cooperation.”

Granit and Claassen suggest parties to identify and address above-mentioned obstacles early on in the water cooperative process. They advise not to use these barriers against state sovereignty, yet solely to devise strategies to overcome them, in order to set up an effective cooperative process.

In ‘Cooperation in a Troubled Region – The FoEME Experience from the Jordan River Basin’ (2009), Mehyar highlights cooperation in the troubled Middle Eastern region: the reduced flow of the Jordan River has badly damaged its terminal lake, the Dead Sea. Annex IV of the Treaty of Peace between Israel and Jordan (1994) compelled both States to undertake a coordinated action to restore the once mighty river. However, in the time that has passed, neither government has taken action towards ecological rehabilitation of the river. Nevertheless, on a local level there have been grassroots movements to restore fresh water to the river. It seems that these local efforts are paying off. The Israeli and, Jordanian and Palestinian governments have stated their commitment to reviving the river (the Lower Jordan River). It is essential to create political will on a local, regional and national level as well recognizing opportunities for equitable sharing (including the Palestinians) of the water supply. Support from the international community is paramount in this. Cooperation that aims for peace and sustainability is the only hope for the ecological rehabilitation of the Lower Jordan River, which would in turn create economic and social opportunities for its riparians.

Although regional water cooperation within the Israeli – Palestinian sphere seems scarce, there are examples of cooperative projects being developed. The New York Times (2013) reports in ‘A Rare Middle East Agreement, on Water’ about the treaty on regional cooperation between Israel, Jordan and Palestine, signed on the 9th of December 2013, to build a Red Sea-Dead Sea water project that is meant to benefit all three parties. The treaty deals with two issues, firstly with the issue of immediate scarcity of clean fresh water in the region, especially in Jordan, and secondly with the fast reduction of the Dead Sea. The agreement covers the realisation of a new desalination plant in Aqaba, Jordan, which is supposed to convert salt water from the Red Sea into fresh water for use in southern Israel and southern Jordan – each State would get eight billion to 13 billion gallons a year. The plant would produce an equal amount of brine as a waste product, which would be distributed to the Dead Sea, which is already very saline. The treaty stipulates that Israel will also provide Amman with eight billion to 13 billion gallons of fresh water from the Sea of Galilee in northern Israel. The Palestinians will be able to obtain eight billion gallons of additional fresh water from Israel at preferential prices. The World Bank has been supporting the project.

In a reaction to the report, earlier-mentioned Mr Mehyar, the Jordanian Director of regional organization Friends of the Earth Middle East, expressed grave concern over the environmental impact of releasing brine into the Dead Sea. “What is being signed today is a conventional desalination project, albeit with a regional perspective”, he stated.

Coming back to the TWO: in his article ‘The TWO Analysis – Introducing a Methodology for the Transboundary Waters (*sic*) Opportunity Analysis’ Philips (*et al*, 2008) presents a conceptual framework which may be used by stakeholders dealing with development and management of shared freshwater resources. Philips argues that the objective of the TWO should be the promotion of sustainable and equitable use of transboundary water resources. His analysis aims to explain possible trade-offs connected to development. The article provides an outline for analysing potential benefits in a transboundary (river) basin. According to Philips, such an approach should “optimise economic growth, political stability and regional integration”. He intends his conceptual framework

to be used by basin State governments, regional economic communities as well as financing entities. The framework identifies options to realise opportunities by addressing the (water) conflict in a broader sense, and by reaching a necessary agreement on political and social (-economic) issues among the parties involved. The TWO should be used as a flexible tool to support governmental decision-making, in a broad range of different circumstances, as an additional instrument to their own administrative process. In Philips' model, the TWO analysis consists of a matrix with four key development opportunities and two main categories of water sources to help attain the realisation of those opportunities (Philips, 2008). Philips concludes with the notion that the TWO analysis offers parties to the cooperative process with "a starting point for a better understanding of key drivers, opportunities and trade-offs. This way, value-added outcomes incorporate environmental goods and services in meeting social and economic development" (Philips, 2008).

Chapter 3: Theoretical underpinning

To be able to identify possibilities for a more cooperative mode of water conflict management within the parameters of the Arab – Israeli conflict (and the West Bank in particular) which seeks to avoid conflict or even war over water issues by means of mediation, soft power diplomacy and (better structured) water cooperation, it is necessary to provide this study with a theoretical framework.

This chapter proposes a systematic set of interrelated theories, principles and criteria on how to deal with transboundary water management. First of all, one needs to recognize how water is part of or even the cause of conflict in the West Bank. Then, if water cooperation is chosen as a way to avoid or to solve water conflict, it is necessary to approach the transboundary water issue with a set of criteria to be as effective as possible.

Water disputes result from opposing interests of competing water users, public or private. The Pacific Institute identifies different ways how water management can be the root of conflict: political desire to have *control* of water resources may form the root of the conflict, water resources or water systems may be used as a *military tool*, water resources or water systems may be used as targets or tools of violence or coercion (*terrorism*), water resource systems can be used as *targets* for military actions and finally, water resources or water systems can be a major source of dispute in the context of economic and social development (*development disputes*) (Pacific Institute, 2014).

It is important to address fundamental questions concerning (transboundary) water cooperation. How does one identify the *quality* of water cooperation? *What* is the definition of water cooperation? *Why* and under what conditions do states cooperate? This theoretical construct aims to provide a path to identification of what effective water cooperation should entail. A particular

problem within the scope of this thesis is the way power asymmetry negatively influences successful cooperation.

In Chapters 5 and 6 this study analyses the management of the water conflict component in the Arab – Israeli conflict (in particular the West Bank) and identifies possibilities for a more cooperative kind of water conflict management, in accordance with the method set out in Chapter 4. This study focusses on the Barrier Analysis, the Transboundary Water Opportunity Analysis (TWO) as well as the Strategic Environmental Assessment, proposing these conceptual models as soft power opportunities to achieve truly effective and efficient water cooperation in the West Bank, hopefully resulting in a sustainable peace in this much-troubled area.

Chapter 4: Methodology

As stated in Chapter 1, the key argument of this dissertation is that a review of the management of the water dispute component in the Arab – Israeli conflict, in particular in the West Bank, points to the possibility of engaging in soft power diplomacy, mediation, and (better structured) water cooperation, in a more cooperative kind of water conflict management.

Whereas Chapter 3 has provided the reader with the theoretical construct underpinning this argument, as well as with a framework clarifying a range of concepts concerning water cooperation, Chapter 4 offers the methodology to structure the author's thoughts and conclusions. The models used in this chapter reflect particular perspectives on the case study of the West Bank.

To be able to identify whether effective cooperation strategies are used in the negotiations between Israel and Palestine, Chapter 5 will first use Granit and Claassen's conceptual model as mentioned in Chapter 3, as a method to distinguish a set of proposed causal linkages believed to be related to a less effective cooperative situation in West Bank water management. Granit and Claassen's model might not incorporate all factors correlated with the endpoint of interest of this thesis, it does show an important part of the causal web leading up to effective water cooperation. The model will be used to narrow down the research questions and identify how the water management process has fallen short in effective cooperative terms. Chapter 5 will therefore also contain a short background and historical analysis of the water situation in the West Bank (with Jägerskog's criteria in mind) as well as a summary on how water resources may serve as root of a conflict.

Secondly, Chapter 5 and 6 explore the concepts of 'benefit-sharing' and the Transboundary Water Opportunity Analysis (TWO), in order to invent a number of different solutions for the West Bank.

The TWO is complemented through two other models: next to the Strategic Environmental Assessment, the Barrier Analysis will be used to summarize possible barriers to water management as well as development in the area supplied by the Mountain Aquifer. In Chapter 5 we will look at Chapter 5 concludes in highlighting possible cumulative, economic, environmental en social consequences resulting from the cumulative process for the West Bank communities.

Thirdly, after having determined in Chapter 5 the relevance for the West Bank of the criteria Granit and Claassen proposed in their Barrier Analysis, Chapter 6 follows up with an analysis whether Zeitoun's criteria (as put forward in Chapter 3) are applicable on the West Bank cooperative management situation. The Chapter offers a recommendation on how to deal with power asymmetry in the case of the West Bank, exploring the possibilities of water cooperation in the region, for example through means of 'soft power' or mediation, using cooperative strategies like the Transboundary Opportunity Analysis and the Strategic Environmental Assessment. It sets out to demonstrate that these more cooperative kinds of water conflict management will be beneficiary for the parties to the conflict, diminishing the need to use water scarcity as a military tool. To do so, Philips' conceptual framework for the TWO Analysis is brought into play, which consists of a matrix with four key factors of development opportunities, and two main categories of fresh water resources to realise these opportunities (Philips, 2008). Chapter 7 offers an conclusion to the key argument of this study that analysis of the water management situation in the West Bank shows that water scarcity is used as a military tool and that although the legal framework concerning the water distribution between Israeli and Palestinians provides the basis for cooperative management of available resources, in practice the joint water management is not handled efficiently from the viewpoint of effective water cooperation, with shared benefits for both parties.

Chapter 5: The transboundary water management issues in the Arab-Israeli water conflict

Introduction

As the West Bank's water supply is very important for the inhabitants of the area and of the whole country, its particular situation is a good example of how water, power and politics are interrelated. In the case of the West Bank, in 1993 a cooperative framework was set up to help solve issues. The Oslo Accords were phrased to encourage cooperation in the region; nevertheless, a closer look at the agreement shows us what obstacles towards effective water cooperation were already included in the terms agreed upon by both parties. The question is whether the Oslo Accords have provided Israel and Palestine with a good set of instruments in order to set up a system of effective water cooperation and management? Or has this been a case of 'dressing up domination as cooperation' on Israel's part (Selby, 2003)? This chapter investigates the transboundary water management issues in the ongoing conflict between the Israeli government and the PA and examines in which way the physiogeographic characteristics of the West Bank have contributed to the conflict.

To determine whether control of water resources is (part of) the root of the conflict, the chapter also takes a short look at the historical background of the conflict, focussing on the Oslo Process (in particular on Article 40 of the Declaration of Principles). Key factors that have contributed to the current political situation are identified in the paragraph on the Barrier Analysis, which together with the Strategic Environmental Assessment complements the Transboundary Water Opportunity Analysis (TWO). The Barrier Analysis - Granit and Claassen's conceptual model, proposed as a method to distinguish a set of proposed causal linkages believed to be related to a less effective cooperative situation in water management - identifies how water management in the West Bank after the Oslo Agreement has fallen short in effective cooperative terms. Chapter 5 concludes in highlighting

possible cumulative, economic, environmental en social consequences for the communities in the West Bank.

Water cooperation – a definition

What is water cooperation? According to the UN, water cooperation is “every action involving water management [which] requires effective cooperation between multiple actors whether at the local or international scale. (..) If any of the people involved in water management do not cooperate, the ‘cooperation chain’ is broken and water resources will not be managed in the most effective way, with adverse effects on human lives and the economy. When water resources are cooperatively shared and managed, peace, prosperity and sustainable development are more likely to be achieved”(UNESCO, 2013). A closer look at the history of the water cooperative process with regard to the Mountain Aquifer and the West Bank shows us that barriers towards effective water cooperation were put into place already early on in the process.

Extraction from the Mountain Aquifer

The water management in the Palestinian territories differ from one another. The water situation in the West Bank differs from Gaza, since Gaza relies heavily on the Coastal Aquifer for natural fresh water, while the West Bank relies on the Mountain Aquifer. In Gaza, the only source of natural fresh water is the Coastal Aquifer. This aquifer stretches along the Mediterranean coast, all the way from Egypt to Lebanon. The aquifer suffers from overexploitation as well as from salination as a result of seawater intrusion (Food and Agriculture Organization of the United Nations (AQUASTAT, 2008). The position of the different aquifers are illustrated in *fig. 1*.

Mountain and Coastal Aquifers



Fig.1 Aquifers in the West Bank (Israel Water Blog, 2009)

The West Bank on the other hand, is supplied through the Mountain Aquifer, a vital source of water for both Israelis and Palestinians. It obtains its water supply through rainwater and melted snow, with the Northern, Western, Eastern Aquifers that make up the Mountain Aquifer yielding about 565– 822 MCM (Lipchin *et al.*, 2009). Water from this (combination of) aquifers is generally of high quality. The recharge area of the Mountain Aquifer is almost completely situated in the West Bank. The volume of the recharge varies, and generally is about 4% more than the ‘estimated potential’ that was provided for in the Oslo Accords. The next paragraph will elaborate on this agreement.

The West Bank's main resource of natural water is groundwater from the aquifer. Nearly the entire West Bank population relies on springs, wells or extracted water from the Mountain Aquifer for drinking and other uses. Israel depends on the Mountain Aquifer to supply water to its larger cities.

The Mountain Aquifer is threatened by groundwater pollution. It has to deal with untreated sewage running onto its surface and seeping into the ground and threaten the continued utilization of vital water resources (Amnesty International, 2009).

The Oslo Accords I (1993) and II (1995)

In the mid-nineties, the Israeli and Palestinian authorities came to an agreement on how to jointly manage the Mountain Aquifer. The Oslo I Accord, formally known as the 'Declaration of Principles on Interim-Self Government Arrangement of 1993 between Israelis and Palestinians' includes provisions that outline cooperation on economic and development programmes (Annex III) and regional development programmes (Annex IV). The Oslo II Accord (1995) is the informal title of the 'Interim Agreement on the West Bank and the Gaza Strip of 1995'. The Oslo Accords resulted from the first direct, face-to-face negotiations between the government of Israel and the Palestine Liberation Organization (PLO). It involved a framework for future negotiations and relations between the Israeli government and the Palestinian Authority, within which parties would address and hopefully solve all outstanding issues (Oslo II) (UNEP, 2003).

The Oslo Accords are the foundation for water cooperation between Israel and the PLO, the landmark agreement (1993) between both parties. Although the agreement at the time was hailed as a big step towards a lasting peace agreement, it has continued to receive a great deal of criticism during the 20 years that has past. Some argue that the Oslo Accords 'robbed' the Palestinians, that negotiations on a final accord have not progressed. Whereas Israel continues with its settlement program in the West Bank, Islamist movement Hamas has effectively taken control of the Gaza Strip. The two-state solution seems less reachable than it was before, which has become even more apparent during the 50-day war between Israel and Hamas in the Gaza Strip during the summer of 2014. It is even argued that the Oslo Accords provided parties with provisions for a 'false' cooperation with regard to managing water supplies, which in reality helped consolidate illegal settlements as well as undermine the two-state solution (Black, 2013).

The agreement created three territorial zones in the West Bank, namely Area A, where the PA is responsible for public order and internal security, Area B where the PA has responsibility for public order, yet Israel is in charge of internal security, and Area C, where Israel continues to have exclusive control. Furthermore, Israel maintains exclusive control over external control, borders, Jerusalem and settlements in the West Bank (UNEP, 2003).

Officially called the Declaration of Principles on Interim Self-Government Arrangements or Declaration of Principles (DOP), the Oslo I Accord brought forth an agreement which included Israel's recognition of the PLO as Palestine's official representative, the PLO renouncing the use of violence, while recognizing Israel's right to exist. Both parties agreed to Palestinian self-rule in Gaza and the Jericho area of the West Bank by the year 2000, whereas a five-year interim period would facilitate further Israeli withdrawals from other, unspecified areas of the West Bank (Israel Ministry of Foreign Affairs, 1995).

Two years after the initial agreement, Annex III of the Oslo Accords II (1995) provided both parties with a number of provisions with regard to water cooperation, among which the stipulation that "Israel recognizes Palestinian water rights in the West Bank and that both sides would recognize the necessity to develop additional water for various uses" (Israeli Ministry of Foreign Affairs, 2012).

Annex III states among other things that while "respecting each side's powers and responsibilities in the sphere of water and sewage in their respective areas, both sides agree to coordinate the management of water and sewage resources and systems in the West Bank (during the interim period)". Article 40 of the Agreement deals with the sharing of the water of the Jordan River Basin between Israel and the PA, settings of standards of environmental protection and pollution control, and the development of joint management and monitoring mechanisms to govern water development in the West Bank (Israeli Ministry of Foreign Affairs, 2012).

Article 40 of the Oslo II Agreement

An essential part of Article 40 was the provision for a transfer of authority: the Israeli side committed itself to transfer to the Palestinian side of powers and responsibilities in the sphere of water and sewage in the West Bank related solely to Palestinians, which the Palestinian side would assume (Israeli Ministry of Foreign Affairs, 2012). These powers and responsibilities involved the ones that were at that point held by the military government and its Civil Administration. An exception was made concerning issues that were to be negotiated in the permanent status negotiations. However, the Permanent Status Negotiation was never discussed, the responsibilities mentioned were not established, and consequently not transferred (UNEP, 2003).

Another significant part of the Article 40 was the installation of the Joint Water Committee. Both parties established, upon the signing of the Agreement, a permanent Joint Water Committee (JWC) for the interim period, under the supervision of the Joint Civil Affairs Coordination and Cooperation Committee (CAC). Its tasks included dealing with “all water and sewage related issues in the West Bank including coordinated management of water resources, coordinated management of water and sewage systems, protection of water resources and water and sewage systems, exchange of information relating to water and sewage laws and regulations, overseeing the operation of the joint supervision and enforcement mechanisms, the resolution of water and sewage related disputes, cooperation in the field of water and sewage, arrangements for water supply from one side to the other, monitoring systems as well as other issues of mutual interest in the sphere of water and sewage”. The JWC was to be comprised of an equal number of representatives from each side, while all decisions of the JWC were to be reached by consensus, including the agenda, its procedures and other matters (Israeli Ministry of Foreign Affairs, 2012).

Mutual cooperation was specifically provided for in Article 40, with both parties agreeing to cooperate in the field of water and sewage. The agreement included “cooperation in the framework of the Israeli-Palestinian Continuing Committee for Economic Cooperation, in accordance with the provisions of Article XI and Annex III of the Declaration of Principles, cooperation concerning regional

development programs, in accordance with the provisions of Article XI and Annex IV of the Declaration of Principles, as well as cooperation within the framework of the joint Israeli-Palestinian-American Committee, on water production and development related projects agreed upon by the JWC” (Israeli Ministry of Foreign Affairs, 2012).

Furthermore, the article addressed “cooperation in the promotion and development of other agreed water related and sewage-related joint projects, in existing or future multi-lateral forums, cooperation in water-related technology transfer, research and development, training, and setting of standards, as well as cooperation in the development of mechanisms for dealing with water-related and sewage related natural and man-made emergencies, extreme conditions and cooperation in the exchange of available relevant water and sewage data, including measurements and maps related to water resources and uses, reports, plans, studies, researches and project documents related to water and sewage, data concerning the existing extractions, utilization and estimated potential of the Eastern, North-Eastern and Western Aquifers” (Israel Ministry of Foreign Affairs, 2012).

Consensus between unequal powers

The question arises why the provisions of Article 40 may not have resulted in satisfactory management of the water resources for both parties in the West Bank. The answer may lie in the impossibility of consensus between two parties that differ in governmental and political strength. The World Bank (2009, p.33 -56) attributes failures in water resource development and management to insufficient integration of different sectors within the governmental framework. According to the World Bank, Article 40 provided the West Bank with a management system that requires consensus in decision-making. It is impracticable to implement a management system that involves consensus or even compromise between two partners with unequal power. As a result, the Oslo Accords might have given Israel more control in the allocation and management of West Bank water supplies (than was intended by both parties). Although Article 40 provided for a joint water governance of the West Bank water resources, it has, in fact, allowed Israel to dominate the decision-making in the JWC.

The provisions made in Article 40 give Israel the upper hand in the joint management of the Mountain Aquifer. Israel is the “residual downstream beneficiary” (World Bank, 2009) of the water resources of the Mountain Aquifer. Downstream it can therefore take out the amount of water as it sees fit, without having to ask permission from the JWC. The PA has no control over this. This presents the Palestinian side with a paradox: for the Palestinians to be able to extract water from the Mountain Aquifer, it needs the permission from the Israeli authorities, yet Article 40 did not give the PA the right to limit Israeli extraction from the same aquifer in Israel, and therefore, effectively, neither in the West Bank.

Although Article 40 provides the PA with other potential locations for water extraction in the Eastern Aquifer (as well as some other locations), it would still need Israel’s cooperation to be able to start drilling. Either way, at this point the PA lacks the financial resources to complete those projects. In other words, there seems to be a kind of ‘forced consensus’ when it comes to the PA needing Israel’s permission to extract water in the West Bank, while there is no mutual consultation at all when Israel decides to take water from the same aquifer. In reality, as the World Bank puts it “Israeli authorities have an effective veto over all PA water resource extraction and infrastructure projects (but not vice versa), and take action by force when they choose” (World Bank, 2009).

And Israel *is* able to back up its vetoes with force. The Israeli military and Civil Administration control around three-fifth of the West Bank (also known as Area C) , leaving the PA without effective ways to govern the area. Again, since the most of the water supplies are situated within Area C, Israel has even more leverage to control Palestinian water infrastructure, although the PA can’t control Israeli extraction from the same area but not vice versa. Although the main issue is within Area C, the inhabitants in Area A and B have to deal with the same governmental reality. And this reality is, that Israel has constant access to the water supply in the West Bank, while the PA has not. And as we will see, in the next paragraph, Israel uses its power surplus to keep the Palestinian share of the water supply of the West Bank aquifers at a low level.

Current situation in the West Bank

According to the World Bank (2009), the unequal power division between the Israeli government and the PA leads to the current situation in the West Bank in which Palestinians have access to one-fifth of the resources of the Mountain Aquifer (World Bank, 2009). The Israelis overdraw on the amount (the 'estimated potential of the Mountain Aquifer') stipulated in the Oslo Accords by more than 50%. Palestinians have access per capita to water resources for the amount of 25% in comparison to Israeli access per capita. Generally, Palestinian abstraction is in line with what was allocated in the Oslo Accords: 113 – 138 MCM, which is about one-fifth of the 'estimated potential'. Israel abstracts the balance plus a substantial overdraft (118 MCM plus 20.5 MCM), which is about 80% more than what was allocated to Israel in Article 40 of the Oslo Accords, an extra 389 MCM in addition to the 483 MCM allocated. According to Article 40, the JWC must approve increases in extraction that exceed the Oslo allocations (World Bank, 2009).

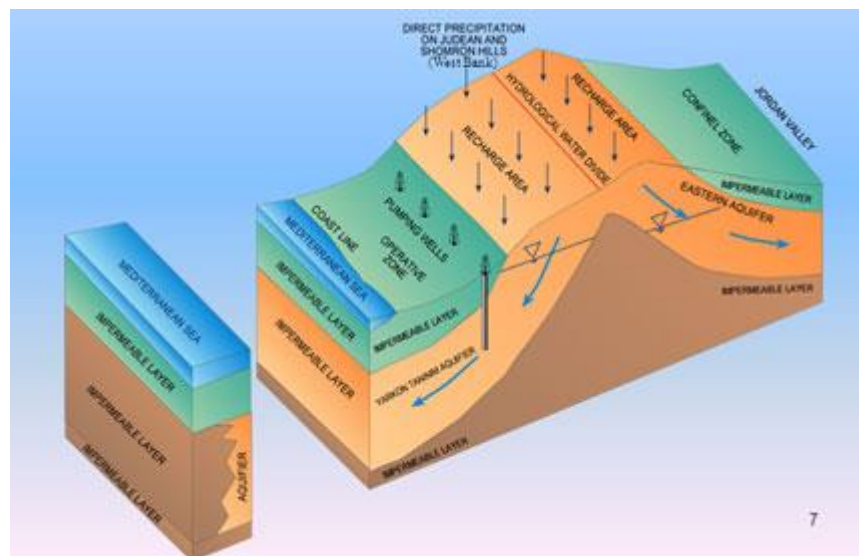


Fig. 2 Schematic overview of the Mountain Aquifer

(Israeli Ministry of Foreign Affairs, 2012)

The consequences of over-extraction can be divided into a couple of categories (World Bank, 2009):

1. **Environmental risks:** over-extraction has created risks for the Mountain Aquifer. In 2008, the Chairman of the Israeli Water Authority stated that because of mentioned abstractions the water levels of the aquifers involved have been affected “to the point where irreversible damage is done (..)”(World Bank, 2009).

2. **Accessibility/ availability:** decline in water supplies available to the Palestinian people. Excess abstraction may have caused water levels in the upper part of the Mountain Aquifer to go down, which in turn has led to decreased potential of utilization beneath the West Bank. In the Eastern Aquifer (which is part of the larger Mountain Aquifer), use of deep Israeli wells has negatively affected exploitation of lower situated Palestinian wells. Half of the Palestinians wells have dried up in the last twenty years, which is particularly hard on the already vulnerable groups in the area. In 2005, the PWA reported that 328 wells were operational in the West Bank, compared to 774 wells in 1967. Water withdrawals per capita for Palestinians residing in the West Bank are 25% of the amount Israelis use per capita, and have been reduced from 118 MCM to 113 MCM since the Oslo Accords, while the Palestinian population in the West Bank has increased with 50% within that same time period (World Bank, 2009).

3. **Coping strategies:** the reduced availability of water supplies (and its high financial cost) has resulted in coping strategies. In areas where water prices are high, while the quality of the water is poor, and where the JWC has not issued any licences for drilling new wells, residents have resorted to illegal drilling to be able to access water of a better quality for a reasonable price. In 2007, this happened in the village of Arrabona, for example, where villagers for years had been trying to obtain a drilling license, without any success. After illegally drilling the well, the Civil Authority sent over 40 military vehicles and bulldozed the well and turned the location into a park.

Since the Oslo Accords, there has been a lot of investments: connection to a safe (high-quality) water supply has improved. By 2005 90% of the West Bank households were connected to a safe water network. Nevertheless, the Palestinian population has grown intensively, generating a 50% increase.

However, for a third of communities in the West Bank, especially in the poorer northern governates, 20% - 30% of the networks are not properly serviced. Actual domestic consumption averages 50 lpcd, while some networks only provide 10 -15 lpcd. Furthermore, families without a direct water supply connection are paying one-sixth of their income or more for tanker water.

Another complicating factor is the fragmented institutional structure of Palestinian water management. Next to water scarcity and a rather small geographical area to cover, the Palestinian water sector suffers from a fragmented and heterogeneous structure. The immediate result of this (actual lack of) structure as well as a strong vision uniting these fragmented, often low-capacity operators, is that they and therefore the whole of the Palestinian access to the available water supply, has become dependent on a single, high-capacity Israeli water supplier (Mekorot), which is the de facto manager of all interconnected systems.

The situation in the West Bank may be summarized as follows: although overall water supply has increased, it has also resulted in an increase in dependency on purchased water. The Oslo Accords stipulated the development of Palestinian resources, yet twenty years after the agreement dependence on Israeli Mekorot water has in fact amplified (from 22 MCM in 2000 to 38 MCM in 2007) (World Bank, 2009). Supply per capita has varied, with some towns in the West Bank having to deal with extremely low quantities, remote villages suffering from low supply because of their geographical location. Supply rates generally do not exceed 50 lpcd, with a sixth of the population only being supplied with around 20 lpcd, which is comparable to the levels in war-stricken countries like Congo and the Sudans.

One should keep in mind that there is also a large discrepancy between supply and actual household use, which in the West Bank is around the above-mentioned 50 lcpd. These low levels of supply place the communities in the West Bank well below international standards. In comparison, the World Health Organization (WHO) estimates 100 lcpd to be the optimal water supply. Not only is the quantity level low, around 10% of the population is not connected to *any* network.

For example, in Jenin, in the North East of the West Bank, villagers turn to ad hoc measures to avoid water of poor quality (from the shallow aquifer) against high costs. The most sustainable solution would be to connect the village of Jenin to a network connecting it to a deeper aquifer, but the plan to realise this project hasn't been completed. Instead, extra illegal wells have been drilled that are depleting the shallow aquifer, deteriorating the quality and quantity of the water supply even further. The village has suffered from increasing internal strife, and possible conflict, for inhabitants are forced to choose between using water for farming or for their domestic needs.

Another reoccurring issue is the water sanitation situation in the West Bank, with more than two-thirds of the Palestinians relying on septic tanks and only four towns having a treatment plant. Quality is poor and there is no recycling. Raw sewage is discharged in the environment, both by the plants and the settlements themselves, which is damaging to water quality. It is very necessary to develop wastewater systems, because with the increase of water supplies the quantity of waste water has also increased, which inevitably leads to environmental problems.

Not only does water costs take up a large part of the average household income, the low capacity to pay is threatening utility finances. Water quality decreases, resulting in an increase of water related illness in the region. With water quality and disease as well as environmental contamination on the rise. An example of this can be found in the high incidence of infant diarrhoea. In 2006, a PAPFAM study showed that 12% of children younger than 5 years old had suffered from this disease in the two week prior to the survey. Diarrhoea is strongly linked to (the lack of) water quality. It is

estimated that annual cost of poor sanitation on infant health accounts for almost 0,4% of the GDP (20 million in 2006) (World Bank, 2009).

With regard to agriculture in the West Bank the World Bank (2009) paints a similar picture: irrigated agriculture is an important economic sector. It covers about 12% of cultivated land. It contributes to about 12% of GDP and employs 117.000 people. However, the economic crisis, restrictions on movement due to the Separation Barrier and the 'Closed Areas', and restricted export in the area as well as decreasing water availability have had a negative effect on the agricultural sector. Nevertheless, the irrigated area has the potential to be quadrupled, which would give the sector a new impulse.

Amnesty International addresses the Palestinians' unequal access to water in its 2009 report 'Troubled waters – Palestinians denied fair access to water' the fact that since the 1967 War Israel has denied Palestinians access to the Jordan River. Israel diverts the flow upstream into Lake Kinneret/ Tiberias/ Sea of Gallilee, while Jordan diverts the river into tributaries on its own territories. As a result, the Jordan River has been reduced to a very small stream. This leaves the Mountain Aquifer as the only water source for the inhabitants of the West Bank. Even with this limited resource availability, Israel limits water supply to the Palestinians to about 20% of the Mountain Aquifer supply. To enlarge the inadequate supplies, Palestinians must acquire water from Israel – water that Israel takes from the same Mountain Aquifer water supply that Palestinian are not allowed to access by themselves. In recent years, indeed Palestinian have bought more and more water from Israel. At the same time, the Israeli settlers in the Occupied Palestinian Territories (OPT) supplies are not reduced during the hot summer season.

Water as a military tool

Examining the aftermath of the Oslo Accords I and II, the de facto extraction of water from the Mountain Aquifer, the political climate as well as the current situation in the West Bank, with the criteria the Pacific Institute (2014) has offered and which were mentioned in Chapter 1 of this thesis,

in mind, one can now do an assessment on how water resources in the West Bank serve as (one of the) root(s) of the Arab – Israeli conflict. In an area that is already vulnerable because of both its arid nature and its political unstable circumstances, it is difficult to establish whether in the case of the Arab – Israeli conflict water is the root of the conflict, since there are many political and religious as well as economic factors that lie at the heart of the conflict. Water does serve as a military and a political tool; it serves as an incentive for further conflict.

To start with the first criterion as identified by the Pacific Institute, control of water resources may serve as the root of the conflict: Israel has a great amount of control over all water management issues in the OPT, among them the West Bank, as the historic overview and summary of the current situation in the West Bank has shown. Water resources or water systems in the West Bank are used as a military tool: Amnesty International (2009) highlights the military component of West Bank water management. After Israeli occupation started in 1967, the Israeli army issued a number of orders. The ones that have had most impact on the water situation are the following:

- Military Order 2 (1967): all water resources in the newly OPT were state-owned by Israel (UNEP, 2003)
- Military Order 92 (1967): granted complete authority over all water-related issues in the OPT to the Israeli army (Amnesty International, 2009).
- Military Order 158 (1967): Palestinians were not allowed to construct any new water installation or resource without a permit from the Israeli authorities. Any installation built without a permit would be seized (Amnesty International, 2009).
- Military Order 291 (1968): this order annulled any land or water-related arrangement which had been in place prior to Israeli rule over the OPT (Amnesty International, 2009).

These military orders show how much water has been part of Israel's military strategy. Next to these military orders, the Israeli army took over control of the West Bank Water Department (WBWD), which operated 13 wells located in the West Bank. Water from these wells is sold to Palestinian

villages and Israeli settlements. In 1982, water management was handed over to Mekorot, the Israeli water company. Mekorot operates around 42 wells in the West Bank which mainly deliver water to the settlements (although the amount it sells, is determined by the Israeli government) (Amnesty International, 2009).

Water resources are an easy target for terrorism, which is defined within this scope as using water resources or water systems as targets or tools of violence or coercion or for military actions (Pacific Institute, 2014). By refusing new wells to be drilled, and destroying newly but illegally drilled wells (without a permit from the PWA), Israel uses West Bank water systems and also the low network servicing as a tool and as targets for violence. By disallowing Palestinian villages in the West Bank drilling wells for gaining access to their own water supply from the Mountain Aquifer, after which the Palestinians may buy water from that same aquifer, Israel is effectively hindering social and economic development of the Palestinian communities in the West Bank.

Israel's point of view

In a reaction to the reports of both the World Bank and Amnesty International, in a PowerPoint presentation on its website, the Israeli Ministry of Foreign Affairs argues that it has complied with the stipulations of Oslo Accord II (1995), including the Water Agreement (Annex III). Israel states that it has made available “approximately 70 MCM/year of water to the Palestinians in the West Bank during the interim period, even though the Water Agreement allocates a much smaller quantity of only 23.6 MCM/year (for the West Bank)”. In addition to that, Israel supplies the Palestinians with 52 MCM of water which is far beyond its obligation in the Water Agreement (31 MCM) (Israeli Ministry of Foreign Affairs, 2012).

Not Israel, but the Palestinians constantly breach the agreement, it argues; Palestinians continuously drill many unauthorized wells in the West Bank, which is not authorized in the Water Agreement. This has resulted in more than 300 unauthorized Palestinian wells in the West Bank, producing additional water on the account of Israel. Israel takes issue with the fact that the Palestinians do not

treat their sewage, which then contaminates the Mountain Aquifer as well as the waterways into Israel. Moreover, according to Israel, the Palestinians “are not developing any new water sources, either through sewage treatment, or desalination”. The larger part of the Mountain Aquifer is located underneath Israel (8,900 km²), while 5,600 km² are located in the West Bank. Israel objects to the World Bank’s assumption that Israel has 240 MCM water available per capita, for “it seems that only in the case of Israel, the World Bank included in its calculations also non fresh natural water sources such as desalinated sea water and treated wastewater” (Israeli Ministry of Foreign Affairs, 2012).

1433 MCM is the multiannual average of renewable fresh natural water (RFNW), between the Jordan River and the Mediterranean Sea, for the period between 1993 – 2009, not including the Gaza Strip. Added to this, is the amount of 197 MCM of saline water. This leads to an amount of available RFNW of 150 m³ for Israel (1170 MCM for 7,8 mln residents) and 124 m³ for the Palestinians (248 MCM for 2 mln residents). The Water Agreement (Oslo II) allocates 196 MCM to the Palestinians in the West Bank, plus 52 MSM supplied directly by Israel. However, Israel argues, the Palestinians in the West Bank extract an extra amount from the northern and western basins of the Mountain Aquifer (around 17 MCM), which is more than allocated to the Palestinians in the Water Agreement, and is, in fact, on the account of Israel. In 2009 there was 127 m³ of water per capita available for the Palestinians in the West Bank, of which 27 m³ was provided for by Israel. Consumption per capita was (only) 95 m³. For the Israelis 154 m³ was available per capita, while only 137 m³ was consumed. In addition to this, Israel states, since 1967 the amount of RFNW by Israel has decreased by 73% per capita, while the RFNW used by Palestinians in the West Bank has increased by 10% per capita. In 2010 Israel recycled 72% of its wastewater (which is impressive, for example in comparison to Spain (12%) and Australia (9%)), while, according to the Israeli government, Palestinians do not recycle their wastewater at all.

In the presentation, Israel highlights the fact that the JWC is co-chaired by the heads of the Palestinian and Israeli water authorities and includes representatives from both sides. The

committee and sub-committees convene regularly and work together on a daily basis. Most of the Palestinian and Israeli requests to JWC for permits are approved; only if an application is in contradiction to the Water Agreement, it will be denied. The JWC has developed a fast-track application mechanism, which allows approval within 21 days (for urgent projects). There are many Palestinian projects which the JWC has approved, but which not yet have been executed, among them the permits for 25 wells. Nevertheless, Israel argues, over 300 unauthorized wells were drilled by the Palestinians in the West Bank. This is dangerous, Israel adds, because these drillings may ruin the environmental quality of the shared Mountain Aquifer (as has happened to the aquifer in Gaza), which would result in an ecological disaster.

Israel assesses what would enhance Palestinian water sector capabilities: the sector needs adequate organisation and management, based upon sustainability and management of water resources, water saving and reduction of water losses. The Palestinian water sector should also focus more on treating and using available water sources (sewage, flood and saline water), as well as on production of new water sources (desalination) and real water pricing. This is how Israel's water management is organised, it says, and it has proved to be effective (Israeli Ministry of Foreign Affairs, 2012).

Conclusion

Israel argues it acts accordingly to the stipulations of the Oslo Accords, protecting the Mountain Aquifer from illegal extraction. The Palestinians, backed up by the World Bank, Amnesty International and other NGOs, are having great difficulty accessing and managing their share of the water supply of the Mountain Aquifer. It seems that, although, the JWC is comprised of both Israelis and Palestinians who make joined decisions on the management of the Mountain Aquifer, they are still (on the aspect of water cooperation) opposing each other instead of working together. The result of effective water cooperation should be shared benefits for contributing parties, peace, prosperity and sustainable development, as we have seen in the definition of water cooperation by the UN. To be able to build mutual respect between parties, peace and promote sustainable growth, it is necessary to address the power asymmetry between the Israeli government and the PA. Israel, although technically

complying with the provisions of the Oslo Accords, will value military security and state sovereignty above being juridically free and equal collaboration with the PA. This would constitute a threat to any cooperative process; any power asymmetry, inequity in bargaining power or sign of coercion needs to be challenged, for this would inevitably lead to a non-sustainable situation, with negative effects for all parties involved.

In line with the criteria Jägerskog proposed in his article 'Addressing Transboundary Water Management Challenges: Getting it right' (2008), it would be beneficial for the cooperative process if parties acknowledged that some cooperation may lead to coercion and that truly effective cooperation meets the goals of all participants. Parties might have to start at a grassroots level, for cooperation at a community level can lead to cooperation on an international level. Every water resource has unique opportunities for benefit-sharing, with a range of development possibilities for everyone involved. The joint efforts of Israel and Palestine may be increased when they both become more aware of the net economic and political benefits that may outweigh the benefits of unilateral action. For Israel to overcome its intrinsic preference for unilateral action (which has brought it a lot of benefits in the past), it needs to be aware of cooperation reducing common water-related risks, like deterioration of the water quality in the Mountain Aquifer. Issues to tackle in the Israeli – Palestinian cooperative process are economic inequity as well as power asymmetry. The Barrier Analysis identifies a number of other stumble blocks towards an effective collaboration and to sustainable development in transboundary water supplies. These barriers tend to have negative economic, environmental and social consequences for the (local) communities in the West Bank as well as for the region as a whole. In the next paragraph the Barrier Analysis is performed with regard to the water cooperative process in the West Bank.

The Barrier Analysis

In their article 'A Path Towards Realising Tangible Benefits in Transboundary River Basins' (2009), authors Granit and Claassen propose their Barrier Analysis, a model complementing the

Transboundary Water Opportunity Analysis (TWO). The model highlights possible barriers to development and to an effective cooperative process. This paragraph identifies different barriers that are in place in the Israeli – Palestinian cooperative process for the management of water supplies in the West Bank.

Barriers to cooperative water management in the West Bank

Taking the historical background as well as the current situation in the West Bank in account, it becomes clear that there are multiple barriers in the relationship with Israel and Palestine that would prevent effective water cooperation and would break the 'cooperative chain', making it difficult to manage shared water resources successfully, with benefits for both parties. Granit and Claassen's conceptual model - the Barrier Analysis - reviews those barriers to effective water cooperation, which in turn have a negative effect on economic, environmental and social development for communities located in the West Bank. Although Granit and Claassen have built their model with regard to shared river basins, the concept is perfectly applicable on shared water supplies other than rivers, for a river often serves as main water supply as well as border between opposing parties; in the same way the Mountain Aquifer serves transboundary populations, opposing each other, depending on each other's use of the same water resource.

Granit and Claassen formulated their criteria with regard to river basins and (opposing) riparian States. As this study focuses on the Mountain Aquifer, references within the criteria to rivers and basins have been substituted with phrases associated with the aquifer and ground water supplies. The criteria as mentioned in the Barrier Analysis are as much applicable on shared water supplies from river basins as they are from another source, like an aquifer. The next paragraphs investigate the situation in the West Bank, measured against the criteria Granit and Claassen have formulated for their Barrier Analysis (and as they were summarised in Chapter 2). Every paragraph will compare the Israeli to the Palestinian situation and investigate whether a possible discrepancy provides the developing water cooperative process with a barrier.

A high level of inequality between states

Israel and the OPTs differ from each other when it comes to economic growth and attractiveness, experiencing a significant discrepancy in GDP. Although the West Bank as a whole has experienced moderate growth since 2008, mostly due to donor aid and government spending, the private sector has not seen strong development. Although the second intifada (2000) resulted in an economic downturn, the overall economic standard has since recovered. The Palestinian Authority has implemented measures to promote economic and security reforms; nevertheless labour and trade flows are still restricted by the Israeli government. The Palestinian economic position suffers from restricted access to land and water and energy supplies, import and export restrictions and above-mentioned dependency on foreign aid. In comparison to other countries, it ranks 157th economically, when it comes to purchasing power parity². The real growth rate of 5.7% shows promise, placing the Palestinian Territories 43th worldwide. The GDP nonetheless is low, at \$2,900 (2008 est.), which ranks Palestine 179th, in comparison to the world. The end use of GDP is mostly household consumption (99.5%). Industries include “small scale manufacturing, quarrying, textiles, soap, olive-wood carvings, and mother-of-pearl souvenirs”. Palestinian unemployment rate soars at 22.5% (2013 est.), landing it on the 169th place globally. More than 18% of the West Bank population live below the poverty line (Central Intelligence Agency, 2014a).

Israel, in comparison, has a much stronger economic position, with a technologically advanced market economy. Leading exports include cut diamonds, high-technology equipment, and pharmaceuticals, while Israel’s trade deficits are equalised by tourism and other service exports, along with substantial foreign investments. Having a solid economic foundation, Israel has an average annual economic growth of nearly 5% per year. Its purchasing power parity puts Israel on a 49th place globally, with a solid GDP - per capita of \$36,200 (2013 est.), ranking Israel 37th worldwide. Not only is Israel’s export much higher, its import much lower and its GDP much higher than

² Note: the data determining purchasing power parity, growth rate, GDP include the Gaza Strip, the unemployment rate does not.

Palestine's, its unemployment rate is significantly lower as well, at 5.8% (2013 est.) (Central Intelligence Agency [CIA], 2014b).

These data make clear that Israel and Palestine are economically highly unequal, providing the cooperative process with its first barrier. Obviously, one has to deal with a certain paradoxical situation, for one of the reasons Palestine is unable to attain economic equity is its limited access to water supply, which makes it the weaker partner in the cooperative process. Yet, to (cooperatively, in accordance with the Oslo regulations) gain access to those resources, it needs to, according to the criteria Granit and Claassen propose, become as economically strong as Israel, which it possibly can't become, if it does not have satisfactory access to water.

Major difference in political systems

Israeli and Palestinian political systems differ significantly as well. The state Israel is a parliamentary democracy. The Israeli political system is heavily influenced by Western European democracies, with an elected government stemming from a multiparty competition. Both local and national elections are characterized by a high level of voter participation. Israel has adopted an independent judiciary. Other features, such as collectivism and a small liberal section in Israeli politics, clearly have an East European and Central European background. This may be the reason that Israel lacks a written constitution which would limit governmental powers and impose restraints on the majority to safeguard the rights of individuals, for example in matters of civil rights and religious interests (Chapin Metz, 1988). The right-wing Likud party dominates Israeli politics, criticising peace policies for failing to protect Israeli security.

When taking a closer look at the Palestinian political system, a few issues seem to emerge. Although the PA is a democratic body, it has to deal with difficult internal power struggles. The West Bank is governed by the Fatah movement, which faction dominates the Palestinian Authority. The stability of the Palestinian government is threatened by a rift between Fatah and its rival faction Hamas. Uneasy co-existence between PNA President Mahmoud Abbas and the Hamas-led government resulted in

violence between armed wings of both factions, after which Hamas seized control of Gaza by force, forming its own government there. Since then, the West Bank is essentially governed by Fatah, whereas Gaza is run by Hamas. Local elections on the West Bank in late 2012 weakened Fatah's position in the area, as it won merely 40% of the seats. Fatah dissidents won almost half of the larger towns, while independents took control of a fifth. Hamas boycotted the elections. In April 2014 Fatah and Hamas declared they were to reconcile, to stop the violence between the two movements and to form a unity government (*BBC News*, 2014). After the armed conflict between Israel and Hamas during the summer of 2014 it seems that Fatah and Hamas are looking for a new power equilibrium.

These descriptions of political systems show (major) differences between political systems, between an established, democratic Israel, although heavily influenced by right-wing politics and orthodox-religious groups; and the PA, as a developing political entity recovering from internal conflict.

A strong geopolitical influence (in the aquifer area)

Another barrier to successful water cooperation may be found in the geopolitical importance of the Mountain Aquifer. The idea behind geopolitics is that the geography of a State for a large part determines its foreign policies, independent of policymakers, technology or the identity of neighbours. Israel's primary external threat does not come from a Palestinian uprising. Israel can manage its conflict with Palestine so long as it does not challenge Israeli unity. The true threat to Israel is the fact that it is a small country, yet must deal with military dangers from (far) outside of its area. Its independence can only endure if it negotiates with global political players in the possession of a great deal greater resources. Israel does not have access to the same quantity of resources and, therefore, it must be persistently clever. In recent history there have been periods when Israel has been relatively safe, due to its alliances to the United States, among others, but its historic condition is one of global unease. To avoid subordination, Israel needs to manage its (limited) natural resources to an almost excessive degree. Maintaining control of the water resources provided by the Mountain Aquifer is therefore of high importance to Israel (Stratfor Global Intelligence, 2011).

As described in the historical overview in Chapter 5, Palestinian agricultural cultivation has suffered due to limitation of water supply in the West Bank, which allowed the Israeli settlers to obtain land. The JWC limiting Palestinian drilling of wells has ultimately caused Palestinian water sources to dry up. New Israeli settlements in the West Bank and the joint cultivated fields have been well-supplied, as opposed to the West Bank's conditions. As a result Palestinian agriculture and therefore the living-standards of the people have declined (Attila, 2010). The geopolitical importance of the West Bank is closely interwoven with the priority of freshwater ownership: for Israel it signifies independence from larger powers in the region, a strong global political position, not to mention survival of the Jewish State. For the Palestinians residing in the West Bank water ownership means independence of Israel, and preserving a reasonable standard of living (Stratfor Global Intelligence, 2007).

Difference religious views and ethnic composition

As the Arab-Israeli conflict is influenced by different factors, frictions between the existing religions in the area are an aspect to consider as an influence on the hydro-political situation. According to the Israel Central Bureau of Statistics Israel has a fast growing population of approximately 8,134,100 inhabitants as of the end of 2013. 75% percent of them are Jewish, while a little more than a fifth are of Arab background. Israel's yearly population growth rate was 1.9% in 2013, which is more than three times faster than the OECD average of around 0.6%.

The Jewish population is made up of mainstream Jews (around 64%), Haredi Jews (around 12%) and Arabs (around 21%). Although Israeli birth-rates have soared (largely because of the expanding Haredi sector), the Arab annual population growth has dropped considerably from around 3% to less than 2.2% by 2013. In comparison: the West Bank houses 2,731,052 people (July 2014 est., including East Jerusalem, and including Israeli settlers). 83% of the population in the West Bank is Palestinian - Arab, 17% are Jewish. Of that population three-quarters are Muslim (predominantly Sunni), while 17% is Jewish (and 8% of Christian/ other background) (The State of Israel Central Bureau of Statistics, 2014).

A large difference in legal systems

Dissimilar legal systems may provide another barrier towards successful water cooperation. Consecutive administrative and legal systems have greatly influenced management of water resources in the West Bank. Initially (during Ottoman rule), water distribution in the West Bank was governed by Islamic principles. These laws demanded that water should be accessible to everyone and that sale of water is forbidden. They also regulated the right to utilize water supplies for human and animal consumption and irrigation. Ahead of its time, it already created a concept of protected areas. Islamic water law has been codified, for example with regard to the right of water use, water for irrigation and mentioned protected areas. On the other hand, regulation covering organization and administration of water resources was underdeveloped (UNEP, 2003).

The Palestinian judicial system is still a work in progress and may be compared to legal systems in developing countries. After the implementation of the Oslo Accords, the PNA exerts the rule of law within the West Bank. Because of the complex legal history of the area, overlapping jurisdictions, lawlessness and high crime rate, the Palestinian legal system is not firmly established. Next to the 34 courts in the West Bank and Gaza Strip, with different legal systems for civil and criminal cases, the Sharia courts deal with personal status laws like divorce cases and inheritance. State security courts deal with issues related to general security. The Israeli presence limits the authority of the courts and the implementation of decisions, by limiting movement between Palestinian areas A, B and C (Atallah, 2013).

According to Ibrahim Barghouti, head of the NGO 'Musawa', the Palestinian Center for the Independence of the Judiciary and the Legal Profession, "the judiciary police can't arrest, execute orders, or inform defendants to go to court in areas B or C [under Israeli security control], the police are not allowed to work or wear their uniform in these areas." Although the PNA strives to comply with international principles of justice and prosecution, court decisions are not always adhered to

and not always executed, which leads to a certain amount of distrust among the people (Atallah, 2013).

On the other hand, Israel generally has a well acting judiciary, with the public placing considerable trust in it (Barak, 2002). Israel's legal system is a mixture of Western and Eastern law, lacking a constitution. According to the Israeli Ministry of Foreign Affairs (2013), the Israeli courts of law form an independent unit within the Israeli Ministry of Justice. The Organization of Courts of Law is supervised by the Directorate of Courts and directed by the Director of Courts. The President of the Supreme Court of Law has effectively control over the legal system, together with the Minister of Justice. As the judiciary presides over the rule of law and individual rights, it finds itself in a key position, for Israel lacks a comprehensive written constitution, including a bill of rights. The laws left behind by the British Protectorate and the extensive powers of the legislative branch places the judiciary in Israel in a powerful position.

Legislation for the regulation and management of the Palestinian water sector is covered by the Water Law No. 3 (2002). The law incorporates a vision, goals, policy and strategic principles for the management of the Palestinian water sector. Next to that, a National Water Plan was developed. Key factors of that plan include the securing Palestinian water rights, strengthening national policies and regulations and build institutional capacity and develop human resources (UNEP, 2003).

The Water Law gives regulations for sector governance, including separation of resource management and use (World Bank, 2009). Nonetheless, the organisational design proposed by the law has only been partially implemented. The World Bank (2009) proposes technical assistance and capacity building by the international community in order to have effective water sector governance. Currently, there is a significant discrepancy in how the Water Law envisions water resource management in the West Bank and how water supplies are managed in reality. After a promising start, the PWA is not performing as was expected. Its diminished capability to negotiate is influencing

its position in the JWC. Not only its management structure needs to be revised, but also its policies and procedures need to be reviewed.

Difference in access to investment markets

According to the US Department of State (2011), economic growth in the West Bank depends on a combination of factors including continuous private sector expansion, sustained reform measures by the PA, consistent donor aid as well as Israel's continued willingness to ease movement of people and goods, which has boosted economic activity in the area. Palestinian businesses generally have a good reputation, with international connections to other areas in the Middle East, the Far East, Europe and North and South America. The investment climate in the West Bank has developed significantly in recent years, due to the economic reforms implemented by the PA. The current growth in the West Bank attracts foreign investment; this depends however on continued facilitation of free movement as well as external trade.

Israel is attractive to foreign investment as well, reports the US Department of State (2013), as a parliamentary democracy with a secure domestic environment. The State welcomes foreign investment, with only a few limitations on foreign investors, notably for businesses connected to Israel's defense system or otherwise connected to national security. Nevertheless, the ongoing hostilities between Israel and (mostly) Hamas brings with it the risk of violent outbursts. The 50-day war in the Gaza Strip during the summer of 2014 has been a clear manifestation of that risk. Israel's strained relationship with Iran presents potential foreign investors the possibility of a regional conflict. Any slowdown of the Israel economy will have a direct influence on the Palestinian economy, because of very close inter-linkages, for many Palestinians are employed in Israeli industry, service and agriculture (UNEP, 2003).

The existence of civil strife (within the aquifer area)

Civil strife within the area in which the aquifer is situated may provide the water cooperative process with another barrier. The West Bank suffers from multiple conflicts. Firstly, there is the overarching

Israeli – Arab conflict that lingers on and which erupted most violently past summer. The West Bank has a substantial position in this conflict. Secondly, the West Bank has to deal with the rift within the PA, after tensions between Fatah and Hamas started to grow in 2005. After the Hamas won the elections in 2006, the two factions sporadically entered into violent conflict, each believing to be the true representative of the Palestinian people. Fatah is still in control in the West Bank, while Hamas is in control of the Gaza Strip. In recent months there have been attempts to reconcile both groups. Thirdly, and possibly most importantly, there is the issue of the Israeli settlers in the West Bank. The Jewish settlements in the West Bank house nearly 500,000 people and are deemed to be illegal under international law, although Israel disagrees (Roth, 2011). Israeli NGO B'Tselem (2014) has stated that even though the actual buildings cover only 1 percent of the West Bank (other NGO's estimates vary up to 6%), their jurisdiction and their regional councils extend to more than 60% of the West Bank. From 1967 to 2012, 125 Israeli settlements were built in the West Bank that were recognized by the Israeli Ministry of the Interior as 'communities' (B'Tselem, 2014). The ongoing settlement process has been widely recognized as a barrier towards reaching a sustainable solution of the Arab – Israeli conflict (Booth, 2014).

Difference and/ or low levels of in-country infrastructure

There is a stark difference between the general infrastructure in Israel and that of the West Bank. Israel has a well-developed road infrastructure across the entire country. The State of Israel Ministry of Transport and Road Safety (2012) reports on its website on how the road system is improved and expanded continuously, to keep up with the country's fast demographic and economic growth, which is much higher than the growth rate of similarly developed States. The subsequent greater demand for a strong infrastructure has led Israel to increase investment in roads, to maintain and improve dating offered to the public. Infrastructure is also expanded to extend Israel's reach around and beyond the settlements in the West Bank.

On the other hand, many of the roads in the West Bank have been badly maintained, requiring safety features like guard rails or shoulders. Organisations like USAID help the PA to improve West Bank

roads (especially around Tulkarem city, Jenin and the Nablus districts) by renewing the paving, and installing appropriate safety features. Infrastructures, particularly roads are conditional for spatial and social segregation, as well as integration (International Relief & Development, 2014). Israel extends its roads to connect the West Bank settlements to Israeli territory and to protect the settlements in the West Bank. Israeli-imposed 'multi-layered restrictions' are set up to enhance security: checkpoints, trenches, earth mounds, road gates, roadblocks and also a large restricted road network on which Palestinians are not allowed (McCarthy, 2009).

The West Bank of course has to deal with a huge infrastructural issue: a literal obstruction blocking effective collaboration is the West Bank barrier, which the Israeli government started to build during the second intifada. The barrier connects the major settlements in the West Bank to Israel. Rory McCarthy reports for *The Guardian* about how settlements in the West Bank are "creating a new reality, brick by brick" (2009). After completion it will be 450 miles long, running inside the West Bank for 86% of its length. The barrier will annex almost 10% of the West Bank and East Jerusalem on the 'Israeli' side, isolating 35,000 Palestinians from the rest of the West Bank, negatively affecting the Palestinian economy as well as social integration (McCarthy, 2009).



fig. 3. The West Bank Barrier (Barabati, 2013)

The absence of regional cooperative frameworks

Another important potential barrier to effective water cooperation is the absence of regional cooperative framework. The water shortage in both Gaza and the West Bank is critical, and the quest for a regional solution to these issues could make Israel's relationships with its neighbouring States stronger. As we have seen, there is a regional committee in place: article 40 of the Declaration culminated in the Joint Water Committee (JWC) for the interim period, as provided for in the Oslo Accords, regulating the collaboration between Israelis and Palestinians in the water sector. The debate about the effectiveness of the JWC is ongoing: Amnesty International (2009) criticized the JWC for having "merely institutionalized the intrinsically discriminatory system of Israeli control over Palestinian resources that had already been in existence since Israel's occupation of the OPT three decades earlier."

In addition to this the World Bank (2009) stated: "The JWC has not fulfilled its role of providing an effective collaborative governance framework for joint resource management and investment (..) The JWC does not function as a 'joint' water resource governance institution because of fundamental asymmetries - of power, of capacity, of information, of interests – that prevent the development of a consensual approach to resolving water management conflicts."

There are new initiatives on the horizon, with regard to a regional approach of the West Bank water situation. Regional environmental organization Friends of the Earth Middle East (FoEME), in collaboration with the Institute for National Security Studies (INSS), are calling for a new framework agreement related to water resources and the environment shared by Israel and the Palestinian Authority. This agreement should replace Article 40, which was only supposed to last for the interim period and is still in place 20 years later. The new agreement should also establish a 'new' Joint Water Committee, this time including a third party. With this new approach, government of water resources should "be based on all sources of shared natural water and be governed by principles of equity, efficiency, environmental sustainability, and participatory structures," according

to the Director of FoEME Israel, Gidon Bromberg. “Regional water policies have gained a place in recent years of increasing importance for the State of Israel, in the background of a growing shortage of freshwater in the Middle East. Israel’s water policies today influence not only the price of water in Israel, but also our security and political situation. Surpluses of water that are sold or transferred to our neighbors can help strengthen relationships, serve as a gesture to prevent escalation, and serve as a basis for creating mutual interests among Israel and its neighbours” (Udasin, 2014).

An aquifer that is closed, with limited water resources or water quality constraints

The fact that the Mountain Aquifer is a limited resource is a further barrier to successful water cooperation in the area. The Palestinian inhabitants in the West Bank rely solely on the Mountain Aquifer for their groundwater resource. It is one of the most important water resources for Israel as well. The influx is limited: it is replenished for the most part through rainfall on West Bank territory, after which the water flows northward and westward into Israeli territory and eastward toward the River Jordan. According to the Hydrological Service of Israel the different aquifers that make up the Mountain Aquifer yield an estimated 734 MCM/Y, which is slightly more than the 679 MCM/Y which is used by the Israeli government in its water allocation to the Palestinians in accordance with the Oslo Accords (Amnesty International, 2009,).

Not only is the Mountain Aquifer limited as a resource, over-extraction, illegal drilling of wells, as well as inadequate treatment of wastewater threatens its water quality. Zinat reports for Israeli newspaper *Haaretz* that nearly 90 percent of sewage from Palestinian communities in the West Bank flows into the environment untreated. This contaminates not only the groundwater and 162 kilometres of streams, but eventually also the fresh water resource in the Mountain Aquifer. The absence of effective Israeli-Palestinian cooperation has hindered finding a solutions for this issue (Zinat, 2013).

Limited in-country capacity to (regionally) manage water resources

As we have seen earlier in this chapter, the World Bank (2009) attributes failures in water resource development and management to insufficient integration of different sectors within the governmental framework. Article 40 provided the West Bank with a management system that requires consensus in decision-making. It is impracticable to implement a management system that involves consensus or even compromise between two partners with unequal power. The Oslo Accords have effectively given Israel control in the allocation and management of West Bank water supplies. Although Article 40 provided for a joint water governance of the West Bank water resources, it has, in fact, allowed Israel to dominate the decision-making in the JWC.

In addition to this, because of inadequate development of new water resources in the West Bank (and despite ambitious ideas), only slightly more than half of what the Oslo Accords aimed to achieve to deal with 'immediate needs' has been developed (World Bank, 2009). The inadequacy in development stems from constraints due to Palestinian institutional weaknesses.

The World Bank suggests that the PWA's capacity has eroded and that its organisation is too centralised. Internal staff call for prioritising as well as for a new strategic focus. It is necessary for the PWA to adjust its water strategies, to be able to negotiate effectively with its Israeli counterpart. In comparison, the Israeli Water Authority has 200 people working in its organisation, including 50 – 60 just for studies, focussing on economics, law, planning and water resources. Israel also outsources its water management, working with large, world-class, consultants, for "water is big business!".

Management review of the PWA constitutes prioritising as part of its water strategy, as well as strengthening of its planning, strategy and investment programming. Among other things, a new water department should be set up, with attention for strengthening relationships at a decentralised level, for example with local communities. Integration is another key factor, for it is important to involve donors and NGOs fully in planning and investment (World Bank, 2009).

Conclusion: economic, environmental and social consequences

The results from the Barrier Analysis with regard to the water management situation in the West Bank are clear: literally all of the barriers identified by Granit and Claassen beforehand in their model are applicable on the cooperative process in the West Bank. The first barrier can be found in the fact that there is a high level of inequality between Israel and Palestine, which is shown through not only the difference in GDP per capita, but also the disparity in economic growth and attractiveness, with more than 18% of the West Bank population living below the poverty line. The second barrier is the difference in political systems stems, between an established, democratic Israel, although heavily influenced by right-wing politics and orthodox-religious groups; and the PA, as a developing political entity recovering from internal conflict. Thirdly, the instability in political systems hinders effective negotiations as well as successful joint management. The fourth barrier is the geopolitical importance of the West Bank, which is closely interwoven with the priority of freshwater ownership: for Israel it signifies independence from larger powers in the region, a strong global political position, not to mention survival of the Jewish State. For the Palestinians residing in the West Bank water ownership means independence of Israel, and preserving a reasonable standard of living.

As the Arab-Israeli conflict is influenced by different factors, frictions between the existing religions in the West Bank are a fifth stumbling block towards effective water cooperation. The cooperative process also suffers from a difference between participating States' legal systems as well as from a slow performance of executive bodies, like the PWA (sixth barrier). Its diminished capability to negotiate is influencing its position in the JWC. A poor management performance, as well as outdated policies and procedures are barriers to the water cooperative process. Israel and Palestine's difference in their access to investment markets, with the PA being dependent on donor aid and Israel's continued willingness to ease movement of people and goods, is the seventh factor that needs addressing. As we have seen, the existence of multiple conflicts and civil strife within the West Bank area is not helping cooperative management either (the eighth barrier).

A ninth barrier is the difference between the general infrastructure in Israel and that of the West Bank. Israel has a well-developed road infrastructure across the entire country, while that of the West Bank is in a less than satisfactory state. Another complicating issue is the building of the West Bank Barrier, a most literal barrier to achieving successful Israel – Palestinian joint water management, along with (illegal) Israeli settlements in the West Bank, straining the water supply even more. The tenth barrier is the absence of regional cooperative frameworks, for example a Regional Economic Commission or a transboundary water institution. Although there is in fact a regional committee in place, the JWC, it has not been able to fulfil its role of providing an effective collaborative governance framework for joint resource management and investment. The JWC does not function as a 'joint' water resource governance institution because of fundamental asymmetries - of power, of capacity, of information and of interests (World Bank, 2009).

The eleventh barrier is a natural one: the Mountain Aquifer has only limited water resources and has to deal with water quality constraints. Over-extraction, illegal drilling of wells, as well as inadequate treatment of wastewater threatens its water quality. Finally, the twelfth barrier, limited in-country capacity to manage water resources and to effectively participate in regional cooperation adds to the negative effect of the natural limits of the aquifer, as Jägerskog (*et al.*) had already foreseen (2008).

As we have concluded earlier in this chapter, the economies of Israel and Palestine are closely linked. Any negative influences on the Israeli economy (the 'stronger' party) immediately affects the Palestinian economy. The Palestinian economy depends on foreign aid and investments and needs a stable water and affordable supply as well as a good in-country infrastructure. It depends on Israel's willingness to ease movement of people and goods in the West Bank, on the supply of (purchased) water and on the co-chaired JWC to issue permits to drill wells. This over-dependency has weighty social consequences: the absence of easy and cheap access to water forces the Palestinian to resort to 'coping strategies', which are also harmful to the environmental quality of the Mountain Aquifer. Israel, relying on its unilateral actions to protect its internal and external security, in turn resorts to using water management as a military tool.

All the barriers that Granit and Claassen have identified in their Barrier Analysis are in place in the water cooperative process in the West Bank, effectively meaning there currently is no real (effective) water cooperation possible between Israel and Palestine with regard to the Mountain Aquifer. Selby's argument that Israeli – Palestinian water cooperative relationship is actually 'domination dressed up as cooperation' therefore makes sense. The power asymmetry as well as social and economic inequity makes water cooperation in the current situation unattainable, with the absence of true cooperation negatively affecting the economies, social circumstances and natural environments of participating parties. In a reaction to this, Chapter 6 identifies possibilities for effective water cooperation. The Chapter offers a recommendation on how to deal with power asymmetry in the case of the West Bank, exploring the possibilities of water cooperation in the region, for example through means of 'soft power' or mediation, using a cooperative strategies like the Transboundary Opportunity Analysis and the Strategic Environmental Assessment . It sets out to demonstrate that these more cooperative kinds of water conflict management will be beneficiary for the parties to the conflict, seeking out positive-sum solutions and shared benefits, diminishing the need to use water scarcity as a military tool.

Chapter 6: The possibilities of water cooperation

Now that the Barrier Analysis has revealed the inherent weaknesses in the cooperative relationship between Israel and Palestine, effectively showing that there is no real cooperative relationship, only in name, and that all barriers that could have been identified according to the model, are in fact in place, Chapter 6 follows up with an analysis whether Zeitoun's criteria (as put forward in Chapter 3) are applicable on the West Bank cooperative management situation. The Chapter offers a recommendation on how to deal with power asymmetry in the case of the West Bank, exploring the possibilities of water cooperation in the region, for example through means of 'soft power' or mediation, using a cooperative strategies like the Transboundary Opportunity Analysis and the Strategic Environmental Assessment. It sets out to demonstrate that these more cooperative kinds of water conflict management will be beneficiary for the parties to the conflict, diminishing the need to use water scarcity as a military tool, on which Chapter 7 offers a conclusion.

Dealing with power asymmetry

Zeitoun and Jägerskog (2009) acknowledge in their study 'Confronting Power: Strategies to Support Less Powerful States' that power asymmetry may be unavoidable, although its negative effects may not. As we have seen, in both Chapters 4 and 5, Israel has the upper hand in the negotiations with regard to the West Bank water management. It already had it at the beginning of the cooperative process, with the conception of the Oslo Accords, and it continued to be significantly stronger, economically and politically. It can (and does) back up its positions with military force. Seeing that Palestine is the less powerful state, the two theories on how to deal with such a power asymmetry which were proposed by Zeitoun and Jägerskog deserve further attention. According to Zeitoun and Jägerskog asymmetry can be influenced and/ or challenged, by existing and newer forms of 'soft power'.

The first approach is convincing 'basin bully' Israel (and as all bullies always act out of a sense of insecurity, Israel acts from its continuous (and justified) need for military security) of the idea that there is a possibility of a positive-sum result from the cooperative process, a 'win-win' outcome for all parties, would be a great step in the right direction. Both Israel and Palestine could embrace the idea of 'benefit-sharing'. Optimal use of the water supply in the West Bank would not entail the 'division of water'; it would involve sharing the benefits derived from the water supply, even if the water cannot be divided equitably.

The second approach on how to deal with power asymmetry is to influence 'basin bullies' into 'basin leaders', possibly through international diplomacy. Israel may be open to persuasion and less inclined to use the cooperation process as a disguised way to dominate, to coerce the other party into a less beneficial agreement if there are objective standards it can be held accountable to. Both Israel and Palestine need to be part of the solution, instead of the problem. This is where (objective) international organisations and/ or mediators may have an important diplomatic role. Objective standards as well as international support may help 'level the players' and/ or 'level the playing field'. Palestine needs international help for capacity building, for investments. In this way, Palestine would gain a stronger position at the negotiation table. The capacity building should focus on technology and engineering, on administration and effective water management, which would provide it with some negotiational leverage. This would allow Palestine to be an equal partner, and to take up a larger role in the process, to assume more responsibilities in the management of the West Bank water supply and to come up with solutions for the water issues in this area.

With regard to the levelling the 'playing field', it is beneficial to do so in any cooperative process, for, according to Zeitoun and Jägerskog (2009), power asymmetry through an 'uneven' playing field is detrimental towards that process and will not have a sustainable outcome. In the case of the West Bank, the international community can contribute positively to the cooperative water process. It is crucial that the international community supports Palestine (being the weaker party) in the process and place a larger burden on Israel. However, Israel should not be 'punished' (as the threats against

its national security are real and immediate) and Palestine be 'petted' by the international community, for this a) will not contribute to trust in the already unsteady relationship between the *partners* (which they ideally should be, instead of *participants*) and b) is contradictory to the idea of soft power diplomacy, which involves persuading and positive attraction, more than showing international political muscle. It would also put Hamas in a more secure position than possibly desired. It is the task of the international community to react to situations of power asymmetry, inequity in bargaining power as well as coercion, in order to accomplish successful transboundary water management (Jagerskög and Zeitoun, 2009).

It is the author of this dissertation's conviction that the international community should put an emphasis on this soft power approach; a hard-line international approach will confirm Israel's belief that it has no choice to act by itself and for itself, which has proven to be effective in the past. To be able to persuade Israel to accept Palestine as a true partner in the cooperative process with regard to the West Bank, it needs to have support of the international community as well, including the states in the region. Only a process in which Palestine is an equal partner on a levelled playing field and in which Israel understands that 'shared benefits' for all partners does not mean a decreased security level, for it also has the support of the international community, can be truly effective and sustainable.

Transboundary Water Opportunity Analysis (TWO)

In the previous chapter stumbling blocks towards a successful water cooperative process in the West Bank were identified, with the help of the Barrier Analysis. In their study 'A Path Towards Realising Tangible Benefits in Transboundary River Basins' Granit and Claassen (2009) offer the Transboundary Water Opportunity Analysis (TWO) as a way to overcome these stumbling blocks, through identifying and promoting cooperative development. The TWO can be used to imagine the Jordan River Basin as well as the area around the Mountain Aquifer 'as a basin without political boundaries and borders

and looks to where the basin has potential for optimisation, then puts the (..) borders back onto the map (Philips *et al*, 2008).

The adoption of the TWO as a measure of preventive diplomacy through employing and supporting mediation is in line with the global trend in diplomacy to try and tackle potential crises at an early stage. Modern diplomacy has moved on from a culture of 'reaction' to one of 'prevention'. Within this view, mediation is considered a form of traditional preventive diplomacy, while the soft power approach of the cooperative TWO and the Strategic Environmental Assessments can be regarded as part of modern diplomatic efforts, pursuing comprehensive strategies involving all relevant disciplines, from poverty-eradication to social development as well as capacity building and the protection of human rights. Water cooperation as a form of modern preventive diplomacy ideally addresses the deep-rooted structural causes of conflict as well as the immediate.

To achieve effective water cooperation in the West Bank social, political, economic as well as environmental constraints need to be addressed. As we have seen in Chapter 5, the Palestinians in the West Bank have to deal with limited access to water, which impedes development in all areas. Having an efficient joint water management in place is vital, especially in areas where shared water is scarce: ineffective water management is critical for all parties involved, not on the long-term, but immediately.

Water security: shared benefits

Both Israel and Palestine will benefit from water security through effective water management of the resources in the Mountain Aquifer. Water security is defined as "availability of an acceptable quantity and quality of water for health, livelihoods, ecosystems and productions, coupled with an acceptable level of water-related risks to people, environments and economies" (Grey and Sadoff, 2007). To achieve political security as well as social and economic growth it is essential to change the traditional dialogue from dividing water between parties to sharing the water supply. Parties may benefit from a practical approach, to understand and address the complicated relationship between water security and socio-economic growth.

There are opportunities for Israel and Palestine to overcome their differences as identified in the Barrier Analysis. They need to redesign their water cooperative system as was provided for by the Oslo Accords, through exploring opportunities and trade-offs. This way, they will be able to identify shared benefits and maximise sustainable development in the process. Mutual benefits are sustainable water management, water security, political stability as well as regional integration (Granit and Claassen, 2009).

Key development opportunities

To identify opportunities and possible mutual benefits, the author suggest the employment of the TWO. The TWO can be used by participating governments, regional committees as well as financing entities. The TWO analysis highlights four key development opportunities with associated benefits:

1. Hydropower production and power trading
2. Primary production
3. Urban and industrial development
4. Environmental and ecosystem services (Granit and Claassen, 2009).

The list above is not exhaustive: the TWO would allow the addition of specific water opportunities in a specific regional environment, for example the West Bank. The analysis continues with three proposals on how to develop the availability of water in the region. The first is 'New Water', which can be added to the basin, river of the aquifer, for example through desalination techniques. The second proposal involves increasing the water supply by more effective management of existing water resources. An example of this is the development of better irrigation techniques. The third suggestion the TWO does, is the more productive use of allocated water (in a basin).

With regard to the West Bank case, the TWO may provide Israel and Palestine (and other parties/beneficiaries in the region, like Jordan) with a set of possibilities to achieve a water cooperative process with shared benefits for both, by combining the key development opportunities with the

above-mentioned proposals. Through this ‘soft power’ approach (a concept developed by Nye (2004) to describe a diplomatic approach which success lies in the ability to attract and persuade, while ‘hard power’ describes the ability to coerce; soft power involves an attractive culture, regarding political ideals as well as governmental policies), partners in the water cooperative process are thus able to involve different stakeholders on all levels – from grassroots to international – to ‘think outside the conceptual box’ with regard to sustainable solutions in the management of the Mountain Aquifer.

The diagram below (*fig. 4*) shows the different combinations within the TWO. It serves as a means to show the possible positive (mutual) gains for participating parties. Different stakeholders can show which option or opportunity of soft power approach they prefer, as they can use the specifics of the situation in the West Bank to elaborate and explore on the options that are proposed, to different levels of detail. This chapter explores these options; the results will be included in a new diagram, representing the TWO on the Israeli-Palestinian water cooperative relationship (*fig. 5*).

Categories: sources →	a) New Water	b) Efficient use of Water	c) Other sources in basins that are not closed
Development Opportunity Factors ↓			
1. Hydropower and power trading			
2. Primary production			
3. Urban growth and industrial development			
4. Environment and ecosystem services			
5. Others (every basin is unique and other opportunities may exist)			

fig. 4 Transboundary Water Opportunity Analysis – diagram (Granit and Claassen, 2009)

TWO: addressing the barriers

In the TWO, we address the barriers which were identified in the previous chapter, for which we take into account the suggestions Jägerskog (et al.) did in his article 'Addressing Transboundary Water Management Challenges: Getting it right' (2008). As we have seen in Chapter 5 the relationship between Israel and Palestine suffers from different barriers: economically there is a high level of inequality, with a significant difference in access to investment market. To be able to 'level the players' the existing development opportunities in the West Bank have to be acknowledged. Israel and Palestine may perhaps work together when the net economic and political benefits are greater than the benefits of unilateral action. When a large range of possible benefits are identified, parties will be more driven to contribute to effective water cooperation.

As we have learned, economic inequity and power asymmetry are the principal barriers to cooperation. Earlier in this chapter we have already observed that such asymmetry may be addressed through strategies to influence a powerful state with 'win-win' solutions, or by transforming the 'basin bully' into a basin leader, in other words: to make Israel part of a joint solution, by involving the international community and by devising international (objective) standards. Both Israel and Palestine could be persuaded that there is a joint benefit in establishing an effective water cooperation process that aims to meet the goals of (all) partners. This type of cooperation should start at a community level which can lead to cooperation at the municipal level and eventually to an international process (Zeitoun and Jägerskog, (2009).

As we have seen, the administration of both countries is characterised by a notable difference in political systems, with Israel having a strong geopolitical interest in the West Bank. Next to having a developing legal system (which is somewhat unstable), Palestine experiences a limited capacity to effectively manage the water resources in the West Bank, making it vulnerable to Israel's power play.

The absence of in-country capacity reinforces limited participation in regional cooperative frameworks. The relationship between Israel and Palestine also experiences a difference in religious views and ethnic composition, which is partly the root of civil strife in the West Bank. With regard to urban planning, it is noted that the West Bank has a low levels of in-country infrastructure. With regard to environmental aspects we have recognized that the West Bank has to deal with limited water resources and water quality constraints. For Israel and Palestine to be really willing to reduce common water-related risks, again, in the cooperative process there needs to be an emphasis on the idea that there could be a combination of 'win-win' solutions, the basis of any mediation process. In order to achieve this, it is essential (for the international community) to invest (even more) in Palestinian capacity-building. The international community also needs to play a role in the creation of objective and fair water-sharing standards. As Jagerskög (2008) argues, it takes long-term and flexible support from third parties (notably the international community) to encourage effective water cooperation, by supporting dialogue and institutional arrangements.

The TWO and its soft power approach provides parties with endless possibilities, for which the combinations in the TWO diagram (*fig. 4*) are not exhaustive. This dissertation will nevertheless examine a number of opportunities within its limited scope, addressing the most important barriers as identified in the Barrier Analysis of Chapter 4.

Soft power: capacity building and dialogue

As we have seen in Chapter 4, the water cooperative process between Israel and Palestine suffers from disparity in water management capacity, which has resulted in a strongly present power asymmetry. However, when there is political will and there are possibilities for open dialogue, transboundary water cooperation can be the norm. The basic principles of water cooperation should be "equitable access to water, adequate in terms of both quantity and quality for all members of society, especially for those in vulnerable positions" (Bonvoisin, 2013). These are the principles laid down in the Convention on the Protection of Transboundary Waters and International Lakes (1992), also known as the Helsinki Convention (UNECE, 1992). Practical implementation of these principles

would improve the power balance between Israel and Palestine, diminishing or even remove the barriers altogether. The emphasis should be on capacity building, starting at a municipal level.

A promising example: Good Water Neighbours Project

There already have been some promising examples of a soft power approach of sustainable water management in the West Bank and its region. Twenty years after the Oslo Accords, new opportunities for water cooperation in the region have emerged. In December 2013, Israel, Palestine and Jordan showed their willingness to participate in a regional water cooperation project with an emphasis on desalination, as their representatives signed an agreement to build a Red Sea-Dead Sea water project that is meant to benefit all three parties. The deal capped 11 years of water negotiations.

Another promising project was carried out by NGO Friends of the Earth in the Middle East (FoEME). The goal of this GWN project (Good Water Neighbours) was to promote cross-border cooperation through concentrating on shared water problems as well as on protection of shared resources (Bonvoisin, 2013). At the outset, FoEME selected eleven neighbouring communities in Israel, Palestine and Jordan to participate in the project. An interesting aspect of this ‘twinning’ project was that several of the communities were actually able to see each other from across the border. The inhabitants of all the participating communities used water from the same source, and regularly also polluted that same water source. Using a holistic approach, the project involved youth groups, adult groups as well as representatives from local governments. The emphasis was put on interaction between the different communities, which was a challenge in itself, because of the logistical and political constraints in the area hindered free movement between the participating communities. The project included developing ways to reuse greywater³ or rainwater (for example for flushing toilets) as well as transforming schools into ‘water-wise’ buildings and the construction of ecological gardens.

³ Greywater is generally described as wastewater generated from wash hand basins, showers and baths. It can be used for on-site recycling, for uses such as toilet flushing, land irrigation and constructing wetlands. It generally does not contain human waste.

The notion that involvement at a grassroots level can expand from local to regional to international was embraced in the GWN project by the FoEME: at a regional level the FoEME promoted effective water cooperation through information sharing, dialogue and cooperative ventures. One of the positive outcomes of the project (which has expanded to 28 communities in 2013) has been the growing awareness of the ability of local community partnerships to address environmental issues through cross-border water cooperation with a positive sum-outcome (Noury, 2013).

A new political and legal framework

Another one of the barriers identified in the Barrier Analysis was the absence of a comprehensive legal framework. For cooperative water management in the West Bank to be successful, the Joint Water Committee needs to be reviewed and upgraded to be able to assist Israel and Palestine (and possibly Jordan in the implementation and progressive development of any agreement regarding the resources of the Mountain Aquifer. A well-working governing body, supported by (regional) working groups and a permanent secretariat would be able to provide partners with exchange of data, information, good practices and the development of legally binding documents as well as capacity-building. Any partner in the cooperative process should not be left to fend for himself in any cooperative process. The international community should assist in capacity building, recommending good practices, (objective) guidelines and regulations to which partners can be held accountable to, even invoking an international court if necessary. Under the earlier-mentioned Helsinki Convention, there has been a recent initiative to make guidelines internationally available on the identification, quantification as well as communication about the broad range of possible shared benefits of transboundary water cooperation (Bonvoisin, 2013).

It would be beneficial to the water cooperative process if Israel would disclose and share its research data and information with Palestine and Jordan (and vice versa), as part of the shift within the relationship between partners from focusing on division of water supplies and subsequent allocation, to understanding of the possibility of mutual gain or, alternatively, understanding that not working together and competition for water will inevitably lead to high costs, decrease of water supplies as

well as irreversible environmental damage, for example the irreparable loss of biodiversity. These negative effects might be as much as an encouragement as the possible mutual gains, since unsuccessful water cooperation in the vulnerable Middle Eastern region and the following loss of biodiversity negatively impacts poverty rates, health, food security and economic development, which would affect all inhabitants of the area, Israeli or Palestinian (Marton-LeFèvre *et al.*, 2013).

The conceptual framework for the TWO Analysis – according to Philips

In which way can participants in a water cooperative process apply the TWO? In his article 'The TWO Analysis – Introducing a Methodology for the Transboundary Waters (*sic*)⁴ Opportunity Analysis' Philips *et al.*, 2008) has presented a conceptual framework which may be used by stakeholders dealing with development and management of shared freshwater resources. In his model argues that the objective of the TWO should be the promotion of sustainable and equitable use of transboundary water resources. His analysis aims to explain possible trade-offs connected to development. The article provides an outline for analysing potential benefits in a transboundary (river) basin. According to Philips, such an approach should "optimise economic growth, political stability and regional integration". He intends his conceptual framework to be used by basin State governments, regional economic communities as well as financing entities. The framework identifies options to realise opportunities by addressing the (water) conflict in a broader sense, and by reaching a necessary agreement on political and social (-economic) issues among the parties involved. The TWO should be used as a flexible tool to support governmental decision-making, in a broad range of different circumstances, as an additional instrument to their own administrative process. In Philips' model, the TWO analysis consists of a matrix with four key development opportunities and two main categories of water sources to help attain the realisation of those opportunities. Philips concludes with the notion that the TWO analysis offers parties to the cooperative process with "a starting point for a better understanding of key drivers, opportunities and trade-offs". This way, value-added outcomes incorporate environmental goods and services in meeting social and economic development (Philips *et al.*, 2008).

⁴ Philips uses 'Waters' in plural; the author has chosen to use the singular interpretation, similarly to Granit and Claassen's interpretation.

As stated earlier, the TWO analysis highlights four key development opportunities with associated benefits: hydropower production and power trading, primary production, urban and industrial development, and environmental and ecosystem services. These opportunities are measured against two (basic) categories, in case the water cooperative process deals with a water resource in a closed basin. These categories are a) New Water and b) Efficient use of water. If participants in the water cooperative process are negotiating over a water source that is *not* closed, the TWO offers a third category that describes *other sources* which may be employed (Philips *et al*, 2008).

The combinations of the three potential sources of water as well as the key opportunities can be presented to the participants in the water cooperative process as development possibilities. If the participants in the water cooperative process in the West Bank (Israel, Palestine and possibly Jordan) would engage the TWO analysis as a method to identify positive (mutual) gains as well as preferred options for development. With parties that have a history of strife and distrust, it is necessary to provide a structured approach to identify both positive and negative consequences of possible development opportunities (Jägerskog *et al*, 2009). The author propose to use Philips' matrix he puts forward in his article 'The TWO Analysis – Introducing a Methodology for the Transboundary Waters Opportunity Analysis' (2008) and explore the advice and suggestions he does in Chapter 2: 'The Conceptual Framework for the TWO Analysis' and apply them to the water cooperative process in the West Bank. The next few paragraphs will entail a short summary of each opportunity identified in the matrix, exploring different fields of possible development which may bring Israel and Palestine closer together, providing with them with better structured process towards effective water cooperation. Essentially, filling in the matrix below (*fig. 5*), using Philips' general assumptions in his standard TWO Analysis and complementing them with the key opportunities specifically identified for the water cooperative situation in the West Bank, provides us with the answer to the key argument of this study, which states that the water cooperative relationship between Israel, Palestine (and to a lesser extent Jordan) points to the possibility of participants engaging in soft power diplomacy, mediation, and water cooperation, in a more cooperative kind of water conflict

management. The different key opportunities which are at the basis of the TWO matrix can be summarized below.

Hydropower production and power trading

It would be beneficial for the participants in the water cooperative process in the West Bank to investigate whether there is untapped hydropower production available in the area. Electricity production as well as power trade would boost economic development in the area, decreasing economic disparity between Israel and Palestine. Besides being a tradable commodity, it may also help to provide the area with electricity, as some areas lack transmission interconnection. At this point the existing dams provide mostly Israel and Jordan with larger quantities of fresh water, also allowing a greater rate of evaporation. Placing new dams for instance, may either negatively or positively affect downstream water supplies; it is therefore essential parties come to a good working agreement in order to distribute the water fairly. To install power trading as a market-based regulated industry would hopefully strengthen the economic ties between Israel and Palestine as well as increase economic growth in the region (Philips, 2008). It would be beneficial to investigate whether Israel and Jordan could improve the water flow into the southern Jordan River, which currently receives merely 4 percent of the amount of water that flowed through the southern Jordan River 80 years ago. This is the result of the dam Israel built to catch Kinneret water. Jordan and Syria, on the other hand, have invested in dams in the Yarmouk River. There are already initiatives to not only improve the quantity of the water flowing through the Jordan River, but also its quality, with Jordan setting up purification plants to protect this most important water resource from the devastating effects of the influx of waste water (Rinat, 2012).

Primary production

Israel and Palestine (Jordan to a lesser extent, because it does not hold lands in the area) should explore the possibilities for primary production through agriculture and bio-energy, for example, and by expanding growth of sustainable crops. It might be interesting to look into crops that adapt to the arid environment and as consequence do not use as much water as the agricultural sector generally

does. Such an approach would immediately address poverty in the area, as well as be economically beneficial to the area. Factors to consider when investigating possibilities are differences in temperature and rainfall in the different areas (governed by participants), as well as the difference in agricultural use (and its effect on local soil quality). Participants should identify the need for water downstream as well as upstream, taking into account the possibilities for expansion of irrigated farmland downstream (Philips, 2008). After all, Israel is world-renowned for its highly-developed irrigation techniques, most notably its drip-irrigation, which for instance has helped India immensely to increase their crop yields and to facilitate its fast-growing population (Shamah, 2013). Again, better access to or even shared use of best available techniques would increase economic output for the West Bank. While investigating the possibilities to optimise agricultural production, participants should also be prepared to enhance transport routes as well as general infrastructure, and to eliminate trade sanctions. Investigation of shared internal and external markets would provide participants to the water cooperative process with a common goal: to access those markets and to (both) benefit from them. It is essential that participants understand the (political as well as socio-economic) benefits of collaboration.

Urban and industrial development

Israel has already invested a great deal in the collection and treatment of wastewater, preparing it for re-use. Not only could it share its know-how with its partners in the cooperative process, both Israel and Palestine could consider intersectoral reallocation of low-value use to uses with higher economic output, for example towards industrial development. Philips (2008) points out that a growing population possibly warrants such a transition from agriculture to a more industrial society, for it is also more water efficient and would provide the West Bank with a greater economic output. A society focused on industry and services would also mean a change in social and economic behaviour; Philips proposes Israel as a prime example of continuing a political rhetoric emphasising the importance of the connection between the land and the people (i.e. an agricultural link). This is not sustainable, he argues, as more than 60 percent of its regional water resource use only generates 2 percent of its GDP.

Environmental and ecosystem services

Another key development to explore is the protection of the environment and the ecosystem in the already vulnerable arid area of the West Bank. Not only would a sustainable development of the area prevent overexploitation of the land as well as longer poverty, it would also give a positive incentive to (eco-)tourism. A good, joint management of environmental goods would lead to shared benefits for contributing parties: food, possible fuel from cultivated wood and fibre, while a healthy ecosystem would also be beneficial for the local population, for it entails sustainable management of water resources, water purification, pollination, climate regulation and disease regulation. Participants should also be aware of the fact that eco-tourism is a fast-growing sector (Philips, 2008).

New Water

'New Water' is a phrase which Philips has proposed in earlier studies (Philips, 2006). The idea is to increase the fresh water volume in the area. The West Bank suffers from a constant insufficient volume of fresh water, causing strife and distrust between parties. It would be beneficial to the water cooperative process in the West Bank if New Water can be added to the hydrological cycle. This would not only again be of value to the economic development of the region, it would also allow a more equal/ fair division of water resources to participants. Philips refers in his article (2008, p.11) to an idea proposed by Turton (2003) that in a highly securitised water basin (of which the West Bank is a very clear example) "New Water may represent the only means for attaining more equitable allocations of volumes (*of fresh water, ed.*), especially where a strong hegemon is present (Philips, 2006)". In this case, obviously Israel should be regarded as a strong hegemon in the area. For New Water sources in the West Bank, in line with Philips' proposals (2008), Israel, Jordan and Palestine should look at possibilities for the expansion of brackish and marine water supplies, re-use of treated wastewaters as well as the improved management of the flows of transboundary waters. Israel is a global market leader in desalination techniques. The cost of desalinated water has become much cheaper in the last two decades. Again, shared use of best available techniques will be beneficial for all parties in the water cooperative process. Palestine has to catch up with Israel regarding treatment reuse of wastewaters; as we have seen in Chapter 5, the Israeli government has expressed its

annoyance at the Palestinian indifference regarding wastewater treatment, accusing it of mismanagement of available water sources.

Efficient use of water

If the participants in the water cooperative process in the West Bank should focus more on efficient management of available fresh water resources, the output of those resources should come out higher than is the case now. Philips advises to use context-specific measures in this key category, addressing the barriers that are identified as blockages towards that specific cooperative process. He names barriers that include those between local and regional jurisdictions as well as those stemming from religious, ethnic, social and ethnic differences between participants. In Chapter 5 we have seen the many barriers that are in place, blocking a successful and efficient water cooperation between Israel and Palestine.

Other sources

Philips incorporates a column in the matrix belonging to the TWO Analysis for 'other sources', for basins that are not closed. Earlier we have identified the fact that the Mountain Aquifer should be regarded as a closed basin, as a limited resource, which in itself is an important barrier to successful water cooperation in the area. The influx is limited: it is replenished for the most part through rainfall on West Bank territory, after which the water flows northward and westward into Israeli territory and eastward toward the River Jordan. We have also seen that the Mountain Aquifer is limited as a resource because of over-extraction, illegal drilling of wells, as well as inadequate treatment of wastewater threatening its water quality. This optional part of the TWO Analysis is therefore not useful for identification of key opportunities for the West Bank and is left blank in the matrix.

If we look at the matrix that Philips proposes on p. 12 of his article (2008), it becomes immediately clear that some of the key opportunities that are identified for water cooperative processes in general, are very much applicable on the situation in the West Bank. With Philips' matrix in mind, the matrix below investigates which generally identified development opportunities are applicable on

the water cooperative relationship between Israel, Palestine and possibly Jordan. The opportunities that are identified are non-exhaustive, providing merely examples of opportunities which could support a truly cooperative strategy.

Categories: sources → Development Opportunity Factors ↓	a) New Water	b) Efficient use of Water
1. Hydropower and power trading	<p>Israel, Palestine and Jordan could consider the placement or replacement of dams, decreasing loss of fresh water through evaporation, changing the water volume reaching the Jordan river floodplain, which would boost grassroots water cooperation in communities along its banks, restoring its ecological value.</p> <p>There are already initiatives to improve water quality and quantity in the Jordan and Yarmuk Rivers.</p>	<p>Hydropower stations and the locations of dams can positively influence water availability for downstream communities from all sides. Participants should explore whether a more efficient use of these facilities could provide participants with an equitable division of water resources. Again, it is vital that know-how and technology is openly shared.</p>
2. Primary production	<p>Desalination is a good example of the primary production of New Water, for which Israel is global market leader. Ideally, Israel should share its know-how and technology with its partners in the water cooperative process, using desalinated water (which is becoming less and less expensive) along treated wastewater for economic purposes with higher financial output (more industrial, less agricultural), making it more affordable/ a more logical choice.</p> <p>Improvement of the flows of transboundary waters (for example of the Jordan and the</p>	<p>The agricultural sector is a very ‘thirsty’ sector. Using ‘best practices’ as well as the newest methods, efficient allocation of water resources is doable. Bio-energy could be a connected industry. Exploring more sustainable, less water-inefficient crops would increase economic output.</p> <p>Better access to or sharing of best available techniques (for example the (drip-)irrigation techniques developed by Israel would increase agricultural yields of downstream areas in the West Bank.</p> <p>Investigation of areas that have sub-optimal agricultural</p>

	<p>Yarmouk Rivers) would be beneficial as well.</p> <p>Another option are inter-basin transfers of water, for example through canals or pipelines. Israel already investigated this possibility, with water transfers from Turkey. Due to growing population in the area, this option might regain momentum.</p> <p>In December 2013 Israel, Jordan and Palestine agreed on building a new desalination plant in Aqaba, Jordan (see Chapter 2 of this study).</p>	<p>production, understanding the political and socio-economic benefits of collaboration.</p>
<p>3. Urban growth and industrial development</p>	<p>In connection to the primary production of New Water and its use for purposes with higher financial output, the transition from agricultural use (which is a ‘thirsty’ sector) to more efficient use, it is necessary for participants to not forget about the consequences of urban growth; spatial as well as economic planning need a ‘holistic’ approach, for the West Bank already deals with a socio-economic vulnerable society.</p>	<p>When switching from agriculture to industrial development, it is necessary to prevent mistakes that were made during agricultural water management being transferred to any industrial process, thus maximising the economic output.</p>
<p>4. Environment and ecosystem services</p>	<p>If participants in water cooperative process in the West Bank should choose to enhance the New Water yield of both the Mountain Aquifer and the Jordan River, they should take into account the improvement of the local ecosystem. Not only would this lead to a sustainable approach, public support would grow as well. A sustainable approach could be beneficial to ecotourism in the area, boosting the local economy.</p>	<p>As with the production of New Water, more efficient water use would also have beneficial effects on the environment, the ecosystem (water purification, pollination, climate regulation, disease regulation) and with that on (eco-)tourism and possibly minor fishery industries.</p> <p>Parties could also focus on the (by)products of sustainable ecomanagement: food, fuel wood, fibre as well as other bio-products.</p>

<p>5. Others (every basin is unique and other opportunities may exist)</p>		<p>Participants may like to incorporate the North European principle of retaining pluvial water in storage facilities underground (enhancing the natural storage capacity), which would help in times of (extreme) drought.</p>
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Fig. 5 Transboundary Water Opportunity Analysis – diagram on the Israeli – Palestinian water cooperative relationship

In response to the TWO with regard to the Israeli – Palestinian relationship Baltutis (2009) addresses in his Master’s thesis on the ‘Fairness and Equity in Transboundary Water Resources: A Comparative Analysis of the TWO Analysis and WAS Models as applied to the Jordan River Basin’ the most important question with regard to the asymmetrical relationship between the two parties: would Israel consent to reallocation of water resources from the Mountain Aquifer as well as to the loss of certain control mechanisms over these water resources? As the author of this study, Baltutis recognises the potential value of cooperative models like the TWO, identifying a positive-sum result for both Israel and Palestine, through the creation of New Water as well as optimisation of the basin yield. The author reiterates the key importance of the identification of shared benefits along with Baltutis’ conclusion that a positive-sum outcome of a TWO is a realistic scenario, in which Israel’s fresh water supplies should not have to decrease at all. In other words: for a sustainable cooperative solution, it is essential that Israel, distrusting its neighbours, is convinced it will not lose out in the agreement, but will benefit from the ‘basket of benefits’ concerning socio-economic growth, political and military security as well as climate and ecological protection. Israel, even more than Palestine, needs to be encouraged by the idea that *traditional water allocations* are less beneficial for its economic growth as well as its internal and external security than the *distribution of water benefits* (Priscoli and Wolf, 2009). To make the idea of distribution of water benefits more attractive to Israel, but to Palestine and Jordan as well, it may prove helpful to perform a Strategic Environmental Assessment for the Jordan River Basin/ Mountain Aquifer, to obtain a good and objective grasp of opportunities for development in the area, with realistic possibilities of attaining shared benefits.

Strategic Environmental Assessments

In the Chapters before, the author has examined the conceptual model Granit and Claassen presented in their article 'A Path Towards Realising Tangible Benefits in Transboundary River Basins' (2009), and use it as blueprint for effective water cooperation in the West Bank. This study has used the TWO to explore the idea of 'benefit-sharing' in the complicated relationship between Israel and Palestine. Instead of taking positions participants are advised to invent a number of different solutions, to address the barriers to a successful water cooperative relationship that were identified in the Chapter 5 in the Barrier Analysis. The TWO is complemented with another conceptual model next to the Barrier Analysis, known as the Strategic Environmental Assessment (SEA).

The SEA consists of an assessment whether development possibilities that were identified in the TWO, are viable and attainable. This assessment could be, in the author's opinion, a tool of great importance to the water cooperative process in the West Bank. As a pre-investment tool, it would be a very helpful instrument to understand the possible benefits of truly-shared responsibility for the water resources in the Mountain Aquifer. Before any (new or updated) agreement between parties, both Israel and Palestine need to be able to evaluate, assess and agree on the merits of any development in the water system in the West Bank. It is vital to improve the (strained) relationship between both parties as well as adjacent States by having equal access to key information on the physical characteristics of the region.

The SEA should be performed before any negotiations have started, in a structured and transparent manner. Not only would shared access to the same information level the players as well as the playing field (which is essential for successful cooperation, as we have seen in Chapter 5, while addressing the barriers that exist towards effective water cooperation in the West Bank), the transparency that comes with it would be beneficial for the building of much-needed trust between participants. Therefore, in the author's opinion, it is of the utmost importance that a TWO and a follow-up SEA are executed by a (trusted) third party, by internationally accepted standards. Jordan

as well as Egypt could play a central role in providing Israel and Palestine with those standards, to evaluate the feasibility of any development of New Water or more efficient use of existing water resources. The earlier the SEA is performed, the better the results. Granit and Claassen (2009) advise to perform the SEA in the earliest stages of development, for this would be the most practical and transparent approach. The difference with a traditional feasibility study, is that the SEA as Granit and Claassen propose it, not only entails technical and financial factors, it ideally incorporates socio-economic as well as environmental issues that are at play in the region. In this way, the assessment is not only a description of the (im)possibilities of expanding the water system in the West Bank, it is also a strategic instrument to address and hopefully overcome the socio-economic and environmental challenges that potentially accompany implementation of measures, identified in the TWO and approved by the parties to a future water cooperative agreement.

Chapter 7: Conclusions

With regard to the water cooperative process between Israel, Palestine and possibly Jordan concerning the West Bank's Mountain Aquifer, this study has shown that the key to finding solutions for mutual gain in order to satisfy opposing parties, and eliminate the possibility of the use of force and turning to armed conflicts lies in using preventive diplomatic tools, through traditional mediation or through utilizing other instruments of soft power diplomacy. In the West Bank, and in general in the strained relationship between Israel and Palestine, control of water resources are the root of many (smaller) conflicts. All concerning parties face the daunting challenge to avoid further escalations, in which fresh water supplies are increasingly used as a military tool.

The key argument of this dissertation is that a review of the management of the water dispute component in the Arab – Israeli conflict, in particular in the West Bank, points to the possibility of engaging in soft power diplomacy, mediation, and (better structured) water cooperation, in a more cooperative kind of water conflict management. The Oslo Accords haven't provided Israel and Palestine with a solid basis for a sustainable cooperative framework; in practice the joint water management is not handled efficiently from the viewpoint of effective water cooperation, with shared benefits for both parties. Israel has positioned itself as the 'basin bully', having the upper hand in every sector concerning (water) management of the West Bank. This study has proposed the use of the Barrier Analysis and has performed a short examination of possible stumbling blocks towards effective water cooperation in the West Bank. The results from the Barrier Analysis with regard to the water management situation in the West Bank are clear: literally all of the barriers identified by Granit and Claassen beforehand in their model are applicable on the cooperative process in the West Bank. For an effective cooperative relationship, it is necessary to level the players (in other words, build Palestine's governing capacity in order to become Israel's equal) as well

as the playing field, firstly by addressing the barriers identified in Chapter 5 and secondly by creating a relationship in which knowledge as well as technology is openly shared by participating parties.

The economies of Israel and Palestine are closely linked. Any negative influences on the Israeli economy immediately affects the Palestinian economy. Palestine's over-dependency has social consequences: the absence of easy and cheap access to water forces the Palestinian to resort to 'coping strategies', which are also harmful to the environmental quality of the Mountain Aquifer. Israel, relying on its unilateral actions to protect its internal and external security, in turn resorts to using water management as a military tool.

The author has identified that next to the Barrier Analysis, the Transboundary Opportunity Analysis in combination with the Strategic Environmental Assessment, could provide participants with objective instruments to identify opportunities for development. The TWO highlights four key development opportunities with associated benefits, in connection with the production of New Water as well as more efficient use of existing water resources, through the use and expansion of hydropower production and power trading, primary production, urban and industrial development as well as environmental and ecosystem services. A Strategic Environmental Assessment, preferably performed by a third, neutral, party, would provide Israel and Palestine with objective knowledge of the physiological opportunities of the Mountain Aquifer.

The conclusion of this thesis is that it is necessary to level the playing field as well as the players, and to address the hydrological issues of the West Bank in a broader, socio-economic spectrum. For a sustainable cooperative solution for the water management issues in the area, satisfying Israel as well as Palestine, it is essential that both parties are convinced a positive-sum solution is in the cards, that both can gain from a 'basket of benefits' concerning socio-economic growth, political and military security as well as climate and ecological protection. Israel, even more than Palestine, needs to be encouraged by the idea that traditional water allocations are less beneficial for its economic growth as well as its internal and external security than the (equal and fair) distribution of water

benefits. It is up to the international community to offer Israel and Palestine an objective and structured approach to obtain a sustainable water cooperative agreement, for example by using the conceptual models that are proposed in this study.

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