# An analysis of the discourse of water scarcity and hydropolitical dynamics in the case of Jordan

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## ABSTRACT

This thesis investigates the construction of the discourse of water scarcity in Jordan. First, it identifies the actors constructing the discourse, their interests, and the elements comprising the discourse. Second, it examines the effects of the deployment of the discourse of water scarcity on policy-options, analysing the solutions opened and closed by the discourse in the national water strategy. Third, it explores the effects of the deployment of the discourse on transboundary water governance, as well as what other factors shape Jordanian-Syrian, Jordanian-Israeli, and Jordanian-Saudi hydropolitical relations.

The study is important and makes an original empirical contribution because while the issue of water scarcity in Jordan has been widely researched, it has been done mainly from an engineering perspective, the discourse of water scarcity has been taken for granted, and studies on an in depth discursive analysis of the issue of water scarcity in Jordan are still missing. Moreover, a study on the relation between the deployment of the discourse of water scarcity and transboundary water governance in the case of Jordan is still lacking. Research undertaken in other contexts on this topic shows that discourses are being deployed to sanction and open certain solutions rather than others. It also shows that policies are designed and implemented in line with dominant discourses.

The main methods of data collection are documentation - including reports, academic articles, and newspapers - as well as semi-structured interviews with relevant individuals involved in the construction and reproduction of the discourse. Interviews are deployed also to collect data on the transboundary water governance and bilateral relations. The data are analysed through Fairclough's theoretical framework of critical discourse analysis, which applied to this case study represents a methodological contribution to knowledge.

The study finds that there is a single dominant discourse of water scarcity, which is composed of two narratives: water insufficiency and water mismanagement. The water insufficiency narrative is constructed to emphasise factors external to the responsibility of the Jordanian government as reasons for water scarcity, like nature, refugees, and neighbouring countries. It is mainly constructed by governmental oriented actors and deployed to open solutions on the supply and conservation sides and ultimately to maintain the status quo of the current water uses. The water mismanagement narrative is constructed to emphasise as reasons for water scarcity factors of mismanagement of water resources, and deployed to increase economic efficiency in the water sector. The actors behind this narrative are mainly donors and international organisations. The water mismanagement narrative is deployed to open mainly

demand oriented policies and solutions on the conservation side, ultimately challenging the status quo of the current water uses. However, the water mismanagement narrative is not dominant, and therefore does not have a major impact on the policies. The results suggest that the dominant and mainstream narrative is water insufficiency and the most prominent solutions that this narrative opens are on the supply side and particularly of transboundary nature: the Disi and the Red Sea Dead Sea Canal projects. By highlighting how the discourse is constructed and deployed to shape solutions and policies, the study shows the relevance of including a discursive analysis of the national dominant narrative into the analysis of water policies and transboundary water governance. This study is important because it shows the effects of discourses on policies and hydropolitical relations.

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## LIST OF ACRONYMS, ABBREVIATIONS, AND TERMS

| | |
|---|---|
| AFED | Arab Forum for Environment and Development |
| APN | Arab Group for Protection of Nature |
| AWC | Aqaba Water Company |
| BOT | Build-operate-transfer |
| CDA | Critical Discourse Analysis |
| EU | European Union |
| FAO | Food Agricultural Organisation |
| FHH | Framework of Hydro-Hegemony |
| FoEME | Friends of the Earth Middle East |
| FY | Fiscal year |
| GCC | Gulf Cooperation Council |
| GDP | Gross domestic product |
| GIZ | Gesellschaft für Internationale Zusammenarbeit (German Cooperation Agency) |
| IFC | International Finance Cooperation |
| IMF | International Monetary Fund |
| ISSP | Institutional Support and Strengthening Program |
| IWL | International water law |
| JD | Jordanian Dinars |
| JICA | Japanese International Cooperation Agency |
| JOHUD | Jordanian Hashemite Fund for Human Development |
| JVA | Jordan Valley Authority |
| JWC | Joint Water Committee |
| LJR | Lower Jordan River |
| MCM | Million Cubic Meters |
| MENA | Middle East and North Africa |
| MFA | Ministry of Foreign Affairs |
| MoA | Ministry of Agriculture |
| MoE | Ministry of Environment |
| MoPIC | Ministry of Planning and International Cooperation |
| MPs | Members of the parliament |
| MWI | Ministry of Water and Irrigation |

| | |
|---|---|
| NCARE | National Centre for Agricultural Research and Extension |
| NGO | Non governmental organisation |
| NRW | Non-Revenue Water |
| PMU | Performance Monitoring Unit |
| RBO | River basin organisation |
| RSCN | Royal Society for Protection of Nature |
| RSDSC | Red Sea – Dead Sea Canal |
| RSS | Royal Scientific Society |
| SIDA | Swedish International Development Agency |
| TWG | Transboundary water governance |
| TWINS | Transboundary Water Interaction Nexus |
| UEA | University of East Anglia |
| UN | United Nations |
| UNDP | United Nations Development Programme |
| UNFCCC | United Nations Framework Convention on Climate Change |
| UNICEF | United Nations Children's Emergency Fund |
| UNTSO | United Nations Truce Supervision Organisation |
| USAID | US Agency for International Development |
| WAJ | Water Authority of Jordan |
| WB | World Bank |
| WDM | Water demand management |
| WFL | Water for Life |
| WSI | Water Scarcity index |
| WTO | World Trade Organisation |
| YWC | Yarmouk Water Company |

# CHAPTER 1: INTRODUCTION

## Introduction

Headlines in the media, ministries in conferences, academics in seminars, representatives of donors' organisations in meetings, teachers in schools: all of these agree that water scarcity in Jordan is a serious issue, and that Jordan is among the world's most water scarce countries. As presented in the background contextual chapter (Chapter 5), it has to be noted that the Jordanian territory lies in an arid region, the country is dry, it has low precipitation, it has only 24 kilometers access to the sea, and it is beset by waves of refugees, making the issue of water scarcity a major important issue. Nevertheless, actors disagree on the fundamental causes of water scarcity and on the emphasis and relevance of each cause of water scarcity, and consequently on how to solve the issue. Framing the causes of water scarcity as either due to water insufficiency or water mismanagement has important implications, as it opens doors to some solutions and policy-options while closing the door to others.

This thesis investigates the water scarcity discourse in Jordan, in order to: identify the narratives and sub-narratives comprising the discourse, examine who is constructing, reproducing, and sanctioning which framing, and understand how the deployment of the framings affects solutions, policies, and transboundary water governance (TWG). The research question guiding this study is: how is the discourse of water scarcity constructed in Jordan? This thesis does not examine how the discourse developed and evolved, but focuses on what are the elements comprising the discourse and the effects of the deployment of the discourse, as this allows investigation of the effects of its deployment on the policies and on their implementation. First, this study focuses on the elements comprising the discourse, identifying the narratives and sub-narratives comprising the discourse, the actors, their interests, and where the blame is placed. Second, it examines how the discourse operates within Jordan, the effects of the deployment of the different framings of the issue of water scarcity to open, sanction, or close policy-options, especially in the national water strategy. Third, it explores the effects of the deployment of the discourse on TWG in the national water strategy and its implications in Jordanian-Syrian, Jordanian-Israeli, and Jordanian-Saudi hydropolitical relations.

The discourse and its deployment are situated in the geopolitical context. A discursive analysis of the discourse of water scarcity is important for the effects the deployment of the discourse have on policies, which have implications on maintaining the political stability of the

kingdom. The study finds that the discourse is combined of two narratives: water insufficiency and water mismanagement. The water insufficiency narrative leads to supply-side solutions which: absolve the government of blame, allows stability in the kingdom, and traps the country into supply-side solutions, the most prominent ones being of transboundary nature: the Disi and the Red Sea Dead Sea Canal (RSDSC) projects. These projects are expensive and also inflexible to adapt with next waves of refugees, as further discussed in the empirical Chapter 7. The second narrative, the water mismanagement narrative, emphasises as reasons for water scarcity factors of mismanagement of water resources, and is deployed by donors and international organisations in order to open market oriented solutions and challenge the current status quo and allocation of water resources, which are seen as unsustainable and inefficient. However, the solutions opened by this narrative are highly politically costly.

### 1.1 Key concepts: discourse, power, and hegemony

The concept of discourse is central to the study. Actors construct and deploy discourses to open or close solutions and policy-options. Discourses are the place where and around which the power struggle between actors and different interests takes place. This study does not take discourses for granted, but it investigates them to identify how a discourse is constructed, reproduced, transformed, and deployed; who are the actors behind it, their interests, and where the blame lies. This thesis adopts Fairclough's conceptualisation of discourse. For him, discourse combines the texts, the discursive practice, and the social practice. A discourse is the whole process of social interaction, which includes the text, the processes of text production and interpretation, and their impact on the social practice (Wilson, 1990: 20-21, Yom, 2014: 72-73). Hence, for Fairclough a discourse is the whole process that constructs, reproduces, and transforms the social reality through agents' actions, events, declarations, reports, etc. However, one limitation of this thesis in terms of discourse is its focus on the official discourse of water scarcity, overlooking any discourse developed by marginalised communities that may contest or undermine the official discourse. The latter discourses are not powerful and their deployment does not result in influencing policies, remaning unheard by the policy makers.

Power and hegemony are interlinked concepts. For Fairclough, power may be in the discourse or behind the discourse, therefore a tool or a goal. Hegemony is about dominating with consent - dominating and leading with both coercion and consent - through building alliances, ideological means, and concessions, for instance through discourses to convince

marginalised segments of society to accept that it is "normal" and "common sense" the status quo of their position of subordination and domination in the society (Yom, 2014: 92). In Fairclough's framework, hegemony is advanced through the reproduction of norms through discursive practices (Wilson, 1990: 2).

As further presented in the theoretical framework chapter (Chapter 3), these three concepts of discourse, power, and hegemony are key for this study as discourses are tools deployed by actors to pursue their interests, increase their power, and reach hegemony. Fairclough's use of hegemony and power in the discursive practice allows investigation of the water scarcity discourse. It opens up the discourse to see how it is constructed, who is contributing, even unconsciously, to its construction, reproduction, and transformation, and how it relates to other discourses, processes, and norms.

### 1.1.1 Scope of the Study

#### 1.1.1.1 Theoretical Focus

The study is bound by a theoretical focus on discourse, its construction, and its implications on policies. One of the strengths of investigating discourse is that it enables identification of: the relevant actors involved in constructing, reproducing, and transforming it; the different narratives and sub-narratives, and the implication of their deployment. The theoretical framework of critical discourse analysis discussed in the theoretical framework chapter (Chapter 3) is deployed for the analysis of the discourse of water scarcity in the empirical chapter investigating the elements comprising the discourse (Chapter 6). Empirical Chapter 7 and Chapter 8 analyse the implications of the deployment of the discourse of water scarcity, and therefore the theoretical focus in these two chapters is on the implication of the deployment of the discourse on opening and closing solutions on the policy side, both nationally and on TWG.

#### 1.1.1.2 Actor Focus

The actor focus of this study is multiple and on different scales. Actors can be divided into those involved in: the construction, reproduction, and transformation of the discourse; the deployment of the discourse; in the making of the national water policies; and in TWG.

As shown in detail in Table 3.1 on page 27 and in Section 2.4 on page 19, when it comes to the construction of the discourse, there are a variety of actors on different scales that contribute to this process, including actors at the local, national, international, and transnational scale. The state is considered as constituted by different voices and not simply as a single monolithic institution. The state is therefore considered by looking at the different ministries, the different agencies, and departments within it. Also the civil society has different voices, including NGOs, academics, and associations. Concerning TWG, the actor focus is on the Jordanian side only, as the focus of this thesis is on the water scarcity discourse in Jordan and on the role of the deployment of the discourse on the social practice, including solutions at the national and transboundary level.

#### 1.1.1.3 Spatial Focus

The spatial focus of this study is the country of Jordan, given the focus of the research question on how is the discourse of water scarcity constructed in Jordan. The discourse of water scarcity in Jordan is constructed by actors based in Jordan, and influenced in minor part by global discourses. Chapter 8 focuses on the effects of the deployment of the water scarcity discourse on TWG. The three elements of TWG considered are: Jordanian-Syrian hydropolitical relations; Jordanian-Israeli hydropolitical relations; and Jordanian-Saudi hydropolitical relations. Nevertheless, these three elements are studied from a Jordanian perspective, and no interviews have been conducted in Syria, Israel, and Saudi Arabia.

#### 1.1.1.4 Temporal Focus

The scope of this study is bound by a temporal focus. In terms of TWG, the study analyses the Jordanian hydropolitical relations with Syria, Israel, and Saudi Arabia. Although these relations have been in place for decades, this study adopts three different dates as temporal focus for the three cases of TWG in line with tipping point events of the bilateral hydropolitical relations. For the Jordanian-Syrian hydropolitical relations, although the first bilateral agreement can be traced back to 1953, this study looks at the relations since the last bilateral agreement, which was concluded in 1987. Therefore, the timeline chosen is from 1987 until 2012, as this is when the Syrian political unrest started. For the Jordanian-Israeli hydropolitical relations, although informal discussions and relations have been in place since the early 1950s, this study looks at

the bilateral relations since 1994. In this year, the peace treaty between the two governments was signed, and official diplomatic relations started. Hence, the timeline chosen is from 1994 until 2015. Concerning the Jordanian-Saudi hydropolitical relations, the timeline considered for this study is 1984 until 2015. 1984 has been chosen as in 1984 the Jordanian government increased the Jordanian exploitation of the Disi groundwater resources, which is shared with Saudi Arabia, by leasing land and water resources to four Jordanian agribusinesses in the Disi area.

In terms of the discourse of water scarcity, although Chapter 6 shows that the discourse is as old as the independence of the state of Jordan, this study looks at the period between 1984 and 2015. This timeline is adopted in order to capture all events within the three set of dates adopted for the three hydropolitical relations cases.

### 1.2 Research Gaps

A discursive approach to water scarcity in Jordan has been deployed in the literature only with a focus on privatisation of the water utilities (Masharqa, 2012, Mahayni, 2015), but an in depth discursive analysis of the issue of water scarcity in Jordan is still missing. Extensive research has been done on the Jordan River Basin, but nothing has been published so far on a detailed analysis of the relation between the discourse of water scarcity and the Jordanian cases of TWG.

As discussed in the literature review chapter (Chapter 2), this study situates its analysis in the literature on water scarcity. In the literature, the hegemonic framing of water scarcity takes a Malthusian approach, emphasising physical issues like population growth and climate patterns as putting a pressure on the fixed water resources worldwide (Gleick et al., 2009). Different scholars have tried to quantify water scarcity, including Falkenmark (1989), Rijsberman (2006) and Ohlsson (2000). Instead, the management and economic approach to scarcity in this literature argues that management and market-oriented solutions will allow coping with water scarcity without compromising economic growth and environmental sustainability. This approach considers the issue of scarcity as due to mismanagement and not to the limited available resources. In contrast with these two framings of water scarcity, Mehta (2005) emphasises issues of water use and access. The solutions that the previous two approaches open are often engineering or market oriented type of solutions, which do not challenge the "unexamined assumptions about the nature of the 'problem'" (Mehta, 2010: 2).

These solutions do not consider socio-economic issues within water scarcity, further reproducing and reinforcing the disparities and inequalities within different groups in the society. Mehta argues: "this naturalization of scarcity […] largely benefits powerful actors. Thus, water 'crises' must also be seen as the crisis of skewed access to and control over a finite resource" (Mehta, 2005: ix).

Mehta's approach has been lacking in the studies on water scarcity in Jordan. Water scarcity in Jordan has been addressed by Jordanian scholars from a hegemonic framing of water scarcity. As investigated in the empirical chapter on the construction of the discourse (Chapter 6), the water insufficiency narrative describes water scarcity as due to population growth, climate change, unfair distribution of shared water resources with neighbouring countries, aridity of the territory, and low precipitation. This framing of the issue, as examined in empirical Chapter 7, opens solutions on the supply side, sanctioning engineering solutions like dams and mega projects. As seen in these two empirical chapters, Jordanian academics strongly support, construct, and reproduce the water insufficiency narrative and sanction the engineering solutions.

By employing Fairclough's critical discourse analysis theoretical framework, this study applies Mehta's critical approach to the discourse of water scarcity in Jordan, making an original empirical contribution to knowledge. This study fills the gap by investigating the discourse of water scarcity in Jordan, the effects of the deployment of the discourse on solutions and policies, as well as on TWG.

### 1.3 Research Questions

The overarching research question explored in this study is

***How is the discourse of water scarcity constructed in Jordan?***

The following complementary sub-questions help to answer the overarching research question of this study:

A) What are the elements comprising the discourse of water scarcity, including narratives and sub-narratives?

B) What are the effects of the deployment of the discourse of water scarcity on the solutions, national water policies, and strategies?

C) What are the effects of the deployment of the discourse of water scarcity on transboundary water governance?

This thesis does not examine how the discourse developed and evolved, but focuses on what the discourse, narratives, and sub-narratives are, and the effects of the deployment of the discourse. This decision was taken to focus on the elements of the discourse and the effects of the discourse on policies and on the implications of the deployment of the discourse on the social practice, as discussed in Chapter 3. The theoretical framework developed in Chapter 3 is applied to the empirical Chapters 6, 7, and 8. Empirical Chapter 6 answers sub-question A by investigating the discourse, how it is constructed, the narratives and sub-narratives comprising it, the actors constructing it, their interests, and where the blame is placed. Chapter 7 answers sub-question B by focusing on the effects on solutions and policies of the deployment of the different narratives and sub-narratives. Chapter 8 answers sub-research question C by analysing the effects of the deployment of the discourse on the transboundary solutions in the national water strategy and the effects of their implementation on the TWG cases considered in this study: the Jordanian-Syrian, the Jordanian-Israeli, and the Jordanian-Saudi hydropolitical relations. The sub-questions contribute to answer the overarching research question, which is discussed in the final chapter of this thesis.

### 1.4 Structure of the Study

The study is composed of nine chapters. All the chapters are summarised below.

**Chapter 2** is a theoretical literature review of discourse theory, the politics of scarcity and more precisely water scarcity, and hydropolitics. It highlights the emergence and evolution of critical hydropolitics and of a critical approach to water scarcity. This chapter also argues in favour of a multi-scalar approach.

**Chapter 3** provides a theoretical framework for the analysis of the empirical chapters. The framework deployed is Fairclough's Critical Discourse Analysis, which combines the key

concept of discourse with power and hegemony. The framework provides tools to investigate the discourse, identifying how it is constructed, by whom, and the effects of its deployment.

**Chapter 4** provides the methodology deployed by this study, explaining the approach used by the study, and the methods of data collection and analysis. The chapter then highlights the rationale for these choices. Finally, the chapter discusses the limitations and problematic fields in the methodological approach adopted, and it indicates how these limitations are addressed.

**Chapter 5** provides the general background information needed for the analysis in the empirical Chapters 6, 7, and 8. This chapter provides contextual details regarding the facts and figures of water resources in Jordan, including water uses per sector and transboundary resources and agreements. Then, it discusses the legal and institutional framework. Finally, it presents the process of economic neoliberalism that resonates in Jordan with official and shadow actors.

**Chapter 6** is the first analytical chapter, and it investigates in depth the discourse of water scarcity. It explores the roots and main historical events informing the water scarcity discourse. It analyses the two narratives that construct the discourse of water scarcity: the water insufficiency and the water mismanagement narratives. It does so by investigating what the sub-narratives are comprised of, who constructs them, and where the blame is placed. It also examines the parallel voices to the discourse of: Bedu, also known as Bedouins; and small farmers. Finally, it examines the discursive prominence of the sub-narratives and the different ways of mapping the discourse.

**Chapter 7** is the second empirical chapter and focuses on the implications of the deployment of the discourse and narratives on the solutions, national water policies, and national water strategies in Jordan. This chapter identifies and analyses the solutions that the deployment of the water scarcity discourse opens and closes in order to solve the issue of water scarcity. It examines the relations between those solutions, the narratives and sub-narratives, and the actors deploying them. Then, it investigates the impact of the solutions on the national water strategy to identify which solutions have been incorporated and supported by the policy makers. It then examines what solutions of the national water strategy are implemented through governmental water campaigns, policies, and actions.

**Chapter 8** is the last empirical chapter and focuses on TWG. Having explored the construction of the discourse of water scarcity and how the deployment of the discourse impacts solutions and policies, this chapter investigates the impacts of the deployment of the discourse on transboundary solutions in the national water strategy, and the effects of their implementation on TWG in Jordan. In particular, this chapter investigates the role of the water scarcity discourse in Jordanian-Syrian, Jordanian-Israeli, and Jordanian-Saudi hydropolitical relations. Then, it examines why the deployment of the discourse of water scarcity impacts TWG in different ways in the three cases considered.

**Chapter 9** provides the concluding remarks of the study. The research question and sub-questions are reviewed, contributions of this study are underlined, and gaps and potential future research areas are highlighted.

# CHAPTER 2: LITERATURE REVIEW

## Introduction

This chapter reviews the bodies of research literature upon which the theoretical framework presented in Chapter 3 is created for the analysis of the empirical case studies in Chapters 6, 7, and 8. This chapter first presents discourse theory, which is a central body of literature for this study. Second, given the central role of the concept of scarcity and more precisely of water scarcity, this chapter explores the politics of scarcity debate, focusing on the concept of water scarcity. Third, it briefly examines the literature of hydropolitics, with a specific focus on the critical hydropolitics research developed in the last decade, literature in which Chapter 8 is situated. Finally, this chapter discusses the politics of scales debate, which is important for the analysis of the empirical chapters, as discourses are constructed, reproduced, and deployed by actors on different scales.

## 2.1 Review of discourse theory: a key body of literature

This section analyses the literature on discourse theory, which is central for the analysis of this study. According to Leach and Mearns (1996), narratives or discourses play a central role in shaping environmental change and policy-making as they legitimise and sanction certain solutions and silence others (Leach and Mearns, 1996). Representation of the environmental issues are strategic, in particular understanding why and how certain discourses are and become dominant (Watts and Peet, 2004: 19). Their representation is key as policy makers make sense of the complexity of environmental issues through discourses in order to suggest and identify potential solutions to the issues (Dryzek, 1997: 9-10). Leach and Mearns note that discourses are appealing to policy-makers as they make sense of the environmental issue, through stabilising assumption that represent both the issue as well as the solution (Leach and Mearns, 1996). In so doing, discourses represent the issue, they open a range of suitable solutions for the identified issue, and silence others not in line with their representation of the issue (Leach and Mearns, 1996).

Hajer (1995), and later Dryzek (1997), argues that discourses frame an issue in a way that policy makers can solve it by identifying appropriate solutions. Policy-making is seen as a process in which texts and declarations are processed and interpreted in a way they are then

able to make sense of the issue and find solutions for (Hajer, 1995: 15). This study situates its analysis in this literature by investigating the discourse of water scarcity in Jordan, the different narratives and sub-narratives comprising it, and actors involved in its construction and deployment. Analysing the discourse allows to identify the actors involved in shaping the definition of the issue (Hajer and Versteeg, 2005). Hajer (1995: 44) defines discourse as "an ensemble of ideas, concepts, and categories through which meaning is given to social and physical phenomena, and which is produced and reproduced through an identifiable set of practices." Discourse coalitions comprise actors that for different interests support a particular framing of an issue, driving towards - albeit for different reasons and interests - the same way of talking and thinking about it, opening similar solutions and policies (Hajer, 1995). In this study, I call discursive framing of a discourse coalition as narrative, which comprise different sub-narratives that drive towards the same narrative. I understand sub-narratives as a way to distil and map the different arguments of actors within the same narrative. Actors use sub-narratives and narratives when trying to make sense of a discourse. In line with Roe, I understand narratives as stories with a beginning, middle, and an end, driving therefore towards a solution, in this case towards policy-options (Roe, 1991). In line with Rappaport, I understand narratives as a representation of an issue common among a group of people and not only by an individual (Rappaport, 1995). I adopt this understanding of narrative because of the focus of this study, which also investigates the effects of the deployment of the discourse on solutions and policies. In order to investigate discourses, this study requires a theoretical framework that strongly draws upon discourse theory, framework that is presented in details in Chapter 3.

Nevertheless, discourse theory lacks to capture the interests and identities of the policy-makers, assuming they would be inclined to do what is rational and in line with the dominant discourses. In other words, it conceprualises knowledge as power, overlooking the other dimensions of power and the "informal" aspects, interests, and relations, which a more grounded political economy analysis would be able to capture (Collinson, 2003). Nevertheless, this thesis, as discussed in Chapter 3, attempts to overcome this shortcoming by including in the conceptual framework of critical discourse analysis (CDA) also the broader socio-political-economic context, which contributes in capturing the "informal" interests.

## 2.2 Review of the politics of natural resources scarcity, and its limits

This section reviews the body of literature on the politics of natural resources scarcity. After a brief description of the indicators of water scarcity, this section first reviews the mainstream neo-Malthusian approach to scarcity and its developments. Second, it presents the management and economic approach to scarcity and the solutions it opens. Third, it discusses the critics and limits to the mainstream approach to scarcity presenting the structural inequality and distribution critical approach. This literature shows that the problem lies in how the issue of scarcity is framed and in the solutions it sanctions. As Trottier puts it, "water is short only when social actors have decided it is so for a variety of reasons" (Zeitoun, 2008: 198). This literature challenges the mainstream understanding of the taken for granted notion of scarcity of natural resources, its roots, and its solutions, heavily based on a neo-Malthusian approach, calling for a critical analysis of the scarcity discourse.

There are several ways and set of indicators to calculate the degree of water scarcity; scholars have attempted to quantify water scarcity with different indicators, accounting for both physical and economic water scarcity: Falkenmark through the availability of water per capita (Falkenmark, 1989); and Rijsberman, including also economic, technological, and political considerations (Rijsberman, 2006). The Falkenmarks indicators are widely and commonly used to determine the extent of water scarcity of a country through its Water Scarcity Index (WSI) (Falkenmark, 1989). According to the WSI, there are three types of water scarcity: water stress (1,000 Cubic Meters to 1,700 CM of freshwater per capita); water scarcity (500 CM to 1,000 CM of freshwater per capita); and severe water scarcity (less than 500 CM of freshwater per capita) (Falkenmark, 1989). Ohlsson attempts to improve the WSI by including measurements to account for the capacity of institutions, socio-political-economic differences that may affect their response to issues of water scarcity (OhIsson, 2000). However, Rijsberman added that access to water needs to be also accounted for, as often this is not due to water shortage, but rather due to poor infrastructures and mismanagement in the water delivery services (Rijsberman, 2006). Therefore, it emerges that while Falkenmark's indicator focuses on physical water scarcity, Ohlsson and Rijsberman indicators' account for economic water scarcity. Other limitations of Falkenmark's indicator are: considering the annual - national averages hide scarcity at smaller scales; it does not consider the availability of infrastructure that modifies the availability of water to users; and the thresholds do not reflect differences in

demand among countries and regions due to different lifestyles, climate, and cultural norms (Rijsberman, 2006).

Malthus mistakenly argued over two centuries ago that food production would not be enough to meet the needs of population growth, as food production grows linearly while population growth increases exponentially, and this would result in famine and deaths. Neo-Malthusianism informs the mainstream politics of scarcity literature, and it also includes climate change and new threats. The assumptions behind scarcity are that the natural resources considered are finite, limited, scarce, emphasising environmental limits and absolute scarcity. Concerning water scarcity, the hegemonic framing of water scarcity, which takes a neo-Malthusian approach, emphasises the deterministic relation between physical issues like population growth and the fixed water resources worldwide (Gleick et al., 2009). This neo-Malthusian approach emphasises the linear relationship between hydrological systems, climate patterns, population growth, and pollution on the available water resources (Linton, 2010). *The Limits to Growth* book published in 1972 underlines the absolute scarcity and the environmental limits to growth, as the earth has physical limited resources to support the needs of human society (Meadows et al., 1972). If the thresholds are breached, this would result in the collapse of the world system (Meadows et al., 1972). The book highlights the necessity to limit needs and consumption patterns, and this is particularly important in today's society, which is driven by abundance that leads to never-ending needs and desires. Recent developments within this stream of literature are the methaphor of anthropocene and the concept of planetary boundaries, which are based on the belief that the exponential growth and the human activities are putting a further pressure on the Earth System, and this could cause irreversible changes to the climate and to the environment, ultimately resulting in catastrophic events (Rockström et al., 2009). Solutions opened by this approach focus either on engineering supply side solutions, which would solve the issue of water scarcity by increasing the available water resources, or on challenging the paradigm of economic growth seen as environmentally unsustainable. This mainstream approach guides the water insufficiency narrative in Jordan analysed in Chapter 6, and the solutions it opens discussed in Chapter 7.

The management and economic approach to scarcity argues that management and market-oriented solutions will allow coping with water scarcity without compromising economic growth and environmental sustainability. This approach considers scarcity as due to mismanagement and not to the limited available resources. Scarcity is seen as "home made", and therefore the solutions suggested are on the management side. Scarcity is perceived as a

set of economic problems that are a consequence of market failure. The economic system is believed to be able to solve the issue of scarcity through market-related measures, including tariffing systems, technology and innovation, externalising costs, and trade. Solutions offered focus on increasing the productivity of the resources, for instance by using waste and increasing economic efficiency by using technologies, introducing desalination, generally modified crops, and treated wastewater. Scarcity is not related to physical limits, but a value-related and abstracted constraints. The water mismanagement narrative analysed in Chapter 6 is guided by this approach to scarcity, and so are the solutions it opens described in Chapter 7.

Consequently to these two mainstream conceptualisations of scarcity, standardised market-oriented, institutional, and engineering solutions are put forward to solve scarcity. The assumptions behind these solutions are on availability of water resources, and is supported by a deterministic relationship that assumes for instance that increasing food supply would reduce hunger (Mehta, 2010: 2, Harris et al., 2015), or that increasing water supply would reduce water scarcity. In Jordan, as analysed in Chapter 6, two trends emerge in line with the two mainstream conceptualisation: the neo-Malthusian approach to water scarcity opens supply side solutions aiming at increasing the amount of water resources; and the management and economic approach to water scarcity opens demand side solutions driven by markets and economic efficiency principles. The neo-Malthusian approach at the global level leads to supply side solutions as well as to the condemnation of increased consumption, linking it to the metaphor of "*limits to growth*" and of "*Anthropocene.*" However, at the local level, as emerges in the case of Jordan, the supply side solutions are suggested by the neo-Malthusian approach, while the condemnation of increased consumption as a threat to the overall system is a global discourse present at international forums and arenas, but absent in the local levels, such as in the case of Jordan.

Critics to the neo-Malthusian approach note that there are many other non-environmental variables that should be considered when analysing the causes of conflicts; technological innovations and international trade should be accounted for; scarcity can be seen as an opportunity for cooperation (Mildner et al., 2011: 158). The literature on the politics of scarcity challenges the mainstream neo-Malthusian understanding of scarcity and its assumptions, seeing the problem in the way that scarcity is conceptualised. The politics of scarcity literature focuses on issues of access to natural resources, emphasising power asymmetries, and access to water. For this literature, the mainstream discourse of water scarcity is used to justify certain projects and interventions, like dams and mega-projects, silencing

discussions about alternative solutions. These solutions are often engineering or market-oriented solutions, which overlook the socio-economic problems within water scarcity, proving therefore tragic results for the urban poor communities. This is shown by Shiva in the case of India (Shiva, 2002) and Perreault in the case of Bolivia (Perreault, 2006). Scholars within this critical body of literature have shown how the discourse of water scarcity is deployed to support the political agendas of the states. Swyngedouw (1999) and Bakker (2002) analysed the case of Spain, showing how the state deployed this discourse to justify the hydraulic mission; Alatout (2008) showed how it was used to justify the hydraulic mission and legitimise the building of Israel; and Edwards (2013) shows the deployment of the discourse of water scarcity by powerful actors to support market-oriented reforms (Swyngedouw, 1999, Bakker, 2002, Alatout, 2008, Edwards, 2013).

For the structural inequality and distribution critical approach the issue is in the inequitable institutional and governance arrangements. As emphasised by Mehta (2010: Chapter 1), the key issue is not about the availability of a resource, but rather about who has access in an adequate quantity to it, which is the outcome of political processes and decisions of inclusion and exclusion, which could be linked to the price of water, to the lack of infrastructures, or to social exclusion. The attention should be on who primarily benefits by the sanctioned solutions and improved efficiency. It should also be on who is marginalised from these solutions. It is argued that the increased benefits will be privatised and go to those in the powerful class, while the poor will be further marginalised, if judicious re-distributive mechanisms are not adopted (Allouche et al., 2015: 616). Solutions should therefore be on dismantling the institutional barriers that cause discrimination and inequalities. Clear examples of structural inequality and distribution in the water sector come from: the West Bank, where it has been argued that water scarcity is an issue of structural discrimination against Palestinians and priviledged access to water to illegal Israeli settlements; in apartheid South Africa, where inequalities based on discriminatory policies were extensive also in the water sector (Movik, 2012); and in India, where access to certain wells is denied to so called lower caste women (Singh, 2006). Nevertheless, in the mainstream discourse efficiency arguments prevail on equity arguments, and neo-Malthusians arguments are deployed enriched by the scarcity concept. For Mehta, it is necessary to consider who is consuming what and for whom are the limits. Scarcity is for Mehta "a crisis of unequal power relations" for the control of water resources (Mehta, 2005: 4). Mehta argues: "this naturalization of scarcity […] largely benefits powerful actors. Thus, water 'crises' must also be seen as the crisis of skewed access to and

control over a finite resource" (Mehta, 2005: ix). Mahayni emphasises that the hegemonic scarcity discourse neutralises factors like inequitable access to natural resources, which need to be addressed to solve the scarcity issue (Mahayni in: Harris et al., 2015). Mehta explores the meanings and experiences of scarcities, as the hegemonic framing tends to present scarcity as a singularised problem, overlooking the diversities within it. This results in the hegemonic framing overlooking regional differences within the same country, or cyclical variations over time. Also Lankford shows the necessity of moving beyond the volumetric in order to solve the issue of water scarcity, underlining the need for water distribution among its users and of water equity (Lankford in Mehta, 2010: 195-196). This literature shows the necessity to investigate issues of access and equity rather than simply of quantity and of balance between supply and demand.

Overall, this section showed the necessity to investigate the discourse of water scarcity and its implications on policy-solutions, and not to take the framings for granted. My position is that while biophysical limit exists, the biophysical data need to be interpreted, and therefore cannot be objectively understood but they are open to different subjective interpretations. In line with the structural inequality and distribution critical approach, I am not a neo-Malthusian, and I believe that the focus should be on investigating the allocation of the water resources, what is scarcity, who defines it, scarcity for whom, whose interests are promoted in the scarcity discourse, who is excluded and silenced, and why. This thesis does so by investigating the discourse of water scarcity in Jordan. The background chapter (Chapter 5) analyses the current allocation of the water resources sector by sector, to understand who currently uses the water resources, and why. There is a need to understand how discourses of scarcities are perpetuated and reproduced, the interests and reasons behind them – as done in Chapter 6 - and interrogate the policies informed by these discourses – as done in Chapter 7. To do so, I need to deploy a critical discourse analysis approach, which is presented in the theoretical framework chapter (Chapter 3) to investigate the discourse of water scarcity, its construction, and implications.

### 2.3 Review of the hydropolitics literature and its limits

This section examines the literature of hydropolitics, in which Chapter 8 is situated. The field of hydropolitics is relatively recent, as it started to develop in the late 1970s. The first body of literature developed around hydropolitics emphasised the potential for water wars, portraying water as the blue gold. This literature then moved from water wars towards cooperation and

peace through water. The emphasis became on the potential for building cooperation through benefit sharing around water, seeing water scarcity as an opportunity for peace rather than as a threat to security and stability. The last body of literature within hydropolitics, which has appeared in the last decade, has focused on the co-existence of conflict and cooperation, and on the different dimensions of power – including discursive power - to explain the outcome and maintenance of water allocation within a basin. The latter is a critique of the mainstream previous bodies of literature, and is known as critical hydropolitics.

### 2.3.1 Water wars: "the next war in the Middle East will be over water, not politics"

Politicians, media, and NGOs have argued that especially in the Middle East, given the vital importance of fresh water and the scarcity of this resource, that competition over physical scarcity of water resources will result in inter-state conflicts. As Boutrous Boutros-Gali said "the next war in the Middle East will be over water, not politics" (in Butts, 1997: 65). Late King Hussein of Jordan identified water as the only issue that might lead Jordan to war with Israel. In the 1990s, mass media and academic articles have reproduced this idea of water wars (Shiva, 2002, Bulloch, 1995, Sherk et al., 1998). Homer-Dixon analysed several shared river basins and concluded that "the renewable resource most likely to stimulate interstate resource war is river water" (Homer-Dixon, 1994: 19). These predictions were based on a Malthusian approach, which focuses on the deterministic relation between physical water scarcity and increased population, climate change, and new threats in explaining how water wars will be inevitable. Water scarcity was identified as the main reason for water wars in semi-arid regions like the Middle East (Lowi, 1995, Gleick, 1993), suggesting the possibility for water wars in the Middle East (Selby, 2005, Alam, 2002).

The water wars approach has been viewed as an unfounded hyperbole by several academics after Wolf showed that the number of cases of water conflicts over shared water resources is minimal compared to the instances of transboundary cooperation (Wolf, 1998). Also Homer-Dixon recognised that he overstated the deterministic approach adopted for his analysis of hydropolitics (Homer-Dixon, 1999: 139). As noted by Allouche, the issue is on the allocation of water resources between the riparian states rather than water scarcity, as water rich countries are involved in disputes over the allocation of shared water resources with other water rich countries (Allouche, 2007, Allouche, 2005, Allouche, 2011).

### 2.3.2 Water peace: states can build peace through water cooperation

As literature on hydropolitics has developed, since the end of the 1990s the alarmist claims of water wars have decreased in academic publications. Wolf's research (1998) showed that only in Sumerian times there have been instances of water wars, delegitimising in this way the claims on water wars. Water conflicts are more common at the inter-sector, inter-community, and inter-household levels (Allouche, 2011: S5). Since then, academic research has developed on cooperation over shared water resources, exploring reasons that enable this cooperation.

In explaining why there have been no water wars in the Middle East, Allan (2002) shows that virtual water[1] trade has been and is an effective way to cope with water scarcity especially in arid and semi-arid regions like the Middle East. For Wolf (1995), technology advancements contribute to reduce water scarcity by increasing the supply, for instance through desalination plants, wastewater reclamation schemes, and inter-basins transfers. Turton shows that benefit sharing and trade-off mechanisms between water and non-water issues are strategic to promote and explain cooperation over shared water resources (Turton, 2008). In addition, Lowi (1995) argues that the broader political context explains why cooperative measures are adopted rather than result in conflicts. For Lowi (1995), water is often a "low politics" issue within the broader bilateral relations of two states. The role of the broader socio-political-economic context is key for the analysis of the TWG dynamics in the empirical Chapter 8, and hence is further developed in the theoretical framework presented in Chapter 3.

### 2.3.3 Review of the critical hydropolitics literature and its limits

The critical hydropolitics literature is a critique to the mainstream hydropolitics literature examined above and is developing around the different intensities of conflict and cooperation regarding international waters. It is "critical" in the sense that for this literature a key role is represented by the concept of power, and of power relations in the hydropolitical transboundary relations (Cascão, 2009, Zeitoun and Warner, 2006, Zeitoun and Mirumachi, 2008). Hence, water is recognised as a political issue. Zeitoun and Mirumachi (2008), as well as Cascão

[1] Allan (2003: 5) defines virtual water "the water needed to produce agricultural commodities." For instance, to produce a ton of grain, the amount of needed water is 1000 cubic meters. If 50 million tons of grain was imported by the MENA region states, they virtually imported 50 billion cubic meters water, which is equivalent to 30 per cent of the entire water supply of the MENA region.

(2009), argue that cooperation and conflict can co-exist, dismissing the "either/or" approach that sees conflict and cooperation as two opposite of a continuum.

Zeitoun and Mirumachi (2008) critically examine the role of treaties, which are often seen as a good instance of cooperation. They argue that cooperation is not always good, as treaties can codify existing asymmetrical status quo, and treaties can become the issue of the conflict. Selby (2003), analysing the Oslo Agreements between the Israeli government and the Palestine Liberation Organisation, shows that the agreement serves to "dressing up domination as cooperation." Zeitoun and Mirumachi (2008) develop the Transboundary Water Interaction Nexus (TWINS) matrix to analyse the conflictual and cooperative relations between riparian states over shared water. In this way, they go beyond the idea of a continuum of conflict or cooperation, emphasising the co-existence of conflict and cooperation.

Central to this literature is Zeitoun and Warner's (2006) Framework of Hydro-Hegemony (FHH). The framework, in order to explain how control is achieved and maintained over shared water resources, takes into account the riparian geographical position,[2] the exploitation potential[3], and in particular the power asymmetries of the different riparian countries (Zeitoun and Warner, 2006: 435).[4] Cascão (2009) analyses also how non powerful countries, known as non-hegemonic countries, can challenge the status quo by using in particular soft power[5] to shift dominant ideas. Other strategies and tactics of counter-hegemony are issues-linkages to gain more bargaining power or the "boomerang strategy"[6] (Daoudy, 2009: 361-362, Keck and Sikkink, 2002: 89-90, Fischer et al., 1981). By looking at power asymmetries, the FHH allows to consider the broader socio-political-economic context, as military and geopolitical dynamics are accounted for in hard power, while issue-linkages and inter-sectorial interests are accounted for in soft power, as further developed in the theoretical framework chapter (Chapter 3). As summarised by Mirumachi (2015), "the management and governance of shared basins need to contend with factors outside of the 'water box'" (Mirumachi, 2015: 33).

This research focusing on the discourse of water scarcity and on the effects of the deployment of the discourse on policies and ultimately TWG, fits in the critical hydropolitics literature, as it investigates the role of the discursive power, identifying actors, narratives and

[2] Geographical position: downstream/upstream
[3] Technological capacity, infrastructures, size of the population, or number of engineers.
[4] Lukes' three dimensions of power: overt, covert, and structural power
[5] Known in the FHH as bargaining and ideational power and as covert and structural power in Lukes' definition (second and third dimension of power in Lukes' definition).
[6] Connections with international actors in order to put pressure on riparian states.

sub-narratives, and tools deployed to shape policies. In so doing, it contributes to the critical hydropolitics research on ideational power tools to maintain or gain control over shared water resources. Nevertheless, one limitation that emerges from the critical body of literature in hydropolitics, both in FHH and in TWINS, is the state centric approach. As investigated in the first empirical chapter (Chapter 6), the discourse of water scarcity is constructed and reproduced by several actors on different scales, and not only by the state. Also in TWG, there are non-state actors involved, including international organisations, NGOs, and regional organisations. In addition, this literature does not provide the required tools to fully investigate the construction and operationalisation of the discourse. For this reason, this research fits in this literature, but it deploys theories from discourse theory for the analysis of this research. Hence, the main theoretical tools deployed in this study are presented in the theoretical chapter (Chapter 3).

### 2.4 Actor mapping in a multi-scalar analysis approach

Scale can be understood in terms of governance or in terms of space. For this study I understand scale in terms of governance, meaning "social organisations and interactions between […] levels of organisations," including between local, state, and international levels (Namrouqa, 2010b: 922). In the space case, scale is understood as a spatial category, and therefore the geographical focus of study, for instance: regional, national, basin, and international scales (Namrouqa, 2010b: 922, Greenwood, 2014, Al-Tabini et al., 2012).

Given that the focus of this study is on discourses, it is necessary to consider different scales as discourses are constructed, reproduced, and transformed by several actors on different scales. By looking only at the variety of actors on different scales I will be able to examine the construction of discourses, the power struggles, and the dynamics of discourses. Using a multi-scalar approach fits with the critical discourse analysis theory and with Fairclough's framework analysed in Chapter 3.

A multi-scalar approach allows me to examine the complexity of the water debates within a country and the intra-state relations, considering the multi-faceted complexity within a country, for instance between the different ministries or between departments within the same ministry. In this way, it is possible to go beyond the hydro-politics and international relations limitation of considering states as fixed units (USAID, 2011: 10). In this section, I briefly

discuss the politics of scale and the multi-scalar approach I adopt for this study, also describing the relevant actors I have identified for the topic of this study.

This research goes beyond the fixed scalar approach of considering only one scale of analysis, and deploys a multi-scalar analysis, exploring actors within their complexity, on the local, national, and international scales. Within these scales, I look at the public sector, private sector, and at civil society. However, I do not take for granted the different scales and sectors, but I investigate their complexity and variety of interests, therefore looking at the state and at the civil society, for instance, not as unified actors, but as actors with a complexity of interests and identities and therefore positions. The state is considered as constituted by different voices, for instance, the different ministries, agencies, departments, while the civil society is constituted by several actors, including NGOs, academics, associations, and within them several positions and interests are represented. The most relevant actors[7] I have identified are:

- Ministry of Water and Irrigation (MWI), the Jordan Valley Authority (JVA) and Water Authority of Jordan (WAJ). The MWI is responsible for the water and wastewater system, for planning and management, for the national water policies and strategies, research on water studies, and for raising funds and ensuring financial resources. WAJ is responsible for the public water supply and wastewater services, for the infrastructural construction, operations, and maintenance. The JVA is responsible for the social and economic development of the Jordan Valley, including water resources.
- Ministry of Planning and International Cooperation, which plays an important part as it is the ministry that collects and coordinates all the donors' financial support.
- Ministry of Agriculture plays an important role as 60% of the water demand is due to the agricultural sector, and therefore water uses in this sector are key for the overall water management of Jordan. Due to historical reasons, this ministry is very important as the economic and social development of strategic areas, such as the Jordan Valley, was implemented through investing in the agricultural sector.
- Ministry of Environment, established in 2003, is a new ministry and its voice is weak and often marginalised. It should support the interests of the environment but water is not yet among its responsibilities, so it has a limited sphere of action.
- Joint Water Committees between Jordan and Israel and between Jordan and Syria. They are important as they monitor the implementation respectively of the 1994 and 1987

[7] Please see also Figure 5.4 on page 73 for an actors' map of the Jordanian public water sector.

treaties on TWG.

- Royal Water Committee, proposed by King Abdullah II, was established in 2007 and lead by Prince Faisal. Its mandate was to prepare a national water strategy for Jordan, a guide and framework for the future policies of the MWI and other agencies in Jordan. This strategy was published in 2008 and is currently being updated. It is considered the baseline for water policies in Jordan.
- NGOs (Royal Society for Protection of Nature (RSCN), Arab Group for Protection of Nation, Friends of the Earth Middle East (FoEME), Greenpeace Jordan, etc.). They play an important role in awareness campaigns, water and environmental conservation, and in shaping governmental decisions on the Red Sea-Dead Sea Canal project, as in the case of the campaigns and positions of FoEME and RSCN.
- Academics (University of Jordan, Techno – Irbid, and the German-Jordanian University in Madaba); they are important in providing updated research on the water situation in Jordan, focusing mainly on groundwater resources and not conventional water resources, namely treated wastewater and desalination. They usually have an engineering approach to water studies and reproduce the mainstream discourse of water scarcity.
- Donors (USAID, JICA, Italian cooperation, SIDA) and international organisations (World Bank and UN) are key actors as they often shape the national policies and strategies. This happens through the technical assistance given to the MWI, the conditionality put on loans and grants, and on frameworks, programmes, and projects designed by donors, adopted by the MWI, and financed by the donors.
- Large farmers and tribes, who play an important role as they are the main consumer of water resources in Jordan. Their role in shaping water policies is relevant as they have personal and tribal connections in the main institutions and are able to stop, change, or ignore policies.
- Private sector, including industries, supply utilities, and tourist sectors play a role in shaping water policies, supporting for instance a further involvement of the private sector or Red Sea-Dead Sea Canal project who would support the tourist and industrial companies operating on the Jordanian shore of the sea.
- Religious leaders, through their sermons they can shape norms and people's behaviour.
- General population, who in their daily actions and talks produce, reproduce, and transform discourses

Considering the complexity of actors and the different voices, however, does not mean giving the same importance to all actors. While several actors on different scales are involved both in constructing discourses and in the national water sectors, Norman and Bakker (Namrouqa, 2013f) show how in US-Canada TWG, an extensive number of actors are involved, but governmental actors maintain most of the power in TWG. Also Zeitoun et al. (Zeitoun et al., 2012) show how, in the case of water demand management policies in Jordan and Yemen, many actors are involved but with different power and capacity to influence policies. In the background chapter (Chapters 5) and in the empirical chapter on the construction of the discourse (Chapter 6), I examine which actors are more influential in designing and leading the national water policies and strategies for Jordan. This is examined in relation to discourses, solutions, national policies, and TWG, and is crucial in understanding actors' power and their capacity to influence policies.

**Conclusion**

The purpose of this chapter was to review the relevant literature in which this study is situated. First, this chapter reviewed the literature on the politics of scarcity, focusing on the development of the concepts of water scarcity, key for the analysis of the empirical chapters. Second, it examined the literature of hydropolitics and of critical hydropolitics, in which this study is broadly situated, in which the empirical chapter on TWG (Chapter 8) is situated. Given the state centred approach of the critical hydropolitics literature, this chapter has then discussed the literature of the politics of scale, which provides theoretical tools for the analysis of the empirical chapter on the construction of the discourse of water scarcity (Chapter 6) given that discourses are constructed, reproduced, and deployed by actors on different scales. Chapter 3 presents the analytical frame deployed for the analysis of the empirical chapters, which is based on Fairclough's critical discourse analysis framework. In a nutshell, this chapter has set the scene in which this thesis developes and is situated.

# CHAPTER 3: THEORETICAL FRAMEWORK

## Introduction

The research question guiding this study is: how is the discourse of water scarcity constructed in Jordan? In order to analyse the discourse of water scarcity and to be able to answer the research question, I need a theoretical framework to investigate the discourse of water scarcity, looking at how the discourse is constructed through reports, declarations, and actions, who the actors are, and the effects of its deployment on solutions, policies, and TWG. I also need a theoretical framework that captures the broader socio-political-economic context, in order to contextualise water resources in a wider geopolitical regional context; the variety and diversity of actors involved on different scales; and issues of access, distribution, and dynamics beyond the supply demand water balance. In this chapter, I present Fairclough's Critical Discourse Analysis (CDA) theoretical framework, which I adopt for this study, presenting its theory and framework, its main concepts, and why I adopt it. Then, I define the concepts of power and hegemony and explain how they fit into the framework I borrowed from Fairclough.

## 3.1 Review of the critical discourse analysis theory

The key theory deployed for investigating the discourse of water scarcity in this study is Fairclough's CDA. This theory refers both to Fairclough's approach and to a broader movement of which Fairclough is part (Alon, 2007: 60) and it provides both theories and methods for the exploration of discourses within the broader context.

CDA differs from other approaches in the literature of discourse theory because it sees discourse as an important tool of construction of the social world through social practices, which are the means through which social relations are reproduced or transformed. For CDA, discourses contribute to construct social identities, social relations, and systems of knowledge and meanings and they contribute to the construction of the social world through its reproduction and transformation (Alon, 2007: 67). It is by analysing interests in the social practice, meaning whose interests are promoted or neglected by the positioning of the text, what are the consequences of this positioning, that the discourse is related to relations of power, making *critical* this type of discourse analysis. Similarly to Mehta's approach to the politics of scarcity examined in the literature review (Chapter 2), also the CDA approach is politically

committed to social change, taking the side of marginalised and oppressed groups in society and trying to bring justice to those who suffer from domination and inequality. Fairclough aims at uncovering discursive practices of power relations' maintenance and at making people more conscious of these discursive processes, to enable them to resist them (Wilson, 1990: 1, Boas and Gans-Morse, 2009: 252). People can resist and transform the power relations because for Fairclough social structures shape social practices, but, at the same time, social structures are a product of social practices (Wilson, 1990: 31, Alon, 2007: 62). A discourse contributes to the constitution of the social world and is at the same time constituted by other social practices, and therefore CDA's approach is bi-directional as agent and structure constitute each other. Therefore, people can act upon the world reproducing it or transforming it through discourses (Yom, 2014: 63).[8]

### 3.2 Why is Fairclough's critical discourse analysis useful?

I adopt the CDA framework because it allows investigation of the discourse of water scarcity in Jordan. First, it looks at the key texts, declarations, or events key for the discourse, exploring who constructed them. Second, the discursive practice looks at the construction and interpretation of the texts. Third, the social practice examines how the discursive practice impacts the social relations within the broader socio-political-economic context, to analyse whether the deployment of the discourse reproduces and reinforces current power relations or transforms and contests them. Finally, looking at the power struggle in the discourses in the social practice dimension allows identification of the economic and political forces and interests that lie in and around the discourse. The conceptualisation of power and hegemony are useful and in line with my understanding of these concepts and with the understanding of discourses as the place of power struggle and ideology contestation and in their relation to policies. What is useful about Fairclough's CDA is that it allows to focus on the texts producing

[8] While Archer ARCHER, M. S. 1982. Morphogenesis versus structuration: on combining structure and action. *The British journal of sociology*, 33**,** 455-483. sees agents and structures as different and separate but related elements in a relationship, Giddens argues for a duality that cannot be conceived of apart from one another. For Giddens, people's knowledge is limited and they are not completely free to choose their actions. Nevertheless, people are the agency that reproduces and transforms the structures. For him, there is a dual relation but it is impossible to clarify what is changing what, as structures are created, reproduced, and transformed through actions, but at the same time actions assume meaning through structures. "Social structures" in Giddens view, "are both constituted by human agency, and yet at the same time are the very medium of this constitution" GIDDENS, A. 1976. New rules of sociological method: A positive critique of interpretative sociology. *London: Hutchinson*.

the discursive practice, on how they relate to previous texts, but at the same time relating them to the broader socio-political-economic contexts and their constraints.

### 3.3 Fairclough's Framework of Critical Discourse Analysis

Fairclough's framework is central to operationalise the study of discourses and the relation between texts, discursive practice, and social practice. Figure 3.1 shows Fairclough's three-dimensional framework for CDA, which shows that social practice is based on and constraints discursive practice, which is based on texts. According to Fairclough (1992), the first dimension is represented by the text, which is the spoken or written text itself like a report or declaration; the second dimension is the discursive practice, which is the production and interpretation of such text; and the third dimension is the social practice, which is the context (social, political, and economic) in which also the first two dimensions are situated, and the implications of the discursive practice on the social world. Table 3.1 shows examples of the main concepts used in the framework with concrete examples from the Jordan case.

Figure 3.1: Fairclough three-dimensional diagram.

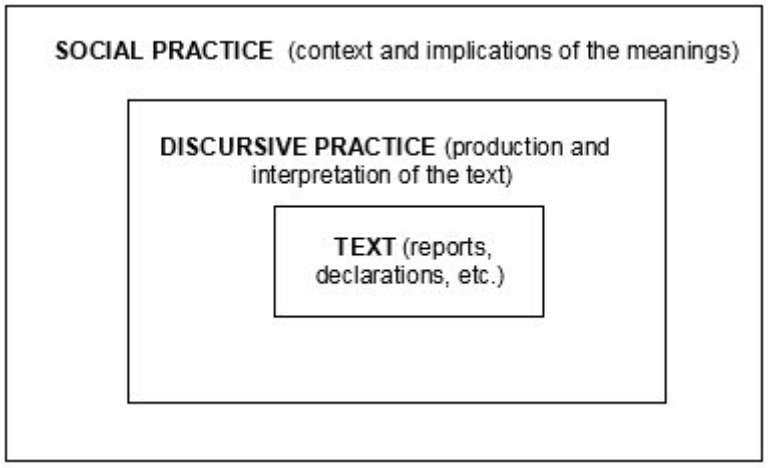


Table 3.1: Wider processes, Agents, Texts, Discourses, Norms in the Jordanian water sector

| | |
|---|---|
| Wider processes | - The wider process of economic neoliberalism |
| Agents | - Ministry of Water and Irrigation (MWI), the Jordan Valley Authority (JVA) and Water Authority of Jordan (WAJ)<br>- Ministry of Planning and International Cooperation<br>- Ministry of Agriculture<br>- Ministry of Environment<br>- Joint Water Committees between Jordan and Israel and between Jordan and Syria<br>- Royal Water Committee<br>- NGOs (Royal Society for Protection of Nature (RSCN), Arab Group for Protection of Nation, Friends of the Earth Middle East (FoEME), Greenpeace Jordan, etc.)<br>- Academics (University of Jordan, Techno – Irbid, and the German-Jordanian University in Madaba)<br>- Donors (USAID, JICA, Italian cooperation, SIDA) and international organisations (World Bank and UN)<br>- Large farmers and tribes<br>- Private sector, including industries, supply utilities, and tourist sectors<br>- Religious leaders<br>- People |
| Texts | - National water strategies<br>- The 1994 agreement with Israel and the 1987 with Syria<br>- Regulations on water tariffs<br>- Regulations on groundwater uses in 2002 (and amendments in the following years)<br>- Reports on impacts of the Syrian refugees on water resources done by the MWI<br>- UNDP-Ministry of Environment UNFCCC reports on the impacts of climate change on Jordan<br>- The National Agenda, which is a master plan for the reform, future growth and development of Jordan and was commissioned by His Majesty King Abdullah II<br>- Textbooks<br>- The 2013 (new) proposal of the first phase of the Red Sea-Dead Sea Canal project |
| Discourses | - **Water scarcity** (including the two narratives and the sevel sub-narratives identified in Chapter 6)<br>- Hydraulic mission<br>- Marketisation |
| Norms | - Water access should be free to everyone, and therefore only the services could be chargeable<br>- Water is a precious resource: it shall not be wasted<br>- Engineering projects are the solution to water scarcity<br>- Water scarcity is due to mismanagement;<br>- Private sector and the market are more efficient than the public sector in resources management |

### 3.3.1 Text

A text, which can be written or non-written material, like a policy report, a declaration or a picture, is the product of the process of text production. Texts can produce, reproduce, or contribute to transform the social world, for instance through reproducing or contesting a discourse or a norm. The empirical chapter that investigates the elements comprising the discourse of water scarcity (Chapter 6) identifies the texts constructing the narratives and sub-narratives of the discourse of water scarcity in Jordan. As summarised in Table 3.1 above, the relevant texts for the water sector in Jordan are:

- National water strategies. They set the priorities for the Jordanian water sector, and the last strategy was commissioned by the king and prepared by the Royal Water Committee. It is a key text that reproduces the mainstream water discourse;
- 1994, 1987, and 2015 treaties. These bilateral water agreements are important texts. For instance, the 1994 agreement with Israel produced new discourses; the 1987 with Syria reproduced, updating it, the 1953 Jordanian-Syrian agreement; the 2015 Jordanian-Saudi agreement is producing new discourses.
- Regulations on water tariffs, an important text that produced new norms.
- Regulations on groundwater uses in 2002 (and amendments in the following years), an important text that also produced new norms.
- Reports on impact of the Syrian refugees on water resources done by the MWI. It is often used in other reports, conferences, articles, and declarations as a proof of the refugees' impact on water resources in Jordan.
- UNDP-Ministry of Environment UNFCCC reports on the impacts of climate change on Jordan. They are often mentioned in interviews, reports, articles, and conferences as the proof of the impact of climate change on water resources in Jordan.
- The National Agenda, which is a master plan for the reform, future growth and development of Jordan and was commissioned by His Majesty King Abdullah II. It is a way to create a comprehensive strategy for social, political and economic reforms, aiming at sustainable economic growth and social inclusion. It is guiding policies and strategies also in the water sector.
- Textbooks, which reproduce the mainstream discourse and contribute to make it hegemonic in society.
- The 2013 (new) proposal of the first phase of the Red Sea-Dead Sea Canal project.

### 3.3.2 Discursive practice

A discursive practice is the whole process of text production and of text interpretation, where in the latter the text is a resource (Wilson, 1990: 20-21, Yom, 2014: 72-73). Both these processes are social and need to be considered within the social conditions and contexts – economic, political, and institutional settings - of production and interpretation. These social conditions mutually interplay with the way people produce and interpret discourses (Wilson, 1990: 20-21, Yom, 2014: 72-73). This understanding of discursive practice allows exploration of who constructed the text, on which previous texts it is based, and if the text is legitimising or challenging prior texts.

There are sanctioned, dominant, and hegemonic discourses. The term "sanctioned discourse" was first understood as constraining people thinking differently to the dominant discourse (Allan, 2001: 182)[9], while Jägerskog defined it as "the prevailing dominant opinion and views, which have been legitimised by the discursive and political elite" (Zeitoun et al., 2012: 1). For Zeitoun, the powerful actor makes its discourse 'heard' and have impact beyond its own political domain, while the weaker discourses are not 'heard' by as wide or as an influential audience (Zeitoun, 2008: 43). My understanding of the difference between sanctioned and dominant discourse is that a dominant discourse is the prevailing opinion and views, while the sanctioned discourse has and is being sanctioned and legitimised by someone, but does not mean that it is the prevailing opinion. Hence, a dominant discourse is a sanctioned discourse that becomes the prevailing view, while a sanctioned discourse per se can be a dominant but can also be a non-dominant discourse if another sanctioned discourse results to be more powerful. I understand hegemonic discourse as a dominant discourse accepted at the subconscious level by the majority of people and so hegemonic discourse is always dominant. However, a hegemonic discourse is not necessarily a sanctioned discourse. Nor is a sanctioned discourse always hegemonic, even if it is usually dominant. The dominant discourse may or may not be hegemonic.

Examples of discourses I have identified for the water sector in Jordan are: water scarcity, hydraulic mission, and marketisation. Concerning the water scarcity discourse, all national strategies, policies, and reports on the water sector in Jordan reproduce the water

[9] In Allan's book "The Middle East Water Question" it emerges (through personal communication between Allan and Tripp) that the term was first introduced by Tripp, in 1997. The terms was developed by Allan, and largely used in hydro-politics.

scarcity discourse through emphasising and underlining in their first paragraphs that Jordan is a water scarce country. This is done both by donors, international organisations, ministries, academics, and the media. This discourse has been sanctioned and dominant for several decades. Hydraulic mission, a key discourse in hydropolitics, refers to the self-proclaimed mission of the state to expand irrigation through mega-projects of hydraulic infrastructural nature, mainly dams (Allan, 2001: 28-30; 180). Through the hydraulic mission, states aim at increasing their political and socio-economic stability (ibid). This discourse emerges in the national water strategies, in the media, and in school textbooks, where the solutions for the water sector are of hydraulic infrastructural nature: the King Abdullah Canal in the past, the Wahda Dam until its construction in 2009, the Disi canal until its construction in 2013, the Red Sea-Dead Sea Canal project, and the construction of as many dams as possible (MWI, 2009: 3-4; 1-2, Al Rawashdeh, 2012b). The discourse of marketisation of water refers to the idea, among water professionals, that water in Jordan is not efficiently utilised and that market and tariff based solutions would be a solution (JICA, 2014: 6)[10] (interview 45 and 39 to directors of major Western donors).[11] States are not seen to be able to provide all services, including good infrastructures, for water supply and management. The general background chapter (Chapter 5) provides details of the wider process of economic neoliberalism, to which this discourse is linked.

### 3.3.3 Discourse employed as social practice

The third dimension of Fairclough's framework is discourse as social practice. Discourses contribute to constructing social identities, social relations, and systems of knowledge and meanings and they contribute to the construction of the social world through its reproduction and transformation (Alon, 2007: 67). Fairclough explains that a power struggle for constructing, reproducing, and transforming the social world takes place in the social practice dimension (Yom, 2014: 86). On the one hand, the dimension of social practice constrains the discursive practice and the texts, as the processes of construction and interpretation of the texts are situated in a specific context, and are influenced by elements of the social practice dimension, including norms, discourses, wider processes, actors' identities and interests. The broader socio-political-economic context is part of this dimension, and is included in wider

[10] See also GIZ's Management of Water Resources project, at https://www.giz.de/en/worldwide/17213.html (visited on the 16th of January 2015)
[11] For further references and an in depth analysis, please refer to chapter 7

processes, interests, identities, norms, and discourses, as discussed below. On the other hand, as shown in Figure 3.1 on page 26, this dimension considers the impacts of the discursive practice on the social world, as this dimension is where the power struggle takes place between the discursive practice, and the production and reproduction or contestation and transformation of wider processes, interests, identities, norms, and discourses.

In this dimension the main concern is to explain connections between the process of text production and interpretation – the discursive practice - in its mutual relation to the social world and the power struggles (Yom, 2014: 72). In other terms, in this dimension the aim is to understand to what extent the discursive practice reproduces or transforms wider processes, norms, discourses, interests, and identities; this dimension analyses their interplay with the discursive practice. These elements are inter-related, and by changing one of them, the others are all mutually affected because of the inter-play taking place among these elements. The social practice dimension allows investigation of the consequences of texts and of the discursive practice, and the relation between the discourse and the relations of power, and how the discourse is implicated in relations of power. This dimension shows the power struggle within and around the discourse, relating it to actors and the impacts of the deployment of the discourse on related discourses, structures, norms, interests, and identities, situated in the broader socio-political-economic context.

In this study, empirical Chapter 7 examines the effects of the deployment of the discourse on solutions and strategies, analysing which solutions and policies are implemented in practice, and which ones are not, examining the interplay of the different elements within the broader socio-political-economic context. For instance, the solutions and policies implemented in practice are more likely to have an impact on norms and on the discursive conventions. In that chapter (Chapter 7), the dimension of discourse as social practice is examined.

### 3.3.4 The socio-political-economic broader context

The broader socio-political-economic context is part of the social practice dimension, and it influences also texts and the processes of texts production and interpretation. Texts and the discursive practice dimension are situated within the broader socio-political-economic context, as they happen in a specific context. In the social practice dimension, the broader socio-political-economic context is captured by norms, discourses, interests, identities, and wider

processes. For instance, consideration related to the broader socio-political-economic context interplay with actors' interests and identities, and relates to discourses, norms, and wider processes. The Syrian war, as shown in the empirical chapters, impacted the interests of several actors in Jordan, but is also related to the actors' identities, to the related discourses for instance of stability socio-economic development, to the wider process of economic neoliberalism, and to the discursive conventions meaning norms. The Syrian war influences all these elements to different degrees, and they are all inter-related.

The broader socio-political-economic context is important for this study as it is related to the power struggle around and within the discourse and the bilateral relations on TWG. In this case study, the broader socio-political-economic context includes: national security concerns; regional geopolitics like the 1994 Jordanian-Israeli peace treaty, the Syrian current political situation; domestic security concerns like the Palestinian and Syrian refugees in Jordan; issue-linkages; and the historical background.

First, for the analysis of the empirical chapter on the discourse construction (Chapter 6), considering the broader socio-political-economic context is necessary also to understand actors' interests and identities, which influences actors' alliances, explaining how and why actors deploy the discourses. The changing broader socio-political-economic context is one factor that explains changes in the discursive coalitions and the actors' alliances. In addition, important political events may generate new discourses deployed to shape national policies and TWG, as for the sub-narratives on waves of Syrian refugees to Jordan or the text of the 1994 Jordanian-Israeli Peace Treaty, contributing to generate new discourses on water scarcity and deployed to open solutions like the Red Sea-Dead Sea Canal (RSDSC) project. This last aspect is further examined in the empirical chapter on solutions and policies (Chapter 7).

Second, the broader socio-political-economic context is central for the analysis of TWG in the empirical Chapter 8, as bilateral relations over water are shaped also by broader socio-political-economic context considerations. The broader socio-political-economic context in hydropolitical studies has been considered for instance by Daoudy (Daoudy, 2009), Conker (Conker, 2014), and Mirumachi (Mirumachi, 2015). I argue that the separation between water politics and other sectors, also known as separation between "low politics" – meaning sectors like water, environment, and cultural affairs - and "high politics" – meaning sectors like trade, energy, and military affairs - (Lowi, 1995), is an artificial one, and TWG analysis should include consideration of the broader socio-political-economic context and of other relevant sectorial relations. As shown by Mirumachi (2015), factors outside the 'water box', including

food security, energy demands, and land use, contribute to explain TWG and management. Mirumachi (2015) emphasises that "decision-making outside of this water box is fundamental to the outcome of river basin development" and that "conflict and cooperation over shared waters are thus also subject to broader socio-political-economic contexts and the political economy of water" (Mirumachi, 2015: 33). In line with Conker's (2014: 100-103) list of elements of the broader socio-political-economic context, for analytical reasons I consider the following elements. They are listed as separate only for analytical reasons as they are interdependent, and I also acknowledge that some of elements may have a stronger impact than others:

- **Issue linkages**: direct linkages between water issues and issues related to other sectors, as demonstrated by Daoudy (2009) for the Turkish-Syrian relations over shared water;
- **Geopolitical dynamics**: hydraulic infrastructures are often built for specific political reasons, in order to include or exclude specific groups from the utilization of the water of the basin, as was the case for instance in Iraq pre-2003 (Conker, 2014: 101);
- **Domestic concerns**: building mega-projects can be due also to domestic political concerns, for instance of socio-political stability and security. As seen in Chapters 6 and 7, the sub-narrative of refugees and population growth particularly calls for supply side solutions in order to maintain socio-political stability in the country;
- **Global and regional political dynamics**: changes in political global and regional dynamics can change the hydropolitical relations between states. This was the case, for instance, after the end of the Cold War, the establishment of Israel in 1948, the 1994 peace treaty between Jordan and Israel, or similar events;
- **Historical background**: the historical background of relations between states informs their relations also on hydropolitical dynamics. The 1967 war between Jordan and Israel shaped their relations at least until the peace treaty in 1994, the Saudi and Jordanian relations have been shaped by the historical enemy relations between the Saud and Hashemite families, etc.;
- **Cultural elements and water resources**: cultural, ethnic, and religious symbolic relevance can be attributed to the shared water resources, and these meanings can shape the hydropolitical dynamics on the shared water resources. For instance, the symbolic cultural, historical, and religious importance of the Jordan River and of the Dead Sea

are used as an argument by governments and NGOs to call for the rehabilitation of the Jordan River and to "save the Dead Sea";

- **Economic interdependencies and regional organisations**: cooperation on economic issues and economic interdependence can enhance positive cooperation on water. Regional organisations may impact positively on cooperation on water resources, as in the case of the European Union (EU).

Nevertheless, the broader socio-political-economic context is generally overlooked in discourse theory, as the emphasis tends to be on discursive practice and analysis, overlooking issues related to the political economy analysis. This is one of the many critisms that this framework receives. By emphasising the broader socio-political-economic context as an element of the conceptual framework for this study, I attempt to overcome this shortcoming.

### 3.3.5 Norms

Called by Fairclough as ideology, a norm is, as defined by Finnemore and Sikkink, "a standard of appropriate behaviour" (Finnemore and Sikkink, 1998: 891). Norms are understood by Fairclough as discursive conventions that contribute to the construction of relations of domination and power asymmetries between social groups or actors (Alon, 2007: 63). They are "a means of legitimising existing social relations and differences of power, simply through the recurrence of ordinary, familiar ways of behaving which take these relations and power differences for granted" (Wilson, 1990: 2). They become particularly powerful when they reach the status of "common sense" and become naturalised (Yom, 2014: 87). I understand discourse as more fluid and more liable to change under influnces, when compared to norms, which are more permanent. In Fairclough's framework, norms are important as they are mutually related to actors' interests and identities, to wider processes and to the discursive practice, which can reproduce or transform norms in the social practice dimension.

In the case of Jordan, I have identified several norms deriving from: religious principles on water access and allocation; the hydraulic mission discourse; and the marketisation discourse. There are two religious principles on water, the first one is that water access should be free to everyone, and therefore only the services could be chargeable. This norm is based on a saying of Prophet Mohammad, who once said that everyone should have free access to water, which is a shared resource (Al Farraye, 2013: 69)(Interview 57 with an senior official at the

AWQAF ministry).[12]

The second norm is that water is a precious resource, which must not be wasted even during abundance. This norm is based on a saying of Prophet Mohammad, who once "saw Sa'd performing ablution and said to him: 'Why are you wasting all this water?' Sa'd asked, 'Is there wastefulness even in performing ablution?' The Prophet replied, 'Yes, even if you were at a flowing river'" (Ministry of Education, 2013f: 173).

I argue that in Jordan the norm deriving from the hydraulic mission discourse is the supply side mentality, which in this study I call the norm that engineering projects are the solution to water scarcity (MWI, 2009: 1-2).[13] The supply side mentality supports engineering projects that include both the mega-projects of the Disi canal and of the RSDSC project, as well as smaller projects like construction of dams and small water harvesting wells.

The norms deriving from the marketisation discourse are norms among water professionals, but they are now becoming norms among wider society: water scarcity is due to mismanagement; and the belief that the private sector and the market are more efficient than the public sector in resources management (interview 13 with academic and water professional, and interviews 39 and 45 with Western donors).

### 3.4 Power and hegemony

Fairclough adopts a Gramscian conceptualisation of power and power struggle based on hegemony. Power may be in the discourse or behind the discourse, therefore a tool or a goal: power may be a discourse deployed and utilised – in this sense power as a tool – and it can be a goal, meaning deployment of discourses to increase its power, for instance economic, military, or political power – in this sense power as a goal. Fairclough would say "discourse is the site of power struggle" - discourse as a tool of power -; "power is the stake in power struggle" - power as a goal - (Wilson, 1990: 61); and I add that control of the dominant discourse through sanctioning of discourses is also what is fought over to increase actors' power. In the case of water policies in Jordan, discourse can be a tool of power, to support for instance hydraulic mission and to maintain the current water uses. At the same time, given that most of the water resources in Jordan are of transboundary nature, power is the goal as increasing the allocation of water to Jordan from transboundary sources means increasing the

[12] For further references and an in depth analysis, please refer to Chapter 6.
[13] For further references and an in depth analysis, please refer to Chapter 7.

economic growth and internal political stability, therefore Jordan becoming a stronger economic and political power.

Hegemony is the power of a group in alliance with other forces over society, but it is a temporary equilibrium (Boas and Gans-Morse, 2009: 255). Its original meaning from the Greek is "someone who leads," for Gramsci it had to combine coercion with consent (Gramsci et al., 1971). For Zeitoun, we can realise that hegemony is active "when the *existing* 'order of things' is taken as the *natural* order of things" (Zeitoun, 2008: 30). Hegemony is about dominating with consent[14] through building alliances, ideological means, and concessions, for instance through discourses to convince marginalised and from the working classes segment of society to accept that it is "normal" and "common sense" the status quo of their position of subordination and domination (Yom, 2014: 92). In Fairclough's framework hegemony is advanced through the reproduction of norms through discursive practices (Wilson, 1990: 2). This can take place through intertextuality, meaning that a text is implicitly or manifestly linked to previous texts, and in so doing may legitimise, naturalise, or challenge and transform prior texts and existing norms[15] (Yom, 2014: 93). Intertextuality is the characteristic of texts of having implicit or explicit snatches of references to prior texts (Yom, 2014: 84). In the social practice dimension, intertextuality is important because it can challenge or naturalise and legitimise prior texts turning them into routines and conventions. In the process of discourse production, as noted by Zeitoun (2008), people are consciously aware, while if someone arrives when a discourse coalition is already in place, they would accept it subconsciously, and therefore this discursive power would act partly subconsciously as ideational power (Zeitoun, 2008: 41).

My understanding of power is adopted from Lukes' three dimensions of power, which is also adopted by Zeitoun and Warner in the FHH briefly mentioned in the literature review chapter (Chapter 2) (Zeitoun and Warner, 2006). The FHH explains how control over shared water resources is achieved and maintained, emphasising power as the main explanatory factor. Lukes' conceptualisation of the three dimensions of power is the understanding of power behind the FHH. The three dimensions of power are: overt or material power; covert or bargaining power; and structural or ideational power. The first dimension of power considers the visible power, such as military and economic power resources. The second dimension of power is the ability to have control on the political agenda and to decide what to discuss and

[14] Dominating and leading with both coercion and consent.
[15] Know by Fairclough as "ideological conventions".

what not to discuss. This includes skills, strategies, and tactics adopted to exert more power over negotiations and influence the political agendas. The third dimension of power, which is central for this study, is structural power, also known as ideational power. It is the about shaping perceptions, influencing actors' understanding of the possibilities of change (Lukes, 1974). It can be deployed by "A" to shape, influence, or determine the very wants of "B," the subordinate, the ruled over (adapted from Dahl, R. in Zeitoun and Warner, 2006: 442). In this way, a dominant mainstream discourse can influence people's perception over the water scarcity issue. The broader socio-political-economic context is embedded in all three dimensions of power. Overt or material power includes considerations of economic and military alliances, which relate to the geopolitical context. Bargaining power includes issue linkages, which relate to sectors outside of the 'water box,' including food, energy, and trade relations. Ideational power includes discourses of national security and regional stability.

This conceptualisation of power and hegemony fits my study as I focus on how the water scarcity discourse is constructed and deployed to shape water policies, and Fairclough's use of hegemony and power in the discursive and social practices allows me to investigate the water scarcity discourse. It allows me to open up the discourse to see how it is constructed, who is contributing, even unconsciously, to its construction or reproduction, and how it relates to other discourses and norms. I can explore which previous texts, events, or facts, the discourse is based on, and how it is legitimising or challenging existing norms and wider processes. In addition, it allows investigation of the relation between discourses and solutions of water policies. I adopt these concepts because of the critical nature of my research question, which aims at identifying the elements comprising the water scarcity discourse, and is interested in the power struggles, the different actors involved, their interests, the wider processes, and the norms within and around the discourse of water scarcity. This framework provides analytical tools to understand how the discourse is constructed and its relation to solutions and policies.

## Conclusion

In this chapter Fairclough's CDA framework was presented in order to guide the empirical chapters (Chapter 6, 7, and 8), providing analytical tools to analyse the data in order to answer the research question making use of the methodology described in the next chapter (Chapter 4). While Chapter 2 discussed the necessity of a theoretical framework able to investigate discourses and power, this chapter presented Fairclough's framework of CDA.

The framework, using the theoretical basis provided by CDA, provides tools to unpack discourses, understanding discourses as the process of discourse production and interpretation. It considers the interplay and power struggle between discursive practices and social practices, and the interplay of discourses, norms, interests, and identitis, which are situated within the broader socio-political-economic context. CDA problematises actors, considering them not as speaking with only one voice, but opens up the boxes to understand the peculiarities and differences in identities and interests within each actor-category; for instance states, civil society, and local communities are further examined and considered within their variety of positions and voices.

Fairclough's critical approach aims at uncovering and understanding discursive practices of power relations' maintenance. The conceptualisation and relevance of the concepts of hegemony and power in CDA helps in looking at the power struggle in and around discourses, showing the interests of actors, and the effects of the deployment of discourses on norms. Power and hegemony allow also accounting for the broader socio-political-economic context for instance when considering TWG in Chapter 8.

The framework presented in this chapter is applied throughout this study, and in particular in the empirical chapters (Chapter 6, 7, and 8). But before applying it to the empirical chapters, in the next chapter (Chapter 4), I provide the methodological framework, which is linked to the theoretical framework, as the former will need to provide a methodological framework and tools. In Chapter 5, background information on the case study is provided.

# CHAPTER 4: METHODOLOGY

## Introduction

This chapter explains the research methodology that has been used throughout this study. This chapter first presents the philosophical underpinnings of the methodology deployed, and why a constructivist approach has been adopted. Second, this chapter discusses the methods of data collection used to collect the relevant data to enable to answer the research question. Third, it discusses the methods of data analysis for the interpretation of the data. Finally, it presents ethical considerations relevant to the study and the limitations of this study.

## 4.1 Research methodology: an iterative project

The methodology used in this research combines three complementary phases: review and analysis of existing research, data collection, and data analysis. This study involved constant iteration between methodological design, data collection, and analysis and interpretation (Denzin and Lincoln, 2005: 3). I understand methods as different strategies of inquiry used to collect and analyse information and my role to decide how these methods can be employed in combination or isolation (Denzin and Lincoln, 2005: 3). This process resulted in the decision of changing the research topic during my fieldwork as the data I was collecting showed that the initial topic – climate change discourses and transboundary water governance (TWG) – was not a dominant discourse in relation to TWG. Hence, I took the decision to go back to theory and to the research topic, and then back to the data collection on the new focus.

### 4.1.1 The philosophical underpinning of the study: a constructivist approach

The research question guiding this study is: how is the discourse of water scarcity constructed in Jordan. My understanding of reality is that it cannot be captured objectively and neutrally (Julien, 2012: 45-46). While a material objective reality exists, our understanding of it is mediated, I argue, mainly through discourses. For constructivists, knowledge is not objective (Murphy, 1997: 5), but as Von Glasersfeld puts it, "it is made up of the network of things and relationships that we rely on in our living, and on which, we believe, others rely on, too" (Von Glasersfeld, 1995: 7). For Kincheloe, "there is no truly objective way of seeing things"

(Kincheloe, 2005: 8). As seen in Chapter 3, my theoretical framework strongly engages constructivist epistemological backgrounds. How discourses channel not only what we say, but also what we think, imagine, and believe is "normal" and "natural"[16] is at the core of my framework.

It could be argued that critical realism could be the most appropriate epistemology for my research because it sums up constructivism (Mir and Watson, 2001). However, critical realism still maintains the positivist notion of the existence of an objective value-free reality and believes that "true explanations of reality are possible" (Mir and Watson, 2001: 1172). For critical realists, reality is a network of fundamental natural laws. The focus of critical realists is to change the world rather than only explain it. Instead, constructivists aim at explaining the world and the 'socially constructed' reality (Alvesson and Skoldberg, 2009: 39). For constructivists, reality is a network of culturally constructed social laws, which are often perceived by its members as if they were natural laws. Natural laws cannot be changed but only utilised; social laws can.[17]

The constructivist epistemological approach has also consequences on the methodology. While positivists and post-positivists approaches deploy mainly quantitative methods as they aim at explaining causal relations, constructivists are more likely to deploy qualitative methods as they aim at exploring and understand issues and phenomena (Corbetta, 2003, Guba et al., 1998). Hence, the methods utilised for this study are of qualitative nature.

### 4.1.2 Case study approach

In line with the constructivist epistemology, this is an inferential study adopting an exploratory single case study design.[18] Each case study is unique because of the history, culture, and geopolitical dynamics influencing it, and therefore it could be argued that generalisations from one case study cannot be done in absolute terms as they might lead towards wrong conclusions. However, a series of findings from similar case studies can contribute in refining conceptual and theoretical frameworks (Flyvbjerg, 2006: 225). In this sense, this study is inferential.

[16] Lukes' third dimension of power: structural power

[17] If members become aware of their existence and disadvantage them; hence, the interest of those in power to present/maintain them as "natural laws."

[18] Meaning that although we cannot generalise a case study, we can use it to generalise in terms of new theories, or we can test and apply existing ones

For Yin (2003), a case study design should be considered: for "how" and "why" research questions; to cover contextual conditions as they are relevant to the phenomenon focus of the research; and when the boundaries between the phenomenon and the context are not rigidly set and defined (Yin, 2003). As examined in the literature review (Chapter 2), in the theoretical framework chapter (Chapter 3), and in the empirical chapters, the contextual conditions are vital to capture the construction and influence of the discourse of water scarcity in Jordan, which is constructed on different scales. In order to study complex processes in-depth, such as discourses and TWG, a case study design is appropriate, as it allows to explore and understand one complex case by looking at it from different angles (Bryman, 2012: 53, Denzin and Lincoln, 2005: 301).

The case study adopted is an explorative type of case study, which is used to explore situations in which the phenomenon being evaluated has no clear single set of outcomes, but rather could potentially result in several set of outcomes (Yin, 2003). This study is a single embedded case study as it focuses on Jordan as a country, in order to investigate the discourse of water scarcity, unpacking its elements, how its deployment affects the national water policies, strategies, and TWG. It is an embedded case study as it is a detailed in-depth study of a specific location and set of processes that is inter-linked to many different dynamics occurring at other scales that cannot in themselves be fully explored (Yin, 2003).

In order to examine the effects of the deployment of the water scarcity discourse on TWG, in Chapter 8, this study considers three sub-elements:

1) Jordanian-Syrian hydropolitical relations (1987-2012). The timeline has been chosen as in 1987, the two governments signed a treaty over the Yarmouk River resources, and until 2012 as this is when the Syrian political unrest started.
2) Jordanian-Israeli hydropolitical relations (1994-2015). The timeline has been chosen as in 1994 the peace treaty between the two governments was signed, and official diplomatic relations also in the water sector started in 1994.
3) Jordanian-Saudi hydropolitical relations (1984-2015). The timeline has been chosen as in 1984 the Jordanian government increased the Jordanian exploitation of the Disi groundwater resources by leasing land and water resources to four agribusinesses in the Disi area.

### 4.2 Methods of data collection

This section reveals the methods deployed to collect the data needed to answer the research question. I opted for a combination of different methods as well as intensive ten months fieldwork spread during different seasons. The methods deployed are: document collection, semi-structured interviews, official statistics, and observation. This study makes use of qualitative methods of data collection, with a particular focus on interviews as the main method of inquiry.

#### 4.2.1 Document collection[19]

Document collection is relevant for two main reasons. First, because as seen in the theoretical framework chapter (Chapter 3), for Fairclough the central part of the discourse is the text; the discursive practice originates through the construction and interpretation of texts (Wilson, 1990: 20-21, Yom, 2014: 72-73). For Fairclough, a text, which can be written or non-written material, like a policy report, a declaration or a picture, is seen as the product of the process of text production (ibid.). The texts can produce, reproduce, or contribute to transform a discourse. Hence, for this reason collecting key texts, reports, and policies, is central to identify and unpack the discourse of water scarcity in Jordan. Also autobiographies of key figures like Emir Abdullah I or former ministers' biographies, academic articles of key people like Munther Haddadin, former minister of water and irrigation in Jordan, national policies and strategies, governmental/donors/non-governmental organisations (NGOs) reports and briefings are all key texts that contributes in investigating the discourse of water scarcity. These documentations help me in understanding how the water scarcity discourse is constructed.

Second, secondary sources are also essential for understanding the historical hydro-political relations between the riparian states. A large number of scientific articles, books, and theses have been published on political relations in the basins considered. Their analysis contributes in understanding how have the transboundary water relations been evolving. This method has been successfully applied in similar studies in the region (Zeitoun et al., 2013, Haddadin, 2006). These sources include reports of organisations, policies, briefings, and written documents of NGOs, ministries, and donors' organisations. However, this method by itself is not useful enough for analysing the current hydro-political developments, the impact

[19] Also known as "document analysis" method of data collection

that the deployment of the water scarcity discourse is having on policies, and for identifying the interests and power struggle within and around the discourse. Hence, other methods are required.

### 4.2.2 Semi-structured interviews

Semi-structured interview is a central data collection method to the study. Semi-structured interviews were extensively employed, as they allow collection of data relevant to understand the interests, the power struggle, and hidden stories within and around the discourse. During the ten months fieldwork in Jordan, 106 semi-structured interviews were conducted (see Annex 5 for the list of interviewees)[20]. This method is used to interview policy-makers and actors involved in constructing or deploying the water scarcity discourse. It is more appropriate than structured and unstructured types of interviews because it offers freedom in covering certain topics and as well as the ability for the researcher to guide the interviews (Mason, 2002, Bryman, 2012). Follow up questions can also drive the interview towards explanations of meanings or understandings of particular word choices deployed during declarations or in reports and policies. A "one to one" interview type with the interviewee is furthermore better suited than group discussions because of time constraints of the interviewees, and to go more in depth and understand reasoning behind specific declarations, reports, etc., and to ensure anonymity.

This method has been successfully used in transboundary water management research for several reasons (Cascão, 2009, Haddadin, 2006). First, this kind of interview makes it easier to uncover the background stories often hidden to the public, to collect data about on-going negotiations. As water is a high political issue and to some extent securitised, there are not many available written sources on the Jordanian-Syrian and on the Jordanian-Israeli Joint Water Committees activities. The same can be said for the current negotiations or relations on transboundary water resources between the governments of Jordan and: Saudi Arabia, Syria, and Israel. Second, this method allows collecting data to investigate the reasoning behind specific wording in reports and declarations. Finally, it also allows capturing the most recent and ongoing processes of discourse construction and reproduction.

[20] Annex 5 reports 89 interviews, as some interviews started as a single interview with more interviewees of the same organisation and followed as different one to one interviews (see number of people per interview in Annex 5).

#### 4.2.2.1 Target groups for semi-structured interviews

The target group for the interviews is as diverse as the data needed to answer the research question. As shown in Table 4.1, in order to investigate the discourse of water scarcity, the target group is: academics, governmental employees, donors' organisations employees, international organisations employees, employees of NGOs, journalists, former and current ministries, members of political parties, diplomats, members of the parliament, employees of water utilities, farmers, Bedouins, and teachers. In order to explore the bilateral relations over water resources, the target groups are: diplomat, former ambassadors, academics, NGOs, donors' organisations employees, international organisations employees, journalists, former and current ministries, and members of the parliament. In order to examine the policy-making process, the target groups are: members of the parliament, former ministers, members of political parties, academics, donors' organisations employees, and governmental personnel.

Table 4.1: Number of interviews per group

| **Group** | **Number of interviews** |
|---|---|
| Governmental employees | 22 |
| Donors' organisations employees | 13 |
| Employees of NGOs | 15 |
| Academics | 12 |
| International organisations employees | 5 |
| Farmers | 6 |
| Diplomats | 6 |
| Bedouins | 5 |
| Members of the parliament | 4 |
| Employees of industries | 3 |
| Former ministers | 3 |
| Research institutes employees | 4 |
| Employees of water utilities | 2 |
| Water Users Associations employees | 2 |
| Teachers | 2 |
| Journalists | 1 |
| Representatives of political parties | 1 |

Initially I interviewed employees of the main Jordanian environmental NGOs, Jordanian academics that published extensively on water resources in Jordan and on transboundary water governance, high level officials from the main relevant governmental

institutions, and water managers from donors organisations. During these meetings, I asked them who else in their opinion could be useful to interview on this topic, proceeding therefore with a "snowball system."

Another method of data collection deployed is semi-structured interviews with key experts that were identified for their involvement in and knowledge of the water sector in Jordan. The goal of the interviews with the key experts was to collect data on the negotiations and relations between Jordan and the neighbouring countries, as this kind of data are usually not available in written sources and generally hidden to the public. In addition, they were important to understand what were the discourses deployed in TWG and the different interests. They were useful also to identify and test the discourses identified. During the ten months of fieldwork, I have met multiple times with some of the key expert interviewees, asking them to comment on declarations or pieces or information collected in previous interviews, presenting them anonymously, or about new reports or policies I came across after having met them the first time. In addition, during the interviews I was asking follow up question asking them how they know what they were telling me. These follow up questions were useful in order to find what were the key texts, declarations, and reports that constructed in them the perception of an issue.

The interviewees I have met are the relevant ones as I considered the constituencies and groups they represent, those involved in the different stages of the policy process, and those involved in constructing and reproducing the discourse. For every organisation I tried to interview several people with different roles within the same organisation, in order to capture different perspectives. For instance, concerning the educational system, I have collected and analysed textbooks, interviewed relevant personnel at the Ministry of Education, and teachers and students from different schools and different parts of the country. Concerning non-revenue water, I have interviewed employees from: donors' organisations, water utility companies, technical unites of the Ministry of Water and Irrigation (MWI), community leaders, water users associations in the Jordan Valley, farmers using legal wells, and those using non-licensed wells.

#### 4.2.2.2 Anonymising and not recording

Given the political sensitivity of transboundary water issues in Jordan, an informal approach to the interviews and flexible semi-structured interviews was required, rather than a formal and very structured interview. In this way, the interviewee were more incentivised to speak freely

and openly, providing a framework for a progressive interaction and engagement in an informal, relaxed, and friendly "conversation". For this reason, I did not record the interviews, but I took brief notes during the interview and report verbatim statements for the statements that I find extremely relevant and useful to be reported word by word, important dates, further references, places, events, etc. "Also, recording equipment may be off-putting for interviewees" (Bryman, 2012: 482). In this way, I aimed to assure confidentiality and to enable the friendly and informal environment for the conversation, to allow the interviewees to express openly their opinions. In addition, all my interviews have been anonymised.

Although I did not record the interviews, I did take notes during the interview and report verbatim statements for the sentences that were particularly important and relevant for my research. The main limitation from not recording the interviews is that recording would have allowed correcting the natural limitation of memory and would also have allowed a deep textual analysis. However, my main interest was on how the water scarcity discourse is constructed, the interests behind, the effects of the deployment of the discourse on the national water strategies and policies, TWG, and relations between states, rather than on textual analysis of the discourse. I was aware of the limitation that not recording interviews implied, and for this reason I made extensive use also of other methods: documentation, hydrological and water use data, and observation.

### 4.2.3 Other methods of data collection

**Hydrological and water use data**: This method allows gaining of information on the amount of water resources, how they are allocated, and how are they exploited. This kind of information is available at: primary official data at the relevant ministries and governmental institutions; international organisations like FAO, the World Bank, etc.; academics; donor organisations (e.g. USAID), and NGOs. This method has been successfully applied for similar works in the region on transboundary water studies (Cascão, 2009, Conker, 2014).

**Observation:** often observation and ethnography are seen as very similar methods, and associated with ethnographic research within social sciences (Bryman, 2012: 432). However, for the current and ongoing nature of the topic of this study, this method provides useful insights to complement the data needed for answering the research question. I participated at the World Water Week at SIWI in 2013, Stockholm, the FAO Water and Land Days in

December 2013 in Amman, the Hydro-Hegemony Conferences in London in 2013, 2014, and 2015, and the University of Jordan conference Water in the Arab World: Status, Challenges and Opportunities in 2014. Jordanian and water practitioners from the region and representatives from donors and international organisations were present. This allowed me to listen to how the water issue in Jordan was framed differently by Jordanian officials according to the venue and the audience. This method helps examination of the behaviour of the relevant people from different perspectives and interacting with others, and better understanding of the interests of the different actors. Nevertheless, this is not a formal method of data collection, rather a method to have insights and to triangulate discourses I have identified through data collected with other sources.

## 4.3 Analysis and interpretation of data

### 4.3.1 Discourse Analysis

Discourse analysis is the main method used for analysing the data collected. As seen in the theoretical framework chapter (Chapter 3), discourses are not taken for granted as neutral or apolitical tools to convey meanings. Discourse analysis is used for the analysis of both interviews and documents, including policy reports, media sources, and bibliographies. This method of data analysis is deployed to identify and test the discourse, its construction, interests, and power struggle.

I argue in the empirical chapter that investigates the construction of the discourse (Chapter 6) that a major role mainly in reproducing the discourse of water scarcity is played by textbooks in the educational system and by media. Concerning the educational system, for Podeh textbooks on the one hand transmit "accepted historical narratives; on the other, they alter – or rewrite – the past in order to suit contemporary needs" (Podeh, 2000: 66). For Mehlinger, textbooks are powerful as they "are responsible for conveying to youth what adults believe they should know." They are powerful "in their capacity to convey a uniform, approved, even official version of what youth should believe" (Mehlinger, 1985: 287). In an interview with a director of the Ministry of Education, it was underlined the importance of their task, as "textbooks are very important and a sensitive issue as they build and construct national culture and what people take for granted" (interview 24, person 1). Interestingly enough, social scientists and researchers in Jordan fail to investigate the role of textbooks in their social and

political dimension of constructive a collective perception of the water issue in the country. Discourse analysts in the region rarely analyse them focusing on the water discourse, but do rather focus on nation building, tribes, and on the Palestinian-Israeli conflict (Massad, 2001: 148-150, Podeh, 2005, Podeh, 2000: 65-66). Therefore, as part of my fieldwork I examined all textbooks of Jordanian educational system relevant for the water scarcity discourse. I focused on national curricula for primary and middle school from grade one until grade ten currently in use in Jordan. I analysed the textbooks of: science for grade one till eight; geography from grade six until grade ten; and earth and environmental science for grade nine and ten.[21]

Concerning media, I have considered three national newspapers: The Jordan Times, Al Rai, and Ad-Dustour. The former one is owned by the government-controlled Jordan Press Foundation and is considered a governmental mouthpiece of the Jordanian government (Bonn, 2013: 730, Armijo, 2009: 34) (interviews 33 and 64 with Western diplomats based in Amman). The same could be said for the two latter ones, which are the oldest and most widely circulated Arabic newspapers in the country. Al Rai is also owned by the Jordan Press Foundation, while Ad-Dustour is considered governmental aligned, especially after 1986, when the government bought a share of it. Nevertheless, they are useful in the sense that they clearly summarise, voice, and reproduce the governmental positions.

Concerning academia, I have analysed through this method of data analysis the academic articles published on the issue of water scarcity in Jordan in the past twenty years, as well as declarations and presentations in academic conferences described in section 4.2.3. Concerning donors, international organisations, and NGOs, I have considered the reports of the organisations published on the issue of water scarcity and water policy in Jordan. Finally, this method of data analysis has also been deployed for the analysis of governmental reports, laws, and policies. This method of data analysis allowed to identify the discourse, narratives, and sub-narratives, and to test them.

### 4.3.2 Triangulation

For Bryman, triangulation is about using multiple methods of data collection in order to reach a comprehensive understanding of the considered social phenomena (2012: 392). Due to the nature of this study, it was essential to triangulate the data from several different sources:

[21] Science is taught until grade eight, then it becomes earth and environmental science; geography is taught since grade six

governmental institutions, international organisations, academics, NGOs, donors, diplomats, media, textbooks, religious leaders, farmers, and tribal leaders. Also concerning the development of the bilateral relations, I triangulate the sources interviewing also diplomats of foreign countries and international organisations' personnel based in Amman. In addition, three sources of media are used and their content is also checked with donors, NGOs, governmental institutions, and academics during the interviews. In addition to data triangulation, I applied also methodological triangulation, meaning deploying different methods for the collection of information. Hence, documentation data are triangulated with declarations during conferences and meetings (observation method), statistical data, and data from the interviews.

### 4.4 Research ethics[22]

While obtaining data for this study, ethical implications that may arise had been considered (see Annex 6). To avoid instances of coercion, the participation was always on a voluntary basis and incentives were not offered. Anonymity and confidentiality concerning people and places is assured. Participants have always had what the study is about explained to them, and informed consent was sought orally prior to their involvement in the research.

To avoid possible physical or psychological risks, the semi-structured interviews have been conducted in the working places of key informants where possible, or in a safe and discreet place.[23] It has been made clear how the information would be used in the research projects. All data have been coded at the time of collection to the greatest extent possible. In addition, sensitive information that could have potentially negatively impacted someone's reputation has not been shared. Data has also been securely stored. I have avoided using data, which could be potentially inflammatory or endanger people's positions. In addition, specific names of places or neighbourhoods that may facilitate the identification of the participants has not been mentioned in this research.

[22] An ethical clearance has been obtained from the UEA International Development Research Ethics Committee on the 4th of June 2013, Ref. No. 130524.

[23] Due to political sensitiveness of the study, facilitating confidentiality of the research participants has vital importance.

### 4.4.1 Researcher's positionality, identity, and language issues

Finally, issues related to my positionality, being aware of what I was representing to the participants, were also relevant. As Maher and Tetreault (2001) explain, "knowledge [is] valid when it takes into account the knower's specific position in any context, a position always defined by gender, race, class and other socially significant dimensions" (Saif and Omet, 2005: 22). As a qualitative researcher, I kept reflecting on my identity and positionality during my fieldwork and interaction with the participants. I was aware of my gender, race, origins, class, sexual orientation, political, and religious beliefs. I suspended my personal position during the research and avoided making judgements of any source, but rather studied the processes and how this worked and evolved. All personal qualities I mentioned were kept in mind not only on how they might have affected bias in collecting data[24], but also helped me staying aware and kept in-check my own potential biases.

In particular, my identity is of a single male that grow up in Italy with Italian and Jordanian citizenship, of Arabic origins, and PhD student in social sciences at the University of East Anglia (UEA). In particular, the challenges that I expected to face related to: my identity, taking for granted the context, and people assuming I grew up there and therefore updated with socio-cultural-political events and developments. I expected to be seen either as European-Italian, or as Jordanian, or as Middle Eastern living abroad. The different ways I was perceived in resulted in different access to people and data, and different relation between the participants and myself. The limitations to this study due to my positionality are explored in the next section. My position was perceived differently according to how I presented myself and on how I was perceived. Also the religious aspect was important, as I was sometimes perceived as a Christian, due to my tribal family name, or as a Muslim, due to my first name, and this resulted in doors being often, but not always, open in both cases, as discussed in the next section on limitations of this study. On the one hand, my academic background in social sciences could have represented an obstacle to access academics and water professionals, as the water field is seen as related to the engineering field. On the other hand, coming from a UK

[24] From the participants

institution and given my academic westernised background, balanced, in their eyes, my specialization in social sciences.

Another challenge of doing fieldwork in a familiar environment could have been not to be critical enough at the beginning, taking for granted several cultural and social elements of the general context. However, in my case, given my multicultural background, and growing up and living in different countries, including Kuwait, Italy, UK, Belgium, Poland, and the US, I am used to live in different cultural environments, and to see contexts both as an insider and outsider. This by itself does not resolve the issue of taking for granted the contexts, and therefore I decided to work on defining wider processes, actors, contexts, and constrains in the Jordanian context theoretically while in Norwich, and analysis was on going during fieldwork, in order to minimise the taking for granted effect. In addition, combining theoretical with empirical, and mutual interaction helped me in looking with new eyes to the Jordanian reality. Also, combining periods of fieldwork with periods of analysis away from Jordan helped me in looking at Jordan from a new perspective and fresh eyes.

A final challenge I expected to face was that participants would expect me, because of my Jordanian name and background, to be familiar with and knowledgeable of tribal roles, relations, and distributions, and updated on national political figures and dynamics. To overcome this challenge, I read extensively on Jordanian tribal history, distribution, and relations, and on current and recent political, social, and cultural events and developments in the country and in the region. Overall, I kept thinking about my positionality, and made the best I could do in order to be aware at all time of my positionality and how people saw me and perceived me.

### 4.4.2 Limitations of this study

Although the methodology was subject to careful analysis to reduce the potential for error, I must acknowledge that some limitations emerged. Given the nature of the topic, analysing issues related to water scarcity and transboundary water governance, which are highly politicised and partly securitised in Jordan, could have negatively impacted the data validity of this work. Given the socially constructed nature of discourses, which are the focus of this work, I had to triangulate data from interviews with documentation, and other data collected with other methods. Nevertheless, data validity must be acknowledged as a limitation of this study. The methodological limitations were:

- Data validity may have been affected by the nature of the topic of this research. The issue of water scarcity is politicised and also securitised, especially concerning transboundary water resources. In addition, I was fully aware that discourses are socially constructed. Data collected through the interviews might have been of limited validity per se. Hence, interviews were only a part of data collected, which complemented documentation and other data collected through and triangulated with other methods of data collection.

- The intrinsic challenges of studying power relations constituted a limitation of this study. In order to study power relations, several dimensions of political, economic, social, religious, cultural relations were considered. In addition, these relations are not static over time, but rather dynamic. In order to study the complexity of these relations, I adopted Lukes' understanding of power, which considers multiple dimensions of power. In addition, I focused on a limited temporal scope, which has reduced the potential for errors in this study.

- Another limitation that emerged in the literature review and theoretical framework in Chapters 2 and 3 is given by the limits of discourse theory. Discourse theory, while useful to identify discourses, narratives, and actros' interests, resulted not to be the most appropriate framework for capturing political economy aspects. For this reason, as showed in Chapter 8, issues related to consideration of the broader socio-political-economic context would have been better captured by a framework of political economy analysis.

- Another potential limitation is the access to information, data, and key informants, in order to collect data on the bilateral and regional hydropolitical relations. While being perceived as a Jordanian helped me from a linguistic point of view, given that I am fluent in Arabic, other challenges emerged. Access to diplomats from most of the neighboring countries relevant to the regional focus of this study denied me access to their diplomats, and this may be due not only to the securitised issue of this study, but also because of being perceived as a Jordanian researcher rather than as a European researcher.

- Another limitation of this thesis in terms of discourse is its focus on the official discourse of water scarcity, overlooking any discourse developed by marginalised communities, such as those living in refugees' camps, which may contest or undermine the official discourse.

- Another limitation of this study is the partial scope of analysis. The focus is on the discourse of water scarcity in Jordan. Most of the surface water resources of Jordan are of transboundary nature. The Jordan River, for instance, flows through five riparian states. The role of all five states has been important in the overall hydropolitical relations and allocation of the water resources of the river. However, there is no regional or basin wide agreement but only bilateral agreements over the transboundary water resources of the Jordan River. An assumption of the study is that its focus and findings relate only to the state of Jordan and not to the whole basin of the Jordan River.

- Chapter 8 on hydropolitical relations considered only the Jordanian perspective of the relations, not considering the Syrian, Israeli, and Saudi perspectives on the bilateral relations. This is due to the focus of this study on the discourse of water scarcity in Jordan and on its effects on the hydropolitical relations. Nevertheless, had I done equally deep investigations from the other sides I would expect to find considerable nuance and possibly even challenge of my fidings.

- The heavy reliance on Munther Haddadin as a source for the hydropolitical relations is a limitation of this study. Haddadin has been a central actor of hydropolitical relations between Jordan and its neighbouring countries for the past four decades. He has written extensively on the negotiations between the Jordanian and Israeli governments and Jordanian and Syrian governments. Nevertheless, the heavy reliance on his writing and on him as a major source is problematic. For this reason, triangulation with interviews to other informants was deployed to overcome this limitation.

- The lack of data availability for the historical process of discourse construction has limited possibility to explore how the discourse of water scarcity has been

constructed and has evolved historically in Jordan.

- Not recording the interviews: the main limitation from not recording the interviews is that recording would have allowed correcting the natural limitation of memory and would also have allowed a deep textual analysis. However, my main interest was on how the water scarcity discourse is constructed, the interests behind, the effects of the deployment of the discourse on the national water strategies and policies, TWG, and hydropolitical relations, rather than on textual analysis of the discourse. To overcome this limitation I made extensive use also of other methods: documentation, hydrological and water use data, and observation.

- The government-aligned media sources in Jordan were a limitation as it was harder to identify and access the non-dominant narrative and sub-narratives. This limitation was overcome by deciding to spend ten months in Jordan for fieldwork in order to meet and speak with a wide variety of actors, attempting in this way to explore the issue from different perspectives.

**Conclusion**

This chapter outlined the methodology of this study. A constructivist approach guides this research project, adopting qualitative methods of data collection and analysis. Several methods of data collection were used to collect data; while documentation and semi-structured interviews were the two key methods, also statistical data and observation resulted useful in complementing the data necessary to answer the research question. Discourse analysis was the main method for data analysis, and triangulation was done both triangulating the sources of data and the methods of data collection. Finally, it presented issues related to positionality, wider ethical considerations relevant to the study, and limitations of this study.

# CHAPTER 5: BACKGROUND INFORMATION ON EMPRICAL CASE STUDIES

*"We have to balance between drinking water needs and industrial and irrigation water requirements. Drinking water remains the most essential and the highest priority issue." (H.M. King Abdullah II November 7, 1999).*

## Introduction

This chapter provides the general background information needed for the analysis in the empirical chapters 6, 7, and 8. The driving research question of this thesis investigates how the discourse of water scarcity is constructed in Jordan. To be able to conduct the analysis for the empirical chapters, an account of the geographical and hydrological situation is necessary. This is important because as illustrated in the introduction, literature review, and theoretical framework chapters (Chapters 1, 2, and 3), different people have different perceptions of the water resource itself; perceptions that are constructed, reproduced, and transformed also through discourses. For this reason, before embarking on a discursive analysis of the issue of water scarcity, which will draw in first instance from the water resources in the country, an account of these resources is needed. It is necessary to illustrate what the current water resources in the country of Jordan are, and also how they are used, as this has implications on how the water scarcity discourse is deployed and on its effects on policies and solutions. A description of the wider process of economic neoliberalism and of how it resonates with official as well as shadow actors is also necessary.

To be able to conduct the analysis for the empirical chapter on the effects of the deployment of the discourse on solutions and policies (Chapter 7), I first need to examine the institutional framework for the water sector in Jordan in order to determine the formal and shadow actors involved, and the ways in which policies and strategies are framed, approved, and implemented. Before starting the analysis of transboundary water governance (TWG) in Chapter 8, I need to identify the current bilateral water agreements, treaties, or relations in place on water between the states of Jordan and the states of: Syria, Israel, and Saudi Arabia. In this chapter, I only briefly mention the transboundary water resources and the existing treaties, but a detailed analysis is provided in Chapter 8, and not here.

This chapter, first, provides contextual details regarding the facts and figures of water resources in Jordan, including water uses per sector and transboundary resources and

agreements. Second, it discusses the institutional framework. Finally, it analyses the process of economic neoliberalism and its relation with official and shadow actors.

## 5.1 Basic hydrological and geographical facts and figures: population, water resources and uses in Jordan

This section explores the geographical features of Jordan: population, climate, water resources, and water uses. It does so, first by discussing how the demographic growth has increased the number of water users; second, by analysing the country's climate and rainfall in the different areas of Jordan; third, by discussing what are the water resources available and the relevance of the groundwater resources; and finally, by examining the current water uses and needs.

The population of Jordan increased from 225,000 during the Emirate of Jordan in 1922 (Haddadin, 2006: 7) to more than 9.5 million in 2015 (Ghazal, 2016), as shown in Table 5.1 below. This is mainly due to the several waves of refugees of Palestinian, Lebanese, Iraqi, and Syrian origins, who fled their home countries due to wars and occupations. The table shows that significant increases in the population occurred after the 1948-1949 war with Israel, after the six days war in 1967, after the second Gulf war in early 1990s, after the Iraq war in 2003, and currently due to the events in Syria.[25] Jordan served as a host country because of its political stability and its location, as shown in Map 5.1 below, Jordan is today bordering with Syria in the north, Iraq in the east, Saudi Arabia in the south and east, and Israel and the occupied West Bank in the west.

[25] The waves of Palestinians to Jordan happened after the major Israeli-Arab countries wars in 1948, 1967, 1973, and 1982; following the second Gulf war in 1990-1991, the war in Iraq in 2003, and the unrest that started in 2011 in several Arab countries, including the still on-going events in Syria. Minor waves from Lebanon also occurred as a consequence of political instability in Lebanon.

Table 5.1: Demography of Jordan over time

| Year | Population of Jordan[26] | Major political event |
|---|---|---|
| 1922 | 225,000 | Emirate of Transjordan founded in 1921 |
| 1947 | 473,200 | One year before the establishment of Israel |
| 1952 | 586,200 | After the 1948-1949 war with Israel |
| 1970 | 1,508,200 | Three years after the six days war with Israel, when Israel occupied the West Bank |
| 1989 | 3,144,000 | One year before the Iraq-Kuwait war |
| 1993 | 3,993,000 | Two years after the Iraq-Kuwait war |
| 2002 | 5,098,000 | One year before the war against Iraq |
| 2004 | 5,350,000 | One year after the war against Iraq |
| 2010 | 6,113,000 | One year before the Syrian crisis |
| 2012 | 6,388,000 | One year after the start of the Syrian crisis |
| 2015 | 9,500,000 | Three years after the start of the Syrian crisis |

*Source: Author's presentation of data from Department of Statistics of Jordan Yearbook 2013 (Department of Statistics, 2014: 6), Haddadin (2006: 7), and CENSUS 2015 data (in Ghazal, 2016)*

Looking at the over 9.5 million people living in Jordan, it also emerges that 83% of the population lives in urban areas[27], mainly in the northern part of the country in Amman, Irbid, Zarqa, and Zaatari camp. Therefore Jordan needs to consider that most of the water demand for drinking purposes comes from the northern part of the country.

To understand how Jordan can satisfy water demand in the northern part of the country, it is also necessary to consider the rainfall patterns in the different parts of Jordan and its different physiographic regions in relation to the demographic distribution. Jordan is characterised by three[28] physiographic regions: the Jordan Rift Valley along the western border of the country with a total area of 8,228 $km^2$, the Mountain Heights Plateau or Highlands with a total area of around 15,000 $km^2$, and the Badia desert region in the east, extending from north to south, with an area of almost 70,000 $km^2$ (Department of Statistics, 2014: 4, Salameh and Bannayan, 1993: 3). Climate varies according to the three regions described: semitropical in the Jordan Valley, Mediterranean in the Highlands, and continental in the Badia (FAO, 2009: 233, Salameh and Bannayan, 1993: 5). Rainfall, which usually occurs in between October and April, ranges between 50 mm in the Badia and 650 mm in the Highlands, with over 90% of the

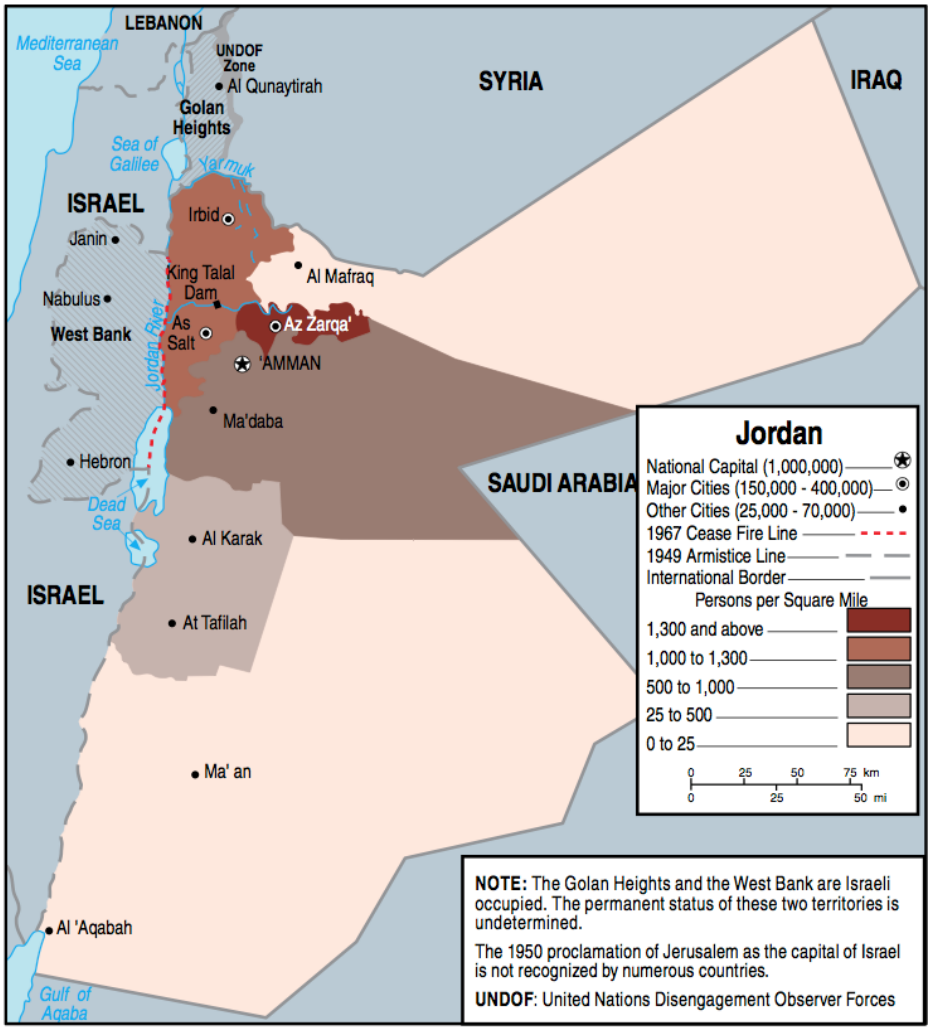
[2626] (estimated)

[2727] http://esa.un.org/unpd/wup/Country-Profiles/Default.aspx, last visited on the 16th of December, 2014

[28] It is divided either into three regions or into four regions, considering in the latter case the highlands and the plateau as two different regions. For the purpose of this study, which considers water uses, a division into three regions is more appropriate as the water use patterns and the climate in the highlands and the plateau are to some extent similar.

country receiving less than 200 mm per year and an overall average of 80 mm[29], as shown in Map 5.2 below (FAO, 2009: 233). Therefore, even if large amounts of rainfall occur in the most populated areas of the governorates of Irbid, Zarqa, Ajloun, and Amman in the north, overall the precipitation in Jordan is low, with an average of 80 mm. In addition, studies have shown a trend of decreased rainfall over the past 75 years, suggested at about 25%, which has also negatively impacted surface water resources and recharge of groundwater basins in Jordan (Jassim and AlRaggad, 2009: 356). The generally accepted figure of 90-95% evapotranspiration losses means that only 5% of rainfall recharges the groundwater resources (ISSP, 2012a: 63).

Map 5.1: Population density of Jordan as of 2009, before the Syrian crisis started

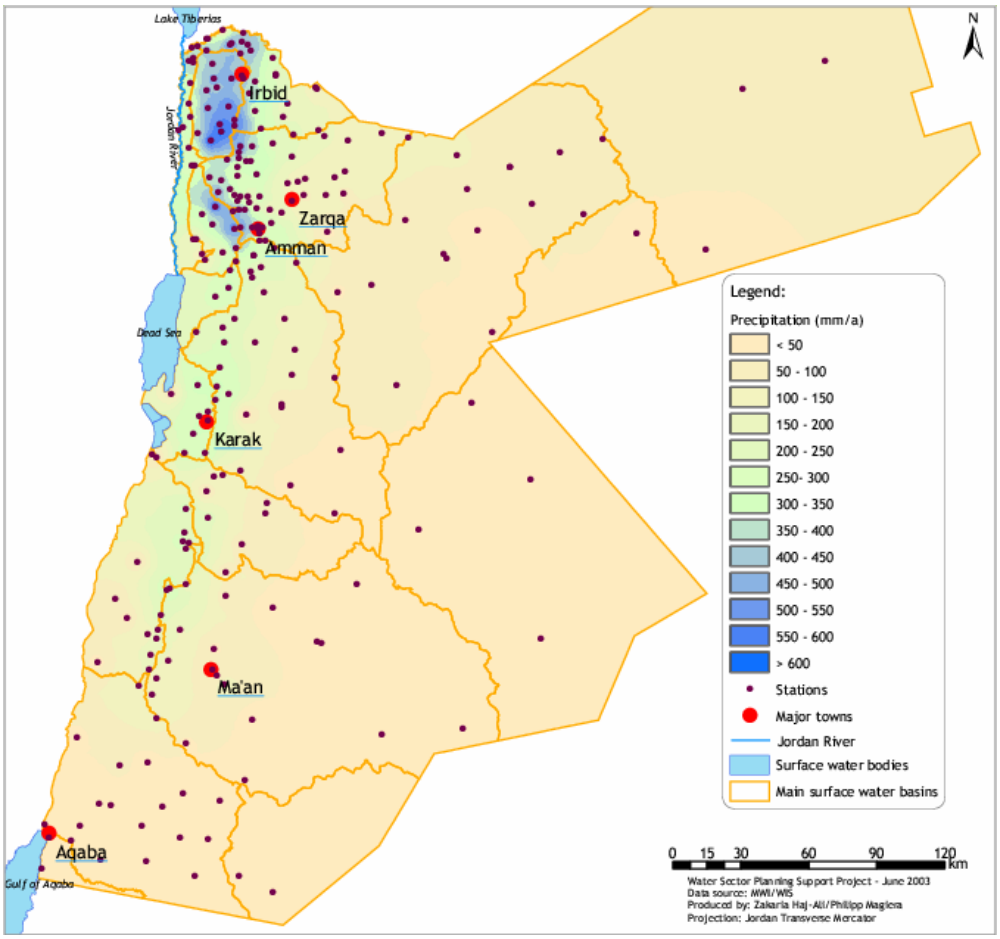



**Population Density**

*Source: University of Texas Libraries*

[29]As of 2005, according to FAO. 2014. AQUASTAT database, Food and Agriculture Organisation of the United Nations (FAO). Website accessed on [30/12/2014 13:40]

Map 5.2: Spatial Distribution of Mean Annual Rainfall for the Period 1963-2002




*Source: National Water Master Plan (MWI, 2004: 43)*

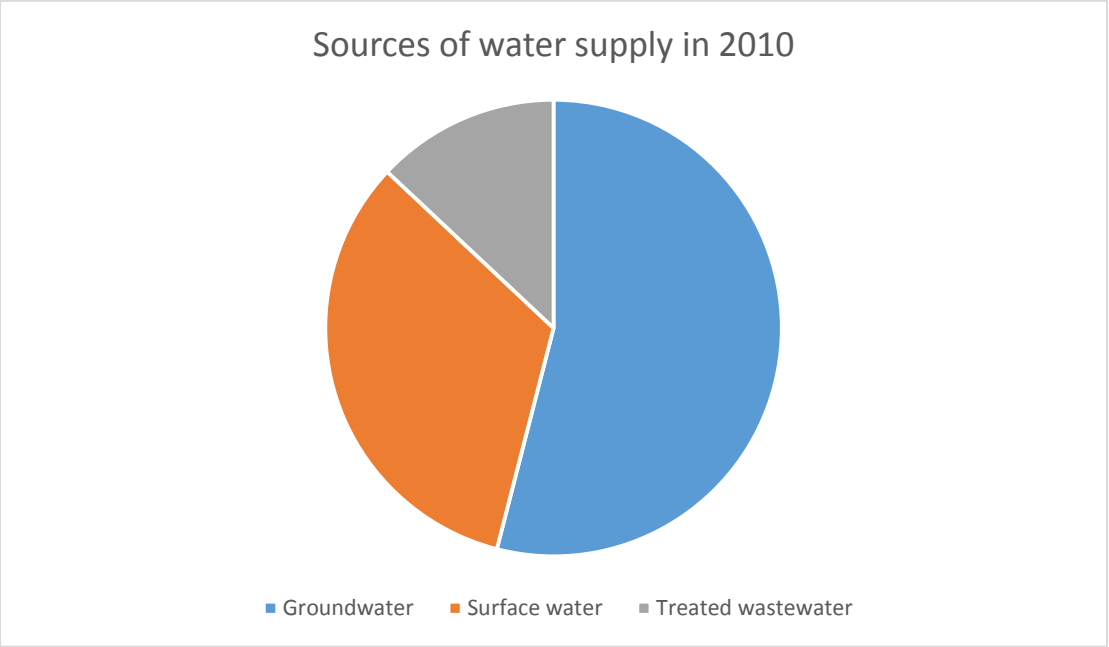
### 5.1.1 Water resources in Jordan

According to the 2014 water budget of the Ministry of Water and Irrigation (MWI), the total water resources in Jordan in 2013 were 864 Million Cubic Meters (MCM) per year (MWI, 2014b: 20), while they were 892 MCM in 2010 (MWI, Water Budget Projected Demand and Resources 2010-25, 2012, in Yorke 2013). Also the total safe yield of the groundwater basins in Jordan is estimated at about 300 MCM per year[30], while the total surface water resources in Jordan is 563 MCM per year, including treated wastewater. In 2010, as emerges from Figure 5.1 below, groundwater represented the main source of water supply, with a total of approximately 54% of the total water supply - over 500 MCM; surface water supply represented only 33%, meaning 286 MCM; while treated wastewater accounts for more than

[30] 319 MCM for the Water Budget (2014: 19)

13% of the total water supply, meaning 117 MCM (MWI, Water Budget Projected Demand and Resources 2010-25, 2012, in Yorke, 2013: 14).

Figure 5.1: Sources of water supply in 2010




*Author's presentation of data from MWI, Water Budget Projected Demand and Resources (2010-25, 2012, in Yorke, 2013: 14).*

While surface water represents a higher proportion of water resources, at around two thirds of the total water resources in Jordan, in practice two of the three major rivers in Jordan are transboundary, and therefore Jordan is bound in their usage by bilateral agreements. Therefore, groundwater resources are the most important sources of water supply, and these are currently over-exploited.

### 5.1.2 Surface water

Surface water resources constitute two-thirds of the water resources in Jordan. Three rivers may be found in Jordan, the Jordan, the Yarmouk, and the Zarqa, the first two being transboundary. The Yarmouk and the Zarqa are two of the main tributaries of the Lower Jordan River (LJR) (Garber and Salameh, 1992-12, FAO, 2009-237). However, the Yarmouk and the Jordan Rivers, which represent the biggest surface water available in Jordan, originate partly in Jordan and partly in other countries, and the country of Jordan is constrained by bilateral treaties on their use.

As further examined in the empirical chapter on TWG (Chapter 8), the allocation of the Jordan[31] and Yarmouk Rivers' water resources is defined through bilateral agreements signed in 1987 between Jordan and Syria and in 1994 between Jordan and Israel (UN-ESCWA, 2013: 210). Due to the transboundary nature of the Jordan River, Jordan does not use water from it directly, but from its tributaries[32] before discharging into the river (Haddadin, 2000: 63-77). For this reason, Jordan has deployed engineering solutions to store this water, building nine dams or reservoirs, the biggest ones being: King Talal Reservoir, Wadi el-Arab and Tanour dams, and the Unity dam also known as Al Wahda dam, on the Yarmouk River.

Today, mainly due to recent exploitation and diversions[33] (Venot et al., 2009: 417-428), as shown in Figures 5.2 and 5.3 below, only 20-30 million $m^3$ instead of the historic 1.3 billion $m^3$ reaches the Dead Sea, around a 97% reduction contributing to a 50% decrease of its biodiversity since the 1930s (FoEME, 2010: 15). The over-exploitation of the LJR is resulting in a deterioration of the water quality, which can only be used for agricultural purposes due to its low quality, and in the shrinking of the Dead Sea, which has overall decreased by one third of its level[34] compared to its level in 1960, decreased from -394m in 1960s to around -425m in 2013 (Venot et al., 2009: 417-428). Today, the Dead Sea is currently decreasing by around one meter per year, with social and economic impacts, including the sinkholes around its shore (interview 48 with an NGO director).

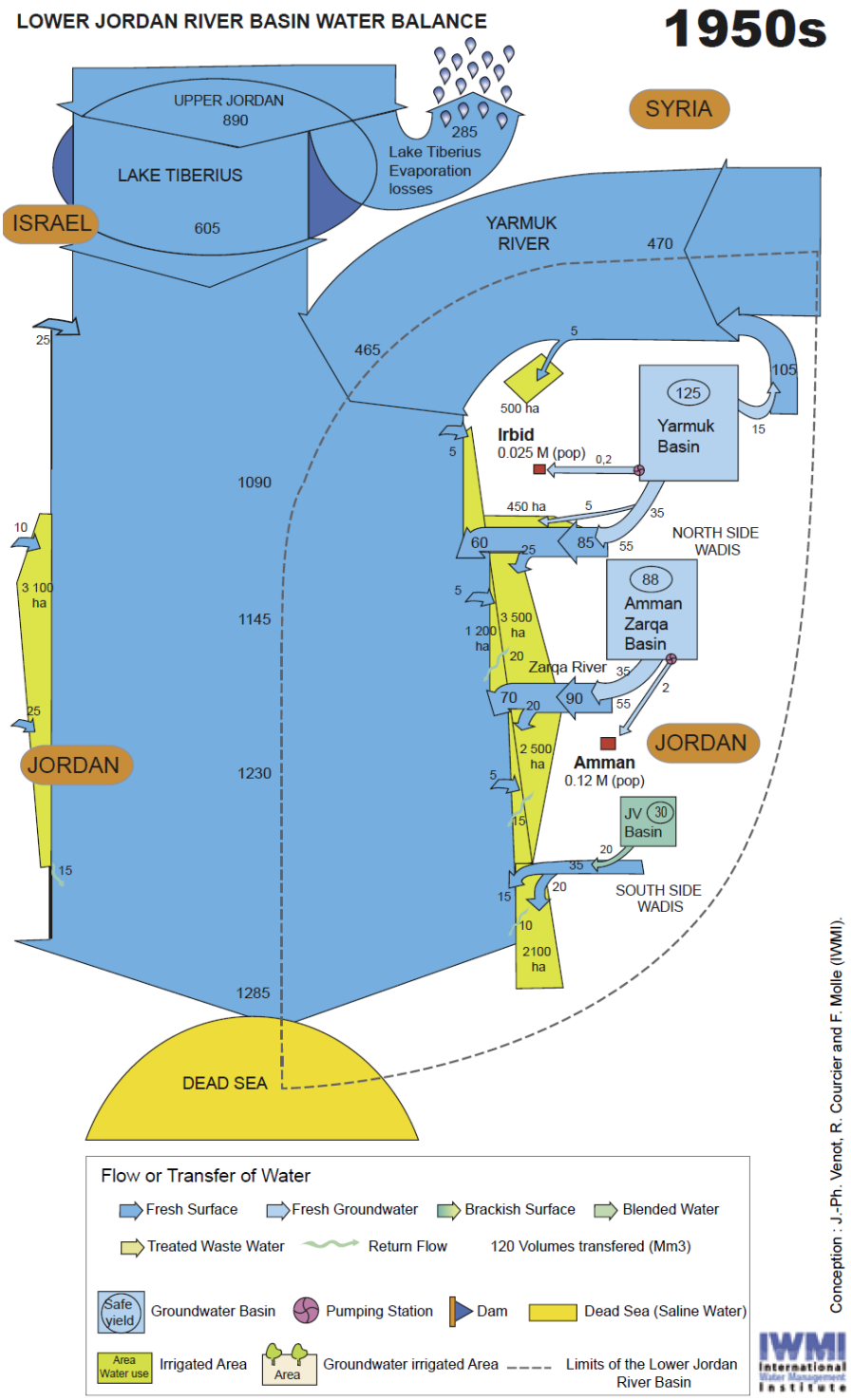
[31] A look at Map 5.1 of the topography of the basin also helps in understanding the complexity of the Jordan River. The part of the river that touches Jordan is the Lower Jordan River. Originating from Mount Hermon, the Jordan River flows for 228 km through Lebanon, Syria, Israel, Palestine, and Jordan, and is regenerated by the Hasbani River in the south of Lebanon, the Banias River in the Golan Heights, and the Dan River in Israel. After a further 14 km, the Jordan enters the Sea of Tiberias, while the Yarmouk River, its downstream tributary, constitutes the border between Jordan and Syria before joining the Jordan and flowing south until emptying into the Dead Sea.

[32] Side wadis

[33] Through the National Water Carrier Israel diverts most of the water that used to flow from the Tiberias Sea to the Lower Jordan River (UN-ESCWA, B. 2013. Inventory of Shared Water Resources in Western asia. *Beirut*.), while due to a series of dams, Jordan and Syria are exploiting the Yarmouk River and on the East bank of the river, Jordan is exploiting most of the remaining water resources mainly for agricultural purposes.

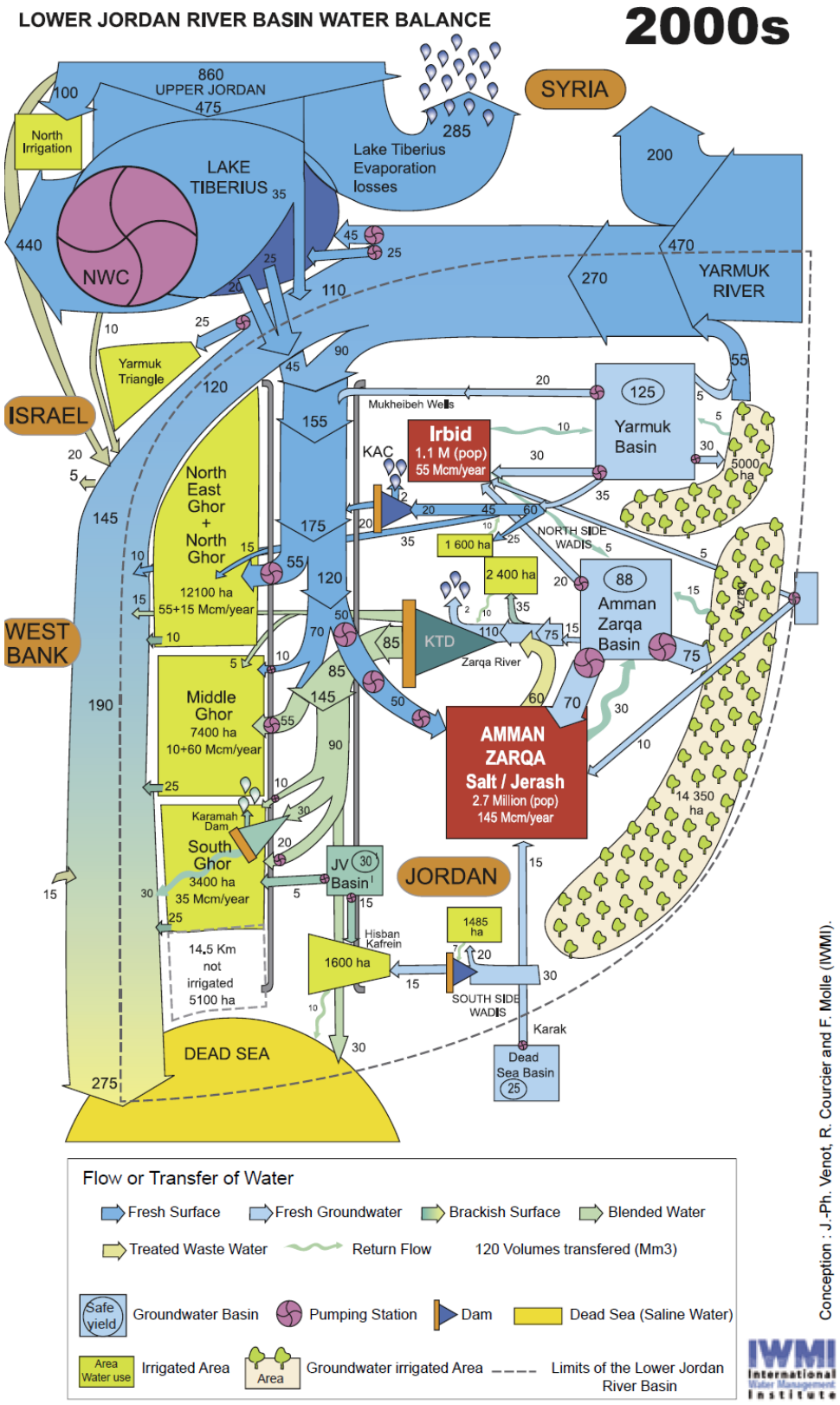
[34] From roughly 950 square kilometres to 637 square kilometres today

Figure 5.2: Water resources development in the LJR Basin in the 1950s




*Source: (Venot et al., 2009: 417)*

Figure 5.3: Water resources development in the LJR Basin in the 2000s




*Source: (Venot et al., 2009: 421)*

The Yarmouk has better quality water than the Jordan, but its quantity is decreasing, according to Jordanian officials and academics, due to Syrian upstream abstractions and diversions beyond bilateral agreement levels (interviews 3, 4, and 7 with Jordanian academics). The water from the Yarmouk, which accounts for 40% of Jordanian surface water resources, is an important source of water for the King Abdullah Canal, used in the Jordan Valley for irrigation purposes (Nortcliff et al., 2011: 406). The canal also receives water from the other wadis[35], rivers, and tributaries of the Jordan river, mainly the Zarqa river, wadi Mujib, Hasa, and Araba (Nortcliff et al., 2011: 406). Built at the beginning of the 1960s, the King Abdullah Canal, known as the East Ghor Main Canal until 1987, is the largest irrigation canal system in Jordan and runs for 110 km in the Jordan Valley parallel to the Jordan River.

According to the 1987 agreement on the Yarmouk River between the states of Jordan and Syria, Jordan is entitled to 208 MCM a year, but in practice Jordan rarely receives more than a third of its share (interviews 3, 4, and 7 with Jordanian academics). From the Jordan River, according to the 1994 agreement between the Jordanian and Israeli states, Jordan is to receive around 80-100 MCM a year from Israel (Beaumont, 1997: 422-423), but in practice Jordan receives 50-60 MCM a year.[36] Chapter 8 critically examines in depth the Jordanian - Syrian, Jordanian - Israeli, and Jordanian - Saudi hydropolitical relations, discussing to what extent the agreements are respected and the nature of the hydropolitical relations.

The Zarqa River is completely within the Jordanian territory, and provides around 60 MCM a year. In 1977, the King Talal Dam, which is one of the major dams in the country, was built along this river and now the dam has a total capacity of 89 MCM, but the Zarqa River cannot fill it in completely in an average year. However, its water quality has decreased in the past decades due to industrial and domestic abstractions and discharges (interviews 3, 4, and 7 with Jordanian academics).

### 5.1.3 Groundwater resources

Given the limited access that Jordan has to its surface water resources due to their transboundary nature, it mainly relies on its groundwater resources, most of which are completely within Jordanian boundaries. In Jordan there are eleven renewable aquifers[37] and

[35] Wadi is the Arabic term traditionally referring to a valley, but also used to refer to a dry riverbed that contains water only during times of heavy rain or, like in this case, to an intermittent stream.
[36] Numbers are contested and will be further explored in Chapter 8.
[37] Now only ten as one was lost due to high salinity caused by over-pumping in the 1960s – 1970s (MWI website)

three main[38] non-renewable fresh fossil water aquifers, as shown in Table 5.2, distributed among twelve groundwater basins, as shown in Map 5.3 (El-Naqa and Al-Shayeb, 2009: 2381). Approximately 80% of the known groundwater resources are in the Yarmouk, Amman-Zarqa, and Dead Sea basins (Nortcliff et al., 2011: 406), mainly in the governorates of Amman and the northern governorates. All the groundwater basins are indeed over-exploited, with an average over-abstraction that stands at 159% of the renewable average of recharge, ranging between 146% for the minor aquifers to 235% for the major ones. This is resulting in a decrease not only of their quantity due to lower recharge, but also of their quality. Due to the over-abstraction, the water supply from these sources is higher than the amount shown in the table which shows their safe yields (El-Naqa and Al-Shayeb, 2009: 2380).

Table 5.2: Groundwater basins in Jordan and their safe yields

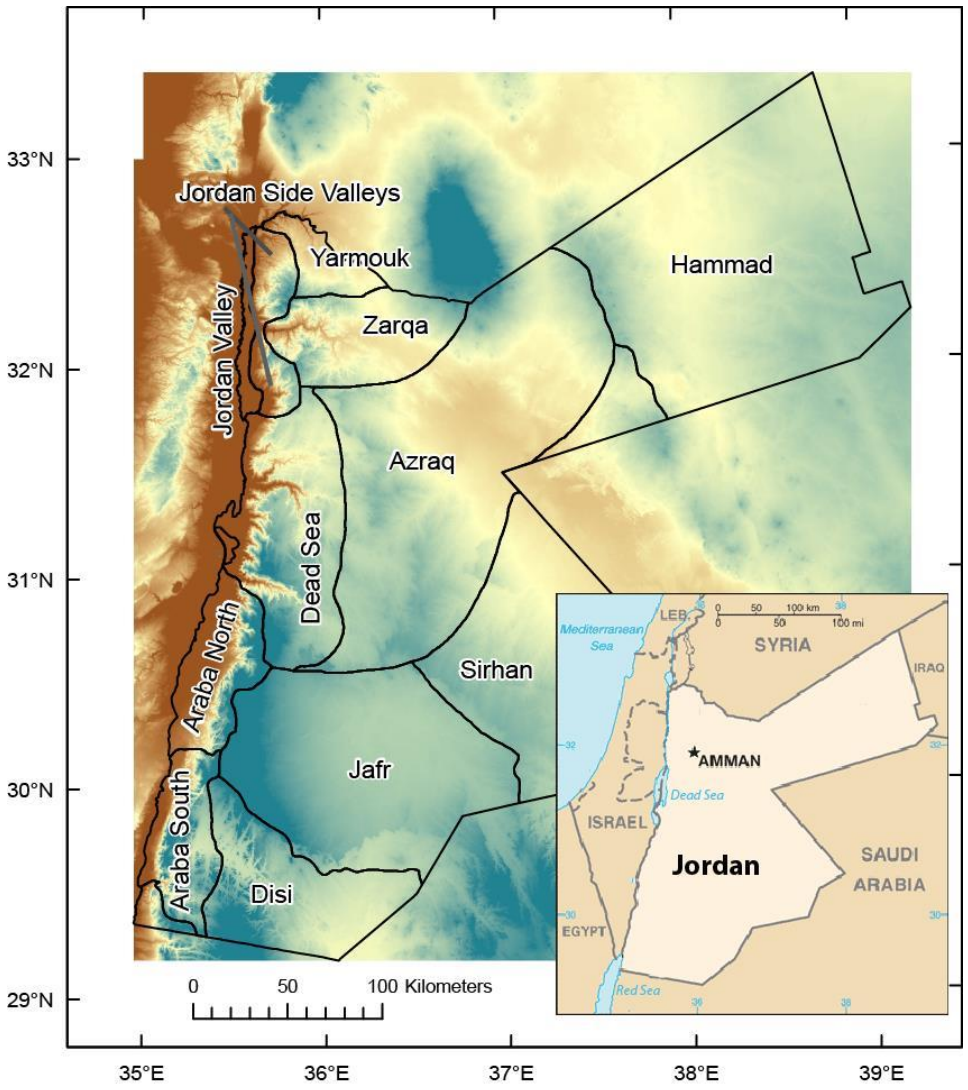
| | **Basin** | **Safe yield MCM per year** |
|---|---|---|
| 1. | Yarmouk | 30-35 |
| 2. | Amman Zarqa | 60-70 |
| 3. | Jordan Rift Side wadis | 28-32 |
| 4. | Jordan Valley | 15-20 |
| 5. | Dead Sea | 40-50 |
| 6. | Azraq basin | 30-35 |
| 7. | Hammad basin | 12-16 |
| 8. | Wadi Araba North | 5-7 |
| 9. | Wadi Araba south | 4-6 |
| 10. | Sirhan | 7-10 |
| **Total renewable** | | **231-281[39]** |
| 11. | Jafr | 7-10 |
| 12. | Disi | 100 |
| 13. | Lajjoun | 5-7 |
| **Total Non renewable** | | 113-116 |

*Source: BGR, 2004*

[38] There are other non-renewable reservoirs in the sandstone formation around the country, but due to their relevance there are neglected, even if more work to explore their relevance and potential exploitation might be done by Jordan in the future (MWI website).

[39] The water supply from these sources is higher than the amount shown in this Table, which shows their safe yields. This is due to the fact that all groundwater basins are over-exploited, with an average over-abstraction that stands at 159% of the renewable average of recharge, meaning their safe yield. The Table shows the safe yield.

Map 5.3: Groundwater aquifer basins in Jordan.




The backgrounds colours represent land-surface altitude in meters, ranging from lower than 0 (brown) to higher than 1000 (blue).
*Source: (Goode et al., 2013: 3) Base map and all data provided by Ministry of Water and Irrigation, Jordan. Projection is Palestine 1923 Palestine Belt, Transverse Mercator. Inset map after U.S. Department of State (www.state.gov).*

However, over-exploitation is resulting in diminishing flows released to side wadis[40] in the Jordan Valley, in a decrease of the groundwater quality due to an increase in salinity, and in the disappearance of the Azraq oasis (Yorke, 2013: 15, El-Naqa et al., 2007: 146). Scholars and donors have highlighted that in the near future this may result in an inability to use many groundwater basins due to their high salinity and pollution caused by over-exploitation (Salameh, 2008: 55, Yorke, 2013: I, ISSP, 2012a: 70, Salameh, 1996: ix) (interview number 28 and 58 with two Western donors). The groundwater development was

[40] Drainage courses

very rapid in the 1980s, when governments awarded many licenses for wells and for inter-basin pumping from the northern aquifers to the capital, Amman, resulting in a systematic over-pumping (Haddadin, 2006: ch.4). This over-abstraction, both from licensed and non-licensed wells, caused a decrease in the quality of groundwater resources.

Due to the decrease in the quality of all renewable basins caused by over-exploitation, Jordan also began using non-renewable groundwater resources for drinking purposes of Amman residents. The main non-renewable aquifer is located in southern Jordan — the transboundary Disi aquifer, shared with Saudi Arabia. Water from the Disi has been pumped to Amman since July 2013, and this was one of the main priorities of the Jordanian government in its National Water Strategy 2008 – 2022 report (MWI, 2009: 1-2) (Chapter 7). It is far from major industrial and urban areas, and has been exploited in the past only locally for irrigation and for limited municipal uses by the municipality of the city of Aqaba, conserving the high quality of this water according to the MWI officials and several academics (interviews 3, 4, and 7 with Jordanian academics)(Jasem et al., 2011: 711). However, in 2009 a study was published which presented data showing a high level of radioactivity in the Disi aquifer (Vengosh et al., 2009: 1769-1775), but the MWI reacted by arguing that before reaching the households, the Disi water is mixed with water of different quality, decreasing its radiations' level.[41] The other non-renewable aquifer is the Jafr basin, sustainable for at least another 40 years at the annual current yield of 18 MCM.

Given the high importance of groundwater resources for Jordan, the absence of agreements on the shared common management or allocation of the transboundary groundwater basins with Syria is striking. While most of the groundwater resources are within Jordan, major ones are shared, like the Disi, aquifers in Wadi Araba, and the Yarmouk basin. The treaty with Syria signed in 1987 only considers surface water resources, while in the 1994 peace treaty between Jordan and Israel, there are details on the temporary allocation of the groundwater resources of the Jordanian side of Wadi Araba to Israel in exchange to 10 MCM a year from Israel to Jordan (Haddadin, 2006: 19). A formal agreement between the states of Jordan and Saudi Arabia on the shared water resources of the Disi has been signed only in 2015, as examined in Chapter 8.[42]

[41] See also Markus Becker, Contaminated Aquifers: Radioactive Water Threatens Middle East, der Spiegel, 2012, at http://www.spiegel.de/international/world/contaminated-aquifers-radioactive-water-threatens-middle-east-a-865290.html

[42] For more on this point, please see Chapter 8.

### 5.1.4 Water Use

Water resources can be used for different purposes. For instance, according to King Abdullah drinking water is the most important use of water because it is necessary and vital for life. This has guided the work of the Royal Water Committee. As the king puts it, "we have to balance between drinking water needs and industrial and irrigation water requirements. Drinking water remains the most essential and the highest priority issue" (MWI, 2009: 2). This section investigates the water uses in Jordan sector by sector, to understand what the main sectorial uses are, and how this informs the overall water scarcity discourse in Jordan. This is necessary for the analysis of Chapter 6 on the construction of the water scarcity discourse, as well as for Chapter 7 on the solutions and policies of the water sector.

While the available renewable water resources are 864 MCM per year, in 2013 the actual total water uses for the different sectors was higher: between 900 and 1,000 MCM (MWI, 2014: 20).[43] This was done at the cost of over-exploiting the groundwater resources. Regulations on limits of over-abstraction are in place, but poorly enforced: both on new well drilling and on controls on abstraction rates (ISSP, 2012b: 9).[44]

Tables 5.3 shows that most of the water resources are being used for irrigation, and that in the past this sector has decreased the use of freshwater, substituting it with treated wastewater. The table also shows increased use by the municipal sector, also due to the growing population, and an overall stable use from the industrial sector.

Table 5.3: Water Supply and Consumptive Use (MCM), by sector in 2010

| Source | Domestic | Industrial | Irrigation | Livestock | Total | Share |
|---|---|---|---|---|---|---|
| **Surface water** | 120.0 | 6.6 | 154.5 | 7.0 | 288.1 | 31.9% |
| **Ground water** | 231.7 | 33.9 | 245.0 | 0.3 | 510.9 | 56.6% |
| **Treated wastewater** | 0.0 | 1.5 | 101.5 | 0.0 | 103.0 | 11.4% |
| **Total water used** | 351.7 | 42.0 | 501.0 | 7.3 | 902.0 | 100.0% |
| **Share** | 39.0% | 4.7% | 55.5% | 0.8% | | |

*Source: Author's presentation of data from (MWI data from 2010) as reported in (ISSP, 2012b: 9)*

[43] However, in the national water strategy "Water for Life" the water demand is around 1,400-1,500 MCM for 2007, while the water supply of 867 MCM, with a water deficit of around 500 MCM (MWI, 2009: 1-2). This misleading data is due to the definition they adopt for the water demand: the water needs to reach the policy objectives and not the actual water uses. Therefore, for this section, I will only focus on the actual water uses sector by sector.

[44] More on this in the section on structures in this chapter

Table 5.4 shows that in 2011 the total agricultural use including livestock amounted to 58% of total water uses, around 500 MCM a year. However, it is necessary to investigate which kind of agriculture uses which kind of water. Two-thirds of the water utilised in agriculture is used in the Highlands, meaning around 335 MCM a year, and their use of water relies on groundwater resources, which are over-exploited (FAO, 2009). The remaining one-third of water used in agriculture is consumed by farmers in the Jordan Valley, amounting to around 165 MCM a year, but from surface water. In 2004, 91% of agriculture was irrigated, and overall 71% of cultivated land was in the Jordan Valley and 29% in the Highlands (FAO, 2009: 240-242). Farmers in the Jordan Valley mainly use surface water from the King Abdullah Canal and also, more recently, an increased amount of treated wastewater mixed with other surface fresh water, mainly from the King Talal Dam. In the Jordan Valley, water is being used more efficiently with the amount of water used decreasing while the area of irrigated and cultivated land remaining the same. The system introduced in the Jordan Valley of the Water Users Associations has helped to increase transparency of water use among its users and to reduce water losses and thefts as it empowers local communities and farmers in managing, distributing, and monitoring the water resources (GIZ website[45]; interviews 9 and 26 to the Jordan Valley Authority and to researchers, employees, and users of the WUA in the Jordan Valley) (ISSP, 2013: 3-4). Overall, agriculture in the Jordan Valley can be seen as more water-friendly than Highlands's agriculture because of the type of water they use and its impact on the sustainability of the Jordanian water resources.

Table 5.4: Water uses per sector

| Sector | 2011 | 2010 | 2009 | 2008 | Average share year 2011 |
|---|---|---|---|---|---|
| **Municipal** | 347 | 352 | 326 | 315 | 37% |
| **Agriculture** | 405 | 400 | 399 | 397 | |
| **Agriculture (treated water)** | 103 | 103 | 101 | 101 | 58% |
| **Other**[46] | 7 | 7 | 8 | 8 | 1% |
| **Industry** | 37 | 39 | 37 | 38 | 5% |
| **Total** | 899 | 901 | 871 | 858 | 100% |

*Source: own elaboration based on data from the MWI Water Budget 2010-2011*

[45] www.giz.de/en/worldwide/17213.html visited on the 27th of December 2014
[46] Mainly services

In 2011 the municipal sector used around 37% of the total water used, almost 350 MCM. According to the MWI (MWI, 2009: 2-1), in 2008 the available water per person was 145 CM per year, while in 2011 this level decreased to 90 CM per year (SIWI, 2012: 1), far below the absolute water scarcity levels[47] of 500 CM per year discussed in the literature review in Chapter 2 (Falkenmark et al., 1989: 258-260); GLOWA, 2007[48]). Therefore, it is not surprising to see that drinking water is the first priority within the water sector in Jordan, as emphasised in the national water strategy "Water for Life" (MWI, 2009: 1) through the words of King Abdullah II:

> Our water situation forms a strategic challenge that cannot be ignored. We have to balance between drinking water needs and industrial and irrigation water requirements. Drinking water remains the most essential and the highest priority issue. (H.M. King Abdullah II November 7, 1999).

Industrial use in 2011, as shown in Table 5.4, accounted for 5% of the total water used, meaning 37 MCM. The main industries in Jordan are phosphates, potash, mining, pharmaceutical, and tourism, of which the phosphate and potash ones are the biggest and most important ones. The phosphate industry is located in the central-southern part of the country, and the potash industry on the shore of the southern part of the Dead Sea, at Safi. The type of water they use is mainly groundwater from private wells they own, while in the case of the potash industry also surface water from side wadis and dams are used. To reduce costs, industries also recycle and reuse their wastewater. Not surprisingly, the main constraints on Jordanian industries are the country's lack of natural resources, mainly energy (interviews 40, 43, and 62, to the personnel from the main Jordanian industries and from the Chamber of Commerce of Jordan).

Water use distribution by sector is even more striking if compared to the sectors' contribution to GDP by sector and employment by sector in Jordan. Table 5.5 shows that agriculture is responsible for around 3% of the national GDP, industry for around 30%, and services, including tourism, for around 67% (IFC, 2012: 5)[49]. In addition, less than 4% are employed in agriculture, many of which are non-Jordanian workers, around 20% in industry including construction, and 77% in services (Castejon, 2011: 227). However, several

[47] According to the generally accepted Falkenmark indicators.
[48] http://www.glowa-jordan-river.de/Project/Background visited on the 27th of December 2014
[49] See also http://ec.europa.eu/trade/policy/countries-and-regions/countries/jordan/

interviews at the MWI and Ministry of Agriculture (MoA) (for instance interviews 63 and 25) revealed that this data does not consider the whole agricultural chain, but only those directly working and the revenues of those directly employed in agriculture. Nevertheless, even considering the whole agricultural chain, which includes preparation of the land including seed supplies and fertilisers, land preparation including irrigation, production and processing, trading including transportation, this sector would employ around 25% of the labour force and around 28% of GDP (ISSP, 2012b: 12, Al-Jaloudy, 2006: 6).

Table 5.5: GDP and employment by sector in Jordan

| | |
|---|---|
| **GDP by sector** | Agriculture (3%),<br>Industry (30%),<br>Services (67%) |
| **Labour force by sector** | Agriculture (3%),<br>Industry (14%)<br>Construction (6%),<br>Services (77%) |

*Source: own elaboration from data from International Finance Cooperation (IFC) (2012)*[50]

## 5.2 Institutions responsible for water resources in Jordan

This section presents the relevant actors within the water sector and within policy making in Jordan, as well as the policy making process itself. This is of key importance as it provides the background information needed for the analysis of the empirical Chapters 6 and 7 on the construction of the water scarcity discourse and on the effects of the deployment of the discourse on water solutions, policies, and strategies. First, this section describes the official institutions of the water sector in Jordan, second it examines other influential actors in the water sector that are also involved in deploying the discourse. Third, it analyses the official and the shadow actors in light of their influence in relation to policies and laws. Finally, it deepens the focus on the role of donors, which are key in the water scarcity discourse construction together with the formal actors of the water sector previously analysed.

Figure 5.4 shows the core water sector institutions in Jordan: the MWI, the Water Authority of Jordan (WAJ), and the Jordan Valley Authority (JVA). The MWI, established in 1992 through bylaw 54, is the official institution responsible for national water strategies, planning, and policies in Jordan. It is also responsible for the monitoring of the entire sector,

[50] Data also taken from http://ec.europa.eu/trade/policy/countries-and-regions/countries/jordan/

and therefore the WAJ, the Performance Monitoring Unit[51] (PMU), and the JVA, as these are all agencies under the MWI. The minister of the MWI chairs the boards of both the WAJ and the JVA.[52] The MWI is also responsible for research and development, consolidation of data, and procurement of financial resources (interview 42, high level official at the MWI) (Hübschen, 2011: 133).

The WAJ, established by law 34 in 1983 as an autonomous institution, is in charge of regulating and providing abstraction permits and licenses, water supply, and sewage system. It is also responsible for providing services, including planning, construction, and monitoring of public water supply and sewer services, either directly or through one of its subsidiaries: Aqaba Water Company in Aqaba, Mihayuna in Amman, and the Yarmouk Water Company in northern Governorates. The WAJ was established before the MWI and therefore initially depended directly on the prime minister (interview 42, high level official at the MWI; interview 3, Jordanian academic) (Hübschen, 2011: 133, Haddadin, 2006: 41).

The JVA was established before both the MWI and the WAJ in 1973.[53] According to law 30 of 2001, it is responsible for the social and economic development of the Jordan Valley, including its water resources, and is responsible for the conservation, development, and allocation of water resources - particularly the King Abdullah Canal resources (Haddadin, 2006: 39, Hübschen, 2011: 139).

However, a range of other ministries are also involved in the water sector: the Ministry of Agriculture (MoA), the Ministry of Planning and International Cooperation (MoPIC), and the Ministry of Environment (MoE) (Abed Rabboh and Jabarin, 2008: 14, Hübschen, 2011: 133-135, Tomaira, 2008: 97) (interview 3, Jordanian academic).[54] Therefore, the MWI partially shares its responsibilities with the mentioned ministries.

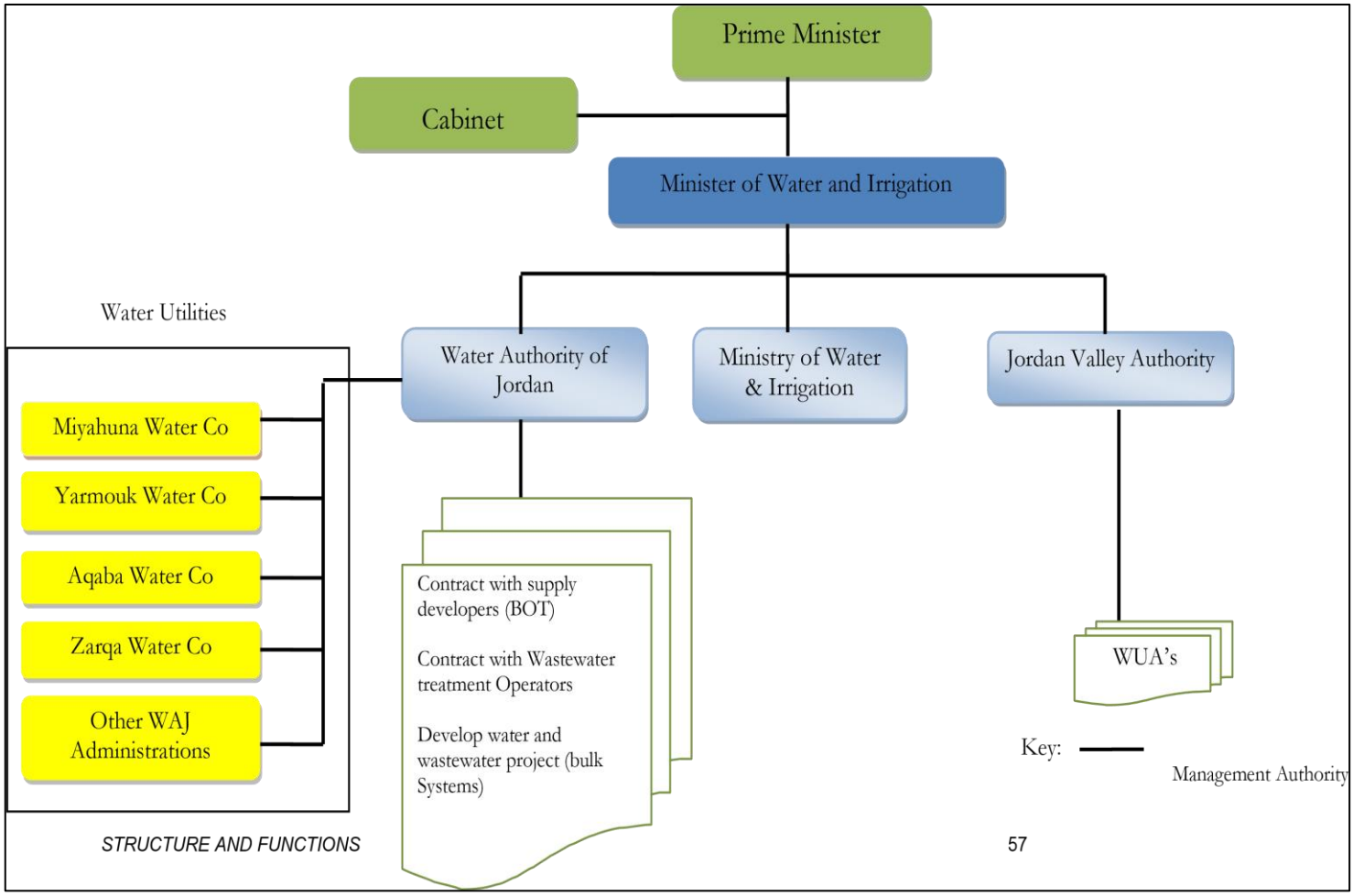
[51] Previously known as Programme Management Unit

[52]While the MWI is de facto in charge of the two other agencies, the jure the MWI is less important being established after them and through a bylaw, while the two agencies were established through a law HÜBSCHEN, K. 2011. *Integrated water resources management as a governance challenge for countries of the Middle East with special focus on Yemen, Jordan and Syria*, Logos Verlag Berlin GmbH.

[53] Firstly as Jordan Valley Commission and then amended in 1977 to become the JVA

[54] A minor role (considering the focus of this thesis) is played by the Ministry of Health, which is responsible for monitoring and ensuring that both wastewater and drinking water are in line with international standards and therefore not harmful to public health.

Figure 5.4: Water sector structure in Jordan




*Source: ISSP (ISSP, 2011: 57)*

The MoA is an important actor in the water sector, given that around 60% of water is used for irrigation. This is not because agriculture is important for the Jordanian economy, but rather for the role it has in rural development. Legally, the MoA is responsible for on-farm irrigation, meaning exploitation of surface water resources for this purpose. It is also responsible for drilling wells to provide water for livestock (interview 25, senior official at the MoA) (Hübschen, 2011: 134). Therefore, it is in charge of water management at the farm level, meaning that while the MWI allocates water among sectors, the MoA manages the water within the farm, but not the overall sector allocation. Within the MoA, the National Centre for Agricultural Research and Extension (NCARE) is a semi-autonomous agency responsible for research on conservation and sustainability of natural resources (interview 58, international organisation senior officer).

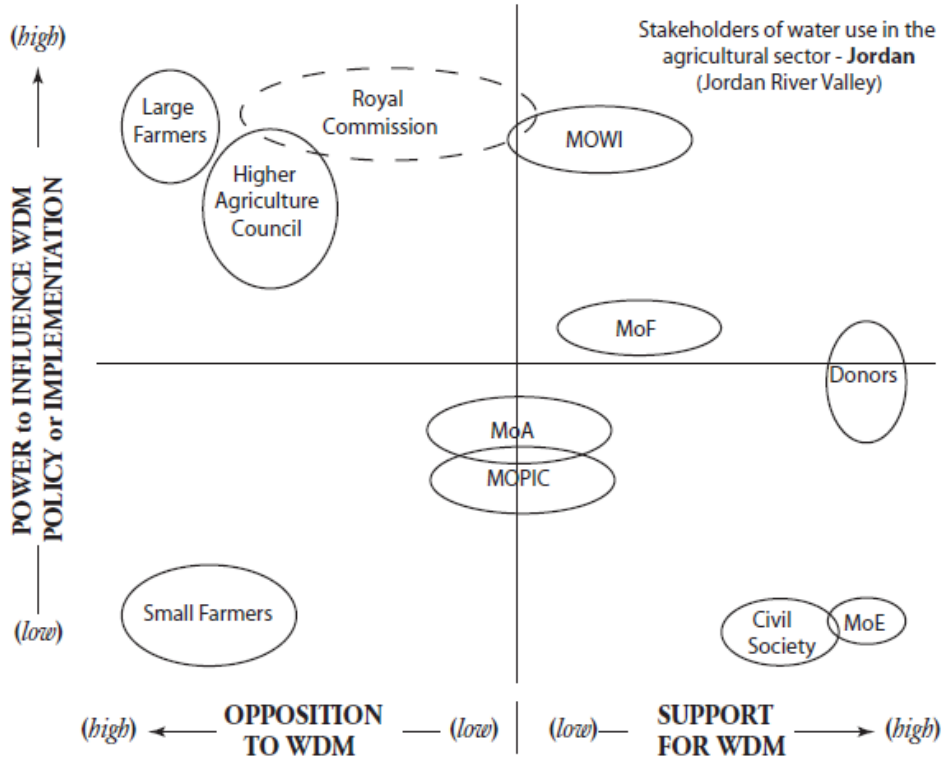
The MoPIC is important as it coordinates donor support, and has to provide and manage the funds for the water sector through loans, technical assistance, and grants. This is done in coordination with the Ministry of Finance. MoPIC negotiates donor aid and signs the agreements, and then forwards the funds to the MWI, while the Ministry of Finance pays the interest on loans (Hübschen, 2011: 134, Tomaira, 2008: 97, Abed Rabboh and Jabarin, 2008: 16-17)(interview 47, high level officer at MoPIC).

The MoE is responsible for the protection of the environment and all natural resources, including water protection, monitoring against pollution and degradation, climate change, and biodiversity. However, it is trying to increase its responsibilities in the water sector as well (interview 82, governmental employee MoE). Until now the MoE has not been very influential, as emerges also from Figure 5.5. The MoE was established in 2003, and in 2012 the Prime Minister Abdullah Nsour wanted to dissolve it and delegate its functions to the ministry of municipalities, a decision that was ultimately not pursued (interview 83, governmental employee MoE).[55] However, this shows the weakness of the MoE. Furthermore, interview 50 with a director from the MoE underlined that the role of the MoE is simply to monitor the MWI, and that the MoE tends not to disagree with MWI's decisions as the MWI officials are specialists in the water sector. Also, concerning the mega-projects of Disi and Red Sea - Dead Sea Canal, they are supported by the government and are matter of national priority, so the MoE does not even consider opposing them, according to the same interviewee (interview 50, official from the MoE). Again, this shows the weakness of the MoE and its alignment with the MWI and the governmental decisions.

From the interviews it emerged that the government has different voices, linked to different personalities and interests of the ministries, resulting in different influence, as appears in Figure 5.5. In particular, the MWI and MoA are strong ministries, which are closely linked to the shadow actors and the farmers' lobby. These ministries tend to focus more on the supply side in order to maintain the status quo and current uses in the different sectors. The MoE is weaker and rather lukewarm in contrasting the trend of the mentioned two other ministries and to call for demand side policies in order to support the conservation of the environment, water resources, and biodiversity. While the MoE voice was stronger and the ministry was more vocal on these issues before 2012, after that year it became more aligned with the mainstream positions of the MWI and MoA in order not to face again threats of closing the ministry itself.

[55]For more on this, please read the article of Batir Wardam https://bwardam.wordpress.com/2012/11/23/five-reasons-for-saving-the-ministry-of-environment-in-jordan/ (consulted on the 16th of January 2015).

Figure 5.5: Stakeholders of water use in the agricultural sector in Jordan




*Source: (Zeitoun et al., 2012: 60)*

### 5.3 The wider process of economic neoliberalism

The process of economic neoliberalism impacts the Jordanian economy, including the water sector, and shapes policies and reforms towards principles of economic neoliberalism. As seen in Chapters 6 and 7, these principles are incorporated in the narratives and discourse of water scarcity, opening certain policy options. This wider process of economic neoliberalism resonates in Jordan with official as well as with shadow actors. Within the context of the economic neoliberalism process, there is a power struggle to support or challenge reforms in different sectors among several actors, including: the government, shadow actors, donors, etc. As the official state and governmental actors involved in the water sector have been discussed earlier in this chapter, this section also analyses the shadow actors, as they interplay in the implementation of policies, and in the social practice dimensions, as further discussed in Chapter 7. Overall, this section provides further background information needed for the analysis of the empirical chapters on the construction of the water scarcity discourse and on the water policies and strategies making process.

### 5.3.1 The process of economic neoliberalism in Jordan

The general understanding of the definition of economic neo-liberalism is that it is an economic philosophy that supports the application of a revisited form of economic liberalism. The latter is a theory[56] calling for the abolition of state intervention in economic affairs, free from state control and putting as the only protagonist the individual which is free and liberal from state control, within a capitalistic framework (Jones et al., 2005: 100, Boas and Gans-Morse, 2009: 137). Economic liberalism was predominant in the US in the 1800s and 1900s, but was challenged in the 1930s by Keynes who pushed for a stronger involvement of the state. This, for Keynes, was necessary to ensure economic growth through full employment within a capitalistic framework (Martinez and Garcia, 1997: 1). The economic crisis of the 1970s saw a revival of economic liberalism, this time on a global scale given the globalisation of the capitalist economy (Gilpin, 2011: 306). The state is not seen in a negative way, but it needs to play a role in providing the conditions, laws, and institutions, in order to create the appropriate market and make it operational, therefore it does not aim at fully competitive private sector, but rather oligopolistic market structures (Zawahri, 2010: 315). The main features of economic neo-liberalism are: deregulation for a free market meaning freeing the private sector from regulations imposed by the state; supporting freedom of movement for trade, capital, goods, and services and eliminating tariffs, subsidies, and state-imposed protections; reducing public expenditure for social services, including the abolition of subsidies or any form of or support safety-nets for the marginalised groups, including for health and educational sectors; and privatisation of state-owned companies (Zawahri, 2010: 314-315, Ferguson, 2010: 170). In the case of Jordan, I argue that since 1989 this economic philosophy is "defining potential, a set of possibilities" (Fairclough, 2003: 23), as it is driving the space of action of the policy makers. However, being mutually constituted and constitutive, economic neoliberalism is constantly challenged and can be shaped over time by agents.

In the 1980s, due to an economic crisis caused also by the rise in oil prices, the Jordanian government increased the amounts it was borrowing from foreign lenders, entering into a debt crisis (Yorke, 2013: 63, Imai, 2012: 2-3). The government of Jordan did so as it was unwilling to impose austerity measures that would have meant losing popular support and

[56] It is generally attributed to Adam Smith, who is said to have introduced it in 1776. However, he did not believe that all industries should be free of control. For instance, ship building, should be governmentally run. But the vast majority do attribute this theory to Adam Smith.

legitimacy (ibid.). Therefore, in 1989 King Hussein agreed to a loan from the IMF, with conditionality for "structural adjustment and the imposition of neo-liberal economic reforms" (Baylouny, 2008: 277). Further loans were borrowed from the IMF with the imposition of similar neo-liberal economic and structural reforms from 1989 until 2004 and since 2012 (interview 39 with Western donor and IMF website[57]).

Several neo-liberal reforms took place. First, the government reduced the public expenditure for social services, including cuts on subsidies on consumer goods like gasoline, cigarettes, and cooking oil; but reforms had to be done gradually to avoid riots and protests in the country by the marginalised and poorest groups of society (Baylouny, 2008: 278). Second, after the accession of King Abdullah II in 1999, reforms towards privatisation of public companies took place, benefiting the oligopolistic economic elite and the shadow actors of Amman (Imai, 2012: 3, Helfont and Helfont, 2012: 86, Baylouny, 2008). Third, further policies supported foreign direct investment through the abolition of rules and regulations, and the private sector development through reforms in line with the best practices of the World Bank's Doing Business report[58] (Baylouny, 2008). Fourth, Jordan established the Aqaba Special Economic Zone, joined the World Trade Organisation (WTO) in 2000, and signed several free trade agreements. Finally, privatisation of state-owned companies took place including in the following cases: Jordan Telecommunications Company, Royal Jordanian Airlines, Queen Alia International Airport, Hammamat Main Resort, and water-related service like the Samra wastewater plant (Baylouny, 2008: 294, Imai, 2012: 4-5). Currently, as suggested by the IMF, the Jordanian government is reducing the subsidies to electricity and increasing their tariffs gradually since 2014 till 2017 (interview 39 with Western donor).

It emerges that the reforms since 1989 have been shaped and influenced by the IMF structural adjustment and economic neo-liberal reform directions. This happened also in the water sector. Economic neo-liberalism in the water sector promotes: decentralisation of governance; the creation of capital markets for water resources exchange and uses; water privatisation; water commodification; and deregulation (Fletcher, 2010: 210). These features of the wider process of economic neo-liberalism have been shaping policies and reforms in the water sector in the past two decades. Decentralisation of water governance is slowly happening through the distribution and management of the water resources by governorate rather than centralised. In addition, in the Jordan Valley the Water Users Associations are a form of

[57] http://www.imf.org/external/np/fin/tad/extarr2.aspx?memberKey1=530&date1key=2014-11-30
[58] See "Doing Business in the Arab World 2013 Report", IFC-World Bank Group, 2013

decentralised water governance. The government – and therefore official actors - has supported private sector participation in the management of the water supply utilities creating Miyahuna Water Company in Amman, the Aqaba Water Company in Aqaba area, and the Yarmouk Water Company in Irbid area. The Jordanian government created a water market by allowing privatisation of groundwater wells and the selling of their water through private companies that use tanks. This water is usually bought in the dry seasons when households run out of water in their roof tanks. The private sector participation has also been supported by the build-operate-transfer (BOT) formula, which is build, operate, and transfer from the private sector to the public sector, which was adopted for the biggest wastewater treatment plant in the country, Samra plant near Zarqa, constructed in 2008[59]. The BOT formula will also be adopted for the desalination plant that will be built in Aqaba as part of the first phase of the Red Sea-Dead Sea Canal project.

However, Tomaira (2008) found that economic neoliberalism is influenced by the context and the political economy (Tomaira, 2008). In fact, in the case of the Jordanian water sector, reforms on reducing the subsidies for the water sector have not been taken because of the power struggle with shadow actors, and the water supply utilities have not been completely privatised, but still see an important role of the public sector (MWI) in it. Also, in the case of Samra wastewater plant and of the desalination plant planned for Aqaba, the financial scheme adopted a BOT scheme, which envisions a transfer to the public sector in 15 or 20 years. The same can be said for the MWI campaign to increase water efficiency and reduce the non-revenue water through improving the network supply system and stopping the water thefts and illegal connections, as further discussed in Chapter 7. Therefore, this shows the interplay between the wider process of economic neoliberalism with the Jordanian context, the official and shadow states, which contribute to shaping the outcome of the policy making process.

### 5.3.2 The shadow actors

This section describes what a shadow state is, who the shadow actors are in Jordan, not taking for granted the categories of tribes and Jordanian or Palestinians origins, and then discusses how they operate in shaping water policies. I argue that in Jordan it is more appropriate to talk of 'shadow states' or 'shadow actors' rather than of a 'shadow state.' This is because in Jordan there is not a coherent entity with a national presence, the shadow state is not a black box or a

[59] The construction started in 2003 and was completed in 2008.

homogenous category, but it is very heterogeneous, and therefore using 'shadow actors' or 'states' is more apprioriate.

Tripp and Springborg[60] first used the concept of "shadow state"[61] in relation to the Middle East (Tripp, 2002: 4-5, Springborg, 2007: 3-4). Within a shadow state, authority belongs to an individual or group of individuals; it is a neo-patrimonial regime that can also have a façade of laws, procedures, and governmental institutions. The official ruler maintains the support of key actors, who are linked to him through tribal or regional affiliation, and through privileged access to economic assets. For Glass, "Egypt is the only nation-state in the Middle East. The rest are tribes with flags. […]. The great majority of the Levant's people still look to traditional community and sectarian leaders for protection, favours, money and jobs. Loyalty to family, village, tribe and sect has always been stronger than ideology. Ideology comes and goes out of fashion. Loyalty does not" (Glass, 1990: 3-4). Being linked to the ruler, these actors become very influential in the shaping of national water policies, often more than the façade institutions (Keulertz, 2013: 265-267, Yorke, 2013: 58-60, Tomaira, 2008: 213, Greenwood, 2014: 153, Zeitoun et al., 2012: 59). While it could be argued that also in the EU member states there are lobby groups that put pressure on the governmental institutions and shape their policies, I argue that the difference between those groups and the shadow state is the transparency and accountability of these groups. While in the EU member states those groups are formally registered and their activities are transparent and accountable, in Jordan, as emerges in Chapter 6, certain shadow actors used even guns to resist and shape decisions of the government.

In Jordan there are official divisions of power between three branches, and a rational institutional legal system. However, Yorke (2013) noted that in practice the power resides in the king[62] and in the economic-political elite around the political system established by the monarchy: the shadow state (Yorke, 2013: 58-59, Oudat and Alshboul, 2010: 65). The individuals of the shadow state, in practice, have privileged access to resources and are influential in shaping policies and in resisting change. They support the official ruler, and being linked to him, they participate in maintaining the status quo and their privileged position.

I argue here that the shadow states in Jordan, as emerges in Figure 5.6, can also resist national water policies, laws, and actions. The shadow states or actors are important for this

[60] Tripp focusing on Iraq and Springborg expanding it to the whole Middle East.
[61] The concept draws on Weber's analysis of authority (1919) and on Eidenstads definition of neo-patrimonialism (1973), and on the following work of Clapham (1982)
[62] The king enjoys broad powers over the Parliament and the government

research as they play an important role in the translation of the discursive practice into social practice and policy outcome, as discussed in Chapter 7. In fact, they resist decisions and delay or block the implementation of water policies and laws that undermine their interests. This emerges in the water sector for example in relation to: the tariff system, the groundwater regulation, and the 2013-present "illegal wells campaign."[63] The 2002 groundwater regulation on non-licensed wells and abstraction limits that was passed in 2002 has not been fully implemented until 2013. Concerning the tariff system, the groundwater law was amended in 2004 lowering the fees for the water abstracted in licensed wells, instead of increasing the highly subsidised water tariffs, up to $0.007 per mc[64] (interviews 45, 48, and 54 with Western donor, NGO director, and Jordanian MP)(Venot and Molle, 2008: 1931-1932). Despite the MWI personnel knowing where the non-licensed wells are, they did not intervene to close the wells because many of them were owned by influential figures: high level directors of the intelligence in the Highlands area, relatives of the royalties in the Disi area[65], and former ministries or tribal leaders in the Amman area[66] (interviews 11 and 13 to two academics and 48 to NGO director). Consequently, the "illegal wells campaign" against all non-licensed wells started in 2013 by the MWI, was directed to closing the non-licensed wells of marginalised people, both of East Bank and Palestinian origins, but did not close the non-licensed wells of the influential people (interviews 11, 13, and 48 to Jordanian academics and NGO director). According to a Jordanian academic, this seems like a media campaign rather than a real campaign to close all wells; in fact, a list of all owners and location of the wells is available at the MWI and it was also published online by a Jordanian blog in 2014, but it was removed a few hours later (interview 11).

In this context, it is understandable why policies and laws exist in theory but in practice are not implemented, or why governments have been not inclined to push for policies and actions in the water sector that go against the interests of the shadow states and actors. Several scholars have remarked that it would be a political suicide to implement those reforms (Yorke, 2013: 30; 57, Greenwood, 2014: 153). The shadow actors impact the water sector both in

[63] More on the campaign in Chapter 6

[64] Referring to the volumes abstracted between 150,000 and 200,000 mc per year per well, charging them $0.007 per mc instead of $0.035 mc per year (Venot and Molle, 2008: 1931).

[65] Emir Makhtoum of Dubai is married to Princess Haja of Jordan and they own a big farm in Disi area, which is a security-military area, and is irrigated 24/7 with non-licensed wells (interviews 11 and 13). According to the journalist Peter Speetjens, "deeper inside the valley one also finds the hilltop palace owned by the ruler of Dubai, Sheikh Mohamed bin Rashid al Maktoum, and his wife Princess Haya of Jordan. To liven up the view from the palace, Maktoum created an artificial lake in the valley below", in http://peters.myserveur.net/?p=309

[66] Surprisingly enough, according to interview 13 to a Jordanian academic, water from illegal wells from south Amman is also sold to the Queen Alia International Airport.

shaping or blocking policies and laws, as in the case of the water tariffs, or in the implementation phase, like in the case of the 2002 groundwater law and the "illegal wells campaign." In the 1994 negotiations and peace agreement between Jordan and Israel, the Bedouin leaders met and advised the king about the details of the agreement, informally giving the green light to the king to proceed with the ratification of the treaty (interview with a Bedu tribal sheikh).

However, the shadow actors are not fixed over time, they are not static, but subject to change over time. This emerges in the history of Jordan looking at some social groups which passed from being initially completely marginalised to becoming fully part of Jordanian society. For instance, the case of Jordanian Bedouins, whose more influential members became influential shadow actors, while Jordanian Bedouins became legally full citizens and not discriminated by law only in 1976 (Massad, 2001: 52).

The shadow actors have often been identified with the East Banker tribes, seeing them in a dualistic way opposed to Jordanians of Palestinian origins. For Hübschen (2011), Jordanian tribes are those who really rule the kingdom, comprising the shadow actors and political elite of the country, versus the Jordanian of Palestinian origins, seen as discriminated and marginalised within the social and political society (Hübschen, 2011: 118-123). For Gao (in Sindic et al., 2014: 50-65), power relies in the tribes for historical reasons, and this emerges in the electoral system, in the *wasta* or nepotism system, and in civil rights privileges granted to East Bankers[67]. For Oudat and Alshboul, informal tribal networks substitute in practice the formal institutions and authority (Oudat and Alshboul, 2010: 90).

Several scholars describe the tribes as the backbone of the monarchy and loyal to the kingdom since its establishment (Alon, 2005: 213), and benefiting from and comprising the *wasta* system and the shadow actors (Loewe et al., 2008: 29-30, Al-Ramahi, 2008: 38-40, Wilson, 1990: 57). As noted by Alon (2007), since Black September[68] in the 1970s, media and scholars seem to have preferred an oversimplification of Jordanian society, where Bedouins and tribes are described as the backbone of the Hashemite monarchy, and Palestinians as the marginalised and disloyal category (Alon, 2007: 1). However, I argue that not all tribes supported the Hashemites at the establishment of the Emirate in early 1920s, not all tribes have

[67] According to Gao, civil rights privileged include the process for obtaining the Jordanian citizenship for children of parents with one Jordanian parent and one non-Jordanian parent.
[68] Black September refers to the Jordanian Civil War, which started in September 1970 and ended in the summer 1971. The war was fought between Jordanians and the Palestine Liberation Organisation of Arafat, which aimed at taking the power in Jordan.

equal weight and influence, and not all members of the tribes are shadow actors. While most of the Bani Hamida, including Howeitat, and the Bani Sakher,[69] supported the Hashemites and provided them with support in defending the borders, Bani Hasan were more reluctant to do so and sometimes were vocally against the Hashemites: this happened in the Balqa revolt in 1923 when the Adwan family started a revolt against the British and the Hashemites (Alon, 2007: 54-56). For this reason, they have been excluded from key positions in the army and security establishments until the 1980s (interview 23). Nevertheless, also within the loyal Bani Sakher, it was noted that the support was not homogeneous, but also within the most influential family of Al Fayez, some parts supported the Hashemites and some did not, and those who did received great benefits (interview 2, 23, and 41 to academics and expert in political affairs) (Alon, 2007). Finally, interviews showed that within a tribe, only those economically or politically important are influential and can resist change and shape policies, and are to be seen as shadow actors. Instead, those who even if members of an important family like Al Fayez, are marginalised and poor, will be treated as normal citizens with no *wasta* and subject to the laws of the state (interview 2 and 41).

Moreover, I do not take for granted the interpretation of shadow actors as purely tribal and I argue that shadow actors are of both East Bankers and Jordanian of Palestinian origins. As an example, the Bedouins, who are thought to be the most truly representative group of Jordanian history and culture, have been discriminated by law by the state and were subject to the Law of Supervising the Bedouins[70] since 1929 until 1976 (Massad, 2001: 52) (interview 2 with academic). In addition, also within the most influential Jordanian tribes, there are marginalised people who are not influential and not part of the shadow states, for instance the youth activists of the *Hirak* movement[71], who are mainly from rural, marginalised, and poor tribal communities (Yom, 2014: 229) (interview 2 with academic). The shadow actors can be: managers and important figures from the public sector agencies, including the military, intelligence services, and ministries; elites from the commercial and private sector; and sheikhs, tribal leaders, and influential people within tribes. Therefore, the division between East Bankers and Jordanians of Palestinian origins is not relevant as managers and important

[69] In Jordan there are three main *Qabilas*, or confederation of tribes: Bani Hamida in the South, Bani Sakher in the middle, and Bani Hasan in the north. Within each *Qabila*, there are the *Ashaer*, which are usually known as tribes.

[70] Also known as Bedouin Control Law

[71] *Hirak*, which literally means movement, is a Jordanian Youth Movement started during the Arab Spring or upraising and most of its members are of East Banker origins from rural and marginalized areas, like Tafilah. They strongly oppose corruption in the public sector and in politics, and they called for regime change and accused the highest political authorities of corruption.

figures from the public sector, who are part of the shadow states, are also of Palestinian origin. This is the case with families like the Kilani[72] and Badran[73] from the security apparatus, the Rifai[74] and Nabulsi[75] from the governmental one, and the Al Masri family[76] from the private sector (interview 2 with academics)(Keulertz, 2013: 268-269).

Religion does not appear to be a relevant factor when considering the shadow actors or members of the official state in Jordan, as they are both Christians and Muslims. In an interview, a spoke person of the Muslim Brotherhood party explained in 2013 that it is problematic for the water sector to have Christian ministers of the MWI. For him, having a current and previous ministers of the MWI of Christian beliefs explains: the lack of an agreement (the interview took place in 2014 before the agreement over the Disi aquifer system) with the Islamic state of Saudi Arabia on the Disi; and the violations of the Islamic state of Syria of the agreement with Jordan signed in 1987 on the Yarmouk River (interview 29). However, while the ministry was established in the spring of 1988, ever since about twenty ministers of the MWI took office and only four of them were Christians. Samir Kawar was appointed because of his membership in a parliament block; Bassam Qaqish, to award him for his distinguished service in the military; and two, Haddadin and Hazim Nasser, twice because of their technical competence (interview 52 with a former minister of the MWI).

Also, in order to investigate the influence of tribes and Palestinians upon the water sector in Jordan, it is necessary not to see them as fixed categories. Jordanians of Palestinian origins represented in the government, parliament, and among shadow actors, are from influential families living in Amman, for instance Rifai and Al Masri, and they support the political-economic system and the status quo (interview 23 with an expert in political affairs from the parliament; interview 2 with an academic from the University of Jordan). Poor and not influential families with the same origins, marginalised individuals within the influential families, or those against the status quo like members of opposition parties like the Muslim Brotherhood, do not have a voice[77] and cannot influence or resist change, policies, and

[72] Muhammad Rasul Al Kilani was the former General Director of Intelligence (Mukhabarat). See also Massad (2011: 202)
[73] Mudar Badran was General Director of the Intelligence (Mukhabarat) in the 1970s and became Prime Minister in the 1980s.
[74] Samir and Zaid Rifai were both Prime Ministers of Jordan
[75] Sulayman Nabulsi was Prime Minister in the 1950s
[76] Sabih Taher al-Masri is the Chairman of the Arab Bank, Founder and Chairman of Arab Supply and Trading Company (ASTRA), Chairman of Palestine Telecommunication Company PLC, and Chairman of ZARA Investment Holding Company Limited. He also owned the agribusiness in Disi area, as discussed in chapter 7.
[77] The Muslim Brotherhood has a voice in the political arena, but it is not influential and cannot shape or resist policies.

decisions in the water sector (ibid.). In a nutshell, while the latter do have influence among the people in particular among the marginalised communities, they result not to be shadow actors, as the latter prefer to maintain the status quo.

Therefore, it emerges that in Jordan it is more appropriate to consider shadow actors rather than a fixed category of shadow state, as the shadow actors are not composed by whole categories of the society, but rather only by the most influential individuals within each category: East Bankers and Jordanians of Palestinian origin; public sector; army and intelligence; private sector; and the royalties.

## Conclusion

The purpose of this chapter was to provide the general background information needed for the analysis in the empirical Chapters 6, 7, and 8. The chapter, first provided contextual details regarding the facts and figures of water resources in Jordan, including water uses per sector and transboundary resources and agreements. This section found that while most of the water resources in Jordan are of surface nature, Jordan is bound by international agreements for their uses, as most of them are transboundary. For this reason, most of the water supply sources comes from the groundwater resources, which are over-exploited at a rate of over 150% of their safe yield. It also emerged that almost 60% of the water is used by the agricultural sector, which produces around 3% of the total GDP. While farming is mainly practiced in the Jordan Valley and in the Highlands, it also resulted that agriculture in the latter is responsible for over-abstraction of groundwater and is a less efficient type of agriculture compared to the former.

The second section, investigated the actors involved in the policy-making process in the water sector and found that while the MWI, parliament, government, and king are the official actors, a variety of actors, which I called shadow actors, are also involved in shaping, blocking, and resisting new policies and laws. The shadow actors, farmers, donors, and academics were among those.

The last section, investigated the wider process of economic neoliberalism, also known as the economic neoliberal era that has been taking place in Jordan since late 1980s. The political economy reforms taking place in the country, including in the water sector, need to be contextualised within this economic neoliberalism process. Within this context, there is a power struggle to shape reforms in different directions, process that involves official governmental, shadow actors, etc. For this reason, this section has then analysed the shadow

actors, which play an important role in the implemnentation (or lack of) water policies and reforms in Jordan. After outlining the geographical facts and figures, the actors and policy-making process, and the role of the process of economic neoliberalism in this sector, in the following empirical Chapters 6, 7, and 8 a discursive and hydropolitical analysis will be made informed by the theoretical framework presented in Chapter 3.

# CHAPTER 6: THE DISCOURSE OF WATER SCARCITY

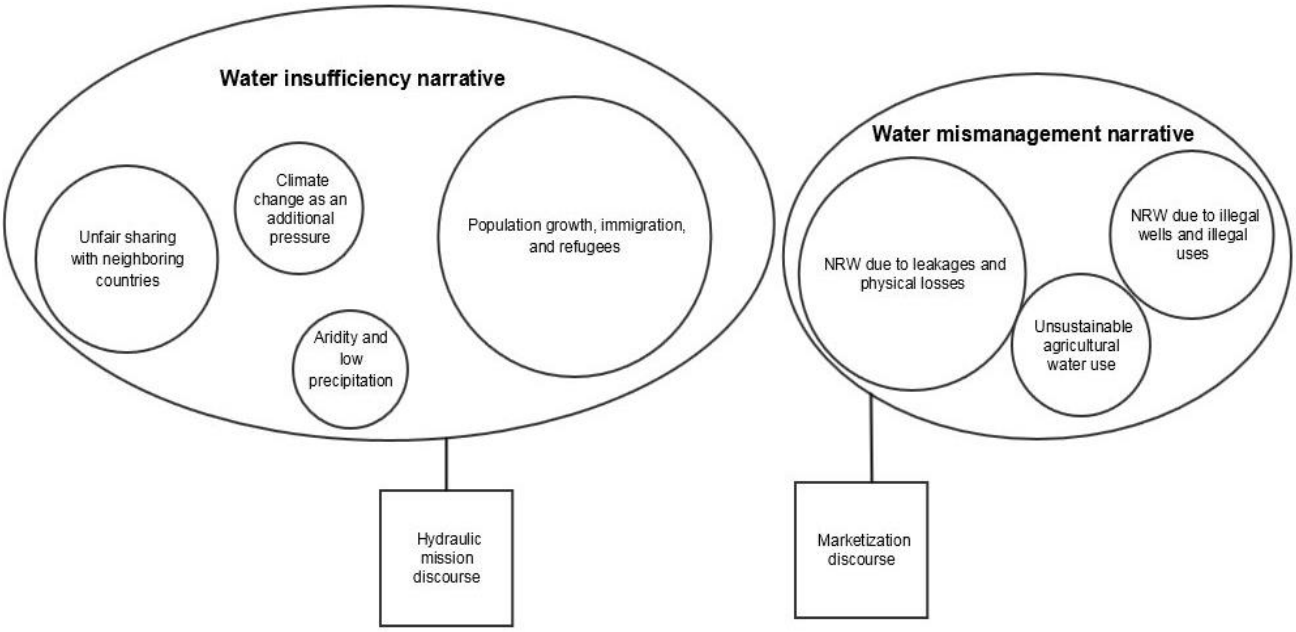
## Introduction: mapping the discourse

This empirical chapter investigates the discourse of water scarcity in Jordan. This is of key importance for this thesis, as the research question examines the construction of the discourse of water scarcity in Jordan. In particular, this chapter answers sub-research question A): What are the elements comprising the discourse of water scarcity, including narratives and sub-narratives? I understand the discourse of water scarcity in Jordan as comprised by two narratives: water insufficiency and water mismanagement. For analytical purposes, I decided to map the discourse into two narratives and seven sub-narratives; nevertheless, I understand the discourse as fluid and not divided into different parts. Section 6.5.2 explores different ways of mapping and dividing this discourse while Figure 6.1 below shows in a diagram the mapping of the discourse, the two narratives, and seven sub-narratives. The sub-narratives I have identified are:

- Population growth, immigration, and refugees
- Unfair sharing with neighbouring countries
- Climate change as an additional pressure
- Jordan as an arid and semi-arid region with low precipitation
- Non-Revenue Water: leakages and physical losses
- Non-Revenue Water: illegal wells and illegal uses
- The unsustainable agricultural water use

The size of an oval indicates the dominance of the narrative in comparison to the other oval. The size of a circle inside the ovals indicate the dominance of the sub-narrative in comparison to the other circles in the same oval. However, the size of the circles in the left-hand oval does not relate to the one of the circles in the right-hand oval.

Figure 6.1: Narratives and their relationship to related discourses




To unpack the water scarcity discourse, this chapter first explores the historical roots of the water scarcity issue. Second, it analyses the sub-narratives of the water insufficiency narrative, identifying which sub-narratives relate to which narrative. Third, it examines those comprising the water mismanagement narrative. It does so by investigating who constructs and reproduces the sub-narratives, the key texts, where is the blame placed, and the "prevalence" of the sub-narratives. Fourth, after having explored the water scarcity discourse, it examines the parallel voices to the discourse of: Bedu, also known as Bedouins, and small farmers. Finally, it examined the discursive prominence of the narratives and sub-narratives and the different ways of mapping the discourse. To do so, the analysis of this chapter deploys Fairclough's theoretical framework of critical discourse analysis presented in the theoretical framework chapter (Chapter 3) and is informed by the general background information provided in the background chapter (Chapter 5).

This chapter will not analyse the effects of the deployment of the discourse and narratives on the strategy, policies, and laws, as for analytical purposes, this is covered in Chapter 7. This chapter focuses on the discursive practice, while Chapter 7 on the social practice dimension of the discourse. In other words, Chapter 7 covers the effects that the deployment of the discourse, the narratives, and the sub-narratives have on framing the solutions to water scarcity; in other words, their implications on strategies, policies, and actions in the water sector.

### 6.1 Historical roots of the water scarcity discourse in Jordan

I argue that the water scarcity discourse in Jordan has its roots in the early 1970s, and the 1967 Six Day War could be seen as a main event that contributed to inform this discourse. However, the deeper roots of the discourse are to be seen in 1948, the year of the establishment of Israel. In this section, I first analyse the argument that the discourse of water scarcity has its roots since the independence of Jordan in 1946. Second, I argue that it would be more appropriate to see the roots of the public discourse of water scarcity in the early 1970s.

According to Haddadin, the roots are to be seen since the independence of Jordan in 1946, as water supply has been a priority of the Jordanian government since its beginning due to the aridity of its territory (Haddadin, 2006: 66). Haddadin (2006) argues that the natural conditions of aridity of the Jordanian territory as the main reason for the roots of the water scarcity discourse. Instead, I assert that water was present as an important sector for the Jordanian government since its establishment in 1946, and that 1948 should be seen as the year of the roots of the water scarcity discourse in Jordan. 1948 was a key year, as the establishment of Israel sparked new discourses, including the water scarcity one. As put by the former Jordanian Prime Minister Abdul Salam Majali during the 1994 Jordanian-Israeli negotiations, "Israel has been behind Jordan's water agony. In 1946, the per capita share of renewable water resources was comfortable indicating a surplus in the population-water resources equation. That surplus abruptly diminished shortly afterwards with the arrival of the first wave of Palestinian refugees in 1948, and was eroded shortly after" (in: Haddadin, 2012: 500). Since the first war between the states of Jordan and Israel in 1948, Jordan has tried to expand its control over water resources, partly to satisfy its growing population, which was increasing since 1948 due to the waves of Palestinian refugees, and partly to support the economic growth of the country through new jobs and expanding the economic activities. For this reason, in 1953 the Jordanian government has concluded its first bilateral agreement over water resources with Syria. In the agreement it appeared that the first interest of the Jordanian government was water rather than energy: this emerges from the allocation of the benefits from the planned Maqarin Dam. In the 1950s, Jordan was also strongly involved in the negotiations with the US and the Arab League for a plan for the development and allocation of the water resources of the Jordan

River Basin, also known as Johnston Plan[78]. In the 1950s, the United States Agency for International Development (USAID) supported the Jordanian water sector, as this would have helped to resettle the Palestinian refugees in the Jordan Valley (Yorke, 2013: 67). Discussions about the Israeli National Water Carrier project were ongoing since early 1950s, and the project was concluded in 1964, but talks on the impacts on Jordan took place during the Johnston Plan negotiations in mid-1950s (Haddadin, 2006: 244).

However, I suggest that while the water scarcity discourse has its roots in 1948, this discourse was known within the government, while it became a public discourse only in the early 1970s. As a consequence of the 1967 war, Jordan lost Jerusalem and the West Bank, which Israel occupied during the Six Day War, causing further waves of Palestinian refugees entering Jordan. This wave of refugee was different as they went from the West Bank to the East Bank of Jordan. Instead, the previous waves of Palestinian refugees before 1967 went to the West Bank rather to the East Bank, and therefore they did not have a major social impact into the Jordanian perceptions, as Jordanians lived in the East Bank of Jordan, while the Palestinians and refugees were mainly based in the West Bank of Jordan. After the 1967 war, waves of Palestinian refugees left the West Bank and went to the East Bank, bringing with them not only necessity for more food and water, but also memories and stories about their perceptions of the Israelis and of the war. I suggest that these narrations and experiences contributed to informing the water scarcity discourse, and making it publicly known.

After the 1967 war, the Jordanian government further proceeded to construct a water scarcity discourse, which supported the hydraulic mission of the state, especially in the Jordan Valley. In 1973, Jordan established the Jordan Valley Commission, which then became known as Jordan Valley Authority in 1977, with the aim to develop the socio-economic rehabilitation of the Jordan Valley, with water rehabilitation and development as a key goal. Dams and water infrastructures were developed and constructed: King Talal Dam completed in 1977 and the East Ghor Canal, later renamed King Abdullah Canal, in 1987. The hydraulic mission of the state was further promoted and the discourse of water scarcity was key in supporting these policies (Haddadin, 2006: 38-40). In the first edition of the National Water Master Plan of Jordan completed by the Jordanian Government with the support of GTZ in 1977, water scarcity was first mentioned (MWI and GTZ, 1977). After the droughts years in 1975-1978, the government decided to pump part of the water from the valley to the capital because of the

[78] This was a US plan drawn by the special ambassador Johnston in 1953 for a regional allocation and development of the Jordan River system. It was accepted by Israel, while the Arab League accepted it on a technical level but rejected it on a political level as it would have implied recognition of Israel.

water shortages in Amman (Khouri, 1981: 17, Haddadin, 2006: 85). Discursively, this was justified with water scarcity in Amman due to the growing population (ibid.). The Jordanian academic Rami Khoury in 1981 was already mentioning depletion of surface water resources, "the capital region around Amman is already short of water", foreseeing that "within the 1980s, Jordan will suffer from a devastating water shortage if present consumption trends continue and new supplies are not tapped" (Khouri, 1981: 17). This shows that in the 1970s the discourse of water scarcity was already public, and it was further reinforced by the mentioned master plan published in 1977.

As Fairclough sees it, it is not one single event or report that constructs a discourse, but rather a series of events, declarations, and reports. In the case of the water scarcity discourse in Jordan, the water scarcity discourse was constructed by a series of events, declarations, infrastructures, narrations, experiences, and reports. Albeit the main root of the discourse lies in the creation of Israel in 1948, I suggest that competing water and development plans, as well as refugees, are to be seen as consequences of the main cause: Israel. The discourse then materialised and cemented in reports and reinforced itself in the following decades, becoming a public discourse mainly after the 1967 war in the early 1970s. An interesting link that could be done in the future is to examine through the "security dilemma" whether the threat of Israel since 1948 has shaped the Jordanian perceptions over water since 1948.

### 6.2 The water insufficiency narrative

This section analyses the water insufficiency narrative. This narrative identifies the reasons for the issue of water scarcity in the limited supply, namely the limited or decreasing water resources and the factors increasing the demand side (Rijsberman, 2006: 6). There are four sub-narratives comprising it. The first one considers population growth, in particular waves of immigration and refugees, as the cause for water scarcity. The second one identifies the unfair sharing over the transboundary water resources with neighbouring countries as the reason for water scarcity. The third one argues that climate change is putting an additional pressure and intensifying the water scarcity in the country. The fourth one describes water scarcity as due to Jordan's natural condition of semi-aridity and aridity and to the low precipitation.

For each sub-narrative, this section examines: the actors constructing them, their interests, the main texts source of interpretation, and where the blame lies in each sub-narrative. It also attempts to understand approximately the "prevalence" of each sub-narrative in relation

to their contribution to water scarcity. This will be done by looking at the sub-narrative from a water resource manager's perspective, to understand what sub-narrative appears to be more prominent than the others. What I mean is a relative prevalence of the causes identified with what is generally agreed by water resource managers as being their impacts and contribution to water scarcity in Jordan. The findings are summarised in Figure 6.2 on page 132.

Overall, the main texts basis of this narrative are governmental reports, declarations, and data. This is to maintain and protect the interests of the shadow actors, blaming external factors like immigrants, refugees, and nature and environmental conditions rather than the unsustainable agricultural practices of the members of the shadow states. Chapter 7 analyses how this narrative opens or closes certain solutions, which are in line with the interests of the members of the shadow actors.

### 6.2.1 The sub-narrative of population growth, immigration, and refugees

The first sub-narrative sees the problem of water scarcity as due to the rapidly increasing population, immigration, and waves of refugees. Academics, governmental employees, donors, and international organisations mentioned in all the interviews that a very important reason for water scarcity is population growth, which is not linear but stepped due to waves of immigrants (e.g. interviews with governmental personnel 8, 14, 17, 18, 22, 25, and 42, with donors 28, 39, and 45, and with academics 3, 4, 7, 11). This reason was not simply mentioned, but emphasised by the interviewees, in reports, and articles as the biggest issue when it comes to why there is water scarcity in Jordan. For instance, a former minister of the MWI (interview 52) emphasised that in 1947 only 350,000 people lived in Jordan, "while today about nine million live here, therefore the per capita water share has decreased." A Jordanian professor underlined how "water scarcity has been caused and further exacerbated by the waves of refugees: in 2010 we had a population of about six millions, while today we are closer to ten millions. The resources have not increased. It's logical therefore that the increased demand due to a growing population is what brought us to this water scarcity crisis" (interview 11). Former minister of the Ministry of Water and irrigation (MWI) Munther Haddadin dedicates the first chapter of his book "Water Resources in Jordan" to the population issue, chapter co-authored with the geologist Elias Salameh[79]. In this chapter, as highlighted in Table 6.1, they say that "Jordan's population

[79] Salameh is the founder of the Centre of Water of the University of Jordan, member of the Royal Water Committee, and academic at the University of Jordan.

grew 11.5 times in 66 years, from 0.3 million in 1938 to 5.35 million in 2004, because of the abrupt influx of population in the wake of the turbulence that has been affecting the Middle East" (Haddadin, 2006: 24-25). This information related to the discourse of water scarcity are not new, as this sub-narrative was mentioned also more than twenty years ago as one of the key reasons for water scarcity by Salameh and Bannayan, who in 1993 wrote among the different reasons, "population pressure as a result of natural multiplication and refugee waves coming to Jordan" (Salameh and Bannayan, 1993: 1).

Table 6.1: Demography of Jordan over time

| **Year** | **Population of Jordan**[80] | **Major political event** |
|---|---|---|
| 1922 | 225,000 | Emirate of Transjordan founded in 1921 |
| 1947 | 473,200 | One year before the establishment of Israel |
| 1952 | 586,200 | After the 1948-1949 war with Israel |
| 1970 | 1,508,200 | Three years after the six days war with Israel, and the Israeli occupied the East Jerusalem and the West Bank. |
| 1989 | 3,144,000 | One year before the Iraq-Kuwait war |
| 1993 | 3,993,000 | Two years after the Iraq-Kuwait war |
| 2002 | 5,098,000 | One year before the war against Iraq |
| 2004 | 5,350,000 | One year after the war against Iraq |
| 2010 | 6,113,000 | One year before the Syrian crisis |
| 2012 | 6,388,000 | One year after the start of the Syrian crisis |
| 2015 | 9,500,000 | Three years after the start of the Syrian crisis |

*Source: Author's presentation of data from Department of Statistics of Jordan Yearbook 2013 (FAO, 2009: 6) and Haddadin (2006: 7), and CENSUS 2015 data (in Ghazal, 2016)*

This sub-narrative emphasises the refugees and waves of immigration from neighbouring countries rather than the natural fertility rate of Jordanians, which was never mentioned. Currently, the main focus of this sub-narrative is on the Syrian refugees' impact on the Jordanian water resources. The MWI is updating[81] the National Water Strategy "Water for Life" to include the impact of the Syrian refugees in Jordan on the water sector (interviews 8, 14, 17, 18, 22, 25). The MWI has also published the "Cost of hosting Syrian refugees on water sector of Jordan" report published in 2013 on the impact of the Syrian refugees on water resources both in the short term and in the long term, considering direct and indirect costs (MWI, 2013: 19-22). This text is often cited as a text supporting this sub-narrative by other governmental personnel, academics, and the media. Hana Namrouqa, environmental journalist for The Jordan Times, uncritically reproduces this aspect from the MWI in many articles,

[80] (estimated)
[81] At the time of writing, in August 2015

stressing the role of the Syrian refugees in increasing the water scarcity in Jordan:

> "The deteriorating regional conditions and turmoil have led to waves of hundreds of thousands of refugees flowing into Jordan, pushing it over time from being one of the world's 10 water-poorest countries in the world, to the fourth and now the second, according to ranking by the United Nations, Ministry of Water and Irrigation Spokesperson Omar Salameh told The Jordan Times. […]. The main challenge to the water sector, according to [the government coordinator for human rights report on challenges the water sector is facing], is the increasing demand for water due to the ongoing influx of Syria refugees into the country" (Namrouqa, 2014d).

In a different article, Namrouqa underlines this aspect in its opening sentences: "Jordan's climate and its growing population place enormous pressures on water, leaving the sector struggling with a severe supply-demand imbalance, according to officials. They added that the situation is only aggravated by the ongoing influx of Syrian refugees" (Namrouqa, 2013b). Al Rawashed emphasises in the newspaper in Arabic Al Rai how the Syrian refugees are putting an additional pressure on the already limited water resources in Jordan (Al Rawashdeh, 2012a). Also the newspaper in Arabic Ad-Dustour underlines that the Syrian refugees in Jordan are causing a serious reduction of the water resources in the country (Editor, 2014). A recent meeting in which the Jordanian Prime Minister Nsour declared to his Swedish counterpart that the refugees' crisis is aggravating the water scarcity issue in the country received high coverage in the Jordanian media (Editor, 2015).

Population growth, immigration, and refugees are reasons that are mentioned by donors and international organisations when discussing water scarcity. They acknowledge that population growth is putting a pressure on the water resources. This emerged in interviews 28, 39, 45, and also in several reports including a Japanese International Cooperation Agency (JICA) report that says that "the rapidly increasing population is putting heavy pressure on the limited water resources" (JICA, 2014: 3). However, international organisations and donors recognise that this is adding pressure on water resources in Jordan, but its impact is limited compared to the sub-narrative comprising the water mismanagement narrative, as analysed in Section 6.3 (ICRC, 2015: 16-17).

Overall, the sub-narrative of population growth, immigration, and refugees is

constructed through texts and interpretation of texts from the MWI, including the report on Syrian refugees, and declarations from governmental personnel, mainly from the MWI and the Ministry of Planning and International Cooperation (MoPIC).in the National Water Strategy, this sub-narrative is mentioned several times, for instance: "more pressure […] from changes in population, household formation and development, and lifestyle" (MWI, 2009: 1-1); and "the future challenges on water demand are enormous. Any unexpected growth due to regional instability, as was the case during the past decades, would increase water demand and impact the plans to reach a balanced demand and supply" (MWI, 2009: 2-2). In all declarations and reports about the water situation in Jordan the government always mentions and emphasises population growth, immigration, and refugees, as the main cause for water scarcity in the country (MWI, 2013, MWI, 2009). The broader socio-political-economic context constraints this sub-narrative, as the regional geopolitical dynamics, including wars and waves of refugees, contribute to shaping the production and interpretation of these texts. It is reproduced by media and backed by academics, whose thoughts often coincide with that of the government. This sub-narrative is partly supported and reproduced by donors and the international community, but behind closed doors they tend to be critical of over-emphasising this aspect as a natural one, rather than as a managerial or governance one (interview 59 with a UN senior water official).

This sub-narrative finds population growth as a reason of water scarcity, blaming the waves of refugees and currently the Syrian one, and the immigrants from neighbouring countries, therefore an external cause to Jordan or the Jordanian government. In so doing, it protects the current use made by Jordanians in other sectors, supporting the interests of the shadow actors, which remain untouched, overlooked, and free of blame. This sub-narrative blames the refugees and immigrants and shows that water scarcity is not caused by Jordanians, by the official or shadow actors overusing water, for instance in an unsustainable agriculture, but rather by the immigrants and refugees. Unsurprisingly, in none of the interviews or reports the population growth mentioned the natural demographic rate growth of Jordanians as an issue; no one has ever questioned the fertility rate of an average of four children; no one has ever blamed Jordanian couples for water scarcity, calling for birth rate control.

Concerning the prominence of this sub-narrative, I will consider only refugees and not immigrants as data are contested about the number of immigrants that are not refugees and also

about who is an immigrant and who is a Jordanian. Currently refugees[82] represent about a third of the population of Jordan, impacting one third of the water municipal use.[83] Concerning their impact on water use in agriculture, this is different as 90% of the food used in Jordan is imported and only 10% is nationally produced. For this reason, they would mainly impact the imported virtual water for their food needs, as the agencies are providing them with vouchers and not with in-kind food assistance.[84] Given the current uses by sector of: 37% for municipal, 58% for agriculture, 5% for industry, and 1% other; the refugees would impact on about 12% for municipal and an estimated 5-10% for the agricultural sector, for a total of 17-20% of the current water uses.[85] In relation to the prominence of the sub-narrative, the amount that refugees contribute to water scarcity is limited; resulting that in comparison to the other sub-narrative, this is a prominent one.

It results that this sub-narrative is constructed by the government mainly through governmental texts, declarations, and reports. The production and interpretation of these texts are influenced by the broader socio-political-economic context. This sub-narrative is generally accepted, reproduced, and reinforced by all major actors in the water sector. The government and most of the Jordanian actors blame refugees and immigrants, while the high fertility rate is overlooked and never mentioned. This sub-narrative, as appears in Figure 6.1 on page 87, strongly informs the water insufficiency narrative.

### 6.2.2 The sub-narrative of unfair sharing with neighbouring countries

The second sub-narrative under the water insufficiency narrative considers the issue of water scarcity as due to the unfair sharing with neighbouring countries of most of the surface water resources of Jordan, claiming that the Jordanian right to an equitable and reasonable use of all transboundary flows is not respected. The sub-narrative ranges between those who blame Israel and those that blame Syria. I argue in this section that the blame is on the riparian countries,

[82] Currently in Jordan more than two million Palestinians are registered with UNRWA in Jordan and almost one million Syrians with UNHCR. These numbers do not include those who are of Palestinian, Iraqi, etc., origins and live in Jordan not as refugees but that might have Jordanian citizenship. Considering only the officially registered refugees, the total amount would be of around three million people, out of the almost nine million people living in the country.

[83] This is an estimate as there is a variety of water uses according to the variety of lifestyle of different people. While as part of the Jordanian population many live in rural areas with lower water consumption, most refugees live in big urban areas with higher consumption. However, this also depends on the economic health of the different families.

[84] This is a broad estimate, as further studies could focus on the type of agricultural products cultivated in Jordan and to what extent they are part of the daily diet, etc. It would be roughly an estimate of 150-180 MCM

[85] Considering the data for the year 2011 of a total use of 899 MCM.

which are not giving a fair share of water resources to Jordan, either due to an unfair treaty – as in the case of Jordanian-Israeli relations – or due to the other country not respecting the existing treaty – as in the case of Jordanian-Syrian relations. The senior governmental officials reflect the governmental current position of defending the 1994 agreement per se and of stating that the Jordanian-Israeli agreement is overall being respected by both sides, not questioning the quality of the agreement. They also argue that the 1987 agreement with Syria is not being implemented and therefore respected by Syria. Instead, those that criticise Israel, instead, do so not on the basis of whether the agreement is respected or not, but they challenge the 1994 treaty as they see it as a bad agreement that does not guarantee an equitable and reasonable allocation of the flow to Jordan. Therefore, senior governmental officials are more likely to reproduce the official governmental position and therefore blaming Syria rather than Israeli for water scarcity in the country. Instead, low-ranking governmental personnel are more likely to reproduce the more popular perception of blaming Israel for the unfair allocation of the Jordan River resources. This is why certain groups blame Israel and other blame Syria. Lastly, some groups like the farmers blame both as they see that both on the Syrian and on the Israeli borders the other side is having a larger allocation of the shared water than the Jordanian side. Overall, I argue that most of the people and sources of this sub-narrative attribute the unfair water sharing to asymmetries in power.

On the one hand, from the interviews it emerged that current senior government personnel from the MWI, MoPIC, and the Ministry of Foreign Affairs (MFA) see the problem as lying in the relations with Syria over the Yarmouk. Instead, those at the Ministry of Agriculture (MoA) were more sceptical with seeing Israel as respecting the equitable and reasonable share of Jordan and saw in both Israel and Syria most of the reason for water scarcity in Jordan. On the other hand, low-ranking governmental employees, individuals, political parties, members of the parliament (MPs), former ministries, farmers associations, and NGOs consider Israel as the main obstacle to having an equitable and reasonable share of the transboundary water flow. This emerged in the interviews, including those with MWI staff (interviews 18 and 42), former MWI ministers (interviews 52 and 63), and NGOs (interview 72). Mohammad Najjar stated in 2010, when he was minister of the MWI, that "Jordan receives its allocated water shares in full under the Jordan-Israel Peace Treaty's second annex" (Namrouqa, 2010a). The current MWI, MFA, and MoPIC senior staff stressed that the problem lies in the relations with Syria, which is not respecting the 1987 bilateral treaty. This is also reported in articles in the newspaper in Arabic Al Rai, which underline that Syria is not giving

the right share of the Yarmouk to Jordan, undermining agriculture on the Jordanian side while supporting farmers on the Syrian side (Al Rawashdeh, 2012a, Al Rawashdeh, 2012b, Al Rawashdeh, 2011). Instead, a former MWI minister (interview 63), as well as a Jordanian NGO (interview 72) argued that the major problem is the 1994 agreement that does not ensure an equitable and reasonable allocation to Jordan. Adnan Khaddam, head of the Jordan Valley Farmers' Union, argues that Israel is not respecting the 1994 agreement, as "Israel's excessive pumping contravenes the Israel-Jordan peace treaty signed in 1994" and considered therefore taking legal actions against Israel (Miller, 2012). Several academics also believe that the 1994 agreement is a cause of water scarcity, and they reproduce this discourse in their articles. This is the case for instance with Hadadin[86], Qaqish, Akawwi, and Bdour from Balqa Applied University and Hashemite University both in Jordan. While describing the water scarcity situation in Jordan, they underline that "the situation has been intensified by the fact that Jordan shares most of its surface water resources with neighbouring countries; their control on water has partially disallowed Jordan of its fair share of water" (Hadadin et al., 2010: 197). This sub-narrative is reproduced also in the textbooks.[87] A geography teacher from the ministry of education underlined that in grade twelve they speak about political transboundary water governance (TWG) relations: they mention the quotas and allocations. They also say that Syria is not always respecting the agreement, as well as Israel in the past. They only give the facts and data on these issues, without judgements, and they are provided with these "objective data" from the Institute of Geography, the MWI, and the Department of Statistics (interview 24, person 2).

Only one donor emphasised in an interview (28) this element as a cause for water scarcity, while the other donors I interviewed overlooked this aspect. Nimry from The Jordan Times underlines that "shortages in Jordan are worsened by the fact that we share most of the surface water with neighbouring countries," seeing it as contributing, but not as sole cause, to the water scarcity in Jordan (Nimry, 2013). Al Hamidi writes in the newspaper in Arabic Al Rai that an important aspect of water scarcity is the fact that 90% of the surface water resources are shared with neighbouring countries. He underlines that the water of the Jordan River cannot be used for agricultural or industrial purposes by Jordan due to the continued pollution and

[86] Nidal Hadadin from the Hashemite University, Jordan, and not Munther Haddadin, former minister of the MWI.
[87] I focused on national curricula for primary and middle school from grade one until grade ten currently in use in Jordan. I analysed the textbooks of: science for grade one till eight; geography from grade six until grade ten; and earth and environmental science for grade nine and ten. Science is taught until grade eight, then it becomes earth and environmental science. Geography is taught since grade six.

violations from the Israeli side (Al Hamidi, 2012). As it emerges in Figure 6.1 on page 87, this sub-narrative is relatively less powerful than the population growth, immigration, and refugees' one as it is not often mentioned by donors and international organisations compared to the previous sub-narrative.

Concerning what it is meant by "fair", the interviewees never explicitly referred to international law or to the 1997 United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses. Concerning the Jordanian-Syrian hydropolitical relations, fair is perceived as having the bilateral agreement respected and not violated. Concerning the 1994 Jordanian-Israeli treaty, fair was used to describe both the correct implementation of the treaty, as well as to challenge the treaty itself comparing it to the provisions of the Johnston Plan, which were perceived as more fair than the 1994 treaty.

Concerning the texts that are the source of interpretation for this element, the 1987 and 1994 treaties between Jordan and Syria, and between Jordan and Israel are the main sources. In a comparative way, also the Johnston Plan is a source of interpretation for this element. The broader socio-political-economic context influenced the production and interpretation of the texts, for instance the historical background and the geopolitical dynamics influence actors' identities and interests, and the way they interpret and produce texts.

Concerning the prominence of this sub-narrative, from a water resources manager perspective the impacts on water scarcity could be measured in several ways, including: looking at the allocation to Jordan agreed in the bilateral agreements and to what extent it is respected; considering the historical flows of the 1950s assuming those rivers were not shared; or comparing today's Jordanian uses to the Johnston plan allocation. Given the relevance of the political context and of bilateral treaties in determining the Jordanian share, I analyse the first option. According to the 1987 agreement on the Yarmouk River, Jordan is entitled to 208 million cubic meters (MCM) a year, but in practice Jordan rarely receives more than a third of its share (interviews 3. 4, and 7 with Jordanian academics), with a reduction of 130-150 MCM from the agreed share. From the Jordan River, according to the 1994 agreement with Israel, Jordan is to receive around 80-100 MCM a year from Israel (Beaumont, 1997: 422-423), but in practice it receives 50-60 MCM a year; a reduction of 30-40 MCM a year compared to some estimates.[88] In total, this means a shortcoming of about 180-200 MCM a year compared to what was agreed in the bilateral agreements. These numbers give an indication of the prominence of

[88] The quantities concerning the 1994 agreement between Jordan and Israel are still contested. This aspect will be further discussed in chapter 8.

this sub-narrative. While this sub-narrative is discursively less prominent than the one due to refugees and immigration, it seems that its impact on water scarcity according to a water manager would be higher. Therefore, it contributes more to water scarcity than the previous sub-narrative, but it is less discursively powerful.

Overall, this sub-narrative is constructed and strongly emphasised by the government, and is generally accepted and is aligned with the thoughts of academics, MPs, political parties, media, and NGOs. The key texts are the treaties and declarations of relevant politicians and water professionals. Production and interpretation of these texts is influenced the broader socio-political-economic context, including issue-linkages, the historical background, and geopolitical dynamics. Donors and international organisations are more lukewarm about this sub-narrative. The government and most of the Jordanian actors blame either Syria or Israel or both, externalising the blame towards the neighbouring countries. This sub-narrative, as appears in Figure 6.1 on page 87, strongly informs the water insufficiency narrative.

### 6.2.3 The sub-narrative of climate change as an additional pressure

The third sub-narrative under the water insufficiency narrative sees water scarcity as due to the impacts of climate change and climate variability to the water sector. Those are identified in temperature increases, decrease in precipitation, droughts, and increase in evaporation. These are resulting in a reduced recharge of aquifers and surface water, and in a decrease in the quality of surface and groundwater resources (MoE and UNDP, 2014: 21).

In the interviews and reports, climate change was mentioned as one of the causes of water scarcity, although not as the major one, but it still emerged as a relevant sub-narrative: climate change was seen as adding a pressure to water scarcity. This aspect emerged during the interviews with academics, ministerial employees, donors, and NGOs (for instance interviews with academics 3, 4, 7, 11, 30, with the MWI staff 8, 14, 17, 18, 22, 42, with donors 16, 28, 45, and with NGOs interview 48)(Earle et al., 2015: 55). In the interviews, no one challenged or denied the impacts of climate change in Jordan. The Ministry of Environment (MoE) and the United Nations Development Programme (UNDP) backed and voiced this sub-narrative through key texts and reports, within and in line with the global discourse of climate change produced by the United Nations Framework Convention on Climate Change (UNFCCC). Texts mentioned as sources for this information are the Jordan National Communication to the UNFCCC (MoE and UNDP, 2009, MoE and UNDP, 2014), the 2013-2020 Jordan Climate

Change Policy (MoE and UNDP, 2013), and the national water budget reports of the MWI. In light of the second and third national communication to the UNFCCC, the MWI is updating the National Water Strategy to include the impacts of climate change, which were overlooked in the 2008 edition.

The former minister of environment Khalid Irani stated that "at the adaptation front Jordan is facing a severe challenge in water scarcity to be magnified by the impacts of Climate Change," seeing climate change as magnifying and putting an additional pressure to water scarcity (MoE and UNDP, 2009: 1). Media reproduces several times the governmental position also on this sub-narrative: for instance, journalist Hana Nimry underlines that "this stress is a result of several factors, including […] impact of prolonged dry climatic conditions and a high population growth, of 2.8 per cent per year. All these factors have aggravated an already critical situation" (Nimry, 2013). Namrouqa went even further claiming that "climate change has already caused a 30 per cent reduction in the kingdom's surface water resources," not providing any source apart from "experts believe" (Namrouqa, 2009a). Also Al Rawashdeh mentions in the newspaper in Arabic Al Rai climate change as contributing to the decrease of the water resources in northern Jordan (Al Rawashdeh, 2011). The environmentalist Wardam describing the initial findings of the mentioned reports on the impact of climate change on the Jordanian water resources, underlines that "the reality check of the expected water situation in the Kingdom is alarming. This is common knowledge, even to schoolchildren in the country, but the exact nature of the combined impact of climate change on the already exhausted water supply has barely been studied" (Wardam, 2009). Jordanian academics' thoughts are also aligned and coincide with the governmental position of seeing climate change as adding a pressure on water scarcity, backing this sub-narrative, as emerges for instance in the words of Al Omari, Salman, and Karablieh from the University of Jordan: "the impact of climate change on water resources and demands in arid and semiarid regions like Jordan is projected to be severe. […] Challenges that complicate the water situation in Jordan, especially when coupled with the projected negative impacts of climate change" " (Al-Omari et al., 2014: 2). Donors also reproduce this element in their conferences, reports, and declarations. For instance the German donor agency (GIZ)[89] in their "Management of Water Resources" section, state that

[89] The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH was formed on 1 January 2011. It brings together the long-standing expertise of the Deutscher Entwicklungsdienst (DED) GmbH (German development service), the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH (German technical cooperation) and InWent – Capacity Building International, Germany. For further information, please visit http://www.giz.de/

"with less than 150 cubic metres of water available per capita each year, Jordan ranks among the world's most water-poor countries. This situation is exacerbated by the impacts of climate change" (GIZ website[90]). Also USAID emphasises repeatedly the climate change aspect, for instance stating on their website that "Jordan is among the driest countries in the world, and climate change trends threaten an even more arid future" (USAID website[91]).

This sub-narrative finds in climate change an additional pressure on water scarcity, blaming nature and the environment. The causes of climate change are seen as for the most part external to Jordan and therefore not particularly Jordan's fault. This means that the reasons for water scarcity are considered external to the Jordanian government, and the blame is externalised.

Concerning its prominence, apart from the suggested data of Namrouqa (2009) from The Jordan Times, who reported that due to climate change a 30% surface water reduction has already taken place in Jordan providing no references, there are different projections on the impact of climate change on Jordan as several studies attempt predictions of its impact on Jordan. However, they overall agree that climate change will contribute to decreased precipitations, which would have an impact on the surface water resources and on the regeneration of groundwater resources (MoE and UNDP, 2013: 24-25). As discussed in the background chapter (Chapter 5), all groundwater resources are currently over-exploited; their quality and quantity are decreasing due to over-pumping beyond their safe-yields limits with an average over-abstraction that stands at 159% of the renewable average of recharge, ranging between 146% for the minor aquifers to 235% for the major ones (El-Naqa and Al-Shayeb, 2009: 2380). For this reason, it is difficult to quantify what the exact impact of climate change per se is and will be, but is seen as intensifying and adding a pressure to existing problems.

In summary, key texts are governmental reports that also reproduce texts of donors and international organisations. The MoE and UNDP back this sub-narrative in line with the global discourse of climate change. It is reproduced by governmental institutions, media, NGOs, academics, and donors. The official and shadow actors support this sub-narrative as it externalises the blame of water scarcity to the nature and the environment, as Jordan does not contribute a lot to the causes of climate change. Overall, climate change is seen as adding pressure to water scarcity, but not as a central cause of the problem.

[90] https://www.giz.de/en/worldwide/17213.html consulted on the 15th of February 2015
[91] http://www.usaid.gov/jordan/water-resources-management visited on the 22nd of May 2015

### 6.2.4 The sub-narrative of Jordan as an arid and semi-arid region with low precipitation

The fourth sub-narrative under the water insufficiency narrative sees the issue of water scarcity as due to the arid and semi-arid territory with low precipitation in which Jordan lies; territory where the precipitation rate is less than 200 mm in around 90% of the country. This sub-narrative emerged several times in interviews with academics (interviews 3, 4, 7, 11) and employees, managers, and directors at the MWI and MoA when asked why there is water scarcity in Jordan (interviews 8, 9, 14, 17, 18, 22, 25, and 42).

Academics, NGOs, governmental reports, and donors contribute to reinforce this sub-narrative. For instance, the first paragraph of an academic article of Ghanem, from the University of Jordan, underlines that *"*a large part of Jordan is arid and semi-arid, about 90% of its area has an annual rainfall totally less than 200 mm on average, most of it evaporates back to the atmosphere" (Ghanem, 2013: 203). Munther Haddadin, former minister of the MWI, when describing the Middle East and North Africa (MENA) region, also emphasises that the "MENA has the most desert and arid areas per capita" (Haddadin, 2001: 461). The governmental voice reproduced by media emphasises that "Jordan, the world's second water poorest country […] relies mainly on rainwater, but only 1.1 per cent of its total area receives an average of 400-600 mm of rain a year, according to official figures. Approximately 91 per cent of Jordan's total area of 97,000 square kilometres is situated in arid areas with an annual rainfall average of 50-200 mm, while 2.9 per cent of the country's land is categorised as semi-arid" (Freij, 2014). Jordan is defined in the MWI reports as a "resource-starved" country and "is classified as semi-arid to arid region with annual rainfall of less than 200 mm over 90% of the land" (MWI, 2014a: 3). Also, Rania Abdel-Khaleq, manager at the MWI, wrote with Dziegielewski in an academic article that "Jordan is a semi-arid country with very limited freshwater resources" and went on emphasising the aridity of the country as a cause for its water scarcity (Abdel Khaleq and Dziegielewski, 2006: 216). Limited precipitation and the arid nature of Jordan were also mentioned as causes of water scarcity in two interviews with donors (interviews 28 and 45), but the interviews with donors generally did not focus or even mention aridity as a main cause of water scarcity.

Concerning the texts that are a source of interpretation for this element, the water budget reports of the MWI and the reports of the water research studies unit in the ministry were mentioned by several governmental interviewees in order to show and prove the low

precipitation rate in Jordan. This sub-narrative is backed by the government, mainly the MWI and its reports, and coincides with the thoughts of different ministries, academics, and a few donors. The cause for water scarcity in this sub-narrative is identified in the low precipitation and the semi-aridity and aridity of the country, blaming therefore nature and natural conditions of the environment in which Jordan is located. This means that water scarcity is understood as due to the low precipitation in the country, which have made of Jordan a semi-arid and arid territory. It results that, as for the previous sub-narratives examined for this water insufficiency narrative, the blame is externalised towards nature and the environment. The interest of the official and shadow states is to move the attention and the blame from internal to Jordan, in particular from the shadow actors like farmers and their unsustainable agricultural practices, towards outside of Jordan, in this case towards the nature and the environment.

Concerning its prominence, this sub-narrative seems in line with the definition of arid and semi-arid regions, which are areas with rainfall zones of 0-300 mm for arid and 300-600 mm for semi-arid areas (FAO, 1987). As discussed in the background chapter (Chapter 5), rainfall in Jordan ranges between 50 mm and 650 mm, with over 90% of the country receiving less than 200 mm per year and an overall average of 80 mm (FAO, 2009: 233)[92]. This is a condition of the hydrological characteristics of this area and rainfall patterns are predictable, even if low. The alteration of those patterns has been examined in the sub-narrative discussing climate change. Overall, the natural characteristic of aridity is a description of the current hydrological situation and difficultly quantifiable.

Overall, the government, in particular the MWI, backs this sub-narrative. Key texts are governmental reports, produced especially by the MWI. It is reproduced and aligned with the thoughts of academics and governmental institutions, while donors do not particularly mention it. This sub-narrative externalises the blame of water scarcity to the nature and the environment, in this specific case on aridity and low precipitation.

### 6.2.5 Summary

The water insufficiency narrative is composed of four sub-narratives: population growth, immigration and refugees; the unfair sharing over the transboundary water resources with neighbouring countries; climate change as an additional pressure; and aridity and low

[92] As of 2005, according to FAO. 2014. AQUASTAT database, Food and Agriculture Organisation of the United Nations (FAO). Website accessed on the 30th of December 2014

precipitation. Key texts for its production and interpretation are governmental reports and declarations. The processes of construction and interpretation are also influenced by the broader socio-political-economic context. I argue that this narrative externalises the causes and the blame for water scarcity to external actors: the nature, immigrants and refugees, and neighbouring countries. This narrative is sanctioned by the government and by the shadow actors, and is a dominant narrative as it reaches and coincides with the thoughts of academics, media, and NGOs, going beyond the government. Also donors and international organisations mention these sub-narratives, albeit with lower emphasis. For Zeitoun, the powerful actor makes its discourse be 'heard' and have impact also outside its own political domain (Zeitoun, 2008: 43). This is the case of this narrative, which is widely accepted beyond governmental actors.

The first sub-narrative describes water scarcity as due to population growth, immigration, and refugees, emphasising the immigration and refugees aspect and overlooking the high fertility rate of Jordanians. This sub-narrative is constructed by the government, and is generally accepted, reproduced, and reinforced by all major actors in the water sector. The second sub-narrative considers the problem of water scarcity as linked to the unfair sharing with neighbouring countries of most of the surface water resources of Jordan, claiming that the Jordanian right to an equitable and reasonable use of all transboundary flows is not respected. This sub-narrative is: constructed and strongly emphasised by the government; generally accepted and aligned with the thoughts of academics, MPs, political parties, and NGOs; not backed by donors and international organisations, who are more lukewarm about it. The third sub-narrative sees climate change as adding a pressure to the scarce water resources. The MoE and UNDP back this sub-narrative in line with the global discourse of climate change. Governmental institutions, NGOs, academics, and donors reproduce it as their positions coincide with it. The fourth sub-narrative believes that the issue of water scarcity is due to the arid and semi-arid territory with low precipitation in which Jordan lies; territory where the precipitation rate is less than 200 mm in around 90% of the country. The government, in particular the MWI, backs this sub-narrative. It is reproduced and aligned with the thoughts of academics and governmental institutions, while donors do not particularly mention it.

The government and the MWI in particular, through the production and interpretation of key texts, which are MWI and MoE publications and reports, and bilateral treaties signed in 1987 and 1994, construct and strongly inform the sub-narratives and this narrative. This narrative is reproduced by academics, and local NGOs, which are mainly aligned with the

governmental positions. Media reproduces the governmental positions, meaning all the four sub-narratives. Donors and international organisations mention these sub-narratives, but not with high emphasis and often result to be lukewarm or they overlook some of the mentioned sub-narratives.

The water insufficiency narrative blames factors external to the government or Jordan's circle of influence and responsibilities: immigration and refugees influx; external countries and regional political situation; climate change; and nature and environmental conditions. Being the causes identified as external, the blame is also on external elements: nature, refugees, and neighbouring countries. This implies that the blame is not within the country, for instance the government, the big water consumers, or influential elites. In a nutshell, the shadow actors remain untouched and free of blame. Chapter 7 analyses how this narrative opens certain solutions, which are in line with the interests of certain ministries and shadow actors.

### 6.3 The water mismanagement narrative

This section analyses the water mismanagement narrative, which identifies the reasons for the issue of water scarcity on the mismanagement of the water resources (Rijsberman, 2006: 3). This narrative attributes water scarcity primarily to bad governance and mismanagement of the water sector, and a lack of economic investment and development of the water resources, de-emphasising the causes promoted by the water insufficiency narrative. This section examines the sub-narratives comprising this narrative, which are: Non-Revenue Water (NRW) due to leakages and physical losses, NRW due to illegal wells and illegal uses, and the unsustainable agricultural water use.[93] For each sub-narrative, this section examines the actors constructing them, their interests, the key texts, and where the blame lies. It also attempts to understand approximately the "prevalence" of each sub-narrative in relation to their contribution to water scarcity. The findings are summarised in Figure 6.2 on page 132.

[93] NRW is different from Unaccounted for Water (UFW) because the latter is water produced by a provider but not billed due to losses, illegal uses, and wrong metering. NRW instead includes UFW plus authorised unbilled uses like uses for public buildings, fire-fighting, etc. (IB-NET, 2005). In the case of Jordan most reports use NRW rather than UFW. For this reason, it is more practical to consider NRW rather than UFW for the scope of this thesis.

### 6.3.1 The sub-narrative of Non-Revenue Water: leakages and physical losses

The first sub-narrative under the water mismanagement narrative identifies the main reason for water scarcity in the striking percentage of water resources lost in Jordan because of NRW due to leakages and physical losses, and calls for a better management and governance of the sector. In the interviews with donors and international organisations, NRW due to leakages and physical losses strongly and overwhelmingly emerged as one of the main causes for water scarcity in the country.

Reports, declarations, and studies of donors, international organisations, and water utilities highlight NRW due to leakages and physical losses as a major cause of water scarcity in Jordan. In the interviews, when they were asked about the causes of water scarcity in the country, they have always mentioned the elements of this sub-narrative as a very important aspect causing water scarcity. For instance, JICA's report underlines that in Jordan "NRW reaching more than 50% of water produced as of 2002, is becoming an urgent issue" both in urban and agricultural areas (JICA, 2014: 3). Hani Kurdi, Deputy Chief Program Officer of JICA Jordan emphasises that "reducing the high ratio of Non-Revenue Water (NRW) in the networks is one of JICA technical assistance projects" in order to improve "efficient management and effective use of water resources" (JICA, 2014: 6). Also GIZ identified NRW due to leakages and physical losses as a major issue, and has been working through projects aiming at reducing physical losses through improving the pipelines network and the metering system. It has been doing so by involving the private sector and enhancing their participation and partnership with the public sector (Luck, 2008). GIZ's focus is on increasing efficiency by reducing NRW, however focusing more on the physical losses rather than on the illegal uses and losses (ibid.). Also USAID, through the Millennium Challenges Cooperation and the Institutional Support and Strengthening Program (ISSP), focuses on NRW due to leakages and physical losses, and links it to the performance of the water utilities in Jordan. For USAID, the high level of NRW in the case of the water utilities of Miyahuna and Yarmouk Water Company (YWC) means that the performance of the management of the water resources needs to be improved at the company level through institutional reforms (ISSP, 2012a: 31-32). This emerges from the report, which emphasises that "tightly linked to the utility performance […] is the issue of nonrevenue water" (ISSP, 2012a: 31). Also, "it is essential that skills of the NRW detection and reduction are transferred to the local utility, and that NRW reduction is institutionalised" (ISSP, 2012a: 33). UN agencies and other Western donors also underlined in

the interviews that NRW due to leakages and physical losses is a major reason for water scarcity in Jordan (interviews 81, 89, 32, 45, 58, 59). As the head of the water program of a donor agency said, it makes no sense to pump expensive water from Disi, which is a non-renewable aquifer, for 300 km to Amman if 50% is then lost due to leakages and physical losses (interviews 81 and 89). The Jordan Times mentioned NRW due to leakages and physical losses only in relation to projects of JICA, USAID, and GIZ relating to improving the pipeline system, or through improvements on the metering system (Ghazal, 2010b, Ghazal, 2010a). Even if the government and the MWI acknowledged this cause as contributing to water scarcity, it was always de-emphasised in reports and during the interviews. As the former minister of the MWI Jamani puts it, "even with improving water efficiency, reducing water loss and wisely managing every drop of water, the country will still suffer from a water deficit," calling then for focusing on the causes identified by the water insufficiency narrative (Namrouqa, 2012b).

The texts sources of this sub-narrative and mentioned in interviews and reports are: the yearly reports of water utilities; and studies produced by ISSP, which is a USAID/Jordan program for supporting the MWI's efforts to improve the management of the water sector. The blame is on the poor management and bad governance of water resources; blaming mainly the water companies and the public sector institutions Water Authority of Jordan (WAJ) and the Jordan Valley Authority (JVA) within the MWI, which are responsible for water utilities and for the sewage systems in the country. The discourse of marketisation influences the framing of this sub-narrative, blaming the public institutions and emphasising their mismanagement and their economic inefficiency. The norm supporting and reproduced by this sub-narrative is that water scarcity is due to mismanagement. Another related norm picked-up from the interviews is that the private sector is more efficient than the public sector. These norms influence the interpretation of the texts in the discursive practice dimension. The discourse of marketisation drives this sub-narrative towards new and more efficient institutions and for solutions involving a stronger involvement of the private sector, as further discussed in Chapter 7. For instance, USAID's ISSP project, which pushes the MWI to promote institutional reforms in the water sector by further involving the private sector, aims at reducing water scarcity primarily by reducing NRW in Jordan (interviews with donors and MWI managers 39, 45, 49, 51).

Overall, the main actors backing this sub-narrative are donors, international organisations, and the water utilities, and they do so through the production of texts, meaning their reports, declarations, and studies. This sub-narrative blames water scarcity on the poor

management and bad governance of water resources: blaming mainly the water companies and the public sector institutions WAJ and the JVA within the MWI, which are responsible for water utilities and for the sewages systems in the country. This is why the government and the MWI are lukewarm in discussing NRW due to leakages and physical losses as a reason for water scarcity. The norms supporting and generated by this sub-narrative are: water scarcity is due to mismanagement; and that the private sector is more efficient than the public sector. As further discussed in Chapter 7, reforms for corporatisation of water utilities are discursively supported by this sub-narrative. The prominence of this sub-narrative is analysed at the end of the next section.

### 6.3.2 The sub-narrative of Non-Revenue Water: illegal wells and illegal uses

The second sub-narrative under the water mismanagement narrative considers NRW due to illegal wells and illegal uses as among the main reasons for water scarcity in Jordan. Until 2013, the focus when discussing NRW was mainly on the water lost due to leakages, while the government and the MWI overlooked the issue of water theft and illegal wells. In August 2013, the new minister of the MWI Hazim Al Nasser started a campaign against illegal wells, which originated new framings of this sub-narrative from the governmental officials. While before 2013 only donors, international organisations, and a few academics mentioned NRW due to illegal wells and illegal uses, after 2013 the MWI and the government backed it also.

Before 2013, media focused on NRW due to leakages and physical losses rather than on NRW due to illegal wells and uses; and it did so in relation to projects of JICA, USAID, and GIZ relating to improving the pipeline system, or through improvements on the metering system (Namrouqa, 2013a, Luck, 2008, Ghazal, 2010b, Ghazal, 2010a). Before 2013, NRW in relation to illegal uses and thefts was mentioned only in articles reporting declarations of Miyahuna, the Amman Water Company, and their difficulties in collecting revenues and their losses due to illegal connections (Namrouqa, 2008, Namrouqa, 2010b). USAID pushed for the MWI to tackle the issue of illegal wells as emerges in the following USAID/Audit report:

> Mission officials noted that during negotiations over the draft list of conditions precedent, Government of Jordan officials requested that mission staff remove one condition. It required the Government of Jordan to shut down 50 illegal wells. Although closing the illegal wells would increase Jordan's water

> sustainability by decreasing nonrevenue water, Government of Jordan officials could not achieve the condition precedent because of political pressure from influential agribusiness owners (USAID, 2011: 5-6).

Interviews with personnel from the international organisations and donors' agencies showed that NRW due to illegal wells and uses is seen as a major obstacle for an efficient water sector, and they also identified in certain shadow actors, like big farmers and tribal leaders, the reasons why the government did not act against the violations (interviews 58 and 59). This shows that before 2013 donors, USAID in particular, were pushing the government of Jordan to close the illegal wells. However, this was not possible due to political pressure from within the shadow states, as emphasised by the USAID reports, which call it "influential agribusiness owners," and by interviews with donors and UN agencies in Jordan (USAID, 2011: 5-6) ( interviews 45, 58, and 59). In particular, it emerged that while the MWI saw the illegal connections and uses as an issue to be tackled, the MWI did not push for this until 2013.[94] This is due to consideration of the broader socio-political-economic context, in particular domestic concerns, which influenced the process of texts production and interpretation in the discursive practice dimension.

Since August 2013 the so-called "illegal wells campaign" was launched by Hazem Al Nasser, minister of the MWI. However, this campaign is not a new one, but rather a new focus on the issue of so-called illegal wells, in conformity to the 2002 groundwater bylaw. When launching it, the minister stated that "this is a high-level decision, which calls for respecting the law and achieving justice… nobody has the right to claim that they are above the law, whatever their… political, tribal or social background may be," adding that the objective is to close all illegal wells in the country (Namrouqa, 2013f). This willingness to implement the legislation, according to high officials of the MWI and to academics, started in 2013 because of the new emphasis and energy of this new minister (interviews 7 and 42). Penalties for illegal wells became much higher, and now ministries of interior and police are supporting the campaign, cooperating with the MWI (interview 18 and 42). This is important because in the

[94] Ali Subah not mentioning NRW due to leakages as a cause for water scarcity or water problem in Jordan in 2012: http://www.envirosecurity.org/essmed/june2012/presentations/II-B_Jordan_Ali_Subah.pdf but then mentioning it during a specific presentation on groundwater governance during the same year: http://www.fao.org/fileadmin/user_upload/groundwatergovernance/docs/Amman/Presentations/PS2_Ali_Subah.pdf websites visited on the 2nd of April 2015

past the MWI personnel was often not able to implement the legislation because they were threatened by farmers, even with guns (Wardam, 2004: 79) (interviews 7, 11, 42):

> Water Authority of Jordan (WAJ) employees in the northern Governorate of Ajloun were recently attacked after installing devices to prevent water theft, according to authorities. [They] threw stones at the WAJ workers and damaged newly installed water devices, an official at the Ministry of Water and Irrigation, who asked to remain unnamed, said yesterday (Namrouqa, 2009b).

The government also approved regulations to make working permits, electricity connection, loans, etc. always conditional on a clearance from WAJ; therefore if a person has an illegal well, all his economic and professional activities will be suspended (Namrouqa, 2014a). For this campaign the MWI also involved the religious authorities, who issued a religious edict, known as fatwa, against water theft and violations to the water networks (Namrouqa, 2013d).

Since the campaign, this sub-narrative is not silenced by the government and media anymore, and it became 'talkable', and this emerges from extensive media coverage. For instance, Namrouqa, who never particularly focused on this issue before the campaign, in 2014 uncritically reports the new voice of the MWI, with an article titled "70% of water loss in Jordan blamed on theft, illegal usage - ministry" (Namrouqa, 2014a). Also the newspapers in Arabic have been following, reporting on, and reproducing this sub-narrative since 2013. In Al Rai, for instance, several articles appeared emphasising the successes of this campaign, while Wardam in Ad-Dustour has underlined the necessity of continuing with this campaign (Zakarneh, 2015, Wardam, 2013).

However, while in theory the campaign aims at closing the illegal wells, which are mainly owned by influential actors such as large farmers in Azraq or powerful individual around Amman, in practice the government is implementing the campaign mainly towards non influential and powerful actors. In fatc, after a closer look at how the campaign is being implemented in relation to the shadow actors, it emerges that the targets of the campaign, in practice, are not the influential actors, but rather, once again, the poor and marginalised individuals (interview 11). This emerges, for instance, from the operations in Lubban, a village south of Amman, mainly populated by the influential Fayez tribe (interview 26). The WAJ employees tried to close a number of illegal wells there, but they were denied access and had

to negotiate and agree with the influential people within the tribe on which wells to close (Namrouqa, 2014c). According to non-mainstream academics, the MWI accepted to close only eight illegal wells which already were non-operational (interview 11). In this way, the shadow actors were not impacted, while the MWI saved its face in front of the media, which reported the governmental version. And so did Namrouqa of the Jordan Times (Namrouqa, 2014c). Also, illegal wells in the Disi area of influential people related to the royalty and illegal wells of the economic-political elite in the Azraq area have not been closed, yet (interviews 11 and 55).

Interestingly, in the process of text interpretation in the discursive practice, the blame tends to be on the domestic individual users rather than on the agricultural users (interview 45). In interviews with senior officials of the MWI, it emerged that the main problem related to the illegal wells is water stolen for selling and for domestic uses, overlooking the agricultural aspect (interview 18 and 42). Given that the highest number of illegal wells for agricultural uses is in the Azraq area, from data from the MWI-WAJ itself, it is indeed surprising that it was overlooked (interview 15).[95] Overlooking the unlicensed wells in the agricultural sector seems to be an attempt to protect the shadow actors, meaning the farmers' lobby, the influential agribusiness men, and the big interests that the sector hides. Elements of the shadow states, influential people from Amman that have invested in the 1980s and 1990s in big farms in Azraq area, have high interests in maintaining the status quo and current uses in the agricultural sector in Azraq governorate.

According to donors, the influence of the shadow actors also emerges in the clause added by the MWI to save some illegal wells (interview 45). The clause is an exemption for illegal wells that provide socio-economic benefits. This exemption may be a legal way to protect and save shadow actors as it is a legal way to legalise some non-licensed wells. A study has been recently concluded by ISSP and the MWI to verify which wells are bringing economic and socio benefits to households, or if the owner are simply business-men from Amman or elsewhere (ISSP, 2014). The first findings of this same study also confirm that most of the illegal wells are in the Highlands: in north-western Badia, in the areas of Mafraq and of Azraq (ibid.). The owners are mainly Jordanian business men part of the political-economic elite

[95] A current study of a donor organisation found that Mafraq is the leading basin in the total estimated abstracted groundwater for agricultural use followed by Azraq, and results also show that 73% of the total abstracted groundwater was used by large farmers. By large farmers I refer to 382 farms with greater than 20 ha. A study will be published by ISSP this year on this issue (interview 45).

(interview 45). Large farms are mainly in Mafraq, but they can be also found in Azraq. This is due to the low depth of the groundwater in Azraq (interview 42) (ISSP, 2014).

As further discussed in Chapter 7, I argue that the shadow actors play an important role mainly in influencing the implemnentation of the solutions opened by the narratives, playing an important role in the social practice dimension. This is one of the reasons why the legislation, which was in place since 2002, has not been implemented. This appears, for instance, from: the removal of the clause in the USAID reports discussed above; interviews with donors and UN agencies; the MWI blaming the domestic illegal uses rather than the illegal wells in the agricultural sector; the clause to save certain illegal wells from this campaign; and the MWI and governmental focus until 2013 on the NRW due to leakages and physical losses. Governmental actors also influenced this sub-narrative through shaping the interpretation of the texts, and this emerged also in the analysis of the media articles until 2013 concerning NRW, which was seen as a technical rather than as a legal issue. The government was promoting the interests of the shadow actors by framing this sub-narrative as a technical issue of leakages and losses. This was to maintain the status quo of both legal and illegal uses, which benefited the shadow actors. In a statement of the previous minister of the MWI Jamani, he underlines how the focus for solving the water scarcity problem in Jordan should not be on NRW: "highlighting Jordan's critical water situation, Jamani noted that even with improving water efficiency, reducing water loss and wisely managing every drop of water, the country will still suffer from a water deficit" (Namrouqa, 2012b).

The last aspect that needs to be examined within this campaign is the concept of illegality. This concept is an issue because it could be subjective, as the more powerful actors can decide whom to include or exclude from the legality sphere. This campaign is supposedly against people who have illegal wells. As emerged from an interview with a UN official, it seems that the concept of legality of wells is rather controversial: if you have good connections and personal networks (*wasta*), then you will easily manage to get your application for a permit approved, and therefore legalise your well. If you are a marginalised individual with no influence or no connections then your well will be an illegal one, even if it is acknowledged by the MWI-WAJ and if you have been paying for its usage (interview 55, 58, and 67).

In this way, the discourse can be shaped towards a dichotomy view of those who have illegal wells and those who have legal wells; in other words between those that managed to obtain a license and those who did not. The blame is on those that do not have a license, most of the time those are the marginalised people with no connections and influence to manage to

have a license, and who use water mainly for domestic use. In addition, the blame is on those, who use the illegal wells for domestic use rather than for agricultural purposes. The members of the shadow states belong mainly to the latter group. In this way, the legality concept hides the issues of sustainable use of water in agriculture, discussed in the next section. Ad hoc clauses to save some illegal wells have also been included to transform illegal wells into legal wells, attempting to save some shadow sctors that did not obtain a license. Overall, the discourse is protecting once again the shadow actors, their interests, and the current water uses. It results that the water scarcity issue is seen as a "home-made" and demand side problem rather than an external and supply side one. The blame is on actors within Jordan, and therefore for the donors and the international organisations, the government should reduce NRW due to illegal wells and uses, improve the governance and management of the water sector, in order to face water scarcity.

Concerning the prominence of the sub-narrative about NRW, I here consider both sub-narratives together as overall data for NRW are less contested. While the Jordanian water network pumps an average of 400 MCM a year, it is estimated that around 50% is NRW due to losses and illegal uses, therefore an average of about 200 MCM a year. Of this, triangulating data from academics, journalists, and the MWI, it seems that about 70% would be due to illegal uses and 30% to leakages and physical losses (Abdullah, 1950: 17, Al-Ramahi, 2008) (interview 7 to a Jordanian academic). However, those are only estimates and not uncontested data. Moreover, NRW due to illegal use are contributing to water scarcity from an economic perspective, but unlike NRW lost due to leakages, it is water being used and therefore it could be argued that it should not be seen as contributing to water scarcity. NRW due to losses, at the same time, could be seen as not lost as it penetrates in the aquifers, contributing to regenerating them. However, it is *economically* lost from the perspective of the water utilities. Overall, from a prominence perspective, it can be said that NRW due to illegal uses should be more prominent than NRW due to losses at a ratio of around 70% to 30%. In comparative terms with the previous sub-narratives, while this sub-narrative is discursively less prominent than the one on population growth, immigration, and refugees or the one on the unfair sharing with neighbouring countries, this sub-narrative seems to be contributing more to water scarcity than the other two. For this reason, it is discursively less prominent than the other sub-narratives.

Overall, the NRW due to illegal wells and illegal uses sub-narrative is constructed by donors and international organisations, and since August 2013, by the MWI as well. Before 2013 it was constructed through key texts of donors and international organisations, including

their reports and declarations, and it was overall de-emphasised by the government. After 2013 the government sanctioned it and became vocal in reproducing it. The minister's declarations and MWI reports in cooperation with donors became the main texts of interpretation of this sub-narrative, reproducing donors and international organisations reports. For the donors and international organisations, this sub-narrative blames the governance and management of the water resources: the illegal users and elements of the shadow states; the MWI and its agencies, which are seen to be under pressure, limited in their capacity, and not able to face the pressures of the shadow actors. According to the MWI and the government, it blames the illegal water users mainly at the household and domestic level rather than the agricultural sector. Instead, for the donors it is mainly the large farmers that should be blamed for illegal uses of water for agricultural purposes. The governmental and shadow actors influence this sub-narrative in the process of text interpretation, firstly by de-emphasising it until 2013, and then since 2013 by blaming domestic illegal water users rather than agricultural ones, as well as by the construction and focus on the concept of illegality. The norms supporting and reproduced by this sub-narrative are that water resources are badly managed in Jordan, and that the private sector is more efficient than the public sector in water governance, implementing regulations, and collecting revenues.

### 6.3.3 The sub-narrative of the unsustainable agricultural water use

The third sub-narrative under the water mismanagement narrative is that water scarcity is due to the inefficient water management, especially in the agricultural sector, which consumes almost 60% of the water resources in Jordan. In the interviews with donors and international organisations, the unsustainable agricultural water use emerged strongly and overwhelmingly as an important cause of water scarcity in the country. This section examines the following two aspects: inefficiency in irrigation and the export of agricultural products.

According to this sub-narrative, concerning inefficiency in irrigation, the agricultural sector is economically not efficient, from an economic water use perspective, meaning dollars per drop or jobs per drop. This is because it uses around 60% of the water resources in Jordan, but it contributes with only 3% to the national gross domestic product (GDP) and it employs less than 4% of the national labour force[96] (IFC, 2012: 5, Castejon, 2011: 227). This sub-narrative emerges in reports of and interviews with donors and international organisations. In

[96] Many of which are non-Jordanian workers

the interviews with donors and UN agencies, the interviewees underlined and emphasised the economic inefficiency of the irrigation techniques, technologies, and type of crops used by farmers, the latter often water intense (interviews 45 and 58) (IFC, 2012: 5, ISSP, 2012b: iii). This inefficiency in water use is also motivated by the low economic incentives set by the high subsidies for water for the agricultural sector. In Jordan, as emerges from Table 6.2, farmers in the Highlands are those paying the least for water, followed by farmers in the Jordan Valley, industries, and those using it for domestic use paying the highest amount. If the latter run out of water and decide to buy water from private tankers, the price in Amman is 25 Jordanian Dinars (JD) for six cubic meters, which is about four JD per CM.[97] This is striking as agriculture in the Highlands over-exploits groundwater resources, as discussed in the background chapter (Chapter 5), and is far less efficient than agriculture in the Jordan Valley. Despite agriculture in the Highlands uses two thirds of the total water used in Jordan by the agricultural sector, it accounts for only 29% of the national agricultural production (FAO, 2009: 240-242, ISSP, 2012b: 14). Overall, donors and international organisations argue that while it is not economically efficient, this sector makes an important contribution to the rural development of the country, and therefore agriculture comprises "vital socioeconomic activities in the country" (Barham, 2012: 4). For this reason, for them agriculture should be reformed and made more efficient.

Table 6.2: Water tariffs in Jordan

| **Who** | **Where** | **Sector** | **% of the total amount used in Jordan** | **Type of water** | **Water tariff (JD per CM)** |
|---|---|---|---|---|---|
| WAJ | Jordan (mainly Highlands), excluded the Jordan Valley | Agricultural | 40% | Groundwater | zero for 150,000 CM/ year; 0.005 from 150,001 CM/ year until 200,000 CM/ year; 0.60 for more than 200,000 CM/ year. |
| JVA | Jordan Valley | Agricultural | 20% | Surface water | 0.012 |
| WAJ | Jordan | Industrial | 5% | Groundwater | 0.250 if pumped from private wells; 1,800 within Qualifying Industrial Zones and for the Potash Industry |
| WAJ | Jordan | Domestic | 35% | Mainly groundwater | Based on rate block system, in average 0,480[98] |

*Source: author's presentation of data from FoEME (Saif and Omet, 2005: 26)*

[97] http://www.goethe.de/ins/jo/amm/prj/ema/far/whj/enindex.htm visited on the 15th of May, 2015

[98] In Amman Miyahuna, the public supplier, charges 0.3 JD for MCM up to the amount of 40 MCM. Beyond this amount, the price is calculated retroactively by 0.85 JD for MCM.

Reports, articles, and interviews, showed that this sub-narrative, which is constructed by donors and international organisations and reproduced by a minority of academics, in practice is overlooked by the MWI and most governmental officials. The sub-narrative is reproduced by critical academics not aligned with the governmental positions, whose thoughts coincide with the donors and international organisations positions. For instance, Barham, from the University of Jordan highlights how irrigation in the Highlands is "problematic," and that "despite the permanent discussions of allocate water inter and intra sectoral, [in practice the amount of] water for agriculture […] remained unchanged" (Barham, 2012: 4). For Barham, this is due to the fact that "the state is not in the position to activate laws against tribe leaders [and] investors in this area [which] consist of rentier-elite, high ranking state employees, military officers and tribal figures" (ibid.). Instead, the governmental officials tend to overlook the unsustainable agricultural practices. For instance, despite the Royal Water Committee calling through the National Water Strategy for a more sustainable agriculture (MWI, 2009: 5-2), the strategy is not implemented in this regard. In the interviews with senior governmental officials, this sub-narrative was always overlooked. Moreover, several interviews at the MWI and MoA (interviews 22, 63 and 25) argued that the data on economic efficiency of the agricultural sector does not consider the whole agricultural chain, but only those directly working and the revenues of those directly employed in agriculture. Nevertheless, for a UN official (interview 58) and for the leader of a local environmental NGO (interview 48), even considering the whole agricultural chain, which includes preparation of the land including seed supplies and fertilisers, land preparation including irrigation, production and processing, trading including transportation, this sector would still be economically inefficient (ISSP, 2012b: 12, Al-Jaloudy, 2006: 6). Also in the textbooks, the argument for the unsustainable agriculture water use is supported. In the geography textbook for grade ten, the inefficiency in agriculture is emphasised providing the data of its impact on GDP, 2,1% in 2003, and the contribution of the labour force, 6,1% (Ministry of Education, 2013c: 47). A former minister of the MWI during an interview mentioned that farming is part of the Jordanian culture and society: "if a person loves its land, this person will irrigate it and love it; it is not about numbers" (interview 63). According to him, it is not about 60% of the water resources for agriculture, as "even if Jordanians drunk it instead of using it for irrigation, they would still not have a balance, so there is a need for new water supply." In addition, for the former minister, this sector does not employ only 3-4% of population, as "almost everyone in Jordan is a farmer, or has at least

a farmers' mentality" (interview 63). Therefore, for him they do not need to be employed to be farmers, but simply have a "farmers' mentality."

The second aspect of this sub-narrative identifies the unsustainable and unfair water use as due to the Jordanian export of agricultural products. Donors and international organisations argue that Jordan should be careful in producing agricultural goods for export because of its limited water resources, and it should focus on low water intensive products and with a high economic return (ISSP, 2012b: 28). Even if unsustainable, they argue that both the crops and the destination of export need to be considered when calculating the economic impact of virtual water export. For instance, Eastern Europe provides the highest economic value for Jordanian vegetables (ISSP, 2012b: 28). However, most of the export stays into the region, with 53% to neighbouring countries, 40% to the Gulf Cooperation Council (GCC) members' states, and only 7% to the rest of the world (ISSP, 2012a: 4). "The main reason behind this result is that tomatoes [, for instance,] are mostly exported when there is excess supply for the local market in peak season when prices are at their lowest" (ibid.: 5). In this way, the neighbouring countries absorb what the Jordanian market cannot consume, even if it has a lower value compared to the European one (ibid.). Donors, international organisations, and some academics call the relevant ministries and farmers to take into consideration water and economic value when deciding where and what to grow, and what to export (interviews 28, 45, 58, and 59). As Al Karablieh and Jabarin from the University of Jordan found in a recent study, "Jordan utilizes large amounts of water in its exports, and in turn, it does not export goods with low water requirements […]. Therefore, they have to be replaced with either imports or crops that optimize the water resources" (Al-Karablieh et al., 2011: 964). For Talozi, Al Sakaji, and Altz-Stamm, "it is additionally necessary to view the virtual water usage numbers in light of how much is being put towards produce that is exported from Jordan. […] This raises the policy question of whether Jordan should be producing this quantity of fruits and vegetables, either for export or for its own use, with precious blue water resources that are needed in other sectors" (Talozi et al., 2015: 477).

While donors, international organisations, and critical academics back this sub-narrative, the senior governmental officials de-emphasise it. In an interview at the MoA, it was noted by a senior director that while there are policies and recommended crops to be planted in the agricultural sector in Jordan, for instance to disengage from bananas and water intensive crops, in practice they are difficult to implement as there are no economic incentives to help the farmers to shift towards other products (interview 25). In this interview, this director at the

MoA explains that it is not easy for the MoA to intervene on the agricultural sector dictating what to cultivate and what not to grow, especially given that economic incentives are not provided to farmers to comply with the regulations. In addition, pressures from the shadow actors make it difficult for the MoA to take decisions against or constraining farmers' decisions and choices, to try to reduce water for agriculture or to convince farmers to shift to new crops. Moreover, most employees at the ministry are farmers, the minister himself is a farmer, and they are all supported by the farmers' community. As most Jordanians are originally farmers, for the director of MoA, a strength of agriculture is that it involves the vast majority of the population. For the director, consideration linked to the broader socio-political-economic context, from the historical background to the cultural importance of farming, are to be considered when taking decisions and passing policies. For him, this would be also be linked to domestic concerns, and to the social stability of the country.

Text sources of this sub-narrative are reports of donors and international organisations (interviews 28, 45, 58, and 59), and a few academic articles of critical academics (Al-Karablieh et al., 2011, ISSP, 2012b). However, governmental officials overlook this aspect of the sub-narrative. This sub-narrative is strongly supported by the concept of virtual water, which argues that water scarce countries like Jordan should save their water resources by relying on import of food and reducing their water allocation to the agricultural sector (Allan, 2002: 165-167). However, this idea is challenged by the discourse of food sovereignty, as some local NGOs like the Arab Group for the Protection of Nature (APN) as well as governmental officials, claim that this could lead Jordan to further decrease its food sovereignty, becoming further dependent on foreign countries outside the region even for food. Therefore, they are calling for strengthening the cooperation among the Arab countries to reach food self-sufficiency not at the country level but at the regional level (APN website[99], interview 72). The necessity for a regional food sovereignty was underlined by the Jordanian minister of the MoE Taher Shakhshir at the Arab Forum for Environment and Development's (AFED) conference in November 2014 and by the AFED report (Namrouqa, 2013c, Namrouqa, 2014b).

In this sub-narrative, the blame is on the public institutions that are not able to implement and pass laws and regulations for a more sustainable and economically efficient agricultural sector, and primarily on its roots: the farmers, in particular large farmers, and the farmers' lobby; meaning the shadow actors.

[99] http://apnature.org/en/content/definition visited on the 10th of March 2015

Concerning its prominence, the agricultural sector used about 58% of the total supply in 2011[100], mainly in the Jordan Valley and in the Highlands. Around two thirds a year was used in the Highlands, and one third in the Jordan Valley. However, 71% of cultivated land was in the Jordan Valley and 29% in the Highlands (FAO, 2009: 240-242, ISSP, 2012b: 14). The inefficient use of water in agriculture in the Highlands contributes by about 250-300 MCM a year to water scarcity. If they used water at the same ratio per land as in the Jordan Valley, they would only need around 40-70 MCM a year.[101] I will not consider here the food import and export issue as it could be argued that all food products could be imported having a total of about 58% of the total supply a year of contribution to water scarcity by the agricultural sector if adopted the virtual water approach. Overall, it appears that while the unsustainable agricultural use of water contributed significantly to water scarcity in Jordan, discursively this sub-narrative was promoted mainly by donors and international donors, and neglected by the governmental officials. Especially when compared to the sub-narratives of the water insufficiency narrative, this sub-narrative appears not to be a prominent one.

### 6.3.4 Summary

The water mismanagement narrative is composed of three sub-narratives. The first sub-narrative identifies the main reason for water scarcity in the striking percentage of water resources lost in Jordan because of NRW due to leakages and physical losses, and calls for a better management and governance of the sector. This sub-narrative is strongly backed by donors and international organisations. The second sub-narrative considers NRW due to illegal wells and uses as among the main reasons for water scarcity in Jordan. Until 2013, the focus when discussing NRW was mainly on the water lost due to leakages, while the government and the MWI overlooked the issue of water theft and illegal wells. In August 2013, the new minister of the MWI Hazim Al Nasser started a campaign against illegal wells, which originated new framings of this sub-narrative from the governmental officials. While before 2013 only donors, international organisations, and a few academics mentioned NRW due to illegal wells and illegal uses, after 2013 the MWI and the government backed it also. The third sub-narrative is that water scarcity is due to the inefficient water management, especially in the agricultural sector, which consumes almost 60% of the water resources in Jordan. This is due

[100] About 500 MCM

[101] I acknowledge that several other factors should be taken into account, including local climate, evaporation rate, type of crops, etc. This is an approximate general estimate I attempted to do.

to two elements: inefficiency in irrigation and the export of agricultural products.

It emerges that the water mismanagement narrative is overall constructed and reproduced mainly by donors, international organisations, and some critical academic, while the government and the MWI are lukewarm and tend to de-emphasise this narrative. The texts source of this narrative are reports and declarations produced by donors and international organisations, while some academic articles reproduce and have similar thoughts to the donors' reports. Overall the blame is on mismanagement and bad governance of the governmental institutions and the water utilities within the country, on the illegal users, on the farmers, and shadow actors. This emerges in the sub-narratives: NRW due to leakages and physical losses blames mismanagement by WAJ and the public governmental institutions; NRW due to illegal wells blames bad governance and mismanagement at the MWI and governmental level, the water utilities, and the illegal users, including the shadow actors that benefit from it; inefficiency in the agricultural sector blames the bad governance at the governmental level, the MoA, and the farmers.

The status quo is seen as inefficient, and the narrative attacks those benefiting from it, including the big water consumers, the farmers' lobby, and the shadow actors. It is supported by the discourse of marketisation and the concept of virtual water. The norm supporting and reproduced by this narrative is that water scarcity is due to mismanagement. Another related norm picked-up from the interviews is that the private sector is more efficient than the public sector. The discourse of marketisation drive this sub-narrative towards new and more efficient institutions and for solutions involving a stronger involvement of the private sector. As further examined in Chapter 7, the sub-narrative of unsustainable agricultural water use opens market oriented solutions concerning import and export, while the NRW sub-narratives open solutions calling for better management and governance mainly targeting the water utilities, and often result in backing privatisation and private sector participation related solutions. They are partially overlooked by the government, who for instance emphasised the physical losses in NRW rather than the illegal uses and wells until 2013, or the domestic illegal uses rather than the agricultural ones. Overall, this narrative is sanctioned by the donors and the international organisations, but overlooked and de-emphasised by the government, especially in comparison to the water insufficiency narrative. For this reason, albeit this narrative is sanctioned by donors and international organisations, it is not a dominant one.

## 6.4. Parallel voices

After having examined the sub-narratives, which are constructed, reproduced, and transformed by institutional voices of governmental personnel, international organisations, donors, academics, NGOs, political parties, etc., this section analyses the parallel voices not constructing or reproducing the water scarcity discourse. They are parallel to the overall water scarcity discourse and not part of it because from the interviews and academic articles it emerges that they do not inform the discourse directly, as these voices are of people that do not experience, feel, and see water scarcity as a problem. They are not in principle against the main discourse, as they are embedded and they agree to some extent with some of the sub-narratives. For this reason, I consider them parallel voices. This section focuses on the two trends of parallel voices I picked-up during the interviews: the Bedu and the small farmers' voices.

I see them as parallel even if they do not exist in the same way or have the same prominence as other voices. They are not interested in contributing to the discourse of water scarcity, remaining therefore discursively largely irrelevant. As discussed in the theoretical framework chapter (Chapter 3) about Fairclough's critical discourse analysis, all discourses are sanctioned by someone, but if they do not interlink with each other, in the discourse as social practice dimension the discourse remains largely irrelevant. In Fairclough's dimension of discourse as social practice, the main concern is to explain connections between the process of text production and interpretation, and the discursive practice in its mutual relation to social structures and struggles. In other terms, in this dimension the aim is to understand to what extent the discursive practice influences and relates to the norms. Fairclough explains the relation between discourse and social practice looking at "discourse in relation to ideology and to power, and […] discourse within a view of power as hegemony, and a view of the evolution of power relations as hegemonic struggle" (Yom, 2014: 86). Concerning parallel voices, their voices remain largely irrelevant in relation to their interaction and impact in the social practice.

### 6.4.2.1 The Bedu[102] voice

Bedu people, known in the West as "Bedouins," could be defined as people who live a nomadic or semi-nomadic lifestyle in or around one of the desert areas of the Middle East, raising

[102] The Western term "Bedouin" is a double plural; in the Arabic, "Bedouins" prefer to refer to themselves as "Bedu," which is also plural.

livestock including camels, sheep, or goats. In Jordan, Bedu originally were nomadic, lived in the Badia region and had livestock, while today 98% of them are settled and live in villages. Today, most Bedu in Jordan are semi-nomadic, meaning they live in villages for part of the year, and they move with livestock and live in tents for another part of the year (interviews 31 and 41 with Jordanian Bedu and academics).

During my fieldwork I met with Bedu from the Mafraq governorate in the North-Eastern part of the country, from the Aqaba governorate in Southern Badia, from Ma'an governorate in the south, and from Wadi Araba in the South Western part of Jordan. All those villages are in the Badia region, which is the arid region of Jordan. While it would be wrong to assume that all Bedu have the same perception of water scarcity, given the diversity of today's Bedu, overall I have identified some trends about the perceptions of semi-nomadic Bedu towards water resources. However, this is a snapshot of a few semi-nomadic Bedu I have interviewed during my fieldwork, and it cannot be seen as representing the variety of Bedu experiences and perceptions of such a diverse group. The number of Bedu I met is around thirty, often through group discussions.

In this section, I first examine the trend of today's semi-nomadic Bedu in relation to their water consumption. Second, I investigate their claim of experiencing climate change. Third, I argue that they are aware of the water scarcity issue in the country, but they do not feel it as a problem affecting their community. Finally, I argue that they do not inform and contribute to the reproduction of the water scarcity discourse, as they do not see it as an issue for their local context, and therefore they are to be seen as a parallel voice.

First, concerning water consumption of the Bedu, because of the limited water resources in arid regions, Bedu were and are very efficient water users. The main water use of Bedu are for drinking, washing, and for their livestock. Bedu are good in finding shallow water of 20-30 meters depth, as they do not use artesian wells, which are 300 meters deep.[103] In East Azraq, for instance, shallow water can be found in two meters, and groundwater in maximum 50 meters. Bedu were good at building water harvesting and small dams to collect and use rainwater. Today, semi-nomadic Bedu are very efficient in water use also when living in the villages. There, they have rooftop water harvesting systems, they do not have swimming pools, do not wash cars weekly or daily; so their lifestyle is different even from the Bedu living in big

[103] In the past, a tribe used to have and own a spring or well, but in the summer and dry seasons all wells and springs were shared with all tribes

urban areas in Jordan, like Amman (interviews 31 and 41 with Jordanian Bedu and academics, interview 55 with Bedu MP, and interviews with local Bedu 19, 20, 21).

Second, from these interviews with semi-nomadic Bedu, it emerged a trend of experiencing climate change through: different rainfall patterns, higher temperatures, decrease in plants and vegetation (ibid.). This trend was also captured in the research conducted by Raed Al Tabini, president of the Hashemite Fund for the Development of Badia, and other Jordanian academics (Al-Tabini et al., 2012). However, the academics argue that these elements that Bedu identify as climate change, can be explained with overgrazing and political borders (Al-Tabini et al., 2012: 5-8). For these academics, while in the past Bedu used to move to Saudi Arabia, Syria, and Iraq, when it was too hot and dry in the Jordanian Badia, starting in the 1980s Jordan closed the borders not allowing Bedu to freely move across countries (ibid.). This was when they started to experience higher temperatures as well as a decrease in plants due, for the academics, to overgrazing, as the grazing activities became confined within the Jordanian border (ibid. and interview 31). In the past, when there were no more plants, they simply moved to new territories in the Saudi, Iraqi, or Syrian Badia; now this is no longer possible (ibid. and interview 31). The trend that emerged from my fieldwork is that semi-nomadic Bedu acknowledge the impact of what they see as climate change mainly linked to the grazing challenges, but they do not see this as linked to water scarcity, as they are not experiencing water shortages in their realities. Overall, they believe they are experiencing climate change but this does not mean water scarcity to them.

Third, another trend that emerged from interviews with a group of semi-nomadic Bedu in the Southern area of the Badia region is that water scarcity is not felt as a main issue affecting their lifestyle (interview 20).[104] Instead, it was felt that if anything is changing, it is not due to water resources availability, but rather to new economic opportunities due to the tourism industry. When it comes to other realities, for instance in the area of Wadi Musa near Petra, the trend that emerged was not to see water scarcity as the reason for changing the lifestyle, but rather issues of mismanagement of water resources. According to this trend, there are a lot of leakages in the connections, and it should be the responsibility of WAJ to take action, but they do not. It seems to them that water is not scarce; otherwise actions would be taken immediately

[104] This is mainly because they know where the water sources are in the desert and because of their lifestyle. For instance, an interviewee knows that there are 42 small wells and 7 big ones in his area. They are purely nomadic and they have animals and livestock. This was the case 50 years ago and it still is today. They only have animals, no farms, as this is not part of their nomadic culture, explains the interviewee. They move from place to place, together with their animals. For him, all you need is water and graze to feed the animals

by WAJ (interview 20). According to this trend, water scarcity is "somewhat real for Jordan, but not for the Bedu and for the South of Jordan," so it exists at the national level but not at the local one for Bedu people (ibid.). For him, this is mainly because of different life styles. While Bedu use little water, people in Amman and in the cities use a lot of water, "for instance Bedu have Turkish toilets or Bedu toilets, while they only have new fancy Swiss toilets that need a lot of water" (interview 21). Another reason is agriculture: today there is a lot of agriculture cultivated land compared to the past. "We cultivate for ourselves, they cultivate also for exportation" (interview 21). Bedu water use is for domestic purposes, and for their animals to drink; there is no water scarcity in the desert (interview 21).

Overall, according to this snapshot, what emerges is a trend among semi-nomadic Bedu communities of a sceptical voice concerning water scarcity in their own reality, because they know how to deal and cope with limited water resources. Bedu acknowledge that water scarcity exists and is an issue at the national level. Bedu experience what they call climate change, which impacts them through reduced vegetation in the Badia region, but they do not see this as linked to water scarcity. Nevertheless, interviewing academics working on Bedu communities, MPs representing the Bedu, Sheikhs, Bedu in their communities, and NGOs working for supporting the Bedu, no one has ever mentioned any attempt by the Bedu to intervene to challenge national policies or strategies on water because of their different vision of the water scarcity issue. They do not even attempt to contribute to shape policies as they are not interested in doing so: they do not see water scarcity existing in their community, this is not an issue for them also because of their water saving oriented lifestyle. As happens in other parts of the world, it seems that also in Jordan the local knowledge for coping with water scarcity is overlooked, intentionally or unintentionally. Overall, their voice is not captured in the water scarcity discourse. Their experiences are not mentioned in any reports on water scarcity of donors, international organisations, or of the MWI. The main data for collecting their voice were interviews and a few academic articles written by Jordanian academics of Bedu origin and whose academic expertise is on anthropology, with a focus on the Badia region. Overall, I understand the Bedu voice as a parallel one: their voice does not interact with the main water scarcity discourse and does not inform it, remaining isolated and irrelevant in relation to the interaction and impact to the water scarcity discourse and to the social practice considered in this thesis.

#### 6.4.2.2 The small farmers' voice

In this section, I analyse the trends of water perceptions of small farmers in Jordan. First, I investigate why they perceive water scarcity at the national level. Second, I examine what is different at the local level and why they perceive there is no water scarcity in their reality. Finally, I argue that they do not inform and contribute to the reproduction of the water scarcity discourse, as they do not see it as an issue for their local context, and therefore they are to be seen as a parallel voice. However, this is only a snapshot of a few small farmers I have interviewed during my fieldwork in the Jordan Valley and in Wadi Araba, and it cannot be seen as representing the variety of small farmers' experiences and perceptions of such a diverse category. In the Jordan Valley I interviewed a group of ten small farmers, while in the village of Wadi Araba I spoke with a total of twenty farmers. Here I report only trends and discuss the findings with generalisations. My understanding of a small farmer is any farmer that either is labour force and does not own the land he or she works in, or a farmer who owns the land but whose farm is of less than 30 dunums (3 ha), which is the average size of farms in Jordan (interview 25, manager at the MoA).

First, speaking in the Jordan Valley and in Wadi Araba with small farmers, different views emerged on whether there is water scarcity. While there was general agreement that water scarcity exists in Jordan at the national level, most farmers admitted that they did not see water scarcity in their own experience most of the times. The causes that were identified by farmers for water scarcity at the national level were Israel and Syria, as well as the mismanagement of WAJ and JVA (interview 26). During the interviews and the days spent in a village of Wadi Araba, a trend for the reasons of water scarcity at the national level was that it "is due to the agreements with Israel on water, as they steal our water and our government is silent. But we would not have it if we were allowed to dig wells, but we can't because you need permits. And given that our wells would impact water used by Israel, we are not allowed to dig wells in the Jordan Valley near Israel" (interview 26). They blame Israel also because of the National Water Carrier diverting water from the Jordan River basin, and of the 1994 agreement. It also blames Syria for constructing dams and wells on the Yarmouk, strongly reducing its flow. The government is seen as aligned to Israel when not allowing farmers to dig new wells, as in their opinion they would negatively impact the water resources in Israel. This same perception was common among farmers in the Jordan Valley.

Second, concerning water scarcity in their own reality, from their experiences, a general trend of answers was that they are not experiencing much water scarcity in their farms as they instinctively implement coping mechanisms to face water scarcity. In the Jordan Valley, they also exactly know when the water will come to their farm and at what times, as this is agreed with the Water Users Association (WUA). Hence, the farmers adapt accordingly. Coping mechanisms include: the type of crops, the amount and portion of land to cultivate, and the periods of farming activities. For instance, they take into consideration that in the summer palm trees use a lot of water and the rest of the year vegetables use an extensive amount of water. In the summer climate is very dry, and several farmers do not cultivate the land in the valley as the land, they explained, need to rest for a while and cannot be cultivated twelve months a year. In that time, some farmers go to work in the Highlands, where groundwater is always available through the wells (interview 26). Water scarcity is experienced mainly by those cultivating more land than the amount suggested by the JVA and the MoA. These farmers can apply for an extra amount of water to be allocated to them by the WUA after prior approval of the JVA, but this amount of water is not always available. So the farmers that are not cultivating the extra amount do not usually experience water scarcity. The aspect of the amount of land to be cultivated was also underlined in the interviews in Wadi Araba. Several farmers argued that water is enough for domestic needs, and also for the current agricultural use. However, farms could be expanded as there is more land that could be potentially cultivated, but they would not have enough water to do so.

Finally, the small farmers I met acknowledged water scarcity at a national level, often identifying the problem in the neighbouring countries. Another trend was to blame the Jordanian MWI institutions for not allowing farmers to exploit more groundwater resources by digging new wells. It also emerged from the interviews and group discussions that they do not suffer from water scarcity as they are coping with the existing water situation. However, they would benefit from more water that would result in expanding the land they are cultivating. Therefore, while they do not often feel water scarcity, they absorb the discourse at the national scale. I see them as a parallel voice as the general trends indicates that they do not perceive water scarcity as an issue for their own reality, and therefore have no interest in shaping policies or in having their voice heard. Large farmers, who own large agribusinesses and have high economic interests, are those who are active in influencing policies and decisions, and whose voiced is therefore heard. Large farmers contribute to the constructions and reproduction of several sub-narratives of the water insufficiency narrative. Instead, the small farmers' voice,

which does not acknowledge water scarcity at their local level and therefore does not see this as an issue, is not involved in reproducing or constructing the water scarcity discourse informing it, and therefore I see it as a parallel voice.

Overall, the trends I have identified in the snapshots of the two parallel voices considered do not see water scarcity as impacting them directly. Nevertheless, they acknowledge the existence of water scarcity at the national level. In both cases, farmers and Bedu know how to cope with limited water resources, and this helps in understanding why they do not feel directly impacted by water scarcity. They do not attempt to intervene to challenge national policies or strategies on water because of their different vision of the water scarcity issue, particularly because for them water scarcity is not a problem that they experience in their reality. Therefore, in the case of the Bedu and of the small farmers, they do not contribute to construct or reproduce the water scarcity discourse, they rather absorb it to a limited extent and acknowledge water scarcity at the national level; but not at their local level as they do not experience it. Overall, I understand them as parallel voices: their voices do not interact with the main water scarcity discourse and do not inform it, remaining isolated and irrelevant in relation to the interaction and impact to the water scarcity discourse and to Fairclough's social practice stage.

### 6.5 The water scarcity discourse as a dominant discourse

I argue that the overall water scarcity discourse, which is comprised by the water insufficiency and the water mismanagement narratives, is sanctioned and dominant. While both narratives are sanctioned, they are also dominant albeit differently powerful. My understanding of sanctioned and dominant discourse is that a dominant discourse is the prevailing opinion and views, which have not necessarily been legitimised and supported by anyone in particular. Instead, the sanctioned discourse has and is being sanctioned and legitimised by someone. A sanctioned discourse is not always dominant, while a dominant discourse is usually sanctioned by someone. For Hajer,[105] the influence of a discourse can be examined looking at: how many people use it to understand their reality; if it does sediment into institutions and their practices. If both are satisfied, then it is the case of a dominant discourse. In this case, the issue of water scarcity will be understood and perceived mainly according to how it is framed by the dominant

[105] http://www.maartenhajer.nl/?page_id=14 visited on the 30th of March 2015

discourse, opening certain solutions showing them as logical and natural consequences to the perceived reality of water scarcity through the lenses of the dominant discourse.

As seen in this chapter and summarised in Table 6.3 on page 148 all the following confirmed the existence of water scarcity at the national level: interviewees during my fieldwork; the government, including the MWI, MoE, and MoA, and the shadow states; declarations from former ministries of the MWI and royalties; reports and declarations of donors and international organisations; reports, declarations, and campaigns of the NGOs; academic articles of Jordanian academics; newspaper articles; textbooks; MPs; sheikhs and tribal leaders; semi-nomadic Bedu, and small farmers. In addition, the discourse of water scarcity is backed through all the references on water in the textbooks across all disciplines.

In particular, as summarised in Table 6.3 below, the trend is that the government, mainly the MWI and the MoE, as well as UNDP, sanctioned the water insufficiency narrative. Instead, donors, international organisations, and since 2013 also the MWI for one sub-narrative, sanctioned the water mismanagement narrative. It also appears that the MWI sanctions both the first narrative and the NRW due to illegal wells and illegal uses sub-narrative of the second narrative. At the same time, also donors and international organisations, while strongly sanction the water mismanagement narrative, they also reproduce mainly the sub-narratives of: population growth, immigration, and refugees; and climate change as an additional pressure. This means that it would be wrong to consider the two narratives as a dichotomy and consider actors as either supporting one or the other. Table 6.3 shows the nuances, and that this relation is more fluid, as the MWI strongly supports the first narrative, but it also reproduces, albeit with a lower emphasis, sub-narratives belonging to the water mismanagement narrative. In the same way, international organisations and donors emphasise and sanction the water mismanagement narrative, but they also reproduce, albeit with different emphasis, most of the sub-narratives belonging to the water insufficiency narrative. Chapter 7 discusses how these narratives open or close certain solutions, identifying who supports the different solutions.

The water insufficiency narrative satisfies the first criteria of having most of the actors understanding and perceiving the water situation in Jordan through its lenses. This emerges from Table 6.3, which shows that a variety of actors reproduce the sub-narratives, and not only those sanctioning it. This narrative did also sediment in the institutions not sanctioning it but reproducing it, and this emerged from the academic articles and the reports of NGOs, donors, and international organisations; they all reproduce the sub-narratives and NGOs, donors, and

international organisations have projects and programs covering to some extent the issues identified in these sub-narratives.

Concerning the water mismanagement narrative, donors and international organisations sanction it, but also the MWI backs one sub-narrative since 2013: NRW due to illegal wells and illegal uses. However, only a minority of academics and NGOs reproduce it. Nevertheless, among the donors and international organisations community, this narrative, as emerges from reports and projects, is cemented in their practices and institutions. In addition, since 2013 the sub-narrative of NRW due to illegal wells and uses is sanctioned by the MWI, and voiced by media and governmental officials. For this reason, it can be said that this narrative is less powerful than the water insufficiency one, but it is dominant within the donors and international community. In addition, since 2013, it reached the MWI and become cemented and part of its institutional practices. Therefore, this is a dominant narrative albeit less powerful compared to the water insufficiency one.

Overall, the overarching water scarcity discourse is a dominant discourse in Jordan. It also satisfies the second criteria given that the relevant institutions, including the MWI, the government, the royalties, and the Royal Water Committee, see water scarcity as a serious and vital issue for Jordan and reflect this in the national water strategy, declarations, and reports (MWI, 2009, MWI, 2014b, MWI, 2004, Namrouqa, 2014d, Namrouqa, 2012b, Namrouqa, 2013g, Nimry, 2013). Donors and international organisations are mainly backing the narrative of water mismanagement, and in so doing sanctioning the overall discourse (MercyCorps, 2014, ISSP, 2012a, ISSP, 2012b). Academics, NGOs, royalties, individuals, are all involved through their daily actions, events, and declarations in reproducing the overall discourse.

Table 6.3: Who sanctions narratives and sub-narratives

| Narrative | Sub-narrative | Who sanctions it | Who reproduces it |
|---|---|---|---|
| The water insufficiency narrative | Population growth, immigration, and refugees | Government, the MWI, the shadow actors. | All major actors in the water sector: donors, international organisations, academics, NGOs. |
| | Unfair sharing with neighbouring countries | Government and the shadow actors | Academics, MPs, political parties, and NGOs. Donors and international organisations are lukewarm |
| | Climate change as an additional pressure | MoE, UNDP, and the shadow actors. | Governmental institutions, NGOs, academics, and donors. |
| | Jordan as an arid and semi-arid region with low precipitation | Government, the MWI, and the shadow actors. | Academics and governmental institutions. |
| The water mismanagement narrative | Non-Revenue Water: leakages and physical losses | Donors and international organisations | Minority of academics and the water utilities |
| | Non-Revenue Water: illegal wells and illegal uses | Donors and international organisations, and since August 2013, by the MWI as well. | Since 2013, NGOs and academics |
| | Unsustainable agricultural water use | Donors and international organisations | Minority of academics |

### 6.5.1 Discursive prominence of the sub-narratives

This section aims at understanding the prominence of the different sub-narratives. This can be done by looking at the different weights of the sub-narratives in relation to the audiences they manage to reach. To understand the weight of the sub-narratives, I examine the emphasis that each actor puts on the sub-narratives as well as to what extent the sub-narratives go beyond their political domain of the main actors constructing them, considering reports, national strategies, policies, and academic articles.

As discussed previously in this chapter, the water insufficiency narrative is dominant, constructed and sanctioned by the governmental institutions and voiced and reproduced by academics, NGOs, and other actors, as summarised in Table 6.3. It is also reproduced in reports,

articles, and declarations of the MWI, donors, international organisations, NGOs, and academics. These same actors also mentioned the sub-narratives of this narrative in the interviews. Among the sub-narratives of this narrative, population growth, immigration, and refugees is the most prominent one. This is because it is the one that is always mentioned with most emphasis in the interviews, in academic articles, and in reports, as discussed earlier in this chapter. At the same time, also the sub-narrative about the unfair sharing with neighbouring countries is prominent. Also King Abdullah II as well as Prince Hassan, when discussing the water scarcity issue in Jordan, put emphasis on the necessity to look beyond the Jordanian border because the transboundary nature of water in the region should be seen as an opportunity for cooperation and regional planning rather than as an obstacle, as it currently is perceived in the region (Namrouqa, 2013g).[106] Also, in the interviews with small farmers, Bedu, MPs, NGOs, and academics, the sub-narratives that were usually mentioned with most emphasis were: population growth, immigration, and refugees as the most important; followed the unfair sharing with neighbouring countries; and NRW due to leakages. This was also reflected in the NGOs reports and academic articles. Overall, among the water insufficiency narrative, it results that the most prominent ones are respectively: population growth, immigration, and refugees; unfair share with neighbouring countries; climate change as an additional pressure; and Jordan as an arid and semi-arid region with low precipitation.

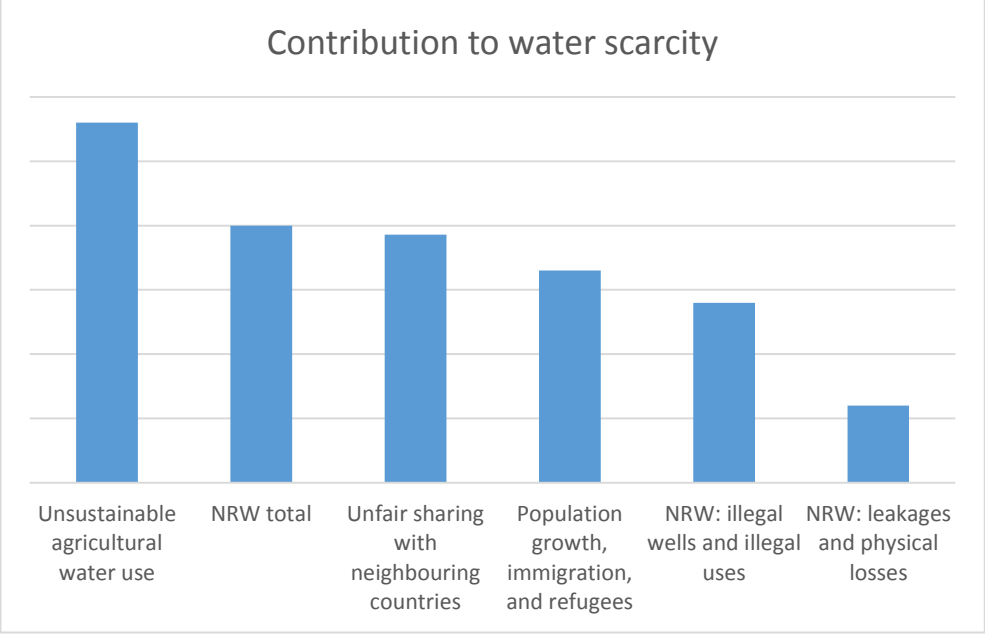
Concerning the sub-narratives of the narrative of water mismanagement, as summarised in Table 6.3, they are mainly constructed by donors and international organisations. However, all of them strongly backed the NRW due to leakages and physical losses sub-narrative, and this was also emphasised in the interviews by Bedu, NGOs, MPs, and academics. Until 2013, this sub-narrative had also large coverage by The Jordan Times, especially when compared to NRW due to illegal wells and illegal uses. Also, before 2013, the government when discussing NRW always emphasised this aspect of NRW rather than the illegal uses one. For this reason, while NRW due to leakages made it to a wider audience even before 2013, NRW due to illegal uses made it to the wider audience and to new domains only after it was decided to allow so by the government in 2013. After 2013, also the latter sub-narrative became prominent as backed by the government and reproduced by academics and The Jordan Times. The sub-narrative of the unsustainable agricultural water use is produced by donors and international organisations,

[106] For the King's position, please see the last question of this interview: http://kingabdullah.jo/index.php/en_US/speeches/view/id/447/videoDisplay/0.html ; for the position of Prince Hassan, please see: http://jordantimes.com/prince-hassan-calls-for-forming-west-asian-commission-for-water and http://www.elhassanbintalal.jo/en-us/# visited on the 2nd of April, 2015

backed by some NGOs. The government is lukewarm about it. However, it is discussed by some NGOs and ministries when promoting the discourse of food sovereignty at a regional level. It results that the most prominent sub-narratives for this narrative are respectively: NRW due to leakages and physical losses; NRW due to illegal wells and uses; and the unsustainable agricultural water use.

Figure 6.2 summarises these results, highlighting the prominence of the different sub-narratives comparing them according to the analysis of their prominence done per each sub-narrative. While on the x axis there are the sub-narratives, on the y axis I preferred not to put MCM as this is an indicative result as exact data are difficultly quantifiable. I preferred to present the data in a comparative way, as the relevant aspect for this work is to understand what sub-narrative is discursively more prominent than the others in a comparative way. From the analysis of their prominence done in this section, it results that the most powerful sub-narratives are: population growth, immigration, and refugees; unfair share with neighbouring countries; NRW due to leakages and physical losses; and NRW due to illegal wells and illegal uses.

Figure 6.2: Contribution of the causes of water scarcity identified by the sub-narratives to the water shortage in Jordan



### 6.5.2 Different ways of mapping the discourse

The mapping of the discourse into two narratives and seven sub-narratives was done only for analytical purposes, as I understand the discourse as fluid and not divided into different parts. The sub-narratives division was useful in showing, as in Table 6.4, what each sub-narrative blames. Moreover, the discourse could have been analysed also in other ways, dividing it for analytical purposes not into sub-narratives, but according to other categories to show and highlight other aspects, according to the needs of the analysis. This short section will provide alternative mappings of the discourse focusing on the actors constructing it.

Another way of mapping the discourse is according to the actors constructing them: governmental water insufficiency narrative; donors and international organisations water mismanagement narrative; and Bedu narrative of water scarcity at the national level. While the three narratives support the water scarcity discourse, the governmental one is the prominent one and can be seen as comprising the first four sub-narratives. The donors and international organisations narrative can be seen as formed by the two NRW sub-narratives and the unsustainable agricultural water use sub-narrative. The Bedu narrative does not see water scarcity at the local level in their environment but does support in a lukewarm way the water scarcity discourse at a national level, therefore it does not construct the latter but rather simply supports it. However, as seen earlier in this chapter, this would have not covered the nuances and overlapping of positions between the governmental actors and the donors and international organisations ones.

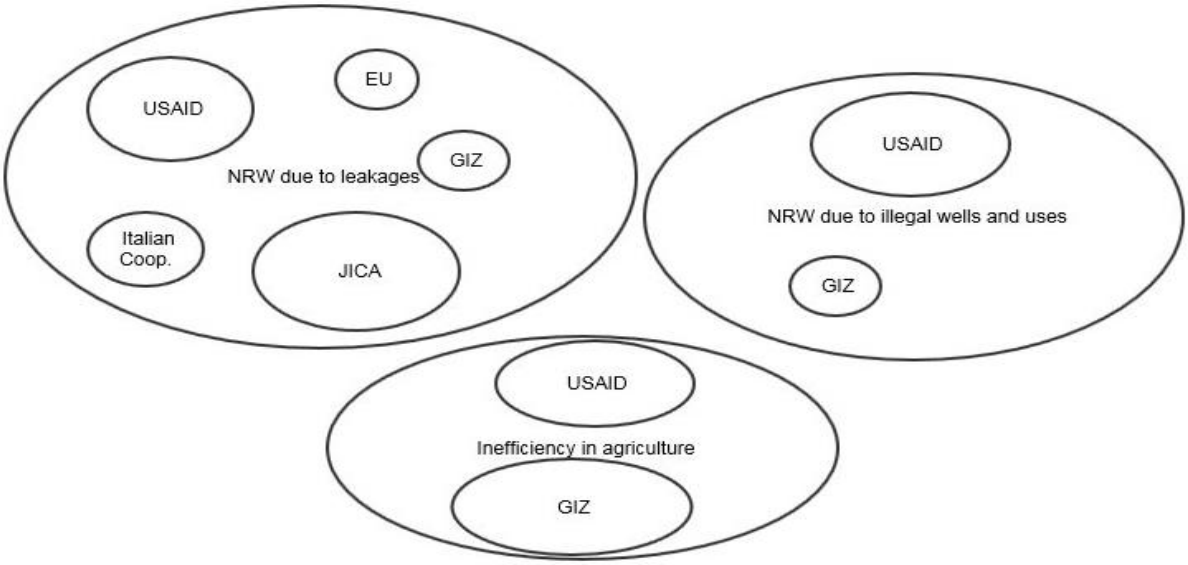
Table 6.4: Sub-narrative and blame

| **Narrative** | **Sub-narrative** | **Who or what it blames** |
|---|---|---|
| Water insufficiency narrative | Population growth, immigration, and refugees | Refugees and immigrants |
| | Unfair sharing with neighbouring countries | Israel and Syria |
| | Climate change as an additional pressure | Nature and foreign countries for the anthropogenic nature of climate change |
| | Jordan as an arid and semi-arid region with low precipitation | Nature and environment |
| Water mismanagement narrative | Non-Revenue Water: leakages and physical losses | WAJ and water utilities |
| | Non-Revenue Water: illegal wells and illegal uses | MWI and shadow states |
| | Unsustainable agricultural water use | MWI, MoA, JVA, shadow states, agribusinesses and farmers lobby |

Focusing on the donors and international organisations narrative, as Figure 6.3 below shows, it is interesting to examine specifically which donor supports and constructs what sub-narrative. The size of the ovals indicates the prominence of the sub-narrative, and the size of the ovals inside the ovals indicates the dominance of the donor in relation to the sub-narrative it is situated in. USAID focuses with their ISSP project on all aspects of the donors' narrative: NRW due to leakages and physical losses, NRW due to illegal wells and illegal use, and on the unsustainable agriculture water use. USAID has been pushing the MWI to tackle the illegal wells issue before the 2013 campaign, and helped the MWI with further studies on this issue through its ISSP project (ISSP, 2014). Concerning the unsustainable agricultural water use, USAID has been working with the JVA focusing on the issue of the high subsidies to farmers on water tariffing. Concerning NRW due to leakages and physical losses, USAID has been supporting the water utilities also pushing for further institutional reforms. GIZ has been focusing on participatory approaches to reduce the economic inefficiency in the agricultural sector: in the Jordan Valley through the WUA and in the Highlands through the forum, which also aims at reducing the NRW due to illegal use. The Italian Cooperation and JICA have been investing most of their projects on the rehabilitation of the water network in big urban areas of the country, tackling the NRW due to leakages and physical losses. The Swedish International Development Agency (SIDA) since 2008 only works on transboundary cooperation. The European Union (EU) cooperation has been working on awareness raising campaigns and behaviour change. Finally, the donors from GCC countries have been mainly supporting Jordan in mega-projects, particularly dam construction (interviews with donors 28, 39, 45, 61, 81, 89).

The other way of mapping the discourse would be to look at the solutions the narratives suggest. However, this aspect will be further explored in Chapter 7.

Figure 6.3: Prominence of selected donors in constructing the sub-narratives of the water mismanagement narrative




## Conclusion

The purpose of this empirical chapter was to investigate the discourse of water scarcity in Jordan. In particular, this chapter answered sub-research question A): What are the elements comprising the discourse of water scarcity, including narratives and sub-narratives? It did so by unpacking the discourse and investigating it for analytical purposes through two narratives: water insufficiency and water mismanagement narratives. Within the discourse, it examined the seven sub-narratives that I have identified in interviews, academic articles, and reports. The analysis was done by identifying the actors constructing and reproducing the discourse, their interests, the key texts, what the sub-narratives blame and why, and finally the prominence of to what extent the sub-narratives, narratives, and the discourse are powerful and dominant.

The following sections examined the parallel voices of the Bedu and of the small farmers, showing that while these communities do not usually experience water scarcity, they still believe in a national water scarcity issue in Jordan. Then this chapter argued that the water insufficiency narrative is sanctioned by the government and reproduced by academics, NGOs, and to some extent also by donors and international organisations. The water mismanagement narrative is backed by donors and international organisations and since 2013 also the MWI sanctions one sub-narrative. The latter narrative is reproduced also by other actors, but they are

fewer compared to those reproducing the former narrative. Overall, it resulted that the water insufficiency narrative is more prominent and dominant than the "we mismanage our water"one. This section then attempted to calculate the “prominence” of the different sub-narratives comprising the discursive elements with the impact of the causes they identify for water scarcity on the water scarcity in Jordan. It emerged that the most powerful sub-narratives are: population growth, immigration, and refugees; unfair share with neighbouring countries; NRW due to leakages and physical losses; and NRW due to illegal wells and illegal uses. This means that the sub-narratives that are sanctioned and voiced by governmental institutions and the shadow actors, and also reproduced by donors, international organisations, NGOs, and academics, are the most prominent and powerful ones. This resulted to be a useful exercise, even if data are not always uncontested. For this reason, I argue, discourses and sub-narratives find space to flourish and present the issue of water scarcity in different facets.

This chapter has provided an in depth analysis of the water scarcity discourse, identifying the elements comprising the discourse of water scarcity. This is important because, as discussed in the literature review and theoretical framework chapters (Chapters 2 and 3), discourses contribute to shaping policies and hydropolitical relations, and therefore it is essential to investigate the construction of the discourse and the elements comprising the discourse. This chapter is important for the overall study as it maps the elements of the discourse, identifying the narratives and the sub-narratives. This is necessary as it allows identification of who is behind the construction of the different narratives and sub-narratives, and it is the starting point for the analysis of Chapter 7, which analyses how the different narratives and sub-narraties, and therefore the different actors constructing them and deploying them, open different solutions and policy options for solving the issue of water scarcity in the country. Therefore, after having analysed in this chapter the discourse of water scarcity, the following analytical chapter (Chapter 7) analyses how this discourse and its elements open or close solutions for the water sector in Jordan, while Chapter 8 provides a discussion of how the water scarcity discourse relates to transboundary water governance and hydropolitical dynamics.

# CHAPTER 7: EFFECTS OF THE DEPLOYMENT OF THE DISCOURSE OF WATER SCARCITY ON WATER STRATEGIES AND POLICIES

## Introduction: from discursive practice to social practice

This empirical chapter examines the effects of the deployment of the discourse of water scarcity on national policies and strategies in Jordan. This is of key importance for this thesis, as this chapter answers sub-research question B): What are the effects of the deployment of the discourse of water scarcity on the solutions, national water policies, and strategies? First, this chapter identifies and analyses the solutions that the water scarcity discourse opens in order to solve the issue of water scarcity. Second, it investigates the solutions that it opens in the national water strategy, to identify which solutions have been incorporated and supported by the policy makers. It then examines what solutions of the national water strategy are implemented through governmental water campaigns, policies, and actions. Some of the conclusions reached include that the water insufficiency narrative is deployed mainly by governmental institutions, opening supply side solutions to increase the water resources in the country. The water mismanagement narrative is being used mainly by donors and international organisations, opening demand side solutions to maximise economic efficiency and the economic return of water. The latter narrative is also being used by both governmental, donors, and international organisations, to open solutions to better manage the water resources through their conservation.

The analysis of this chapter is informed by Fairclough's critical discourse analysis theoretical framework presented in Chapter 3, the general background information on the process of the water policy making provided in Chapter 5, and by the analysis of the construction of the discourse of water scarcity provided in Chapter 6.

## 7.1 Analysis of the solutions identified by the water scarcity discourse

As discussed in the empirical chapter on the construction of the discourse (Chapter 6) and summarised in Figure 6.1 on page 87, the water scarcity discourse can be sub-divided in two narratives: water insufficiency and water mismanagement. The water insufficiency narrative comprises four sub-narratives: population growth, immigration, and refugees; unfair sharing with neighbouring countries; climate change as an additional pressure; and aridity and low

precipitation. Instead, the water mismanagement narrative is represented by three sub-narratives: Non-Revenue Water (NRW) due to leakages and physical losses; NRW due to illegal wells and illegal uses; and the unsustainable agricultural water use.

This section identifies and analyses the supply and the demand side solutions, investigating the sub-narratives that open them, the actors behind them, and their interests. This power struggle around the discourse between actors in order to open or close solutions, takes place in what Fairclough's framework, analysed in the theoretical framework chapter (Chapter 3), calls social practice dimension. In this dimension the main concern is to explain connections between the process of text production and interpretation – the discursive practice - and the discourse in its mutual relation to social structures and struggles (Yom, 2014: 72). It is the dimension where the power struggle takes place between the deployment of discourses and "the evolution of power relations as hegemonic struggle" (Yom, 2014: 86).

### 7.1.1 The supply side solutions

As investigated in Chapter 6, the water insufficiency narrative is constructed and reproduced by: governmental institutions, including the Ministry of Water and Irrigation (MWI), the Ministry of Agriculture (MoA), the Ministry of Planning and International Cooperation (MoPIC), and the Ministry of Environment (MoE); local NGOs; academics; media; and the educational system through textbooks. As discussed in Chapter 6, I have asserted that they frame the discourse of water scarcity mainly blaming nature, neighbouring countries, and the refugees, externalising the fault for water scarcity to causes which are outside of their sphere of responsibilities. The issue of water scarcity is understood as due to the limited water resources available and the blame is not on the current uses in the country or on large farmers – shadow actors – and therefore this narrative keeps the shadow actors free of blame (Chapter 5 and 6). I argue that the deployment of this narrative opens solutions that need to be found on the supply side, on creating more water resources, as summarised in Table 7.1 on page 159. This framing of the water scarcity issue opens policies and actions for increasing the supply, for instance through construction of irrigation canals, dams, water harvesting constructions, desalination, and over-pumping groundwater resources. The interests behind this framing is to maintain the status quo of the current water use, which is beneficial to the shadow actors, meaning their overuse of water resources; the low water prices; the high subsidies; the non-implementation of the groundwater policy and by law; the inefficient system of water

distribution. As discussed in Chapter 6 and summarised in Figure 6.1 on page 87, this framing is discursively supported by the discourse of the hydraulic mission and the norms that engineering projects are the solution to water scarcity, and that water should be free to everyone and only services could be chargeable. These norms and discourses, as emerged from the interviews to policy makers and governmental personnel, shape the texts interpretation phase in the discursive practice dimension (interviews 8, 14, 17, 18, 22, 25). These interviews also showed that these norms and discourses were reinforced and reproduced by the texts and by the construction of this narrative.

In an interview with a director of the MoE, the director emphasised that water scarcity is mainly due to natural reasons, and the solutions are those identified by the MWI, "*in primis* the Red Sea – Dead Sea Canal Project, which is a matter of national priority and security" (interview 50). He justified this statement by underlining that given that the reports of the MWI show that there is water scarcity, then from his knowledge engineering projects are the solution to water scarcity, hence his natural support to the project. The former minister of the MWI Jamani "noted that even with improving water efficiency, reducing water loss and wisely managing every drop of water, the country will still suffer from a water deficit" due to natural conditions and waves of refugees, calling therefore for working on increasing the water supply in the country rather than on reducing NRW or the demand (Namrouqa, 2012b). In an interview with a director of the MWI, he emphasised how the water scarcity issue in Jordan is due to the naturally limited water resources in the country, and for him the only logical solution is to build as many dams and catchment areas as possible, emphasising an engineering solutions approach to the issue (interview 53). For this director, this is also due to the broader socio-political-economic context, as "everyone in Jordan knows that water should be free"; hence for him the solution should be on increase the supply. Two interviewees state for instance that the approach of policy makers and governmental personnel in the MWI has always been engineering oriented, and engineering solutions for the water issue have been seen as appropriate and natural (interview 17 and 68). For a former senior official of the World Bank, governmental personnel in Jordan looks for technical solutions also because of their background as military officers and engineers. They were trained to find technical solutions, and apply this also to their work in the water sector (interview 68).

The technical solutions are voiced by governmental personnel, and this emerged from

the interviews at the MWI, in the textbooks[107], in the national water strategy, and in academic articles (interviews 17, 18, 42, 50, 52, and 63) (Al-Omari et al., 2014: 1, MWI, 2009: 8-18, Hadadin et al., 2010: 201, FAO, 2009: 301). As summarised in Table 7.1 below, the solutions suggested by the governmental institutions to increase the supply side are: desalination and the RSDSC project; the Disi project; treated wastewater; more dams and water harvesting constructions; and claim and increase the Jordanian share rights on transboundary water resources. The following sub-sections explore the suggested solutions on the supply side, while the summary section comprises the discussion and analysis of the supply side solutions.

Table 7.1: Supply and demand solutions

| **Supply or Demand side solution** | **Solution** | **Sub-narrative opening this solution** | **Strong support** | **Moderate support** | **Strong opposition** | **Moderate opposition** |
|---|---|---|---|---|---|---|
| Supply side solutions | RSDSC | Population growth, immigration, and refugees; Jordan as an arid / semi-arid region with low precipitation; Unfair sharing with neighbouring countries; Climate change as an additional pressure | MWI, government, shadow actors | World Bank (including several donors that financed the feasibility study) | NGO FoEME-Eco Peace | Other NGOs |
| | Desalination of brackish water | Jordan as an arid / semi-arid region with low precipitation; Climate change as an additional pressure | MWI, JVA, WAJ, GIZ, and USAID | Other donors | | |
| | Disi project | Population growth, immigration, and refugees; Jordan as an arid / semi-arid region with low precipitation; Unfair sharing with neighbouring countries; Climate change as an additional pressure | Government, king, MWI, shadow actors, French Development Agency, European Investment Bank | World Bank Group, IFC | | Other donors |
| | Reuse of treated wastewater | Population growth, immigration, and refugees; Jordan as an arid / semi-arid region with low precipitation; Climate change as an additional pressure Unsustainable agricultural water use | MWI, WAJ, USAID | Other donors | | |
| | Dams and water | Population growth, immigration, and refugees; Jordan as an arid / | WAJ, JVA, MWI, MoA, | | | Some donors |

[107] I focused on national curricula for primary and middle school from grade one until grade ten currently in use in Jordan. I analysed the textbooks of: science for grade one till eight; geography from grade six until grade ten; and earth and environmental science for grade nine and ten. Science is taught until grade eight, then it becomes earth and environmental science. Geography is taught from grade six.

| | | | | | | |
|---|---|---|---|---|---|---|
| | harvesting | semi-arid region with low precipitation; Climate change as an additional pressure | shadow actors, government | | | |
| | Claim and increase the Jordanian share rights on transb. water resources | Unfair sharing with neighbouring countries; Climate change as an additional pressure; Population growth, immigration, and refugees; | King, government, MFA, MoPIC, MWI, shadow actors | | | |
| Demand side solutions | Rehabilitation of the supply system | NRW due to leakages and physical losses | Donors and international organisations, government, MWI, and WAJ | Some members of the shadow actors | | |
| | Efficiency in water utilities | NRW due to leakages and physical losses; NRW due to illegal wells and illegal uses | Donors and international organisations, MWI, some members of the shadow actors | JVA | Critical position of WAJ several times on the type of reforms, involv. of the private sector, and role of the public sector on water utilities | |
| | Closure of illegal wells | NRW due to illegal wells and illegal uses | Donors (USAID very vocal), and MWI since 2013 | Gov. | Shadow state | |
| | Tariffing system and subsidies removal | Unsustainable agricultural water use | Donors (mainly USAID and GIZ), international organisations | MWI, WAJ, JVA | Shadow state, MoA, and parliament | |
| | Regulation on the type of crops | Unsustainable agricultural water use | Donors (mainly USAID and GIZ), international organisations | MWI, WAJ, JVA | MoA, shadow state, gov., and parliament | |
| | Efficiency in irrigational practices | Unsustainable agricultural water use | Donors, international organisations | Governme nt, MoA, MWI, JVA | Some farmers | |
| | Awareness raising for behavioural change / reduced consumption | Population growth, immigration, and refugees; Jordan as an arid / semi-arid region with low precipitation; Unfair sharing with neighbouring countries; Climate change as an additional pressure; NRW due to leakages and physical losses; NRW due to illegal wells and illegal uses; Unsustainable agricultural water use | Everyone | | | |

### 7.1.1.1 The Red Sea – Dead Sea Canal project

In this section, I examine the history of the RSDSC project and the main actors behind the project, which are governmental institutions, but also certain donors and international organisations. I argue that the RSDSC is another technical and supply side solution and that currently is one of the most prominent solutions on the supply side, shown in Map 7.1, and that it is opened by the water insufficiency narrative.

As explained in Annex 1, the idea of a canal connecting the Red Sea or the Mediterranean Sea to the Dead Sea is not a new one, but the reasons for suggesting this kind of project differed over time: transportation, hydro-power, desalinisation, save the Dead Sea, enhance regional peace and stability, and recognition through regional cooperation.

Map 7.1: An earlier version of the proposed Dead Sea-Red Sea Conveyance Project


Source: The Economist (2007).

A study programme facilitated by the World Bank and requested in 2005 by the Israeli, Jordanian, and Palestinian governments, aimed at conducting studies on the impacts and feasibility of the RSDSC project. The studies were financed by international donors, and the

goals of the project were: desalination, saving the Dead Sea, and hydropower generation. However, the feasibility study found that the planned project would be economically too costly, and therefore this project did not materialize and is unlikely to happen.

For this reason, the Israeli, Jordanian, and Palestinian water ministers signed a new agreement on the 9th of December 2013 (Jägerskog, 2003).[108] This agreement has been portrayed by some as the first phase of the RSDSC plan aiming at saving the Dead Sea.[109] However, I argue that this agreement, which is the project that I consider for this research, is not the first phase of the RSDSC project, but simply a different project. Its focus is on swapping water between the states of Jordan and Israel, and selling some additional water to Palestinians. As per this agreement, Jordan builds a desalinisation plant in Aqaba to provide water to the southern part of Israel, while Jordan will receive water from Lake Tiberias, and Palestinians will be allowed to buy more desalinised water from the Israeli national water utility; and a small pipeline will pump the brine from Aqaba to the Dead Sea (interview 17). This thesis considers this RSDSC project and not the World Bank RSDSC project. Therefore, in this thesis with 'RSDSC' I refer to the 2013 agreement and plan and not the World Bank original plan.

In an interview with a manager of the Jordanian MWI, the manager explained that the decision to start with this RSDSC instead than with the whole World Bank RSDSC project is due to technical and economic reasons. For him, Jordan does not have the experience in desalination plants and "this is why we start only with phase one" (interview 17). Also, he explained that the whole project would be too costly, and this is why it was decided to start with phase one, hoping that new donors will support the project in the future. Also, to reduce costs only one pipeline to the Dead Sea will be constructed, and the desalination plant will be based in Aqaba and not on the shores of the Dead Sea: 190 Million Cubic Meters (MCM) would be abstracted to produce 80 MCM of fresh water. According to the agreement, this amount will be allocated as follows: 30 MCM to Jordan for the local communities of Aqaba, 50 MCM to Israel, while the waste brine would go into the Dead Sea. A Build Operate and Transfer (BOT)[110] contractor would pay 80% of the cost, and the Jordanian government will

[108] From the press release "Water pipeline to link the Red Sea with the Dead Sea" from the Israeli ministry of Foreign Affairs, 9/12/2013, consulted on the 15th of January 2014: http://mfa.gov.il/MFA/PressRoom/2013/Pages/Israel,-Jordan-and-PA-sign-Red-Sea-Dead-Sea-agreement-9-Dec-2013.aspx The pipeline will be 180 km long and entirely within Jordan. It will channel 100 mcm of water per annum. The pipeline will take an estimated three years to complete.

[109] However the amount of water that would be transported to the shrinking sea is only one tenth of the original RSDSC plan, and according to geologists and NGOs, would not stabilize the level of the sea (FoEME, 2013).

[110] The BOT scheme will be valid for 25 years, and then the plan will be transferred to the public sector. Jordan will buy all the water and then will sell it to Israel at BOT price.

pay the remaining 20% (interview 17, manager from the MWI). This manager highlighted that Jordan's problem is in the northern districts: Ajloun, Irbid, and Jerash. For him, the RSDSC project is key as Israel would sell water to Jordan at the price of the 1994 agreement, which is estimated at a third of the BOT price, and transfer it from Lake Tiberias to the northern part of Jordan. Jordan will only need to treat and transfer it. For this purpose, the MWI is building treatment plants and pipelines from the border with Israel into the Yarmouk Water Company system, which operates in the northern governorates, at Wadi Arab (not to be confused with Wadi Araba) (ibid.).

The RSDSC project is one of the most prominent solutions and seen as a priority for the national water security of the country. The national water strategy dedicates three pages in its executive summary for graphs showing that only with the RSDSC project Jordan will be able to balance demand and supply by 2022 (MWI, 2009: 1-5, 1-6, 1-7). For a former minister of the MWI, "the national water security in Jordan is related to the RSDSC project", as the only solution for the water scarcity in Jordan can be desalination (interview 63). Al Hamidi reports in the newspaper in Arabic Al Rai that for Jordanian specialists and governmental officials "the 'two seas project' is the only sustainable solution to solve the water scarcity issue" (Al Hamidi, 2012). In addition, it shows that for the Jordanian government the natural solution to water scarcity, often also referred to as the *only solution*, is to be found on the supply side, through mega projects and engineering solutions, and the RSDSC is a key project and an important national priority (Al Hamidi, 2012). The Jordanian Prime Minister Ensour stated that the RSDSC will be able to solve the water scarcity issue, which is further aggravated by the Syrian refugees (Editor, 2015), the latter being one of the sub-narratives of the physicial water scarcity narrative. This is also the line supported in the Jordanian textbooks, where the construction of dams and of the RSDSC project are strongly supported and never questioned and seen as the solution for the issue of water scarcity (Ministry of Education, 2013e). As underlined by a geography professor from the ministry of education, since grade nine the issue of the RSDSC project is discussed, showing its necessity for solving the issue of water scarcity in the country. The environmental impacts are mentioned, but with a focus on the positive aspects, such as saving the Dead Sea (interview 24, person 2). At the conferences I participated in during my fieldwork, Jordanian high level water professionals from the MWI continuosly underlined and emphasised the necessity of building the RSDSC as the only long term solution to the issue of water scarcity in Jordan, as the issue of water scarcity in Jordan is due to the limited water resources available due to the sub-narratives of the water insufficiency narrative. In particular,

the arguments deployed to emphasise that this is the only solution are that: water demand is increasing due to population growth, immigration, and refugees, and water resources are limited and decreasing due to aridity and low precipitation, and climate change. When I asked the governmental personnel why this is the main solution, their reasoning was that the only solution is to increase water resources in the country through supply side and engineering solutions, and given that all rivers and tributaries have been dammed, wastewater treatment are in place, and the groundwater resources are being over-exploited, the main solution is desalination through the RSDSC (interviews with governmental personnel 8, 14, 17, 18, 22, 25, and 42). This shows the interplay of the norm that engineering projects are the solution to water scarcity, meaning the supply side mentality, and of the hydraulic mission of the state in order to solve ths issue of water scarcity through mega projects.

#### 7.1.1.2 The Disi project

In this section I argue that the government, the king, and the MWI support the Disi project, that this project is another technical and supply side solution, and that it is a solution opened by the water insufficiency narrative. As shown in Table 7.1 on pages 159, donors and international organisations are generally lukewarm supporting or opposing this project. As per the RSDSC, the norm that engineering projects are the solution to water scarcity and the hydraulic mission discourse also support this project.

The Disi project connecting Disi to the Greater Amman region, a distance of around 325 km, is been in operation since July 2013 and provides 100 MCM per year of drinking water to the capital, where most of the water demand is concentrated (Namrouqa, 2014e). Water is also pumped to the northern governorates. This would allow for partial restoration of the over-exploited but renewable aquifers of Amman and of the northern governorates (Halasah and Ammary, 2007: 5, UN-Water, 2013, Lankford et al., 2013).

The project raised environmental concerns due to the groundwater's non-renewable nature, and the Disi conveyor is seen as potentially damaging the conservation of this precious resource for the future generations that will not be able to use it for instance to adapt to the new climatic conditions (ibid.) (Global Water Partnership, 2000: 454-455). The project received funds from the European Investment Bank and the French Development Agency, and it was

constructed through a BOT scheme to the Turkish company GAMA (Global Water Partnership, 2000: 454-455, UEA Water Security Research Centre) (interview 68).[111]

The Disi project split the donor community. The World Bank initially supported the project as it provides reliability, as there is a lot of water, high quality water, and more flexibility in the water source. Other donors, like the Japanese International Cooperation Agency (JICA) and US Agency for International Development (USAID), instead, were critical with the project for two main reasons: the Disi aquifer is a non-renewable groundwater resource, and they are against working on the supply side rather than on the demand side (interviews 45, 68, and 89).

In 2013, King Abdullah II inaugurated and celebrated the Disi project, which is now fully operational (Namrouqa, 2013e). "The Disi project is the largest strategic venture implemented with the cooperation of the private sector and is one of Jordan's solutions to its pressing water crisis" underlined the minister of MWI, Hazem Al Nasser (UEA Water Security Research Centre), who stated also that this project is a "major milestone for the water sector" (Zeitoun, 2011). This project was one of the main priorities of Jordan in its National Water Strategy 2008 – 2022 and aimed at reducing the water scarcity in the country (MWI, 2009: 1-2). Its importance is emphasised in several articles of the Jordan Times[112] and also in the newspaper in Arabic Ad-Dustour (Editor, 2014, Editor, 2013). A governmental official from the Ministry of Education said about the Disi project that in the new edition of textbooks for primary school, they would talk about the Disi project, and on how this project is positively helping Amman and Zarqa for domestic water supply (interview 24, person 2). Finally, the king stated in a press release: "the Disi project […] is considered as one of the vital ventures in managing water resources, addressing the problem of water scarcity and resolving it across

[111] In addition, in 2009 a study was published which presented data showing a high level of radioactivity in the Disi aquifer (VENGOSH, A., HIRSCHFELD, D., VINSON, D., DWYER, G., RAANAN, H., RIMAWI, O., AL-ZOUBI, A., AKKAWI, E., MARIE, A. & HAQUIN, G. 2009. High naturally occurring radioactivity in fossil groundwater from the Middle East. *Environmental science & technology,* 43**,** 1769-1775.), but the MWI reacted by arguing that before reaching the households, the Disi water is mixed with water of different quality, decreasing its radiation level. "What matters is how you deal with the radiation levels using environmentally and economically sound methods. The ministry is mixing the Disi water with fresh water from Zay Treatment Plant, Mujib and other water resources in the Jordan Valley," the current minister of the MWI Hazem Al Nasser said (UEA WATER SECURITY RESEARCH CENTRE An introduction.). "Disi water is purer than bottled water and I take full responsibility for what I'm saying," Al Nasser emphasised during a press conference (ibid.)

[112] Optimism and support to the project came also from the Editor of the Jordan Times, who in an editorial titled "Good News" dedicated to the Disi project, writes: "The Disi Water Conveyance project has started bearing fruit for most of the country's thirsty cities, with households in Amman, Zarqa and Karak set to receive water four times a week. What a relief and what good news for the inhabitants of these cities" (Editor, 2013).

all the governorates of the Kingdom."[113] During the interviews with governmental personnel, I asked why this is an important and vital solution. In their answers, the same reasoning behind the support of the RSDSC is also in place for the Disi project: the only solution is to increase water resources in the country through supply side and engineering solutions, and given that all rivers and tributaries have been dammed, wastewater treatment are in place, and the groundwater resources are being over-exploited, the only solution is desalination and non-renewable groundwater resources (interviews with governmental personnel 8, 14, 17, 18, 22, 25, and 42).

Overall, it emerges that the MWI, the government, and the king support and sanction this project. They strongly support the Disi project solution, which they see as *vital* for the water sector, as it would increase the available water supply. The water insufficiency narrative is deployed by these actors, and it opens the supply side and technical solutions like the Disi project. The hydraulic mission of the state discourse and the norm that engineering projects are a solutions to water scarcity are relevant also concerning the Disi project. Some donors, instead, who were lukewarm in constructing the discourse as due to the causes identified by the water insufficiency narrative as they backed and contributed to the construction of the water mismanagement narrative, perceive that the solutions should be on the demand side, and therefore do not support this supply oriented solution.

#### 7.1.1.3 Non-conventional water

In this section I present the solutions aiming at increasing water resources focusing on the so called non-conventional water, which are: a) wastewater re-use, transforming it through pre-use treatment and management strategies mainly for agricultural use; b) desalination of brackish water or sea water; c) water harvesting; and d) claim and increase the Jordanian share rights on transboundary water resources. These solutions are on the supply side, and they are opened by the deployment of the water insufficiency narrative. I argue that these solutions are supported not only by the government, but also by donors, international organisations, and some NGOs. I also argue that the norm that engineering projects are a solution to water scarcity and the hydrualic mission discourse are relevant for solutions a, b, and c.

a) As of 2013, an estimated 120 MCM of treated wastewater is produced and used in Jordan (MWI, 2014b: 19). The amount increased from 72 MCM in 2000 to the 2013 estimates,

[113] http://kingabdullah.jo/index.php/en_US/news/view/id/11001/videoDisplay/1/print/1.html visited on the 22nd of April 2015

covering around 11% of the national water supply, according to a water lecturer at the University of Jordan (interview 12)(MWI, 2009: 1-7). The goal for the MWI is to increase this amount from 11% to 15% by 2022 (MWI, 2009: 1-7). In Jordan, 10% of treated wastewater is used for irrigation, and 1% for industrial use (MWI, 2009: 1-7). Given the proximity of the urban areas above the Jordan Valley, the main treatment plants are located between Amman, Zarqa, Irbid and the Jordan Valley. In this way, most of the treated wastewater benefit the agriculture of the Jordan Valley (Solomon, 2014: 14). In the past ten years, the MWI and the WAJ have been backing the development of wastewater treatment plants, finding the support of the donors, mainly USAID. The Samra Wastewater Treatment Plant, the largest wastewater treatment facility in the country, is located in Zarqa and is operational since 2008. Examining its financing, it emerges that USAID strongly backed this and other wastewater treatment plants, pushing for the BOT formula to further involve the private sector in the construction and implementation of mega-projects. For the Samra plant, USAID provided $78m; the Jordanian government $14m; and the Arab Bank and other banks granted $60m.[114] In the textbooks, wastewater treatment and reuse is voiced as an important way to face the issue of water scarcity (Ministry of Education, 2013f: 171).

b) Concerning desalination, Jordan can desalinise water either in Aqaba from the Red Sea or from brackish groundwater. As for the Red Sea, this has been extensively discussed in the RSDSC project section. Currently, there are a few small brackish desalination plants used for industrial purposes as well as for irrigation, for a total of 10 MCM, meaning about 1% of the current water resources (Bonn, 2013: 4, MWI, 2009: 1-7). Those are privately owned and the latter ones are mainly located in the Jordan Valley and belong to large farmers who can afford their costs. The MWI aims at increasing the amount of desalinised water from 1% to 31% of the total water resources by 2022 (MWI, 2009: 1-7). Desalination of brackish groundwater is backed by the government and donors, mainly the German cooperation agency GIZ and USAID (interviews with donors 16, 45, 68 and with MWI 18, 22, and 42).

c) Water harvesting is a solution backed by the government, and in particular by the MWI (MWI, 2009: 5-2). For the minister of MWI Al Nasser, water harvesting is an important solution for water scarce countries like Jordan, and the government together with NGOs and donors is working on "pursuing schemes to capture runoff whenever it is economically and technically feasible to do so," mainly through dams and rooftop harvesting systems (Burck,

[114] http://www.water-technology.net/projects/as-samra-wastewater-treatment-plant-jordan/ consulted on the 23rd of April, 2015

2005: 123). According to the minister of the MWI, a plan aiming at raising dams' rainwater storage by a quarter of their capacity by 2020 has been adopted (Shapland, 1997). WAJ and the MWI are planning to build new dams, in order to increase the storage capacity in the dams in the country from 327 MCM to more than 400 MCM (ibid.). Also new dams and scores of sand dams, desert dams and ponds in the desert of Badia are planned to be constructed, as confirmed by a director of the MoA (interview 25). Interviews and analysis of the textbooks showed that dams' rainwater storage is believed to be a "natural" solution to water scarcity, as it easily allows to increase the water resources and the supply in the country through a technical – engineering project. It emerged that the norm that engineering projects are the solution to water scarcity and the hydraulic mission discourse, as also shown in Box 7.1, are at play in opening this solution. Dams and water harvesting solutions are sanctioned by the government also through the ministry of education, as emerges in the textbooks used in the Jordanian educational system analysed in Box 7.1 below.

Box 7.1: Dams in the Jordanian textbooks

In order to conserve more water, students are invited several times to discuss what the best ways to collect rain water are, and the solutions suggested are dams and private wells (Ministry of Education, 2013d: 23). In this volume, there were three pictures of dams, as good examples to save and conserve water. In the textbook of science for grade three, as an example of surface water is given a dammed river, showing the dam as something normal and natural (Ministry of Education, 2013e: 19). In the same textbook, a page is titled "What are the sources of water in Jordan?" and four pictures are provided, two of them showing Jordanian dams, the third one showing the King Abdullah Canal, and the fourth one showing water falls (Ministry of Education, 2013e: 23). This means that three out of four pictures on water resources in Jordan reproduce the hydraulic mission of the state and three mega-projects. On page 24 (ibid.), questions are asked to the students: "how can we conserve and capture rainwater? Why we need to build dams? What happens to water if there are no dams?" In order to answer these questions, students are suggested to look at the big figure in the centre of the page: a big picture of a dam. This clearly shows how dams are the sanctioned solution. On page 28 (ibid.), this message is even clearer: in a box titled "read and learn: In Jordan there are few sources of surface and groundwater. We need to conserve rainwater through dams. It is our duty to preserve water." On page 60 (ibid.), there is a drawing of a dam and questions below asking the students "what is that? What is the goal of building dams?" So far, it results that all students of Jordan between grade one and three have been exposed to and may begin to internalise that there is water scarcity in Jordan and the natural solution are the dams. In the textbook of geography for grade eight, on page twenty there is a map showing the major rivers in the Arab World, and only one picture of King Talal Dam in Jordan and the title of the page is surface water in the Arab world (Ministry of Education, 2013b: 20).

d) Another solution backed by the government, the MWI, the MFA, MoPIC, and the king is to claim and increase the Jordanian share rights on transboundary water resources. As discussed in Chapters 5 and 6, Jordan has most of water resources being of transboundary

nature, shared with Syria, Israel, and Saudi Arabia. According to the current and former ministries of the MWI, Syria is not respecting the 1987 agreement on the allocation of the water of the Yarmouk River (Chapter 8). Their deployment of the sub-narrative of the unfair sharing with neighbouring countries opens this solution: Jordan should claim its rights on the agreed share of the river, especially given the water scarcity issue in the country due to the causes identified by the water insufficiency narrative. Chapter 8 further investigates issues around transboundary water governance, which are only touched in this section. Donors and international organisations do not take a stand on transboundary share issues directly; rather they might do so through their embassies (Chapter 5, 6, and 8). From the interviews, it emerged that for the governmental actors, the fair share of transboundary resources is currently ensured in relations with Israel and with Saudi Arabia (interviews 17, 18, 22, and 42 at the MWI). Only a minority of NGOs claim that Jordan should renegotiate the 1994 bilateral treaty with Israel in order to increase the Jordanian share (interview 48). This position is supported by the sub-narratives of climate change as adding an additional pressure and unfair sharing with neighbouring countries, in this case Israel. However, this position is not currently supported by the government. As discussed in Chapter 8, another issue linked to the 1994 agreement raised by a few academics and NGOs is that while the government says that it is respected, their concern is with the treaty itself, which is seen to be unfair to Jordan (interviews 17, 18, 22, and 42 at the MWI, 47 from MoPIC, 66 from MFA, and 34 from a Jordanian diplomat). The shadow states support the solution of claiming the Jordanian fair share on transboundary resources in relation with Syria, and are aligned with the governmental position.

#### 7.1.1.4 Summary

Overall, this section showed that the supply side solutions to increase conventional water resources are supported and backed by the government, and not by most of the donors or international organisations, which are generally against investing on the supply side solutions. However, supply side solutions to increase non-conventional water resources are supported not only by the government, but also by donors and some NGOs. This is one of the instances where support to these solutions comes from both governmental and donors agencies. I assert that donors and international organisations support most of the non-conventional solutions because of their environmental impact, as it is believed that the environment would benefit from these solutions, given that they would reduce the water stress of the over-exploited water resources

in the country. They would increase the water supply not by increasing the over-exploitation of the existing water resources. It has also showed which norms play a role in shaping the interpretation of texts in the discursive practice.

Concerning the conventional water resources solutions on the supply side, they are: the RSDSC and Disi projects. They are backed mainly by the government, and they use words like "vital," "only solutions," and "milestones for the water sector," putting them high in the national agenda of projects for the water and economic security of the country. These projects are the main solutions sanctioned by the government, they are technical and supply side solutions, and are securitised and linked to the national priorities of water security. They are supported by the norm of engineering projects are the solution to water scarcity, the discourse of hydraulic mission, and make the interests of the shadow actors, meaning maintaining the current water use, and to increase the supply. The norms, discourses, and actors influence the way people interpret the texts and the solutions they make of them. Donors and international organisations are lukewarm or against these projects for environmental reasons; an exception is the role played by the World Bank Group both in the RSDSC and in the Disi projects.[115]

The non-conventional water resources solutions on the supply side are backed by the government, and also supported by donors, international organisations, and some NGOs. These solutions are: wastewater re-use, transforming it through pre-use treatment and management strategies mainly for agricultural use; desalination of brackish water or sea water; water harvesting; and claim and increase the Jordanian share rights on transboundary water resources. From Table 7.1, it emerges that also sub-narratives like unsustainable water use in agriculture, from the water mismanagement narrative, suggest and drive towards solutions on the supply side, like reuse of treated wastewater. Therefore, treated wastewater reuse and water harvesting are supported by the government and also by donors and international organisations, while desalination is less emphasised by donors and international organisations while it is strongly sanctioned by the government. In addition, water treatement plants are being built through the BOT scheme, backing the involvement of the private sector. This is done mainly through USAID projects and funds, and this is one of the instances of the involvement of the marketisation discourse in supply side solutions. Concerning, claiming and increasing the Jordanian rights share on transboundary water resources, donors and international

[115] The World Bank Group did not finance the Disi project, but it was involved in its planning and considered partially funding it.

organisations do not take a stand directly; rather they might do so through their embassies (Chapters 5, 6, and 8).

This section showed that the supply side solutions are opened by the water insufficiency narrative, as the belief of the actors deploying the narrative and sanctioning these solutions is that water resources in the country are currently limited and over-exploited, demand is increasing due to population growth, water resources are decreasing due to climate change and low precipitation, and therefore the only solution is to increase the supply. The shadow actors benefit from the narrative that opens the supply side solutions, as the blame is not on the current uses but is externalised, protecting the current uses in the country, which are beneficial to the shadow actors. The goal of the shadow actors is not to be impacted by solutions that may negatively impact their interests – hence, mainly the demand side solutions. As discussed in the literature review chapter (Chapter 2), this approach is in line with the mainstream approach of water scarcity within the literature on the politics of natural resources scarcity. To recall, the mainstream water scarcity approach in the literature takes a neo-Malthusian stance, it emphasises the deterministic relation between physical issues like population growth and the fixed water resources worldwide (Gleick et al., 2009). This approach emphasises the linear relationship between hydrological systems, climate patterns, population growth, and pollution on the available water resources (Linton, 2010), as in the case of the water insufficiency narrative and the supply side mentality which underpins, in this case the norm supporting the supply side solutions.

In Fairclough's terms, the water insufficiency narrative opens supply side solutions and reproduces the norm of engineering projects are the solution to water scarcity in the social practice dimension. This norm at the same time influences the opening of these supply side solutions by influencing the interpretation of texts in the discursive practice dimension. At the same time, the discursive practice reinforces this norm in the social practice dimension. In addition, the broader political context needs to be considered in this dimension, and consideration of political stability linked to the shadow actors' uses of the water resources, the norm of water should be free and not chargeable, and the power of the shadow states constraint the possibility of transforming the norms, which are reproduced in the social practice dimension.

### 7.1.2. The demand side solutions

As investigated in Chapter 6 and summarised in Figure 6.1 on page 87, the water mismanagement narrative frames the issue of water scarcity as due to mismanagement, calling for a better management of the existing water resources, opening demand side solutions. This framing of the water scarcity issue opens policies and actions for increasing the conservation and efficiency of the water resources through demand side solutions. As discussed below in Section 7.1.2.1, these solutions on the demand side can be divided into two groups: market oriented solutions, aiming at maximising the economic efficiency of water resources; and conservation oriented solutions. This section first examines the link between the water mismanagement narrative and demand side solutions. Then, it examines the market oriented solutions and the conservation oriented solutions.

The water mismanagement narrative is constructed and reproduced mainly by donors, international organisations, and some NGOs (Chapter 6). For them, the cause of water scarcity is internal to Jordan: water resources are not limited, but not efficiently used. Donors and international organisations argue that water resources would be enough if well managed, so it is an issue of mismanagement, and it seen as a "home-made" problem. Donors and international organisations mainly blame the mismanagement of the WAJ, bad governance, current regulations and tariffs, the high subsidies, the water utilities, the shadow actors, and the farmers' lobby (Chapter 6). This emerged also in the interviews; when I asked them why these solutions are better than the supply side solutions, they explained that given that the water resources in the country are enough, and that the issue of water scarcity is due to mismanagement at the water utilities level and at the misgmanagement in the agricultural sector, the solution must be found on the demand side (interviews 89, 39, 45 and 49). Given this framing of the issue, as emerges in Table 7.1 on page 159, the solutions are to focus on improving the management of the existing water resources, with no need of increasing the supply, but rather with a necessity of focusing on conserving the existing water resources and maximising their economic efficiency through demand side solutions. Analysing their framing of the issue with Fairclough's framework, it emerges that the water mismanagement narrative opens demand side solutions, it reproduces and is influenced by the discourse of marketisation, and by the following norms: water scarcity is due to mismanagement; and private sector and the market are more efficient than the public sector (interviews 89, 39, 45 and 49).

The basic approach of donors to water development is to improve the management of

the existing water resources before developing new water resources (interview 89). For donors, it is meaningless to develop new waters if about 40% is then lost. Apart from a loan from the French donor agency, donors did not participate in the Disi project. This is because donors support the necessity to upgrade the system in Amman otherwise 40% of the water pumped from Disi would be lost in the ground (interview 89). As Hani Kurdi, deputy chief program officer at JICA Jordan puts it, "JICA's approach is curbing demands and seeking more efficient management and effective use of water resources," working to "help Jordan reduce its water consumption and improve waterworks management" (JICA, 2014: 6). The priority of the European Union (EU) cooperation in Jordan in the water sector is "to finance water and wastewater projects, including the restructuring and rehabilitation of the water supply network in Greater Amman and the modernisation of the water supply and wastewater treatment facilities in the north of the country" (Zawahri, 2010: 13). The EU focus aims at improving the management of the existing water resources, also working on improving the institutional side, as the water scarcity issue is seen mainly due to mismanagement (interview 39). Also for USAID the main challenge is the mismanagement of the water sector, including water losses and unsustainable water use in agriculture, and therefore their focus is "on efforts to increase the fairness and effectiveness of water policies affecting farmers, to improve management of groundwater and efficiency of water use, and strengthen enforcement of regulations on water pumping and waste disposal" (USAID, website).[116] USAID works with the MWI to reform the water tariffs and to push forward and implement water demand management mechanism and encourages farmers to switch to new crops, from water intense ones to water efficient and high value crops (ibid.). It also works through USAID's Institutional Support and Strengthening Program (ISSP) on institutional reforms supporting the involvement of the private sector to make water utilities more efficient in Jordan (interviews 45 and 49).

To reach these solutions, donors put conditionality on loans to the Jordanian government (not only) in the water sector, conditionality that push for the involvement of the private sector in the management or ownership of water sector related projects. This was the case for instance in relation to the Disi and RSDSC projects, the Samra wastewater treatment plant[117], and water utilities in the country (Baylouny, 2008: 294, Imai, 2012: 4-5, Tomaira, 2008). Also, supporting reforms in the water sector promoting principles of economic neoliberalism fits within this rhetoric and their interests of pushing the economic neoliberalism

[116] http://www.usaid.gov/jordan/sustainable-agriculture-and-water-management visited on the 27th of April 2015
[117] http://www.water-technology.net/projects/as-samra-wastewater-treatment-plant-jordan/ consulted on the 23rd of April, 2015

agenda (Njeru, 2013: 18-21, Pugh, 2005: 23). From the interviews with donors' personnel, when I asked them why these solutions would be the best, in their answers the marketisation discourse and the norms that the water scarcity is due to mismanagement and private sector and the market are more efficient than the public sector clearly emerged (interviews 89, 39, 45 and 49). The marketisation discourse, which refers to the idea, among water professionals, that water in Jordan is not efficiently utilised and that market and tariff based solutions would be a solution, is linked to economic neoliberalism. For this discourse, states are not seen to be able to provide all services, including good infrastructures, for water supply and management. The norm that water is precious and should not be wasted supports the solutions on the demand side that call for conservation of the water resources, as showed by Box 7.2 on page 179.

#### 7.1.2.1 Demand side solutions

The solutions on the demand side emerged in reports and during interviews and can be divided into two groups: maximising the economic efficiency of water resources; and conservation of water resources (ISSP, 2011, USAID, 2011, JICA, 2014) (interviews 39, 46, 51, 68). The following solutions belong to the group of maximising the economic efficiency of water resources: a) rehabilitation of the supply system, closure of the illegal wells, and increasing the economic efficiency in water utilities; b) tariffing system; c) regulation on type of crops; and d) efficiency in irrigational practices. The following is the solution that supports the conservation of water resources: e) awareness raising for behavioural change.

#### 7.1.2.2 Market oriented demand side solutions

a) As discussed earlier in this chapter and shown in Table 7.1 on page 159, donor agencies give high priority to the rehabilitation of the water supply network. This solution is also suggested and supported in the textbooks (Ministry of Education, 2013f: 171). This solution is in line and opened by the sub-narratives of the water mismanagement narrative. In its sub-narratives, the need for a better management and for more efficiency was underlined, insisting on the need to increase economic efficiency in the water utilities. Many donors, in particular USAID through ISSP, the EU, and the World Bank, have been blaming the water utilities for NRW (Chapter 6). They see the water utilities as not economically sound and have been calling for more efficiency through a stronger involvement of the private sector (ISSP, 2011, USAID, 2011,

JICA, 2014) (interviews 39, 46, 51, 68). This emerges, for instance, in the water sector review report on Jordan of the World Bank published in 1997, two years before the beginning of the involvement of the private sector in the Amman water utilities. To tackle the issue of "low efficiency in water resource management agencies", the report recommends to "facilitate private sector participation through: (i) a management contract for water supply and sewerage services in Greater Amman; (ii) BOT/BOO contracts for bulk water supply and wastewater treatment/reuse; and (iii) contracting some O&M functions" (Salameh et al., 2014: viii). While the EU was for the incorporation of a private sector mentality and commercialisation concepts in the water utilities, USAID, the World Bank, and the International Monetary Fund (IMF) backed a stronger privatisation of the sector (interview 39 and 51). This emerges for instance in the ISSP report of USAID: "the currently corporatised water utilities, Miyahuna, the Aqaba Water Company (AWC) and Yarmouk, operate as only partially-corporatised government entities with limited decision-making autonomy. While there have been notable performance improvements at the two larger utilities, inadequate incentives for performance, outside interference in day-to-day operations, and incomplete regulation of service standards and tariffs have limited these gains. Reforms are recommended to *fully corporatise* these utilities" (emphasis added) (ISSP, 2011: 35). The relation between the framing of the sub-narratives and the solutions suggested, are also analysed by Darmame and Potter for the case of Greater Amman Municipality (Darmame and Potter in Curtis, 2006: 464) and by Mahayni (Mahayni, 2015). Concerning the reforms of the water utilities, the government was lukewarm concerning the donors' approach, and most of the proposals were initially not approved, not passed, or not implemented by the government, who did not intervene to reform the inefficient system of water utilities it had, maintaining high subsidised and low cost recovery (interview 39 and 51). WAJ, who managed the water supply in Greater Amman, was against a decentralisation and separation of responsibilities between operator, management, and owner of the utilities (ibid.). As discussed in Chapter 6, the shadow actors overall benefited from the inefficient system and NRW due to illegal uses and illegal wells. Stopping all illegal water uses is another solution that is being suggested by donors and international organisations and currently it is voiced and formally backed also by the MWI, as discussed in Chapter 6.

b) Most donors, NGOs, and international organisations also call for restructuring the tariffing system schemes for the water sector. This is particularly supported by the IMF, the World Bank, and USAID, who focus on economic efficiency for the sector (interview 68, former senior manager of the World Bank). As shown in Table 7.1 on page 159, this is driven

by the water mismanagement narrative. This appears in the 2013 IMF report that emphasises that "water tariffs cover only about two thirds of the costs of the water companies, which run an aggregate loss of about one per cent of GDP a year" (de Gooijer et al., 2009: 15). For USAID, "the Government of Jordan could raise significant revenue – possibly achieving full cost recovery – by increasing water tariffs to closer to their market value" (Corbetta, 2003: 20). Interviews and reports showed that the this solution is supported by the discourse of marketisation, and the norms that water scarcity is due to mismanagement and that the private sector and the market are more efficient than the public sector support increasing economic efficiency in the water sector through reforms that include market and private sector involvement (ISSP, 2011, USAID, 2011, JICA, 2014) (interviews 39, 46, 51, 68). However, while it is supported by the MWI, it faces the opposition of the shadow actors, mainly represented in this instance by the farmers lobby, the MoA, and the parliament (interview 68).

c) and d) GIZ, USAID, and other donors focus on agriculture, with projects aiming at: supporting and raising awareness about best practices concerning irrigation techniques, water and drainage efficiency, switch to higher water value crops, and better marketing of the agricultural products. They do so for instance with projects to encourage farmers to switch to non-water intensive type of crops (interview 16, 28, 45 and 68).[118] When I asked in the interviews why these projects were important, their answer was always linked to the issue of the unsustainable water use in agriculture (ibid). As shown in Table 7.1 on page 159, this is particularly opened by the sub-narrative of unsustainable water use in agriculture from the water mismanagement narrative. However, this can be done only with difficulty through regulations, as underlined by a director of the MoA (interview 25). This is because farmers want to be free to choose what to grow in their own land, and it would be politically difficult for the government to impose regulations on this matter, as the large farmers are part of the shadow states and are very influential and interlinked with the government and governmental institutions (interview 16, 25, 28, 45 and 68). In these interviews the broader socio-political-economic context was mentioned as contraining their sphere of action. In addition, it is also about the type of crops exported, as emerges in an ISSP report (ISSP, 2012a). As well summarised by Al Karablieh and Jabarin from the University of Jordan "Jordan has to implement policies that reduced, or even abandoned, the export and the production of water-intensive crops. Therefore, they have to be replaced with either imports or crops that optimize

[118] http://www.usaid.gov/jordan/sustainable-agriculture-and-water-management and http://www.johud.org.jo/pages/517/natural-resource-management-and-sustainability visited on the 27th of April 2015

the water resources" (Al-Karablieh et al., 2011: 964). However, as pointed by a former senior water manager of the World Bank, while most reforms were widely accepted, including water conservation technology, water tariffing and type of crops are still opposed by the government (interview 68). In particular, the government strongly opposed banning bananas cultivation, and this became an iconic fight between the international donors and the Jordanian government (ibid). Unsurprisingly, in the textbooks among the suggested solutions there is more efficiency in agriculture through drip irrigation techniques, but nothing on the type of crops (Ministry of Education, 2013f: 171).

#### 7.1.2.3 Conservation oriented demand side solutions

e) Donors, international organisations, NGOs, and the MWI, all support solutions for the conservation of water resources on the demand side, meaning awareness raising and behavioural change projects aiming at decreasing wasting water at the household levels. As shown in Table 7.1 on page 159, this is opened by all seven sub-narratives, resulting to be supported by all actors and becoming therefore powerful and sanctioned. The interviews showed that the reason for these actors to support the conservation solutions is that they all believe this solution alone will never solve the issue of water scarcity, but they believe that it is a complementary solution to the otehr solutions they sanction. Concerning the conservation solutions, GIZ and the Jordanian Hashemite Fund for Human Development (JOHUD) established a mechanism for raising awareness, which targets women, "water wise women" project (interview 46).[119] Overall, the MWI and the government as a whole have been working intensively on raising awareness for a behavioural change to reduce demand. In particular, the MWI has been working with donors in implementing projects for raising awareness involving religious leaders, as summarised in Box 7.2. Another project implemented by the MWI with the ministry of education is on raising awareness and behavioural change among students. In the textbooks, students are suggested to decrease the waste of water, change their behaviour, as this would be in line with what Prophet once said when he "saw Sa'd performing ablution and said to him: 'Why are you wasting all this water?' Sa'd asked, 'Is there wastefulness even in performing ablution?' The Prophet replied, 'Yes, even if you were at a flowing river'" (Ministry of Education, 2013f: 173). In the textbook of science for grade one, the focus is

[119] http://agriwaterpedia.info/images/1/14/GIZ_(2011)_Best_Practices_in_the_Water_Sector_in_Jordan.pdf and http://www.gender-in-german-development.net/jordan.html visited on the 27th of April 2015

raising awareness to reduce consumption at the household level, teaching pupils on how to reduce water consumption as "water is a good from God, so we need to conserve it" (Ministry of Education, 2013d: 21). In the earth and environmental sciences ninth grade textbook, a section is dedicated to water management in Jordan (Ministry of Education, 2013a: 31-32). The solutions identified to solve water scarcity in Jordan are:

"1) Developing water resources

2) Expanding water projects

3) Water conservation

4) Introducing Islamic approaches for water management

5) Wastewater treatment

6) Monitoring of groundwater to reduce their exploitation

7) Continuing to search for new sources of water, including: water harvesting, desalination, rainwater harvesting, building dams, and digging new wells

8) Raising awareness to improve efficient use in the three sectors: agriculture, domestic, industrial" (ibid.).

Box 7.2: Raising awareness through religion

The MWI has been working with donors, the Ministry of Awqaf and Islamic Affairs, and academics from the Sharia faculty from the University of Jordan, on raising awareness and changing behaviour on water use through religion. They organised workshops to imams to raise awareness on water scarcity and on changing people's behaviour. In particular, they prepared a book on water and Islam in 2000. This book, was given to imams, and a series of workshops were organised with imams to teach them about Islam and water. The workshops and books have been given on a pilot project to selected imams and mosques covering all governorates in Jordan. The imam were invited to raise awareness during Friday sermons about the water situation in the country, the importance of saving water, and how to do so in daily life. This project is very important for public awareness: there is a big impact on norms and people's behaviour. Another project targets *wudhu* (abduction) water in the mosques, aiming at reusing it to irrigate mosques' gardens and harvesting water for mosques' water uses. The reaction of imams was good and they found the books very helpful as the topic is current and the books provided them with relevant references. The challenges faced by the MWI were AWQAF permissions, and during the preparation of the book, they needed to be very careful to make sure to collect all references and to find the correct interpretations of the holy books and hadiths.
At the moment, the MWI is working with GIZ to further improve public awareness in the mosques with posters, flyers, and brochures. The impact is difficult to measure, but the trend is that imams are now knowledgeable about issues of water scarcity and they feel empowered and actors of social change, according to a director of the MWI. (Interviews 18 with MWI, 57 with AWQAF, 28 with donor, and 48 with an NGO director).

#### 7.1.2.4 Summary

This section has highlighted how the framing of the water mismanagement narrative analysed in Chapter 6 opens demand side solutions. This narrative frames the issue of water scarcity as due to mismanagement, calling for a better management of the existing water resources. This section has also identified the solutions on the demand side opened by the narrative and divided them into two groups: maximising the economic efficiency of water resources; and conservation of water resources. This section also showed that while donors, international organisations, and some NGOs supported all demand side solutions, governmental personnel and the shadow actors also backed the solutions on the demand side not conflicting with the interests of the shadow actors. The marketisation discourse and the norms that water is precious and should not be wasted, water scarcity is due to mismanagement, and private sector and the market are more efficient than the public sector, are discursively reinforced and reproduced in the social practice dimension.

Donors and international organisations back those reforms by putting conditionality on the grants and loans to the MoPIC and the water sector. In the case of the reforms for the water utilities, this has generated reforms that have partially corporatised the utilities, albeit not fully as wanted by the USAID. The reforms of involvement of the private sector were also partly supported by members of the shadow states, who benefited from these reforms. In Fairclough's terms, the discursive practice is influenced by the broader socio-political-economic context, in this case by domestic concerns of stability linked to the support of the shadow states, and therefore in the social practice dimension the outcome is influenced by these considerations. In the case of closure of illegal wells, as seen in Chapter 6, the MWI has been vocal since 2013 in fighting the illegal users. Concerning efficiency in agricultural water use and in the agricultural sector, the struggles between official and shadow states versus the donors lies in reforms on tariffing, subsidies, and regulations on type of crops, as these reforms would undermine current benefits of the shadow actors. In this struggle, the shadow actors succeeded in blocking the reforms. Nevertheless, reforms to improve irrigation techniques and type of water used have been also supported by the government and are implemented. Concerning conservation oriented solutions on the demand side, meaning projects to raise awareness for behavioural change, these are strongly backed both by the donors and international organisations, and by the government, and driven by all sub-narratives. Therefore, these solutions were fully implemented.

Overall, a situation emerges where the demand side solutions are supported mainly by donors and international organisations. However, some of the solutions, like awareness raising, irrigation techniques, and reducing NRW through reforms of the water utilities, have been supported also by the government. In the case of the reform of the water utilities, a power struggle between donors and parts of the government, and also within donors, resulted not in a full privatisation of the utilities. Moreover, key reforms on subsidies, tariffing schemes, and regulations on type of crops are supported by donors and international organisations but blocked by parts of the government and by the shadow actors. Therefore, all the demand side solutions are supported by the donors and international organisations, but only those not opposed by the shadow actors are supported by the government and ultimately implemented. Table 7.1 above summarises the supply and demand side solutions and the positions of the actors.

## 7.2 Water scarcity discourse in the national water strategy: theory and practice

This section investigates the impact of the deployment of the water scarcity discourse on the national water strategy. It analyses the causes for water scarcity that have been identified in the strategy and then it discusses the solutions incorporated and suggested to solve water scarcity. The strategy is found to be comprehensive, incorporating the causes for water scarcity suggested by all sub-narratives. Nevertheless, I argue that some solutions, like the RSDSC and the Disi projects, are sanctioned by the strategy while others are not. However, I argue that in practice only solutions that are not conflicting with the interests of the shadow actors are substantially implemented.

The national water strategy "Water for Life," which was published in May 2009, was commissioned by the king in February 2008 and prepared by the royal water committee. This committee was chaired by Prince Faisal and brings together ministries and non-governmental water professionals from different sectors (interview 7).[120] The strategy "establishes [the country's] Vision for each of the major areas of the Water Sector. It also establishes the Actions required to achieve the Visions […] for the years up to 2022," as explained by Prince Faisal, Head of the Royal Water Committee (MWI, 2009: 1).

[120] The members of the royal water committee are: the ministers of water and irrigation, agriculture and environment, along with the director of the Economic Department at the Royal Court, Bishr Jardaneh, Suleiman Ghzawi, Ayman Bani Hani, Abdullah Malkawi, Elias Salameh, Tareq Abu Dueis and Raed Zreikat.

### 7.2.1 Theory of the national water strategy

The Water for Life (WFL) strategy for 2008 - 2022 is very comprehensive: it mentions all seven sub-narratives, not silencing any of them. First, in line with the first sub-narrative identified in Chapter 6, it blames population growth, immigration, and refugees several times in the strategy, for instance: "more pressure […] from changes in population, household formation and development, and lifestyle" (MWI, 2009: 1-1); and "the future challenges on water demand are enormous. Any unexpected growth due to regional instability, as was the case during the past decades, would increase water demand and impact the plans to reach a balanced demand and supply" (MWI, 2009: 2-2). Second, as per the second sub-narrative identified in Chapter 6, the unfair sharing with neighbouring countries is also seen as contributing to water scarcity, and therefore "Jordan shall protect and defend the rightful shares of the Kingdom's water resources through bilateral and multilateral contacts, negotiations, and agreements" (MWI, 2009: 3-9). A goal for 2022 is to ensure that "our shared water rights are protected" (MWI, 2009: 3-3; 8-3). Third, in line with the third sub-narrative identified in Chapter 6, climate change is seen as a adding a pressure on the water resources: "climate change scenarios all predict a further decline of our water resources" (MWI, 2009: 7-1). Fourth, in line with the fourth sub-narrative identified in Chapter 6, water scarcity is seen as due to aridity and semi-aridity and the low precipitation resulting in the fact that "Jordan is one of the fourth driest countries in the World" (MWI, 2009: 2-1). Fifth, in line with the fifth sub-narrative identified in Chapter 6, NRW due to leakages and physical losses is seen as a cause of water scarcity in a country where "non-revenue water is over 50% in much of the country" (MWI, 2009: 4-1; 8-3). Sixth, in line with the sixth sub-narrative identified in Chapter 6, the strategy notes NRW due to illegal wells and illegal use is part of the problem as "there are hundreds of illegal wells" (MWI, 2009: 2-1). Seventh, in line with the seventh sub-narrative identified in Chapter 6, unsustainable agricultural water use is tackled in several parts of the strategy: "water for irrigation utilizes 71% of the water demand (2007) and 64% of water supply (2007)" (MWI, 2009: 2-1); water scarcity is "manifested by a substantial imbalance in the foreign trade in food commodities" (MWI, 2009: 5-1) and a future challenge is that "irrigation consumes more than 64% (2007) of the total water used in Jordan while Agriculture's share of the GDP is 3%" and there is a need for "irrigated agriculture in the highlands will need to be capped and regulated and the by-laws will need to be reinforced" (MWI, 2009: 5-2).

Table 7.2: Causes and solutions of water scarcity in the Jordanian government's "Water for Life" strategy

| Causes | Suggested solutions | Demand - supply side solution |
|---|---|---|
| Population growth, immigration, and refugees | RSDSC and non-conventional water resources | Supply |
| Jordan as an arid / semi-arid region with low precipitation | RSDSC, Disi project, and non-conventional water resources | Supply |
| Unfair sharing with neighbouring countries | Protect the Jordanian rights' share; support negotiations, agreements, and regional cooperation for new water resources | Supply |
| Climate change as an additional pressure | RSDSC and non-conventional water resources | Supply |
| NRW due to leakages and physical losses | Rehabilitation of the system and increase efficiency in the water utilities by involving the private sector and institutional reform | Demand |
| NRW due to illegal wells and illegal uses | Implement existing regulations; awareness raising | Demand |
| Unsustainable agricultural water use | Regulations on crops; eliminate subsidies; tariffing schemes; water users associations; awareness raising | Demand |

As shown in Table 7.2, the WFL strategy thus underlines both the sub-narratives of the water insufficiency narrative and those of the water mismanagement narrative. Constructing and reproducing the issue of water scarcity as due to all seven sub-narratives, it is unsurprising to find that the solutions and actions suggested are also comprehensive, including solutions on the supply and the demand sides. On the supply side, first the RSDSC and Disi projects are seen as strategic to obtain a demand-supply balance by 2022 (MWI, 2009: 1-4 - 1-7). In the opening statement of the former minister of the MWI Raed Abu Saud, "We are taking on board serious important plans. By 2022, the Disi water conveyance and the Red-Dead Canal would be operational" (MWI, 2009: 2). Also, in the executive summary, it is emphasised that "in order to achieve the visions of this Water Strategy, the implementation are set under the following main themes: […] implementation of the Disi water conveyance and the Red Dead conveyance projects" (MWI, 2009: 1-2). Second, new dams as well as works to enhance the storage of dams are planned (MWI, 2009: 3-3). Third, concerning non-conventional water resources,

chapter six of the WFL strategy is dedicated to the issue of wastewater resources and treated wastewater for irrigational use: "Jordan will continue expanding the use of treated wastewater, which shows great potential for agriculture, industry, and urban landscape" (MWI, 2009: 2-5). Given the prospected population growth, "about 247 MCM [Million Cubic Meters] per year of wastewater is expected to be generated. When treated properly this water can be used for non-drinking purposes and will thus represent an important water resource for the country" (MWI, 2009: 6-1). Mainly due to the RSDSC project, in 2022 "water supply from desalination is a major source" of water supply (MWI, 2009: 3-3). "Jordan will implement regulations (incentives structures) to encourage rainwater harvesting" (MWI, 2009: 2-5), and the goal for 2022 is that in Jordan "rainwater harvesting is encouraged and promoted" (MWI, 2009: 7-2). Finally, also claiming and increasing the Jordanian share rights on transboundary water resources is among the solutions suggested by the strategy (MWI, 2009: 3-9).

Until here, the supply side solutions have been illustrated. However, solutions from the demand side are also promoted in the WFL strategy. First, NRW is aimed at being reduced by 2022 through rehabilitation of the supply system. This emerges in the water demand chapter: "we will reduce non-revenue water to 25% by 2022 with technical losses below 15%. To reach this goal will require the rehabilitation of water supply systems (including improved water meters), optimization of operation and management, and network restructuring" (MWI, 2009: 2-6). Second, when discussing solutions on how to reduce NRW and making the supply system more efficient to reduce water scarcity, the strategy blames the public water utilities calling for institutional reform and more involvement of the private sector (MWI, 2009: 4-5). In addition, expanding the role of the private sector and its participation in the management and ownership of the water utilities is strongly supported (MWI, 2009: 4-6). A chapter on institutional reforms focuses on this issue. This chapter identifies "weaknesses which require institutional reform" in the public sector, which "impedes efficient management" (MWI, 2009: 4-1). Among those challenges, overstaffing of the MWI, WAJ, and JVA and lack of stakeholders' involvement are mentioned (ibid.). As goals for 2022, "governance functions and operational functions are separated" and "commercial principles drive water management" are in place (MWI, 2009: 4-2). By 2022, "the retail function […] will be privatized and/or handled by empowered farmers' associations" (MWI, 2009: 5-2). Third, the issue of tariffing schemes in the water sector is also promoted to promote water efficiency in irrigation by 2022 (MWI, 2009: 2-2). Tariff setting mechanism in order to reflect the "real value of water" will be taken, as low tariffs are seen to encourage waste and low-value uses, providing no incentive for efficient water distribution

and use by water utilities and customers (MWI, 2009: 2-5). Fourth, the strategy argues that one solution should be on the agricultural and type of crops side. Market measures to discourage planting of crops with high water requirements, also through higher water tariffs for the agricultural sector and crops permits in line with water scarcity considerations, will be deployed (MWI, 2009: 5-4). Finally, raising awareness for behavioural change is seen as a necessary tool for solving water scarcity. "We will create awareness among the Jordanian public and decision makers as it is the first step towards behavioural change and lays the foundation for policy change. For example, if a high percentage of the population knew that 64% of all water goes to agriculture, but contributes little to the country's economic growth, an increase in irrigation tariffs would receive more public support" (MWI, 2009: 2-2). The goal is to have by 2022 a population "well aware of water scarcity and [about] the importance of conserving and protecting our limited water resources" (MWI, 2009: 8-1).

### 7.2.2 Implementation of the national water strategy

This section examines which solutions of the national water strategy are implemented through governmental water campaigns, policies, and actions, and which, instead, are only on paper and not implemented. In Fairclough's terms, this section looks at to what extent the deployment of the discourse brings a change to the existing power relations within the social practice dimension. It explores to what extent the change is only in theory, on the pages of the national water strategy, meaning that it is not having an impact in the social practice, or whether it brings a real change through implementation on the ground and an evolution of the power relations. I argue that while both demand and supply solutions are intimated in the strategy, in practice there is an emphasis on implementing the supply side solutions. The only bits that are implemented are those that are not politically costly for the Jordanian government and not challenging the current water use and therefore the interests of the shadow actors. These issues are to be seen as consideration of the broader socio-political-economic context, and play a role in the social practice dimension, influencing the outcome of the power struggle.

Even if both type of solutions are suggested by the strategy, the first chapter of the WFL shows that only with the construction of the RSDSC and Disi projects by 2022 there will be a water balance between supply and demand (MWI, 2009: ch.1). These two projects are portrayed as vital for the country, as emerges several times in the strategy (MWI, 2009: 4). In doing so, the strategy strongly backs these two projects. It is therefore clear that even if the

strategy suggests also demand side solutions, overall only with the adoptions of these two sanctioned supply oriented projects Jordan would manage not to be a water scarce country anymore. Also from all the nine interviews held with officials or former ministries from the MWI and with one member of the Royal Water Committee I met, it emerged a strong emphasis on the Disi and RSDSC projects (interviews 8, 14, 15, 17, 18, 22, 42, 52, 63 from the MWI, and interview 7 with member of the Royal Water Committee).

Demand side solutions present in the strategy are not fully implemented. This emerges also from an interview with a manager of the MWI that was very involved in the water demand management (WDM) department of the MWI. The manager explained that before 2002 the MWI focused on water resource management and did not look into WDM (interview 8). Donors strongly called for WDM practices, and the WDM unit in the MWI was created through a USAID project. However, this unit first focused on awareness raising rather than demand. The latter element was incorporated only in 2007 through another USAID project. Only in 2008 a WDM policy was approved and in the same year the WFL largely backed demand management (interview 8). However, to implement the WDM policy, action plans within the different ministries were necessary.[121] The policy was not a success because the ministries did not see it as a priority for them plus it was seen as an economic burden. For instance, challenges emerged in the suggestion of classification of hotels according to water efficiency. A minor success story came from the public works and housing ministry: regulations on new building with water efficient plumbs were passed in 2011 (interview 8). For the MWI manager, today the MWI is not overlooking demand: "it is considering demand but still focusing on supply" (interview 8). The Disi project was supposed to guarantee continuous water supply to Amman, and was supposed to support Amman water till 2020 considering expected demands and supply. So by 2020 Jordan needed to have a new supply source: the RSDSC project. "Now RDSC is a must," as due to the influx of refugees from Syria, Jordan now needs a new source of water (interview 8). For this reason, "WDM is further neglected as new water supply is seen as necessary and urgent and the focus of the MWI becomes on the mega-projects of Disi and RSDSC and the WDM becomes a side show" (interview 8).

The trend of focusing more on implementing the supply solutions emerges also by looking at what has been or is being implemented and at the list of solutions identified earlier in this chapter. As emerges in Table 7.3 on page 189, all the supply side solutions have been

[121] WDM is not responsibility only of MWI, but also of other sectors, including tourism, hospitals, households, industry, and agriculture. For this reason, the MWI needed a unit to coordinate the efforts on WDM in the different sectors. Focal points in all ministries and water utilities were necessary.

or are being implemented. The first phase of the RSDSC has been signed in December 2013 and is being implemented, as discussed in Section 7.1.1.1. The JVA and WAJ support farmers and industries with desalination of brackish water for their own uses. The Disi project has been completed and inaugurated in July 2013. The reuse of treated wastewater in Jordan has been increased and as of 2013, an estimated 120 MCM of treated wastewater is produced and used for irrigation in Jordan (MWI, 2014b: 19). Concerning dams and water harvesting, for Hazem Al Nasser, minister of the MWI, a plan aiming at raising dams' rainwater storage by a quarter of their capacity by 2020 has been adopted (Shapland, 1997). WAJ and the MWI are also planning to build new dams, "to raise the overall storage capacity from the current 327 million cubic metres (MCM) to more than 400 MCM" (ibid.). Finally, concerning claiming and increasing the Jordanian share rights on transboundary water resources: an agreement with Saudi Arabia was reached and signed in 2015; no updates concerning the relations with Syria on the Yarmouk due to the political events in Syria; and relations with Israel on the implementation of the 1994 peace treaty concerning water is said by Jordanian officials to be positive; in addition in December 2013 an agreement was signed for the implementation of the first phase of the RSDSC between the ministries of water of Israel, Jordan, and Palestine.

Instead, as emerges in Table 7.3 not all the demand solutions promoted in the strategy have been implemented. Several projects have been done to rehabilitate the supply system. The water utilities have been partly reformed, involving the private sector in their management. Concerning the closure of the illegal wells, the MWI has launched a campaign in 2013 against illegal wells, but it has so far only closed a small percentage of the total amount of illegal wells, as discussed in Chapter 6. In particular, the campaign has shown that most of the illegal wells that have been closed so far belong to small household owners, not targeting and closing the illegal wells of the shadow actors. Tariffing, subsidies removal, and regulation on the type of crops have not been implemented, or when the MWI tried to do so, these reforms failed to pass at the governmental or parliamentary level. This is because, as emerged from Section 7.1.2, the large farmers and agribusiness owners, who are shadow actors, have high interests to maintain the status quo, and therefore block these reforms at the parliamentary and governmental level. Efficiency in irrigational practices and raising awareness for behavioural change has been backed by all stakeholders and are being implemented.

Table 7.3: Implementation status of the solutions to water scarcity

| **Project/solution** | **Implementation status** | **Notes** |
|---|---|---|
| RSDSC | On going | This is the new project labelled RSDSC and not the original World Bank designed RSDSC project |
| Desalination of brackish water | Yes | |
| Disi project | Yes | Completed and operational since 2013 |
| Reuse of treated wastewater | Yes | |
| Dams and water harvesting | Yes | |
| Claim and increase the Jordanian share rights on transboundary water resources | On going | Disputes between Jordan and Syria on the Jordanian share according to the 1987 agreement are still on going. |
| Rehabilitation of the supply system | Yes | |
| Efficiency in water utilities | Yes | |
| Closure of illegal wells | On going | A campaign launched in 2013 by the MWI is targeting mainly non-influential owners of illegal wells. |
| Tariffing system and subsidies removal | No | Reforms to increase the tariffing of water for the agricultural sector have been blocked at the parliamentary stage of the process |
| Regulation on the type of crops | No | Reforms suggested to regulate the type of crops are blocked at the governmental and parliamentary level |
| Efficiency in irrigational practices | Yes | |
| Awareness raising for behavioural change | Yes | |

As the water director of a donor agency explained, "in Jordan strategies are only on paper and not implemented," so while this is a good strategy that acknowledges the challenges of NRW and the unsustainable water use in agriculture, and suggests appropriate solutions, in practice this strategy is not fully implemented (interview 45). Only bits of it are implemented, those that are not politically costly for the Jordanian government and not challenging the current water use and therefore the interests of the shadow actors. This means that only those solutions that are not politically costly and that do not undermine the interests of the shadow states are fully implemented. In other words, reforms on the demand side on subsidies, tariffing, and regulations on type of crops are supported by donors and international organisations but blocked by parts of the government and by the shadow states. Therefore, all the demand side solutions are supported by donors and international organisations, but only those not opposed by the shadow states, are supported by the government and ultimately implemented. In

Fairclough's terms this means that the narrative of the water mismanagement did not bring a relevant change to the hegemonic struggle in the social practice dimension.

## Conclusion

The purpose of this empirical chapter was to analyse the impact of the deployment of the discourse of water scarcity on solutions and on the water strategy in Jordan. This is of key importance for this thesis, as this chapter answered sub-research question B): What are the effects of the deployment of the discourse of water scarcity on the solutions, national water policies, and strategies? This chapter is important because it showed the solutions opened up and closed down through the deployment of the discourse.

The chapter first identified the solutions to water scarcity both on the supply and on the demand side; then it investigated the impact of the deployment of the discourse on the national water strategy; finally it examined to what extent the strategy is being implemented. The main finding is that when the interests of the shadow actors are at stake, those solutions are blocked and not implemented. This is due to considerations of the broader socio-political-economic context.

The first section showed that the same actors constructing the water insufficiency narrative support supply side solutions. The reasoning behind these solutions is that the issue of water scarcity is due to limited water resources in the country, demand is growing due to population growth, and current water resources are over-exploited. Therefore, they argue that the only solution to water scarcity is to increase the supply. In the social practice dimension, the discursive practice interacts with issues related to the broader socio-political-economic context, including political stability considerations and the shadow actors' support. Increasing the water resources through supply side solutions means therefore maintaining the status quo of current water use, resulting in continuous support of the shadow actors, ensuring political stability in the country.

The second section showed that the same actors constructing the water mismanagement narrative support demand side and conservation-oriented solutions. The reasoning behind these solutions is that the issue of water scarcity is due to mismanagement of the water resources, which are enough but not well managed by the public sector. Therefore, the need is to better manage the current water resources, more efficiently. The water mismanagement narrative calls for the involvement of the private sector to improve efficiency. In the case of the reforms for

the water utilities, this has generated reforms that have partially corporatised the utilities, albeit not fully as wanted by the USAID. The economic system is believed to be able to solve the issue of scarcity through market-related measures, including tariffing systems, technology and innovation, externalising costs, and trade.

The National Water Strategy "Water for Life" (WFL) includes both narratives, as both are incorporated and reflected in the strategy. It is therefore very comprehensive, incorporating the causes for water scarcity suggested by all sub-narratives and consequently both the solutions opened by the two narratives on the supply and on the demand side. However, some solutions, like the RSDSC and the Disi projects, are described as national priorities and strategic for the water sector, therefore sanctioning them. In Fairclough's terms, the WFL is a text and through intertextuality it shows that it reproduces all seven sub-narratives.

The following section analysed to what extent the water strategy is implemented, meaning the impact of discursive practice - the construction and interpretation of the text of the WFL - into the social practice. It emerged that only bits of it are implemented, those that are not politically costly for the Jordanian government and not challenging the current water use and therefore the interests of the shadow actors. In other terms, only the parts of it in line with consideration of the broader socio-political-economic context are implemented. In other words, reforms on the demand side on subsidies, tariffing, and regulations on type of crops are supported by donors and international organisations but blocked by parts of the government and by the shadow actors. This chapter showed that the shadow actors played an important role in the social practice dimension, in determining what could be implemented and what could not be implemented.

While this finding is important, it reasonates with interests of national considerations. Nevertheless, the sanctioned solutions are on the supply side and are of transboundary nature. For this reason, the next chapter broadens the scope of investigation by examining what are the effects of the deployment of the discourse of water scarcity on transboundary water governance. This is important as national and regional are intertwined given that most water resources in Jordan and that most of the implemented and sanctioned projected solutions would impact transboundary water governance.

# CHAPTER 8: EFFECTS OF THE DEPLOYMENT OF THE DISCOURSE OF WATER SCARCITY ON TRANSBOUNDARY WATER GOVERNANCE

## Introduction: from the construction of the discourse to shaping policies

This chapter investigates the effects of the deployment of the discourse of water scarcity on transboundary water governance in Jordan, as well as what other factors contribute to shaping transboundary water governance (TWG). This chapter answers sub-research question C): What are the effects of the deployment of the discourse of water scarcity on transboundary water governance? This is relevant for two reasons; first, most of the water resources in Jordan are transboundary, as explored in the background chapter (Chapter 5). Second, because the sanctioned dominant solutions opened by the discourse of water scarcity in the national water strategy "Water for Life" (WFL) are transboundary: the Red Sea Dead Sea Canal (RSDSC) and the Disi projects (Chapter 7). This chapter builds on Chapter 6, which investigated the construction of the discourse of water scarcity, and on Chapter 7, which showed to what extent different narratives open and close different solutions and policies. After a brief presentation of the regional geopolitical dynamics, this chapter first investigates the hydropolitical dynamics in the cases of Jordanian-Syrian, Jordanian-Israeli, and Jordanian-Saudi relations. Second, it analyses to what extent the Jordanian government is successfully claiming and increasing the Jordanian share rights on transboundary water resources. Third, it examines why the transboundary solutions opened in the WFL strategy are being implemented in different ways in the three cases considered.

## 8.1 Regional geopolitical dynamics

This section provides a background to the geopolitical alliances of the Middle East. An incomplete list of events that have shaped the regional geopolitics in the past 70 years relevant to this study is: the Cold War; the establishment of Israel in 1948; the main Arab-Israeli wars in 1948, 1956, 1967, 1973, 1982; the Iran-Iraq War in 1980-1988; the Gulf War between the states of Iraq and Kuwait in early 1990s; the Oslo Agreement in 1993; the Jordanian-Israeli Peace Treaty in 1994; the 2003 Iraq War; and the Arab Spring since 2011.

Another aspect that needs to be considered is represented by foreign aid and economic security, mainly aid from the rich countries in the region: the member states of the Gulf

Cooperation Council (GCC)[122]. Jordan, Morocco, and Sudan are aid dependant states, and they do not hesitate to support the GCC countries when required and requested. Jawad Anani, former Jordanian Royal Court chief and several-time minister, stated that "in addition to being a return of favour to the Gulf States' generous and endless support to Jordan, the Kingdom's participation has to do with its strong cultural, historical, economic and strategic relations with Saudi Arabia and other Gulf states. Jordan's national security is inseparable from the security of the Arab Gulf region" (Ghazal and Omari, 2015). In an interview to the Jordan Times, the former Jordanian minister Samer Qallab emphasised that Jordanian support to the Saudi government in the Yemen operation is "at the heart of defending Jordan's national security" (Ghazal and Omari, 2015). The article also underlines that the Jordanian priority is not to fight the Iranian expansion of influence in the state of Yemen, but rather to show to the GCC countries the Jordanian support, in order to maintain their economic support. In terms of Jordanian energy security, trade, investments, and labour remittances, the GCC stability and security overlaps with the Jordanian national security.

In line with political economic interests and the perception of security threats seen above, Russia's historical allies in the Middle East before the Arab Spring were: the Iraqi government at the time of Saddam Hussein, the Assad government in Syria, the Libyan government at Gaddafi's time, the military regime in Algeria, and the Iranian government (Katz, 2015: 2). Alternatively, the historic allies of the United States in the region are the governments of Turkey, Saudi Arabia, Morocco, Jordan, Afghanistan (after the 2001/2002 war), Israel, Egypt, Kuwait, Bahrain and Qatar. The Israeli and Egyptian governments were the two leading recipients of United States foreign aid as of 2010. The close relationship between the US and the GCC allies is shaped by energy security and energy trade and market interests (Echagüe, 2015: 184, Halliday, 2005: 334; 336-337). The close alliance between the US and the GCC countries as well as the Israeli, Egyptian, and Jordanian governments emerges also by looking at the high arms trade from the US towards those countries (Echagüe, 2015: 186).

The interests of the Israeli, Jordanian, and Saudi governments are similar when it comes to the relations with the states of Iran and Syria, and in fighting against the expansion of the Iranian influence in the state of Syria and in the neighbouring countries. It is also in the interest of these three governments to fight against the extremisms of the Islamic State, and to defend

[122] The GCC member states are all Arab states of the Persian Gulf, except for Iraq, meaning: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

their borders. In this sense, the stability of the Jordanian state, seen by the Saudi and the Israeli governments as a buffer zone, is a priority. In addition, for the Israeli government maintaining the stability of the Jordanian and Egyptian government is important as they are the only two Arab states that recognise the Israeli state (interview 66).

### 8.2 Development of the hydropolitical dynamics

Chapter 6 showed that one of the sub-narratives of the discourse of water scarcity identifies the unfair sharing with neighbouring countries as one of the causes of water scarcity in Jordan. Chapter 7 showed that the WFL strategy emphasises that "Jordan shall protect and defend the rightful shares of the Kingdom's water resources through bilateral and multilateral contacts, negotiations, and agreements" (MWI, 2009: 3-9). Chapter 7 showed that in the WFL strategy, the discursive practice opens among other solutions also three transboundary solutions: to claim and increase the Jordanian share rights on transboundary water resources; the RSDSC; and the Disi projects (MWI, 2009: 3-9). These solutions are backed by the government, the MWI, the Ministry of Foreign Affairs (MFA), the Ministry of Planning and International Cooperation (MoPIC), and the king. As discussed in Chapter 7, donors and international organisations do not take a stand on transboundary share issues directly, and they have a lukewarm position on the RSDSC and Disi projects. Interviews with senior personnel of the MWI and of the MFA, former ministers of the MWI and of the MFA, and Jordanian diplomats, showed that protecting the rightful shares of the country and strengthening the transboundary water cooperation to increase the water resources in the country has been a solution sanctioned by the government for several decades (interviews 8, 14, 17, 18, 22, 25, and 42). The discursive practice opens this solution, at least in theory, also in the WFL strategy. Nevertheless, Chapter 7 has also found that even if both supply and demand side solutions are suggested by the strategy, when looking at the social practice dimension, only the solutions that are not politically costly for the Jordanian government and not challenging the current water use and therefore the interests of the shadow actors are implemented. Table 7.3 on page 189 shows that all supply side solutions are implemented or ongoing, while the solutions not implemented are only on the demand side. The solution of claiming and increasing the Jordanian share rights on transboundary water resources is listed as ongoing, while the RSDSC and the Disi project are

implemented.[123] This section focuses on the social practice dimension, in order to understand to what extent the WFL strategy is implemented concerning the transboundary solutions, in particular on claiming and increasing the Jordanian share rights on transboundary water resources.

### 8.2.1 Development of the Jordanian-Syrian hydropolitical dynamics

In this section I argue that the 1953 and 1987 bilateral agreements with Syria were perceived by the Jordanian government as being violated by the Syrian government. The developments around the Wahda Dam, which the Jordanian government has been strongly sanctioning and backing, proceeded very slowly and did not produce the results the Jordanian government expected. Overall, the Jordanian government did not succeed in strengthening the transboundary water cooperation with the Syrian government and in claiming and increasing the Jordanian share rights on the Yarmouk basin.

The Jordanian and Syrian governments signed two[124] agreements over the Yarmouk River in 1953 and 1987. The first agreement concerned the construction of a dam near Maqarin with a capacity of 300 MCM (today's Wahda or Unity dam) and a power generating station at Adasiya for the generation of hydropower, where the electricity produced at Adasiya was to be allocated on a 75%-25% basis between Syria and Jordan (UN-ESCWA, 2013: 210-211, Haddadin, 2009: 421, Hof, 1998: 84). However, the political relations between the two governments have been tense since 1957, due to the so-called Arab Cold War between the promoters of Arab nationalism and pan-Arabism guided by the Egyptian President Abdel Nasser and the Arab monarchies, including the Jordanian Hashemites. Because of tense political relations, the Yarmouk Joint Water Committee did not meet between 1967 and 1975 and between 1980 and 1986 (Haddadin, 2006: 250). In the decades after 1953, the Syrian government reduced the flow of the river downstream, without informing the Jordanian government, by expanding the use of upstream springs; increasing the use of groundwater resources feeding the springs on the Jordanian side; and damming the tributaries to the river (Haddadin, 2006: 251). The bilateral hydropolitical relations were tense, as the Jordanian government perceived that the Syrian "act was in clear violation of the 1953 bilateral agreement

[123] The RSDSC project has not been completed yet, but an agreement for its implementation has been reached. More on this is discussed below.

[124] Rosenberg (2006) reports of three agreements, the third one being signed in 2001. However, my fieldwork showed that the third agreement was never signed and ratified, and it was rather a series of bilateral arrangements.

between the two countries" (ibid.). As put by Haddadin, "the Syrians have consistently violated the provisions of the 1953 Agreement" (Haddadin, 2012: 280).[125]

In 1987, in a climate of good bilateral relations, the two governments renegotiated a new agreement on the Yarmouk River (interview 66 with high level official of the MFA) (Curtis, 2006: 33). The 1987 agreement included the following provisions: it outlined a smaller dam with maximum capacity of 225 MCM and 126 m high (known as Wahda or Unity Dam) and a reservoir at Maqarin; it changed the approach to dispute resolution making it inter-governmental and not subjected to third-parties arbitration (as in the 1953 agreement) which worked to Syria's advantage; and recognised Syrian use of the 26 dams on the river and its tributaries and Jordan's right to store Yarmouk resources only after the filling of all Syrian dams (see Annex 2) (Hof, 1998: 87, UN-ESCWA, 2013: 211). There are two types of dams, those for water storage and those for hydropower generation. In the 1987 agreement, the planned dam serves both purposes. This means that the two governments were intending to pursue not only water supply increase, but also electricity production.

According to Rosenberg, new arrangements (not a formal agreement) between the two governments were agreed in 2001 (Rosenberg, 2006). According to these arrangements, the storage capacity of the dam decreased from 480 MCM, as envisioned in 1987, to 115 MCM in 2001, the hydropower plant was removed, the Syrian rights to fill and use additional small dams was expanded, and the Jordanian government had to compensate Syrian farmers for flooding because of the dam (Rosenberg, 2006). On the 9th of February 2004, the inauguration of the construction work of the dam took place (Rosenberg, 2006: 28, Zawahri, 2010: 137-138, Curtis, 2006). The removal of the hydropower generation part shows that the water issue, which coexisted with the electricity generation element in 1987, became prominent in 2001.

The construction of the Wahda Dam encountered long delays before it became operational in 2006.[126] The Jordanian government was pushing strongly for the dam, also because it saw the dam as a potential contributor to the solution for the water scarcity issue (interview 42 with a high level MWI official). However, since its completion, the dam never reached the full capacity of 110 MCM, but its maximum storage was reached in 2009/2010 at 20 MCM (UN-ESCWA, 2013: 211). In addition, the water quality is deteriorating – with negative peaks in the spring -, becoming utilisable only for agricultural purposes (Al-Taani, 2013). The issue of the decreased flow of the river has been discussed in the Joint Water

[125] The strength of the assertions is bounded by the availability of data, which is relatively weak for the Syrian-Jordanian hydropolitical relations; hence the heavy reliance on Haddadin.
[126] It became fully completed in 2009 (ESCWA, 2013: 211)

Committee established with the 1987 agreement, and resulted in a joint study on the quality and quantity of the water in the basin in 2009. The study aimed at exploring the causes of the decreased level of water and best measures to protect the basin from illegal pumping. In addition, it resulted in the establishment of monitoring stations in the two countries (UN-ESCWA, 2013: 212). In 2012, Mousa Jamani, former Jordanian minister of the MWI, stated that "the number of Syrian dams increased from 26 to 48, while around 3,500 wells were drilled to pump water from the river basin" without Jordanian consent (Namrouqa, 2012c). The Jordanian government negotiated in 1953 and renegotiated in 1987 a bilateral agreement with the Syrian government; nevertheless, in practice the agreement is not respected (Kubursi et al., 2011: 8). Overall, Jamani noted that "the solution to Yarmouk Basin water sharing is not technical, it is political" (Namrouqa, 2012c).

Since 2011, the year of the beginning of the political instability in Syria, a slight increase in the flow to the Wahda dam was registered (Namrouqa, 2012c). However, it was noted by Jordanian officials that this was due to a decrease in farming activities in Syria due to the unstable conditions and power cuts, which negatively impacted the pumping stations in the Syrian dams, and not to a Syrian political will to respect the 1987 agreement (interviews 18, 22, and 42 with MWI officials).

### 8.2.2 Development of the Jordanian-Israeli hydropolitical dynamics

In this section I argue that the 1994 peace treaty simply formalised the existing water regime as well as the bilateral non-official relations over water that existed between the Jordanian and Israeli governments since 1948. Also, while many analysts and Jordanian officials say that the water aspect of the treaty was good and they expected warm relations between the two governments, the relations remained formal and cold. Overall, the Jordanian government succeeded in strengthening the transboundary water cooperation through treaties and to increase the water resources through support for the RSDSC project.

Albeit formal diplomatic relations between the two governments started only in 1994, the two governments have been having non-official relations over water resources since 1948. Since the 1950s, Israeli and Jordanian officials have been meeting under the United Nations Truce Supervision Organisation (UNTSO) umbrella to discuss the management of the shared water resources. Since the 1970s, the informal secret meetings, also known as "picnic table talks," became more regular - every two to three weeks - and aimed at discussing the allocation

of the water of the Jordan and Yarmouk Rivers (Jägerskog, 2003: 143-144)(interview 52 with a former Jordanian minister of the MWI). The two governments formalised this water regime on the 26th of October 1994 by signing the peace treaty at the border crossing of Wadi Araba[127] (see Annex 3). The bilateral peace treaty had a section on water; article 6 covering in five paragraphs the general principles on water; while annex II provided details on the implementation of article 6. The water section of the treaty mainly focused on surface water, specifying the water allocation, storage, quality, but it also considered the contested groundwater in Wadi Araba, as well as the establishment of a Joint Water Committee (JWC).

While the 1994 agreement is not always perceived by Jordanian officials to be a good agreement, the Jordanian officials believe that overall it has been respected by both sides, even if it did not bring the two countries to the expected warm peace. Substantiation of this assertion comes from consideration of the bilateral relations on water are generally perceived by governmental officials to be good, as analysed in Box 8.1 (interview 17, 18, 42, and 52). As a senior official from the Ministry of Water and Irrigation (MWI) underlined, the treaty over water resources is generally respected; whether it was a good or bad agreement is another issue (interview 42). As a former minister of the MWI puts it, "I think Haddadin [former minister of the MWI who negotiated and signed the 1994 treaty] did a great job, but I don't know for whom. It seems the treaty was already written and then given to him and asked him to make it look nicer and to advertise it with good marketing. It's like a chicken: he did the egg, but no one knows whether the egg is for Jordan or for someone else" (interview 63). However, for the former minister the treaty is already there and therefore there is no point to discussing whether it is a good or bad agreement; now "we need to cope with it" (interview 63). Interviews with Jordanian diplomats show that the 1994 treaty was expected to be the starting point of a warm peace between the two countries, and that transboundary cooperation on key commercial issues, including water and energy, would have driven the countries towards a warm cooperation (interview 34 and 37, the latter with a former minister of the MFA). The 50 MCM per year that the Israeli government has to give to the Jordanian government has been overall respected. However, the peace treaty did not lead to the warm relations they initially envisaged (Barari, 2014, Barari, 2004). The bilateral relations remained cold and mainly technical, including the water sector, in part because of the lack of public opinion support to the peace treaty from the Jordanian side. However, Jordanian-Israeli relations need to be considered together with the Palestinian-Israeli relations. This was the main cause for a lot of immobility

[127] Also known as Wadi Arava.

on the Jordanian-Israeli relations. Both the Jordanian and Israeli government respected the treaty, but mistakenly thought it would generate warm relations; culturally, socially, and even people-to-people. As noted by a former Jordanian ambassador, the 1994 treaty on water has been delivered, but the peace issue has not, essentially because the bilateral relations include considerations of the Israeli illegal occupation of the Palestinian territories (interview 34).

As discussed in Chapter 7, in December 2013 the Israeli, Jordanian, and Palestinian governments signed an agreement of cooperation on the RSDSC, which was strongly backed by the Jordanian government. This is an instance of Jordanian success towards the goal of strengthening transboundary cooperation to increase water resources in the country.

Box 8.1: Analysis of the implementation of the 1994 agreement: cold peace and flexible water cooperation

For most of the MWI employees, the treaty is clear about the amounts, but disagreement happened about who has to bear the costs of developing new water resources (interview 17, 18, and 42). Disagreement happened also on the quality of the water resources, which is not well specified in the treaty. The agreement is also not flexible and does not take into consideration droughts or climate change impacts on the shared water resources (interview 48 and 61 to an NGO and European diplomat). The discussions in the JWC are generally very technical, which results in the limitation of any disagreements. Political issues are discussed directly between ministries or governments (interview 17, 18, 42, and 52). Allan argues that the implementation of the treaty on water issues is overall proceeding, resulting however in a few problematic issues (Allan, 2001: 219). In practice the monitoring inspections that are to be undertaken by the JWC need the permissions of the states, which is not always granted. Therefore, the treaty has a weak monitoring power. In addition, no conflict resolutions exist for the JWC. This became clear during three major controversies since 1994. The first of the three most relevant controversies that have arisen in the committee was on the quantity of water and on who should bear the costs for future water resource development projects in order to find the additional 50 MCM/year for Jordan. The second crisis happened in the summer 1998 and it was over water pollution in Jordan and the quality of the water transferred. The last case happed in 1999 concerning water allocation in cases of droughts. Jägerskog (Jägerskog, 2003: 143) has also noted some positive aspects of the JWC cooperation: the regular exchange of water as fixed by the treaty, the canal for storage of Yarmouk water from Jordan in Lake Tiberias in 1995, and the RSDSC project initially announced in 2002 by Israel and Jordan is also to be seen as a positive aspect of the JWC work. Overall, the lessons that could be learned from this treaty are that a water agreement should be clear not only on the water allocation, but also on who bears the costs of the development of projects. However, even with a clear language, crises and disputes can arise, as happened in July-August 1998 on the quality of the water transferred from Israel to Jordan. Finally, in water scarce regions, provisions on droughts should also be included, and the treaty should consider that the future scenarios might change due to climate change, and therefore it should include a clause for the revision of the treaty in light of new situations on the ground, like climate change.

### 8.2.3 Development of the Jordanian-Saudi hydropolitical dynamics

In this section, I argue that the Jordanian government has been exploiting the Disi groundwater resource in order to acquire a right on the shared water resource. It did so by leasing land for

agribusinesses and giving the farmers free water, and by then constructing the Disi project to pump water up to Amman. Consequently, the two governments concluded an agreement in 2015, ensuring the Saudi support to the status quo of the Jordanian uses of the aquifer. Overall, the Jordanian government succeeded in strengthening the transboundary water cooperation through treaties and support for the Disi project.

As formal official relations between the two countries over the groundwater resources have been lacking in the past decades, both countries started exploiting the Disi aquifer. Apart from an agreement signed in 1965 for land exchange that provided Jordan with the coastal area around the city of Aqaba on the Red Sea, there have been no other agreements on land or water between the two countries until 2015. Since the 1965 agreement, there has been a forum for exchange of data on the Disi, but the Saudi government has not been keen in providing data on the use of this groundwater resource (MWI and GTZ, 1977). Nevertheless, starting from the 1980s this aquifer was used for agricultural purposes by both countries. The Saudi government promoted exploitation of the Disi resources for cereals production and became a cereals exporter, negatively impacting the quantity of the non-renewable aquifer (ISSP, 2014: 452). In 1986, the Jordanian government leased 10.000 ha state-land for 25 years to four agro-companies - Ram, Wafa, Arabco, Grameco - to produce wheat, allowing them to pump 70-80 MCM a year from the Disi aquifer for free (ISSP, 2014: 452, Barham, 2012: 3).[128] For Haddadin, the Jordanian government decided to transfer water from the Disi aquifer to Aqaba since the early 1980s, aiming at solving "the escalating demand for municipal and industrial water in Aqaba" (Haddadin, 2006: 71). However, it is argued that the Jordanian side had low extractions, and therefore the Jordanian government decided to start over-exploiting the aquifer to establish historical uses rights in order to negotiate a future agreement beneficial to the state of Jordan rather than for food security considerations (Ferragina and Greco, 2008). "The companies using Disi water for irrigation argue that Saudi Arabia agro-businesses are extracting large amounts of ground water from the same aquifer complex which might cause detriments to Jordan's share in the water. Why not doing that in Jordan?" (Salameh et al., 2014: 1685).

[128] In 2011 the agreement ran out and the government decided not to renew it Moreover, shortly after the agreement was signed, the companies shifted from wheat to fruits and vegetables, using therefore more water and breaching the agreement with the Jordanian government (Barham, 2012: 3). The bylaw n.85 issued in 2002 to meter ad price groundwater was not accepted by the four companies, on the basis of the agreement signed in 1986, and therefore they refused to pay.

This "pumping race" (Shapland, 1997: 150), also known as "race to the bottom" (Zeitoun in de Gooijer et al., 2009: 19) and a "voluntary silence pumping race" (ISSP, 2014: 459), was focusing on exploiting water for irrigation in the late 1980s and in the 1990s. However, given the non-renewable nature of this groundwater resource and the perceived increasing water scarcity in the country, the government decided to use this resource for drinking and municipal use (Haddadin, 2006: 71, 144, 206). Therefore, the government pushed for pumping the Disi water to Amman to solve the issue of water scarcity in the big urban centres of the northern part of the country (Salameh et al., 2014: 1686)(ibid.). As investigated in Chapter 7, the Disi project is seen by governmental officials, media, academics, and the king as a vital project for the water security of the country. They perceive it as a key short term solution for the water sector in the state of Jordan. "The Disi project is the largest strategic venture implemented with the cooperation of the private sector and is one of Jordan's solutions to its pressing water crisis" underlined the minister of MWI, Hazem Al Nasser (UEA Water Security Research Centre), who stated also that this project is a "major milestone for the water sector" (Zeitoun, 2011). Also the king stated in a press release that "the Disi project […] is considered as one of the vital ventures in managing water resources, addressing the problem of water scarcity and resolving it across all the governorates of the Kingdom."[129]

The Disi project connecting Disi to Greater Amman region, a distance of around 325 km, has been operating since July 2013 and aims at providing drinking water to the capital, where most of the water demand is concentrated, allowing for partial restoration of the overexploited renewable aquifers of Amman and northern governorates' aquifers (interviews 3, 4, and 7 with Jordanian academics) (Fletcher, 2010: 5). The Disi project has been carried out without the consensus of or an agreement with Saudi government. For this reason as well as for environmental concerns, the project did not receive the economic support of the World Bank or of international donors (ISSP, 2014: 454).[130] [131] Finally, as shown in Box 8.2, in May

[129] http://kingabdullah.jo/index.php/en_US/news/view/id/11001/videoDisplay/1/print/1.html visited on the 22nd of April 2015

[130] The project raised environmental concerns due to its non-renewable nature, and the Disi conveyor is seen as potentially damaging the conservation of this precious resource for the future generations that will not be able to use this resource for instance to adapt to the new climatic conditions (Ferragina and Greco, 2008: 454-455). Finally, concerns concerning the costs of constructions, operations, and maintenance were raised, given the need to pump the water and the pendency (Ferragina and Greco, 2008: 454-455). Nevertheless, in 2013 King Abdullah II inaugurated the Disi – Amman conveyor, which is now operational.

[131] According to a World Bank former water specialist, the issue was that the World Bank had to notify the parties of the transboundary water basin, but the International Finance Corporation (IFC), which was responsible for this project within the World Bank Group, did not notify the Saudi government (interview 68). For him, it was not an issue of the Saudi government trying to stop the Jordanian project, but rather of IFC not handling correctly the internal notifications process (interview 68).

2015, after the Jordanian government proved the historical uses showing the acquired rights on the basin, a bilateral agreement between the two governments was reached and signed (see Annex 4). In this way, the Jordanian government ensured the Saudi approval for the Disi project and for the status quo it had created.

Box 8.2: Analysis of the 2015 Disi agreement:
a significant milestone in cooperation over transboundary groundwater resources

The agreement signed by the governments of Jordan and Saudi Arabia in May 2015 over the Disi groundwater is the first agreement on groundwater resources signed in the Middle East and among the first ones in the world. The agreement is a milestone in establishing cooperation on transboundary groundwater resources. In fact, treaties over water are usually signed about surface water resources, with over 3,600 treaties, while only a handful treaties were signed over groundwater resources.
The Disi agreement is comprised of four articles. There are no limitations on the quantity to be extracted. Two areas are envisioned; a "protected area" and a "management area". The former is a territory within each country of 10 km from the border, where "all activities … which depend on the extraction of groundwater therefrom" must be discontinued within five years. It results that there will be a buffer zone of 20 km where no excavations will be allowed. The "management area" is a more extended of around 1,000 $km^2$ in each country, but beyond the protected area. In the management area water extraction are allowed only for municipal uses, and not for other purposes like for instance irrigation. As the aquifer extends beyond the management area, it is unclear whether beyond the management area, water could be extracted for irrigation and industrial uses or not. The agreement also prohibits "any pollution" and the injection of "ant pollutant" in the management area. It also creates a Joint Technical Committee, responsible to supervise the implementation of the agreement, exchange of data and information, and ongoing monitoring. The agreement "shall be reviewed every twenty-five years," which is an important clause.
Nevertheless, the agreement does not align with the principles of international water law as it does not explicitly mention the principles of: equitable and reasonable utilisation and no significant harm. Also the norm of prior notice of planned measurers, which may have a transboundary impact is not explicitly mentioned in the agreement. As previously seen, there are provisions that align with the former two principles, such as the prohibition to use excavated water in the management area for irrigation or industrial uses, or the prohibition to pollute the groundwater resource. However, it is not clear whether beyond the management area the water could be used for irrigation and industrial uses. Also, there are no provisions on quantities of water that can be used, even if for drinking and domestic uses, and therefore this would not be in line with the reasonable utilisation especially given that the water can be pumped hundreds kilometres away from the basin, as in the case of the Jordanian Disi project.

### 8.3 Same discourse, different transboundary water governance results: a discussion

As seen in Chapter 7, the Jordanian government has been deploying the water insufficiency narrative and the discourse of water scarcity to open and drive towards certain solutions, in particular the sanctioned supply side solutions, aiming at increasing the water resources in the country. Among the sanctioned supply side solutions with transboundary relevance are: diplomatic and political claims within the framework of a bilateral agreement, which so far

have failed in the case of the relations with the Syrian government; strengthening transboundary cooperation and implementing the RSDSC project in the case of the relations with the Israeli government; and unilateral actions, including the Disi project, followed by negotiations and conclusion of a bilateral agreement in the case of the relations with the Saudi government. Therefore, the deployment of the same discourse of water scarcity in Jordan has resulted in the transboundary water governance being shaped in different ways in the three cases considered above. In other words, the discursive practice, which opened the transboundary solutions, has resulted in different power struggles results in the social practice dimension.

This section aims at explaining the differences in the cases considered and at understanding why the Jordanian government did not succeed in expanding its share in all three cases considered. I argue that it is necessary to consider the broader socio-political-economic context, as emphasised in Fairclough's framework analysed in Chapter 3. To recall, Fairclough's framework allows to open up the water box by situating the discursive practice within the broader socio-political-economic context, understanding in this way why change happens in the social practice dimension and whether the WFL is ultimately implemented or not. In this way, it allows understanding and explanation of why the deployment of the mere discourse of water scarcity has different results in the social practice dimension on the three cases considered and what the factors that interplay in the power struggle are.

### 8.3.1 The Jordanian-Syrian transboundary water governance: failed Jordanian political and diplomatic claims attempts

Concerning the Jordanian-Syrian hydropolitical relations over the Yarmouk, Section 8.2.1 highlighted that the Jordanian government has been claiming the fair Jordanian rights' share of the river and condemning the Syrian violations of the bilateral treaty. The Jordanian government has tried to increase its share by renegotiating and signing a treaty with the Syrian government in 1987 and new arrangements in 2001. However, according to Jordanian officials, the Syrian government kept not complying also with the new agreements.

While the discursive practice dimension opened solutions towards claiming the fair Jordanian rights' share of the river, in the social practice dimension these solutions do not bring change and are not successfully implemented. To recall from Fairclough's theoretical framework, it is necessary to consider the discursive practice – and the solutions it opens –

situated in the broader socio-political-economic context within the social practice dimension, context which is captured by identity and interests, related discourses, and norms, in order to understand and explain the bilateral water relations. In this specific case, the water scarcity discourse opens and underpins policies in the national water strategy towards claiming the Jordanian share rights from Syria over the Yarmouk, but I argue that the solutions opened interplay with other factors in the social practice dimension, as the discursive practice and these solutions are situated in the broader context. By considering the solutions within the social practice and the power struggle, this work can explain why there are no unilateral actions from the Jordanian government to develop the water resources on the Yarmouk River or to take any action against the Syrian government about their continuous violations taking place since 1953.

From the Syrian perspective, the Jordanian government is outside of its geopolitical alliances, and supporting the stability of the Jordanian government is not a priority or a key interest of the Syrian government. In the past decades, the Jordanian government has been a close ally of the US and Israeli ones, while the Syrian government has been closer to the Russian and Iranian ones. This geopolitical division also contributed to the conflictual relations on water cooperation between the two countries. Interviews with high-level officials of the Jordanian MWI and Ministry of Foreign Affairs (MFA), including former ministries of the MWI, showed that water was often not the top priority in the overall bilateral relations for the Jordanian government (interview 34 to former ambassador; interview 66 from the MFA, interview 37 to former minister of the MFA, interview 52 to former minister of the MWI), and for this reason in practice they assert that they have to consider the overall bilateral relations. So while for Jordan the water issue is a top priority nationally, in the case of the bilateral relations with the Syrian government, water was not the top priority when compared to other inter-sectorial relations. According to a former Jordanian ambassador, overall the Jordanian government could not do much because water "was not on top of the Jordanian priority list, water was a topic that was given to the engineers. The priorities of our foreign policies towards Syria were: trade, the peace process, and political" (interview 34 with a former ambassador). Also for a former Jordanian minister of the MWI, it was difficult and almost impossible for the Jordanian government to stop the Syrian violations for several reasons: the political alliances and objectives of the two countries were strongly different; the Syrian state was upstream and the Jordanian one downstream; Jordan had a population of five million people while Syria had 25 million people; the transit trade through Syria for the benefit of Jordan was strategic for the Jordanian government. The latter had to consider the other sectors, and therefore they assert

that it did not and could not do much about the violations of the agreement (interview 52 with former minister of the MWI). For a high level official of the MWI, the consolidated and important interests in the other sectors, in particular trade, is the main reason for which the Jordanian government never undertook any action against the Syrian violations apart from releasing statements condemning them (interview 22).

In addition, also on the Jordanian side there are nuances, and complexities that need to be accounted for. For instance, related discourses of economic development and of social stability supported the discourse of water scarcity, and its goal of a dam and of strengthening the relations with the Syrian government over the Yarmouk. As highlighted by Haddadin, former Jordanian minister of the MWI, "building a dam and expanding irrigation in the Jordan Valley would create badly needed job opportunities and help settle Palestinian refugees in the Jordan Valley", and therefore the Jordanian government adopted this plan as a policy and "recognised the importance of liaison with Syria […] to implement that policy" (Haddadin, 2006: 239). Hence, the dam was seen as necessary not only to solve the issue of water scarcity, but also to support economic development, creating jobs, and settling the Palestinian refugees, ensuring socio-political-economic stability in the country. Also Zawahri underlines that the details of the 1953 agreement are shaped by the Jordanian policy of creating jobs in the Jordan Valley through constructing a series of dams for storing water for irrigation and building the Maqarin Dam on the Yarmouk River aiming at producing hydropower (Zawahri, 2010: 136). The series of canal system, designed in 1957 and built in phases since 1961, is known as the King Abdullah Canal and was known as the East Ghor Canal until 1987 (ibid.). Energy production and water for irrigation were seen by the Jordanian government as essential for maintaining social stability in the country. As put by Haddadin, former Jordanian minister of the MWI, "faced with the realities on the ground, and eager to obtain Syria's consent to build the Maqarin Dam on the river, Jordan succumbed to Syrian pressure to rewrite the 1953 agreement" (Haddadin, 2006: 252). "Even if the 1987 agreement made the Jordanian government accept all the Syrian violations of the 1953 agreement and envisioned a smaller dam at Maqarin, the Jordanian urgency and "pressing needs" (Haddadin, 2012: 259) to build the Maqarin Dam pushed the Jordanian government to sign the 1987 agreement (Haddadin, 2012: 231-233). The features of the 2001 arrangements, as described by Rosenberg, were disadvantageous to the Jordanian government compared to the 1987 agreement, but guaranteed the construction of the dam, even if with a smaller capacity. For Rosenberg, "a desire to improve municipal water availability, reduce shortages, and lower user costs provides strong

practical, political, and economic motivations for Jordan to make the necessary concessions in exchange for the building the Unity Dam and expanding abstractions from the Yarmouk River" (Rosenberg, 2006: 34). These related reasons support the water scarcity discourse in opening the solution of claiming and increasing the Jordanian share rights on transboundary water resources, nevertheless, in the social practice dimension they are mutually related also to other considerations of the broader socio-political-economic context. The current hydropolitical relations and configuration of the TWG are the results of the power struggle within the social practice dimension.

Overall, although the Jordanian government constructed, sanctioned (Chapter 6), and deployed (Chapter 7) the water insufficiency narrative to increase its share and development of the Yarmouk River in the WFL strategy, the Jordanian government did not achieve what it aimed for in terms of TWG in the Jordanian-Syrian hydropolitical relations. This section argued that this is due to the different related elements of the broader socio-political-economic context like inter-sectorial relations, geopolitical alliances, and Syrian interests about the Jordanian political stability, the Jordanian economic development goals, and the issue of water scarcity, which interplay with the different elements of the social practice dimension. In a nutshell, this section showed that the discourse of water scarcity and in particular the narrative of water insufficiency is one of many – and not the only one - determinants of the hydropolitical relations and of TWG.

### 8.3.2 The Jordanian-Israeli transboundary water governance: successful strengthening of water cooperation

Concerning the Jordanian-Israeli hydropolitical relations, the Jordanian government sanctioned the following solutions to solve the issue of water scarcity: the 1994 peace treaty; the RSDSC project; and a stronger cooperation with the Israeli government in order to increase the water resources in the country of Jordan. The deployment of the water scarcity discourse and of the water insufficiency narrative have opened solutions for a closer water cooperation with the Israeli government, as noted by a high level official from the MFA (interview 66). This resulted in full Israeli support to the RSDSC project, which was and is wanted by the Jordanian government, and in Israeli flexibility to contributing with higher amounts of water to Jordan when requested due to droughts (ibid.). The interviews showed that the Jordanian officials perceive that the Israeli government has overall been respecting the 1994 agreement concerning

the provisions on water issues. The Jordanian governmental officials also assert that the Israeli government has been flexible in providing more water to Jordan during drought periods, upon Jordanian request (interviews 22 and 42 with a high level MWI officials). This section shows that the issue of water scarcity pushed the Jordanian government to strengthen the bilateral water cooperation by signing the 1994 agreement and then by signing the 2013 RSDSC agreement. I argue that the Jordanian efforts to increase the water share and the development of the shared water resources have been successful in these two cases due to considerations of the broader socio-political-economic context, including geopolitical alliances and to the Israeli interest in maintaining a stable political Jordanian state, which have made change happen as an outcome of the power struggle in the social practice dimension.

Concerning the 1994 agreement, apart from the formalisation of the existing water regime, Manna (Manna, 2006: 60) notes that for the Israeli government the normalisation of the relations with Jordan was the main goal, while the Jordanian government was driven by commercial interests, mainly water and energy security. This means that also from the Jordanian side, related discourses of energy security influenced the social practice dimension elements, in this case supporting the same solution opened by the deployment of the water scarcity discourse. For a former Jordanian minister of the MFA, a high priority for the Jordanian government was water, as the discourse of water scarcity at that time was as prominent as it is today, resulting in the perception of urgency around the issue of water scarcity (interview 37). For him, "water was among the five key issues negotiated in 1994 as it is one strategic sector, as important as the other four. […] Water is a matter of life or death, and this pushed the Jordanian negotiators towards concluding the peace treaty with Israel" (ibid.). For a Jordanian ambassador who was involved in the negotiations in 1994, water relations are good because it is a quantified issue, it was specified in terms of numbers, and "while it was a technical issue, it was a very important issue for Jordan. The issue of water scarcity was a main driver for Jordan. In Israel today they have 30% more water than they need, we don't, especially because of waves of refugees at that time as well as now with the Syrian refugees" (interview 34). This emphasises two important points: the relevance of the water insufficiency narrative, especially compared to neighbouring countries like Israel; and that population growth and waves of refugees are seen as an important cause of water scarcity. For Haddadin, former Jordanian minister of the MWI involved in the 1994 peace negotiations, "water obviously ranked high on the agenda of Jordan's negotiations with Israel [… and] the treaty addressed water and stressed the need for bilateral cooperation to alleviate the water shortage in each

country" (Haddadin, 2006: 256). During negotiations, "the Jordanian team leader pressed [...that] Jordan was in need of more water […] and explained the tight water situation in Amman" (Haddadin, 2012: 303). During the negotiations, the Israeli "tried their best to take advantage of Jordan's need for a diversion weir" and for water, emphasised Haddadin (Haddadin, 2012: 233). As the Jordanian minister of information in 1994 Jawad Anani declared on a TV show the day after the peace treaty signature, "Jordan has recovered its rightful share of water at a time we are badly in need of more water" (Haddadin, 2012: 406). It emerges from high level governmental officials that the water scarcity discourse was strongly deployed by the Jordanian government before and during the negotiations with the Israeli government in 1994 in order to justify and allow for the conclusion of this agreement (interview 34 and 37).

Concerning the RSDSC project, for a MWI manager, the main interest of the Jordanian government when signing the RSDSC agreement in 2013 was water, as he perceived his country to be among the most water scarce countries in the world (interview 17):

> For Jordan this is a water problem, not a political issue, therefore we treat it as purely a water project, it is a technical project and it has nothing to do with politics. It's about water availability. That's why we need an engineer, doesn't make sense to have political scientists or social scientists […]. What has politics to do with water? (ibid.).

The manager also underlined that, given the importance of water for the Jordanian government, his government was ready to consider a Jordanian only solution to implement the RSDSC project if there was no agreement with Israel. Also a high level official from the Jordanian MFA confirmed that the "Jordanian government was ready and would be ready to proceed with a Jordanian only option in order to secure water for the country" (interview 66).

Concerning the RSDSC project, the Jordanian government had to face two main challenges: a political one, meaning the necessity of including both the Israeli and Palestinian governments, and an economic one, meaning finding donors willing to finance part of the project. Solving these two challenges was key for the Jordanian government in order to increase the water resources in the country and solve the issue of water scarcity. The political issue was solved when in 2013 the Jordanian government, supported by the US administration, convinced the Palestinian government to be part of the RSDSC agreement signed in December 2013 (interviews 61 and 65 with a European diplomat and an international organisation). The

Jordanian king and government had a key role in convincing the Palestinian government to be part of the agreement and to sign it (interviews 61 and 65). From the interviews, it emerged that the Palestinians did so mainly for Jordanian and US pressures (ibid.). Also, the US are actively pushing for solving, after the political issues, also the economic issues related to the project. For instance, the US Ambassador in Amman, Jordan, has organised a series of closed meetings in the summer 2015 with diplomats from Europeans and Western embassies in order to convince them to fund the RSDSC project (interviews 45, 61, and 68 with Western diplomats and a former World Bank senior manager).

The perceived urgency of the Jordanian government for building the RSDSC project emerges also in the diplomatic conversations between Jordan and the US. The WikiLeaks cables show that in a communication from the US Embassy in Amman, Jordan, written by the Deputy Chief of Mission Lawrence Mandel to the US State Department and other US missions in the region, for the Israeli diplomats in Amman, the Israeli government has been very supportive of Jordanian requests concerning water (WikiLeaks, US embassy cable – 09AMMAN1219, 28 May 2009). For instance, the Israeli government has provided the Jordanian government with more water than agreed when requested due to droughts (WikiLeaks, US embassy cable – 09AMMAN1219, 28 May 2009). This emerges also from a 2006 cable, which highlights that "Jordan is seeking help from Israel and Syria to cover an emerging water supply gap. Israel has been helpful, Syria reluctant" (WikiLeaks, US embassy cable - 06AMMAN2108, 22 March 2006). These information are also confirmed by interviews with managers of the MWI and of Western donors (interviews 42 and 45 with high level MWI manager and Western diplomat). These cables show that the discourses around the problematic hydropolitical relations with the Syrian government influenced the Jordanian-Israeli hydropolitical relations.

For the Israeli government it is a priority to maintain a strong military and security cooperation with the Jordanian government aiming at supporting a successful Jordanian state (interview 68 with a former high level employee of the World Bank, interview 34 with a high level Jordanian ambassador, and interview 33 with a Western diplomat based in Amman). The main reason why the Israeli government supports a stable Jordanian state is that the two countries share their longest border. Therefore, for the Israeli government the Jordanian border is safe and well protected by the bilateral military and security cooperation (ibid.). In addition, Jordan is one of the two Arab countries that recognises the Israeli state and with which it has diplomatic relations, contributing to providing the state of Israel with political legitimisation.

The geopolitical reason for the Israeli support to the state of Jordan is that the latter is seen by the Israeli government as a buffer zone, a safe and stable political territory which divides the state of Israel from the states of Iraq and Saudi Arabia (ibid.). Especially nowadays, the state of Jordan separates and protects the state of Israel from the Islamic State forces deployed in parts of the states of Iraq and of Syria. In addition, the state of Jordan absorbed several waves of Palestinian refugees, and is seen from the Israeli government as a territory for the absorption of even more Palestinians in the next decades. Finally, both the Israeli and Jordanian governments are close allies of the US. For all these reasons, which are elements of the broader socio-political-economic context and driving forces of the transboundary water interactions, the Israeli government has as a top priority maintaining and supporting the political stability of the state of Jordan. It does so also by strengthening the cooperation over water resources, as this is seen as vital by the Jordanian government (Barari, 2014: 69-71, Barari, 2004: 7, Welsh, 2014, Solomon, 2014).

The related discourse of energy security was also instrumental in the power struggle in the social practice dimension. Both in the 1994 negotiations and in the discussions around the RSDSC project, both water and energy security were central discourses deployed by the governments to support the strengthening of the transboundary cooperation (interviews 45 and 56 with a high level official from a Western donor organisation and with Jordanian MPs). In 1994, the Jordanian parliament voted in favour of ratifying the bilateral treaty also because of the urgency represented by water and energy scarcity and insecurity (ibid.). The same discourses are currently being deployed by the Jordanian government, opening and driving towards the sanctioned RSDSC project and the gas deal between the two governments. Netanyahu, current Israeli prime minister, stated about the gas deal that "this was an important security, geopolitical and economic contract. Had this contract been signed a year ago, it would have helped the economic stability of Jordan, which is facing the significant and difficult challenge of hundreds of thousands of refugees. It strengthens our relations of peace, relations that are very important to the State of Israel" (in Omari, 2016). In addition, the initial plan envisioned by the World Bank for the mega project of the RSDSC had a strong economic development as well as a hydropower generation aspects. The transboundary cooperation on gas and water signed respectively in 2014 and 2013 (RSDSC) see the involvement of private companies through build-operate-transfer (BOT) programmes and not the direct involvement of the Jordanian government (Chapter 6).

This section showed that the Jordanian government successfully pursued the solutions of transboundary nature opened by the discourse of water scarcity in the relations with Israel. This section argued that this is due to the different related elements of the broader socio-political-economic context like inter-sectorial relations, geopolitical alliances, Israeli interests about the Jordanian political stability, the Jordanian economic development goals, and the issue of water scarcity. These elements interplay with the different elements of the social practice dimension. In a nutshell, this section showed that the discourse of water scarcity and in particular the narrative of water insufficiency is one of many – and not the only one - determinants of the hydropolitical relations and of TWG.

### 8.3.3 The Jordanian-Saudi transboundary water governance: unilateral Jordanian actions and successful negotiations

Concerning the Jordanian-Saudi hydropolitical relations, Section 8.2.3 showed that the Jordanian government was successful in exploiting the Disi aquifer, and in undertaking unilateral actions to construct the Disi project. The Saudi government did not openly oppose the project, and was not vocal in trying or considering stopping it. According to a high level official of the MWI, from 2006 the two governments started discussing and working on an agreement, which was accepted in 2011/2012 specifying the levels of extractions from the Disi, and the Disi project that the Jordanian government started building was in line with what was agreed (interview 22). In May 2015, the two governments formalised this decision by signing the bilateral agreement on the Disi aquifer. The project has been completed unilaterally, without Saudi official consent or cooperation, but also without public Saudi opposition to the project. In May 2015, an agreement between the governments of Jordan and Saudi Arabia was signed, as discussed in Box 8.2 on page 205.

To explain the different outcome of this case, it is necessary to include considerations of the broader socio-political-economic context as they interplay with the elements of the social practice dimension. I argue that the reasons of the Saudi government to help the Jordanian government by tacitly and then officially supporting the Disi project, strongly wanted by the Jordanian government, are related to broader socio-political-economic context' considerations. These considerations influence the interests and identities, norms, and related discourses in the social practice dimension of the discourse of water scarcity.

The countries of Saudi Arabia and Jordan share a long border. For the Saudi government, it is strongly beneficial to have a stable Jordanian state as it prevents the Saudi one from bordering with the Syrian and Israeli states (interview 34 with a high level Jordanian diplomat; interview 64 with a high level Western diplomat in Amman). The bilateral relations between the Jordanian and Saudi governments became even stronger in the past ten years, as most of the other Jordanian borders are unstable, and therefore trade relations between the two countries on energy intensified (ibid, and interview 66 with a high level MFA official). The Jordanian relations with the Gulf Cooperation Council (GCC) countries improved (ibid.). Since 1967, year of the Israeli occupation of the West Bank, the Jordanian government has faced many issues due to waves of refugees, and for a high level official from the MoPIC, the Saudi government has supported the Jordanian government economically and with resources to maintain the Jordanian social and political stability (interview 47).

However, the Saudi government, while supporting the Jordanian government, aimed at having a surviving but weak Jordanian government. As put by a former Jordanian minister of the MFA, the Saudis want "Jordan to survive but in a weak way: on one foot but never prosper" (interview 37). Also for a Western diplomat in Amman, the Saudi government likes to keep the Jordanian government "on a short leash", giving them financial support to maintain them at flow, but not to make them prosper (interview 33). For him, a Saudi interest is also to keep using the Jordanian government to talk to Iran and Israel, and to the Iraqi one during Saddam's times (ibid.). Finally, both the Jordanian and Saudi governments are close allies of the US one, and are aligned concerning regional geopolitics. Both countries support the US positions concerning Syria, Iraq, and they are both allies versus Iran. For all these reasons, the Saudi government has as a top priority maintaining and supporting the political stability of Jordan, and it does so also by strengthening the cooperation over water resources, as this is seen as vital by the Jordanian government for its stability.

This section showed why the Jordanian government was successful first in overexploiting the Disi resources for agricultural reasons, and then to build the Disi project to pump water to Amman for drinking reasons. The Saudi government firstly tacitly, and then officially, supported the Jordanian government in increasing its water resources through the shared water. The reason for the Saudi support is of political economy and mainly geopolitical, therefore due to elements of the broader socio-political-economic context that influenced the relevant elements of the social practice dimension of the discourse of water scarcity, rather than water only related considerations. This section affirmed once again that TWG and

hydropolitical dynamics are shaped not by the discourse of water scarcity alone, but by the discourse of water scarcity seen within the broader socio-political-economic context that influences all elements of the social practice dimension of the discourse of water scarcity, making change happen or not.

## Conclusion

The purpose of this chapter was to discuss the findings of the empirical Chapters 6 and 7 in relation to TWG. The previous two chapters have explored the construction of the water scarcity discourse and how its deployment opens and closes solutions, which result in impacting policies. Given that the majority of the water resources in Jordan are transboundary, and that the sanctioned solutions are of transboundary nature, this chapter investigated the extent to which the deployment of the discourse shapes TWG in Jordan, as well as what other factors contribute to shaping TWG.

The WFL strategy analysed in Chapter 7 shows that the deployment of the discourse of water scarcity by the Jordanian government opened and emphasised mainly supply side solutions. Among these solutions, the discourse opened solutions to increase the Jordanian share from the transboundary water resources. To solve the issue of water scarcity, the Jordanian government is trying to increase its share through agreements and by strengthening cooperation with neighbouring countries. Jordan is the least powerful country in all three cases considered, however the behaviour of the other riparian countries versus the Jordanian efforts to increase their water resources is different. I argued that it is necessary to consider the broader socio-political-economic context, as it is to the other governments to decide to what extent to help the Jordanian government, in line with considerations of the broader socio-political-economic context. These considerations influence the elements of the social practice dimension, namely interests and identities, structures, norms, and related discourses. I also argued that the Jordanian government pushes with different intensities to increase or claim its shared water resources according to considerations of the broader socio-political-economic context, which interplay with elements of the social practice dimension.

While the deployment of the water scarcity discourse opened and underpinned solutions of increasing the water supply by claiming the Jordanian share rights on the transboundary water resources, the Jordanian efforts had three different outcomes in the three cases considered. First, in the Yarmouk case, the Jordanian government has been unable to increase

its share of water from the river, and did not succeed in making the Syrian government respect the 1987 bilateral agreement. Second, in the Israeli case, the Jordanian government increased its share during the droughts period because of the Israeli cooperation, and is working towards the RSDSC project to increase water resources in the country through desalination and a water swap agreement. Third, in the Saudi case, the Jordanian government successfully constructed the Disi project and formalised the current uses in a bilateral agreement signed in May 2015. Therefore, it results that the Jordanian government reached positive results from a water perspective in the Israeli and Saudi cases, but not in the Syrian one.

As examined in Sections 8.3.1, 8.3.2, and 8.3.3, while the Jordanian government backed increasing the water resources in the country, the Syrian, Israeli, and Saudi governments had different considerations in relation to allowing the Jordanian government to increase its share over the transboundary water resources. For the latter two governments, maintaining the political stability in the state of Jordan is a priority, which resulted and results in supporting the Jordanian government, albeit to different extents, to maintain its social and political stability also through its water sector. The Syrian government, instead, does not have a strong interest in supporting the Jordanian government, and this explains why the Syrian government is lukewarm in helping the Jordanian government, including when it comes to TWG. At the same time, it emerged that the Jordanian government had vital trade, economic, and commercial interests with the state of Syria, and these economic relations interplayed with the elements of the social practice dimension, shaping the outcome of bilateral water relations. For this reason, as discussed in Section 8.2.1, the Jordanian government has in practice never taken any action against the Syria government, apart from declarations condemning the Syrian government for the breach of the agreement.

It is therefore necessary to consider not only the water relations, but also the broader bilateral relations – the broader socio-political-economic context - including to what extent the other government has an interest in supporting the Jordanian government in facing what is framed as a water scarcity issue. By looking at the broader bilateral relations, it is possible to capture the related discourses, structures, norms, interests and identities, and how they interplay with each other. For instance, often water is not on top of the political bilateral agenda in comparison to the economic interests existing between the Jordanian and other governments. As Daoudy would put it, to understand water relations and dynamics between two countries, it is necessary to also look at issue linkages, as inter-sectorial relations can overcome conflictual relations and change power asymmetries on transboundary water resources (Daoudy, 2009).

Therefore, I argued that it is necessary to consider the water scarcity discourse as situated in the broader bilateral relations, including the inter-sectorial interests of the governments, in order to understand the different factors impacting TWG.

In other words, this chapter demonstrated that TWG and hydropolitical dynamics are shaped not by the discourse of water scarcity alone, but by the discourse of water scarcity seen within the broader socio-political-economic context that influences all elements of the social practice dimension of the discourse of water scarcity, making change happen or not. This chapter was conceptually important as it showed that other discourses in terms of water rights and water security are also influential in water management discourses in Jordan for TWG. In a nutshell, this chapter contributes to this study by showing the limitation of considering only the discourse of water scarcity and of a discursive approach to the analysis of water resources management, calling for a political economy approach for a more comprehensive analysis of the issue. In fact, while critical discourse analysis attempts to fill this limitation by consideration of the broader socoi-political-economy context, this chapter showed the heavy reliance on this broader context, emphasising the necessity of a framework able to capture this context in a more effective way.

# CHAPTER 9: CONCLUSION

## Introduction

Everyone in Jordan agrees that water scarcity is an important issue. Governmental personnel, academics, donors' organisations' representatives, diplomats, journalists, farmers, students, and teachers: they all agree about the gravity of water scarcity. However, when I asked them why there is water scarcity, making them unpack the issue of water scarcity and telling me the reasons causing it, there was disagreement and a variety of answers. Their different understanding of the issue resulted in them suggesting different solutions to solve water scarcity. This shows that the framing of the discourse is key to opening and closing certain solutions rather than others. Unsurprisingly, actors construct and deploy discourses to pursue their interests in the water sector.

Nevertheless, the belief that water is scarce in Jordan is taken for granted in newspapers, in Jordanian academia, and within Jordanian governmental institutions. The deployment of the discourse is opening and backing supply side solutions, also with impacts on transboundary water governance. This is the case because most of the water resources in Jordan are transboundary. In order to address the issue, this study investigated the discourse of water scarcity in Jordan. First, it focused on the construction of the discourse, identifying the actors, their interests, the texts, the power struggle within and around the discourse, and where the blame is placed. It identified all the narratives and sub-narratives constituting the discourse. Second, it examined the effects of the deployment of the discourse on solutions, policies, and strategies. Third, given the relevance of the transboundary aspect for the water resources of Jordan, it explored the effects of the deployment of the discourse on the: Jordanian-Syrian, Jordanian-Israeli, and Jordanian-Saudi hydropolitical relations.

The departure point of this study was adopting Fairclough's critical discourse analysis (CDA) to the discourse of water scarcity in Jordan to identify who constructs the discourse, and the interplay between their interests, norms, and related discourses. I adopted the CDA framework and Fairclough because it allows a critical investigation of the discourse of water scarcity in Jordan and because it situates the discoursive practice within the broader context, which is central for water scarcity in Jordan. First, it looks at the key texts, declarations, or events key for the discourse, exploring who constructed them. Second, the discursive practice looks at the construction and interpretation of the texts, situating these process within the broader socio-political-economic context. Third, the social practice examines how the

discursive practice impacts the social relations within the broader socio-political-economic context, to analyse whether the deployment of the discourse reproduces and reinforces current power relations or transforms and contests them. Finally, looking at the power struggle in the discourses in the social practice dimension allows identification of the economic and political forces and interests that lie in and around the discourse. Fairclough's conceptualisation of power and hegemony are useful and in line with my understanding of these concepts and with the understanding of discourses as the place of power struggle and ideology contestation and in their relation to policies. What is also useful about Fairclough's CDA is that it allows to focus on the texts producing the discursive practice, on how they relate to previous texts, but at the same time relating them to the broader socio-political-economic contexts and their constraints. For these reasons, I adopted Fairclough's framework rather than other ones.

This study confirmed the necessity of the discursive analysis of water scarcity in Jordan. Nevertheless, Chapter 8 showed some limitations of CDA for the analysis of the impact of the discourse of water scarcity on TWG, meaning on the implementation of the solutions opened by the discourse of water scarcity. Chapter 8 found that the discourse is one element – among others – shaping TWG. In particular, it found that while the rational thing to do for the Jordanian government, in line with its official discourse of water scarcity, was one, in practice other elements and interests pushed the Jordanian government to take other decisions. This showed the limitation of the conceptualisation of knowledge (and discourses) as power, and calling for political economy analysis instruments and tools to examine also "informal" aspects and other dimensions of power. For this reason, as argued below, a political economy analysis would allowed a stronger analysis of the elements and forces shaping reforms in the country. In fact, "political economy analysis is concerned with the interaction of political and economic processes within a society: the distribution of power and wealth between different groups and individuals, and the processes that create, sustain and transform these relationships over time" (Collinson, 2003: 3).

In order to adopt a political economy analysis and to capture also the informal interests, and the nuances in the policy making process and of the power struggles around the reforms in the water sector, it would be useful to adopt an anthropology of the state approach, which would allow giving relevance to systems of meaning and belief, agency, everyday practices, infrastructures, bureaucracy, hidden and overt mechanisms of power. As seen in Chapters 6 and 7, the nuances in the relations between the shadow and official states, the hidden and overt interests, and to some extent overalapping identities of these actors could be better understood

through this approach. As pointed out by Sharma and Gupta (2009: 9), "the state should be seen and conpetualised *within* […] other institutional forms through which social relations are lived", allowing a better conceptualisation also of how power is distributed among other non-state actors, through a 'de-statalization of government' approach (Sharma and Gupta, 2009).

The structure of this final chapter is as follows. First, this chapter reviews the research question and research sub-questions outlined in the introductory chapter (Chapter 1) based on the findings of the empirical case studies. Second, it identifies the analytical gaps and limitations, explaining the reasons why the study was unable to cover the mentioned gaps. Third, this chapter highlights potential future research directions to overcome the gaps I have identified. Finally, this chapter briefly reiterates the contributions to knowledge and to existing literature made by this work.

## 9.1 Reviewing the research question and the empirical findings

This section analyses the empirical findings in the light of the analysis of the empirical and theoretical chapters. The findings points enable a response to the overarching research question guiding this work:

***How is the discourse of water scarcity constructed in Jordan?***

The following complementary sub-questions helped to answer the overarching research question of this work:

A) What are the elements comprising the discourse of water scarcity, including narratives and sub-narratives?

B) What are the effects of the deployment of the discourse of water scarcity on the solutions, national water policies, and strategies?

C) What are the effects of the deployment of the discourse of water scarcity on transboundary water governance?

The main original contributions to knowledge of this study are related with empirical context. The main empirical contributions is the depth of analysis of the water scarcity discourse in Jordan, including: the political economy of Jordan's water sector in the neoliberal era; the methodological contribution of using the critical discourse analysis to this case study; the comparative approach to all transboundary water governance (TWG) in Jordan; and the relation between water scarcity discourse and TWG in Jordan.

As stated above, this study focuses on the construction of the discourse of water scarcity in Jordan and on its impacts on the water sector within a wider process of economic neoliberalism. Although Jordan is considered to be among the most water scarce countries in the world, the discourse of water scarcity has been taken for granted and applications of discourse analysis framework to the study of water scarcity in Jordan has remained limited. Water scarcity in Jordan has been addressed by Jordanian scholars from a hegemonic framing of water scarcity, mainly from engineering and natural sciences approaches. A discursive approach to water scarcity in Jordan has been recently deployed in the literature with a focus on urban areas, privatisation , and water utilities (Masharqa, 2012, Mahayni, 2015), but an in depth discursive analysis of the issue of water scarcity in Jordan is still missing. Extensive research has been done on the Jordan River Basin, but nothing has been published so far on an in depth analysis of the relation between the discourse of water scarcity and the Jordanian cases of TWG.

The lack of an in depth analysis of the discourse of water scarcity in Jordan is a gap in the literature that this study sought to fill. By employing Fairclough's critical discourse analysis theoretical framework, this study applies Mehta's (2005) critical approach to the discourse of water scarcity but to the case of Jordan, making an empirical original contribution to knowledge. This study investigated the discourse identifying the interests, actors, norms, related discourses, where the blame is placed. It then showed the effects of the deployment of the discourse and narratives in opening and closure of solutions, policies, and strategies. Finally, it showed the role of the deployment of the disocurse in TWG, considering its relation with other drivers captured through the analysis of the broader socio-political-economic context.

Within the limits of this study identified in Chapter 4, the main empirical findings, within the main contribution of the depth of analysis of the water scarcity discourse in Jordan, are:

Complexity of actors: actors are comprised of different voices, positions, and interests

This study went beyond the fixed scalar approach of considering only one scale of analysis, and deployed a multi-scalar analysis, exploring actors within their complexity, on the local, national, and international scales. It did not take for granted categories like the public sector, private sector, and at civil society. Instead, it investigated their complexity and variety of interests, looking for instance at the state and at the civil society not as unified actors, but as actors with a complexity of interests and identities and therefore positions. Chapter 6 showed the variety of different interests within the Jordanian government, and how the power struggle between different ministries supporting different sub-narratives and different solutions. It showed how the state and civil society are constituted by different voices, and within them several positions and interests are represented.

Mapping of the elements comprising the discourse

Chapter 6 investigated the discourse for analytical purposes through two narratives: water insufficiency and water mismanagement; and seven sub-narratives. The water insufficiency narrative, which is the dominant narrative, was composed by four sub-narratives, which blamed factors external to the government or Jordan's circle of influence and responsibilities: nature, refugees and immigration, and neighbouring countries. This implies that the shadow actors remains untouched and free of blame. This narrative is sanctioned and constructed mainly by the government through key texts of the Ministy of Water and Irrigation (MWI) and the Ministry of Environment (MoE), and reproduced by many academics, non-governmental organisations (NGOs), and media. The water mismanagement narrative blames the mismanagement and bad governance of the governmental institutions and the status quo is seen as unsustainable, mainly blaming the shadow actors. Its sub-narratives are constructed and reproduced by donors and international organisations, through reports, conferences, and declarations. They are partially shaped by the government, for instance emphasising the leakages physical losses in non-revenue water (NRW) rather than the illegal wells and illegal uses until 2013. Chapter 6 also calculated the "prominence" of the different sub-narratives, showing that the powerful sub-narratives are: population growth, immigration, and refugees; unfair share with neighbouring countries; NRW due to leakages and physical losses; and NRW due to illegal wells and illegal uses. This means that the sub-narratives that are sanctioned and voiced by governmental institutions and the shadow states, and also reproduced by donors, international organisations, NGOs, and academics, are the most prominent and powerful ones.

Chapter 7 showed that this results in opening and closing of different solutions, and in emphasising certain solutions as vital and de-emphasising others.

This study also showed that in Jordan only the two mainstream conceptualisations of water scarcity are constructed. Two trends emerge in line with the two mainstream conceptualisation: the neo-Malthusian approach to water scarcity opens supply side solutions aiming at increasing the amount of water resources; and the management and economic approach to water scarcity opens demand side solutions driven by markets and economic efficiency principles. However, what is missing in Jordan is the structural inequality and distribution critical approach, for which the issue of water scarcity is in the inequitable institutional and governance arrangements (Chapter 2). As emphasised by Mehta (2010: Chapter 1), the key issue is not about the availability of a resource, but rather about who has access in an adequate quantity to it, which is the outcome of political processes and decisions of inclusion and exclusion, which could be linked to the price of water, to the lack of infrastructures, or to social exclusion.

Who is to blame for water scarcity?

Chapter 6 analysed where the blame for water scarcity lies in the different narratives and sub-narratives, as this is discurisively important as it contributes to open and close solutions and policy options, as discussed in Chapter 7. The water insufficiency narrative blames factors external to the government or Jordan's circle of influence and responsibilities: immigration and refugees influx; external countries and regional political situation; climate change; and nature and environmental conditions. Being the causes identified as external, the blame is also on external elements: nature, refugees, and neighbouring countries. This implies that the blame is not within the country, for instance the government, the big water consumers, or influential elites. Instead, the water mismanagement narrative blames the mismanagement and bad governance of the governmental institutions and the water utilities within the country, the illegal users, the farmers, and the shadow actors. This emerges in the sub-narratives: NRW due to leakages and physical losses blames mismanagement by WAJ and the public governmental institutions; NRW due to illegal wells blames bad governance and mismanagement at the MWI and governmental level, the water utilities, and the illegal users, including the shadow actors that benefit from it; inefficiency in the agricultural sector blames the bad governance at the governmental level, the MoA, and the farmers.

Solutions opened up and closed down through the deployment of the discourse

Chapter 7 identified the solutions opened by the deployment of the discourse of water scarcity in Jordan, which are on the supply and on the demand side. The deployment of the dominant narrative – water insufficiency – opens the supply side solutions, which are: desalination and the Red Sea – Dead Sea Canal (RSDSC) project; the Disi project; treated wastewater; more dams and water harvesting constructions; and claim and increase the Jordanian share rights on the transboundary water resources. Governmental personnel and the shadow states voice these solutions, as they push for increasing the water resources in order to maintain the status quo of current water use. These solutions are suggested by the government by framing the water scarcity issue as due to the nature or factors external to the governmental sphere of responsibilities. For them, the priority is to get more water, as according to their framing of the water scarcity issue, the current water resources are limited. The norm of engineering projects are the only solution to water scarcity supports a hydraulic mission of the state, aiming at increasing the supply. However, donors and some NGOs also support non-conventional solutions on the supply side. This is because of their environmental impact, as it is believed that the environment would benefit from these solutions, as they would reduce the water stress of the over-exploited water resources in the country.

The solutions on the demand side opened by the deployment of the water mismanagement narrative are: rehabilitation of the supply system; efficiency in water utilities; closure of illegal wells; tariffing system; regulation on type of crops, efficiency in irrigational practices; and awareness raising for behavioural change. While the latter is a conservation oriented solution, all the previous ones are market oriented solutions. Donors, NGOs, and international organisations suggest these solutions. An important finding is that when the interests of the shadow actors are at stake by the solutions suggested, those solutions are blocked and not implemented.

Implementation of the solutions opened up and closed down through the deployment of the discourse

Chapter 7 also showed that in the National Water Strategy "Water for Life" both narratives are incorporated and reflected. This strategy is very comprehensive, incorporating the causes for water scarcity suggested by all sub-narratives and consequently both the solutions opened by the two narratives. Even if actors' interests are sometimes in contradiction, as in the case of tariffing, subsidies, and regulations on type of crops, the strategy incorporates and promotes all

solutions. However, it appears that some solutions, like the RSDSC and the Disi projects, are described as national priorities and strategic for the water sector, therefore sanctioning them. The analysis in Chapter 7 demonstrated that only bits of the strategy are implemented, those that are not politically costly for the Jordanian government and not challenging the current water use and therefore the interests of the shadow states. In other words, reforms on the demand side on subsidies, tariffing, and regulations on type of crops are supported by donors and international organisations but blocked by parts of the government and by the shadow states. Therefore, the donors and international organisations support all the demand side solutions, but only those not opposed by the shadow states, are supported by the government and therefore implemented. This can be seen as a power struggle in the social practice dimension.

Transboundary water governance: hydropolitical dynamics are shaped not by the discourse of water scarcity alone

Chapter 8 has analysed the effects of the deployment of the water scarcity discourse on Jordanian-Syrian, Jordanian-Israeli, and Jordanian-Saudi hydropolitical relations. The main finding is that the deployment of the water scarcity discourse shaped hydropolitical relations in three different ways. By analysing the three cases, this study showed that TWG and hydropolitical dynamics are shaped not by the discourse of water scarcity alone, but by the discourse of water scarcity seen within the broader socio-political-economic context that influences all elements of the social practice dimension of the discourse of water scarcity, making change happen or not. In Chapter 8, I argued that it is necessary to consider the broader socio-political-economic context, as it is to the other governments to decide to what extent to help the Jordanian government, in line with considerations of the broader socio-political-economic context. These considerations influence the elements of the social practice dimension, namely interests and identities, norms, and related discourses. I also argued that the Jordanian government pushes with different intensities to increase or claim its shared water resources according to considerations of the broader socio-political-economic context, which interplay with elements of the social practice dimension.

## 9.2 Future research and final considerations

This research aimed to give a comprehensive view and an in depth analysis of the construction of the discourse of water scarcity in the case of Jordan and of the effects of the deployment of the discourse on solutions, policies, and strategies at the national and transboundary levels. Hence, the scale and depth of the knowledge the deployment of the discourse of water scarcity impacts are extensive, complex, and multi-dimensional. In order to fully understand its role especially at the transboundary level, the following research lines are proposed:

- An analysis of the discourses deployed in TWG by all riparian states, considered basin by basin, in order to fully comprehend the discursive power struggles from a regional and basin perspectives.
- Exploration of any non-official discourse of water scarcity developed by marginalised communities, such as refugees living in camps, contesting and undermining the official hegemonic discourse of water scarcity.
- A study investigating the power struggle around the water sector in Jordan, but adopintg a political economy analysis framework rather than a discourse analysis approach and an anthropology of the state approach to unfold the shadow and official states relations.
- Analysis of the impacts of the deployment of the narratives of water scarcity on the general population and not only to water professionals and policy makers.
- Include Palestine in the TWG analysis on the Lower Jordan River.
- Analysis of the impacts of the discourses generated by the Syrian refugees on the water strategies and transboundary water agreements in the region.

This specific study of the construction of the discourse of water scarcity in the case of Jordan has contributed to a more comprehensive understanding of the issues of the water sector in the country. This is important to a variety of actors, from policy makers to academics, from donors' organisations to NGOs, from donors to diplomats. This study shows them the implications of deploying the different narratives and sub-narratives, and the interests linked to the different framings. The study sheds light on the often taken for granted discourse of water scarcity, allowing the different actors to understand what the issues are, the different perspectives, and the different solutions opened and closed due to the framings deployed. This study has the potential to shape policies in the water sector in Jordan. In addition, funding of

NGOs, donors, and international organisations should consider the role of discourses and interests in their projects and planning, and this study would help them to this extent. It is important to academics as it provides them with a new perspectives to further analyse the issue of water scarcity in Jordan. It is important to policy makers as it provides them with a comprehensive study of the interests of the different actors involved in the water sector, and it would therefore facilitate them to understand who could potentially support or oppose policies and laws, and why. In this way, they could intervene to overcome potential obstacles and challenges for the policy making process and for its implenentation.

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## ANNEX 1: Politics of the Dead Sea Canal: a Historical Review of the Evolving Discourses, Interests, and Plans


### Abstract

This article explores how the idea of a canal connecting the Dead Sea with either the Red Sea or the Mediterranean Sea has evolved. It analyses the discourses around the proposals, the official interests, and the undeclared reasons. This analysis provides a critical understanding of the discourses behind the complex hydro-political dynamics in a changing and contested topography within a context of a wider geopolitical conflict. As such, this work contributes to shed lights on the relations between discourses and the Red Sea Dead Sea Canal project. The key finding of this article is that in the last decades, increasing competing interests and actors have emerged and are using discourses to support or challenge a canal plan.


### Introduction

The issue of a canal connecting the Dead Sea with either the Mediterranean Sea or the Red Sea has been widely studied in the literature. However, the focus has been on the feasibility study of the project, and consequently the approach has been from engineering and economic perspective (Willner et al., 2013, Salem, 2009, McPhail and Lintner, 2013, Al-Omari et al., 2014, Arad et al., 1990, Beyth, 2007). What has been lacking is a study of the role of the evolving discourses, interests, and geopolitical context in shaping the plans of a canal project. Therefore, this article explores the history of plans for connecting the Dead Sea with either the Red or Mediterranean Sea. Plans have constantly changed around the Dead Sea and this study explains these transformations and where it is going, through an informed discourse analysis. This work also shed lights on the reasons why nothing was ever been built in practice.

I explore how discourses fit into the geopolitical contexts, as the highly securitised context of the Lower Jordan River (LJR), the wider geopolitical conflict and security issues cannot be ignored. Recent studies show how discourses are deployed to influence water policies, with several articles discussing the Israeli-Palestinian case in particular (Feitelson et al., 2012, Fischhendler and Katz, 2012, Mason, 2013, Messerschmid, 2012, Jägerskog, 2001, Fröhlich, 2012). It emerges that discourses are deployed by actors to support their interests, making use of what Zeitoun and Warner defined "ideational power" in the framework of hydro-hegemony (Zeitoun and Warner, 2006). The plan of linking the Dead Sea with either of the other seas goes back at least to 1665, and, I assert, the discourses backing the plan have changed

as the interests behind the plan evolved due to changes in the geopolitical and economic contexts. However, the literature lacks studies on discourses and interests around projects of the canal, as most attention in the literature was on studies of feasibility from engineering or socio-economic studies.

The data used in this paper comes primarily from reports, semi-structured interviews, and documentation collected during fieldwork in the Levantine region in July-August 2011, July-August, October 2012, November 2013-December 2014, as well as material published online.

## 1 Theoretical Framework guided by a *Constructivist* Approach

This study's exploration of discourses is inspired by Cox's insight that "theory and knowledge are always written by someone and for some purpose" (Cox, 1986, p. 207), and is in keeping with the epistemological take of this paper: constructivism. This means that what matters is how reality is perceived and interpreted, as it cannot be captured objectively and neutrally (Julien, 2012, p. 45-46). Reality is mediated by people's lenses. Therefore, while a material objective reality exists, it is perceived differently, and the understanding of reality is mediated, I argue, mainly through discourses. This paper refrains from accepting facts at face value and questions what is taken for granted. It aims at unpacking the discourse of water scarcity in order to understand the mechanism that governs it. The purpose here is to understand the politics underlying such a seemingly apolitical question of water scarcity, and its impacts.

In the literature, there is no common definition of what a discourse is. I adopt Fairclough's theoretical framework of critical discourse analysis (CDA), and his understanding of a discourse as "language as a form of social practice" (Fairclough, 2001, p. 22). Discourse is a social practice as it is situated in a social context: it is part of the society rather than an external element influencing it. For Fairclough, therefore, the discourse needs to be analysed to include texts, their productions and interpretations, and their impacts on the social practices. As Wodak puts it, critical discourse analysis is about considering "social processes and structures which give rise to the production of a text, and of the social structure and processes within which individuals or groups as social historical subjects, create meaning in their interaction with texts," (Wodak, 2001, p. 3).

A discourse is therefore the whole process of social interaction, which includes the text (final product) and the processes of text production and interpretation (in the latter the text is a resource) (Wilson, 1990, p. 20-21, Yom, 2014, p. 72-73). All these processes are social and

need to be considered within the social conditions and contexts – economic, political, and institutional settings - of production and interpretation.[132] These social conditions or structures mutually shape the way people produce and interpret discourses (Wilson, 1990, p. 20-21, Yom, 2014, p. 72-73). Therefore, for Fairclough a discourse is not only the final result, but rather the whole dynamic process which constructs, reproduces, and transforms the social reality through agents' actions, events, declarations, reports, etc. This understanding of discourse is useful for this paper as it looks at discourse as a process of construction of the text, and therefore it allows to consider a report or declaration exploring who constructed it and how, on which previous texts it is based, and how that discourse is legitimising or challenging prior texts, existing norms and structures. It results that, for Fairclough, a discourse is constructed not through a single declaration, but rather through a number of actions, declarations, publications, and events that support and constitute the construction and reproduction of a discourse. As noted by Zeitoun (2008), in the phase of constructing a discourse coalition, people are consciously aware, while if someone arrives when a discourse coalition is already in place, they would accept it subconsciously, and therefore this discursive power would act partly subconsciously as ideational power (Zeitoun, 2008, p. 41).

Concerning discourse, there are sanctioned, dominant, and hegemonic discourses. The term "sanctioned discourse" was first understood as constraining people thinking differently than the dominant discourse (Allan, 2002, p. 182)[133], while Jägerskog defined it as "the prevailing dominant opinion and views, which have been legitimised by the discursive and political elite" (Zeitoun et al., 2012, p. 1). For Zeitoun, the powerful actor makes its discourse be heard and have impact also outside its political domain, while the weaker does not have the ability to be heard by a wide audience (Zeitoun, 2008, p. 43).

My understanding of the difference between sanctioned and dominant discourse is that a dominant discourse is the prevailing opinion and views, which have not necessarily been legitimised and supported by anyone in particular, while the sanctioned discourse has and is being sanctioned and legitimised by someone. I understand hegemonic discourse as a dominant discourse that has reached the subconscious level of the majority of people and therefore is accepted at the subconscious level, so hegemonic discourse is always dominant. However, a

[132] Fairclough identifies three social contexts to consider: the immediate social environment where the discourse takes place; the social institution; the society as a whole.

[133] In Allan's book "The Middle East Water Question" it emerges (through personal communication between Allan and Tripp) that the term was first introduced by Tripp, in 1997. The terms was developed by Allan, and largely used in hydro-politics.

hegemonic discourse is not necessarily a sanctioned discourse. Nor is a sanctioned discourse always hegemonic, even if it is usually dominant. The dominant discourse may or may not be sanctioned or hegemonic.

## 2 Analysis of Historical Plans, Interests, and Discourses

This section outlines the historical evolution of the ideas of a canal, and examines discourses and interests behind the different plans, as well as the contexts that motivated the changes. It first analyses the period until the 19th century; second it looks at the 20th century until 1973; third it explores the 1970s and 1980s; fourth it investigates the 1990s until 2009; and finally the period from 2009 until the current days. The focus is on the discourses, interests, texts around the potential projects, and on the actors suggesting them.

The idea of a Dead Sea canal is not a new one, however, the reasons for suggesting such a project are different: transportation canals, hydro-power, desalinisation, save the Dead Sea, enhance regional peace and stability, recognition through regional cooperation, and desalination (Fischhendler et al., 2013, p. 5). The evolution in interests, motivated by changes in the geopolitical and cultural contexts, saw a parallel construction of discourses supporting the plans. As outlined in the table below, the actors behind the plans and discourses evolved: individual explorers backed by their governments in the 17th-19th centuries, Zionist leaders backed by Zionist discourses in the 20th century, governments in the second half of the 20th century, and governments, NGOs the private sector, and international organisations in the last decades. Also the discourses evolved: transportation in the 19th century, Zionism, irrigation, hydropower, and state-building in early 20th century; hydropower until the 1980s; regional peace and cooperation, stabilise the Dead Sea level, and desalinisation since the 1990s.

| When | Who | Project | Discourses | Official interests | Hidden interests | Geopolitical context, what has changed |
|---|---|---|---|---|---|---|
| 1855 | English Captain William Allen | Mediterranean Sea - Jordan River- Dead Sea- Red Sea | Pro: Shorter way to India; Against: local population and Jews | Convenient route to India | Global naval role | Suez occupied by France |
| 1902 - 1973 | Theodor Herzl, Zionist movement | Mediterranean Sea – Dead Sea Canal (MSDSC) | Pro: Irrigation and hydropower (Zionism) | Irrigation and hydropower production | Convince the world that they should "give" Zionists the land, because they managed the land efficiently; Symbol of proud | Nationalisms, anti-Semitism, Zionism for a Jewish nation in Palestine |
| 1973-1985 | Israel | MSDSC | Pro: Hydropower, Zionism; Against: Human rights | Hydropower | Symbol for Jewish of the world | Energy crisis |
| 1981 | Jordan | Red Sea – Dead Sea Canal (RSDSC) | Pro: Hydropower; Against: expensive, geological | Hydropower | - | Energy crisis |
| 1990s-2009 | Jordan, Israel, and Palestine (since 2005), NGOs, academics, private sector, and WB | RSDSC | Pro: Peace, Save the Dead Sea, hydropower, desalination Against: environmental., sovereignty, impact on industries and health tourism | Save the Dead Sea, desalination, enhance regional cooperation | Mainly a desalination project | Peace treaties |
| 2009-2013 | Jordan | RSDSC | Water scarcity, CCDs | Desalination, save the Dead Sea, and hydropower | - | Delay in the WB study due to civil society's concerns (mainly Israeli) |
| 9 December 2013-present | Jordan, Israel, and Palestine, NGOs, academics, private sector, and WB | RSDSC | Save the Dead Sea, CCDs, water scarcity | Save the Dead Sea | Desalination | Syrian refugees in Jordan, and regional political instability since 2011 |

### 2.1 A Shorter Way to India (up to the 19th Century)

The idea to link the Dead Sea to the Red Sea goes back to 1665, when the Jesuit scholar Athanasius Kircher mentioned[134] that the two seas could be linked (Kempe et al., 2013, p. 3), understood by Glausiusz (2010) as a canal for transportation purposes (Glausiusz, 2010, p. 1119). Also for transportation purposes, in 1855[135], the English captain William Allen (Allen, 2013) suggested a network of canals from the Mediterranean Sea[136] via Tiberias to the Jordan River, the Dead Sea, and down to the Red Sea[137], abandoning the idea of passing through the French-controlled Suez area (Allen, 2013, p. 343, Abitbol, 2006, p. 96, Asmar, 2003, p. 331). Allen describes the benefits of this canal as mainly commercial: a shorter way (time-wise) to India "instead of taking the circuitous route of Cape of Good Hope" (Allen, 2013, p. 343) for the Empire, and more revenues for the local Sultan through the revenues from the transit on the canals (ibid: 344). The canal route would be longer than transiting via land, but it "would be equalised by the time taken by the transit through Egypt" (Allen, 2013, p. 343). The discourse guiding Allen, is based on the revenues that the Sultan of these territories would benefit from through the transit of ships through the canal, while now he is not gaining revenues from the "Arabs living in tents" (ibid: 344). Allen's idea builds on Captain's Phillips of the British Navy idea on a canal, suggested in 1853.

The British Empire backed research on the Mediterranean Sea –Dead Sea – Red Sea (Med-Dead-Red) plan mainly for opening a convenient route to India (Goren, 2011, p. 22-23), while the undeclared interest was to maintain its global naval role, challenged by the French plans of constructing the Suez Canal (Hoskins, 1943, p. 373, Fletcher, 1958, p. 564). The French discourses were challenging the British global naval hegemony, and supported research in the region on the construction of a Suez Canal (ibid). Among the British discourses against the French project, a discourse of "slave labour" forced to work in precarious conditions on the canal, supported by an active role of London in supporting a revolt among the employees on the canal, resulting in the abolition of the *corvee* system (Brown, 1994, p. 122-124, Quirke, 2009, p. 227-228).

The relevant actors at that time in the area were business interests backed by their governments, and the Ottoman Empire ruling on Palestine until the First World War. Officials

[134] In "Mundus Subterraneus"
[135] Charles Gordon suggested in 1883 Allen's plan, stressing the vital need for an alternative to the Suez Canal, but due to economic reason the plan was not further considered by England (Fischhendler et al., 2013: 5).
[136] From Haifa
[137] To Aqaba

of the British Empire, including General Charles Gordon, suggested the plan several times in the following decades. The texts constructing the discourse were mainly declarations of explorers, influential business-men, and governmental officials.

Some discourses challenging Allen's idea are acknowledged by the English captain but simply considered as "sacrifices" (Allen, 2013, p. 343): 2,000 square miles will be submerged, together with the city of Tiberias of some thousands inhabitants, and a few Arab villages. In addition, the "Jews (…) would object strongly to the loss of Tiberias, which is one of the four holy cities" (ibid: 345). However, for Allen, "they are strangers from Russia, Poland, & c., who have no property in it, and come there in the hope of seeing the Messiah rise out of the lake, which is a general expectation among them, though on what authority it is not known" (ibid: 345). However, these counter-discourses were not prominent at that time and did not make it into the public media domain.

**2.2 Hydropower Production, Irrigation, within the Zionist Political Ideology (1902 - 1973)**

As the Suez Canal opened for shipping in 1869, having an impact on the British shipping industry and trade (Fletcher, 1958, p.556), the British Empire interest in a Mediterranean Sea – Dead Sea Canal (MSDSC) for transportation decreased. The shift in trade routes by the opening of the Suez Canal coincided with the rise of Zionism during the late 19th century – beginning 20th century. At that time, nationalist ideologies affected European people - including European Jews - and an increasing anti-Semitism in Europe - culminated in the Dreyfus affair in France and in pogroms in Eastern Europe[138]- resulted in the Zionist movement calling for a Jewish nation in Palestine (Zoltán, 2010, p. 199). Palestine was under the Ottoman Empire until the end of the First World War, and then a British Mandate till 1948[139]. After 1948, the main actors became Israel, Jordan and the Palestine Liberation Organisation (PLO).

While first Kremensky and then Bourcart suggested a canal for hydropower generation to Theodor Herzl, founder of political Zionism, in the last years of the 19th century, Herzl published in 1902 *Altneuland*,[140] a novel outlining Herzl's vision for a Jewish state. This, together with declarations of Zionist leaders of the time, is the main text for the interpretation and construction of this new discourse around the canal. In this novel, he outlines his vision of

[138] Including the Russian Empire

[139] Year of the establishment of Israel

[140]The Old New Land. In 1896, Johann Kremenitzki suggested a Mediterranean Sea - Dead Sea Canal (MSDSC) for hydropower purposes, while Max Boutcart suggested also an irrigational element. These two ideas were the focus of *Altneuland*

a MSDSC for hydropower and irrigation (Asmar, 2003, p. 331, Beyth, 2007, p. 365). This emerges from the text:

"We take great quantities of fresh water from it [the canal], which are pumped into reservoirs and used for irrigation in areas where water is as necessary as it is superfluous here. […] The water power at source had attracted many industries" (Herzl, 1902, book IV).

The agriculture and hydropower[141] discourses were strategic for the Zionist plans of creating a Jewish state for several reasons (Fröhlich, 2012, p. 129, Zeitoun, 2008, p. 63):[142] to feed the growing Jewish population (and linked with the absorptive capacity of Palestine); to build a new identity (Fröhlich, 2012, p. 129, Jägerskog, 2001, p. 3-4) - having an important nation-building role (Feitelson, 2002, p. 300, Elmusa, 1996, p. 70, Lowi, 1995); and to produce electricity and hydropower for a future Jewish state (Elmusa, 1996, p. 70).[143] Lipchin asserts that water was also used as an argument to convince the world that they should "give" Zionists the land, because they managed the land efficiently with advanced technological methods, making the "desert bloom;" it was an argument that fit in well with the productivity and efficiency discourses that were emerging at the time (Lipchin, 2008, p. 77-78). David Ben-Gurion in 1935 and Weizmann in 1947 reiterated the importance of the conveyance project in order to secure water resources for a future Israeli state.

3.3 Hydropower as the Main guiding Discourse (1970s-1980s)

After Herzl's plan, the idea of taking advantage of the elevation was suggested for producing hydropower during the British Mandate by: the engineers Rutenberg in 1920 and Blass in 1943, Ladermilk in 1944, Mekorot (Simcha Blass) in 1941, and the Jewish Agency in 1945 (Stern and Gradus, 1981, p. 265). After the establishment of the state of Israel, in 1948, the government commissioned several studies on the construction of a conveyance project,

[141] At that time known as water power or hydro electricity

[142] The need of water has to be understood in its historical context: Weizmann and other Zionist leaders used to the comforts of the European upper class have been "struck by the relative dryness of the country" (Elmusa, 1996: 70) during their first visits, and water was seen as vital to satisfy the European living conditions they were used to.

[143] At that time, land and water were the only natural resources known in the area and needed to produce electricity. In this context, as underlined by Fröhlich, "a secure supply of fresh water was indispensable, […] a vital condition for Jewish-Israeli identity" FRÖHLICH, C. J. 2012. Security and discourse: the Israeli–Palestinian water conflict. *Conflict, Security & Development,* 12**,** 123-148.. In this view, for Messerschmid, also "settling the land" and "making the desert bloom" were part of the Jewish Zionist collective memory and supported the need for more and more water MESSERSCHMID, C. 2012. Nothing New in the Middle East–Reality and Discourses of Climate Change in the Israeli-Palestinian Conflict. *Climate Change, Human Security and Violent Conflict***,** 423-459..

including: Cotton report in 1955, Batz and Haversham in 1966. However, the project for hydropower was strongly considered by the Israeli government only after the 1973 energy crisis (Glausiusz, 2010, Beyth, 2007, p. 365-366, Stern and Gradus, 1981, p. 265), when the discourse of energy security became dominant.[144]

In 1973, a MSDSC Israeli plan was guided by energy interests, but this was not the only reason (Steinberg, 1987, p. 340-342). I argue that another discourse supporting the project was the technological and scientific symbol of the project itself.[145] On the one hand, the hydropower interest, guided by the energy security discourse informed by the energy crisis of 1973, resulted in the government commissioning different studies on the issue. In 1974, a committee was established by the government to explore options for hydropower generation, in 1976 the TAHAL Group was commissioned an assessment on the different options found by the committee. On the other hand, the discourse on the technological advancement, for Steinberg, was also at play; however, it is to be seen directed to a Jewish audience and as an undeclared interest. This symbol of technological and scientific advancement can have symbolic importance for the Jewish worldwide population, "a source of pride that extended beyond rational cost-benefit calculations" (Steinberg, 1987, p. 342). However, due to financial[146] and political[147] reasons, the 1973 MSDSC plan was abandoned in 1985 (Gavrieli et al., 2005, p. 9).

The international community strongly opposed the plan for several reasons: human rights, sovereignty, and international law concerns (among others, from China[148] and USSR[149]); ecological, nuclear fears; and potential economic damages to the Jordanian industries (Jordan[150]) (UNGA, 1981, UNEP, 1983).[151] This resulted in the United Nations

[144] In 1981, the Israeli government approved the project and the Mediterranean-Dead Sea Company was established. It was concluded in 1974 that a MSDSC was feasible, recommending the Qatif - Massada route in 1977 (Asmar, 2003: 331).
[145] In fact, at the same time Israel was considering plans for nuclear power
[146] The company did not manage to find the funding to support the project
[147] UN resolutions, as explained below
[148] From the declarations of vote at UNEP: "The representative of China said that the canal project would brutally trample upon the rights and interests of the Palestinian people, infringe Jordan sovereignty and cause serious damage to the people and ecosystem of occupied Arab territory"
[149] From the declarations of vote at UNEP: "The representative of the USSR, speaking on behalf of the Eastern European Group, said that the project was not only illegal and violated the legitimate rights of the people of Palestine and Jordan, but would also cause irreparable ecological and economic damage. The draft decision was also directed against Israel's attempts to tighten its hold on occupied Arab territory. The parallels of the Panama and Suez Canals should not be forgotten."
[150] From the declarations of vote at UNEP: "The representative of Jordan said that the canal project was destructive and harmful to the economy and rights and interests of Jordan, threatening the people of both Jordan and Palestine. The possibility that nuclear reactors might be constructed along the canal was a particular cause for concern, since Israel had not signed the nuclear non-proliferation treaty, and had refused to allow IAEA personnel to inspect its nuclear installations."
[151] UNGA resolutions mentioned above and UNEP decision 11/4 of 8th meeting 23 May 1983, including vote declarations).

General Assembly (UNGA) passing resolutions[152] demanding the Israeli government to cease planning the MSDSC.[153]

In 1981, as a response to the Israeli MSDSC plan, the Jordanian government briefly considered a Red Sea - Dead Sea Canal (RSDSC), with hydropower as the main driver (Nahhal, 1982, Asmar, 2003). This project would have been politically less controversial, as not raising international concerns linked to issues of human rights, and with marginal interference with groundwater and agricultural activities.[154] However, the discourses against this plan were two: a hydrological discourse as it would have been passing through a seismic area and an economic discourse as it was more expensive than the MSDSC plan because longer (Asmar, 2003, p. 332).

The energy security and hydropower discourse and interest were at play also in the plans suggested in the 1990s, but I argue in the section below that they were not the main dominant drivers of the suggested plans, but minor discourses.

### 2.4 After the Peace Agreements: saving the shrinking Dead Sea and provide Fresh Water? (1990s – 2009)

The Oslo agreement signed in 1993 between the Israeli government and the PLO included a declaration calling for inter-regional economic development plans,[155] while the peace agreement signed between the Israeli and Jordanian governments in 1994 called for regional watershed development and cooperation (Murakami, 1995b).[156] Hence, only after 1994, a regional cooperation could be politically viable and the momentum for transboundary water cooperation was created (Murakami, 1995b, Murakami, 1995a). After the Oslo agreements, the main actors became the Israeli, Jordanian governments and the Palestinian Authority.[157]

These agreements had a strong impact on the regional geopolitics, "animating" the discourses surrounding. While in the past the Israeli and Jordanian governments saw each other as enemies, now they consider themselves as neighbours and potential partners for the economic development of the Jordan Valley (Brand, 1999, p. 60).[158] The agreements resulted

[152] UNGA resolutions 36/150 (16/12/1981), 37/122 (16/12/1982), 38/85 (15/12/1983), 39/101 (14/12/1984), 40/167 (16/12/1985)
[153] And also demanding the Security Council to monitor on the issue
[154] If compared to the MSDSC
[155] In Annex 3 they agree to establish an Israeli–Palestinian Committee for economic cooperation focusing also on water. In Annex 4 they will cooperate in promoting a regional development program.
[156] Article 6 and Annex 2
[157] Until 2012, when the latter formally became Palestine
[158] However, segments of society, including professional organisations and Islamists, were against the treaties and created the anti-normalisation discourse (ibid.).

in a change of interests and discourses guiding the canal plan. I argue that while before the agreements the political conflict was between the governments, now is between pro and anti-project sides.

A regional feasibility study[159] in 1996 had as goals mainly desalinisation and the stabilisation of the level of the Dead Sea. This study, commissioned by the World Bank and financed by the Italian government, was produced by the Harza Group. The latter conducted an extensive pre-feasibility study for the RSDSC project, considering five different alignments from a technical, environmental, and economic perspective, and concluded that the most appropriate alignment was the one entirely within Jordanian territory and 203 km long (Asmar, 2003, p. 332, Gavrieli et al., 2005, p. 10). The main goal of the proposed project was to create potable water through desalinisation. Other additional goals that were identified were: the stabilization of the level of the Dead Sea, the production of hydropower, developing the area, and strengthening the Israeli-Jordanian relations (Asmar, 2003, p. 332, Gavrieli et al., 2005, p. 10).

The supporting discourses included the need for water sources to combat water scarcity, saving the dying Dead Sea, and foster regional cooperation (Asmar, 2003, p. 332, Gavrieli et al., 2005, p. 10). The study identified potential negative impacts: on the environment, on the health touristic sector[160], and the local industries[161]. In addition, the risks for terroristic attacks and the seismic area were identified as negative aspects (Asmar, 2003, p.332-333).[162]

In 2002 the Israeli and Jordanian governments publicly committed to a project to save the shrinking Dead Sea (Gavrieli, Bein et al. 2005: 10) backing it with the peace and regional cooperation discourse.[163] Only in 2005, after the end of the *intifada,* Israelis, Jordanians, and Palestinians agreed to conduct a feasibility study for a RSDSC plan, coordinated by the World Bank (WB, 2013).[164] While the main goal of this project is the stabilization of the level of the Dead Sea, minor goals were "Desalinate water / generate energy at affordable prices for Jordan,

[159] Done by Harza Group (Harza, 1996)
[160] Due to the changes in the characteristic of the water of the Dead Sea
[161] Due to the higher costs to protect their plants from higher sea level
[162] Overall, the study concluded that the project was feasible from an economic and environmental perspective.
[163] The Palestinians were not members of the project in 2002, as the *intifada* was starting.
[164] In 2005, also the Palestinians agreed to support this project. However, the Palestinian role, also according to the terms of reference published in April 2005 by the World Bank for a feasibility study of the project, shows the different role of the three actors: the RSDSC "is one of the projects being promoted by Jordan and Israel, and indirectly by the Palestinian Authority" (Terms of Reference, WB, 2005). The feasibility study would further investigate the preferred alignment of Wadi Arabah/Arava identified in the 1996-1998 pre-feasibility study.

Israel, and the Palestinian Authority; [and] Build a symbol of peace and cooperation in the Middle East" (ToR WB, 2005: 8).[165]

However, there are official discourses and interests, and undeclared ones, as summarised by Yaakov Garb, a professor at Ben-Gurion University of the Negev who participated in the World Bank study: "it's basically a 'drinking water for Amman' project that is disguised as a 'saving the Dead Sea' project" (Levitan, 2012).[166] Discourses against the plan were developed and backed on environmental basis from local NGOs, especially during the publication of ToR and during the public consultations[167] in the region done by the WB.

The discourse alliance against the plan is not only environmentalists, but comes also from other sectors: the Israeli Environmental Protection Minister Gilad Ardan fearing a negative impact on the health tourist industry (Orsam, 2013)[168] and a group of 20 NGOs for social justice concerns, demonstrating that environment and society cannot be separated.[169]

### 2.5 Jordanian Water Scarcity Discourse as a Driver for the Canal (2009 - Present)

In 2009, following delays[170] of the RSDSC plan seen by the Jordanian government as mainly due to the Israeli civil society, Amman announced the intention to proceed with a Jordanian only plan called "Jordan Red Sea Project." This project would bring water from the Red Sea to the Dead Sea, having as a priority goal desalinisation and water supply to Jordan, and as other minor goals stabilizing the Dead Sea level and hydropower production. The project is supported by Jordanian water scarcity discourse, "the country's water security is dependent on the desalination of seawater in the future," as underlined by Mousa Jamani, Water and

[165] The costs of the study is about US$16 million, financed by eight bilateral donors: France, Greece, Italy, Japan, South Korea, The Netherlands, Sweden and the United States of America (WB link). The study program is overseen by a technical steering committee of fourteen members (four members per beneficiary party and two from the World Bank). In addition, an independent panel of experts of ten members was appointed in 2009 to provide advice during the study of the project (wb link).

[166] This sentence is better explained in the last paragraph of section 3.4.

[167] In line with the World Bank safeguard procedures and internal guidelines, the following public consultations have taken places: Public Stakeholder Meetings August 2007, Public Stakeholder Meetings July 2008, Technical Steering Committee, Aqaba, October 2008, Environmental and Social Assessment: Update on Progress - Presentation to the Public Stakeholder Meetings, June 2010, Presentation Made in the February 2013 Public Stakeholder Consultations, Public Stakeholder Meetings, February 2013

[168] Orsam, International Business Times, $10 Billion Red Sea-Dead Sea Middle East Water Project Roiling, Again, Israel, Palestinians, And Jordan, 08/03/2013

[169] The NGOs sent a letter on the 21st of October, 2013 titled "Palestinian NGO statement on the World Bank-sponsored Red-Dead Sea Canal." This letter to the Palestinian Authority and the PLO asked them to stop their support to the RSDSC as they see it as forcing the "Palestinian population to consent to their own dispossession and to compromise on their own rights."

[170] The criticism of the environmental NGOs resulted in further studies being done, and a delay of around three years (Glausiusz, 2013, Glausiusz, 2010).

Irrigation minister of Jordan (Namrouqa, 2012a), and by the climate change discourse (Earle et al., 2015, Al-Omari et al., 2014).

The Israeli, Jordanian, and Palestinian water ministers signed a new agreement on the 9th of December 2013 (Ministry Foreign Affairs of Israel, 2013).[171] The agreement has been advertised as the first phase of the RSDSC plan aiming at saving the Dead Sea (ibid.).[172] The agreement is about building a desalinisation plant in Aqaba to provide water to Israel, Jordan will receive water from the Lake Tiberias , and Palestinians will be sold more water from Israel at a price and conditions to be negotiated among the two governments; and a small pipeline will connect Aqaba with the Dead Sea.

For the Israeli Minister Shalom "this is a historic agreement that realizes a dream of many years and the dream of Herzl" (Israeli Ministry Foreign Affairs, 2013). I assert that while there is a return to Zionism as an official discourse, Herzl's Zionism is essentially complete[173]; hence, this discourse could be hiding other interests. I assert that this is a water exchange plan, with a regional perspective. Also for a representative of the NGO Eco Peace (former Friends of the Earth Middle East) and a senior researcher at the University of Jordan, Jordan's priority is to increase the water supply, also fearing further reduction of the water scarce resources due to the impacts of climate change, and the population would never accept to rely on Israel for its water supply. For this reason, they could not sign an agreement of water exchange with Israel, but only an agreement to save the Dead Sea with an element of water saving (Anon A and B, January 2014)[174]. The Israeli interest is to support the Jordanian political stability, given the geopolitical Israeli priority of maintaining the political stability of its Jordanian ally. The reasons why the Israeli government supports the Jordanian government by supplying more water or by supporting the RSDSC project, strongly wanted by the Jordanian government, can be captured by looking at the broader context and at the Israeli interests. The latter are political and geopolitical. Israel and Jordan share their longest border. Israel has diplomatic relations with Jordan, with which has strong military and security ties. For this reason, for Israel the Jordanian border is safe and well protected by the military and security cooperation with the

[171] From the press release "Water pipeline to link the Red Sea with the Dead Sea" from the Israeli ministry of Foreign Affairs, 9/12/2013, consulted on the 15th of January 2014: http://mfa.gov.il/MFA/PressRoom/2013/Pages/Israel,-Jordan-and-PA-sign-Red-Sea-Dead-Sea-agreement-9-Dec-2013.aspx The pipeline will be 180 km long and entirely within Jordan. It will channel 100 mcm of water per annum. The pipeline will take an estimated three years to complete.

[172] However the amount of water that would be transported to the shrinking Sea is only one tenth of the original RSDSC plan, and according to geologists and NGOs, would not stabilize the level of the sea (FoEME, 2013).

[173] Or incomplete in the sense the West Bank is not fully occupied

[174]Interviews in Amman: Anon A, 7/01/2014, representative from the NGO FoEME; Anon B, 21/01/2014, senior academic from the University of Jordan.

Jordanian government. Jordan is one of the two Arab countries that recognises Israel and with which it has diplomatic relations, contributing to providing Israel with political legitimisation. Jordan is seen by the Israeli government as a buffer zone, a safe and stable political territory which divides them from Iraq and Saudi Arabia. Especially nowadays, Jordan separates and protects Israel from the Islamic State forces deployed in parts of Iraq and Syria. In addition, Jordan absorbed several waves of Palestinian refugees, and is seen from the Israeli government as a territory for the absorption of even more Palestinians in the next decades. Finally, both Israel and Jordan are close allies of the US. For all these reasons, the Israeli government has as a top priority maintaining and supporting the political stability of Jordan, and it does so also by strengthening the cooperation over water resources, as this is seen as vital by the Jordanian government (Barari, 2014, p. 69-71, Barari, 2004, p. 7, Welsh, 2014, Solomon, 2014).

## 3 Discussion and Conclusion

This paper analysed the main plans for connecting the Dead Sea to either the Mediterranean or the Red Sea. In particular, it has examined the interests behind these plans and discourses supporting or challenging them within the wider geopolitical context. This concluding section summarises the analysis.

During the 19th century, the ideas were suggested for transportation reasons, in order to find a shorter way to India for the British Empire (Allen, 2013). The interests behind were mainly commercial and discursively supported by imperial discourses for the maintenance of the British global hegemonic role in the naval sector. Geopolitics, borders, and naval routes played an important role.

During early 20th century, the plan was suggested for production of hydropower and irrigation (Herzl, 1902). The interests behind were multiple: through irrigation to secure enough food for supporting the Jewish immigration to Palestine, demonstrate the technological advancement of the Jews justifying their presence in the region, and provide hydropower for the industrial development of a future Jewish state. The discourse supporting Herzl's plan was the political Zionist ideology for the different interests mentioned.

Following the 1973 energy crisis, the plan was re-considered by Israel mainly for hydropower reasons. The discourses supporting it were: a symbol of proud for all Jews worldwide, energy crisis and energy security, "make the desert bloom", technological superiority, and embedded in the Zionist ideology.

The 1981 Jordanian plan was guided by hydropower goals, supported by the energy security discourse but challenged by hydrological - as it would have been passing through a seismic area - and economic considerations as it was more expensive than the MSDSC plan because longer.

The peace treaties and agreements signed in the 1990s between Israel and Palestinians, and Israel and Jordan called for regional cooperation on water and economic development. Hence, at the beginning of this century, the plans suggested in 2002 and 2005 and again in 2013 were regional plans and not unilateral as in the past. These plans have as major interest the supply of desalinised water, but are mainly supported, especially in the international arenas (e.g. WEF, WB)[175] as to save the Dead Sea or as peace constructor for the Valley of Peace and a Peace Canal.

After 2009, the canal construction became strongly supported by the water scarcity discourse in and of the Jordanian government, underlying Jordanian water resources interest, and supported by the Israeli government for geopolitical reasons.

This article suggests a general limitation of the data for the 19th and early 20th century. This emerges from the availability of only sanctioned discourses and mainly at the state-governmental scale. It appeared difficult to gain the discourses, which may have existed, against the proposed plans and from the local communities living in the area.[176] In addition, research for that period has been mainly based on critical review, without the possibility of semi-structured interview with who was involved in suggesting those plans and promoting the discourses of that time. Semi-structured interview and critical discourse analysis result to be key for the study.

The voices against the canal, while in the 19th were only mentioned as potential and by the sanctioned discourses, they became more effective and visible in the 1970s and 1980s with the discourse of the international community within the UN and since the 1990s with the environmental and human rights NGOs as well as some ministries within the same government supporting the plan.

This article suggests that compared to the 19th and early 20th century, in the last decades there have been more discourses constructed to support and to challenge the proposals, discourses constructed by actors on multiple scales and aiming at shaping the plans, as for the role played by environmental and human rights NGO, the World Bank, and the UN.

[175] World Economic Forum and World Bank
[176] e.g. of Tiberia inhabitants, or of the Jews for Allen's plan

It emerges that hard power and geopolitics were more important than structural power during the 19th century, when states were the main actors involved. But especially since the peace agreements and the regional canal plans, it emerges a richness in the quantity and quality of discourses backing and challenging the RSDSC, with more actors involved at different scales, more goals, undeclared interests, and unofficial discourses.

The political conflict here between the discourses is strongly influenced and guided by the wider geopolitical context. For this reason, before the peace agreements of the 1990s, the political conflict was between the various governments. After the mid-1990s, I argue it is animated and enriched by a variety of discourses supporting and opposing the plan by actors on different scales, and the political conflict between the discourses becomes between pro and anti-project sides. For this reason, a critical discourse analysis is useful because it considers discourse alliances, meaning actors that discursively support the same goal but for different reasons.[177] In this context, it is also interesting to further explore the contexts where discourses are deployed by the different actors in different arenas in the last decades: a peace discourse and to save the Dead Sea discourse at the World Economic Forum and World Bank in Washington D.C.[178], and to desalinise water discourse promoted in other forum.

[177] For instance, as in the case of the Israeli Minister of Environmental Protection opposing the RSDSC to save tourism in the area, as well as the NGO FoEME for environmental reasons, and the 20 NGOs for human rights and international law concerns, all for different reasons but with the same goal.

[178]The 2002 agreement was done at a WEF (World Economic Forum) meeting, while the 2005 and 2013 agreements signed in the WB forums.

**ANNEX 2: Jordanian-Syrian 1987 Agreement**

**No. 31937**

**SYRIAN ARAB REPUBLIC**

**and**

**JORDAN**

**Agreement concerning the utilization of the Yarmuk waters (with annex). Signed at Amman on 3 September 1987**

*Authentic text: Arabic.*

*Registered by the Syrian Arab Republic on 20 June 1995.*

**REPUBLIQUE ARABE SYRIENNE**

**et**

**JORDANIE**

**Accord relatif à l'utilisation des eaux du Yarmouk (avec annexe). Signé à Amman le 3 septembre 1987**

*Texte authentique : arabe.*

*Enregistré par la République arabe syrienne le 20 juin 1995.*

[TRANSLATION TRADUCTION]

AGREEMENT1 BETWEEN THE SYRIAN ARAB REPUBLIC AND THE HASHEMITE KINGDOM OF JORDAN CONCERNING THE UTILIZATION OF THE YARMUK WATERS

The Government of the Syrian Arab Republic and the Government of the Hashemite Kingdom of Jordan,

Desiring to strengthen the bonds of Arab brotherhood and the special relationship existing between the two fraternal countries; taking into account the results of the negotiations between their representatives in Damascus on 4 and 5 July 1987 and from 9 to 11 August 1987 concerning the utilization of the waters of the Yarmuk river as provided for in the Agreement concluded between the two countries in Damascus on 4 June 1953, 2 and considering the advantages which the two countries would derive from the efficient collection and use of the waters of the Yarmuk Basin for the irrigation of arable lands and the generation of electric power,

Have resolved to conclude this Agreement and for this purpose have named as their plenipotentiaries:

For the Government of the Syrian Arab Republic: Mr. Abd al-Rauf Kassem, Prime Minister;

For the Government of the Hashemite Kingdom of Jordan: Mr. Zaid al-Rifa'i, Prime Minister;

who, having communicated to each other their respective full powers, found in good and due form, have agreed on the following provisions:

*Article I*

For the purpose of this Agreement it shall be understood that:

*(a)* "Syria" means the Government of the Syrian Arab Republic;

*(b)* "Jordan" means the Government of the Hashemite Kingdom of Jordan;

*(c)* "The State" means Syria or Jordan as the context requires;

*(d)* "The Jordan Valley" means the valley of the river Jordan;

*(e)* "The Wahdah dam and reservoir" means the dam on the river Yarmuk for the collection of the water and the reservoir for its storage situated in the territories of Syria and Jordan near the Maqarin generating station;

(*f*) "The Wahdah dam generating station" means the electricity generating installation situated on the south bank of the river Yarmuk inside the Wahdah dam;

*(g)* "The Yarmuk scheme" means the Wahdah dam and reservoir, the electricity generating installation, the buildings and installations required in connection with this scheme near the Maqarin generating station and the diversion of the Hejaz Railway line;

*(h)* "The Joint Commission" means the Syria-Jordan Commission referred to in article IX of this Agreement.

*Article II*

The two Governments, recognizing that, for physical and legal reasons, the additional water and the hydroelectric power needed by the two States may be provided in an economical and effective manner by constructing the Wahdah dam, have accordingly agreed to construct the following installations:

*(a)* The Wahdah dam and reservoir, namely the dam for the collection of the river flow and the reservoir situated on the river Yarmuk in the territories of Syria and Jordan near the Maqarin

generating station in Syria, such water being utilized for the generation of electric power, for the irrigation of land in Jordan and for other Jordanian schemes, for the irrigation of land in Syria situated below the site of the dam and along the course of the river to an altitude of 200 metres above sea level;

*(b)* The installation for the generation of electricity using the waters of the reservoir leaving the dam;

*(c)* The diversion of the Hej az Railway line in the Yarmuk Valley as required by the scheme, and the construction of the other works and installations necessary to the scheme.

*Article III*

Regard being had to the provisions of article IX of this Agreement, Jordan shall assume responsibility for the establishment of the Yarmuk scheme and for the financing of every stage of the studies, plans, construction, operation and maintenance.

Syria shall furnish the necessary facilities and assistance to enable personnel employed on the scheme to obtain access to parts of the scheme located on Syrian territory in order to undertake duties connected with the scheme at all stages of the work, within the framework of Syrian regulations and in accordance with the provisions of this Agreement.

*Article IV*

Each State shall undertake to compensate the owners of land, estates and buildings on its territory which are expropriated for the purposes of the Yarmuk scheme in accordance with its own laws and regulations. Syria shall undertake to settle all claims of individuals relating to water rights and to compensate such claimants, while Jordan shall undertake to be responsible for all compensation and expenses paid in Syria in respect of such expropriations and claims.

*Article V*

Syrian and Jordanian workmen shall be employed, as needed, in the construction of the Yarmuk scheme. Syrian and Jordanian technicians shall be employed during the period of study, implementation, operation and maintenance. Companies from the Syrian construction public sector shall cooperate for the purposes of the establishment of the project with Jordanian construction companies.

*Article VI*

Jordan shall undertake to design and build the Wahdah dam to a total height of 100 metres including floodgates, in order to store the waters flowing in the Yarmuk river after the filling of the reservoirs of the Syrian dams which are specified with their storage capacity in the annexed table. Syrian shall have the right to retain the total content of these reservoirs as an integral part of this Agreement. The design and construction of the dam shall ensure that it may in future be raised in height in order to increase storage capacity (height and capacity), where such measures are technically and economically justified and agreed on by the two States.

*Article VII*

*(a)* Syria shall retain the right to the use of the waters of all springs welling up within its territory in the basin of the Yarmuk and its tributaries, with the exception of the waters welling up above the dam below the 250-metre level, and shall retain the right to use water from the river and its tributaries below the dam for the irrigation of Syrian land along the course of the river.

*(b)* Jordan shall have the right to use the overflow from the Wahdah dam reservoir and generating station to generate electricity.

*(c)* The electric power generated by the Wahdah dam hydroelectric installation shall be divided between Syria and Jordan in the proportion of 75 per cent to Syria and 25 per cent to Jordan.

*Article VIII*

Syria shall assume the responsibility of implementing the diversion of the Hejaz Railway line and constructing all the necessary buildings in accordance with the requirements of the scheme. Jordan shall undertake to assume all expenses connected with the implementation and construction.

*Article IX*

A Joint Syria-Jordan Commission shall be established for the implementation of the provisions of this Agreement, the regulation of the rights and obligations which the two States have assumed thereunder, the exercise and performance thereof and consideration of all questions arising out of its implementation.

The Joint Commission shall be deemed a legal corporate body and its members shall enjoy diplomatic privileges and immunities in the State of which they are not the representatives. The Joint Commission shall be composed of three members from each State. The leader of each

side shall be an Under-Secretary of State or Minister of State. The Joint Commission may seek advice from experts and consultants and may employ such assistants, technicians and officials as may be required for the conduct of its work. The aforementioned shall be selected from the nationals of either State or of third States.

The external relations of the Commission shall be conducted by the two leaders of the representatives of both sides acting jointly, not individually.

The Commission shall undertake all the tasks assigned to it under the terms of this Agreement. In the event of any difference arising between its members which they are unable to resolve conclusively to the satisfaction of the representatives of both Parties, its members shall report the matter forthwith to their Governments, which shall settle the difference and find an objective solution that will ensure the smooth continuation of work while guaranteeing the rights of both Parties under the terms of this Agreement.

The Joint Commission shall draw up its rules of procedure, which shall be approved by the heads of both Governments.

*Article X*

Representatives of the two States, members of the Joint Commission, employees of the technical bodies working on the scheme and all other persons working on it shall have the right to travel for work-related purposes in the areas in which the Wahdah scheme installations are situated and in neighbouring areas to be specified by the Joint Commission. Prior authorization to that effect shall be obtained from the Joint Commission in the form of special identity papers issued by the Commission, to the extent necessary for the carrying out of studies and investigations, and construction, administration and maintenance operations. The bearers of such papers shall not be subject to any restrictions resulting from the application of the passport and similar laws and regulations in force in either State. In all other respects, however, the domestic legislation of each State shall remain in full force within its territory.

*Article XI*

The two States shall undertake, each within its own territory, to comply with recommendations of the Joint Commission regarding measures to prevent or reduce silting in the joint reservoir such as preventing the washing away and removal of the earth, preventing the growth of weeds and blocking cracks and other measures to facilitate the maximum use of the capacity of the reservoir. The cost of all such measures shall be borne by Jordan.

*Article XII*

Each State shall have the right to make use of the portion of the lake formed by the dam that is situated in its territory and to exploit, utilize and maintain it for purposes of tourism and pisciculture that do not conflict with the administration of the Wahdah dam installations.

*Article XIII*

The boundary line between the two countries shall remain as it was prior to the construction of the Wahdah dam and its installations and shall be considered as drawn on the surface of the water.

*Article XIV*

This Agreement shall be ratified in accordance with the constitutional procedures of both Contracting Parties and shall enter into force on the date of the exchange of the instruments of ratification.

This Agreement may be amended by means of annexes, which shall be ratified and the instruments of ratification for which shall be exchanged in accordance with the procedure for the ratification of this Agreement.

IN WITNESS WHEREOF, the two Parties have signed this Agreement in two original copies in the Arabic language, each copy being equally authentic. Each Party has received a copy of the Agreement.

*Article XV*

The Agreement between the two States concerning the utilization of the Yarmuk waters, signed at Damascus on 4 June 1953, is hereby abrogated.

DONE at Amman on 3 September 1987.

For the Hashemite Kingdom of Jordan: ZAID AL-RiFA'I Prime Minister

For the Syrian Arab Republic: ABD AL-RAUF KASSEM Prime Minister

**ANNEX 3: Jordanian-Israeli 1994 Agreement**

**TREATY OF PEACE BETWEEN THE STATE OF ISRAEL AND THE HASHEMITE KINGDOM OF JORDAN**

**October 26, 1994**

**PREAMBLE**

The Government of the State of Israel and the Government of the Hashemite Kingdom of Jordan:

**Bearing** in mind the Washington Declaration, signed by them on 25th July, 1994, and which they are both committed to honour;

**Aiming** at the achievement of a just, lasting and comprehensive peace in the Middle East based on Security Council resolutions 242 and 338 in all their aspects;

**Bearing** in mind the importance of maintaining and strengthening peace based on freedom, equality, justice and respect for fundamental human rights, thereby overcoming psychological barriers and promoting human dignity;

**Reaffirming** their faith in the purposes and principles of the Charter of the United Nations and recognising their right and obligation to live in peace with each other as well as with all states, within secure and recognised boundaries;

**Desiring** to develop friendly relations and co-operation between them in accordance with the principles of international law governing international relations in time of peace;

**Desiring** as well to ensure lasting security for both their States and in particular to avoid threats and the use of force between them;

**Bearing** in mind that in their Washington Declaration of 25th July, 1994, they declared the termination of the state of belligerency between them;

**Deciding** to establish peace between them in accordance with this Treaty of Peace;

**Have agreed as follows:**

**ARTICLE 1**

**ESTABLISHMENT OF PEACE**

Peace is hereby established between the State of Israel and the Hashemite Kingdom of Jordan (the "Parties") effective from the exchange of the instruments of ratification of this Treaty.

**ARTICLE 2**

**GENERAL PRINCIPLES**

The Parties will apply between them the provisions of the Charter of the United Nations and the principles of international law governing relations among states in times of peace. In particular:

1. They recognise and will respect each other's sovereignty, territorial integrity and political independence;
2. They recognise and will respect each other's right to live in peace within secure and recognised boundaries;
3. They will develop good neighbourly relations of co-operation between them to ensure lasting security, will refrain from the threat or use of force against each other and will settle all disputes between them by peaceful means;
4. They respect and recognise the sovereignty, territorial integrity and political independence of every state in the region;
5. They respect and recognise the pivotal role of human development and dignity in regional and bilateral relationships;
6. They further believe that within their control, involuntary movements of persons in such a way as to adversely prejudice the security of either Party should not be permitted.

**ARTICLE 3**

**INTERNATIONAL BOUNDARY**

1. The international boundary between Israel and Jordan is delimited with reference to the boundary definition under the Mandate as is shown in Annex I (a), on the mapping materials attached thereto and co-ordinates specified therein.
2. The boundary, as set out in Annex I (a), is the permanent, secure and recognised international boundary between Israel and Jordan, without prejudice to the status of any territories that came under Israeli military government control in 1967.
3. The parties recognise the international boundary, as well as each other's territory, territorial waters and airspace, as inviolable, and will respect and comply with them.
4. The demarcation of the boundary will take place as set forth in Appendix (I) to Annex I and will be concluded not later than nine months after the signing of the Treaty.
5. It is agreed that where the boundary follows a river, in the event of natural changes in the course of the flow of the river as described in Annex I (a), the boundary shall follow the new course of the flow. In the event of any other changes the boundary shall not be affected unless otherwise agreed.

6. Immediately upon the exchange of the instruments of ratification of this Treaty, each Party will deploy on its side of the international boundary as defined in Annex I (a).
7. The Parties shall, upon the signature of the Treaty, enter into negotiations to conclude, within 9 months, an agreement on the delimitation of their maritime boundary in the Gulf of Aqaba.
8. Taking into account the special circumstances of the Naharayim/Baqura area, which is under Jordanian sovereignty, with Israeli private ownership rights, the Parties agreed to apply the provisions set out in Annex I (b).
9. With respect to the Zofar/Al-Ghamr area, the provisions set out in Annex I (c) will apply.

**ARTICLE 4**

**SECURITY**

1.
    a. Both Parties, acknowledging that mutual understanding and co-operation in security-related matters will form a significant part of their relations and will further enhance the security of the region, take upon themselves to base their security relations on mutual trust, advancement of joint interests and cooperation, and to aim towards a regional framework of partnership in peace.
    b. Towards that goal the Parties recognise the achievements of the European Community and European Union in the development of the Conference on Security and Co-operation in Europe (CSCE) and commit themselves to the creation, in the Middle East, of a CSCME (Conference on Security and Co-operation in the Middle East).
    This commitment entails the adoption of regional models of security successfully implemented in the post-World War era (along the lines of the Helsinki process) culminating in a regional zone of security and stability.
2. The obligations referred to in this Article are without prejudice to the inherent right of self-defence in accordance with the United Nations Charter.
3. The Parties undertake, in accordance with the provisions of this Article, the following:
    a. to refrain from the threat or use of force or weapons, conventional, non-conventional or of any other kind, against each other, or of other actions or activities that adversely affect the security of the other Party;

b. to refrain from organising, instigating, inciting, assisting or participating in acts or threats of belligerency, hostility, subversion or violence against the other Party;

c. to take necessary and effective measures to ensure that acts or threats of belligerency, hostility, subversion or violence against the other Party do not originate from, and are not committed within, through or over their territory (hereinafter the term "territory" includes the airspace and territorial waters).

4. Consistent with the era of peace and with the efforts to build regional security and to avoid and prevent aggression and violence, the Parties further agree to refrain from the following:

   a. joining or in any way assisting, promoting or co-operating with any coalition, organisation or alliance with a military or security character with a third party, the objectives or activities of which include launching aggression or other acts of military hostility against the other Party, in contravention of the provisions of the present Treaty.

   b. allowing the entry, stationing and operating on their territory, or through it, of military forces, personnel or materiel of a third party, in circumstances which may adversely prejudice the security of the other Party.

5. Both Parties will take necessary and effective measures, and will co-operate in combating terrorism of all kinds. The Parties undertake:

   a. to take necessary and effective measures to prevent acts of terrorism, subversion or violence from being carried out from their territory or through it and to take necessary and effective measures to combat such activities and all their perpetrators.

   b. without prejudice to the basic rights of freedom of expression and association, to take necessary and effective measures to prevent the entry, presence and co-operation in their territory of any group or organisation, and their infrastructure, which threatens the security of the other Party by the use of or incitement to the use of, violent means.

   c. to co-operate in preventing and combating cross-boundary infiltrations.

6. Any question as to the implementation of this Article will be dealt with through a mechanism of consultations which will include a liaison system, verification, supervision, and where necessary, other mechanisms, and higher level consultation.

The details of the mechanism of consultations will be contained in an agreement to be concluded by the Parties within 3 months of the exchange of the instruments of ratification of this Treaty.

7. The Parties undertake to work as a matter of priority, and as soon as possible in the context of the Multilateral Working Group on Arms Control and Regional Security, and jointly, towards the following:
    a. the creation in the Middle East of a region free from hostile alliances and coalitions;
    b. the creation of a Middle East free from weapons of mass destruction, both conventional and non- conventional, in the context of a comprehensive, lasting and stable peace, characterised by the renunciation of the use of force, reconciliation and goodwill.

**ARTICLE 5**

**DIPLOMATIC AND OTHER BILATERAL RELATIONS**

1. The Parties agree to establish full diplomatic and consular relations and to exchange resident ambassadors within one month of the exchange of the instruments of ratification of this Treaty.
2. The Parties agree that the normal relationship between them will further include economic and cultural relations.

**ARTICLE 6**

**WATER**

With the view to achieving a comprehensive and lasting settlement of all the water problems between them:

1. The Parties agree mutually to recognise the rightful allocations of both of them in Jordan River and Yarmouk River waters and Araba/Arava ground water in accordance with the agreed acceptable principles, quantities and quality as set out in Annex II, which shall be fully respected and complied with.
2. The Parties, recognising the necessity to find a practical, just and agreed solution to their water problems and with the view that the subject of water can form the basis for the advancement of co-operation between them, jointly undertake to ensure that the

management and development of their water resources do not, in any way, harm the water resources of the other Party.

3. The Parties recognise that their water resources are not sufficient to meet their needs. More water should be supplied for their use through various methods, including projects of regional and international co-operation.
4. In light of paragraph 3 of this Article, with the understanding that co-operation in water-related subjects would be to the benefit of both Parties, and will help alleviate their water shortages, and that water issues along their entire boundary must be dealt with in their totality, including the possibility of trans-boundary water transfers, the Parties agree to search for ways to alleviate water shortage and to co- operate in the following fields:
    a. development of existing and new water resources, increasing the water availability including co-operation on a regional basis as appropriate, and minimising wastage of water resources through the chain of their uses;
    b. prevention of contamination of water resources;
    c. mutual assistance in the alleviation of water shortages;
    d. transfer of information and joint research and development in water-related subjects, and review of the potentials for enhancement of water resources development and use.
5. The implementation of both Parties' undertakings under this Article is detailed in Annex II.

**ARTICLE 7**

**ECONOMIC RELATIONS**

1. Viewing economic development and prosperity as pillars of peace, security and harmonious relations between states, peoples and individual human beings, the Parties, taking note of understandings reached between them, affirm their mutual desire to promote economic co-operation between them, as well as within the framework of wider regional economic co-operation.
2. In order to accomplish this goal, the Parties agree to the following:
    a. to remove all discriminatory barriers to normal economic relations, to terminate economic boycotts directed at each other, and to co-operate in terminating boycotts against either Party by third parties;

b. recognising that the principle of free and unimpeded flow of goods and services should guide their relations, the Parties will enter into negotiations with a view to concluding agreements on economic co-operation, including trade and the establishment of a free trade area, investment, banking, industrial co-operation and labour, for the purpose of promoting beneficial economic relations, based on principles to be agreed upon, as well as on human development considerations on a regional basis. These negotiations will be concluded no later than 6 months from the exchange the instruments of ratification of this Treaty.
c. to co-operate bilaterally, as well as in multilateral forums, towards the promotion of their respective economies and of their neighbourly economic relations with other regional parties.

**ARTICLE 8**

**REFUGEES AND DISPLACED PERSONS**

1. Recognising the massive human problems caused to both Parties by the conflict in the Middle East, as well as the contribution made by them towards the alleviation of human suffering, the Parties will seek to further alleviate those problems arising on a bilateral level.
2. Recognising that the above human problems caused by the conflict in the Middle East cannot be fully resolved on the bilateral level, the Parties will seek to resolve them in appropriate forums, in accordance with international law, including the following:
    a. in the case of displaced persons, in a quadripartite committee together with Egypt and the Palestinians:
    b. in the case of refugees,
        i. in the framework of the Multilateral Working Group on Refugees;
        ii. in negotiations, in a framework to be agreed, bilateral or otherwise, in conjunction with and at the same time as the permanent status negotiations pertaining to the territories referred to in Article 3 of this Treaty;
    c. through the implementation of agreed United Nations programmes and other agreed international economic programmes concerning refugees and displaced persons, including assistance to their settlement.

**ARTICLE 9**

**PLACES OF HISTORICAL AND RELIGIOUS SIGNIFICANCE**

1. Each party will provide freedom of access to places of religious and historical significance.
2. In this regard, in accordance with the Washington Declaration, Israel respects the present special role of the Hashemite Kingdom of Jordan in Muslim Holy shrines in Jerusalem. When negotiations on the permanent status will take place, Israel will give high priority to the Jordanian historic role in these shrines.
3. The Parties will act together to promote interfaith relations among the three monotheistic religions, with the aim of working towards religious understanding, moral commitment, freedom of religious worship, and tolerance and peace.

**ARTICLE 10**

**CULTURAL AND SCIENTIFIC EXCHANGES**

The Parties, wishing to remove biases developed through periods of conflict, recognise the desirability of cultural and scientific exchanges in all fields, and agree to establish normal cultural relations between them. Thus, they shall, as soon as possible and not later than 9 months from the exchange of the instruments of ratification of this Treaty, conclude the negotiations on cultural and scientific agreements.

**ARTICLE 11**

**MUTUAL UNDERSTANDING AND GOOD NEIGHBOURLY RELATIONS**

1. The Parties will seek to foster mutual understanding and tolerance based on shared historic values, and accordingly undertake:
    a. to abstain from hostile or discriminatory propaganda against each other, and to take all possible legal and administrative measures to prevent the dissemination of such propaganda by any organisation or individual present in the territory of either Party;
    b. as soon as possible, and not later than 3 months from the exchange of the instruments of ratification of this Treaty, to repeal all adverse or discriminatory references and expressions of hostility in their respective legislation;

c. to refrain in all government publications from any such references or expressions;
d. to ensure mutual enjoyment by each other's citizens of due process of law within their respective legal systems and before their courts.

2. Paragraph 1 (a) of this Article is without prejudice to the right to freedom of expression as contained in the International Covenant on Civil and Political Rights.
3. A joint committee shall be formed to examine incidents where one Party claims there has been a violation of this Article.

**ARTICLE 12**

**COMBATING CRIME AND DRUGS**

The Parties will co-operate in combating crime, with an emphasis on smuggling, and will take all necessary measures to combat and prevent such activities as the production of, as well as the trafficking in illicit drugs, and will bring to trial perpetrators of such acts. In this regard, they take note of the understandings reached between them in the above spheres, in accordance with Annex III and undertake to conclude all relevant agreements not later than 9 months from the date of the exchange of the instruments of ratification of this Treaty.

**ARTICLE 13**

**TRANSPORTATION AND ROADS**

Taking note of the progress already made in the area of transportation, the Parties recognise the mutuality of interest in good neighbourly relations in the area of transportation and agree to the following means to promote relations between them in this sphere:

1. Each party will permit the free movement of nationals and vehicles of the other into and within its territory according to the general rules applicable to nationals and vehicles of other states. Neither party will impose discriminatory taxes or restrictions on the free movement of persons and vehicles from its territory to the territory of the other.
2. The Parties will open and maintain roads and border-crossings between their countries and will consider further road and rail links between them.
3. The Parties will continue their negotiations concerning mutual transportation agreements in the above and other areas, such as joint projects, traffic safety, transport standards and norms, licensing of vehicles, land passages, shipment of goods and cargo,

and meteorology, to be concluded not later than 6 months from the exchange of the instruments of ratification of this Treaty.

4. The Parties agree to continue their negotiations for a highway to be constructed and maintained between Egypt, Israel and Jordan near Eilat.

**ARTICLE 14**

**FREEDOM OF NAVIGATION AND ACCESS TO PORTS**

1. Without prejudice to the provisions of paragraph 3, each Party recognises the right of the vessels of the other Party to innocent passage through its territorial waters in accordance with the rules of international law.
2. Each Party will grant normal access to its ports for vessels and cargoes of the other, as well as vessels and cargoes destined for or coming from the other Party. Such access will be granted on the same conditions as generally applicable to vessels and cargoes of other nations.
3. The Parties consider the Strait of Tiran and the Gulf of Aqaba to be international waterways open to all nations for unimpeded and non-suspendable freedom of navigation and overflight. The Parties will respect each other's right to navigation and overflight for access to either Party through the Strait of Tiran and the Gulf of Aqaba.

**ARTICLE 15**

**CIVIL AVIATION**

1. The Parties recognise as applicable to each other the rights, privileges and obligations provided for by the multilateral aviation agreements to which they are both party, particularly by the 1944 Convention on International Civil Aviation (The Chicago Convention) and the 1944 International Air Services Transit Agreement.
2. Any declaration of national emergency by a Party under Article 89 of the Chicago Convention will not be applied to the other Party on a discriminatory basis.
3. The Parties take note of the negotiations on the international air corridor to be opened between them in accordance with the Washington Declaration. In addition, the Parties shall, upon ratification of this Treaty, enter into negotiations for the purpose of concluding a Civil Aviation Agreement. All the above negotiations are to be concluded not later than 6 months from the exchange of the instruments of ratification of this Treaty.

**ARTICLE 16**

**POSTS AND TELECOMMUNICATIONS**

The Parties take note of the opening between them, in accordance with the Washington Declaration, of direct telephone and facsimile lines. Postal links, the negotiations on which having been concluded, will be activated upon the signature of this Treaty. The Parties further agree that normal wireless and cable communications and television relay services by cable, radio and satellite, will be established between them, in accordance with all relevant international conventions and regulations. The negotiations on these subjects will be concluded not later than 9 months from the exchange of the instruments of ratification of this Treaty.

**ARTICLE 17**

**TOURISM**

The Parties affirm their mutual desire to promote co-operation between them in the field of tourism. In order to accomplish this goal, the Parties -- taking note of the understandings reached between them concerning tourism -- agree to negotiate, as soon as possible, and to conclude not later than three months from the exchange of the instruments of ratification of this Treaty, an agreement to facilitate and encourage mutual tourism and tourism from third countries.

**ARTICLE 18**

**ENVIRONMENT**

The Parties will co-operate in matters relating to the environment, a sphere to which they attach great importance, including conservation of nature and prevention of pollution, as set forth in Annex IV. They will negotiate an agreement on the above, to be concluded not later than 6 months from the exchange of the instruments of ratification of this Treaty.

**ARTICLE 19**

**ENERGY**

1. The Parties will co-operate in the development of energy resources, including the development of energy-related projects such as the utilisation of solar energy.
2. The Parties, having concluded their negotiations on the interconnecting of their electric grids in the Eilat-Aqaba area, will implement the interconnecting upon the signature of

this Treaty. The Parties view this step as a part of a wider binational and regional concept. They agree to continue their negotiations as soon as possible to widen the scope of their interconnected grids.

3. The Parties will conclude the relevant agreements in the field of energy within 6 months from the date of exchange of the instruments of ratification of this Treaty.

**ARTICLE 20**

**RIFT VALLEY DEVELOPMENT**

The Parties attach great importance to the integrated development of the Jordan Rift Valley area, including joint projects in the economic, environmental, energy-related and tourism fields. Taking note of the Terms of Reference developed in the framework of the Trilateral Israel-Jordan-US Economic Committee towards the Jordan Rift Valley Development Master Plan, they will vigorously continue their efforts towards the completion of planning and towards implementation.

**ARTICLE 21**

**HEALTH**

The Parties will co-operate in the area of health and shall negotiate with a view to the conclusion of an agreement within 9 months of the exchange of instruments of ratification of this Treaty.

**ARTICLE 22**

**AGRICULTURE**

The Parties will co-operate in the areas of agriculture, including veterinary services, plant protection, biotechnology and marketing, and shall negotiate with a view to the conclusion of an agreement within 6 months from the date of the exchange of instruments of ratification of this Treaty.

**ARTICLE 23**

**AQABA AND EILAT**

The Parties agree to enter into negotiations, as soon as possible, and not later than one month from the exchange of the instruments of ratification of this Treaty, on arrangements that would enable the joint development of the towns of Aqaba and Eilat with regard to such matters, inter

alia, as joint tourism development, joint customs, free trade zone, co-operation in aviation, prevention of pollution, maritime matters, police, customs and health co-operation. The Parties will conclude all relevant agreements within 9 months from the exchange of instruments of ratification of the Treaty.

**ARTICLE 24**

**CLAIMS**

The Parties agree to establish a claims commission for the mutual settlement of all financial claims.

**ARTICLE 25**

**RIGHTS AND OBLIGATIONS**

1. This Treaty does not affect and shall not be interpreted as affecting, in any way, the rights and obligations of the Parties under the Charter of the United Nations.
2. The Parties undertake to fulfil in good faith their obligations under this Treaty, without regard to action or inaction of any other party and independently of any instrument inconsistent with this Treaty. For the purposes of this paragraph each Party represents to the other that in its opinion and interpretation there is no inconsistency between their existing treaty obligations and this Treaty.
3. They further undertake to take all the necessary measures for the application in their relations of the provisions of the multilateral conventions to which they are parties, including the submission of appropriate notification to the Secretary General of the United Nations and other depositories of such conventions.
4. Both Parties will also take all the necessary steps to abolish all pejorative references to the other Party, in multilateral conventions to which they are parties, to the extent that such references exist.
5. The Parties undertake not to enter into any obligation in conflict with this Treaty.
6. Subject to Article 103 of the United Nations Charter, in the event of a conflict between the obligations of the Parties under the present Treaty and any of their other obligations, the obligations under this Treaty will be binding and implemented.

**ARTICLE 26**

**LEGISLATION**

Within 3 months of the exchange of ratifications of this Treaty the Parties undertake to enact any legislation necessary in order to implement the Treaty, and to terminate any international commitments and to repeal any legislation that is inconsistent with the Treaty.

**ARTICLE 27**

**RATIFICATION**

1. This Treaty shall be ratified by both Parties in conformity with their respective national procedures. It shall enter into force on the exchange of instruments of ratification.
2. The Annexes, Appendices, and other attachments to this Treaty shall be considered integral parts thereof.

**ARTICLE 28**

**INTERIM MEASURES**

The Parties will apply, in certain spheres, to be agreed upon, interim measures pending the conclusion of the relevant agreements in accordance with this Treaty, as stipulated in Annex V.

**ARTICLE 29**

**SETTLEMENT OF DISPUTES**

1. Disputes arising out of the application or interpretation of this Treaty shall be resolved by negotiations.
2. Any such disputes which cannot be settled by negotiations shall be resolved by conciliation or submitted to arbitration.

**ARTICLE 30**

**REGISTRATION**

This Treaty shall be transmitted to the Secretary General of the United Nations for registration in accordance with the provisions of Article 102 of the Charter of the United Nations.

Done at the Arava/Araba Crossing Point this day Heshvan 21st, 5775, Jumada Al-Ula 21st, 1415 which corresponds to 26th October, 1994 in the Hebrew, English and Arabic languages, all texts being equally authentic. In case of divergence of interpretation the English text shall prevail.

*For the State of Israel*
*Yitzhak Rabin, Prime Minister*

*For the Hashemite Kingdom of Jordan*
*Abdul Salam Majali, Prime Minister*

*Witnessed by:*
*William J. Clinton*
*President of the United States of America*

**ISRAEL-JORDAN PEACE TREATY**

**ANNEX II**

**Water and Related Matters**

Pursuant to Article 6 of the Treaty, Israel and Jordan agreed on the following Articles on water related matters:

**Article I: Allocation**

1. Water from the Yarmouk River
    a. Summer period - 15th May to 15th October of each year. Israel pumps (12) MCM and Jordan gets the rest of the flow.
    b. Winter period - 16th October to 14th May of each year. Israel pumps (13) MCM and Jordan is entitled to the rest of the flow subject to provisions outlined hereinbelow: Jordan concedes to Israel pumping an additional (20) MCM from the Yarmouk in winter in return for Israel conceding to transferring to Jordan during the summer period the quantity specified in paragraphs (2.a) below from the Jordan River.
    c. In order that waste of water will be minimized, Israel and Jordan may use, downstream of point

121/Adassiya Diversion, excess flood water that is not usable and will evidently go to waste unused.

2. Water from the Jordan River

   a. Summer period - 15th May to 15th October of each year. In return for the additional water that Jordan concedes to Israel in winter in accordance with paragraph (1.b) above, Israel concedes to transfer to Jordan in the summer period (20) MCM from the Jordan River directly upstream from Deganya gates on the river. Jordan shall pay the operation and maintenance cost of such transfer through existing systems (not including capital cost) and shall bear the total cost of any new transmission system. A separate protocol shall regulate this transfer.

   b. Winter period - 16th October to 14th May of each year. Jordan is entitled to store for its use a minimum average of (20) MCM of the floods in the Jordan River south of its confluence with the Yarmouk (as outlined in Article II below). Excess floods that are not usable and that will otherwise be wasted can be utilised for the benefit of the two Parties including pumped storage off the course of the river.

   c. In addition to the above, Israel is entitled to maintain its current uses of the Jordan River waters between its confluence with the Yarmouk and its confluence with Tirat Zvi/Wadi Yabis. Jordan is entitled to an annual quantity equivalent to that of Israel, provided however, that Jordan's use will not harm the quantity or quality of the above Israeli uses. The Joint Water Committee (outlined in Article VII below) will survey existing uses for documentation and prevention of appreciable harm.

d. Jordan is entitled to an annual quantity of (10) MCM of desalinated water from the desalination of about (20) MCM of saline springs now diverted to the Jordan River. Israel will explore the possibility of financing the operation and maintenance cost of the supply to Jordan of this desalinated water (not including capital cost). Until the desalination facilities are operational, and upon the entry into force of the Treaty, Israel will supply Jordan (10) MCM of Jordan River water from the same location as in (2.a) above, outside the summer period and during dates Jordan selects, subject to the maximum capacity of transmission.

3. Additional Water

Israel and Jordan shall cooperate in finding sources for the supply to Jordan of an additional quantity of (50) MCM/year of water of drinkable standards. To this end, the Joint Water Committee will develop, within one year from the entry into force of the Treaty, a plan for the supply to Jordan of the abovementioned additional water. This plan will be forwarded to the respective governments for discussion and decision.

4. Operation and Maintenance

a. Operation and maintenance of the systems on Israeli territory that supply Jordan with water, and their electricity supply, shall be Israel's responsibility. The operation and maintenance of the new systems that serve only Jordan will be contracted at Jordan's expense to authorities or companies selected by Jordan.

b. Israel will guarantee easy unhindered access of personnel and equipment to such new systems for operation and maintenance. This subject will be further detailed in the agreements to be signed

between Israel and the authorities or companies selected by Jordan.

**Article II: Storage**

1. Israel and Jordan shall cooperate to build a diversion/storage dam on the Yarmouk River directly downstream of the point 121/Adassiya Diversion. The purpose is to improve the diversion efficiency into the King Abdullah Canal of the water allocation of the Hashemite Kingdom of Jordan, and possibly for the diversion of Israel's allocation of the river water. Other purposes can be mutually agreed.
2. Israel and Jordan shall cooperate to build a system of water storage on the Jordan River, along their common boundary, between its confluence with the Yarmouk River and its confluence with Tirat Zvi/ Wadi Yabis, in order to implement the provision of paragraph (2.b) of Article I above. The storage system can also be made to accommodate more floods; Israel may use up to (3) MCM/year of added storage capacity.
3. Other storage reservoirs can be discussed and agreed upon mutually.

**Article III: Water Quality and Protection**

1. Israel and Jordan each undertake to protect, within their own jurisdiction, the shared waters of the Jordan and Yarmouk Rivers, and Arava/Araba groundwater, against any pollution, contamination, harm or unauthorized withdrawals of each other's allocations.
2. For this purpose, Israel and Jordan will jointly monitor the quality of water along their boundary, by use of jointly established monitoring stations to be operated under the guidance of the Joint Water Committee.

3. Israel and Jordan will each prohibit the disposal of municipal and industrial wastewater into the course of the Yarmouk or the Jordan Rivers before they are treated to standards allowing their unrestricted agricultural use. Implementation of this prohibition shall be completed within three years from the entry into force of the Treaty.
4. The quality of water supplied from one country to the other at any given location shall be equivalent to the quality of the water used from the same location by the supplying country.
5. Saline springs currently diverted to the Jordan River are earmarked for desalination within four years. Both countries shall cooperate to ensure that the resulting brine will not be disposed of in the Jordan River or in any of its tributaries.
6. Israel and Jordan will each protect water systems in its own territory, supplying water to the other, against any pollution, contamination, harm or unauthorised withdrawal of each other's allocations.

**Article IV: Groundwater in Emek Ha'arava/Wadi Araba**

1. In accordance with the provisions of this Treaty, some wells drilled and used by Israel along with their associated systems fall on the Jordanian side of the borders. These wells and systems are under Jordan's sovereignty. Israel shall retain the use of these wells and systems in the quantity and quality detailed an Appendix to this Annex, that shall be jointly prepared by 31st December, 1994. Neither country shall take, nor cause to be taken, any measure that may appreciably reduce the yields of quality of these wells and systems.
2. Throughout the period of Israel's use of these wells and systems, replacement of any well that may fail among them shall be licensed by Jordan in accordance with the laws and regulations then in effect. For this purpose, the failed well shall be treated as though it was drilled under license from

the competent Jordanian authority at the time of its drilling. Israel shall supply Jordan with the log of each of the wells and the technical information about it to be kept on record. The replacement well shall be connected to the Israeli electricity and water systems.

3. Israel may increase the abstraction rate from wells and systems in Jordan by up to (10) MCM/year above the yields referred to in paragraph 1 above, subject to a determination by the Joint Water Committee that this undertaking is hydrogeologically feasible and does not harm existing Jordanian uses. Such increase is to be carried out within five years from the entry into force of the Treaty.
4. Operation and Maintenance
    a. Operation and maintenance of the wells and systems on Jordanian territory that supply Israel with water, and their electricity supply shall be Jordan's responsibility. The operation and maintenance of these wells and systems will be contracted at Israel's expense to authorities or companies selected by Israel.
    b. Jordan will guarantee easy unhindered access of personnel and equipment to such wells and systems for operation and maintenance. This subject will be further detailed in the agreements to be signed between Jordan and the authorities or companies selected by Israel.

**Article V: Notification and Agreement**

1. Artificial changes in or of the course of the Jordan and Yarmouk Rivers can only be made by mutual agreement.
2. Each country undertakes to notify the other, six months ahead of time, of any intended projects which are likely to change the flow of either of the above rivers along their common

boundary, or the quality of such flow. The subject will be discussed in the Joint Water Committee with the aim of preventing harm and mitigating adverse impacts such projects may cause.

**Article VI: Co-operation**

1. Israel and Jordan undertake to exchange relevant data on water resources through the Joint Water Committee.
2. Israel and Jordan shall co-operate in developing plans for purposes of increasing water supplies and improving water use efficiency, within the context of bilateral, regional or international cooperation.

**Article VII: Joint Water Committee**

1. For the purpose of the implementation of this Annex, the Parties will establish a Joint Water Committee comprised of three members from each country.
2. The Joint Water Committee will, with the approval of the respective governments, specify its work procedures, the frequency of its meetings, and the details of its scope of work. The Committee may invite experts and/or advisors as may be required.
3. The Committee may form, as it deems necessary, a number of specialized sub-committees and assign them technical tasks. In this context, it is agreed that these sub-committees will include a northern sub- committee and a southern sub-committee, for the management on the ground of the mutual water resources in these sectors.

**ANNEX 4: Jordanian-Saudi 2015 Agreement**

**(*Unofficial English translation provided to the IWLP by Dr. Sami Shubber*)**

**Agreement between the Government of the Hashemite Kingdom of Jordan and the Government of the Kingdom of Saudi Arabia for the Management and Utilization of the Ground Waters in the Al-Sag/Al-Disi Layer**

The High Royal Decree has been issued to approve the decision of the Council of Minister no. 9619, dated 13.5.2015, which contains the approval of the Agreement between the Government of the Hashemite Kingdom of Jordan and the Government of the Kingdom of Saudi Arabia, for the management and utilization of the groundwaters in the Al-Sag/Al-Disi Layer, which was signed in Riyadh on 30.4.2015, which reads as follows:

The Government of the Kingdom of Saudi Arabia represented by the Ministry of Water and Electricity, and the Government of the Hashemite Kingdom of Jordan represented by the Ministry of Water and Irrigation (hereinafter referred to as the Parties), bearing in mind the brotherly relations between the brotherly peoples and countries, and the two countries and the special relationship existing between them, and affirming the sincere cooperation which exists between them, and whereas there is a layer of joint water aquifer between them known in the Kingdom of Saudi Arabia as the layer of (Al-Sag), and in the Hashemite Kingdom of Jordan as the layer of (Al- Disi), and in the light of the mutual desire of the two countries to apply the highest standards of prudence in the management and utilization of the groundwaters, which have limited renewability in this layer for the benefit of the two Parties.

The Parties have agreed as follows:

**Article One:**

For the purposes of this Agreement the words and expressions used therein shall have the following meanings:

Saudi: The Government of the Kingdom of Saudi Arabia – The Ministry of Water and Electricity.

Jordan: The Hashemite Kingdom of Jordan – The Ministry of Water and Irrigation.

The Al-Sag Layer: It is the part of the geologic formation that carries the water from the main Al-Sag layer, which extends from the Jordanian borders until the end of the fields of the water wells project of central Tabuk in the Kingdom of Saudi Arabia.

The Al-Disi Layer: It is the part of the geological formation that carries the water from the main Al-Disi layer, which extends from the Saudi borders until the end of the field of water wells of the Al-Disi Project in the Dabeidab area in the Hashemite Kingdom of Jordan.

The Project for the Transport of Al-Disi Waters: It is the project for the conveyance of waters from the Al-Disi Layer in the Dabeidab area to the city of Amman and other governorates.

The Tabouk Central Water Project: It is the project for the conveyance of waters from the Al-Sag Layer to Tabuk city and other cities and villages.

The Technical Joint Committee: It is the Committee referred to in the Third Article of this Agreement.

Pollution: Any pollution to the surface or groundwaters, whether chemical, bacterial, or any other, caused directly or indirectly.

The International Boundary Line: It is the international borderline between the Kingdom of Saudi Arabia and the Hashemite Kingdom of Jordan, in accordance with the Agreement signed between the two States in Amman on Monday 12.4.1385 of the Hijri Calendar, the equivalent of 9.8.1965 of the Gregorian Calendar.

The Management Area: It is the area between the marking points (B1, B2, J2, J1) in Jordan, and the area between the marking points (B1, B2, S4, S3) in Saudi Arabia, which is part of the Al-Disi Layer in Jordan and Al-Sag Layer in Saudi Arabia. This area is indicated in the attached plan (the Map for the Agreement Concerning the Management and Utilization of the Ground waters in the Al-Sag/Al-Disi).

The Protected Area (the Prohibited Area): It is part of the Management Area confined between the marking points (B1, B2, J4, J3), situated in Jordan, and the area confined between the marking points (B1, B2, S2, S1) in Saudi Arabia, which is indicated in the attached plan (the Map for the Agreement Concerning the Management and Utilization of the Groundwaters in the Al-Sag/Al-Disi).

**Article Two:**

The Contracting Parties have agreed on the necessity for the proper management, utilization and sustainability of the waters of the Al-Sag/Al-Disi Layer, through the following means:

1. The liquidation of all existing activities in the Protected Area (the Prohibited Area), which depends on the extraction of groundwaters therefrom, for a period of five years from the date of signature of this Agreement.

2. The maintenance of the Protected Area (the Prohibited Area) between the two brotherly States, free from all activities which depend on the extraction of groundwaters from the Protected Area.

3. The digging of observatory wells in the Protected Area, for the purpose of obtaining information relating to the quality and level of the groundwaters, provided that prior coordination through the Technical Joint Committee is carried out before the digging of any well.

4. The digging of wells in the Management Area has to be done in accordance with the technical standards approved by the two States. In order to avoid any pollution, the horizontal or tilted digging of wells is prohibited.

5. The protection of groundwater in the Management Area between the two States from any pollution. It is not permissible to inject any pollutant, whatever its quality or quantity, into the groundwaters in the Management Area.

6. The use of groundwaters extracted from the Management Area shall be exclusively limited for municipal purposes in the two States.

**Article Three:**

1. A Joint Saudi/Jordanian Technical Committee shall be established, and shall be composed of five members from each Party to the this Agreement, and headed from the Saudi side by the Undersecretary of the Ministry of Water and Electricity, and from the Jordanian a side by the Secretary-General of the Ministry of Water and Irrigation.

2. The Joint Committee shall be entitled to use experts and advisers, and employ assistants, technicians and officials from citizens from the two States or otherwise, according to its needs, for carrying out specified activities.

3. The Technical Committee shall hold its regular meetings every six months, or as the need arises.

4. The Joint Technical Committee shall be responsible for the following:

a. The supervision of the implementation of the terms of this Agreement.

b. The supervision and observation of the groundwaters, from the point of view of the quantity of water extracted, its quality and level.

c. The collection and exchange of information, statements and studies and their analysis, and the submission of the results to the competent authorities in Saudi Arabia and Jordan. These statements and information shall be the property of the two Parties. The Technical Joint

Committee does not have the right to provide such information and statements to a third party except with the written approval of the two Parties.

**Article Four:**

1. This Agreement shall be approved in accordance with the applicable rules and legislation of the Contracting Parties. It shall come into force from the date of signature in accordance with the official measures in the two States.
2. The plan attached to this Agreement shall constitute an integral part thereof, and the terms of this Agreement shall apply to the part specified therein.
3. This Agreement shall be reviewed every twenty-five years.
4. If the need arise for the amendment of any of the provisions of this Agreement, in the interest of the brotherly States, the Technical Joint Committee shall study the amendment and refer it to the competent authorities, for the purpose of taking the necessary official measures in the two States to approve the amendment.
5. This Agreement has been concluded in the City of Riyadh on 11.7.1436 of the Hijri Calendar, the equivalent of 30.4.2015 of the Gregorian Calendar, in two original copies in the Arabic language, which are equally authentic. Each Contracting Party has received a copy of the Agreement.

For The Government of the Kingdom of Saudi Arabia
The Minister of Water and Electricity
Abdullah Bin Abdul Al-Rahman Al- Hossein

For The Government of the Hashemite Kingdom of Jordan
The Minister of Water and Irrigation
Dr. Hazim Kamal Al-Naser

## ANNEX 5: List of interviewees

| Interviewee Code | Number of people | Affiliation |
|---|---|---|
| 1 | 1 | Jordanian academic |
| 2 | 1 | Jordanian academic |
| 3 | 1 | Jordanian academic |
| 4 | 1 | Jordanian academic |
| 5 | 2 | Water utility company |
| 6 | 1 | Journalist |
| 7 | 1 | Jordanian academic |
| 8 | 1 | Governmental employee, MWI |
| 9 | 1 | Governmental employee, MWI |
| 10 | 1 | Jordanian academic |
| 11 | 1 | Jordanian academic |
| 12 | 1 | Jordanian academic |
| 13 | 1 | International organisation employee |
| 14 | 1 | Governmental employee, MWI |
| 15 | 1 | Governmental employee, MWI |
| 16 | 1 | Donor organisation employee |
| 17 | 1 | Governmental employee, MWI |
| 18 | 1 | Governmental employee, MWI |
| 19 | 1 | Farmer |
| 20 | 1 | Bedouin |
| 21 | 1 | Farmer |
| 22 | 1 | Governmental employee, MWI |
| 23 | 1 | Member of the parliament |
| 24 | 2 | Teachers and governmental employee, Ministry of Education |
| 25 | 2 | Governmental employee, MOA |
| 26 | 6 | Farmers and Water User Association employee |
| 27 | 1 | Employee of NGO |
| 28 | 2 | Donor organisation employee |
| 29 | 1 | Representative of political party |
| 30 | 1 | Jordanian academic |
| 31 | 1 | Employee of NGO |
| 32 | 1 | International organisation employee |
| 33 | 1 | Diplomat |
| 34 | 1 | Diplomat |
| 35 | 2 | Bedouin |
| 36 | 1 | Diplomat |
| 37 | 1 | Governmental employee, former minister of MFA |
| 38 | 1 | Research Institute employee |

| | | |
|---|---|---|
| 39 | 1 | Donor organisation employee |
| 40 | 1 | Employee of industries |
| 41 | 1 | Jordanian academic |
| 42 | 1 | Governmental employee, MWI |
| 43 | 1 | Employee of industries |
| 44 | 1 | Former senior governmental employee, MWI |
| 45 | 1 | Donor organisation employee |
| 46 | 1 | Employee of NGO |
| 47 | 1 | Governmental employee, MoPIC |
| 48 | 1 | Employee of NGO |
| 49 | 1 | Donor organisation employee |
| 50 | 1 | Governmental employee, MoE |
| 51 | 1 | Governmental employee, MWI |
| 52 | 1 | Governmental employee, former minister of MWI |
| 53 | 1 | Governmental employee, MWI |
| 54 | 1 | Member of the parliament |
| 55 | 1 | Member of the parliament |
| 56 | 2 | Member of the parliament |
| 57 | 1 | Governmental employee, AWQAF |
| 58 | 1 | International organisation employee |
| 59 | 1 | International organisation employee |
| 60 | 1 | Member of the parliament |
| 61 | 1 | Donor organisation employee |
| 62 | 1 | Employee of industries |
| 63 | 1 | Governmental employee, former minister of MWI |
| 64 | 1 | Diplomat |
| 65 | 1 | Donor organisation employee |
| 66 | 1 | Diplomat / Governmental employee, MFA |
| 67 | 1 | Farmer |
| 68 | 1 | International organisation employee |
| 69 | 3 | Employee of NGO |
| 70 | 1 | Employee of NGO |
| 71 | 1 | Jordanian academic |
| 72 | 4 | Employee of NGO |
| 73 | 2 | Bedouin |
| 74 | 1 | Diplomat |
| 75 | 1 | Research Institute employee |
| 76 | 1 | Employee of NGO |
| 77 | 1 | Employee of NGO |
| 78 | 1 | Employee of NGO |
| 79 | 1 | Governmental employee, MoE |
| 80 | 1 | Research Institute employee |

| | | |
|---|---|---|
| 81 | 1 | Donor organisation employee |
| 82 | 1 | Governmental employee, MoE |
| 83 | 1 | Governmental employee, MoE |
| 84 | 1 | Jordanian academic |
| 85 | 1 | Research Institute employee |
| 86 | 1 | Governmental employee, MWI |
| 87 | 1 | Donor organisation employee |
| 88 | 1 | Donor organisation employee |
| 89 | 2 | Donor organisation employee |

**ANNEX 6: Ethical clearance**

COMPLETE ALL SECTIONS IN **PART A** AND APPLICANT INFORMATION IN **PART B**

## APPLICANT INFORMATION

| | |
|---|---|
| Forename | Hussam |
| Surname | Hussein |
| Gender | Male |
| Student ID number *(if applicable)* | 6361412/1 |
| Contact email address | h.hussein@uea.ac.uk |
| Date application form submitted | 09/04/13 |
| 1st application or resubmission? | Resubmission (amended and re-approved on the 08/07/2014) due to the new geographical focus and new research question) |

## PROJECT INFORMATION

| | |
|---|---|
| Project Title | The role of climate change discourses in the transboundary water basins in arid and semi-arid regions |

** DEV/DEVco faculty or DEVco research associate applications only:*

| | |
|---|---|
| * Project Funder | |
| * Submitted by SSF or DEVco? | |
| If yes – Project Code: | |

*Postgraduate research students only:*

| | |
|---|---|
| Date of your PP presentation | 28/06/13 |

## PERSON(S) SUBMITTING RESEARCH PROPOSAL

| Name(s) of all person(s) submitting research proposal. Including main applicant | Status (BA/BSc/MA/MSc/MRes/ MPhil/PhD/research associate/faculty etc.) Students: specify your course | Department/Group/ Institute/Centre |
|---|---|---|
| Hussam Hussein | PGR | DEV, UEA |
| | | |

## SUPERVISOR AUTHORISATION

*In the case of undergraduate and postgraduate research, please give details of supervisor(s). The Supervisor is asked to certify the accuracy of the following account. If the supervisor is out of the country at the time of submission they should send an email to the Chair of the ethics committee (j.seeley@uea.ac.uk), copied to dev.ethics@uea.ac.uk stating that they have seen and approved the application.*

| Name of supervisor(s) | Position held |
|---|---|
| Dr Mark Zeitoun<br>Dr Adriana Sinclair | Lecturer in DEV<br>Lecturer in PSI |



Official use only – Ref. no.

| | | |
|---|---|---|
| 13 | 05 | 24 |

## SUPERVISOR AUTHORISATION

| Signature *(supervisor of student)* | Date |
|---|---|
| | |

## APPLICANT SIGNATURE

| Signature *(proposer of research)* | Date |
|---|---|
| | |

## 1. OVERVIEW OF THE STUDY

Describe the purposes of the research/project proposed. Detail the methods to be used and the research questions. Provide any other relevant background which will allow the reviewers to contextualise your research or project activities. Include questionnaires/checklists as attachments, if appropriate.

This research aims to examine how climate change discourses (CCD) influence transboundary water policies in the Lower Jordan River. This study will seek to understand how CCD are developed and constructed at different scales, by whom, and for which aims, incorporating the internal and national divisions on CCD as well as their external implications for transboundary water politics. This study will aim to answer the following research questions:

**Main question**:

- How do CCD shape water policies on different scales in the Lower Jordan River?

**Subquestions**:

- How are the hydro-political relations evolving in the Lower Jordan River?

- How are the climate change narratives constructed on different scales?

- How are climate change and water perceived by Israelis and Palestinians?

- How do CCD impact the (de)securitisation of the water resources?

This study uses qualitative methods in data generation and analysis. The study involves the use of the following methods:

**- Document Analysis:** In order to identify the CCD and to understand the hydro-political relations along the Jordan River, it will be essential to analyse secondary sources such as reports on climate change and on the historical water-relations of the several actors involved. Several scientific articles, theses, and books have been published on the Jordan River and on the politics of water in the basin. Documents are understood in a broad way, focusing mainly on secondary data (rather than primary data), including advertisements, books, brochures, event programs, newspapers, reports, articles, etc.
**- Discourse and Narrative Analysis:** to analyse an actor's capacity to construct CCD and to analyse the hidden power that lies behind. Discourse analysis will be used to analyse textual

## 1. OVERVIEW OF THE STUDY

reports and declarations on climate change in international forum by the governments, NGOs and the different actors described. Narrative analysis will look at a narrative not only from its context, but mainly at its meanings, how it is constructed, the reasons and interests that are driving it. For the narrative analysis a rigorous production of documents will be necessary, and the documentation will be recorded electronically. It would allow me to identify the different narratives, the sanctioned discourse, and the discourse coalitions.

**- Focus group**: It would be useful to have focus groups at the beginning of my fieldwork in the villages (and not with knowledge-makers) with groups of around 8 people.This method would provide me with many different opinions at once, giving me an idea of the general understanding people have of climate change, and I believe it is a good way to start a new piece of research quickly to get a general idea about the discourses in a specific village. I would have a focus group both at the beginning of my fieldwork for the reasons explained, and at the end of my fieldwork to test the results of my findings. It would be interesting to see farmers' reactions and observe their interactions on the topic. It would allow me to see which are the discourses that would emerge on climate change, how they are said, by whom, and why.

**- Semi-structured interviews:** I would use this method to interview key knowledge-makers that are contributing to the development and construction of the CCD, but also to follow up with members of the local communities to better understand their perceptions and understanding of the CCD. This method would be more appropriate than other types of interview because it would give me more freedom in covering certain topics and to guide the interviews withwards my interests and the data I need. It would allow me to make follow up questions to drive the interview withwards explanations of certain meanings or to understand why they decided to use a particular word instead of another one. I would prefer a "one to one" interview type with knowledge-makers rather than group discussions because of time constraint they may have and to go more in depth to understand the reasoning behind specific choices of official declarations, reports, etc. In addition, in this kind of interviews it would be easier to unfold the background stories often hidden to the public.

## 2. SOURCES OF FUNDING

| The organisation, individual or group providing finance for the study/project. |
|---|
| Self-funded |

## 3. RISKS OR COSTS TO PARTICIPANTS

| What risks or costs to the participants are entailed in involvement in the research/project? Are there any potential physical, psychological or disclosure dangers that can be anticipated? What is the possible benefit or harm to the subject or society from their participation or from the project as a whole? What procedures have been established for the care and protection of participants (e.g. insurance, medical cover) and the control of any information gained from them or about them? |
|---|
| Due to political sensitiveness of the study, facilitating confidentiality of the research participants has a vital importance. If the issues with regard to confidentiality are met, possible risks to research participants will significantly decrease. In order to avoid from possible physical or psychological risks, I will conduct semi-structured interviews in the working places of key informants. Therefore, the interviews will be conducted in safe and secure areas for both the research participants and myself. I will make clear how this information will be used in the research projects. I will also offer to make the data of the interviews anonymously attributed, according to the wishes of the interviewee as expressed at any time. I will also state in my interviews that I could send my work in order to let them see how their contribution is used in the research project. |

## 3. RISKS OR COSTS TO PARTICIPANTS

Another potential risk is putting people's reputation in danger, for instance if I shared information that is sensitive. For this reason, care will be taken to ensure that all data is coded at the time of collection as far as possible. In addition, I will make sure not to share sensitive information that could potentially negatively impact someone's reputation. Data will be also securely stored.

Arguments, claims, perceptions of climate change and water will be included in the research. In this respect, discourse and narrative analysis, as well as semi-structures interviews will constitute the main primary data that particularly inform the empirical chapters of the study. Through those data, representatives of different groups will have a space to disseminate their perceptions and views regarding the research topic. It is expected that NGOs and environmentalists as well as groups working on social justice and access to water and supporting the principle of fairness and equity in water distribution in the region will particularly benefit from the research project, since they have relatively limited resources and spaces to disseminate their views regarding water and climate change issues.

Overall, I am aware that anonymising data does not always resolve the issue. Therefore, I am ready to not use data which could be potentially inflammatory or endangering of people's positions. In addition, I will be careful in mentioning specific names of places, and according to the size of the city/area I will be operating in, I will avoid to mention specific neighbourhoods that may facilitate the identification of people I will be interviewing.

In order to reduce exposure of the participants during the focus groups, where confidentiality is difficult to maintain, I will explain before the focus group that participants shall not give too many details that could put their life or reputation in danger, and that they should be aware that what they say will be heard also from the other participants involved. Therefore, if they want to explain further what they want to say, they can do so, but as a follow up in private after the focus group. The focus group would be focused on their understanding of climate change to verify their understanding of this concept, while at the end of the fieldwork it would be on verifying my findings on these issues. I will remind them of the places my study may be published and make sure to explain properly that they should not say in public sensitive things. Concerning confidentiality, I will try to form small focus groups with a homogenous group of people.

## 4. RECRUITMENT/SELECTION PROCEDURES

How will study/project participants be selected? Is there any sense in which participants might be 'obliged' to participate – as in the case of students, prisoners or patients – or are volunteers being recruited? If participation is compulsory, the potential consequences of non-compliance must be indicated to participants; if voluntary, entitlement to withdraw consent must be indicated and when that entitlement lapses.

Participants for the focus groups will be selected through networking. In this sense, I will identify networks of farmers through which I will reach the key informants. The farmers on both sides (Israeli and Palestinian) will be selected from specific villages that are part of the *Good Water Neighbours* project of the NGO Friends of the Earth Middle East, with which I collaborated in the past. Therefore, I will select the relevant farmers to involve in the focus groups. I would like to underline the fact that I used to work with this NGO but not on the field, but in the Amman office, dealing with the research part. Hence, I am not very familiar with the specific communities on the Western side of the river. Nonetheless, I understand that participants may see me as associated with the NGO and may feel obliged to participate in my research. Also for this reason, I will live in the community and try to become a familiar person of the community, not seen as part of the NGO but seen as a common person, establishing every day life linkages with them. In any case, I will remain reflexive at all time concerning my positionality that would affect my relation with the participants. Being aware of this, I believe, is already an important step, as well as keep thinking and adopting a reflexive approach towards my positionality.

## 4. RECRUITMENT/SELECTION PROCEDURES

Regarding reaching the officials from the Israeli government, I will use my network of contacts built in the previous years through the collaboration with the NGO Friends of the Earth Middle East. In addition, Prof. Feitelson - head of the Geography and Environmental Studies Department at the Hebrew University of Jerusalem – who already agreed to help me with my research while on the field, would help me to reach those informants easily in the Israeli side. Moreover, I will also use my personal network that I have already made during my first year research in the UEA. My own personal links, the support of my primary supervisor, would help me to open some useful networks in the Palestinian side and help me to reach the key informants in the Palestinian side. An internship that I intend to do in Ramallah with the Palestinian Negotiations Support Unit would also help me in gain access to data on the Palestinian side concerning climate change and water policies.
Regarding reaching non-state entities, I will arrange meeting with the representatives of the NGOs that engage in water or climate change issues in the region. I reckon there will not be obstacles to reach those representatives. Having Arabic as mother tongue would also help me to engage in those circles easily in the Palestinian side. As for the international organisations, I believe that my previous working experience at the World Bank and the European Institutions would help me in having access to the relevant people in the local offices.
In the selection of the interviewees the main criteria would be their role in the respective institution and previous official declarations made on the relevant topics

However, it should be noted in most cases, I will have a chance to conduct interviews in English, since the key informants whom I will approach would have the ability of speaking English. Hence, I believe that not knowing Hebrew should not be an obstacle for my research. In case, if needed I would hire an assistant proficient with English and Hebrew to help me with this linguistic obstacle. In any case, I am aware of political biases if I do have to use a translator.

The interviews will be conducted on voluntary basis. Therefore, research participants will have right to withdraw their consent in the following time periods. Yet, since identities of interviewees will be kept anonymous, there should hopefully not be cases of withdrawal.

## 5. PARTICIPANTS IN DEPENDENT RELATIONSHIPS

Specify whether participants will include students or others in a dependent relationship (this could affect their ability to decline to participate). If such participants will be included what will you do to ensure that their participation is voluntary etc.?

The interviewees will not be students under age of 18.

## 6. VULNERABLE INDIVIDUALS

Specify whether the research will include children or people with mental illness. If so, please explain the necessity of involving these individuals as research participants and what will be done to facilitate their participation.

As stated above this research will consist of interviews with the representatives of the different groups in society. Therefore, possible interviews and contact with some of the vulnerable groups such as opposition movements may take place, since the data they provide could be useful and important for my research. To prevent any harm and risk for these groups, the following ethical issues will be taken into consideration. Firstly, as I will mention in the following parts, I will take particular attention to the issues with regard to confidentiality through the consent form and a full awareness of their vulnerable position. In this respect, I will clearly specify my affiliations regarding my university. Some of the interviewees may agree that the data they provide can only be use, after they see how I have used it in my work, since they may have concerns regarding the representations of their contributions. When such a request is made, I will pass the relevant

## 6. VULNERABLE INDIVIDUALS

text to them for their approval, and not publish or submit my work by integrating their contributions. Finally, keeping the interviews anonymous as mentioned above is a further method at my disposal to avoid such problems, if requested.

Those vulnerability issues may also be applicable to the government officials, since some of the information that they provide may risk their position in the institution they base. Therefore, the above-mentioned points should be met and it will be taken into consideration.

Since the study will not include children, or people having physical illnesses (unless people having physical or mental illness are leaders of relevant NGOs or relevant positions in institutions strategic for my research) no ethical concern is anticipated apart from those above-stated points.

## 7. PAYMENTS AND INCENTIVES

Will payment or any other incentive, such as a gift or free services, be made to any participant? If so, please specify and state the level of payment to be made and/or the source of the funds/gift/free service to be used. Please explain the justification for offering payment or other incentive.

No payment or other financial incentives will be made for any other research subjects. Participation to my research is on a voluntary and free of compensation basis.

## 8. CONSENT

Please give details of how consent is to be obtained. A copy of the proposed consent form, along with a separate information sheet, written in simple, non-technical language MUST accompany this proposal form (do not include the text of the form in this space, attach with your submission as a separate document).

In the context of political sensitiveness of my research, the interviewees may feel threatening to sign a document. Therefore, verbal consent is best for both the interviewees and myself. When I contact with the key informants to arrange interviews, I intend to read a brief statement before the interview (see attached). The statement includes; the nature of my study and its purpose; how privacy and confidentiality are kept; assure voluntary participation and the right to refuse or withdraw; and that his/her contribution is greatly appreciated. I will also clearly give basic information about my affiliations and myself verbally. In some cases, the interviews will be arranged through e-mail exchanges. In such cases, those points will also be stated in those e-mail exchanges. In any case, I will give the participants an information sheet to ensure they fully understand the consent, and if they choose, can take it away for future reference.

## 9. CULTURAL, SOCIAL, GENDER-BASED CHARACTERISTICS

Comment on any cultural, social or gender-based characteristics of the participants which have affected the design of the project or which may affect its conduct.

Owing to nature of the study field, the research will include nationals from co-riparian states, mainly Israel and Palestine. Within those states, the representatives of government officials and representatives of different interest groups such as NGO within society will be included. In this respect, I will deal with high level of government officials and other representatives of non-state entities. I will show my utmost respect to them, when I conduct my interviews.

As I have grown up in Italy but from an Arabic-Muslim family, I know the religious and cultural norms and conducts in the Palestinian context. I have been travelling in the Middle East every year since I was born, and I am very familiar with the Palestinian communities. This would be an advantage for me to consider social norms and regulations. I will also take into consideration the

## 9. CULTURAL, SOCIAL, GENDER-BASED CHARACTERISTICS

dress codes, when I conduct my interviews. Having studied and worked in multicultural contexts, including SOAS, World Bank, Friend of the Earth Middle East, College of Europe, and the European Parliament, I am also quite familiar with Jewish religious and cultural norms, and broadly speaking familiar to live and relate myself with people from different backgrounds, cultures, and opinions.

Finally I will not choose my interviewees based on gender characteristics. Their position within the institutional body they represent will be the main criteria for choosing the interviewees. However, in setting up focus groups in rural villages, the presence of men, etc., could potentially represent some gender-based obstacles. However, growing up in a Muslim family and being very familiar with the cultural structure of an Arab society, I would be careful in respecting the local traditions in this regard. At the same time, growing up in Italy and having travelled a lot in Europe and lived in the USA, I would feel completely comfortable in interacting with people that self-define themselves as not belonging to one specific gender and not seeing the gender issue as dichotomy. I believe that this open mindness I have could and would be useful especially while interacting with the Israeli civil society, where many leaders, including environmentalist leaders, are openly LGBT.
Being very familiar with the urban society, culture, and tradition, and less with the rural environment so far, I will consider the gender segregated focus groups as an option. Once on the field, I will better know how to structure the focus groups, according and respecting the local cultures, traditions, and believes. Hence, I would have more options to choose from, respecting and being sensitive to the local communities.

## 10. ENVIRONMENTAL IMPACT

Identify any environmental impacts arising from your research/project and the measures you will take to minimise risk of impact.

The research participants have already had some experiences in having such interviews, since considerable number of academics from inside or outside of the co-riparian states conducted the similar research topics. Therefore, I believe that the key informants accustomed to those approaches from researchers. In this respect, I do not expect that the research project would have any negative impacts upon the environment in which it would be conducted.

## 11. CONFIDENTIALITY

Please state who will have access to the data and what measures which will be adopted to maintain the confidentiality of the research subject and to comply with data protection requirements e.g. will the data be anonymised?

Regarding confidentiality, the following considerations will be taken into account.

a. The interviews will be kept anonymous, as long as otherwise is stated or authorised. I will ask to my interviewees whether they are willing to permit to state their names and position or if they prefer to be kept anonymous.

b. In case, the interviewee gives information off the record, I will not use them as primary data in my study. To verify it, I will send my work to let them see their contribution, if requested.

c. The data acquired from interviewees will be securely stored and will only be disclosed to small research team.

## 11. CONFIDENTIALITY

d. In some cases, even though their contribution is anonymous, if they require to see the work before publishing it for their consent, they may not consent with me to publish the work. In such cases, those parts of the work or the work itself will not be published as long as the research participants consent.

e. In case the interviewees withdraw from the research, the data they provide will be destroyed and it will not be disclosed to the third parties.

As a courtesy and safeguard against future ethical issues, I will send a copy of my work to let the participants see how their contribution has been used, if requested. I will leave a reasonable time from sending them transcript to the deadline for withdrawal, in order to have enough time to make the changes and leaving enough time for proceeding with the PhD final stages (revision, submission, discussion).

In order to further secure my materials, I will be using pseudonyms or codes in my interview notes and research diary when referring to names of people or places, and will alternate and or mix the use of different languages, including Italian, English, Arabic, and French in the notes in my diary to further protect and secure the data.

## 12. THIRD PARTY DATA

Will you require access to data on participants held by a third party? In cases where participants will be identified from information held by another party (for example, a doctor or school) describe the arrangements you intend to make to gain access to this information.

Regarding the interviews with the representatives, I will gather the direct data regarding the policies of governmental or non-governmental organisation. In some minor cases, I might have acquired primary data from the other academics based in the local academic institutions.

## 13. PROTECTION OF RESEARCHER (APPLICANT)

Please state briefly any precautions being taken to protect your health and safety. Have you taken out travel and health insurance for the full period of the research? If not, why not. Have you read and acted upon FCO travel advice (website)? If acted upon, how?

Before leaving for fieldwork, I will make a travel and health insurance for the period of my stay in the region. During my fieldwork, I will also be aware of the fact that I represent the UEA and act in accordance with the dignity suggested by that responsibility.

I have consulted the FCO travel advice.Therefore, I will consequently take care and be cautious when travelling and staying in the West Bank and when travelling or being around Israeli settlements or refugee camps or in the cities of Jenin, Nablus, and Hebron. I will check the local and national and international news regularly to be updated about any conflict or security issue that may put at risk my personal safety. In case of danger and security issues or in case of wars or civil wars, I will be in touch with an EU diplomatic representation (UK or Italy) and leave the country or take any measure they would recommend, possibly going towards Jordan or flying back to an EU or a stable and safe country.

When in Jerusalem, I will be alert at all time especially when in the Old City and on Fridays. In case of unrest or tensions, I will try to leave the area as soon as possible. I will also try to avoid

## 13. PROTECTION OF RESEARCHER (APPLICANT)

to be near the Gaza borders. If I will find the need to go to Gaza for my research, I will discuss this with my primary supervisor and after obtaining his approval I will fill out a risk assessment form prior to going there. In any case, I will make sure not to enter Gaza by sea but I would enter it using either the Israeli official border or the Egyptian one. The same applies to any potential travel to Sheba's Farms and Ghajjar.

As for the visas, before the fieldwork I will make sure to have the necessary travel and visa documents required to enter the region.

I also must note that I will always be in close contact with colleagues and friends living in the region, such as employees from the NGO Friends of the Earth Middle East with which I collaborated in the past, and other water specialists met in international conferences, people that in case of help would be there. I will always contact the Italian, Jordanian (being a dual citizen), and UK embassies as well as the EU delegation as soon as I will arrive in the country. Contacts with my previous employer's office in the country (World Bank) would also be done. In addition, I must note that relatives of my parents live in Nablus, East Jerusalem, and in a village not far from Ramallah. In case of need, they would be close to me and helping me. I will also be using mobile phone during this time, so that I can be reached any time by my family, friends, and colleagues.

## 14. PROTECTION OF OTHER RESEARCHERS

Please state briefly any precautions being taken to protect the health and safety of other researchers and others associated with the project (as distinct from the participants or the applicant).

No researchers will be involved in research apart from me.

## 15. RESEARCH PERMISSIONS (INCLUDING ETHICAL CLEARANCE) IN HOST COUNTRY AND/OR ORGANISATION

The UEA's staff and students will seek to comply with travel and research guidance provided by the British Government and the Governments (and Embassies) of host countries. This pertains to research permission, in-country ethical clearance, visas, health and safety information, and other travel advisory notices where applicable. If this research project is being undertaken outside the UK, has formal permission/a research permit been sought to conduct this research? Please describe the action you have taken and if a formal permit has not been sought please explain why this is not necessary/appropriate (for very short studies it is not always appropriate to apply for formal clearance, for example).

On the websites of the Israeli Embassy in London or of the UK Embassy in Tel Aviv there are no details about research guidelines such as research permissions, in-country ethical clearances, etc. Concerning health and safety information, please see answer 13. Concerning visas, I will either apply to an A2 study visa and/or use my Italian passport to enter the country as a visa for Italians staying in Israel for up to 90 days is not required. I would leave for a short Christmas break in December (hence, before the 90 days expire) and the same would be done end of March with a short trip to Jordan. Alternatively, a study visa could be also issued in Jerusalem/ Tel Aviv. In this case, a formal affiliation to the Hebrew University of Jerusalem, which has already been confirmed by the department of environmental studies, would be required. However, my Middle Eastern origins may be a problem for obtaining this kind of visa and therefore a short term stay of 90 days could be the option.

## 15. RESEARCH PERMISSIONS (INCLUDING ETHICAL CLEARANCE) IN HOST COUNTRY AND/OR ORGANISATION

I also must note that I will always be in close contact with colleagues and friends living in the region, such as employees from the NGO Friends of the Earth Middle East with which I collaborated in the past, and other water specialists met in international conferences, people that in case of help would be there. I will always contact the Italian, Jordanian (being a dual citizen), and UK embassies as well as the EU delegation as soon as I will arrive in the country. Contacts with my previous employer's office in the country (World Bank) would also be done. I will also be using mobile phone during this time, so that I can be reached any time by my family, friends, and colleagues.

## 16. MONITORING OF RESEARCH

| What procedures are in place for monitoring the research/project (by funding agency, supervisor, community, self etc). |
|---|
| During my research I will keep a diary regarding my research activities. I will also continuously keep in touch via email and/or Skype with both my supervisors in the UEA regarding the progress of my research as necessary. |

## 17. ANTICIPATED USE OF RESEARCH DATA ETC

| What is the anticipated use of the data, forms of publication and dissemination of findings etc.? |
|---|
| Data that will be gathered during my research will be used for the empirical chapters of my project. I will also attempt publish papers in accredited journal by using drafts chapters for the research project. For this purpose, I will be in touch with my supervisors to get their consultancy about a possible publication. |

## 18. FEEDBACK TO PARTICIPANTS

| Will the data or findings of this research/project be made available to participants? If so, specify the form and timescale for feedback. What commitments will be made to participants regarding feedback? How will these obligations be verified? |
|---|
| The raw qualitative data that I collect will not be made available to the interviewees. However, I will send my completed version of research project to those who have concerns regarding how their contributions are represented in the research project. If any of my interviewees raises such concerns, I will not use their contribution in my research. Prior to submission or publish, I will follow those procedures. |

## 19. DURATION OF PROJECT

*The start date should not be within the 2 months after the submission of this application, to allow for clearance to be processed.*

| Start date | End date |
|---|---|
| 15 September 2013 | 15 September 2014 |

## 20. PROJECT LOCATION(S)

| Please state location(s) where the research will be carried out. |
|---|
| Israeli and Palestinian territories, mainly in Jerusalem, Ramallah, Tel Aviv, and the Jordan Valley. |

## APPLICANT INFORMATION

*To be completed by the applicant*

| | |
|---|---|
| Forename | Hussam |
| Surname | Hussein |
| Student ID number *(if applicable)* | 6361412/1 |
| UG, PGT or PGR *(if applicable)* | PGR |
| Supervisor *(if applicable)* | Mark Zeitoun and Adriana Sinclair |
| Project Title | The role of climate change discourses in the transboundary water basins in arid and semi-arid regions |

**RESUBMISSIONS** – IF YOU ARE ASKED TO RESUBMIT YOUR APPLICATION FOLLOWING REVIEW BY THE COMMITTEE PLEASE **INCLUDE A LETTER** WITH YOUR REVISED APPLICATION DETAILING HOW YOU HAVE RESPONDED TO THE COMMITTEE'S COMMENTS. Students please ensure your supervisor has approved your revisions before resubmission.

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## REVIEWER'S RECOMMENDATION (✓)

*To be completed by the Ethics Committee*

| | |
|---|---|
| Accept | ✓ |
| Request modifications | |
| Reject | |

## REVIEWERS' CHECKLIST

*Delete as appropriate*

| | | |
|---|---|---|
| Risks and inconvenience to participants are minimised and not unreasonable given the research question/ project purpose. | ✓ | × |
| All relevant ethical issues are acknowledged and understood by the researcher. | ✓ | × |
| Procedures for informed consent are sufficient and appropriate | ✓ | × |

## REVIEWERS' COMMENTS

| |
|---|
| A good response to the comments posed in the 23th of May 2013 review |

## COMMITTEE'S RECOMMENDATION

| |
|---|
| Ethical Approval granted |

## SIGNATURE (CHAIR OF THE INTERNATIONAL DEVELOPMENT ETHICS COMMITTEE)

| Signature | Date |
|---|---|
| J. Seeley | 4th of June 2013 |