Yarmouk, Jordan, and Disi basins: examining the impact of the discourse of water scarcity in Jordan on transboundary water governance

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ABSTRACT

Extensive literature has shown the impact of water scarcity discourses on national policies, however the impact of water scarcity discourses on transboundary water governance has been overlooked. This article contributes to filling this gap by investigating the impact of the water scarcity discourse in the case of Jordan, specifically on three cases of transboundary water governance: the Yarmouk River, the Jordan River, and the Disi Aquifer. This article shows that the water scarcity discourse is not enough to explain transboundary water governance, as it needs to be contextualized in the broader context, considering national security, regional geopolitics, inter-sectorial interests, and power asymmetries. This is particularly true when considering that the Arab region has most of its surface waters originating outside of its countries, and transboundary waters represent over two thirds of its overall water resources.

KEYWORDS

Yarmouk River; Disi; Jordan River; transboundary water governance; Jordan.

INTRODUCTION

This article investigates the effects of the discourse of water scarcity on transboundary water governance (TWG) in the case of Jordan. The concept of governance refers to laws, policies, regulations, institutional structures and arrangements set up to govern (Folke et al., 2005, Huitema et al., 2009, Boyle et al., 2001). Dryzek (1997: 8) defines a discourse as "a shared way of apprehending the world." Discourses are central in constructing representations of complex environmental issues, and in so doing they drive towards certain policy-solutions (Leach and Mearns, 1996, Dryzek, 1997: 9-10, Hajer, 1995).

The focus of this article is important for three reasons; first, most of the water resources in Jordan are transboundary (MWI, 2009). Second, the discourse of water scarcity is dominant, and it does drive towards policy-solutions (Hussein, 2016). Third, the dominant policy-solutions opened by the discourse of water scarcity in the Jordanian national water strategy "Water for Life" (WFL) are transboundary: the Red Sea Dead Sea Canal (RSDSC) and the Disi projects (MWI, 2009, Hussein, 2016: ch.7; Hussein, 2018a). This study contributes to the literature on critical hydropolitics, as extensive research has been done on the politics of water scarcity (Mehta, 2001, Mehta, 2005, Hussein, 2016, Edwards, 2013, Feitelson, 2002, Shiva, 2002, Perreault, 2006, Alatout, 2008, Swyngedouw, 1999) – proving that discourses of water scarcity do impact policies at the national level (ibid.) -, but little research has been done on the impact of water scarcity discourses on TWG (Zeitoun and Warner, 2006, Zeitoun and Mirumachi, 2008). In addition, while the three basins considered have been previously analysed, they have never been studied in a comparative way, as this article does.

After a brief presentation of the methodology, the regional geopolitical dynamics, and theoretical framework, this article investigates the hydropolitical relations and the role of the water scarcity discourse on the: Jordanian-Syrian relations on the Yarmouk River Basin, Jordanian-Israeli on the Jordan River Basin, and Jordanian-Saudi on the Disi Aquifer.

METHODOLOGY

Fieldwork took place during intensive twelve months from December 2013 until December 2014, spread during different seasons in Jordan, and mainly in Amman, the capital of the country. Given the guiding research question *What is the impact of the*

deployment of the water scarcity discourse on transboundary water governance in the case of Jordan? the data collection required the deployment of a combination of different qualitative methods. The methods of data collection deployed are: document collection and semi-structured interviews. The method of data analysis is discourse analysis, which allows investigation of the construction and impact of the discourse. Data analysis has been undertaken through thematic coding, and after initial use of the NVIVO software for analysing the interviews, thematic coding has been applied for the analysis of the interviews. The themes and codes utilised for the analysis were: the causes and reasons identified for the issue of water scarcity; the solutions they would suggest to solve the issue; and the development of the TWG. Concerning the sample, the documentation were: the governmental reports on water issues in the country, newspaper articles, academic articles, press releases of relevant ministries, reports of donors and international organisations. In addition, 89 semi-structured interviews (the interviewees are anonymously cited in the text) were conducted especially with those involved in TWG, in order to sketch out how the discourse of water scarcity interplayed in the TWG negotiations in 1987 (with Syria), 1994 (with Israel), and 2015 (with Saudi Arabia), and in understanding how the discourse had a role in the discussions in the bilateral meetings and in the joint water committees. Hence, the main target of these interviews were Jordanian high level and senior governmental officials involved in these discussions and negotiations, mainly from the Ministry of Water and Irrigation (MWI), Ministry of Foreign Affairs (MFA), the Jordan Valley Authority (JVA), and current and former diplomats based in Amman or representing Jordan in the neighbouring countries. Interviews lasted in average about 30-40 minutes each, and included several follow up questions according to the answers received.

REGIONAL GEOPOLITICAL DYNAMICS

This section provides a background to the geopolitical alliances of the Middle East, serving as general background information for the analysis of this article. 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.

The governments in the region can agree to work together against security threats, but they would refer to different security threats. In fact, for the Egyptian and the Emirati governments, the main threat in the region is represented by the Islamic movements like the Muslim Brotherhood. For the Saudi and Bahraini governments, the main threat is represented by the Iranian government and its influence in the region, mainly in the states of Syria, Lebanon, Iraq, Yemen, and in Bahrain itself. For the Jordanian government the main security threat is the Islamic State. However, the recent regional crises are also confirming that those threats are also politically constructed to be used for internal and geopolitical aims.

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). 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, 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 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, an interview with a senior official from the Ministry of foreign Affairs (MFA) for the Israeli government maintaining the stability of the Jordanian and Egyptian governments is important as they are the only two Arab states that recognise the Israeli state.

CRITICAL HYDROPOLITICS AND DISCOURSE THEORY

This article builds on and is situated in the literature of critical hydropolitics, which provides the theoretical frames for the analysis of this case study. More specifically, critical hydropolitics is a sub-field of hydropolitics literature, characterised by its critical and engaged research approach. Within critical hydropolitics, Zeitoun and Warner (2006) explain in the Framework of Hydro-Hegemony (FHH) how control over shared water resources is achieved and maintained. The framework is based on three pillars: geographical position, three dimensions of power (as per Lukes definition) – hard, bargaining, and ideational power - and exploitation potential (Zeitoun and Warner, 2006). The authors conclude that consideration of power asymmetries help to explain the allocation of the shared water resources among the riparian countries of a basin. The FHH has been criticised for being too state-focused, for its conceptualisation of hegemony - which fails to capture the impact of foreign interference and of the international hegemonic discourses like the role of neoliberalism (Davidson-Harden et al., 2007, Kehl, 2015) - and for its conceptualisation of hegemony, which seemed not rigorously defined in line with the

classical international relations tradition (Selby, 2007). Finally, for Conker (2014) and Selby (2007) the FHH overlooks the domestic sphere, focusing more on the states interactions. Conker (2014) builds on the FHH by showing how non-state actors are able to use discursive power to reach their interests and challenge hydro-hegemonic settings. Similarly, Warner and Zawahri (2012) consider tools that non-state-actors deploy to shape the behaviour of the hydro-hegemon riparian states. Cascão (2009) analysed how non hydro-hegemonic countries can challenge the status quo and to contest hegemonic settings, demonstrating that hydro-hegemony is not incontestable. Focusing on bargaining power, Daoudy (2009) applies Putnam's theory to show how issue linkages can be deployed to increase bargaining power during negotiations. She also highlighted the role of international water law (IWL) in providing more legitimacy and bargaining power to the non-hegemonic countries (Daoudy, 2008), while Woodhouse and Zeitoun (2008) call for IWL to include covert hegemonic practices in its principles (Woodhouse and Zeitoun, 2008). Hussein and Grandi (2017) emphasise the necessity of considering the broader socio-political-economic context to explain outcomes of transboundary water governance. In fact, 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).

Cooperation and conflict over shared water resources has also been a topic of research of the critical hydropolitics literature, in particular by Zeitoun and Mirumachi (2008). They 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. Zeitoun and Mirumachi (2008) develop the Transboundary Water Interaction Nexus (TWINS) matrix to analyse the conflictive and cooperative relations between riparian states over shared water (Zeitoun and Mirumachi, 2008). Zeitoun and Mirumachi (2008) go beyond the idea of a continuum of conflict or cooperation, emphasising the co-existence of conflict and cooperation. Zeitoun et al. (2016) also found that both compliance and contest elements lie within transboundary water interactions (Zeitoun et al., 2016). Finally, Menga (2016a) presents the Circle of Hydro-Hegemony, an analytical framework that places the concept of hegemony at the centre of its structure, illustrating how various forms of power are connective in the function of hegemony. Menga (2016b) also shows the domestic and international

dimensions of transboundary water politics, examining in particular cases from Central Asia (Menga, 2018).

Within critical hydropolitics, this article focuses on the role of the third dimension of power of the FHH – ideational or discursive power – and builds on the discourse analysis literature for environmental issues (Hajer 1995; Dryzek 1997). This literature emphasizes the importance of discourses in shaping environmental policies. People's understanding of an issue shapes the solutions they would identify to solve what they perceive as a problem. Discourses are key as they have a central role in mediating people's understanding of the issue. It results that controlling the discourse – meaning how the environmental issue is framed and understood - including constructing and shaping discourses, is very important to drive towards certain solutions. For Dryzek (1997) a discourse is 'a shared way of apprehending the world. […] It enables those who subscribe to it to interpret bits of information and put them together into coherent stories or accounts,' thus legitimising knowledge and justifying specific policies (1997: 8). For Hajer a discourse is "a specific ensemble of ideas, concepts and categories that are produced, reproduced and transformed in a particular set of practices and through which meaning is given to physical and social realities" (Hajer 1995: 44). For him, a discourse is constructed through a number of actions, declarations, publications, and events, which constitute and reproduce a discourse. Discourses are the place where and around which the power struggle between actors and different interests takes place. These literatures and theoretical basis guide this article as it allows capturing to what extent the discourse of water scarcity impacts TWG in the case of Jordan.

The Jordanian discourse of water scarcity

Before proceeding with the analysis, it is necessary to explain what the discourse of water scarcity in Jordan is. As discussed above, dominant discourses are powerful as they can lead towards specific policy-solutions. From the reports, media analysis, and the interviews, it emerged that in Jordan there are seven causes for water scarcity that are elements of the overarching discourse (Hussein, 2018b):

1) Population growth, immigration and refugees
2) Unfair sharing with neighbouring countries
3) Climate change

4) Aridity and low precipitation
5) Non-revenue water due to leakages and physical losses
6) Non-revenue water due to illegal uses and illegal wells
7) Unsustainable agricultural water use

The first reason, which is constructed mainly by governmental institutions and reproduced by governmentally aligned mass media, identifies population growth as a reason for water scarcity, blaming the waves of refugees and immigrants from neighbouring countries (Al Rawashdeh, 2012, MercyCorps, 2014, Namrouqa, 2014b, 2014b). The second reason sees in the unfair sharing with neighbouring countries a cause of water scarcity in the country, with positions ranging between those who blame Israel and those that blame Syria (Namrouqa, 2010, 2012). The third reason believes that climate change and climate variability are a cause of water scarcity. The impact of climate change is identified in temperature increases, decrease in precipitation, droughts and increase in evaporation, resulting in a reduced recharge of aquifers and surface water and in a decrease in the quality of surface and groundwater resources (Al Emam, 2016, Greenwood, 2014). The fourth reason underlines the arid and semi-arid territory with low precipitation in which Jordan lies (Hussein, 2016, Bullock and Darwich, 1993). The fifth cause emphasises non-revenue water due to leakages and physical losses, meaning the mismanagement of water resources in the country (JICA, 2014, Yorke, 2013, 2016). The sixth cause for water scarcity blames the non-revenue water due to illegal uses and illegal wells, estimated to be more than 1,300 in the country (Petra News, 2014, Namrouqa, 2014a, 2014d, 2008). The seventh cause for water scarcity emphasises the unsustainable water uses of the agricultural sector, blaming both the type of crops produced - often not suitable to an arid environment – and the high subsidies to water for irrigation (Ababsa, 2014, ISSP, 2012a, 2012b).

While the first four reason are mainly constructed by the government and reproduced by mainstream mass media – becoming the dominant discourse in the country – they blame the nature – climate change and aridity – and external factors to the government – neighbouring countries and refugees – as causes of water scarcity. In so doing, it emphasises that the issue is about the limited water resources in the country, and that there is a need to increase the supply in order to meet the growing demand. Instead, the last three causes are not dominant and not mainstream often

unheard or de-emphasised –, are constructed by NGOs and donors, and they underline that if there is water scarcity it is mainly due to mismanagement of the existing water resources – which are enough to meet the demand if well used. Hence, they drive towrds policy-solutions on the demand side, pushing for better management and challenging the status quo (MWI, 2009). However, being the first four causes the dominant ones, the policy-solutions sought by the Jordanian government are mainly on the supply side, which would also allow not challenging the current water uses – meaning the status quo and the existing benefits and interests linked to them. The policy-solutions pushed by the government, consequently, have been and are the Disi Canal project, the RSDSC Project, and the Wahda Dam (more on these in the next sections) (Hussein, 2016).

The supply side focus of the government emerges strongly in the governmental reports and in the interviews to senior high level officials of the MWI. For instance, in the National Water Strategy WFL published in 2009 there is a strong emphasis on the RSDSC and Disi projects, which are seen as vital for achieving water security in the country. They are seen as the only solution to meet the growing demand, and strategic for Jordan's national water security (MWI, 2009). The WFL 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. Al Hamidi reports in the newspaper 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). As put by Weinthal et al. (2015: 299), "Jordanian policymakers have framed the security implications of water […] in terms of the need to build large-scale infrastructure projects to increase water supplies". This shows how the discourse of water scarcity is driving towards supply side solutions, in particular of transboundary nature (Hussein, 2017c).

DEVELOPMENT OF THE HYDROPOLITICAL DYNAMICS

The WFL strategy underlines 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). In the WFL strategy, the water scarcity discourse drives towards 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 MFA, the Ministry of Planning and International Cooperation (MoPIC), and the king (ibid.). In the WFL, water scarcity is framed in terms of water security, seeing the construction of these large infrastructures as key to ensure water security and national security in Jordan (MWI, 2009). The scarcity discourse is directly linked to water security, making the issue of water scarcity part of the national security agenda (MWI, 2009). While it emerges that the water scarcity discourse drives towards TWG solutions, this section focuses on understanding to what extent the WLF strategy is implemented concerning the transboundary solutions, in particular on claiming and increasing the Jordanian share rights on transboundary water resources.

Development of the Jordanian-Syrian hydropolitical dynamics

This section argues that the Jordanian-Syrian hydropolitical relations, although governed by bilateral agreements since 1953, have been conflictive. So while cooperation between the two countries resulted in signing bilateral agreements, these agreements co-existed with conflictive relations. Jordan - the non-hydro-hegemon - failed in increasing the water resources through cooperation with Syria.

There have been two agreements signed by the Jordanian and Syrian governments over the Yarmouk River, respectively in 1953 and 1987. The first agreement envisioned a dam near Maqarin with a capacity of 300 MCM (today's Wahda or Unity dam) and a hydropower station at Adasiya, where the electricity produced 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, these projects never materialised. According to the Jordanian officials, 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 Jordanian government perceived that the Syrian "act was in clear violation of the 1953 bilateral

agreement between the two countries" (ibid.). Haddadin, former Jordanian minister of water and irrigation, emphasised that "the Syrians have consistently violated the provisions of the 1953 Agreement" (Haddadin, 2012: 280).

In 1987 the two governments renegotiated a new agreement on the Yarmouk River (Curtis, 2006: 33), which 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 (Hof, 1998: 87, UN-ESCWA, 2013: 211, Hussein, 2017a).

Works for the Wahda Dam project started on the 9th of February 2004 (Rosenberg, 2006: 28, Zawahri, 2010: 137-138, Curtis, 2006), but its construction encountered long delays before it became operational in 2006. In an interview, a high level MWI official emphasised that the Jordanian government saw the dam as a potential contributor to the solution for the water scarcity issue. 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), even if after the Syrian political crisis higher amounts are being registered. The Joint Water Committee established with the 1987 agreement discussed the issue of the decreased water flow, calling in 2009 for a joint study on the quality and quantity of the water in the basin (UN-ESCWA, 2013: 212). Nevertheless, Mousa Jamani, former Jordanian minister of the MWI, noted 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, 2012). Jamani also noted that "the solution to Yarmouk Basin water sharing is not technical, it is political" (Namrouqa, 2012).

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

As seen above, the Jordanian government has been claiming the fair Jordanian rights' share of the river and condemning the Syrian violations of the bilateral treaty, trying to increase its share by renegotiating and signing a treaty with the Syrian government in 1987. However, the Jordanian government failed in increasing its share on the

river.

From the Syrian perspective, supporting the Jordanian government was not a priority for geopolitical reasons. In fact, 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. In addition, while for Jordan the water issue is a top priority at the national level, in the case of the bilateral relations with the Syrian government, water was not the top priority when compared to other inter-sectorial relations. In fact, according to a former Jordanian ambassador, "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". As summarised by a former Jordanian minister of the MWI, it was difficult for the Jordanian government to stop the Syrian violations for the following reasons: the political alliances and objectives of the two countries were strongly different; the Syrian state was upstream and the Jordanian one downstream; Jordan was the non-hydro-hegemon; it had a population of 5 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 consolidated and important interests in the other sectors, in particular trade, are the main reason for which the Jordanian government never undertook any action against the Syrian violations apart from releasing statements condemning them.

In this case, competing national security agendas and geopolitical considerations are more significant for TWG. In a nutshell, the discourse of water scarcity is one of many – and not the only one - determinants of the hydropolitical relations and of TWG in the Jordanian-Syrian case, and in the case of competing national security agendas, water policy-solutions of the non-hydro-hegemon are overlooked.

Development of the Jordanian-Israeli hydropolitical dynamics

This section argues 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. 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). 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. 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, interviews with high level Jordanian officials showed that they 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 emerged in the interviews. As a senior official from the MWI underlined, the treaty over water resources is generally respected; whether it was a good or bad agreement is another issue. 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. 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 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.

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 (Hussein, 2017b). Jordanian officials would argue that this is an instance of Jordanian success towards the goal of strengthening transboundary cooperation to increase water resources in the country.

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

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. This article argues that the Jordanian efforts to increase the water share and the development of the shared water resources have been successful. In other words, converging national security agendas were key in enabling implementation of the transboundary policy-solutions driven towards by the water scarcity discourse.

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 security. 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. 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". This emphasises two important points: the relevance as important causes of water scarcity of: neighbouring countries like Israel; and of population growth and waves of refugees. 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).

According to Western diplomats and representatives of international organisations in Amman, 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. 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. 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. 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, 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).

This section showed that the Jordanian government successfully pursued the

policy-solutions of transboundary nature in the WFL in the relations with Israel. This section argued that this is due to several related issues, including inter-sectorial relations, geopolitical alliances, Israeli interests about the Jordanian political stability, and the Jordanian economic development goals. TWG solutions were achieved because of the convergence national security agendas, which were aligned with the TWG solutions suggested in the WTF. In a nutshell, this section showed that the discourse of water scarcity is one of many – and not the only one - determinants of the hydropolitical relations and of TWG.

Development of the Jordanian-Saudi hydropolitical dynamics

This section argues that the two governments concluded an agreement in 2015, ensuring the Saudi support to the Jordanian uses of the aquifer. Overall, the Jordanian government succeeded in strengthening the transboundary water cooperation through a treaty 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 (Allen, 2010). 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 (Ferragina and Greco, 2008: 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 (Ferragina and Greco, 2008: 452, Barham, 2012: 3). 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).

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” (Ferragina and Greco, 2008: 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.). The Disi project is seen by governmental officials, media, academics, and the king as a vital project for the water security of the country (Hussein, 2016: ch.7). 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 (Namrouqa, 2013), who stated also that this project is a “major milestone for the water sector” (Namrouqa, 2014c). 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.”

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 (Halasah and Ammary, 2007: 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 (Ferragina and Greco, 2008: 454). Finally, in May 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. In this way, the Jordanian government ensured the Saudi approval for the Disi project and for the status quo it had created.

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

Concerning the Jordanian-Saudi hydropolitical relations, the section above 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. 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.

To explain the different outcome of this case, it is necessary to include considerations of the broader context. This article argues 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 context' considerations.

Saudi Arabia and Jordan share a long border. According to Jordanian and European diplomats interviewed, 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. For high level officials from the MFA, 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. The Jordanian relations with the GCC countries improved. 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.

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". 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. 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. 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 that the reason for the Saudi support is of political economy and mainly geopolitical, therefore due to elements of the broader context, 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 context. In fact, only the convergence of national security agendas made it possible for Jordan to achieve the WFL transboundary goals.

CONCLUSION

This study demonstrated that cooperation and conflict on TWG is shaped not by the discourse of water scarcity alone, but by the discourse of water scarcity seen within the broader context. It also argued that it is necessary to consider different national security agendas and whether they are competing or converging to understand the extent to which the TWG policy-solutions in the WFL will be successful.

While the deployment of the water scarcity discourse drove towards solutions of increasing the water supply by claiming the Jordanian share rights on the transboundary water resources, the Jordanian efforts had different outcomes in the three cases considered. In fact, 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. This is because the national security agendas of both countries converged. In fact, ensuring the water security of Jordan means also ensuring the national security of the country, and supporting Jordan through transboundary cooperation, the RSDSC or Disi project meant cooperation on security issues and political stability of Jordan, which are priorities for Saudi Arabia and Israel. The Syrian government, instead, does not have a strong geopolitical 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. Competing national security agendas undermined the Jordanian efforts in reaching the TWG goals. Concerning the Jordanian reaction to the lukewarm approach of Syria, it emerged that the Jordanian government had vital trade, economic, and commercial interests with the state of Syria, shaping the outcome of bilateral water relations. For this reason, 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 TWG, but also the broader bilateral relations, including competing or converting national security agendas, to what extent the other government has an interest in supporting the Jordanian government in ensuring water security. 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 conflictive relations and change power asymmetries on transboundary water resources (Daoudy, 2009). To do so, it is necessary to consider the broader context (Hussein and Grandi, 2015; Hussein and Grandi, 2017, Lowi, 1995). Therefore, this article argued that it is necessary to consider the water scarcity discourse as situated in the broader bilateral relations, including geopolitical dynamics, and the inter-sectorial interests of the governments, in order to understand the different factors impacting TWG. The conceptual implication of this finding is that discourse theory needs to be supplemented also by

material considerations.

REFERENCE LIST

ABABSA, M. (2014). "Jordan Food Dependency and Agriculture Sustainability. Main Economic and Social Challenges." Conference Paper.

ALATOUT, S. 2008. 'States' of scarcity: water, space, and identity politics in Israel, 1948– 59. Environment and Planning D: Society and Space, 26, 959-982.

ALLEN, J. 2010. Disi aquifer-Jordan and Saudi Arabia. Transboundary water resources, report, Jordan.

AL EMAN, D. 2016. "'Climate change impact on Jordan an opportunity in disguise'", The Jordan Times, available at: http://www.jordantimes.com/news/local/climate-change-impact-jordan-opportunity-disguise%E2%80%99 [accessed 07 January 2017].

AL RAWASHDEH, R. 2012. "Jordanians and Syrian refugees share the water shortage problem." *Al Rai* 02 September 2012 (in Arabic).

BARARI, H. 2014. Jordan and Israel: a troubled relationship in a volatile region. FES.

BARARI, H. A. 2004. Jordan and Israel: Ten Years Later, Center for Strategic Studies, University of Jordan.

BARHAM, N. 2012. Is Good Water Governance Possible in a Rentier State? The Case of Jordan. Analysis

BOYLE, M., KAY, J. & POND, B. 2001. Monitoring in support of policy: an adaptive ecosystem approach. Encyclopedia of global environmental change, 4, 116-137.

J. BULLOCK, J., DARWICH, A. 1993, "Water wars: coming conflicts in the Middle East", Victor Gollanez, London.

CURTIS, R. 2006. The Odd Couple: Ending The Jordanian-Syrian "Cold War". The Middle East Journal, 60, 33-56.

DAOUDY, M. 2009. Asymmetric power: Negotiating water in the Euphrates and Tigris. International Negotiation, 14, 361-391.

DE GOOIJER, G., LOFGREN, R., GRANIT, J., JAGERSKOG, A., AURELI, A. & RENCK, A. 2009. Innovations in groundwater governance in the MENA region. Stockholm: Stockholm International Water Institute.

DRYZEK, J. S. 1997. The politics of the earth: Environmental discourses, Oxford University Press.

ECHAGÜE, A. 2015. 13. The United States: redefining engagement? Geopolitics and

Democracy in the Middle East, 181.

EDWARDS, G. A. 2013. Shifting constructions of scarcity and the neoliberalization of Australian water governance. *Environment and Planning A,45*(8), 1873-1890.

FEITELSON, E. 2002. Implications of shifts in the Israeli water discourse for Israeli-Palestinian water negotiations. *Political Geography, 21*(3), 293-318.

FERRAGINA, E. & GRECO, F. 2008. The Disi project: an internal/external analysis. Water International, 33, 451-463.

FOLKE, C., HAHN, T., OLSSON, P. & NORBERG, J. 2005. Adaptive governance of social- ecological systems. Annu. Rev. Environ. Resour., 30, 441-473.

GHAZAL, M. & OMARI, R. 2015. Jordan defends participation in Yemen operation as legitimate, vital for national security The Jordan Times, 26 March 2015.

GREENWOOD, S. 2014. "Water Insecurity, Climate Change and Governance in the Arab World." *Middle East Policy* XXI(2).

HADDADIN, M. 2009. Cooperation and lack thereof on management of the Yarmouk River. Water International, 34, 420-431.

HADDADIN, M. J. 2006. Water resources in Jordan: evolving policies for development, the environment, and conflict resolution, Resources for the Future.

HADDADIN, M. J. 2012. Diplomacy on the Jordan: International conflict and negotiated resolution, Springer Science & Business Media.

HAJER, M. A. 1995. The politics of environmental discourse: ecological modernization and the policy process, Oxford University Press Oxford.

HALASAH, N. & AMMARY, B. 2007. Groundwater Resources in Jordan. Environmental Research Centre, Royal Scientific Society and Water and Environmental Engineering Department, Balqa Applied University.

HOF, F. C. 1998. Dividing the Yarmouk's waters: Jordan's treaties with Syria and Israel. Water Policy, 1, 81-94.

HUITEMA, D., MOSTERT, E., EGAS, W., MOELLENKAMP, S., PAHL-WOSTL, C. & YALCIN, R. 2009. Adaptive water governance: assessing the institutional prescriptions of adaptive (co-) management from a governance perspective and defining a research agenda. Ecology and society, 14, 26.

HUSSEIN, H. 2016. "An analysis of the discourse of water scarcity and hydropolitical dynamics in the case of Jordan." PhD Thesis University of

East Anglia

HUSSEIN, H., and GRANDI, M. 2015. Contexts matter: A hydropolitical analysis of Blue Nile and Yarmouk River Basins. In M. Fayyad, S. Sandri, M. Weiter, & D. Zikos (Eds.), Social water studies in the Arab region: State of the art and perspectives (pp. 159–177). Berlin, Germany: Humboldt University of Berlin.

HUSSEIN, H., and GRANDI, M. 2017. "Dynamic political contexts and power asymmetries: the cases of the Blue Nile and the Yarmouk Rivers." International Environmental Agreements: Politics, Law and Economics, 17(6), 795–814, https://doi.org/10.1007/s10784-017-9364-y

HUSSEIN, H., 2017a. Whose 'reality'? Discourses and hydropolitics along the Yarmouk River. *Contemporary Levant*, 2(2), 103-115, https://doi.org/10.1080/20581831.2017.1379493

HUSSEIN, H. 2017b. Politics of the Dead Sea Canal: a historical review of the evolving discourses, interests, and plans. *Water International*, *42*(5), 527-542, doi:10.1080/02508060.2017.1344817

HUSSEIN, H. 2017c. A critique of water scarcity discourses in educational policy and textbooks in Jordan, *The Journal of Environmental Education*, doi:10.1080/00958964.2017.1373620

JÄGERSKOG, A. 2003. Why States Cooperate over Shared Water. The Water Negotiations in the Jordan River Basin.

JICA, 2014. "JICA's Cooperation for Water Sector in Jordan. 30 years history of remarkable achievements."

KATZ, M. 2015. Conflicting aims, limited means: Russia in the Middle East. FRIDE Policy Brief, 201.

ISSP, 2012a. "Water valuation study: disaggregated economic value of water in industry and irrigated agriculture in Jordan ".

ISSP, 2012b. "Water valutation study - summary report, disaggregated economic value of water in industry and irrigated agriculture in Jordan ".

LEACH, M. & MEARNS, R. 1996. The Lie of the Land: challenging received wisdom on the African environment, James Currey Ltd.

LOWI, M. R. 1995. Water and power: The politics of a scarce resource in the Jordan River basin, Cambridge University Press.

MANNA, M. 2006. Water and the Treaty of Peace between Israel and Jordan. Macro

Center Working Papers, 33.

MEHTA, L. 2001. The manufacture of popular perceptions of scarcity: dams and water- related narratives in Gujarat, India. World Development, 29, 2025-2041.

MEHTA, L. 2005. The politics and poetics of water: the naturalisation of scarcity in Western India, Orient Blackswan.

MENGA, F. 2016a. Reconceptualizing hegemony: the circle of hydro-hegemony. *Water Policy*, 18.2: 401-418.

MENGA, F. 2016b. Domestic and international dimensions of transboundary water politics. *Water Alternatives*, *9*(3), 704.

MENGA, F. 2018. *Power and Water in Central Asia*. Routledge.

MERCYCORPS, 2014. "Tapped Out: Water Scarcity and Refugee Pressures in Jordan " March 2014

MWI 2009. Water for Life. Jordan's Water Strategy 2008–2022.

NAMROUQA, H. 2008. "Crackdown on illegal water use continues." *The Jordan Times* 11 June 2008.

NAMROUQA, H. 2010. "'Jordan does not owe Israel a drop of water'." *The Jordan Times* 05 March 2010.

NAMROUQA, H. 2012. 'Yarmouk water sharing violations require political solution' The Jordan Times, 28 April 2012.

NAMROUQA, H. 2013. King inaugurates Disi water project The Jordan Times, 17th July 2013.

NAMROUQA, H. 2014a. "Illegal wells in Al Lubban sealed under agreement with tribal leaders." *The Jordan Times* 16 August 2014.

NAMROUQA, H. 2014b. "Jordan world's second water-poorest country." *The Jordan Times* 22 October 2014.

NAMROUQA, H. 2014c. Pumping from Disi at full capacity begins. The Jordan Times, 18 January 2014.

OMARI, R. 2016. Confusion prevails over gas deal with Israel. The Jordan Times, 16/02/2016.

PERREAULT, T. 2006. From the Guerra Del Agua to the Guerra Del Gas: resource governance, neoliberalism and popular protest in Bolivia. Antipode, 38, 150-172.

PETRA NEWS (2014). "PM: Gov't is working to end violations against water sector"

available at: http://www.petra.gov.jo/Public_News/Nws_NewsDetails.aspx?lang=2&site_id=1&NewsID=139123&CatID=13

ROSENBERG, D. 2006. The Yarmouk River Agreements: Jordan–Syrian Transboundary Water Management, 1953–2004. The Arab World Geographer, 9, 23-39.

SALAMEH, E., ALRAGGAD, M. & TARAWNEH, A. 2014. Disi Water Use for Irrigation– a False Decision and Its Consequences. CLEAN–Soil, Air, Water, 42, 1681-1686.

SHAPLAND, G. 1997. Rivers of discord: international water disputes in the Middle East. London: Hurst & company.

SHIVA, V. 2002. Water wars: Privatization, pollution and profit, India Research Press

SOLOMON, A. B. 2014. What will the next 20 years of Jordan-Israel relations look like? The Jerusalem Post, 27 October 2014.

SWYNGEDOUW, E. 1999. Modernity and hybridity: nature, regeneracionismo, and the production of the Spanish waterscape, 1890–1930. Annals of the Association of American Geographers, 89, 443-465.

UN-ESCWA, B. 2013. Inventory of Shared Water Resources in Western Asia. Beirut.

WEINTHAL, E., ZAWAHRI, N., & SOWERS, J. 2015. Securitizing water, climate, and migration in Israel, Jordan, and Syria.*International Environmental Agreements: Politics, Law and Economics*, *15*(3), 293-307.

WELSH, T. 2014. Israel and Jordan: The Middle East's Odd Couple. U.S. News, 14 November 2014.

YORKE, V. 2013. Politics matter: Jordan's path to water security lies through political reforms and regional cooperation. NCCR Trade Regulation, Working Paper 2013/19.

YORKE, V. 2016. Jordan's shadow state and water management: prospects for water security will depend on politics and regional cooperation. Society-Water-Technology. Springer.

ZAWAHRI, N. A. 2010. Governing the Jordan River system: History, challenges, and outlook. Journal of Transboundary Water Resources, 1, 127-147.

ZEITOUN, M. & MIRUMACHI, N. 2008. Transboundary water interaction I: Reconsidering conflict and cooperation. International Environmental

Agreements: Politics, Law and Economics, 8, 297-316.
ZEITOUN, M. & WARNER, J. 2006. Hydro-hegemony-a framework for analysis of trans- boundary water conflicts. Water policy, 8, 435-460.