

## Freshwater Scarcity, Interdependence and Institutionalism in Jordanian Foreign Policy: Towards Conflict or Cooperation?

Imad H. El-Anis\*

### Abstract

*Freshwater scarcity is an increasingly important aspect of the international relations of the Middle East and North Africa, and is magnified when sources are shared between states. In the Jordanian, Israeli and Syrian cases, most of their freshwater sources are shared. At the same time, cooperation between these states has emerged. This paper examines inter-state cooperation by considering freshwater scarcity issues in Jordanian-Israeli-Syrian relations. This study argues that three factors help determine whether freshwater scarcity leads to conflict or cooperation between riparian states: the nature and intensity of the scarcity, the level of interdependence between the actors sharing this resource, and their level of engagement in international institutions. It concludes that cooperation is possible between states (even those with difficulties in other areas of their relationship) when the scarcity experienced is intense, they are interdependent in this and other spheres, and they engage with each other through international institutions.*

Keywords: Freshwater Scarcity, Institutionalism, Interdependence, Jordan, Israel, Syria

In the Middle East and North Africa (MENA), the potential for inter- and intra-state conflict remains a key feature of the region's international relations. The traditional causes of conflict seen in the region over the late nineteenth and through the twentieth century in many ways still remain important in the early twenty-first century. However, in addition to the traditional causes of conflict we can now argue that concern for access to sources of freshwater both within states and across state boundaries is increasingly important.<sup>1</sup> Control of territory in the MENA region is, in many ways, now less significant as a potential cause of conflict than in times past due to the combined impact of a number of processes. These include the embedded nature of existing states and state structures, interdependence, and mutual governmental recognition.<sup>2</sup> However, control over natural resources, and in particular freshwater sources, is increasingly a potential cause of conflict.<sup>3</sup> Growing populations, increasing industrial activity, urban sprawl, and environmental change are leading to massive shortages of freshwater supplies across the region.<sup>4</sup> This is, no doubt, not a problem faced by the MENA region alone. Throughout the world, processes directly and indirectly linked to human activity are leading to such shortages. The resulting conflict is also not unique to the MENA region. However, the often fragile nature of inter- and intra-state relations in this region means that the impact of freshwater shortages is magnified. Jordan finds itself in what is arguably the most freshwater-scarce sub-region of the MENA and, along with its immediate neighbours to the west and north, faces acute problems as a result.

We must note here that it is not always the case that shortages of natural resources such as freshwater lead to conflict. While this can be seen to be true in a number of instances the opposite is also true. Indeed, relations between states, as well as between peoples, can also be characterised by cooperation and understanding when shared resources are scarce.<sup>5</sup> This paper argues that three factors determine whether freshwater scarcity leads to international

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\* Imad El-Anis is a Senior Lecturer in International Relations and Course Leader for the MA International Relations degree at the Nottingham Trent University, UK. He is a Fellow of the British Higher Education Academy and author of several books including *Jordan and the United States: The Political Economy of Trade and Economic Reform in the Middle East* (I.B. Tauris, 2011). His current research focuses on the political economy of the Middle East and North Africa as well as revolutionary change in that region.

conflict or cooperation: firstly, the nature of the scarcity itself; secondly, the level of interdependence between the actors sharing this resource; and thirdly, the level of engagement by these actors with each other through international institutions. This latter point refers primarily to institutions related to the specific issue of freshwater scarcity but also to the broader engagement these states have with other international institutions. Furthermore, it is argued here that where resource scarcity exists but interdependence or engagement with international institutions do not, then the risk of conflict is higher than when all three factors are present. At the same time, resource scarcity and interdependence alone are not as effective in ensuring cooperation over matters of freshwater scarcity as when all three conditions exist. Jordan is one of the world's most freshwater scarce states and the issue of managing its main sources of freshwater with its neighbours is a key challenge the Jordanian government faces. As such, Jordan represents a good case study to use in order to explore this hypothesis. This paper uses theories of resource scarcity and institutionalism to examine two key international projects aimed at managing shared freshwater sources and reducing the problem of freshwater scarcity: the first being the Red Sea-Dead Sea Conduit Project on the Jordanian-Israeli-Palestinian border and the second being the joint Jordanian-Syrian project to construct the Wehdeh Dam on the Yarmouk River on their shared border.

### ***Resource Scarcity as a Catalyst for Change***

It is useful to consider resource scarcity theory to analyse the impact of freshwater scarcity on international relations. This is because resource scarcity can be an important influence on changes in the politics and economics that govern resource use. Also, in many parts of the world, resource degradation has become irreversible. In these areas, resource degradation has become an exogenous variable in the political activity of states in regional systems.<sup>6</sup> There are three main schools of thought on the importance of resource scarcity.<sup>7</sup> Firstly, there are the Neo-Malthusians, who claim that finite resources place limits on the growth of human population and consumption. If these limits are exceeded, the result will be widespread poverty and social breakdown.<sup>8</sup> On the other hand, neoclassical economists say there are few, if any, strict limitations on human population, consumption, or prosperity. They argue that properly functioning economic institutions, especially markets, encourage conservation, resource distribution, and the development of alternative sources of scarce resources.<sup>9</sup> Finally, Thomas Homer-Dixon has identified a third group whom he calls the "distributionists." For this group, the real issue is the maldistribution of resources and wealth, although they do concede that there may be some resource limitations to human growth.<sup>10</sup>

Over the next few decades, the MENA region's renewable resources, such as arable land, forests and supplies of freshwater, will dwindle further. At the same time, higher rates of consumption of these resources can cause resource scarcities. These scarcities impose costs on societies, thereby affecting state behaviour by placing demands and constraints on governments. These environmental resource scarcities are the result of three main factors: environmental change, human population growth, and unequal distribution of resources. The concept of resource scarcity encompasses all three. Environmental change refers to the human-induced reduction in the quantity and/or quality of a renewable resource faster than that resource is renewed by natural processes. Homer-Dixon highlights that population growth reduces the per capita availability of a renewable resource by dividing that resource between more people. Unequal distribution of renewable resources affects scarcity as it concentrates the resource, supplying few while subjecting many to greater scarcity. Homer-Dixon explains the relationship between these causes of resource scarcity and its extent as follows: "reduction in the quantity or quality of a resource shrinks the resource pie, while population growth divides the pie into smaller slices for each individual, and unequal resource distribution means that some groups get disproportionately large slices."<sup>11</sup> Nevertheless, analysts have tended to study resource depletion and population growth in isolation from the political economy of resource distribution. Incorporating these three distinct sources of scarcity into one analysis gives us a theoretical approach to resource scarcity which can be used to study the relationship between resource scarcity and the onset of conflict.<sup>12</sup>

The three sources of resource scarcity often interact. Homer-Dixon has identified two specific patterns of interaction, which he calls “resource capture” and “ecological marginalisation.”<sup>13</sup> By “resource capture,” Homer-Dixon means a group’s shifting of resource distribution in favour of itself. The quality and quantity of a resource coupled with the population growth encourage the powerful group (or groups) within a single state or states in a regional system to acquire more resources. This results in a decrease in the amount of scarce resource available to weaker groups. “Ecological marginalisation” is when migration to regions that are ecologically fragile occurs. Such migration is a result of unequal resource distribution combined with high population growth causing high population densities in these areas. Jordan is a prime example as it is subject to both resource capture and ecological marginalisation. The Kingdom’s stronger upstream neighbours exploit the waters of the two major international river systems that the country depends on. Israel in particular has been a major proponent of resource capture. Up until the withdrawal of the Israeli Defence Force from southern Lebanon in 2000, Israel held all the major upstream tributaries and freshwater sources on the Jordan River as well as all aquifers west of the Jordan Valley (which it still holds). Within Jordan itself, where the majority of the population lives in the north-west of the country close to the three major surface water supplies—the Yarmouk, Jordan, and Zarqa Rivers—this is termed ecological marginalisation.

Freshwater scarcity is perhaps the most pressing resource scarcity issue for many of the world’s regions with water demand doubling every two decades or so. In particular, river water is an important issue.<sup>14</sup> Resource scarcity in developing regions has a greater impact on the international political economy of the region. This is because developing states are, in general, more vulnerable than advanced states to resource scarcity as they cannot afford to develop the infrastructure and technological means to replace the scarce resource or mitigate the subsequent environmental, social, and economic impacts of the scarcity. A range of resource scarcity issues could produce four main causally interrelated social effects in developing regions: reduced agricultural production; economic decline; population displacement; and the disruption of regular, legitimised social relations. These could lead in turn to a number of specific types of acute conflict, including scarcity disputes between states, intra-state conflict between differing groups (including ethnic groups), and civil strife.<sup>15</sup>

Thomas Homer-Dixon has developed a model that shows how resource scarcity can cause conflict. He suggests that the effect of human activity on the environment in a particular region causes environmental change and is a function of two variables: the total population size and physical activity per capita, along with the vulnerability of the ecosystem in that region to those activities.<sup>16</sup> His model demonstrates that environmental factors cause social factors that lead to conflict. From this model we can ask the general question of “how” resource scarcity may lead to conflict by dividing it into two specific questions. First, what are the social effects of environmental change? Second, what types of acute conflict, if any, will result from these changes?

The four principle social effects caused by resource scarcity together or independently may increase the probability of acute conflict. To begin with, there may be a reduction in agricultural production. This is perhaps the most important result of resource scarcity. Secondly, the state may witness an economic decline which is especially important when studying the potential for conflict between developing states because resource scarcity can result in the further impoverishment of developing societies. In Homer-Dixon’s model, economic productivity may be influenced directly by environmental disruption or indirectly via other social effects such as decreased agricultural production.<sup>17</sup> In the case of a developing state like Jordan, this is of paramount importance. The third social effect is population displacement. Resource scarcity can cause vast numbers of environmental refugees or displaced people. For example, spreading deserts may cause people to migrate to more arable lands.<sup>18</sup> The final social effect identified is the disruption of social relations and institutions. In many developing states, the previous three social effects are likely to disrupt the norms of custom and habitual behaviour. A decrease in agricultural output, for example, may encourage people to leave a community, thereby breaking down the community’s structure. Economic decline may weaken the national tax base and undermine financial, legal, and

political institutions. Mass migration from one region to another may disrupt class relations, labour markets, and resource supply. We can thus identify three types of resource scarcity-related conflicts. The decrease in physically controllable resources, such as freshwater, can provoke inter-state simple-scarcity conflicts or resource wars. Secondly, large movements of people caused by environmental stress can lead to group identity conflicts that are characterised by ethnic clashes. Thirdly, there are relative deprivation conflicts, where resource scarcity simultaneously increases economic deprivation and disrupts key social institutions.

Nevertheless, the immediate result of resource scarcity may not be direct inter-state conflict over such resources. Rather, resource scarcity causes internal instability within the state, and it is this that results either in intra-state or inter-state conflict. Inter-state conflict over scarce resources becomes a viable option when a state experiences a large amount of internal instability as a result of resources being scarce. For example, resource scarcity reduces food production, aggravates poverty and disease, spurs large migrations, and undermines a government's moral authority and capacity to govern. Over time, these stresses negatively affect the society's social fabric. This is a problem felt most in developing states and causes chronic instability. Governments are forced to act to re-establish legitimacy and stability. This may mean going to war in order to secure the resources needed. With regards to shared river systems, wars between upstream and downstream riparian states on an international river system will only occur under certain conditions. Firstly, the downstream riparian must be extremely dependent on the water for its national well-being. Additionally, the upstream state must be able and willing to restrict the flow of the river before it reaches the downstream riparian. There must also be a history of antagonism between the riparian states. Most importantly, the downstream riparian must be militarily capable of taking successful action against the upstream state.<sup>19</sup> Jordanian military capabilities are limited compared to both Israel and Syria, the upstream riparian states on the Jordan and Yarmouk river systems, suggesting that decision-makers in Amman would not consider military engagements a viable policy option, thus reducing the chance of conflict instigated by Jordan.

Furthermore, the use of military force to gain scarce renewable resources is hindered by a number of other factors. Firstly, states cannot easily convert renewable resources into increased state power in a short period of time, and freshwater is no exception. The acquisition of cropland or freshwater supplies, for example, will have an impact on the state's economy but only after a number of years. States can, on the other hand, increase their power by gaining non-renewable resources such as iron ore, which can be used to manufacture military hardware. Secondly, states that are heavily dependent on renewable resources tend to be under-developed and therefore not as powerful as more developed states. This means that they tend not to have the means to buy large quantities of sophisticated military equipment with which they can threaten their neighbours. Due to these reasons, inter-state conflict over renewable resources is less likely than for non-renewable resources.

In considering the negative impacts of freshwater scarcity on relations between states in the MENA region, it is relatively easy to find cases which indicate that access to scarce resources can catalyse conflict. However, it is perhaps more interesting and more dramatic to consider the effect of resource scarcity on *maintaining* existing conflicts and/or limiting the potential for cooperation. Where conflict exists or has existed between two or more regional states, access to freshwater has traditionally not been identified as the core catalyst,<sup>20</sup> but it has been considered as a key factor in reinforcing bad relations. In Jordanian-Israeli relations, both Israelis and Jordanians suffer from an acute shortage of freshwater supplies. Within historic Palestine (which here refers to the modern states of Israel, parts of Jordan and the Palestinian Territories) there are few sources of freshwater, with the largest individual sources found in the West Bank in the form of aquifers. The main surface sources of this area of the Mashreq are the Jordan, Yarmouk, and Litani rivers with the former flowing from the Sea of Galilee/Lake Tiberias down to the Dead Sea, forming part of the border between Israel, Jordan and the West Bank. The Yarmouk River flows along the border between Jordan and Syria and Syria and Israel, and the Litani River flows in southern Lebanon and northern Israel. Both Jordan and Israel use the waters of the Jordan and the Yarmouk and their linked

basin systems. Within Israel proper there are very few natural sources of freshwater. Likewise, in Jordan there are also very few other sources of surface and ground water, with the Disi aquifer in the south of the country being the largest example of the latter. Apart from the history of military engagement and the state of war that existed between Jordan and Israel from 1948 until the 1994 peace treaty, these actors are deeply intertwined in terms of where they get their freshwater from and how they use this resource.<sup>21</sup> This has often led to problems between the two states and has been one of the issues impacting upon the normalisation of inter-governmental relations between them. This is discussed further below.

### *Interdependence, Institutionalism and Cooperation*

In 1998, Robert Keohane<sup>22</sup> revisited a discussion that he and Joseph Nye<sup>23</sup> had engaged in some years before on the importance of international institutions for maintaining world order. In this second discussion, Keohane argued that international institutions (international organizations and regimes) increased in importance in the post-Cold War era and had become embedded features of international relations. Furthermore, Keohane concluded that some institutions are more effective than others partly because of “the degree of common interests and the distribution of power among members.”<sup>24</sup> While some institutions are not effective, Keohane still concludes that interdependence between states and peoples is a key aspect of the modern world, and that its management can be beneficial in promoting international cooperation. Vivien Schmidt takes this discussion further by exploring the ways in which ideas and discourse are utilized in institutional settings to promote their effectiveness. Schmidt demonstrates that the ways in which ideas and discourse are perceived by institutional members also plays a role in institutional effectiveness.<sup>25</sup> International organizations have proliferated rapidly in the past three decades, increasing in number from approximately 300 in the early 1980s to well over 6,000 by 2013. Furthermore, membership of these international organizations has also expanded rapidly. Randall Stone has considered the proliferation of international organizations and increases in membership while at the same time exploring why international institutions do not always work effectively.<sup>26</sup> Stone argues that “International institutions can only facilitate cooperation when there are common objectives to be achieved,” but that international institutions have often also been ineffective even when common goals are present.<sup>27</sup>

While acknowledging the importance of investigating the nature of interdependence that exists between states in any given relationship, Stone argues that this is not enough to understand the failures of international institutions. In order to develop an analysis that explains why and how international institutions are effective, it is also necessary to consider the power capabilities of the actors involved as well as the nature of the institutions themselves.<sup>28</sup> We can add to this the need to consider how the experiences of shared engagement with international institutions such as the World Trade Organisation (WTO) and the United Nations (UN) can influence willingness to engage in new institutional arrangements. International trade is perhaps the most significant form of international relationship in terms of influencing levels of interdependence and engagement in international institutions. Susan McMillan highlights that interdependence as measured by international trade has been widely acknowledged as reducing prospects for conflict between trade partners.<sup>29</sup> McMillan also argues that further study is needed to explore this connection by looking at the costly aspects of economic interdependence as well as the benefits. However, studying governmental engagement with international institutions more generally speaking—including those governing trade, cultural heritage, education, environmental protection, and so on—can only present us with a limited number of valid insights into bilateral cooperation/conflict over resources. Likewise, simply considering levels of economic integration between states limits our ability to understand these relations. In order to gain a greater insight into the role of institutional engagement and the interdependence that follows from it, it is necessary for this study to consider institutions that are directly related to freshwater resource management. This includes governmental engagement with international organizations that deal with freshwater issues as well as bilateral agreements.

When states that share sources of freshwater face a situation of scarcity and do not engage with each other in an institutional setting, the challenges of managing the scarcity problem are magnified. Then again, when states do engage with each other through the use of mechanisms such as inter-governmental agreements and joint committees dealing with freshwater management, they are able to increase their ability to deal with their freshwater scarcity problems.<sup>30</sup> Furthermore, when states engage with bilateral and multilateral institutions, including large international organisations like the UN and World Bank, their ability to coordinate effective responses to freshwater scarcity tends to increase. Of particular importance here are the positive benefits of establishing procedures and mechanisms for communication and coordination between governments (the area of discussion is not necessarily relevant) as well as the increased access to financial, technical, and material resources provided by actors in the broader international community. For example, as is discussed in more detail below, World Bank funding and organisational support for the Red Sea-Dead Sea Conduit project is essential to the implementation of the scheme.

### ***Jordanian-Israeli Collaboration: The Red Sea-Dead Sea Conduit Project***

One example of international collaboration as a result of resource scarcity is the Red Sea-Dead Sea Conduit project. This project was first suggested over a decade ago to provide freshwater for Jordan, Israel, and Palestine, but failed to materialise due to political tensions. However, the last few years have seen progress with feasibility and design studies for the project near completion.<sup>31</sup> The intended canal would link the Red Sea at the Gulf of Aqaba with the Dead Sea in the Jordan Valley. The area between the Dead Sea and the Red Sea is one of the most arid in the Mashreq region. On the whole, Jordan, Israel and Palestine all suffer from chronic freshwater shortages: the Palestinians suffering the most with around 150m<sup>3</sup> per capita per year while Jordanians have a per capita consumption rate of less than 200m<sup>3</sup> per year.<sup>32</sup> The UN reports that a per capita consumption rate of 1,000m<sup>3</sup> is necessary to meet industrial, agricultural and urban needs, while per capita consumption of water needs to be 500m<sup>3</sup> per year for basic human survival needs.<sup>33</sup>

The canal project was initially suggested as a way to combat this chronic regional freshwater shortage. Approximately 800 million m<sup>3</sup>/year of desalinated water would be provided from the canal and distributed between the three actors. Using the 430 metre drop in altitude to the Dead Sea from the Gulf of Aqaba, up to three desalination plants and two hydroelectricity plants could be constructed to provide freshwater for agricultural, urban, and industrial use. The hydroelectricity plants would provide 250 MW of electricity, again to be distributed between the three parties.<sup>34</sup> The final aim of the project is the restoration of the Dead Sea to its former level; almost 30 metres higher than it is at the time of writing.<sup>35</sup> The canal project has struggled to get off the drawing board as a result of continued tensions between Israel and Palestine and a slow pace of “normalisation” of relations between Jordan and Israel. It was initially suggested as part of the 1994 Peace Treaty between Jordan and Israel, although its roots lay much further back in history.<sup>36</sup> A feasibility study was scheduled for implementation prior to the start of the second Intifada in September 2000. As a result of the uprising, however, the study was shelved, as Israeli-Palestinian coordination was obviously not possible, but neither was Jordanian-Israeli collaboration feasible due to political sensitivities in Jordan. Following the reduction in tensions by 2005, on 9 May of that year, the governments of Jordan and Israel and the Palestinian Authority signed an agreement to go ahead with the feasibility and environmental impact studies. A joint committee including Jordanian, Israeli, and Palestinian government representatives was created in order to work with the World Bank to issue the tenders for private sector actors to conduct the pre-construction studies as well as contracts for the actual construction of the conduit and associated infrastructure. In 2008, the French-based engineering firm, Coyne et Bellier, was chosen to conduct the feasibility study and, according to project leader David Meehan, it is expected that the sea water conveyance capacity of the conduit will be over 1 billion m<sup>3</sup>/year while the capacity for desalinated freshwater could be approximately 800 million m<sup>3</sup>/year.<sup>37</sup>

The freshwater produced is to be divided between Israel, Jordan, and Palestine according to demand.

Perhaps the most interesting element of the proposed canal is that it is to run from the Red Sea instead of the Mediterranean Sea. The Israeli government had initially proposed the construction of a canal from its western coastline. However, objections were made by the Jordanian government. The plans were shelved in favour of the Red Sea-Dead Sea canal as the actors involved argued that creating a canal that ran through Israel alone would not satisfy Jordanian security concerns and potentially further worsen the security situation in the region. The canal now proposed, however, will run along the border between Jordan and Israel and thus result in neither state having disproportionate control over it or over the other state as a result. The slow pace of the project's development (has taken fifteen years simply to begin the feasibility studies) is significant and demonstrates the challenges of Jordanian-Israeli collaboration. As well as political tensions, the costs of the project have also been prohibitive. It is now estimated that the infrastructure will cost well over \$5 billion to build. This is an amount that neither the Jordanians, Israelis, nor Palestinians have available, so funds have been pursued from external sources. Jordanian and Israeli engagement with the World Bank has been pivotal here as it has allowed them to not only engage with each other and collaborate in an institutional setting but has also allowed them to draw upon the support of that international organisation in securing funds for the feasibility studies. Nonetheless, Jordanian-Israeli engagement and integration is severely limited due to the historical conflict between Israel and its Arab neighbours and the contemporary Israeli occupation of the Palestinian Territories. Economic integration has not developed since the 1994 peace treaty and is currently rather limited to the activity that takes place in the Jordanian Qualifying Industrial Zones that have to receive Israeli economic input.<sup>38</sup>

#### ***Jordanian-Syrian Collaboration: Al-Wehdeh Dam***

While Jordan faces a severe freshwater scarcity problem, Syria does not suffer from as extreme a shortage of this essential resource. Nevertheless, as Tony Allan<sup>39</sup> has pointed out, Syria is still a freshwater poor state that does not possess adequate supplies to meet all of its industrial, urban and agricultural demands. At the same time, Syria faces a more pressing deficit in electricity supply when compared to Jordan. The combination of these two separate national conditions led the Jordanian and Syrian governments to agree plans to construct a dam on the Yarmouk River where it runs along their shared border (before it reaches the Israeli-occupied Golan Heights) in 1987. This joint project aimed at storing freshwater from the Yarmouk River for Jordanian agricultural production while at the same time producing electricity via a hydro-electricity plant for Syrian consumption.<sup>40</sup> Two key problems kept the implementation of the project from starting until late 2003: political disagreements between the two governments and a lack of financial resources. These problems have been evident in Jordanian-Syrian relations for much of the post-independence era. For example, an original agreement to share the Yarmouk River's waters was signed in Damascus on 4 June 1953 and came into force several weeks later. Article 1e of this agreement called for the construction of a joint Jordanian-Syrian dam project on the river and Article 2 established the rights of the two parties to the stored water and electricity that would be produced by a hydroelectricity plant to be constructed at the site.<sup>41</sup> However, political divisions, financial pressures, and regional instability kept the project from developing for five decades.

With the overcoming of some of the political disagreements and the securing of the necessary investment funds, selection of private sector corporations to contribute to the dam's construction began. A committee was formed in order to oversee the issuing of the tenders and the selection of the contractors to construct the dam and related infrastructure. The Turkish construction firm, Ozaltin, was awarded a contract in March 2003 to construct 60% of the overall infrastructure.<sup>42</sup> Two Jordanian firms—the Marwan Alkurdi Company as well as the National Company for Roads and Bridges—were also contracted to complete the remaining 40% of the project.<sup>43</sup> The Jordanian government seems to have played a more active role in this process, drawing on the legal documentation agreed between the two states

to legitimise its right to develop the project. The Syrian government appears to have been satisfied with its Jordanian counterpart taking up this role. In terms of funding, Jordanian and Syrian membership in the League of Arab States helped secure financial resources from the Arab Fund for Social and Economic Development in the form of a loan covering 80% of the project's costs. A further loan was secured from the Abu Dhabi Development Fund and the Jordanian government footed the bill for the remaining costs.<sup>44</sup> The dam was originally expected to cost over \$400 million to build but ended up costing less than \$100 million as a result of the plans being downsized. It was belatedly completed in 2007,<sup>45</sup> and the dam was in full use by the winter of 2011, though it was not meeting the expected levels of freshwater reserves due to overuse of the upstream water. Political disagreements and problems with ensuring adherence to the 1988 agreement have caused problems in the effective utilisation of the dam. The Syrian agricultural sector in particular has continued to withdraw more than the agreed amount from upstream, meaning that the dam has not been able to fill to capacity due to a reduced river flow.<sup>46</sup> Some progress has been made in rectifying this situation,<sup>47</sup> but the river's flow at the point of the dam has still not reached expected levels.

If the theoretical assumptions that higher levels of economic integration and engagement in international institutions add to the potential for international cooperation over shared scarce resources are accurate, we should be able to observe these elements in Jordanian-Syrian cooperation. Plans for the bilateral management and use of freshwater resources between Jordan and Syria date back to the start of the post-independence era, but the vast majority of these have never materialised. Economic integration between Jordan and Syria has developed over the past three decades, and total trade levels valued slightly over \$100 million in 1980 and \$3 billion in 2010,<sup>48</sup> with Jordanian exports of pharmaceutical products and phosphates and Syrian exports of food and light manufacturing representing important goods for both Syria and Jordan respectively. However, political integration between the two states has not developed to the extent that one would imagine. The hostility that existed between the two states through much of the Cold War era, with Syria a revisionist state and Jordan a conservative one, to some extent remain and have been further impacted by the Syrian uprising since 2011.

A number of joint economic and political committees have been formed over the past three decades, but have failed to function effectively. In a study of Jordan's inter-Arab relations from the 1970s, Laurie Brand has listed some of these bodies.<sup>49</sup> For example, in 1975, the first joint committee between the two states was established to facilitate bilateral economic integration, while a joint higher command was also established to coordinate their foreign policies. However, by 1978 their bilateral relationship had cooled significantly and by the early 1980s political relations had broken down as a result of Jordan siding with Iraq and Syria with Iran during the 1980-88 Iran-Iraq War. The joint committee and joint higher command would never meet expectations. At the same time, however, joint industrial projects driven largely by private sector forces have witnessed some success. The Syrian-Jordanian Land Transport Company, for example, has steadily grown since its establishment in 1975 and continues to be a key actor in overland transport in the region. Overall, the Jordanian-Syrian relationship does not demonstrate a very high level of effective institutional engagement or economic integration, and the development and running of the Wehdeh Dam and the institutional agreements that accompany it have not been exemplary of effective international cooperation of shared resources. Nonetheless, the existence of the dam and the related institutional agreements do represent progress and do demonstrate that resource scarcity can result in international coordination.

## *Conclusions*

Resource scarcity is one of the most pressing issues in international relations and will remain so for some time. Access to natural resources for fuel such as crude oil and natural gas will, for the next half century at least, be of primary concern and the issue most often impacting inter- and intra-state relations. However, arguably the most destabilising resource scarcity is that of freshwater. Fresh water is pivotal to the main forms of human action and organisation.



Freshwater supplies are most obviously used for human consumption, but also important is the use of freshwater in the most pivotal sectors of economic activity. In the MENA region as a whole and for Jordan in particular, this is increasingly important as freshwater is used in ever growing amounts in agriculture and medium to heavy industry. As Jordan's urban centres continue to grow at an increasing rate due to demographic changes and urbanisation, and as its economy attempts to industrialise, freshwater sources will be ever more precious. It would be incorrect, however, to assume that the growing importance of freshwater sources coupled with the decreasing availability of such sources and the shared nature of Jordan's main freshwater sources will lead to increased tension and competition with its neighbours. It is likely that Jordanian foreign policy towards its immediate neighbours with which it shares freshwater sources will have to respond to the challenges of freshwater scarcity. However, it is equally likely that Jordanian foreign policy will be driven by the need to collaborate with its neighbours in order to ensure freshwater security. If this is to be the case, then the Jordanian government, as well as others in the region, will need to develop the institutional mechanisms for effective engagement. Greater levels of economic integration and interdependence as well as engagement with international institutions can help to facilitate international collaboration, but, at the same time, where levels of economic integration and institutional engagement are low, international collaboration is likely to be hindered. In the case of Jordanian relations with Syria and Israel over shared freshwater sources and projects to manage them, the Red Sea-Dead Sea Conduit project and the Wehdeh Dam offer examples of both foreign policy challenges and opportunities.

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<sup>1</sup> See Peter Gleick, "Water and Conflict: Freshwater Resources and International Security," *International Security* Vol. 18, No. 1, Summer 1993, pp. 79-112; Thomas Homer-Dixon, "Environmental Scarcities and Violent Conflict: Evidence from Cases," *International Security* Vol. 19, No. 1, Summer 1994, pp. 5-40; Mark Zeitoun, *Power and Water in the Middle East: the hidden politics of the Palestinian-Israeli conflict*, London: I.B. Tauris, 2008.

<sup>2</sup>Tareq Y. Ismael and Jacqueline S. Ismael, *Government and Politics in the Contemporary Middle East: continuity and change*, London: Routledge, 2011, pp. 17-43.

<sup>3</sup> James Russell (ed.), *Critical Issues Facing the Middle East: security, politics and economics*, Basingstoke: Palgrave Macmillan, 2006, pp. 27-29.

<sup>4</sup> Alan Richards and John Waterbury, *A Political Economy of the Middle East* (3<sup>rd</sup> edition), Boulder: Westview Press, 2008, pp. 144-145.

<sup>5</sup> Robert North, "Toward a Framework for the Analysis of Scarcity and Conflict," *International Studies Quarterly* Vol. 21, No. 4, 1977, pp. 569-591.

<sup>6</sup> Homer-Dixon, "Environmental Scarcities," p. 36.

<sup>7</sup> Julie Matthaei, "Rethinking Scarcity: Neoclassicism, Neo-Malthusianism, and Neo-Marxism," *Review of Radical Political Economics*, Vol., 16 No. 2, 1984, pp. 81-94.

<sup>8</sup>ibid.

<sup>9</sup> See: Yujiro Hayami and Vernon Ruttan, *Agricultural Development: an international perspective*, Baltimore: Johns Hopkins Press, 1985.

<sup>10</sup> Thomas Homer-Dixon, "The Ingenuity Gap: can poor countries adapt to resource scarcity?" *Population and Development Review*, Vol. 21, No. 3, September 1995, p. 1.

<sup>11</sup> Homer-Dixon, "Environmental Scarcities," p. 9.

<sup>12</sup> North, "Analysis of Scarcity and Conflict."

<sup>13</sup>Thomas Homer-Dixon, and Jessica Blitt, *Ecoviolence: links among environment, population and scarcity*, Lanham: Rowman and Littlefield Publishers, 1998, p. 33.

<sup>14</sup> Ismail Serageldin, "Surviving Scarcity: Sustainable Management of Water Resources," *Harvard International Review*, Vol., 18 No. 3, Summer 1996, pp. 50-53.

<sup>15</sup> Thomas Homer-Dixon, "On the Threshold: Environmental Changes as Causes of Acute Conflict," *International Security*, Vol. 16, No. 2, Fall 1991, p. 78.

<sup>16</sup>ibid, p. 82.

<sup>17</sup>ibid, p.110.

<sup>18</sup> Jodi Jacobson, *Environmental Refugees: a yardstick of habitability*, Washington, DC: World-Watch Institute, 1988, p. 26.

<sup>19</sup> Homer-Dixon, "Environmental Scarcities," p. 10.

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<sup>20</sup> This is perhaps an error made on the part of scholars who are all too eager to construct more elaborate explanations for the region's volatility, often blaming historic belligerence, control of territory for reasons of prestige or military-strategic advantage, nationalism, and religion; all increasingly popular in the post-9/11 era. For example, if attention is paid to the most enduring conflict in the region, the Arab-Israeli conflict, a whole range of causes can be identified. Access to freshwater is by no means the most unapparent one.

<sup>21</sup> Tony Allan, *Water, Peace and the Middle East: Negotiating Resources in the Jordan Basin*, London: I.B. Tauris, 1996.

<sup>22</sup> Robert Keohane, "International Institutions: can interdependence work?" *Foreign Policy*, No. 110, Spring 1998, pp. 82-96.

<sup>23</sup> Robert Keohane and Joseph Nye, "Two Cheers for Multilateralism," *Foreign Policy*, No. 60, Autumn 1985, pp. 148-167.

<sup>24</sup> Keohane, "International Institutions", p. 91.

<sup>25</sup> Vivien Schmidt, "Discursive Institutionalism: the explanatory power of ideas and discourse," *Annual Review of Political Science*, Vol. 11, No. 1, 2008, pp. 303-326.

<sup>26</sup> Randall Stone, "Institutions, Power and Interdependence," in Helen Milner and Andrew Moravcsik (eds.), *Power, Interdependence and Non-State Actors in World Politics*, Princeton: Princeton University Press, 2009.

<sup>27</sup> *ibid*: 31.

<sup>28</sup> *ibid*: 49.

<sup>29</sup> Susan McMillan, "Interdependence and Conflict," *Mershon International Studies Review*, Vol. 41, No. 1, 1997, pp. 33-58.

<sup>30</sup> See: Tony Allan, *The Middle East Water Question: hydrogeopolitics and the global economy*, London: I.B. Tauris, 2001.

<sup>31</sup> World Bank, *Consultation Information Report on the Red Sea-Dead Sea Conduit Project*, 2010, [http://siteresources.worldbank.org/INTREDESEADEADSEA/Resources/PublicMeetingBrochure\\_final.pdf](http://siteresources.worldbank.org/INTREDESEADEADSEA/Resources/PublicMeetingBrochure_final.pdf)

<sup>32</sup> Mohamed El-Ashry, Najib Saab and Bashar Zeitoun (eds.), *Water: sustainable management of a scarce resource*, Beirut: Arab Forum for Environment and Development, 2010, p. 3.

<sup>33</sup> UN, *Water for Life: 2005-2015*, 2005,

[http://www.un.org/waterforlifedecade/swm\\_cities\\_zaragoza\\_2010/index.shtml](http://www.un.org/waterforlifedecade/swm_cities_zaragoza_2010/index.shtml)

<sup>34</sup> World Bank, "Consultation Information."

<sup>35</sup> Coyne et Bellier and World Bank, *Red Sea-Dead Sea Water Conveyance Study Update*, Amman: Coyne et Bellier, 2010.

<sup>36</sup> In 1855, a British engineer named William Allen drafted plans for a canal that would link the Mediterranean Sea to the Dead Sea and a second canal which would link the Dead Sea with the Red Sea. The proposed project would have been cheaper to construct than the Suez Canal and would have provided a link to the Indian Ocean at a time when there was none.<sup>36</sup> The canal, obviously, was never constructed.

<sup>37</sup> Hana Namrouqa, "Experts Say Red-Dead Concerns can be Addressed," *Jordan Times*, June 14, 2010.

<sup>38</sup> See: Marwan Kardoosh, *The Institutional Dimension of the Success of Jordanian QIZs*, Amman: Jordan Centre for Public Policy Research and Dialogue, 2006.

<sup>39</sup> Allan, *Middle East Water Question*, p. 45.

<sup>40</sup> Rami Abdelrahman, "Two Leaders Launch Al Wihdeh Dam," *Jordan Times*, February 10, 2004.

<sup>41</sup> Agreement Between The Republic of Syria and the Hashemite Kingdom of Jordan Concerning the Utilisation of the Yarmouk Waters, Signed at Damascus, 4 June 1953; in force, 8 July 1953, <http://waterlaw.org/documents/regionaldocs/syria-jordan-1953.html>

<sup>42</sup> Anon. "Turkey's Ozaltin Wins \$86 Million Wihdah Dam Tender," *Jordan Times*, March 10, 2003.

<sup>43</sup> Abdelrahman, "Two Leaders Launch."

<sup>44</sup> *ibid*.

<sup>45</sup> Nazim K. El-Naser, *Management of Scarce Water Resources: a Middle Eastern experience*, Ashurst: WIT Press, 2009, pp. 51-54.

<sup>46</sup> *ibid*.

<sup>47</sup> Joseph Audeh, "Jordan, Syria Reach Agreement on Distribution of Water from Yarmouk River," *Al-Shorfa News*, March 10, 2009.

<sup>48</sup> Jordan - Ministry of Trade and Industry, Trade and Investment Information System database.

<sup>49</sup> Laurie Brand, *Jordan's Inter-Arab Relations: the political economy of alliance making*, New York: Columbia University Press, 1994, pp. 152-195.