

# WATER CONFLICT NEXUS IN THE MIDDLE EAST

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## Abstract

*There is a historical links between human, water and civilization in the development of societies. This link becomes even more strategic resource of Nile and Tigris-Euphrates in arid areas such as Middle East. In view of regional conflicts resources play equally important part. Given the ground realities, improved water management techniques and climatic variations the concept of dividing is over taken by the sharing of resources approach. Population pressure and environmental, injustices along with political deprivations is creating haves and have nots.*

*All of this is further compounded by two facts; first, the region is heavily dependent on transboundary waters, even the aquafer resources trespasses disputes and state boundaries, second, the most powerful country of the region is one of the most water scarce country in the world, where water consumption per capita is highest in the region. How this combination of political power, water scarcity and regional conflicts has been addressed through water diplomacy is an interesting aspect of the Middle East politics.*

**Keywords:** *Water, Conflict, Middle East.*

## Introduction

Throughout human history civilizations have struggled to access and maintain fresh water supplies (Postel, 1993). Their very survival and prosperity depended on the availability of water. Apparently it is hard to comprehend that in today's era of science and technology where space and planetary objects are within human reach, man is busy and struggling in one of his oldest pursuits. That is availability of water.

Except some parts of Israel, perhaps most of the Middle Eastern economy is basically dependant on agriculture, and for communities

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to prosper and sustain on agriculture economy, water plays a very important role. Middle East not only mostly is arid with low rainfall and fast depleting aquifers and with one of the highest population growth possess a perfect recipe for water crises leading to water conflict.

Therefore, sharing and dividing the water resources among the countries in region is the most pressing need of the time. Several politicians and head of states including former UN secretary general Boutros Boutros Gali, former King Hasan of Jordan, current UN secretary general Ban Ki Moon and several others have warned that scarcity of water in the Middle East has the potential to fuel the existing conflicts further into another resource based conflicts in addition to territorial based one which has already embroiled the region for more than 60 years.

The way things are on almost all fronts whether it is economy, environment, politics, or regional and global has made it inevitable for the stakeholders of the Jordan that the Nile and the Tigris-Euphrates to either come to some form of water sharing understanding if not an agreement or resort to violent and non-political means to achieve and safeguard their water interest in the above water resources. This can lead to either an unprecedented degree of cooperation or a combustible level of conflict (Postel, 1993), depending which course of action diplomacy embarks upon.

Where human needs have forced innovations and inventions, the resultant competition on resources generated conflicts also. Besides the air that we breathe, nothing is more important than water among natural resources. Nature has distributed natural resources in its own very natural way, the cradle of civilization starts from dry arid regions of the Middle East and not from the rolling prairies and rolling mountains and fresh springs despite water being so essential for the living beings.

## **Hydrological Phenomenon**

Although water is a renewable resource, yet its quantity is limited, it does change its form, from vapours to clouds as a result of temperature difference and either falls back to the earth either in the form of rain or snowfall, drenching and traversing finally to sea to complete the hydrological cycle once again. The weather pattern limits the amount of water available in a given region each season and year. This natural variation was sustainable for thousands of years and accommodated by our eco-system. However, with the climate change this variation has not only increased but became unpredictable. As a result of drought availability of water becomes even more scarce and the quality also goes down. However, due to climatic change a sudden and heavy downpour can inundate the region with an unexpected deluge and this scenario also worsen as a result of unpredictable geographical variation.

Other than nature, humans have indirectly contributed immensely in bringing cum enforcing the water crisis upon us. The explosion of population in areas where water is already scarce, more and more water is needed for irrigation to produce food for the growing number of hungry people. Additional water is needed for industrial and domestic purposes, as a result water is over exploited and worst in scarce region the recycling and water treatment ratio is extremely low, except for Israel which has pioneered water management techniques. It is estimated that the amount of water wasted through leaks and water mismanagement can overcome the dire shortages of water in many areas.

## **Resource Politics**

Nations have gone to war on football match, territorial, political disputes, and resources, although dispute over water is almost as old has human history but in contemporary politics oil has dominated the world politics across the globe. However, this is about to change in

the 21<sup>st</sup> century not because discoveries of alternate fuels, but rather climate change has altered the natural phenomenon of hydrological cycle in such a way that availability of fresh water where it is needed most is now in jeopardy. Today the scarcity of water poses the greatest possibility for inflaming the conflict and two regions are most vulnerable, the South Asia and the Middle East.

### **The Case of Middle East**

The case of Middle East perhaps is very unique. As the most contentious country in the region, Israel is basically developed but surrounded on all sides by less developed countries. Citizens of Israel enjoys higher standards of living, such as maintaining the luxury of grass lawns and swimming pools in many individual houses and communities. On the other hand, majority of Palestinian population living in and around Israel had to stand in long queues on community taps for their share of meagre water supply.

Water scarcity of the 21<sup>st</sup> century can pose similar threats to the global economy and stability, similar to the great depression, oil shock of the 70's or stock exchange crash of the 90's. Besides getting scarce and strategic, upstream countries has strategic advantage over the downstream due to their geographical location. This advantage and disadvantage between upstream and downstream countries is fundamentally a source of all water conflicts and was very aptly expressed by Boutros Boutros Gali in 1989 while addressing U.S. Congress as "the national security of Egypt is in the hands of eight other African countries in the Nile basin" (Jur, 2004).

Crisis in the Middle East stands out for number of reasons to start with as it is already a hot bed of conflicts dating back to centuries. Water crises makes it even more difficult to resolve as it engulfs the politics of states, territorial disputes and then natural resources. It is a dry arid region with very low rain fall and no source of water from glaciers, with a high birth rate, low employment and low economic

opportunities among Arab population and now the smorgasbord of ethnic, civil and ideological conflict engulfing the region. Therefore, countries dependent upon the three rivers have deep rooted interest in sharing the water resources of the region.

Given the above climatic, economic and political scenarios, the Middle East region demands an unprecedented level of cooperation in order to avoid unprecedented levels of conflicts in the region. To judge the complexity at hand is the fact that four states, Israel, parts of occupied West Bank, Jordan and Syria are reaching a critical stage and water shortage has reached to an alarming level. To make matter more complicated, Israel's per capita consumption of fresh water is far above than rest of the countries in the region. Water extraction both of surface and underground is being extracted at a far faster pace than the reservoir can be replenished, making the water resources much harder to extract and quality is also being degraded and polluted at the same time.

On the other hand, Israel water consumption is highest in the region, more than double than Jordan on a per capita basis. With growing population and shrinking economic base and opportunities in the region due to environment, economic and recently more importantly civil war in Syria and ISIS threat and violence, it is clear that in the coming years with rising population and rising water shortages, conflict in the region will shift from territorial disputes to access and control of water resources. As early as in 1990, the late King Hussein had declared that water was the only issue that could take him to war with Israel ([www.iwaterwiki.org](http://www.iwaterwiki.org), 2014).

How difficult is any peace agreement and how much intertwine water with security of concerned states in the Middle East has can be assessed from the fact that most of the disputed territories which Israel has occupied since 1967 war are part of negotiation for withdrawal and return to Jordan. These territories also provide water supplies to Israel such as Yarqon-Tananim aquifer that provides as

much as forty-percent of Israel's water need. The Yaqon-Taninim aquifer runs at the foot hills of the West Bank crisscrossing the territorial control by different parties, crosses the Green Line and the pre 1967 demarcation of Israeli territory towards the Mediterranean Sea (Postel, 1993).

Despite of the fact that the aquifer's recharge area lies on the West Bank, Israel extracts water from both sides of the Green line. Whereas, the main recharge for the aquifer's lies on the West Bank only. Israel's control of the West Bank after the 1967 war had severely limited Palestinian use of the same water resources on which they have relied for centuries. Among these limitations are the restriction on drilling wells by Palestinians without a permit from Israeli authorities (Zielinski, 2014) which is difficult to come by in comparison to Israel's over extraction of water from the same reservoirs.

Although water consumption for agriculture purposes remains stagnant in absolute terms for the period between 1967 and 1995. Domestic consumption does increase by almost 20 percent which does not reflect the actual population rise among the Palestinian population and occupied territories, during this whole period only 23 permits were granted. This also reflects the fact that while on the one hand population have increased multi fold, agriculture water consumption reflects slower agriculture activities. The combination of the two can be seen on the daily skirmishes between Israeli forces and Palestinian on the streets. In 1995, the vice president of the World Bank, Ismail Serageldin, proclaimed that "the wars of the next century will be over water"(Zielinski, 2014).

Ironically, also the largest source of surface water for Israel is in the Golan Heights of Syria which Israel occupied in 1967 war and then annexed it in 1981 for strategic reasons and as a vital source of water source for Israel. The south of Israel is more arid and parched to it has built a canal to transport water from the North. Furthermore, controlling the Golan Heights also provides some bargaining rights

and political leverage on the Yarmoukriver to Israel.

Moreover, Israel secured its water needs and ensured its water security by effectively blocking efforts to construct a dam on the Yarmouk by the Jordanians and the Syrians as are reservoir to be used in dry season, this project had the capacity to curtail water flows into the Jordan River and to Israel.

Israel with excessive pumping over the decades have polluted the aquifer which were already in its pre-1967 borders. Since this aquifer borders the Mediterranean Sea, over extraction of water has resulted not only seawater intrusion but also lowering of the water table. Moreover, in the absence of heavy and persistence rain the quality of aquifer is hard to recover, Israeli industrialization, use of pesticides and fertilizer for intensive agriculture has rendered almost one fifth of the coastal aquifer is contaminated. There are fears that almost a fifth of wells could become redundant due to salts and nitrate intrusion into the aquifers. It is important to note that as the quality and availability of water from aquifers decreases, Israel dependence on the surface water of Jordan River and West Bank Yarqon-Taninim reserve will increase, making any agreement on the water resources even more complicated and difficult to negotiate.

The severity of the potential conflict on water further be judged from the data produced by Gravity Recovery and Climate Experiment satellites (GRACE) of NASA and Germany's aerospace centre (Zielinski, 2014) which revealed that ground water usage between 2003 and 2009 in Tigris-Euphrates Basin which consists of Turkey, Syria, Iraq and Western Iran is losing water faster than any other place in the world except northern India. The amount lost due to low rainfall and unsustainable water management during the six years study period is enough to fill the whole Dead Sea all over.

The combination of drought, shrinking aquifers, and low rainfalls, absence of effective governments in the region which can impose its writ as in the case of Iraq, Syria and now Yemen in particular has led

to spate of killings of officials related to irrigation department in Iraq. There is growing evidence that in Syria, devastating drought from 2006 onwards have forced many farmers to migrate to urban areas after giving up hope of cultivating their fields. This migration is also said to have provided manpower to fuel the civil war in which at least 100,000 people have died so far.

## **The Nile**

The development of Nile can be traced back to 3400 B.C. How important Nile is to Egypt as well as for Sudan can be judged from the fact expressed by Herodotus in the 5<sup>th</sup> century B.C that Egypt is the gift of the Nile. Ethiopian Christian kings in the twelfth century have warned Egyptian Muslim Sultans of their powers to divert waters of the Nile (Carlson, 2015). Those threats were based more on the rhetoric than rational but today politics and ground realities have changed and Ethiopia is building the Grand renaissance Dam which will empower Ethiopia for the first time to make it possible to control the flow and dam the Nile before it enters Sudan and Egypt.

The case of Nile and Egypt is even more complex, besides Pakistan if one needs to see another country epitomizing the dilemmas and insecurities faced by rapid population growth and growing water scarcities than Egypt stand out. With more than eighty two million people, almost seventy percent of Egyptian or approximately fifty six millions are dependent entirely on the Nile's water. What is even more troublesome is that fact that no part or tributaries of Nile originates in Egypt, about eighty five percent of Nile water is produced by rainfall in Ethiopian highlands and known as Blue Nile as it trespasses Sudan before entering Egypt, the remaining fifteen percent originates from lake Victoria in Tanzania and is called the White Nile, the two blue and white joins each other near Khartoum. Interestingly, besides being the longest river, Nile fertile and provide fresh water to nine countries along its path, of which Egypt is last.

Egypt and Sudan claim on Nile rests on the basis of historic rights to the water and in 1979 President Sadat threatened war if Egypt's rights to Nile water were denied. Nile has been a source of dispute in the region since antiquity. Today, agriculture contributes approximately twenty percent for Egypt's GDP and almost seventy percent of cultivation depends on surface water, mostly sourced from Nile. Egypt is planning to complete by 2017 plans to develop its water sector on a mammoth scale. Salient feature of this program includes, expanding water sanitation in urban and rural areas, management of wastewater, improving agriculture productivity and improving irrigation network and efficiency etc.

However, global warming and other impacts of climatic changes poses serious threats such as anticipated sea level rise can pollute Nile Delta besides affecting the productivity and per acre yield of major crops in the region. Furthermore, water stress is very likely to increase with projected decline in rain and anticipated rise in population of Egypt from current 115 million to almost 180 million by 2050. The deadly cocktail of population growth and precipitation decline will automatically put all the sectors under stress and the recent expansion of land for irrigation will stretch and reduce the capacity of Egypt to accommodate and absorbs water flow fluctuations in future.

Egypt being one of the oldest living civilization whose survival relied so heavily on the Nile throughout its history now claims the historic rights for its future needs and water security. Therefore, claiming its needs should be prioritize over other nations even though being the lower riparian state and Egypt has relied on this premise while negotiating with upstream states on all trans-boundary water negotiations. The fact that Egypt has been relying on this right and duly acknowledged by actions of the upper riparian states also means that any changes to the flow which is detrimental to Egypt's water security would also means that its national security is threatened, the perceived scenario can trigger a conflict.

There have been occasions when Egypt has threatened to go to war over Nile water (Carlson, 2015) not only with its bordering countries but with upper riparian nations as well. Recently, WikiLeaks documents claimed that Egyptian and Sudanese governments had plans to build an airstrip for bombing a dam in the Blue Nile River Gorge in Ethiopia, which upon completion would for the first time give controlling rights to the Ethiopia from where most of the Nile originates.

### **Tigris and Euphrates**

Iraq, Syria and Turkey which depends on Tigris-Euphrates are at the moment is in relative ease and comfort as it is the only river basin in the Middle East which is fulfilling current regional water needs. However this relative abundance is not likely to continue in view of climatic changes, population, development needs, weak infrastructure and water losses. Turkey has already initiated massive Anatolia project which includes twenty five irrigation schemes, twenty two dams, at least nineteen hydropower stations and plan to irrigate large tracts of land near Syrian border to start with.

These massive water projects have raised concern in both Syria and Iraq as Euphrates flow into Syria is expected to be reduced by mammoth thirty five percent, and Iraq is further downstream from Syria so after Syrian water consumption and utilization the impact would be even worse. Iraq is already reeling under Syrian water policies and population boom which is expected to double in the next two decades. However, the recent mass exodus of refugees from Syria and its internally displaced people could delay the population prediction.

Owing to less than expected rains over the years, the Euphrates river flow was reduced to half in 1989 and a year after that Turkey increased the stakes by announcing that it will stop downstream water flow in order to fill the Ataturk dam reservoir. Although, Syria

and Iraq were offered to be compensated during the months of November and up until mid-January through increased water flows. The cumulative effects of Turkish developments could render Syrian and Iraqi future projects unfeasible and current water security in jeopardy.

However, Turkey has used water diplomacy to assure the downstream countries that it would never use its privileged, strategic position and power to “coerce or threaten them”. In addition to this Turkey has also offered to build “peace pipelines” to carry and transport water to water scarce countries as far as Saudi Arabia, Kuwait, the United Arab Emirates, Qatar, Oman and Bahrain. The estimated cost of over 21 billion US dollars, and more importantly fear among Arab nations on transferring their water security to a single country Turkey is not acceptable.

The region has already witnessed strained and tensed water politics among different countries and water shortages will create further atmosphere of mistrust which will only complicate already simmering politics of the region. This scenario can become moribund if the current crisis in the region produces ISIS as a major player with the capacity to control water works and supply. The control of Mosul and its dam in Iraq by ISIS forces recently has already portray the potential threats one can expect from ISIS, vast tracks of land across the region has fallen prey to their military ambitions.

The logic of Middle East water issues are similar to all other trans-boundary issues globally, that is one country loss is another’s gain. The Yarmouk River has its origins both in Syria and Jordan and forms the territorial border between the two countries and joins Jordan River Ten kilometres south of Sea of Galilee and further enriched from small springs and intermittent tributaries as it continues its journey for further three hundred and twenty kilometres south before merging into the Dead Sea. If river Yarmouk is dam by Syria and Jordan, Israel naturally stands to lose out. The inherent feature of

every conflict is that at least one side stands to lose out, and this loss is not necessarily be just. Therefore, in any conflict where the rights and duties are overlapping its best for all the concerned parties to cooperate and if the conflict is on resources than to share and develop the resource as a common advantage turning it into basket of benefits. This approach has the potential to win-win situation that can resolve common water conflicts and defuse territorial tensions.

### **The Jordan River**

The Jordan River basin drains five countries in the region, namely; Israel, Jordan, Lebanon, Syria and the West Bank in The Palestinian state. The three springs which collectively make up the Jordan River all originates from three different countries. Hasbani from Lebanon, Baniyas from Golan Heights and Dan are the largest spring from Israel.

Both sides of the banks of the Jordan River including the surrounding hills serve as recharge areas for the extensive aquifer systems in Israel, Jordan and the West Bank, rain water as a runoff percolates down to the underwater reservoir and then slowly through the pores and cracks of the underlying rock layers move slowly. One method of an aquifer's capacity or safe yield to measure, that is the amount of water that can be pumped without adversely affecting the salinity of the aquifer is not to extract more than the annual recharge rate or amount of water.

#### There are three principal aquifer systems in west of the Jordan:

- The North East Basin; recharges in the northern West Bank and discharges in Det She'an and Jezreel valleys in Israel with one hundred and forty MCM/yr. approximately.
- The Western or Yarkon-Tanninim Basin; recharges in the hill of West Bank and discharges westwards towards the Mediterranean coast in Israel with three hundred and twenty million cubic meters per year approximately.

- The Eastern Basin consists of five separate catchment areas in the West Bank and all of them flows eastwards towards the Jordan Valley with one hundred and twenty five million cubic meters per year approximately.

Besides these aquifers which rely on runoffs and Jordan River for their replenishment, there are other major ground water sources in Israel such as “coastal aquifers”. These aquifers do not have hydrological connections or linkages with the above aquifers, yet they provide approximately with two hundred eighty million cubic meters of water every year (Jur, 2004). Furthermore, the Gaza aquifers, another independent source provides approximately additional sixty million cubic meters of water every year. Ground water replenishment within Jordan totals about two hundred and seventy million cubic meters of water every year through its twelve different aquifers (International Rivers in the South) which are mostly in the areas of Zarqa, Yarmouk and the Jordan River catchments.

It is interesting to note that the Jordan River is the smallest of all major watersheds in the Middle East with annual flow of 1,400 million cubic meters of water every year compared with Nile which has 74,000 million cubic meters of water every year or the Euphrates which as 32,000 million cubic meters of water every year. However, due to its geopolitical location and especially taking into account the regional politics and availability of fresh water resources, Jordan has been described as “having witnessed more severe international conflicts over water than any other river system in the Middle East, and remains by far the most likely flashpoint for future”.

### **The Conflict**

As for the peace in the Middle East, superficially it all revolves around territories, which is true in principal, but territories hold no value until resource on it are specified or population is defined and characterized. Taking in view the geographical and strategic position.

It is clear that in any peace deal, Israel will be required to return substantial amount of territories especially the territories it has occupied during and after Arab-Israeli war of 1967. These territories also hold reserves of prime water sources which Israel rely upon, almost forty percent of its sustainable water supply is sourced from Yarqon-Taninim aquifer (Postel, 1993) which runs along the foot hills of the West Bank and right up to Green Line or the pre 1967 demarcation of Israeli territory towards the Mediterranean Sea in the Westerly direction.

Although technically Israel can extract water from both sides of the Green Line (Postel, 1993) but the aquifers main recharge boundaries lies on the West Bank and has controlled the amount of water the Arabs residing in the West Bank can extract. Despite imposing sever restriction on the Arabs, Israel has continue to over draw water from the aquifer. It is a policy which has created further resentment against the Israeli occupation and generated a new term of “water apartheid”.

However, this bias or water discrimination is not restricted to occupying powers or trans-boundary states, in some of West Bank villages, a classic case is of Ein Arik village which being old historical settlement has historical first rights over the spring.

## **Conclusion**

Water shortages have been an engine of human innovations, propelling, motivation and prodding societies to devise, accept, and perpetuate solutions to water scarcity. This was true till the time man acted in the interest of human, today state sovereignty and territory seems to be the dominating factor in all actions taken at national or international arena. What remains to be seen is whether citizens of this world can mobilize with the same rigors and vigours to come to diplomatic solutions of age old concern of water supply.

The Oslo agreement of 1993 also bring to an end Israel’s total monopoly over water rights of the region, Palestinians were allowed

to have a share of water that flows through Israel. However, due to political reasons, Palestinian did not want to rely on Israeli water infrastructure, thus, the Oslo 11 agreement was negotiated which gave Palestinians two-thirds of the water structure development and Israel one-third, ironically despite being deprived for almost half of the century from its water rights, the progress on behalf of the Palestinian Authority has been very slow.

Water management and science have come a long way from simple dam building and diverting water resources. Therefore, experts have been relying on science and technology to counsel the stakeholders that extracting aquifers bone dry, reducing the river flow to shallow water bodies and polluting the fresh water bodies to an extent that neither it remain fit for human consumption nor for marine life are not the options a nation or any civilization can continue to practice. Water is a gift of nature and cannot be confined to any political boundaries, it runs along the natural boundaries, nations need to develop not only understanding for sharing fast depleting water resources but the understanding how the nature and hydro cycle works. The sustainable balance between human development and water consumption is the only way to insure from future water conflicts. There have been positives moves, for example in an area not known for cross-border cooperation, Israeli and Jordanian officials met for the first time in two decades to discuss rehabilitation of the nearly dry Jordan River, and Israel has agreed to release freshwater down the river (Zielinski, 2014).

It is water, in the final analysis, says Thomas Naff, Middle East water analyst at the University of Pennsylvania, "that will determine the future of the Occupied Territories, and by extension, the issue of conflict or peace in the region (Postel, 1993).

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