

International Expert Round Table Meeting Sustainable Water Resources Management for Jordan

Amman - August 28th 2018

ABSTRACTS BOOK

GJU-Jordan
HPA-Turkey

INTERNATIONAL EXPERT ROUND TABLE MEETING



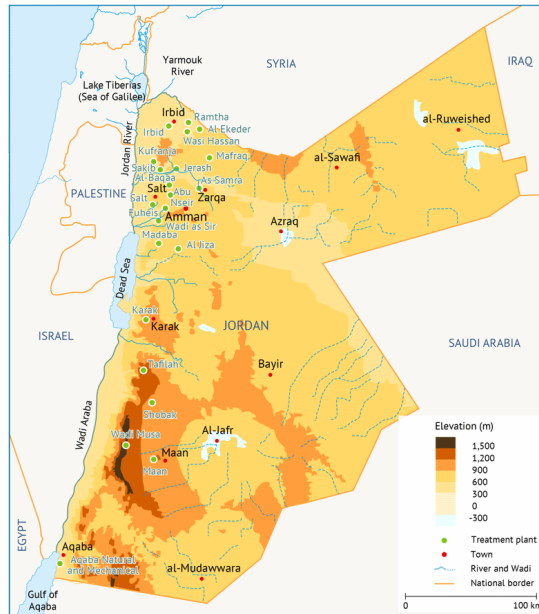
Map showing Jordan and surrounding regions (Syria, Iraq, Saudi Arabia) with water resources and infrastructure. Legend includes: International boundary, National capital, Governorate capital, Railway, Expressway, Road, and Track.



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نشرة إخبارية تصدر عن دائرة العلاقات العامة / الجامعة الألمانية الأردنية
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The International Expert Round Table Meeting on Water Resources Management for Jordan, held at Darat Othman Bdeir, German Jordanian University, in Amman – Jordan on August 28th 2018:



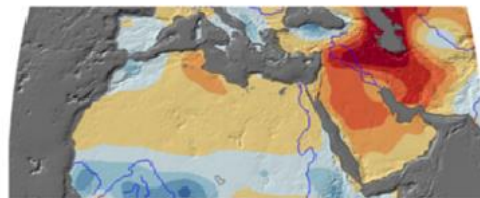
The International Expert Round Table Meeting on Water Resources Management for Jordan, held at Darat Othman Bdeir, German Jordanian University, in Amman – Jordan on August 28th 2018:

COOPERATION FOR

SUSTAINABLE WATER MANAGEMENT IN THE MIDDLE EAST



الجامعة الألمانية الأردنية
German Jordanian University
Othman Bdeir Center of Excellence



"Yesterday is gone .Tomorrow has not yet come .We have only today.
Let us begin "

Mother Teresa

"The Future depends on what you do today"

Mahatma Gandhi



The International Expert Round Table Meeting on Water Resources Management for Jordan, held at Darat Othman Bdeir, German Jordanian University, in Amman – Jordan on August 28th 2018:



His Royal Highness Prince El-Hassan

The International Expert Round Table Meeting on Water Resources Management for Jordan, held at Darat Othman Bdeir, German Jordanian University, in Amman – Jordan on August 28th 2018:

FOREWORD

Water and water resources management is vital to the development of human societies, and it is life threatening in areas where water is at short supply for natural reasons. The Middle East is such an example. This subject was discussed at many occasions between me an urban and regional planner residing in Jordan and my friend Dursun Yıldız, head of the Turkish Hydropolitics Academy, a think-tank of experts on water and its utilization. This round table expert meeting in an example and a debut of a hopefully long cooperation between Jordanian and Turkish experts, that we hope will lead to an intergovernmental and even regional discussions and cooperation to share and manage water resources. Jordan is a middle eastern country which is strived by many challenges. First, it is located at the fringe of the desert with limited water resources unequally distributed over its territory. Second, it is situated in the middle of continuing political struggle resulting in huge numbers of displaced population totaling to 30% of its population of 9.5 million in 2017 estimates. Third, it is poor in energy resources compared to it's oil rich neighbors. Actually it is severely poor in water resources. But, these limitations have created some virtues which developed over time: It has a stable economy, stable political system and a well-managed state. As a result, 98% of it's households are serviced with running water which is rationed to once in a week time, but the population has adapted to the situation. This expert round table meeting was especially designed and implemented to discuss what possibilities Jordan would have in terms of improving it's capacities to manage the water resources available to it, and cater for the needs of a growing population under the challenges created by a global climate change.

Kamal Jalouqa,

Industrial professor, SABE-GJU

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KEYNOTE SPEECH

Impacts of Climate Change on Water Resources

HE Dr. Munther Haddadine.

Former Minister of Water and Irrigation

Distinguished guests, Ladies and Gentlemen

I am honored to be given the opportunity to address you this morning, and I owe this opportunity to Dr. Kamal Jalouqa, the head of the Othman Bdeir Center at the German-Jordanian University. Thank you, Dr. Kamal for this honor.

The topic that is gaining momentum in the field of water resources is the impact on them of climate change. I like first to draw the attention to the twin of water which is energy to keep it in mind whenever we talk about water. Water and Energy are twins and one, that is water, cannot be generated without the other. Man, in fact, has been harvesting the twinning of water and energy since his attempts to settle and pursue his quest to build human civilization.

We say human civilization and we mean it. Without liquid freshwater and its twin, energy, there could not have been life on our planet let alone the building of civilization. The natural source of fresh water is precipitation that originates in water bodies like oceans, seas and lakes. Solar energy causes water from the surfaces of these bodies to evaporate, and convection energy enables the water vapor to assume higher elevations to form clouds at lower temperatures. A good portion of these clouds precipitates, through gravity energy, on the water bodies where they originated and another portion of the clouds gets driven by wind energy to assume locations above the land mass. Again through drop in temperature liquid water is formed and, through gravity energy, falls on the land mass as rain or snow or both. Again gravity energy drives the precipitation to rivers and wadis and makes it flow back to the water bodies, or drives the water into groundwater reservoirs only to emerge as springs flowing into wadis and rivers back to the water bodies. However, soils on the land mass retain moisture that finds its way back to the atmosphere through evapo-transpiration or evaporation or both.

Man intercepts the above water cycle and uses water on the land mass for several beneficial purposes, but not without energy inputs and environmental consequences, usually negative. Water throughout man's history remained the same substance, but the energy form that man used transformed from primitive muscular generation by man and animal to sophisticated forms presented by the success of the industrial revolution. Energy can take different forms and can be converted from one form to another. Potential energy can be transformed, with liquid water as the medium, to kinetic energy which, in turn, can be transformed into electrical energy by the employment of magnetic fields. This intervention by man, as usual, has negative environmental impacts as it interrupts the natural traffic of marine habitat. Conversely, and

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through energy input, salty water can be transformed into sweet water, and condensed salty water ensues that has adverse environmental impacts calling for its management to mitigate such impacts.

Perhaps the most important purpose of water use to man is to meet his domestic and food needs. On the domestic front, freshwater is needed for drinking, cooking and for keeping domestic hygiene. There is also a need to manage wastewater in an environmentally friendly way in service of hygiene and public health. Suppressed water supply to human settlements can very well trigger epidemics especially if drainage is not taken care of. The urban development and its sustainability heavily depend on clean water supply and adequate drainage of wastewater.

On the food front, rain showers apply water to the soil and enable the germination of seeds and their growth into plants that bear fruit. Man observed that natural process and intervened to bring water from nearby sources, employing gravity energy, to irrigate otherwise dry soils/lands and produce food there from. Animal power and his own energy were also employed. Likewise, if drainage of irrigation water is not taken care of the agricultural land may get clogged and will be taken out of production.

Then man utilized water bodies for navigation and transportation and energy, in the form of wind energy or manual energy, was used in the process; later he was able to regulate stream flow by building dams and creating waterfalls to generate power. His needs for water took a new form to meet the requirements of the industry and the requirements of a decent environment. We should remember that all these various uses of water and energy generate jobs and add to wealth that improves the living standards of societies. We further have to remember that life on this planet has been possible because water, in its liquid form, exists here and nowhere else in the universe.

Life, then, and its living standards are a function of water and energy and whatever can be generated from them while keeping the environment acceptably clean. The distribution of water and energy potentials on the surface of the globe determines, more or less, the fortunes of the regions on the globe. I say more or less because water and energy are indispensable ingredients for life and progress, and a third very important requirement is the trained human resources. Any distortion in the distribution of water and energy would impose a redistribution of human resources. This latter result manifests itself either in environmental refugees or in waves of refugees running away from degraded economic conditions and low living standards. The human migration can be felt internationally if the movement of people over the globe is not regulated.

Economies over the globe take different forms. There is the green economy that relies on natural inputs like water and green renewable energy, and the brown economies that have fossil fuel as important input, be it in the form of liquid, gas or a finished product like electricity generated there from. The green economies serve the imperative of sustainable development while the brown economies generate gases that contribute to global warming and climate change, and, after the brief presentation of the beneficial purposes of water and energy use, we may now proceed to look at the impact of climate change.

Climate change impacts the atmospheric conditions around the globe. The distribution patterns of solar energy on the planet changes and the direction and speed of winds undergo parallel changes as well. The percentage of Carbon Dioxide increases in certain geographies of the global atmosphere and decreases in others. The emission of Oxygen from the greeneries gets affected as the green area shrinks. Such changes in the distribution of fundamental elements in

the atmosphere generate changes in the distribution of energy and water on the globe. The changes in the basic elements impact the dynamics of desertification as well and all of these lead to further changes. The process is continuous and, unless broken, will have serious impacts on the global environmental pattern and the distribution of the generators of wealth, namely, water and green energy.

I am a believer in a state of equilibrium in any country between water, energy and human resources. If such equilibrium does not exist naturally in any given country it can be achieved through foreign trade, and if it cannot be so achieved, we will witness shifts in population to have the population of that country get in equilibrium with the resources of water and energy. This imperative urges the facilitation of free trade in goods and commodities to enable the achievement of equilibrium. It also urges the close cooperation among riparian parties on the same water basin be it surface rivers or groundwater reservoirs.

The re-distribution of rainfall due to climate change is not necessarily in sink with the distribution of cultivable land. This out of sink redistribution of rainfall creates a change in the productivity of a unit flow of water and in the total production. The same applies to a redistribution of rainfall that is out of sink with the distribution of human resources. An adjustment in the distribution of resources can be effected to maintain equilibrium and to minimize the negative impacts of climate change.

The foreign trade in commodities helps in re-adjusting the distribution of water and energy. For example, if the climate change resulted in rainfall quantities and their distribution with time and location unfavorable to agricultural production, then the affected country can import food from countries with excess agricultural production. There may be additional overall benefit in that trade like the economy in water use. A ton of grain produced in Iowa, for example, would take about 800 cubic meters of water while it would take about 1200 cubic meters of water if that ton is produced in Egypt. I called the needed quantity of water in the importing country "the shadow" of the water required to produce the same mass of the imported produce in the exporting country. Hence, international trade can mitigate the negative impact of climate change on the one hand, and can result in better economy in the use of global water resources. This, however, requires that the importing countries be enabled to earn foreign currency to service their international trade. I have designated as shadow water the term that has been in use since 1996 as "virtual water".

The factor of climate is very important when assessing the impact of climate change on water resources. If rainfall became short in the Middle East, for example, and is increased in Siberia, the climate where the increased precipitation occurs does not enable the production of the same crops that used to be grown in the original region. This challenge will trigger scientific research to devise ways of producing the needed crops in territories where natural climates are an obstacle for such production.

As climate change negatively impacts the water resources of a certain region, the perennial flows of rivers crossing those regions become more dear to each riparian party. So will also be the case as far as shared groundwater aquifers are concerned. Close cooperation between the riparian parties becomes more important. The charters of regional cooperation should be attended to and updated to avoid violent reactions by a downstream riparian to practices of upstream riparian parties.

I am also a believer that mankind will intelligently seek ways and means to avert its extinction or a steep decline in its living standards. I, like many other professionals, see it imperative that

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mankind invent a new way of energy generation that will be environmentally friendly, operable with ease and affordable for use. Fossil fuel sources are being depleted with incremental use and finite supply, and I cannot imagine mankind will be left without energy generation options before the fossil fuel runs out. This has been displayed clearly in the history of power generation: from dry weeds and branches, to wood, to coal, to hydro-power, to fossil fuel and finally to nuclear fission. The hopes for incremental need for water and energy will more likely materialize in a forthcoming breakthrough in energy generation technology which will enable the desalination of sea water and augment the energy supply.

I have taken of your time more than I intended to, thank you for listening.

28/08/2018



HE Dr.Munther Haddadine.

Former Minister of Water and Irrigation

Dr. Munther Haddadine: Phd in Civil Engineering, former President JVA, former Minister of Water and Irrigation, former member of the Peace Treaty negotiators team, holder of the water portfolio, renowned expert and lecturer on water issues, Head of the Board of Trustees Jordan University of Science and Technology, member of the upper chamber of parliament of Jordan.

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Regional Collaborative Water Management Approach in the Middle East

Ahmet Süha Umar
Former Ambassador to Jordan (Rtd.)
HPA Hydropolitics Academy Center-Turkey

ABSTRACT

We have always been told that life has started in water. We do not know it for sure but we know that without water there will be no life. Water is so crucial.

And water is scarce. At least it is now, due to the fact that world population has risen to today's level and it is still rising.

So people started talking and writing that soon we would find ourselves in "Water Wars." And these most probably will be fought in and around the Middle East which hardly needs another war or conflict.

This is an imposed perception and it is being imposed on the peoples of the Middle East deliberately as if there was no other option.

If war is being considered as a means of reducing the population so that the available water resources suffice then it makes sense but a bad one.

If this option is being promoted to sell more arms to the will be fighting sides again it makes sense but a cruel one.

When water, so important element of life is the issue the key word should not be "war" but "collaboration."

If a resource is scarce and getting even more scarce every day then the aim should be working together in order to make it available for all and as long as possible. This makes better sense.

Roughly speaking there are five main rivers and their basins in the Middle East, Turkey- although not a Middle East state- included: Firat (Euphrates), Dicle (Tigris), Asi (Orontes), Jordan and the Nile. All these rivers originate in one country, transcend one or more others and join the sea/lake in another.

So the picture is clear: As the resource can not be increased forever, all those countries are obliged to cooperate in order to make the best use of what is at their disposal.

This cooperation should aim at rational and optimum use of water resources of the region and should be based on accumulated and scientifically evaluated data.

The "Three Stage Plan" which Turkey had proposed to Syria and Irak in 1984 was based on such an approach. Three Stage Plan or a similar one may still be the best option for the peoples of the region.

Middle East countries which share the same environment, face with similar water problems. Problems on the other hand could and should be an incentive to facilitate and promote regional cooperation that could in turn also help solving political, social and economic issues. As decisions we made today will have a significant impact on future we are obliged and responsible to avoid water crises in the region and around also for the well being of future generations.

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Regional Collaborative Water Management

Some twenty years ago around this time, in November 1998 to be precise, I said good-bye to Jordan as Turkish Ambassador to the Hashemite Kingdom.

The three years I was in Amman were again hectic and turbulent times in the Middle East -when it was not?- and more than that Turkey and Jordan were about to be at odds due to some words spoken by the then King of Jordan that wonderful personality, His majesty the King Hussein and the experienced statesman, the late President Demirel of Turkey.

With the invaluable help and support of King Hussein, Prince Hassan and all those close friends of mine some of whom are sitting among us today we were able to mend ties quickly and brought the relations of our two countries to a level maybe never reached before.

This state of affairs between Turkey and Jordan has also helped to bring in Israel and for the first time in history the three countries has started a strategic partnership dialogue among them.

I was from the very beginning involved in this process and tried my best to promote and encourage this kind of relationship and even dreamed of enlarging the group to include Egypt and others. Emir Hassan and the then Prime Minister Abdul Karim Kabariti shared and supported this opinion.

My personal involvement in Middle East affairs had come as a result of the first Multilaterals held in Moscow in 1992 of the Madrid Peace Process. I was the Deputy Director General for International Security and Disarmament at the Ministry of Foreign Affairs and believed that with her long NATO and OSCE (now CSCE) experience Turkey could be of assistance to encourage meaningful dialogue and promote cooperation among the states of the Middle East. And this idea paid off rather unexpectedly and well.

The key words were “dialog” and “cooperation”. Only through these the region where a “crisis of confidence” were reigning for decades if not centuries could develop a feeling of security and solve many problems that prevented the countries of the region from achieving the positive progress in all fields. Something which they all longed and deserved for so long.

One of the crucial issues the region was facing with was water.

Except air, two elements are indispensable for life: Bread and water.

By the way, I just learned that Jordan with recent discovery of bread crumbs in Qa'Shubayqa in north-eastern Jordan have beaten Anatolia by nearly 5000 years as the place where bread was first baked.

Bread, I mean food we may increase its production although not indefinitely and for this too we need water.

Water is another matter though.

Water is a natural resource which the humans have very little influence on its quantity and quality except in the negative.

So we have to settle for what mother nature provides us with. And although we call it "mother", nature seldom is totally just in its distribution. So there are "haves and have nots" to various degrees.

Irak for instance is a water rich country.

Contrary to what is being pumped by some, Turkey on the other hand is not a water rich country according to the accepted criteria. And it is becoming more and more water poor due to many reasons including the climate change as a result of global warming or for its own repeated mistakes made in the course of many years.

Jordan is in desperate need of water and the need is becoming more and more pressing.

Reasons of it starting from inability in optimal use of water to pollution, non implementation by Israel the 1994 Wadi Araba Peace Treaty are all well known to you so I will not dwell upon them.

I will not involve in any technicality of the water issue either as I am not a water expert.

What I will in short try to give my opinion is how the crucial issue of water should be dealt with and solved to the benefit of all in the region.

And this is not an easy task as opinions as well as expectations widely differ and in the majority of cases they are quite selfish.

I remember for instance a very friendly but frank in terminology an encounter with His Royal Highness Emir Hassan by the side of the fireplace in his study room late one night when he asked my friend the then Water Minister Haddadin to read out his contribution to a water conference in Istanbul. A contribution which did not please Ankara at all.

We have to understand that rivers that are flowing through the Middle East be it Fırat (Euphrates), Dicle (Tigris), Asi (Orontes), Jordan (Şeria) or Nile are all "transboundary" rivers.

We have to admit also that no one will readily agree to "share" the waters of the rivers that originate in its land with other countries which these rivers later flow through.

Trying to attach different description to these rivers and to force "sharing" of their waters may make the much talked about "water wars" a dreadful reality.

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However, another war or armed conflict of any other kind is the last thing the Middle East, that war and armed conflict thorn region should be looking forward to.

And this idea which is being put forward as if there were no other options is in my opinion is a deliberately “imposed perception” which if and when occurs will only serve the interests of main arms producers and will cost dearly to the peoples of the region.

Water issues whether national or international can only be dealt with satisfactorily through collaboration/cooperation of directly influenced and interested countries. As water is scarce and getting more and more scarce every day and that we the humans have nearly no say in increasing the amount nature provides us with key phrase for such cooperation is, “equitable, optimal and reasonable allocation of the use of water.”

The very first step in this direction which each and every country should take independent of other interested parties is to save and not waste and pollute water.

Next comes data collection which should be made through long years and using scientific methods. Data collection is crucial as only through reliable data we can make the right decisions on allocation to and use of water by cooperating partners. Right decisions will make the optimum use of available water by countries through which the rivers in question flow possible and bring high benefits in terms of valuable crops.

For those who are familiar with the issue and followed developments long enough these words of mine will surely bring into memory the Three Stage Plan which Turkey had proposed to Irak and Syria in 1984.

The Plan foresaw the three countries getting together to evaluate available data on the flow of Fırat (Euphrates), establish the real needs of each and try to decide on an “equitable, optimal and reasonable allocation of the use of water” of the river.

To sum up, be it another three stage plan or call it something else the solution to the crucial and vital water issue in the Middle East in general or Jordan in particular lies in cooperation.



Ahmet Süha Umar
Former Ambassador to Jordan (Rtd.)

Born in Istanbul in 1945. Graduated from the Faculty of Political Sciences (Ankara University) in 1966. Served as counsellor and Deputy Permanent Representative in Turkish Delegations to the Council of Europe, NATO and the CSCE/OSCE. In 1995 appointed as Ambassador to the Hashemite Kingdom of Jordan. Retired voluntarily in 1999. Upon request of the Minister of Foreign Affairs returned to duty and appointed

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as Director General for Bilateral Political Affairs. Served as Ambassador of Turkey in Belgrade-Serbia between 2008-2010.

He has written two books ("Belgrade. 500 Years Later" and "Desert Patrol. Jordan Memoirs".) and many articles. He is a section chief of Hydropolitics Association.

Presented at the Round table expert meeting on water resources management for Jordan, organized jointly by Darat Othman Bdeir (COE) GJU and Hydropolitics Academy-Turkey in Amman, Jordan August 28th 2018



His Royal Highness Prens El-Hassan

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Development, climate change and water for Jordan

By Kamal Jalouqa, Industrial professor, SABE-GJU

Foreword: Jordan is a middle eastern country which is strived by many challenges. First, it is located at the fringe of the desert with limited water resources unequally distributed over its territory. Second, it is situated in the middle of continuing political struggle resulting in huge numbers of displaced population totaling to 30% of its population of 9.5 million in 2017 estimates. Third, it is poor of energy resources compared to it's oil rich neighbors. And it's severely poor in water resources. But, these limitations have created some virtues which developed over time: It has a stable economy, stable political system and a well -managed state. As a result, 98% of it's households are serviced with running water which is rationed to once in week time, but the population has adapted to the situation. This paper discusses how socio-economic and spatial planning react to the needs of the population in light of a global climate change.

The natural terrain: Most of Jordan's territory consist of a dry desert terrain which receives as little as 50 millimeters of rain per annum, and arable land is only 5% of the area of the country, and natural forest cover is less than 1%. And receives 300-600 mm of precipitation that allows for rain fed agriculture. Ironically, this part of the Jordanian terrain, the arable lands, is also the place where most of the urban and rural settlements occur, causing an un-revocable loss of agricultural land and speeds the loss of the moister content of the soil that historically supplied the ground water reservoirs. Geographically speaking Jordan is located in strategic location between Syria, Iraq, Saudi Arabia and Israel, giving the country a competitive edge in terms of connectivity to countries far beyond it's close neighbors.

The socio-economic situation: Jordan's population consists of descendants local Arabian tribes who were indigenous to it's land since early history, and generations of migrants and displaced people who were naturalized and treated on equal basis by the state, and live in harmony among themselves. Industry, services and trade and remittances of Jordanians working abroad are the main sources of income. Socio-economic and institutional planning is well perceived since the 1960's and the real estate market is facing most of the demand on residential land and serviced land for commerce and services. It is worth mentioning here that conversion of land from agricultural to urban is over-done due to lack of planning vision at the beginning, responding to high demand and real-estate activity. It was estimated that the zoned area in Greater Amman was sufficient to house about 12 million inhabitants, while the estimated population after twenty years as stated in the Greater Amman comprehensive plan of 1987 was barely exceeding 2 million. The second plan of 2008 came up with a similar conclusion that there will be no need to zone additional lands to accommodate the expected population until 2028. But, over-zoning is continually eating up agricultural land outside the capital area.

The current population of Jordan of 9.5 million among which three million are refugees from neighboring countries and guest workers is fairly well accommodated for in the zoned and serviced urban lands, and apartmentisation (building in 4 floors apartment buildings rather than single family houses) is well underway.

Demand for water and shrinking resources: Climate change is contributing to worsening the water balance sheet for Jordan, through loss of agricultural land, flooding and unprecedented dry seasons. It is expected in a discussion paper prepared by UNDP for the Ministry of Environment in 2017 that the situation will worsen and strict planning and management will be needed.

Alternative water resources:

- Better management of water use, through decreasing loss and un-accounted-for water, water saving devices and practice, flood management, terracing and forestation etc.
- Pipeline intake from Euphrates system 1-4 BCC/year
- Pipeline from Seyhan - Ceyhan system in south-western Turkey (peace pipeline) up to 500 MCM/year and even to 1 BCM as initially indicated in the project idea presented by the late Turkish president Turgut Ozal.
- Water from air 10-50 MCM/year
- Desalination at deep sea- Mediterranean & Red Sea 100-200 MCM/year
- Deep aquifer utilization 500-800 MCM/year
- Aquaponics agriculture saving 200-500 MCM/year
- Roof gardening to decrease concrete surface 200-500 MCM/year
- Green Jordan initiative, forestation, controlled grazing etc

Facts on the water situation

- Jordan consists of 15 surface water basins and 12 groundwater basins.
- The number of operational wells in Jordan exceeds 3000 wells.
- Quantity of renewable water resources for different purposes is around 780 MCM for 2015.
- The safe yield abstraction quantity from renewable groundwater is 275 MCM annually.
- The safe yield abstraction from non-renewable groundwater for 50 years is about 143 MCM annually.
- Quantity of pumping from renewable groundwater is about 160 MCM for 2015.
- The drawdown from static water level between 1-20 m yearly.
- The estimated water demand quantity for all sectors is 1400 MCM for 2015.
- 40% of Jordan's water resources is shared water.
- The water sector consumes about 15% of total electricity consumed in Jordan.
- The non-revenue water is estimated by 52% for 2015.

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- Each Syrian refugee costs the water sector around 440 JD/year.



Presented at the Round table expert meeting on water resources management for Jordan, organized jointly by Darat Othman Bdeir (COE) GJU and Hydropolitics Academy-Turkey in Amman, Jordan August 28th 2018

Dr. Kamal Jalouqa

Freelance Consultant, Industrial Professor of Spatial Planning

He got his bachelor degree of City Planning from Middle East Technical University, Ankara, Turkey in 1978, Masters of Development Planning, Regional Development Planning from Institute of Social Studies, The Hague, The Netherlands, 1982

As a professional planner, He is one of few in Jordan who take planning as an integrated science that study social and economic factors of urban and regional development and overlay them of natural, environmental and physical dimensions to come up with integrated plans that are both implementable and measurable over time. Received additional training in management and public administration, economic feasibility of public and private projects, data base management, remote sensing and land classification and analysis of land uses, Environmental Impact Assessment EIA, Traffic Impact Assessment TIA, GIS and computer applications.

Over 40 years experience in Urban and Regional Planning, Mega Projects Planning and Design, Traffic Impact Assessment TIA, Airport Planning, Major Transportation and Road Studies and Special Area and Heritage Area Planning.

The most outstanding experience of Jalouqa is his ability to manage complicated urban and regional development planning projects and the development of Mega Projects. He gained this ability working for distinguished organisations such as the Greater Amman Municipality and the Amman Urban Region Planning Group (AURPG), Ministry of Planning, Jordan, Ar-Riyadh Development Authority, Riyadh, Saudi Arabia, Directorate of Town Planning and Survey, The International Expert Round Table Meeting on Water Resources Management for Jordan, held at Darat Othman Bdeir, German Jordanian University, in Amman – Jordan on August 28th 2018:

Sharjah, United Arab Emirates, Sigma Consulting Engineers, and many others on a variety of assignments. In his capacity as Industrial Professor at the German Jordanian University he supervised major graduation projects for students of Architecture

Registered as an expert in resolving land disputes at the court of law, and in addition to his technical capabilities he has proven managerial and teaching skills and work experience with international companies and aid agencies.



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An Alternative Source of Water for the Middle East:

An Alternative Source of Water for the Middle East:

”The Piece Water Pipeline” and Innovative Hydro Diplomacy

Is Turkey’s “Peace Water Pipeline Project” worthwhile to be considered again ?

Dursun Yıldız

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ABSTRACT

After completion of the water pipeline project to Cyprus in 2017, bulk water transfer projects to the Middle East has drawn some more attention than before. Although implementation of the Red-Dead Sea Project hasn’t progressed well, the Project has been considered as an alternative for bulk water transfer in the region

About 32 years ago in 1986 ,Turkish Prime Minister Turgut Özal had proposed a “Peace water Pipeline” Project for the Middle East Water Problems. The Project has drawn considerable attention and caused both negative and positive reactions. Political Feasibility and financing of the Project had been argued more than it’s Technical Feasibility.

Preliminary studies on the Project were initiated in 1986 .The ultimate aim of the Project was much beyond of the supplying some water to the countries. The Project proposal mainly aimed to create a process of confidence building and a cooperation environment on water that will help to contribute to the stability and security of the region

During past 32 years after the Peace Water Pipeline Project proposed , water demand has increased ,while the water management has been worse under the political and climatological effects in the region.

As many areas in the Middle East, Jordan is struggling with scarcity of rainfall, diminishing of water resources and increase in population . It is not certain yet if the current water management strategies and the suggested Red Sea- Dead Sea project will be enough to solve this problem. Therefore among the other new water resources

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alternatives , Turkey's Peace Pipeline Project proposal can be worthwhile to be considered again with different length and route .

The Original Project would divert the water from Seyhan and Ceyhan Rivers ,both national rivers of Turkey ,to the Arab Countries in the Middle East. Daily water transfer capacity of the Project was 6 MCM that is only a small part of mean total daily flows of the rivers after Turkey's use .

The water would deliver through the peace pipeline is not intended to replace, but rather supplement current water supplies in the countries served. The Project had an estimated cost of US \$ 20 billion about three decades ago.

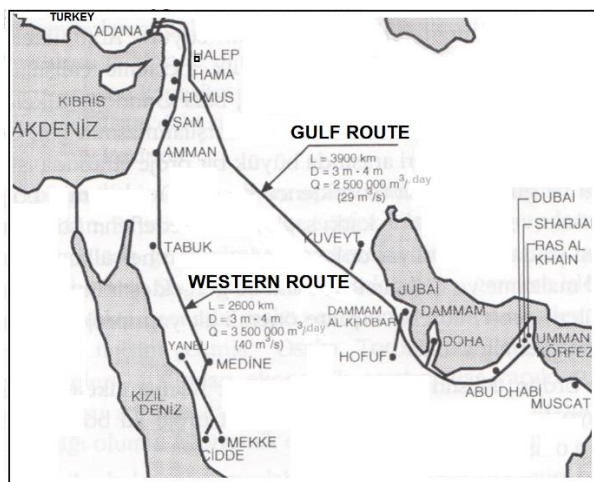


Figure 1. Peace Water Project (10)

While considering sustainable water resources management for Jordan , among alternative options we will analyse “Turkey's Shorter Peace Water Project ” in the international Expert Round Table Meeting .

What to do for innovative hydro diplomacy

- Demonstrate political will to manage natural resources in jointly planned projects
- A Regional approach instead of classical one
- Win win method instead of zero sum
- High level economical integration
- The process must be a continuing one
- The activities should always be ongoing in order to keep up interest
- New activities should be initiated periodically with the participation of all parties concerned

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Dursun Yıldız (CE IHE)

Civil Engineer-Expert on Hydropolitics

He is a civil engineer with a 25 years of past experience on water resource development in the State Hydraulic Works in Turkey. He attended a post graduate programme in the Netherlands and USA. He got his MS degree on water politics in Hacettepe University in Turkey. He lectured in different universities, and has written fourteen books and several technical reports, many papers. He was awarded Successful Water Researcher Prize of 2008 by Association of Agriculturalists of Turkey. He was also awarded continuously success on water research prize of 2016 by Central Union of Irrigation Cooperatives of Turkey.

He is a member of Scientific Committee of Turkish Foundation for Combating Soil Erosion (TEMA). He is now the director of an NGO called Hydropolitics Association, and runs a company, Ada Hydro-Energy, Strategy & Engineering Consultancy Co.

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Tranboundary Water Cooperation and Climate Change

By Eng. Zainab Abu Zaid
Director for Jordan River Basin Development

Headlines:

- Current Situation and Future Needs for water sector in Jordan
- Key performance issues for the water sector
- Water supply:
- Sanitation
- Affordability
- Drinking water quality
 - Vulnerability and Adaptation Strategies
 - According to Jordan's Third National Communication on Climate Change, the climate change vulnerability assessment indicated severe (high) vulnerability of the water sector (sensitivity level = 3.71 / 5)
 - Adaptation strategies and measures proposed for the water sector are :

- (1) Rainwater harvesting
- (2) Wastewater treatment
- (3) Desalination
- (4) Increasing Efficiency of irrigation technologies
- (5) Grey water Reuse
- (6) Public awareness.

Lower Jordan River Rehabilitation Project

The effects of climate change on regional water



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Engineer.Zainab Saleem Mohammad Abu Zaid

She got her BSc degree in Chemical Engineering /University of Jordan in 1990 and MSc degree in Climate Change and Dry Lands Sustainability/Master Program of Environment Engineering and Climate Change

Se worked as operation and process engineer in some companies, Head of Technical Support for WWTPs . Se used to be *Technical Assistant for the Minister Advisor /Engineer Yusuf Hassan who represents SMU OF WORLD BANK in 2012 . She has been working for Jordan Valley Authority since 2013 on Jordan Red Sea Dead Sea Water Conveyance project. She used to be Head of Regional water Division / Business Planning and Regional Water Unit between 2013-2015. She is Director of Lower Jordan River Basin Development section since 2015*

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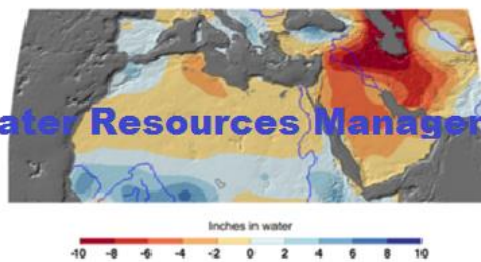
INTERNATIONAL EXPERT ROUNDTABLE MEETING

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