the Hollings Center
for international dialogue

UNIVERSITY OF CENTRAL FLORIDA
PRINCE MOHAMMAD BIN FAHD PROGRAM FOR STRATEGIC RESEARCH AND STUDIES

Dialogue Snapshot
High and Dry: Addressing the Middle East Water Challenge
May 2014

Often overshadowed by its political turmoil, the Middle East faces increasing environmental and resource-based challenges, such as depleting water resources. Recognizing the need to find possible collective solutions, the Hollings Center and the Prince Mohammad bin Fahd Program for Strategic Research and Studies at the University of Central Florida convened a conference to address challenges and opportunities in conservation, and analyze prospects for and obstacles to cooperation on water issues. To that end, the organizers brought together a diverse group of 20 experts that includes academics, scientists, regional water specialists, private sector representatives, and policymakers from the region and the international community. The dialogue aimed to promote innovative thinking to find possible solutions for governments and the private sector in the region and beyond.

Through the dialogue, participants came to the following conclusions:

- Though each country has its unique issues with water, it is a global problem. There is no place in the world where water is a non-issue and where people are happy with water price, quality of service, etc.
- Money and technology alone will not solve the problem. Structural intervention is needed while being highly considerate of societal and cultural constraints. Creating space to solve those constraints will be difficult mainly because of a lack of political will to address the problem comprehensively.
- Countries that have financial resources, leadership, stability, management paradigms, and a competent bureaucracy have made some significant progress in addressing the issue. Countries lacking one or more of those factors have not fared well.
- People expect water as part of their social contract with the government. The tradition of subsidies exacerbates this idea of entitlement and the inability to raise awareness about responsible water use.

Photo by Ulaş Tosun

- Trans-boundary water management is complex and competitive. Still, there are best practices that can be models for cooperation on both formal and informal tracks.

NAMING THE CHALLENGE

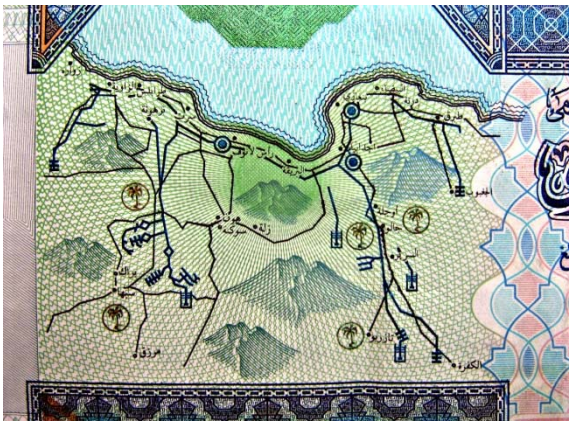
Participants first identified some of the imminent challenges in the Middle East. The first and most obvious matter is that there is just not enough water in this arid region. Even where there are major rivers such as the Tigris, Euphrates, or the Nile, there is a problem of overuse. The second most pressing issue is changing demographics: urban population is rising rapidly in parts of the Middle East, straining infrastructure. A participant mentioned that this region has the highest per capita usage of water despite lowest amount of water resources. Subsidization has resulted in irresponsible use of utilities. For policymakers, the political price of ending subsidies in favor of demand management policies may be too high. An interesting comparison was Denmark versus Saudi Arabia. In Denmark, the consumer price of water is 1000 times higher than in the Kingdom of Saudi Arabia, but the cost of producing that water is significantly higher in the KSA (over $10 USD per cubic meter in Denmark vs. 3-4 cents in KSA.) There are not many good practices in the Middle East regulating the use of water, neither in urban households nor in rural areas for agriculture, which is still the main consumer of water. A final challenge that participants raised was that there is great investment in infrastructure, especially in countries with high oil revenues; but there is not much attention paid when it comes to operating the infrastructure efficiently.

In spite of the dire and pressing matters, there are also hopeful developments. For instance, technological improvements are providing good solutions to the abovementioned problems. Desalination was the predominant technology that participants talked at length about. A desalination expert noted that the cost and energy needed for desalination is reduced year by year. Other good news is that waste water retreatment/reuse has improved. And finally, the growing involvement of the private sector, with the government role being redefined as the regulator, is very promising. While there are obstacles to public-private partnerships, new models are developing in some countries.

Participants discussed specific countries, noting both the development of best practices and the continual presence of urgent challenges. Participants noted the following country-specific issues:

Al-Wand River at Khanaqin. Source: PUK Media / iraq-businessnews.com

In **Iraq,** prior to the recent outbreak of hostilities, water was badly mismanaged by the Ba'athist regime, which also used it as a political tool. That legacy continues today. The Kurdistan Regional Government wants to establish its own water law and manage own water resources, which is a point of tension with the central government. Diplomatic tensions with neighboring countries such as Iran and Turkey are also very risky, as these countries may use the advantage of being upstream and use water as leverage. A participant noted that Iran's recent cut in the flow of Al-Wand River in 2012 created severe problems for Iraqi farmers.



Map of the Great Manmade River water project in Libya - as seen on the 20 dinar currency. Source: Wikimedia Commons.

Libya is a country with resources that is grappling with water issues. There is no political will to address better usage of water despite the high intellectual and educational level of the politicians. Libya needs time and outside assistance so that politicians and the public can see best practices and learn how transition is done. The disassociation of water as an economic value needs to be addressed. During the civil war, both sides protected the oil pipelines, but not the water infrastructure, which was damaged. The Libyan participant highlighted the leakage problem with the Great Man-made River, a pre-Qadhafi era project that cost $45 billion USD and took 30 years to build. Libya is looking at desalination as a solution.

The institutions and legal power are in place in **Saudi Arabia**. The creation of the Water Ministry in 2001 ushered a new era of water management, implementing country-wide water strategy for the first time. The strategy comprised better waste water treatment and use, creating a market for treated water, implementing better desalination techniques, and creating a national water company to improve private sector involvement. There is solid public-private partnership in the water sector to implement the right policies. There has been significant investment in water-related research, which is now paying off. The private sector added efficiency by improving distribution, waste-water recapturing and reuse. Agricultural reform is taking hold: within 3 years, fodder will be grown in greenhouses and wheat will be phased out.

In **Jordan**, where extreme water shortage is exacerbated by the growing influx of Syrian refugees, there might be light at the end of the tunnel thanks to the Red Sea – Dead Sea Water Conveyor project. Despite its potential side-effects such as changing the ecosystem in the Dead Sea by carrying brine into it, the project is expected to supply 800-1,000m cubic meters per year, to be shared by the participating countries. In **Palestine**, a potential beneficiary of the project, more efficient water policies may not be possible to implement due to deep-rooted issues of distrust surrounding the Israeli-Palestinian strife.

> ***"With these model policies and strategy, we are planning for the future. We will be able to survive on desalination and will leave our kids something to live off of."***
>
> ***Saudi participant***

Due to the current political instability, insecurity, and fast-diminishing resources, **Yemen** was the focus of long discussion. A Yemeni participant stated that the country cannot meet the basic needs of the population, especially water. First, there is a vicious cycle of subsidies in Yemen: diesel subsidies make tribe leaders rich as they buy cheap diesel and smuggle it to Ethiopia and Somalia, creating shortages and inequalities in Yemen. Second, 30% of the groundwater is used for cultivating qat, a narcotic plant used locally with no export value. Therefore it is important to invest in education and training to overcome qat addiction, especially among the youth. Qat reform should be a part of greater agricultural reform, as it is the key in addressing water issues in Yemen. One participant thought: "New generations forget the knowledge of their grandparents on good water

management. The doubling of the population hasn't helped." If we consider that around 75% of the conflicts in Yemen are caused or shaped by water, rebuilding local knowledge, old techniques, getting local communities concerned about resources, and working collaboratively might prevent conflict.

LOCAL AND REGIONAL WATER POLITICS

Middle East hydropolitics is contentious and complicated. As one participant stated, "our thinking has evolved from 'all politics is local, all water is local' to 'all water is regional and global.'" Hydropolitics is both an interstate issue and an intra-state policy platform. Another participant noted that in some cities in the region, for instance in Istanbul, slums are purposefully kept away from water resources either to leverage their voting potential or to punish them politically. Participants agreed that water has been used as a manipulation tool. People expect water and basic services as part of their social contract with the government. So any step taken to manage either the demand or the supply side has to be calculated carefully, lest there be unwanted political consequences.

Economic factors are certainly the number one driver for water politics. A participant claimed that where water services and systems have improved, this improvement has not been driven by people who benefit from it. Rather it has been driven on the industrial side or because of economic concerns. This is a blessing in disguise because as long as there is an economic case to be made, it is possible to convince policymakers and constituencies alike to be more responsible about water. A participant noted Tunisia as a best practice of incorporating environmental and economic impact in water policy. Another participant who is an expert on water productivity said "if we implemented the economic optimization of water needs, many societies in the Middle East would look different. For instance Egypt would move away from an agricultural economy to a manufacturing-based one. But would those societies make that choice? Probably not. There are traditions and ways of living that have been there for centuries." In response, a participant stated, "In the Middle East, what makes sense from an economic and sustainable development point of view may not be politically feasible."

> ***"The political time frame has become the water planning time frame, which is rather short-sighted."***
>
> ***U.S. participant***

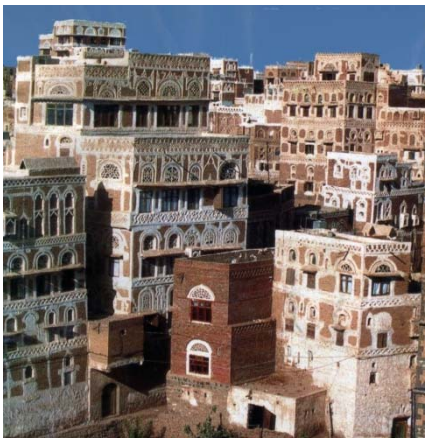
The dialogue touched extensively on governance and management of water. A participant asserted that water has been managed very centrally in the Middle East. She said, "Participation in water development came to the West after the '70s and it still has not come to this part of the world." Governments are defining the rights to water, at best simply paying lip service to citizen participation. Citizens and civil society are not consulted; they are just given information if given any at all. Moreover, water and agriculture ministries have traditionally been weak and disjointed, with some politically devolved from having actionable executive power. Even the imminence of the issue may not be able to unite people under good policies. Good institutions need to be in place for there to be good governance. These institutions need to be the guarantee of the rule of law and *pacta sunt servanda* no matter who is in

power. This is necessary so that discontinuations in governments do not harm agreements and treaties that are already in place.

A final determinant of water politics in the Middle East is food security. Countries in the region regard food self-sufficiency as a sovereignty issue and a matter of legitimacy, which affects the wise and efficient use of water. Regardless of the unproductivity and unprofitability of using groundwater to cultivate certain crops such as wheat, many states still resist importing these crops at the expense of resource sustainability.

INTERNATIONAL COOPERATION AND THE ROLE OF OUTSIDE SUPPORT

Recognizing the need to see water as an international issue, participants debated the modalities of regional and international cooperation. They agreed that there are three strong roadblocks to international cooperation. The first is the demotion of water to a lower-level priority, especially when comparing it to the major security crises in the region. A participant who has access to Washington, D.C. policy circles stated that there is no political will in the US to provide aid on these issues and no popular backing of increased foreign aid. But there is a huge military initiative against AQAP (Al Qaeda in the Arabian Peninsula) in the south where $100-120 million USD per year is spent bilaterally. He went on to call this approach "the brutal reality of the U.S. focus in Yemen."



"Sana'a is expected to become the first urban area in the world to run dry. DC's 'It's their problem' attitude needs to change." - U.S. participant

Photo: Wikipedia

There was objection to this approach from others, suggesting that water is part of not only 'soft security', but also conventional security. For instance in Iran, water plays into all other issues such as nuclear negotiations. If Iran does not have the political will to improve water usage, it may need to use desalination techniques, which will require huge amounts of energy, which will push it towards nuclear sources. Another striking example is Jordan, where water scarcity exacerbates and complicates their refugee crisis. Yet another example is Egypt: a leaked military conversation suggested that Egypt was ready for military action if Ethiopia builds the Renaissance Dam. An expert on Syrian water issues drew attention to the fact that the uprising in Syria was brought on by water problems. In the mainly agricultural town of Dara'a, mismanagement of water damaged the producers there and forced people to change jobs, some even had to resort to smuggling. This economic pressure created additional tensions and triggered the latent anger to boil up against the Assad regime. Participants concluded that U.S. interest at the highest level possible could be a game changer, especially to encourage water agreements that may be considered as steps towards regional peace. Understanding the possible security implications could help reframe this as a larger priority in U.S. foreign policy.

The second roadblock is the misperception that international cooperation on the issue is not possible. Trans-boundary water management is complex and competitive. Historical rivalries between countries, uncoordinated water development, strict positions and focus on sovereignty are factors that hinder cooperation at the regional level. However, there are examples of good international cooperation. For example, the impact of Millennium Development Goals has been very positive especially in Morocco, Tunisia, Egypt and Palestine. The role of UN organizations has been instrumental in improving the waste water management in the region. The Gulf Cooperation Council (GCC) invests a lot in Africa, for instance through building dams. Another good example of international cooperation is in Yemen, where the Water and Environment Center is working with the Netherlands to look at community role in conserving groundwater. Participants also debated the Red Sea – Dead Sea project and there was a general sense that this is also a promising point of cooperation despite environmental concerns.

> ***"Negotiation is a symbol of cooperation but in the Middle East it's on and off. The best way to cooperate is to be patient, but that is not helping the environment."***
>
> ***Turkish participant***

A participant who has extensive experience in Track II water initiatives noted that nongovernmental efforts have been increasing lately, evidenced by the Euphrates-Tigris Initiative. Established in 2004, the initiative brought together mid-level technocrats with engineers for capacity building and training. The political environment was conducive and in 2006 water ministers of Iraq, Turkey and Syria met for the first time in Mexico City. The initiative built confidence and provided access to policymakers. One challenge that is emerging in these efforts is that "there are more players than there used to be and the roles are more blurred." Another challenge is that "it takes long to negotiate water." This is a problem not only because resources are running short, but also in the Middle East there is no guarantee of long-term stability. A participant pointed at Syrian – Turkish cooperation and noted how the current deterioration of relations and institutions have rendered cooperation impossible.

The third roadblock is the insufficiency of international institutions. Though they help the state apparatus figure out joint interest and be cooperative in this competitive international system, treaties or joint technical committees are not comprehensive and most are bilateral as opposed to multilateral. Many stakeholders complain that they are not included sufficiently, for instance in the Nile basin or the Jordan River case where there is limited Palestinian participation. The other problem is the focus on water quantity rather than quality. There are no monitoring mechanisms and many loopholes. Joint technical committees tend to be dominated by either upstream or downstream countries and do not culminate in a treaty. A lot of these treaties are outdated.

When it comes to cooperation between non-wealthy nations and wealthy countries, there is the problem of donor-dependence. Donor countries dictating solutions is a hurdle to recipient countries developing homegrown responses. However, there is room for cooperation in science and technology; and training politicians on how to negotiate. Wealthier countries like Saudi Arabia are ready to put the resources on the table, but need conducive conditions; in other words they need security and stability. They also have certain conditions such as the projects should benefit the community, there should be an environmental

impact assessment, and contractors should supervise funds to ensure there is no misuse. The role of the World Water Council is significant in determining priority regions for aid. A participant suggested that rather than direct aid, wealthier countries could build wastewater treatment plants in exchange for the recipient country to use the treated water for productive purposes.

A much-debated dimension of international cooperation was outsourcing grain / fodder growth to African countries. While it makes sense from a water conservation and international cooperation perspective, the process for allocating land to an outside country in the host country may not be transparent and might be creating further injustice and tensions. Participants engaged in an interesting discussion here regarding the ethical dimension of outsourcing certain crops and how to avoid potential issues of exploitation.

IS TECHNOLOGY A GAME CHANGER?

Before the oil boom in the '60's, populations in the Middle East were much lower and were able to get by on groundwater. The multifold increase in GCC populations in the 1970s and '80s strained water systems. To complicate matters, the oil production that spurned growth of populations and the economies of some of the states is a water intensive process, making groundwater insufficient. In the states without extractive resources, technology also played a role in exacerbating water shortages and mismanagement. Cheap fuel subsidies, combined with mechanical water pumps resulted in agrarian communities abandoning traditional water harvesting methods for agriculture. This resulted in an unsustainable expansion of agricultural activity and population growth, both of which have depleted aquifers.

Al Jubail Desalination Plant, Saudi Arabia.
Photo: acciona.com

Several states began to recognize the problem in the 1970's and began to establish desalination infrastructure. Thermal desalination came first – it was not efficient but was widespread. Then membrane technology was developed in the '80's, followed by reverse osmosis technology. The GCC saw that this technology could be used and constantly improved with few hiccups and produce large amounts of water. Most of the Gulf is now dependent on desalination for drinking water – countries like UAE and Kuwait do not have enough groundwater to use in case of an emergency. This poses a serious sustainability threat and a security weakness as desalination plants are big, indefensible structures along the coast. Other disadvantages include environmental impact: by 2020, desalination will have produced 264 million tons of CO_2 along with other chemicals dumped into the sea. Increasing salinity of the water has negative consequences for marine life and changes currents, which in turn causes climate change. Thus there will likely be a cutoff where the Gulf will no longer be able to desalinate water.

Participants also discussed the merits of solar desalination. The solar technology is more expensive (about $1 per cubic meter) but the cost of PV panels is going down. So it is realistic to expect a technological

breakthrough where solar will make more economic sense. Others expressed concern that progress was not at a fast enough pace: panels are now around 24% efficient and need to reach 50%. Experts were not sure if this could be achieved in the next 20 years.

The dialogue explored alternative technological options. Aquifer recharging was discussed since water storage is limited. For instance, the UAE is looking into putting desalinated water into the ground. Others suggested putting treated wastewater into the ground as is done in Singapore. Some participants raised concern that new agricultural techniques, rain capture and reuse, improved efficiency of water consumption (such as low-flush toilets), new desalination technologies are all good news but the countries with the most urgent need like Yemen and Egypt cannot afford these.

Remote sensing tools such as NASA satellites produce valuable data (as micro as field-level) on crop management efficiency, monitoring water loss, which contributes to better water distribution, but the question is: how do you make more informed decisions with better technology? Participants agreed that technology can provide the tools and information for better management. But countries need applied research for that. In order to encourage applied research, funding is necessary, serious partnerships between academia and the government are crucial, social, culture and economic roadblocks to independent research need to be tackled, and the industry needs to be involved. Also, funding agencies should focus on spending the money where the research is done, and think harder about what is immediately needed.

MANAGING THE DEMAND

Whether discussing resource scarcity, a management problem, or an international dispute, the key to tackling water issues is demand management. As one participant aptly stated, "You cannot innovate your way out of an environmental problem. Conservation and effective management of demand is going to have to play a role in the long-term strategy." Participants discussed how that could be done, especially in light of the social and cultural challenges to employing conservation strategies.

> ***"We focus on technocratic solutions because they don't change the value structure of societies. The larger socio-economic imagination we need to solve these problems is missing."***
>
> ***U.S. participant***

A very important diagnosis was that people do not understand water as a system, thinking of it only as a service. In some countries with heavy subsidization, people also do not understand it as a commodity that comes with a price - a high price. Moving towards transparency about the cost of water, by putting a price on it, will be important. One participant stated that in the UAE, the water bill tells the user how much they pay and how much the government subsidizes. It is unpopular and politically sensitive to mention water and private sector in the same sentence. However, prices or tariffs can be rationalized. Another participant cited the Oman example: in pricing water use, the state increased the progressive steps so that revenue went up without hurting those who use less water. A creative proposal was the creation of a water budget, where countries could do public awareness campaigns (like a "water deficit clock") where everyone knows about water levels (i.e. how much are we

using now and how much are we stealing from the future?) Participants emphasized that even small initiatives can build momentum over time.

The significance of education was frequently underlined in the discussion. Participants asked: "How can the government make cultural changes that would change the use of water – for instance teach people that overusing water to keep your lawn green is not the best or most efficient way to be mindful of water consumption?" The response was that water education needs to be integrated into school curricula. There are teachings of Islam on not wasting water and on treated water. These should be emphasized to overcome the religious apprehension about using treated waste water. Educational resources can also be created by mosques – such as hadiths or Friday sermons – or by women's organizations. Participants noted that reaching rural populations is a challenge. Others responded that it is still wise to target urban areas first as those have higher water consumption rates. Social media and the education of leaders on water are also important. Some leaders do not understand even the basics of water use in their societies and this needs to change.

One cannot talk about demand management without talking about agriculture. Agriculture is the biggest water consumer in the world – two thirds of freshwater use goes to agriculture globally. If farming-related water use does not change radically, we will not be able to make an impact even if we change all the personal use in the world. A participant stipulated that there needs to be a discussion on how to change the conventional economic paradigm and that development does not have to be tied to increased water consumption.

By way of a conclusion, the urgency of the issue was underlined by the participants. A participant noted, "We control 50% of the earth's fresh water systems. Politically it's too easy to cheat the system and often we are myopic and focus on a singular outcome. The tradeoff is biodiversity. We can disturb systems for some time without much consequence but then things change quickly."