



the Hollings Center  
for international dialogue



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



The Arab Gulf States  
Institute in Washington  
Building bridges of understanding

## Dialogue Snapshot

### ***The Water Energy Food Nexus: An Integrated Approach to the Middle East Water Challenge*** **May 2016**



*Dubai at night. Energy demands, particular in GCC states are expected to rise significantly in the coming decade.*

Photo: [Site](#), [CCL 2.0](#)

The Middle East and North Africa region faces growing pressure on its water systems due to population growth, socio-economic development, security issues, urbanization, and environmental degradation. Some of these issues were discussed during the Hollings Center's May 2014 dialogue conference, *High and Dry: Addressing the Middle East Water Challenge*. The dialogue, which was cosponsored by the University of Central Florida's Prince Mohammad bin Fahd Program for Strategic Research and Studies (PMBF), concluded with several recommendations, namely the need for further technology and research, further supporting international cooperative agreements, improving education about water as a resource, and making critical reforms in economic sectors like agriculture.

As a follow-up to this conference, the Center adopted an integrated approach known as the 'Water Energy Food (WEF) nexus' to address some of the critical development challenges the MENA region faces today and in the future. Until the 2000s, water policy dialogues have evolved mostly in isolation from other development-related events. Today, the world is faced with a set of complex interrelated problems, many of which directly relate to the issues of water, energy, and food. It is estimated that worldwide energy demands will double by 2050 along with a 50 percent growth in demand for food and water. Understanding the dynamics and linkages among these three sectors is needed to understand potential opportunities, trade-offs, and synergies, and to develop integrated solutions to the growing demand for resources. The WEF approach is not without criticism, but it is increasingly being considered as a strategy to deal with issues of water, energy, and food security.

To further address the water challenge and incorporate other issues of energy and food, the Hollings Center together with PMBF and the Arab Gulf States Institute in Washington convened a three-day dialogue from 19-21 May, 2016 in Abu Dhabi, UAE. Notable conclusions from participants included:

- The application of the WEF nexus concept is viable in the Middle East and North Africa. By properly evaluating the contexts in which the concept is applied and by correctly engaging the community, the nexus concept can be a useful tool to future resource management.

- The challenges posed by the growth in demand for water, energy, and food are significant but not insurmountable, particularly in wealthy states. For states with fewer financial resources, there are plenty of options to begin applying the WEF nexus concept – so-called “low hanging fruit” – that can address local and national resource challenges.
- Participants called for top-down, bottom-up, and middle-out approaches to applying the concept in states and localities in the region. Successful application of the WEF nexus concept will require all three.
- The international community should be careful in applying securitization to water, energy, and food. While viewing these resources in a security framework can attract much needed attention and resources to addressing challenges, it has the unintended side effect of hardening self-sufficiency and sovereignty arguments that have prevented progress in applying the WEF nexus concept.
- Commoditization and cost-recovery models can be a useful way to collect data and improve infrastructure. But creating cost to the user must be done transparently or risk civil backlash.
- Information and data sharing must improve. Not only is this the case within and between governments, but also at academic and civil society institutions.

### **Defining the Nexus Approach in the MENA region**

The Water Energy Food (WEF) nexus is a concept that requires some definition prior to its application. As first formally defined in the 2011 Bonn Conference, the WEF nexus is defined as an “approach that highlights the interdependencies between achieving water, energy and food security for human well-being... It is based on an understanding of the synergies and regulated negotiation of fair trade-offs between competing uses of water, land and energy resources.”<sup>1</sup> It is a newer concept in terminology, but some of the principles behind it date back to the rise of human agriculture centuries ago; and as several participants pointed out, its conceptual underpinning is integrated water resource management (IWRM). One participant noted the WEF nexus concept came to prominence during the food price crises of 2008, “as a response to climate change, social change, globalization, growing inequities, and social discontent.” It arose not from government or NGOs, but first from multi-national corporations. It has since been adopted by other international organizations and even some governments as an important tool for developing and evaluating management systems.

*“We have to start with the premise that people are part of the ecology.”*

*An American dialogue participant*

While the definition appears common sense, the application of the concept is enormously complex and subject to criticism, skepticism and challenges. Several participants noted the nexus issues at the core are inherently political and they reflect the inequalities and flaws built into human political systems. The incorporation of the nexus concept into management and planning also raises questions about ethics. Particularly in the Middle East and North Africa, the WEF terminology carries with it a Western connotation, something that can be detrimental to adopting the systematic practice as some can conceive it to be a foreign governmental or corporate imposition. Therefore, even the consideration of the nexus approach requires careful thought and action.

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### **Assessing the Challenges**

When looking at issues of water, energy and food security in the MENA region, participants found challenges that directly echoed 2014’s dialogue that addressed water in the region. Such roadblocks not

<sup>1</sup> <https://www.water-energy-food.org/about/introduction/>

only hamper ability to address these challenges on an individual sector level, but also the ability to link sectors together. If a WEF nexus approach is to be adopted, the following challenges need be assessed:

Cooperation: The challenges around the issues of water, energy, and food are multifaceted and interlinked regionally. At the same time, the challenges vary locality to locality, making regional and even national efforts to address these challenges difficult. What results is a need for regional cooperation, but current national frameworks do not prioritize the development of such links. Participants noted that regional cooperation organizations like the GCC are being underutilized, specifically highlighting an interconnected GCC electricity grid that is only utilized in emergency circumstances. Another added that inter-Arab trade has been historically weak, with most governments still relying on arguments of self-sufficiency tied to the protection of national sovereignty.



*Farming in the Wadi As-Sirhan Basin of Saudi Arabia. In spite of extraordinary costs, many nations in the MENA region continue to promote agricultural development as a matter of sovereignty and national security.*

*Photo: Hamza Farooq [hamza82](#), [CCL 2.0](#)*

Data Protectionism: Repeating sentiments noted by participants in 2014's dialogue on water challenges, participants at this dialogue once again reiterated that a culture of data protectionism has greatly hindered both scientific and political efforts. As one participant stated, "Data is always a challenge. Governments often do not disclose data for a variety of reasons, but the gold standard is always government agencies that publish their reports." Sometimes, such reports are not available, requiring the use of data published by international organizations like the UN or private corporations. This is particularly the case in energy and water availability and consumption. Policies need to reflect accurate data. Without it, countries may repeat unsustainable policies. Research and analysis organizations have also been affected by this protective culture. One participant mentioned that the lack of collaboration between academic and non-governmental organizations has resulted in repetitive research and projects. Duplicative work on the part of these organizations hampers forward progress. Better information sharing between these organizations both internationally and within nations is required.

Consumption and Cost: Participants in 2014 noted that the true costs of water distribution are little known to the public, resulting in conspicuous consumption patterns that outpace other nations by as much as 25%. Participants at this dialogue in 2016 concurred that this reality extended to the energy and food sectors, with the general public largely unaware of the costs associated with increased production. Energy demand in the GCC states is estimated to rise 7-8% per year through 2020.<sup>2</sup> Most of that will come from fossil fuel plants. Food production remains a constant concern throughout the region, with some states, as one participant noted, importing as much as 85% of their food. Yet another noted that some states in the Middle East import and consume far more calories per capita than necessary. With projected regional growth rates of 3% per year, it is clear that there will be significant stressors on all three in the years to come.

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<sup>2</sup> [http://graphics.eiu.com/upload/eb/GCC\\_in\\_2020\\_Resources\\_WEB.pdf](http://graphics.eiu.com/upload/eb/GCC_in_2020_Resources_WEB.pdf)

Most of the efforts to date have been on finding ways to increase supply, negating the real needs to control overall consumption through conservation and waste reduction. Positively, since the 2014 dialogue, some nations have made some progress on this front, but the overall challenge remains. The challenges of consumption and of resource availability were summed by one participant as follows: “The carrying capacity of the region is far lower than the number of people that reside in it. Trade needs to be looked at and the self-sufficiency argument needs to be relaxed in more creative ways.”

*“The nexus analysis is certainly an important step to challenge the silos mentality when looking at arrangements in food, water, and energy. But we still need to look closely at the scope of the nexus so we don’t adapt to trendy concepts without regard to their implications.”*

*A Jordanian dialogue participant*

Economic Diversification: While efforts in some nations to promote economic diversification and liberalization have been taking place in the MENA region, participants agreed that greater effort is required. Greater diversification would aid in the implementation of the WEF nexus concept both nationally and regionally, particularly in that some nations economic strategies are too dependent on water or energy-intensive industries. Historically, inter-Arab trade has also been low and the lack of economic diversification and integration is partly to blame for this.

Regional Needs vs. Local Reality: The political challenges posed by managing the nexus of water, energy, and food are made more complicated by the MENA region’s arid climate, disparity in resource availability geographically, and disparity in need. One participant stated, “Disparities between countries in the

region should be considered. GDP, employment, population growth, etc. When we are talking about WEF nexus in the region, we have to be careful. It is more of a national context with local climate, geography, institutional framework, resource sustainability and capacity. Each country has its own context.” Additionally, one participant replied that context may go even further to a hyperlocal level. Management of these contexts will be difficult to do with any specificity, yet regional and national-level cooperation will be necessary given the complexity of the nexus and the realities of resource availability. Historically, such cooperation has been difficult in this region and current regional tensions will likely make it even harder.

### **Balancing Security**

Security is often the foremost factor when considering the MENA region. Even the WEF nexus concept is seen through a security lens. For decades, countries in the region have looked at the separate policies of energy, food, and water through the lens of national security and state sovereignty. This view, which began at the height of Arab nationalism between the 1950s-1970s, led to the development of policies and structures that make integrated approaches more difficult. It led to highly intensive water usage for food production (such as wheat or dairy), most of which have been reliant on groundwater sources which are now under significant strain. Likewise, the energy sector, most notably in the GCC states, relies heavily on local, fossil-fuel based sources of energy. Participants questioned whether unsustainable elements of self-sufficiency could actually be abandoned. One participant noted that some countries in the region like Turkey and Morocco have significant agricultural surpluses, suggesting that regional food trade could be sustainable. Other participants warned about the need to balance food sustainability over food dependency. Instability in the region, trade disputes, economic embargos, and far-away environmental instability could put an integrated trade regime at risk, rapidly creating scarcity.

The securitization of these sectors further created interesting contrasts among the participants. One noted, “If we conceive of something to be a security issue it influences how nations will address it.” And the security framework can be considered both in terms of hard security (issues such as economic resources or national stabilization) or soft security (issues such as ecological balance or consumption patterns). Right now in many MENA countries, one participant argued, the WEF nexus falls into the purview of “soft” ecological concerns. Some participants noted that securitization frameworks can be very useful in attracting resources to a problem. But there can be downsides for compressing everything into securitization frameworks. One participant noted, “One of the dangers of securitizing something is that it is taking it outside the realm of normal politics and masking other problems.” Therefore securitizing something, whether it is a concept or a commodity, becomes a mixed blessing. It may attract greater attention or resources, but it may also reinforce the current self-sufficiency and sovereignty frameworks that most participants agree are no longer sustainable and are inhibiting intra and international cooperation. Finding a way to move beyond the construct of security should be a key consideration going forward.

### Commoditization, Subsidies, and Infrastructure



*Ain Beni Mathar ICC Thermal-Solar Power Plant. The solar energy potential throughout the MENA region is very high. Solar energy can be incorporated into farming, energy production, and even water desalination.*

Photo: [Dana Smillie, World Bank, CCL 2.0](#)

A point of debate throughout the dialogue was whether water, energy, or food should be treated as an economic commodity or whether it is a human right to which all should have fair access. This was particularly the case with water. “[Water] has low excludability. It is not as public or free as air, but it comes close to it. Every government will need to regulate it, and will need to think about what to do for those who do not have access to water on a monetary basis.” The current method by which most governments address this need is through subsidies, and subsidies have become a fiscal problem for many states. One participant noted that subsidies now account for approximately 1/3 of Egypt’s budget deficit. Long term, many agreed that the current models in place are not sustainable in the long term.

Several participants stressed that treating these resources as commodities may be the most efficient method going forward in addressing the challenges and applying the WEF nexus concept. It may, for the moment, be the best way to address the political, social, and environmental economies associated with each sector. Realistically, one noted, “If there is no economic benefit, no cooperation will occur.” Additionally, some contended that the only way to address the challenges of production costs and the reduction of use is to assess costs. With usage rates up, resource availability declining, and production costs rising even with the implementation of new technologies, evaluating the economics may be the most useful paradigm.

In the 2014 dialogue, participants noted that the adoption of cost recovery models was limited, specifically for water usage in GCC states. Two years later, participants noted some measurable progress in addressing the realities of resource subsidies in wealthier states. Part of this is due to the fiscal problems in these countries following sharp declines in the price of oil and natural gas, which has required the

changes to subsidy policies. Previously, these countries feared subsidy reductions would cause social upheaval, but the political will may be building towards change. Commenting on the water and energy sector, one participant noted, “There was no discussion on pricing until 2014. There was resistance towards discussing the pricing model in the region and that was because of the perception of national stability and political upheaval... I think a targeted pricing model is the best model to modify human behavior. Money is a primary motivator.” Participants commented on how Saudi Arabia has begun introducing minimal pricing schemes for water and that fears of societal backlash may be unfounded. Another participant commented on how the introduction of water pricing for non-nationals resulted in a 10% reduction per household. But turning these resources into commodities and introducing pricing schemes should be done with caution. It requires a period of preparation and the full disclosure of information. “When people have transparency and believe that what they will pay will improve services to them, they are willing. But the lack of transparency and perceptions of inequality are things that engender controversy and resentment.”

But what about states that are currently in conflict, troubled, or changing? The adoption of pricing models are dependent partly on states having effective bureaucracies, proper infrastructure investment, social support, and political will. Some states in the MENA region lack some or all of these criteria. For example, one of the participants highlighted the challenge of unaccounted water resulting from the problems of infrastructure deterioration, poor data collection, or theft. Unaccounted for water is a significant challenge. One participant estimated that up to 40% of water usage may be unaccounted for in Jordan and infrastructure in some states like Yemen is virtually nonexistent. Pricing models require proper accounting of the resource. Political will in these states is also lacking, with one participant saying governments will continue to pump subsidies “until the ship sinks.” Participants suggested two possible approaches for these states. One is to go after the “low hanging fruit” targeting the biggest abusers of subsidies, focusing on use reductions from the largest users, and targeting the most inefficient appliances and crops. Another is to adopt a mindset of what one participant called “coping with scarcity.” This not only means adopting a mindset that realizes the scarcity of certain resources depending on the geography, but also dealing with the political nature of scarcity. If the economy is built on the concept of scarcity, governments will need to account for issues of distribution and access. Education and awareness programs built around “scarcity” could go far in lessening the stress on resources.

### **Managing the Nexus: Top-down or bottom-up?**

Incorporating the Water Energy Food nexus into regular practice will require a careful management. A question that was raised in dialogue discourse was whether incorporation of the practice should be done as a top-down approach or from the grassroots. Each has its benefits and flaws, and participants disagreed as to which approach would generate the best results.

Proponents of top-down adoption of the WEF nexus concept argued that in the MENA region, approaching challenges with top-down integration is the only way to have measurable impact. Ministries and corporations in the region are highly hierarchical, requiring the attention of those at the top to permit and engage a solution. When



*Tigris River, Hasankeyf, Turkey*

Photo: [opalpeterliu](#), [CCL 2.0](#)

this happens, implementation of new policy, adoption of new technology can often occur quickly. But the top-down approach comes with its own set of problems. Corruption is a large one. As one participant noted, “Sometimes [corruption] is good. It facilitates business and makes it faster than ever.” On the other hand, too much corruption can have the opposite effect. One participant commented on a recent conference of investors in Germany. “There is a lot of money to be made in water projects... but it is the corruption that holds them back. It is a risk they are not willing to take.” Participants cited multiple examples of failed investments, “white elephant” projects, and botched public-private partnerships throughout the region, noting examples in Egypt, Turkey, Jordan, and GCC states. The intent may be good, but the outcome has been far from desired.

Some participants advocated a more grass-roots approach, advocating that the input from those in local communities is a more productive course of action. One participant commented that when it came to project implementation, “There is 70 years of project evaluations since the 1940s that say community participation is more important than finance and technology. It is what sustainability rests on.” But like the macro approach, focusing exclusively on a bottom-up approach has its problems. When hyper-local engagement and planning are emphasized, these practices may become too shortsighted, ignoring the effects of a hyper-local policy on the greater nation and region. Likewise, governments have a history of being highly distrustful of local organizational efforts, fearing they may be a threat to the security of the state.

Therefore, the conclusion reached by some is that there needs to be a concurrent approaches to implementing the nexus concept that cover both macro and micro-management of systems on multiple levels. There needs to be a concrete analysis of scale. As one participant asked, “At what scale can we be effective? At what scale can we be operative? It’s not bottom up or top down, but middle-out. Our role [as civil society organizations and experts] is to work with local communities and get that information up, to facilitate the empowerment of local communities with the national government and beyond.”

### **Conclusions and Recommendations**

The WEF nexus concept can work. And the key, agreed many participants, is a correct understanding of contexts in which the concept is applied and the engagement of the community. The desire to address the challenges in the region is strong and many have already begun the tasks that will see the nexus concept become a reality. At the conclusion of the dialogue, the participants broke into three distinct groups, tasked with devising recommendations for policy, education and partnerships. An overarching conclusion from these three groups was that the Water Energy Food nexus incorporates many other nexuses, the most important of which is a “second nexus” of government, civil society, and the private sector. The interlinkages are vast, but there are places to start that can address the many macro and micro challenges tied to the WEF nexus.

*“You take the best lessons that you can and you tailor that to meet wherever you are. There is not one model that can fit them all.”*

*An American dialogue participant*

“Do No Harm”: According to the group tasked with developing policy ideas, the overarching principle of any policy or action regarding the WEF nexus should be the basic principle of doing no harm. Too often, entities in the region (whether international, national, or local) have conducted “white elephant” programs that have actually done more harm than good. Asking simple questions about impact before starting can go a long way in developing more meaningful policies and dialogue.

Identify the Stakeholders: Advocates for international level and local efforts agreed, it is important to identify the stakeholders and engage them early in any WEF nexus policy or project. Without addressing those who will be effected most by the outcome, adoption and long term sustainability of any effort will likely not succeed.

Create Dialogue Commissions: The group focusing on education recommended the creation of dialogue commissions that would involve the private sector, governments, NGOs, and the media to collect unbiased data that could be used for the creation of new projects and policies. The commissions would begin by focusing on three major river basins in the MENA region: the Jordan River, the Nile, and the Tigris & Euphrates. The target group for the information collected would be decision makers in governments and corporations.

Establish an International Forum: The group tasked with policy also recommended the creation of an international forum that would explicitly connect issues of food, water, and energy and discuss regional policy concerns. The participants recommended that this forum integrate civil society representatives into the dialogue process, as this would provide better conduits for information to partners and the public. Throughout the dialogue participants noted that cooperative action would likely only follow scenarios that created mutual economic benefit. Such a forum could be used to determine what that would be. The forum could be further used to discuss trade cooperation, technology sharing, and systemic resiliency that leverages interdependencies in a positive way.

Engage the Private Sector: While there was some disagreement about the benefit or detriment of private sector involvement in addressing the challenges in the WEF nexus, there was realization that involvement by the private sector was likely in areas where corruption was less of a problem. Engagement with the sector could provide positive benefit, particularly in the deployment of new technologies and in the collection of data. At the same time, governments, civil society organizations, and average citizens can ill afford to wait for private sector involvement to begin. Future public-private partnerships should be incentivized to work for the public good. Demonstration projects involving the private sector would be a good place to begin.

Public Awareness Campaigns: Participants advocated for the creation of public awareness campaigns. As one participant stated, “A sizeable amount of reduction [in consumption patterns] can be achieved through public awareness campaigns.” Such campaigns could provide transparency necessary to implement pricing schemes in countries seeking that pathway. One participant suggested incorporating religious teachings into the campaigns, noting the clarity that the Quran provides on matters of waste.



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The Hollings Center for International Dialogue is a non-profit, non-governmental organization dedicated to fostering dialogue between the United States and countries with predominantly Muslim populations in the Middle East, North Africa, South Asia, Eurasia and Europe. In pursuit of its mission, the Hollings Center convenes dialogue conferences that generate new thinking on important international issues and deepen channels of communication across opinion leaders and experts. The Hollings Center is headquartered in Washington, D.C. and maintains a representative office in Istanbul, Turkey. Its core programs take place in Istanbul—a city whose historic role as a crossroads makes it an ideal venue for multinational dialogue.

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