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Water Scarcity, Regional Security and Comprehensive Planning

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Views are personal and do not represent official views or policies of the US Air Force or the US Department of Defense.

5 Good morning, ladies, gentlemen and Excellencies, and thank you for the opportunity to address this group at the Al Nahrid Center. As the previous speakers have already stated, water scarcity and related energy and environmental changes pose significant security risks to Iraq and the region. These risks will increase in coming years with additional demand for water, food and energy, and with potential impacts from climate change. Water, food and energy systems underlie stability and well-being for citizens and governments of the region, security concerns that are more pronounced due to historic and emerging conflicts in the region. In the short time I have available, I would like to address some of the crucial ways in which water impacts regional security, and how risk assessments can be integrated with military and political security planning.

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Much of what I describe today is drawn from our research with the US Air Force Minerva Initiative, where I have had the privilege of leading the energy and environmental security team attached to Air University at Maxwell Air Force Base. Although our project is funded by the Office of the Secretary of Defense, my comments today are research-based and do not reflect official US policy.

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Background

First, I must emphasize that our focus is on human security of people in the region, not any

20 expectation that violent conflict will erupt between states due to water scarcity. This is consistent with the Quadrennial Defense Report's view of environmental factors as a key component of security assessments, but not themselves as a cause of conflict. Too narrow a focus on conflict may preclude effective cooperative policies, and in some cases can become a sort of self-fulfilling prophecy.

25 Water is a key component to numerous complex systems, all of them essential to the proper functioning of society. Iraq's dependence of the flows of the Tigris and Euphrates determines its ability to cultivate agricultural lands, remains critical to public health in both rural and urban areas, and maintains critical ecosystems in regions such as the Shatt Al-Arab. As with other river
30 basins in the world, such as the Brahmaputra between China and India or the Colorado between the US and Mexico, increased development and risks of environmental changes pose real risks to these water supplies if upstream and downstream states cannot cooperate to adapt.

From a security perspective, loss of water undercuts the proper functioning of multiple systems such as food production, energy processing and production, public health, and transport, and can
35 only be replaced in the case of food and energy at high cost. We are particularly concerned with vulnerable systems, meaning those that cannot adapt to changing conditions. These need not be poorly developed systems, as is often portrayed in the West, and the 2011 nuclear disaster at Fukushima, Japan illustrates how vulnerable systems can also be highly efficient ("just in time") ones. India in July provided another global illustration of the difficulties involved with water,
40 energy and food demands in growing economies- a delayed monsoon resulted in high electricity use for irrigation pumping (in some Indian states, such pumps can consume up to half of all electricity produced), which may have overloaded the energy grid and resulted in a country-wide blackout that affected some 600 million people.

45 Middle Eastern societies have historically developed cultural and political practices to deal with droughts and disagreements over water allocation- the question is if recent history, current events, and future challenges may alter the region's ability to adapt. The challenge is therefore to

50 apply regional customs and knowledge to understanding how and where these critical systems (e.g. infrastructure, food production, energy exports, public health) are most vulnerable, and where advanced planning can help identify priority concerns.

Iraq situation

55 Iraq receives 8% of its energy from hydroelectric sources and requires coolant water for its thermal power production facilities not located on the Gulf. Agricultural lands require irrigation water, the availability of which has been disputed by various sources, but it remains true that only a fraction of arable land in Iraq is currently under cultivation. Urban settlements also require reliable sources of drinking water, made more difficult by older or unrepaired treatment facilities and infrastructure, and the existence of substantial pollution.

60 These demands on water are significant, and responses to inadequate supply may result in ‘maladaptive’ policies and practices- meaning solutions that have short-term benefits but may contain long-term vulnerabilities to security risks. Unreliable hydro and thermal (often gas) production has led to increased reliance on less efficient crude oil plants, posing local environmental risks. Regional withdrawals of non-renewable groundwater, particular when used
65 for food production, may be unsustainable and result in future market disruptions when resources are no longer available. We’ve already seen this in Saudi Arabia, where massive use of groundwater for wheat production eventually had to be abandoned, with the Kingdom instead resorting to food imports and land leasing in countries such as Indonesia. While Iraq continues to be highly dependent on food imports, the situation in its neighbors may also be highly insecure in
70 some respects.

Impacts from conflict

Countries may also apply maladaptive policies in conflict or post-conflict situations, a dimension of water management that is often neglected. Whether as a direct or indirect result of conflict,

75 critical nodes¹ in water, food and energy systems are often disabled, preventing effective security
and undermining the legitimacy of government. Environmental systems can be targeted during
conflict as a way to undercut local control or livelihoods, or unintentional damage may have
long-term consequences for security vulnerabilities. Expensive systems such as wastewater
treatment facilities are especially vulnerable, and rebuilding infrastructure is both expensive and
80 technically demanding.

Drought and climate change

Droughts since 2007 have posed serious challenges to regional water supplies, particularly in
Iraq. With precipitation dropping more than 40% and lower reservoir storage capacity, Iraq as a
85 downstream country has significant challenges in responding to changing environmental
conditions. The low river flows from in early 2009 presented the Iraqi government with stark
choices between energy and drinking water provisions, also forcing massive reductions in
cultivated land.²

90 Climate change represents a significant ‘wild card’ to water, food and energy planning in the
region. In contrast to climate change projections that assume gradual and ‘linear’ changes over
time, it may be more accurate to conduct military and security plans under more extreme
scenarios. As difficult as it is to cooperate under conditions of scarcity and conflict, climate
changes may create new ‘tipping points’, meaning that relatively small changes in one place can
95 combine to create much larger impacts. There are good arguments that last week’s Hurricane
Sandy in the US and Canada was made more devastating by a combination of factors that climate
change has made more likely- ~~namely, the changes in jetstream flow and Arctic fronts that pulled
the storm straight into New York City.~~³ Similarly, in the Middle East we may witness sudden
changes in precipitation, river flow, or a combination of factors that overwhelms the ability of
100 societies to adapt. In other words, climate change creates ‘moving targets’ for planning,

¹ Definition of critical node: An element, position, or command and control entity whose disruption or destruction immediately degrades the ability of a force to command, control, or effectively conduct combat operations. Also called target critical damage point.

² See Jane's Islamic Affairs Analyst, 2010, States navigate the running water issue

³ At the time of writing, we do not know the full extent of damage from the Sandy storm system.

particularly troubling where agreements must be made on equitable use of international or transboundary waters.

105 Climate change also underlines the vulnerability of countries to disruptions otherwise thought to be geographically remote. The 2010 heat wave in Russia resulted in a complete grain embargo from that country after they lost 30% of their grain production, seriously disrupting food imports to North Africa and impacting food prices in late 2010. Countries that are forced to rely on food imports from other regions, such as Iraq, may increasingly find themselves vulnerable to environmental disruptions elsewhere, whether in India, North America or Europe. I use this
110 example to emphasize that environmental changes need to be considered outside of our own neighborhood, agency or office, and that narrow visions can lead to strategic surprises.

Planning solutions

115 These cascading impacts are difficult to predict in advance, but there are cost-effective methodologies for helping to identify critical vulnerabilities in advance, and integrating such assessments with Phase 0 planning at a country-wide or regional level. The purpose of such strategic planning is to help anticipate potential difficulties, without obligating a specific response. This includes adoption of best practices from countries facing similar challenges, and risk scenario planning practices that help identify national priorities - this is similar to activities
120 we've done with US Pacific Command and NATO, and I will describe them in a minute.

125 As just mentioned, food security is a case in point, and Iraq's ability to rebuild its food security resilience is admittedly difficult. A significant portion of land has been taken out of agricultural production since 2003, and restarting production is hampered by general security concerns, but also a legacy of unexploded ordnance (UXO), damaged infrastructure, and reportedly low river flows. Addressing these problems requires cross-ministerial cooperation and identifying key security goals. To this end, we would like to applaud Iraq's attempts to prioritize water, such as the National Water Council Legislation. Integrating domestic and international planning, including all relevant ministers, and placing the council at the highest levels of government, are

130 all very positive steps in addressing water security.

From a security standpoint, comprehensive security planning requires assessments of current and future operating environments. This requires effective use of available intelligence, surveillance and reconnaissance capabilities (ISR), which in environmental systems are best shared in an unclassified and international manner. Few countries possess effective environmental ISR capabilities themselves, and translation to security impacts always requires working with local knowledge and experts.

It's therefore reasonable for Iraq (or other regional authorities) to ask for technical assistance in such planning, provided that the approach emphasizes open lines of communication, and engagement with local and scientific experts. It's important to have access to information both on the global scale of challenges such as climate change, but also conditions 'on the ground' and how people will be able to react to potential changes. We've seen poor examples before of assessments made (often by North Americans) who don't leave their desks or speak to people who do.

One approach I'll briefly mention was developed at the US Department of Energy (DOE), and designed as a low-investment alternative to expensive consulting programs. Based loosely on epidemiology methods and Shell Oil scenarios, the DOE approach begins assessments by having future risk scenarios created by groups from affected regions. This avoids discussion of risks that aren't relevant to the area, and allows the groups to identify indirect impacts and potential responses. When adapted to the Air Force, we've used these methods both for wargame environmental scenarios at the Air War College, and to identify unique and emerging risks to specific areas of interest. Our work in Hawaii, for example, uncovered emerging risks to freshwater supplies on the island of Oahu, risks that could emerge just as suddenly as the storms last week in New York. Our hope is that such advance planning can help prioritize where greater resilience is needed, or in military training help prepare officers for changing operational conditions. We've at least had success with training on environmental security - policy is more

difficult.

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To conclude, I would reiterate that water is vital to national security, and requires comprehensive planning in ways that Iraq is beginning to address. Further integration with security planning and training is entirely possible, particularly if this can take advantage of ISR -meaning knowledge and monitoring. And it's imperative that risk assessments for water security are made with the

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right mix of people at the table, both for the sake of setting priorities, but also for taking advantage of the collective knowledge on global risks, local impacts, and potential responses.

With shifting climate and security environments, it may be most effective to apply scenario planning and training tools- rather than reacting to current conditions or trying to predict the

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future. Water security, particularly with its close links to food and energy, is of supreme importance to Iraqi and regional security, and requires continued integration of risk as our discussions do here today and tomorrow.

Thank you.