

## ARAB WATER SECURITY

### Threats and Opportunities in the Gulf States

Access to a secure supply of freshwater is critically important in the Arab Gulf states. With a growing dependence on large desalination plants, the threats to water security, and, in turn, food, energy, and national security, are a real and pressing concern.

This book explores the national security implications of the Arab Gulf states' reliance on desalination plants, and their related infrastructure. It provides the first systematic and comprehensive discussion of current and future threats to the supply of freshwater from a desalination plant, including actual and virtual attacks by terrorists, mechanical failure, contamination, sabotage by aggrieved workers, and attacks relating to regional conflicts, as well as their vulnerability to natural disasters. It also provides a detailed analysis of the effects of a potential disruption to the water supply, and proposes possible measures, both political and technological, that can be used to increase resilience to these threats.

*Arab Water Security* is a valuable reference for researchers and graduate students, as well as for policymakers and professionals, interested in water security, natural resources, and environmental terrorism.

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Colorado School of Mines*



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To the memory of my late mother, Helwi Najeeb Kassim AbuGhoush.  
Your grace, compassion and natural intellect will always inspire me.

To my wife, Maha,  
and children Hisham, Laila and Iman.

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## Preface

In the arid desert landscape of the Arab Gulf states, water is everywhere, and there is plenty of it to drink. This is in sharp contrast to the “Rhyme of the Ancient Mariner” that spoke of “water, water everywhere, nor any drop to drink” to describe the mariners of the Middle Ages who were adrift in the sea with nothing to drink (O’Brien, 2006; Hurlimann, 2006). The hydrocarbon wealth discovered in the Arabian Peninsula some eight decades ago eventually allowed the countries that emerged there to desalinate large quantities of seawater to help sustain the populations, their globalized economies, and modern infrastructures with all the amenities and water-intensive lifestyles that are associated with modern living. Today, Gulf governments often decorate major street intersections with water fountains, and line highways with green belts that typically have grassy landscape and palm trees that are irrigated regularly. Also, natives and visitors enjoy lots of swimming pools, lush green grass in private and public spaces, and delight in large water theme parks, and in indoor, multi-story high down-hill ski slopes. When you combine such ubiquitous amenities with free-of-charge freshwater and with household faucets that never desist, one then understands why so many residents of the Arab Gulf states are unaware of the severe water shortages that are pervasive in their region. Although water security is about managing both supply and demand, the young Gulf states have been focusing on water supply and have not paid sufficient attention to limiting demand through efficiency improvements. The Gulf states of today are less than 50 years old; the Kingdom of Saudi Arabia is much older having gained its independence in the early 1920s. Given this, the six Gulf countries have been undergoing an all-encompassing process of nation building.

Water security is closely related to natural and contrived water scarcity. The Gulf states’ experiences are somewhat unique because the geographic space that they occupy lacks any perennial river system, and, decades ago, Gulf governments realized the need to supplement their rapidly dwindling groundwater and chose the

desalination technology. The following conceptual narrative of water development in the Gulf states is an adaptation and expansion of the literature on the politics of water development and management of river systems (Molden *et al.*, 2001; Keller *et al.*, 1998; WWDR, 2012, and FAO, 2008).

Water development in the Gulf states went through phases of exploitation, utilization, augmentation, and conservation. Until the early twentieth century, the Gulf region was lightly populated and poorly developed. At that time, the people used mostly non-mechanical tools to draw water from shallow aquifers which satisfied their basic needs. They eventually built distribution systems, as well as storage and treatment facilities. As the demand for water increased and modern technology became available, the people started to drill deeper wells using fuel-powered pumps, transport water to more distant places, enhance water productivity, import some water-intensive food crops, and to eventually build desalination plants. As economic maturity started to set in, countries crafted long-term plans to ensure the environmental, economic, and social sustainability of what had been erected in previous decades. This usually includes measures to mitigate water pollution, wasteful use, and reallocation to more efficient uses. The Gulf countries have been in water supply phases for too long, and are starting to take hesitant steps towards water demand management.

Deliberate or accidental technological failures, as well as cyber-attacks that result in prolonged and catastrophic disruption of supply, could have significant ramifications for political stability. Water-supply disruptions could be caused by factors such as natural hazards, sectarian discord that permeate Gulf societies, a few low-skilled guest workers acting on their grievances, and by acts of terrorism that may spill-over from near-by countries through infiltrations of the porous borders or through home-grown terrorists who may conduct collective or “lone-wolf” strikes on behalf of a foreign group or ideology.<sup>1</sup>

While the Gulf states have generally been politically stable, a simmering unease dwells beneath this apparent tranquillity.<sup>2</sup> Variable socio-economic and political crosswinds continue to blow over the Middle East and the Arabian Peninsula such as the Arab Spring, high unemployment rate among nationals, as well as medium to high-intensity sectarian wars in Yemen, Iraq, and Syria. Would one or a few of these factors be strong enough to force rulers to embrace the necessary reforms? If that happens, would the transition to the new political reality be smooth and peaceful? Are current institutions sufficiently dynamic and robust to respond to peoples’ wishes and initiate gradual political reform? Is the

<sup>1</sup> See Asal *et al.* (2013) for details on the threat posed by lone-actor terrorists.

<sup>2</sup> For details about the multitude of threats that could undermine the prevailing political order in the Arab Gulf States, see Davidson (2013).

monarchical political system sufficiently resilient to make tough decisions such as graduated lifting of water subsidies?

Prevailing social and political stability often lulls governments into assuming that their countries don't have looming serious security risks. Contrary to this belief, the approach followed in this volume is inspired by the well-known insights of the ancient Chinese military strategist Sun Tzu who advised in his famous book *The Art of War* that countries should not assume that the enemy will not come, but should be prepared for his coming; they should not presume he will not attack, but instead make their own positions unassailable. The governments of the Gulf states, especially after the 2001 attacks in the United States, have increased the size of and capabilities of their security services, hardened their critical infrastructure, and expanded their technological defences. This book examines the security and vulnerability of desalination technology, and whether Gulf states have taken steps to “harden” their culturally and linguistically diverse societies, including members of the marginalized classes.

The genesis of this book project was started over ten years ago. I was fortunate to have had the opportunity to spend a year teaching and researching at the Petroleum Institute in Abu Dhabi, and later spent shorter research periods of time in different countries in the Gulf. The ideas in this book benefitted from observations, interviews with a large number of people ranging from natives (“locals”) and civil servants, to water professionals, academics, and with a large number of guest workers who hailed from various Arab countries, Africa, southeast and south Asia, Africa, and from Western Europe and North America. The constricting political and security culture makes the vast majority of foreigners fear for their jobs which, if lost, would result in them being deported from their host country. This deters the majority, especially labourers and maids, from publicly expressing their grievances and from speaking on the record about their life in a Gulf country. Arguments and ideas in this book were also improved by feedback received from experts in the field at different specialized conferences and symposia that in cities as varied as Bangkok, Muscat, Abu Dhabi, Calgary, Tampa, and Denver. Finally, I owe a debt of gratitude to the many graduate students at the Colorado School of Mines who, over the years, have helped me find qualitative and quantitative data that I needed for this project.

Ultimately, it is my hope that this volume will contribute to raising the profile of water security in the Gulf region (and the wider Middle East), to highlighting the potential security threats that lurk over the political and social horizons, and to inspiring threat-mitigation measures that would improve the security environment and the quality of life of all the stakeholders. This is perhaps a tall order. Inaction, however, could aggravate threats to water infrastructure and increase the likelihood of a high-impact water-disruption event.