

**David Michel, Amit Pandya, eds..** *Troubled Waters: Climate Change, Hydropolitics, and Transboundary Resources*. Washington, DC: Henry L. Stimson Center, 2009. 103 pp. ISBN 978-0-9821935-2-5.

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In *Troubled Waters* Michel and Pandya undertake the daunting task of integrating climate change, water, and security. The edited volume spans three geographic regions ("South Asia," "Southeast Asia," and the "Arab World") and explores cross-cutting themes located at the nexus of changing climate, dwindling availability of clean freshwater, international relations, and human security. Readers interested in any of these topics will appreciate this accessible volume written for policymakers and academics grappling with the interdisciplinary challenge presented by the inextricably connected themes of the book. The volume is a product of the Stimson Center, an institution concerned with national and international security. In a field often focused on nuclear proliferation and terrorism, the center is to be commended for this forward-thinking volume that expands readers' view of security to include human health, food security, and economic security.

The volume aims to tell a story starting with climate change, walking the reader through its impacts on water resources, and suggesting how these impacts might affect international and human security. To do this, the volume uses examples provided in its five chapters--each penned by a separate author--to support the unfolding narrative. The authors' key points are as follows:

Changing climate will have a significant impact on the world's water resources. Warmer temperatures will lead to increased demand for water, and climate predictions suggest that climate change will reduce water availability due to altered precipitation patterns, reduced river flows (in large part due to glacial melting), and increased frequency of extreme rain events and drought. Combined, these changes will lead to a soaring increase in the number of people experiencing water stress. Linking to the question of international and human security, the book queries whether or not this increased stress will lead to "water wars", the "unnecessarily alarmist" (p. 26) term used by three successive UN secretaries general as well as the former head of the Global Water Partnership. In the concluding chapter, Michel argues that the oft-cited threat of violent interstate conflict over water is overblown and unlikely. Instead, he argues, what is more likely is civil war and civic unrest brought on by uneven political, economic, and geographic distribution of an increasingly scarce and unpredictable resource.

The first part of the volume, "Perspectives from the Regions," is divided into three chapters, each of which explores a particular region. "South Asian Perspectives on Climate Change and Water Policy" (by Ashok Jaitly) provides a "birds-eye view" of water issues on the Indian subcontinent.

It explores topics ranging from increasing meat consumption and the green revolution to international transboundary conflicts with India's neighbors in Pakistan, Nepal, and Bangladesh, and examines how changing climate will exacerbate these challenges. "Climate Insecurity in Southeast Asia: Designing Policies to Reduce Vulnerabilities" (by Khairulmaini Osman Salleh) emphasizes the vulnerability and adaptive capacity of different Southeast Asian groups' ability to mitigate the negative impacts changing climate, particularly as they relate to agriculture, forestry, and the fishing industry. Finally, "Climate Change in the Arab World: Threats and Responses" (by Mohamed Abdel Raouf Abdel Hamid) focuses on that area's high per-capita energy consumption--especially its energy use for desalination--and the region's struggle to reconcile climate concerns with its economic reliance on oil and gas exports. This first section of the volume offers some insightful examples and helpful overviews of the regions in question. However, at times the chapters seem disjointed. For example, the Southeast Asia chapter does not address water-specific issues. In another example, each chapter concludes with a different type of recommendation--for future research, (mostly economic) policy recommendations, and international engagement, respectively. Moreover, the rationale behind the selection of these three regions is not clear--are they the most water-stressed? The most likely to experience water-related security concerns? The most vulnerable to changing climate? There is much to be gained from detailed regional perspectives, to be sure. A clear framing of these perspectives would significantly enrich these chapters and provide some context for each author's recommendations.

The latter part of the volume, "Interpreting the Trends," digs deeper into the cross-cutting themes presented in part 1. "A Case for Integrating Groundwater and Surface Water Management" (by Kendra Patterson) presents an overview of the deep-rooted scientific and governmental separation of ground and surface waters. The

author argues that this binary is artificial. As an extension of this, she argues that ground and surface waters should be governed in a more integrated fashion. It is not clear, however, how this argument--well-articulated and convincing in and of itself--fits with the objectives of the book, save for Patterson's point that "fossil groundwater" (groundwater in aquifers that do not recharge) is relatively immune from climate changes and is thus vulnerable to increasing exploitation. The second chapter, "A River Runs Through It: Climate Change, Security Challenges, and Shared Water Resource" (by David Michel), is the capstone chapter in the volume, tying together themes from the previous chapters to make an overarching argument about the links between changing climate, increasing water stress, and security. Refuting sweeping claims about looming "water wars," Michel argues that battles over water are likely to be waged at the sub-national scale. Thus, while climate change-induced water stresses may not be a direct threat to international security, the intra-national conflict and instability wrought by dramatic changes to water availability pose threats to human security and threaten to exacerbate existing tensions within and between nations. Michel's treatment of Aaron Wolf's work--an influential counter-argument to the common "water wars" rhetoric and *de rigueur* reading for those concerned with the specter of water-related interstate warfare--is particularly welcome.

Overall, the volume does an excellent job of demonstrating how deeply the issues of climate change, water scarcity, and security are connected. Scholars interested in any one of these topics would do well to explore this work--particularly Michel's concluding, integrative chapter. The work may also interest political economists, political ecologists, human geographers, economic or environmental historians, and anyone else concerned with the distribution and exploitation of resources in response to environmental change.

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