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FRANCESCO SINDICO, *INTERNATIONAL LAW AND TRANSBOUNDARY AQUIFERS*
(CHELTENHAM: EDWARD ELGAR, 2020)

Reviewed by : Roopa Madhav, PhD Scholar, SOAS, University of London

BOOK REVIEW



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Francesco Sindico, *International Law and Transboundary Aquifers* (Cheltenham: Edward Elgar, 2020)

Groundwater is a versatile resource providing a reliable source for drinking, water for irrigation and for livelihood. The stress caused by increased extraction and climate change threatens all the critical uses that groundwater serves. Effective aquifer management is necessary to protect the resource from depletion and conflicts. The management of aquifers, particularly transboundary aquifers,¹ pose a significant challenge to policy makers. Drawing up an effective aquifer management requires aquifer mapping, identifying the groundwater recharge and discharge zones, thus enabling management strategies to be more targeted. Recognizing the hydro-geological aspects and understanding the socio-economic context is vital for implementation of the management strategies.

In 2006, a comprehensive mapping of the transboundary aquifers (TBA) provided a better understanding of the global status of shared resources between countries.² Approximately 590 TBA's are currently identified and the task of managing these aquifers is complex. There are some formal agreements between countries sharing a TBA such as the Nubian Sandstone Aquifer System, the Northwestern Sahara Aquifer System, and there are efforts on to build consensus over the management of the Lake Chad aquifer. Typically, such efforts at building support and collaboration for a joint management mechanism is led by international organizations such as UNESCO,

1 Transboundary Aquifer refers to an aquifer or an aquifer system, parts of which are situated in different states. In practical identification and verification of a TBA, the spatial delimitation, hydrogeological similarity, recharge and discharge mechanisms and zones, and significant hydraulic connectivity between the national compartments of the TBA are all important factors and should be established and agreed upon between the aquifer-sharing states. (CGIAR and IWMI, *Transboundary Aquifer Mapping and Management in Africa*, July 2014 accessed at: <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwiyYC0tIPzAhWRbSsKHxNmAXoQFnoECA0QAQ&url=http%3A%2F%2Fwww.iwmi.cgiar.org%2FPublications%2FOther%2FPDF%2Ftransboundary_aquifer_mapping_and_management_in_africa.pdf&usg=AOvVaw08e0HSAs6E3EY9-ejh0pot>.

2 See generally, the WHYMAP (World-wide Hydrogeological Mapping and Assessment Programme Publication, 2006.

FAO and INGOs and technical institutions with expertise in groundwater management.³

The book 'International Law and Transboundary Aquifers' provides extremely valuable insights into the underexplored area of shared resources. As the author notes, two critical aspects determine the future of transboundary aquifer management – first, is the availability of adequate data and scientific understanding of the shared aquifers between two countries and second, is the existence of a political will on the part of countries with shared resources to work towards a joint mechanism to govern the aquifer. This book proceeds with an innovative format to reach a wider audience – it frames the debate around a hypothetical practical scenario – wherein two states agree to cooperate on managing an aquifer. Once there is an agreement, then countries must look towards the international legal framework for guidance to draw up a joint mechanism. Chapter 1 provides the reader with an introduction to the book and outlines the hypothetical scenario of two countries that agree to cooperate and proceed to understand the international legal framework that informs TBAs.

An understanding of transboundary aquifers requires some specialized knowledge of aquifers and how aquifers work. Chapter 2 explores or provides a non-technical account of confined and unconfined aquifers, of recharging and non-recharging aquifers, of recharge and discharge zones and of aquifer systems – revealing the complexity of aquifers. The draft articles and the ILC commentaries provide an incomplete definition of what constitutes a transboundary aquifer. As the author notes, the ILC failed to understand the difference between confined and unconfined aquifers when it mistakenly aligned the latter with groundwater not related to an international watercourse in 1994.

The first recognition of shared resources is in the 1999 Tripoli Statement that was put out after the international conference on 'Regional Aquifer Systems in Arid Zones' noted that ".....some countries share aquifer systems; international law does not provide comprehensive rules for the management of such systems as yet, and clearly groundwater mining could have implications for shared water bodies". This acknowledgement of the gap in law and policy led to the launch of the IAH-UNESCO

3 See note 1 above.

ISARM (Internationally Shared Aquifer Resources Management Programme) which is a multi-agency effort to “understand the scientific, socio-economic, legal, institutional and environmental issues related to the management of transboundary aquifers”.⁴ Since 2002, ISARM started a number of global and regional initiatives, designed to delineate and “analyse transboundary aquifer systems and to encourage riparian states to work cooperatively toward mutually beneficial and sustainable aquifer development”.⁵

Chapters 3 and 4, the book highlights the emergence of an international law of transboundary aquifers and discuss its normative content. In an in-depth exploration of legal instruments available to countries willing to cooperate to manage a particular transboundary aquifer, Chapter 3 maps the early scholarly efforts and follows it up with an insightful discussion on how the United Nations Convention on the Non-navigational Uses of International Water Courses (UNWC) and the UN Economic Commission for Europe (UNECE) have dealt with transboundary aquifers. It also looks at the Model Provisions on Transboundary Aquifers. The substantive and procedural obligations contained in these international instruments are outlined in these two chapters.

In the final two chapters the author explores the future of the international law on transboundary aquifers. Chapter 5 examines customary international law, particularly certain provisions of the Draft Articles that are now crystallizing into customary laws, through the process of aquifer specific agreements and arrangements. It identifies and examines four rules as indicating a trend towards the development of customary international law in the field of transboundary aquifers. Thus, Chapter 5 and then Chapter 6 takes the reader into the domain of state practice through an engagement with the various transboundary aquifer agreements and arrangements to understand how they cooperate and help in the development of international law.

In examining the normative content of the transboundary aquifer agreements, the author notes that there is a significant emphasis on procedural provisions to ensure sharing of data pertaining to the

aquifer, thus enabling better aquifer monitoring. Some transboundary agreements also emphasize the need for environmental impact assessments and the setting up of an institution tasked with the role of managing the aquifer.

This slim volume although primarily aimed at policy makers and water managers thinking through the normative aspects of a cooperative management mechanism, is still a useful addition for students and academics working in the field. It provides a focused understanding of the legal developments and the future trajectories that provide a map for researchers in the field. It also brings attention to a neglected aspect of water law, transboundary aquifers and aquifers in general, emphasizing the need for good scientific understanding and guidance of hydrogeologists in evolving law and policy. Finally, it is a timely addition to the subject of transboundary resource management as it is set to become topical even as climate change related adaptation measures become imminent.

⁴ For more see: <https://isarm.org/>.

⁵ *ibid.*

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