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Philippe Cullet, Water Law, Poverty, and Development: Water Sector Reforms in India

practices. Finally, Hyun advocates for the creation of the Colorado River Delta Restoration Institute ("Institute"). The Institute would implement EBM principles, support local CRD restoration projects through bi-national cooperation, and facilitate ecological management of the CRD.

Chapter eight, *Conclusion*, succinctly recaps the book's findings and urges politicians and administrators to take ecosystem considerations into account during CRD management. Without EBM, Hyun fears that the CRD will continue to experience degradation.

Ecosystem Based Management in the Colorado River Delta extensively covers the governance of the CRD in an approachable manner. While the subject matter is dry at times, Hyun clearly states important aspects of her arguments and proposals. Although legal practitioners may find this book theoretical and policy orientated, someone interested in the ecological aspects of river management would likely find this book intriguing and enjoyable.

Jennifer Berg

Philippe Cullet, *Water Law, Poverty, and Development: Water Sector Reforms in India*, Oxford University Press, New York (2009); 241 pp; \$120; ISBN 978-0-19-954623-7; hardcover.

As Philippe Cullet, the Director of the University of London's International Environmental Law Research Centre, explains in *Water Law, Poverty, and Development: Water Sector Reforms in India*, most societies have given water a special status under the law because of the unique nature of water. Using India as a case study for water law and water reforms in the developing world, Cullet examines the connection between both domestic and international water law and reforms, as well as their effect upon environmental, economic, and human rights issues. In *Water Law, Poverty, and Development*, India serves as a microcosm of the world, and India's experiences with water issues provide valuable lessons for other developing nations.

Broken into six chapters, the book provides a general background and context on the worldwide water situation, and the uses and history that inform the development of domestic and international water law. Cullet also examines the main water reforms currently proposed and implemented throughout various Indian states. Cullet then addresses the specific situation of drinking water in India. He concludes with a proposal for an alternative basis for water law reforms to ensure that water law focuses primarily on the social and human rights aspects of water law instead of its economic elements. *Water Law, Poverty, and Development* aims to contribute a better understanding of the context, impact, reaction, and potential alternatives to recent reforms in water law.

Chapter one, *Context for Water Law and Water Sector Reforms*, provides the important context for both the current international and Indian water situations. Freshwater constitutes only 2.5% of all water on

the planet - much of which exists in the form of permanent ice or snow. Meanwhile, over the past half century, the demand for freshwater has tripled. Cullet acknowledges that insufficient access to water disproportionately affects those living in poverty. Moreover, of those living in poverty with access to water, the water available to them is often unsanitary. For instance, 86% of Indians have proper "access" to water, but only 33% of them have access to adequate sanitation, which usually contaminates their accessible water. Unsanitary water leads to disease. Notably, the poor endure such waterborne illnesses at much higher rates than the wealthy.

Meanwhile, Indian water law and reform is currently undergoing a rapid transformation. The increased extraction of groundwater, the construction of massive dams, and various desalinization efforts have fundamentally changed the basic premises of formal Indian water law. Cullet identifies a dichotomy of perspectives regarding water regulation. The first perspective is that water is simply one of many substances in which regulation evolves in response to increasing scarcity. In opposition to this view is the perspective that water falls into its own separate category because it directly sustains life.

The varying interests of nation-states frustrate the development of a comprehensive international water law regime. Many neighboring countries have competing interests as some nations are predominantly upstream while others are mostly downstream. Accordingly, water law and reforms at the domestic level vary greatly from international water law and tend to be more developed while international water law remains largely non-binding.

Cullet argues for a comprehensive approach to water law issues at the domestic level. Both India and much of the developing world have approached domestic water issues in a piecemeal fashion, with different rules applying to different bodies of water. Cullet maintains that addressing issues in isolation will fail. Focusing on India, Cullet contends that traditional Indian water law is ill-equipped to deal with the challenges India now faces, especially regarding poverty eradication.

In chapter two, *Evolution of Water Law*, Cullet addresses the basic features of water law as they have developed up until the twentieth century. Although water is an important issue to many Indian lawyers and policymakers, water law remains a relatively marginal area of law. Several factors drive this problem, such as a fragmented approach to water issues depending on the use of the water. Lawmakers often treat issues such as irrigation, drinking water, and groundwater separately and with different legal instruments. Another problem with past approaches to water law is that they often approach water issues in relation to land ownership and emphasize water use for economic growth. This approach restricts the scope of water law and treats water like other natural resources merely harnessed for economic growth, alone. Still, issues such as increasing water scarcity and pollution are challenging the current basis of water law. Cullet notes the arbitrary legal distinction currently drawn between ground and surface waters. Cullet acknowledges the difficulty of establishing ownership over

flowing water, which thus results in many nations declaring water as a "public trust" and developing legal doctrines such as prior appropriation.

In India, early Muslim rulers viewed water mainly as a common resource. During India's colonial era, however, many foreign and local policymakers viewed water as an unlimited resource. As a consequence, water issues received little attention during this period. Currently, Indian water law is undergoing major changes as pollution increases and the social and human costs of water scarcity mount. As a result, the Indian Supreme Court has joined other developing nations in recognizing that access to clean water is a fundamental human rights issue. Cullet identifies the triangular relationship between water, the environment, and human rights. He resolves that these three issues interconnect and are of equal importance. Despite this, policymakers and officials often overlook these environmental issues in relation to water law, despite the obvious effects that pollution on land can have upon the degradation of water sources.

In chapter three, *From Water Sector Reforms to Law and Policy Reforms*, Cullet examines non-legal water sector reforms from both international and Indian perspectives. Water reforms - defined as any policies, planning, implementations, or measures taken to affect change in the water sector - are essential to understanding the context of reforms to the overall water sector. International policy and organizations affect domestic water sector reform in many developing nations. In India, organizations such as the World Bank and the Asian Development Bank have greatly influenced domestic water policy through conditional loans to water development projects water.

Further, Integrated Water Resource Management ("IWRM") - the idea that constitutes a significant amount of the framework for water sector reforms - promotes coordinated water development and management with land and other resource issues to maximize economic and social welfare without compromising the sustainability of vital ecosystems. Cullet views IWRM as a noble concept, but not a guideline for practice because no specific legal consequences attach to IWRM.

Beyond IWRM, Cullet identifies several principles common to recent water sector reforms, including: conservation; water as a basic need; water as an economic good; individual property rights; and decentralization and user participation. Despite many progressive water policies recently adopted internationally and in India, Cullet argues that policy changes without water law reforms are insufficient because such policies lack the force of law. The reforms to India's water sector, however, provide a framework for overhauling India's outdated water law.

In chapter four, *Evolving Water Law for the Twenty-First Century*, Cullet analyzes some of the main water law reforms that several Indian states have proposed and implemented. Recent water law reforms fall into two basic categories: (1) legislation in new fields, and (2) the updating and modernization of existing acts. In the area of

participation and decentralization, recent Indian water legislation has created "Water User Associations" ("WUAs") that transfer management of water infrastructure to actual water users. These regional WUAs are difficult for governments to apply across the board, however, as regional WUAs face varying water situations unique to their locations.

Other institutional reforms observed in India include the creation of independent water regulatory authorities. These authorities correspond with the growing trend of privatization and decentralization promoted by organizations such as the World Bank. The Maharashtra Water Resources Regulatory Authority ("MWRRA") is an example of such an authority that has established a regulatory system and aims to increase water efficiency, allocate control to water users, and establish criteria for water entitlements. Cullet cautions, however, that such authorities must be careful in their allocation of water rights, because such rights are particularly susceptible to monopolies, as there can only be one company piping a city's drinking water supply. As such, states must apply diligent water regulation.

Cullet identifies groundwater legislation as the most challenging and pressing of all water law reforms due to the fact that groundwater serves as the main source of drinking water. Advances in groundwater pumping technologies and insufficient permitting for groundwater extraction have led to increased groundwater scarcity. Several acts pertaining to groundwater have yet to tackle the problem of overuse. Groundwater management is an area that desperately requires further legal reforms, such as prioritizing uses, creating registration requirements for groundwater extraction infrastructure, and permitting for water extraction. Cullet views India's water law reforms to date as a patchwork superimposed over existing principles. He urges the adoption of comprehensive water legislation that brings together all water law principles and discards outdated colonial principles.

In chapter five, *Regulation of Domestic and Livelihood Water*, Cullet focuses on what he deems the most fundamental component of any water law and policy framework: drinking water. Many recent Indian water laws have failed to address issues surrounding drinking water. Cullet bemoans the separate status India's society has given drinking water apart from other water issues. Drinking water policies also differ significantly between urban and rural areas, where urban areas have received more favorable treatment. In India, 70% of urban dwellers receive their water from a municipal supplier that charges a fee for their services. These authorities also have the power to disconnect private water sources for non-payment. On the other hand, rural areas obtain the majority of their drinking water directly from groundwater. Cullet notes that despite most Indians living in rural areas, most research has focused on drinking water in urban areas.

Cullet also describes the World Bank sponsored "Swajal Project" as a first formal step toward a new policy framework for rural drinking water. As a pilot project in the Uttar Pradesh province, an area facing severe water scarcity, the project instituted a demand-driven approach to encourage participation by water users through the creation of water

and sanitation committees. The demand driven approach, however, has led to intra-village equity problems, with the poor unable to pay for the schemes while the wealthy welcomed them. Cullet advocates for the reversal of many demand-driven approaches to water law reform. He maintains that if access to water becomes dependent upon a person's financial capacity, the poor will not have adequate access to clean water.

In chapter six, *Towards an Alternative Framework for Water Law Reforms*, Cullet proposes an alternative framework for water law reforms in order to foster better management of the water sector so that human rights, social, and environmental issues receive priority under a comprehensive and binding legal framework. He outlines a series of principles that should govern an alternative basis of water law reforms. These principles include: making poverty eradication the focus of water law; building water law around India's development, not merely in the economic sense; creating broad principles that cover the entire water sector; and giving greater weight to water scarcity issues, such as access, prioritization of uses, and environmental concerns. According to Cullet, governments must include groundwater in "public trust" water arrangements so the same principles govern all water sources. Cullet also takes issue with the "public trust" basis for water law. He argues to replace such trusts, which lack accountability, with the idea of water as a "common heritage." This would allow for preservation of water for all because water would no longer "belong" to anyone.

Addressing the link between water and land rights, Cullet contends that states should sever this link to create greater social equity and environmental sustainability through the trading of water entitlements regardless of land ownership. According to Cullet, water allocation should base allocation upon proximity, giving priority to local development. Additionally, he argues that access to water should be free, and the concept of a human right to water should apply beyond merely drinking water to include greater amounts of water for subsistence crops and other domestic needs that fall under the human right to water. Cullet concludes by arguing that governments' use of "issue specific" acts must end. Every state and nation should adopt a comprehensive framework water legislation.

Water Law, Poverty, and Development offers an insightful overview of global water law and reforms, as well as several valuable alternative approaches to reform. Although the focus on India is useful, it is occasionally difficult to determine if Cullet is arguing for specific Indian legal reforms or general policy reforms that governments and policy makers should apply throughout the developing world. More generally, although Cullet provides many alternative principles that should govern water law to make it more responsive to the human right to water, he provides little in the way of *how* to achieve these principles. For instance, Cullet fails to address ways that nations and regions can avoid conditional development loans to impose their own water principles

and still achieve development. Overall, this book is an excellent resource for anyone hoping to understand the evolution of water law in the developing world.

Geoffrey Frazier

Susan J. Marks, *Aqua Shock – The Water Crisis in America*, Bloomberg Press, New York (2009); 226 pp; \$24.95; ISBN 978-1-57660-332-1; hardcover.

In *Aqua Shock*, Susan J. Marks presents a realistic depiction of how the water crisis manifests itself in various localities across the United States. By linking statistics with experiences of individuals, municipalities, states, and regions, Marks provides a fundamental, yet detailed, explanation of water as a shrinking resource. Additionally, *Aqua Shock* explores the problems and complexities associated with water as a shrinking resource. Beginning with an analysis of contemporary global water issues and connections, Marks explains how humans use various sources of water. Then, she summarizes distinct bodies of water law controlling water supply and distribution. Finally, focusing on the depletion and pollution of both ground and surface water, Marks suggests various ways to mitigate the pending water crisis.

In chapter one, *Liquid Gold*, Marks emphasizes essential facts regarding water as a resource. Because less than one percent of the Earth's water is readily accessible freshwater that can satisfy human uses for energy, agriculture, industry, and personal use, Marks labels the resource "liquid gold." After breaking down water use in the United States by various categories of consumers, Marks illustrates local and regional water shortage examples and the battles that result. Although water use levels in the United States have leveled or slowed in the past thirty years, Marks explains that population growth and new industries that consume public water supply can lead to dangerous increases in water consumption, especially in arid areas.

In the beginning of chapter two, *Where Our Water Comes From: A Global Perspective*, Marks frames the global water crisis with appalling statistics: (1) 1.1 billion people do not have access to safe drinking water; (2) approximately 2.5 billion do not have access to adequate sanitation services; and (3) water-related diseases cause 2 million preventable deaths each year. Clearly, far too many humans suffer from lack of a basic need. Marks stresses that future predictions appear even grimmer. According to the United Nations Educational Scientific and Cultural Organization, seventy-five percent of the world's population could face freshwater scarcity.

Additionally, to elucidate the cross-border nature of the water crisis, Marks explains, for example, that a drought in Asia can create dust clouds that cross the Pacific Ocean and deposit pollution and dirt in the United States and other parts of the globe. Despite the closed nature of the hydrological cycle, climate change and increased weather variability can significantly affect how humans capture, store, and use water.