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THE POLYCENTRIC TURN: A CASE STUDY OF KENYA'S EVOLVING LEGAL REGIME FOR IRRIGATION WATERS[‡]

ABSTRACT

Formal legal systems comprise a major part, but not the only part, of the “rules of the game” that structure social and social-ecological interactions. Throughout the twentieth century, centralization and consolidation of legal authority were dominant themes among many, if not all, legal systems. That process may have been successful in some cases, but in others the presumed economies of scale from consolidation and centralization either did not materialize or were offset by other social costs, including the failure to accommodate local knowledge, expertise, and preferences. In what could become a theme of the twenty-first century, many countries, including developing countries, have started to experiment with more polycentric legal systems, as the Nobel Laureate Elinor Ostrom referred to them, where local users and user groups have a substantial say in designing and administering rules that apply to them.

This case study of Kenya amounts to a history of trial-and-error in efforts to develop an effective legal regime to govern use of irrigation water, in a country that has suffered for more than a century from seasonal water scarcity, inefficient water use, and user conflicts over water resources. From colonial efforts to import British riparian law to complete centralization of legal authority early in the post-colonial period, pressure on irrigation

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water resources and water users only increased. Beginning in 2003, however, the government of Kenya has been engaged in a process that is not one of simple decentralization or devolution of authority; rather, it is a story of increasing polycentricism, with meaningful participation by local, regional, and national actors in law-making and administration. The starting point actually occurred in 1997, when local water users (advised by NGOs) formed Kenya's first Water User Association (WUA) to help avoid and minimize local water-use conflicts. It worked so well that the national government took notice. In 2003, Kenya's parliament enacted a brand new Water Act, which not only legally recognized the existing WUA, but actively encouraged and facilitated the creation of what the statute referred to as Water Resources Users Associations (WRUAs). This move to polycentricism appears to have reduced problems, including conflicts, relating to periodic water shortages; and recently drafted (but not yet adopted) legislative proposals would have the effect of strengthening Kenya's embrace of polycentric legal control over irrigation water management.

INTRODUCTION

Although irrigated land comprises less than 2.5 percent of the world's land surface, irrigated agriculture nevertheless uses 70 percent of global water withdrawals.¹ Water scarcity already constrains agricultural production in many parts of the world, and by 2050 the global population is expected to increase by more than a third over its 2010 level.² Even with efficiency improvements, total agricultural demand for water is likely to increase, while at the same time climate change and competing anthropogenic uses increasingly stress water resources. Flexible and responsive governance of irrigation water is needed both to balance competing demands and to provide resilience in the face of climatic uncertainty.

While serious, the challenge is not novel. Agriculturalists have long encountered problems of water scarcity and competing uses and interests. Laws and social norms have been crafted and amended in ongoing efforts to address these problems. For much of the twentieth century, the dominant approach throughout the world was to promulgate laws that consolidated and centralized water governance.³ This centralizing tendency cut across ideological and geographic

1. S. Siebert et al., *Development and Validation of the Global Map of Irrigation Areas*, 9 HYDROLOGY AND EARTH SYS. SCI. DISCUSSIONS 535 (2005); Alessandro Flammini et al., *Walking the Nexus Talk: Assessing the Water-Energy-Food Nexus in the Context of the Sustainable Energy for All Initiative* (Food and Agriculture Organization (FAO) Environmental & Natural Resources Management Working Paper No. 58, 2014), <http://www.fao.org/publications/card/en/c/f065f1d5-2dda-4df7-8df3-4defb5a098c8/> [<https://perma.cc/QV3E-3XC7>].

2. *Attitudes About Aging: A Global Perspective*, PEW RESEARCH CTR., <http://www.pewglobal.org/2014/01/30/attitudes-about-aging-a-global-perspective/> [<https://perma.cc/EY5M-4QJ6>].

3. Krister P. Andersson & Elinor Ostrom, *Analyzing Decentralized Resource Regimes from a Polycentric Perspective*, 41 POL'Y SCI. 71, 72 (2008).

lines, occurring, for example, in post-colonial governments in Africa and India, the United States, and the former Soviet Union.⁴

Yet, despite its relative ubiquity, centralized water governance often proves to be a poor fit for ecological and socio-economic realities on the ground. Centralized governance suffers from two significant shortcomings. First, it tends to lack the responsiveness to address regional and/or seasonal variations in *local* water availability and usage. Second, centralized governance generally proves to be highly resource-intensive, both from an informational and enforcement standpoint. As a consequence, centralized water governance often costs far more and delivers far less than planned.⁵ Increasing recognition of the limits of centralized water policy, combined with an adoption by the international financial community of a more decentralized approach to the provision of public services, is contributing to a global shift to more locally-based and, at times, polycentric approaches to water governance.

Polycentricity can be loosely defined as an approach to governance in which multiple, semi-autonomous centers of decision-making operate under a common set of rules.⁶ Polycentric governance systems include a combination of both “horizontal” and “vertical” polycentricity. While “horizontal” polycentricity describes multiple, autonomous centers at the same level of governance, “vertical” polycentricity describes shared authority across various levels of governance. Polycentricity has been proposed as a potentially useful approach to water and irrigation governance, where heterogeneous conditions within a country or region suggest that no single set of rules could effectively govern resource use; instead, it may be preferable to allow local communities to devise their own rules.⁷

Kenya exemplifies the challenges faced, and approaches taken, by many countries in the governance of water for irrigation. While Kenya has a productive agricultural sector, it experiences seasonal water scarcity, inefficient water use, and user conflicts over water resources. In response to these challenges, for much of the twentieth century, the Kenyan government increasingly centralized control over water resources. Access to irrigation water required authority from central government agencies, with little input from local actors. Consequently, centralized control of irrigation proved ineffective at alleviating seasonal scarcity, inefficiency,

4. James S. Wunsch, *Centralization and Development in Post-Independence Africa*, in *THE FAILURE OF THE CENTRALIZED STATE: INST. AND SELF-GOVERNANCE IN AFR.* 43 (James S. Wunsch & Dele Olowu eds., 1990).

5. See generally Elinor Ostrom, *Crafting Institutions for Self-Governing Irrigation Systems* (1992); Elinor Ostrom, *The Challenge of Underperformance*, in *IMPROVING IRRIGATION GOVERNANCE AND MGMT. IN NEPAL* 3 (Ganesh P. Shivakoti & Elinor Ostrom eds., 2002).

6. Paul D. Aligica & Vlad Tarko, *Polycentricity: From Polanyi to Ostrom, and Beyond*, 25 *GOVERNANCE: AN INT'L J. OF POL'Y, ADMIN., AND INST.* 237, 250 (2012).

7. See e.g., Andre R. da Silveira & Keith S. Richards, *The Link Between Polycentrism and Adaptive Capacity in River Basin Governance Systems: Insights from the River Rhine and the Zhujiang (Pearl River) Basin*, 103 *ANNALS OF THE ASS'N OF AM. GEOGRAPHERS* 319 (2013); Bruce Lankford & Nick Hepworth, *The Cathedral and the Bazaar: Monocentric and Polycentric River Basin Management*, 3 *WATER ALTS.* 82 (2010); Ganesh P. Shivakoti & Ram C. Bastakoti, *The Robustness of Montane Irrigation Systems of Thailand in a Dynamic Human-Water Resources Interface*, 2 *J. OF INST'L ECON.* 227 (2006); Elinor Ostrom & Roy Gardner, *Coping with Asymmetries in the Commons: Self-Governing Irrigation Systems Can Work*, 7 *J. OF ECON. PERSP.* 93 (1993).

and water-use conflicts. Starting in 2003, the government of Kenya began implementing a series of reforms that give local and regional actors greater ability to participate in water allocation decisions. Among the most significant reforms was the encouragement of local actors to create a new class of quasi-governmental, quasi-civil society organizations⁸—Water Resource Users' Associations (WRUAs)—to take on some of the functions previously carried out by central government agencies, such as allocating permits to divert water, apportioning water during times of extreme scarcity, and resolving conflicts between water users.

Beyond the direct relevance to irrigation water governance, Kenya's reforms also provide a more generalizable example of the potential of local adaptation and experimentation to respond to stakeholder needs and experiences. For both logistical and political reasons, policymakers are constrained in their ability to pass fully comprehensive legislation. From a logistical standpoint, it is impossible for them to anticipate all scenarios to which a policy might apply. Those tasked with "street-level" implementation of a policy inevitably encounter circumstances about which a more or less general policy may be silent, or for which the policy would be either ineffectual or counterproductive. From a political standpoint, legislators may wish to shield themselves from political fallout arising from the implementation of unpopular policy provisions. Consequently, policymakers tend to enact legislation that serves as a general policy framework, delegating to unelected bureaucrats the responsibility for filling in the details and for making decisions on benefit or resource allocation. Such policy gaps (or mismatches) create a space in which local government officials can adapt, within limits, national policies to local conditions.

This article will examine the evolution over the past century of one aspect of water governance in Kenya—the extraction of surface water for agricultural use.⁹ Schematically, the article is divided into four sections. In the first section, we briefly discuss the history of the dominant approaches to water governance since the late 1800's. In the second section, we explain the concept of polycentricity and its potential relative advantages for water governance. In the third section, we examine the evolution of Kenyan water law governing agricultural surface water use. Kenya initially relied on the riparian doctrine, then on a highly centralized governance regime, and finally on an increasingly polycentric approach to governance. For each time period from 1890–2014, and for each major approach to water allocation within each time period, this article identifies the main laws, practices, and regulatory bodies that shape water allocation, monitoring, and sanctioning, as well as the conditions impacting the ability of local water users and other stakeholders to adapt Kenya's water policy to local conditions. Because land and water allocations often are closely linked, this section also briefly identifies

8. It should be noted that, while these WRUAs were a new phenomenon in Kenya, quasi-civil society organizations have previously arisen and been discussed in other contexts. *See, e.g.*, ALAN PIFER, *THE QUASI NONGOVERNMENTAL ORGANIZATION* 3 (1967) (discussing the British Quasi-Nongovernmental Organizations commonly referred to as QUANGOs), <http://eric.ed.gov/?id=ED018846> [<https://perma.cc/CSQ9-8FHV>].

9. In many respects, the evolution of agricultural water law and governance approaches mirrors that of other forms of water law and governance approaches. Nevertheless, given the complexity of this area of law, we are restricting the scope of our analysis to only the agricultural use of surface water.

relevant laws and norms regarding land allocation and use. The fourth and final section of the paper discusses potential lessons for policy makers from Kenya's efforts to implement a polycentric water governance regime.

I. HISTORY OF WATER GOVERNANCE IN KENYA

Throughout much of the twentieth century, the consolidation and centralization of control was by far the dominant approach to natural resource management. Until the 1970s, central governments often centralized natural resource governance as part of an attempt to increase industrial development.¹⁰ In many countries, the consolidation began under colonial administration and was continued by the post-independence governments.¹¹ The urge to consolidate control over resources was not limited to colonial countries, however, and included countries at every stage of development and of every ideological persuasion.¹²

Because of its central role in agriculture, industrial development, sanitation, and basic human survival, water might be even more susceptible to centralized governance than many other natural resources. Central governments have tended to dominate water governance for several reasons. First, domestic intercommunity water disputes often require the intervention of national-level agencies.¹³ To avert intercommunity conflicts, national-level agencies are predisposed to create national-level governance regimes.¹⁴

Second, as noted above, natural resources are considered a basic development tool, and developing countries often have viewed the development of water resources as an important component in state building.¹⁵ For instance, Mollinga and Bolding write that “[h]istorically, irrigation has been strongly associated with state formation and state governance.”¹⁶ Similarly, large scale projects such as dams and reservoirs are promoted, at least in part, as representations of state power and hegemony.¹⁷

Finally, third parties such as the World Bank and other development agencies traditionally encouraged state control in water governance through the funding of large-scale development schemes.¹⁸ The World Bank's approach rested on a belief that a strong central government was necessary to ensure economic

10. Andersson & Ostrom, *supra* note 3.

11. Edward L. Webb, *Forest Policy as a Changing Context in Asia*, in *DECENTRALIZATION, FORESTS AND RURAL COMMUNITIES: POL'Y OUTCOMES IN SOUTH AND SOUTHEAST ASIA* 21, 25 (Edward L. Webb & Ganesh P. Shivakoti eds., 2008).

12. *See generally* JAMIE LINTON, *WHAT IS WATER? THE HISTORY OF A MODERN ABSTRACTION* (2010); Webb, *supra* note 11, at 14.

13. *See generally* Eran Feitelson & Itay Fischhendler, *Spaces of Water Governance: The Case of Israel and Its Neighbors*, 99 *ANNALS OF THE ASS'N OF AM. GEOGRAPHERS* 728, 730 (2009).

14. *Id.*

15. *Id.*

16. *See generally* *THE POLITICS OF IRRIGATION REFORM: CONTESTED POLICY FORMULATION AND IMPLEMENTATION IN ASIA, AFRICA & LATIN AMERICA* 1 (Peter P. Mollinga & Alex Bolding eds., 2004).

17. *See* Feitelson & Fischhendler, *supra* note 13, at 730–32.

18. *Id.* at 730.

modernization in developing countries.¹⁹ Consequently, lending in third world countries primarily consisted of funneling loans through central state institutions for large infrastructure projects such as dams, irrigation schemes, and irrigation mechanization.²⁰

Beginning in the 1980s, the dominant paradigm of the World Bank and other development agencies shifted from state-driven economic intervention to the more market-oriented “Washington Consensus.”²¹ As outlined in the World Bank’s “Berg Report,” this approach viewed developing countries’ economic problems as resulting from distorting and irrational state institutions.²² Consequently, these institutions began pressuring developing countries to adopt more market-based approaches to natural resource governance, including water governance, and to devolve state involvement to lower-level political units.²³

II. POLYCENTRICITY

Polycentricity is a concept associated with the “Bloomington School” of political economy, which refers to a political system in which multiple, semi-autonomous decision centers possess overlapping responsibilities and jurisdictions, and operate under an agreed-upon overarching set of rules.²⁴ Such polycentric systems are distinguished from monocentric systems based on who is able to determine and enforce rules.²⁵ In a polycentric political system, many actors and structures are afforded limited discretion to design and enforce rules, whereas, in a monocentric system, a single decision structure has a monopoly over that process.²⁶

Polycentric systems can, but do not necessarily, result in better governance of natural resources. Multiple smaller-scale decision makers in a polycentric system (as opposed to a single centralized decision maker under a monocentric system) allow the users of a common-pool resource greater input into its management.²⁷ Users and other interested parties are, therefore, able to

19. *See generally* JEREMIAH I. DIBUA, MODERNIZATION AND THE CRISIS OF DEVELOPMENT IN AFRICA: THE NIGERIAN EXPERIENCE 2–3 (2006); *see also* GRAHAM HARRISON, THE WORLD BANK AND AFRICA: THE CONSTRUCTION OF GOVERNANCE STATES (2004).

20. HARRISON, *supra* note 19.

21. *See generally* ARUN AGRAWAL, CHARLA BRITT & KESHAV KANEL, DECENTRALIZATION IN NEPAL: A COMPARATIVE ANALYSIS (1999); DIBUA, *supra* note 19; THE WORLD BANK: STRUCTURE AND POLICIES (Christopher L. Gilbert & David Vines eds., 2000); Thomas Perrault, *State Restructuring and the Scale Politics of Rural Water Governance in Bolivia*, 37 ENV’T AND PLAN. A 263 (2005).

22. DIBUA, *supra* note 19, at 3, 35; THE WORLD BANK: STRUCTURE AND POLICIES (Christopher L. Gilbert & David Vines eds., 2000).

23. *See* DIBUA, *supra* note 19, at 2; THE WORLD BANK: STRUCTURE AND POLICIES (Christopher L. Gilbert & David Vines eds., 2000); Perrault, *supra* note 21.

24. Andersson & Ostrom, *supra* note 3, at 73; Michael D. McGinnis, *Networks of Adjacent Action Situations in Polycentric Governance*, 39 POL. STUDIES. J. 51, 51 n.1 (2011).

25. Aligica & Tarko, *supra* note 6, at 245–46.

26. *Id.* at 245 (citing POLYCENTRICITY AND LOCAL PUBLIC ECONOMIES: READINGS FROM THE WORKSHOP IN POLITICAL THEORY AND POLICY ANALYSIS (Michael D. McGinnis ed., 1999)).

27. ELINOR OSTROM, UNDERSTANDING INSTITUTIONAL DIVERSITY 281–83 (2005);

Ahjonid S. Garmestani & Melinda Harm Benson, *A Framework for Resilience-based Governance of Social-Ecological Systems*, 18 ECOLOGY & SOC’Y 9 (2013).

incorporate local knowledge that might not be readily available to a centralized authority.²⁸

Polycentric systems may also foster policy experimentation and allow for the rapid adoption of successful innovations. The creation of multiple centers of power at different scales can provide opportunities for diverse citizens and lower-level officials to innovate.²⁹ Failed experiments are less likely to adversely affect the entire system in a polycentric political system, as the redundancy of responsibilities allows for other centers to take over governance from a failed center.³⁰ But successful experiments can be rapidly diffused among other decision centers.³¹

Polycentricity is not a panacea, however. Polycentric systems face potential shortcomings. Smaller political entities may prove, in practice, to be more risk adverse because they are less able to absorb the costs of failed experiments. Consequently, rather than engaging in experimentation, the constituent decision centers in a polycentric system may experience an ossification of policy design.³² Also, the creation of multiple decision centers increases the risks of inter-center conflicts.³³ Finally, in the case of natural resource governance, policymakers can experience difficulty matching resource boundaries with the appropriate political boundaries for individuals and institutions that benefit from and contribute to the resource.³⁴

Despite these potential shortcomings, polycentric governance systems have had documented successes. In the 1970s, Elinor Ostrom and other researchers famously compared the performance of polycentric (community) and monocentric (consolidated) approaches to policing. Across a number of studies, the researchers analyzed policing in the Nashville-Davidson County of Tennessee and cities of Indianapolis, Chicago, Grand Rapids, and St. Louis. They compared the performance of large, consolidated police forces with that of police forces that continued to be operated by local jurisdictions along a number of dimensions, including effectiveness, responsiveness, and citizen satisfaction. Ostrom and her colleagues found that the smaller, locally operated forces consistently equaled or outperformed their consolidated counterparts. Specifically, residents were more satisfied with localized police services.³⁵ These localized police forces were equally effective³⁶ and were better able to use officers' personal knowledge and

28. OSTROM, *supra* note 27.

29. Elinor Ostrom, *The Comparative Study of Public Economies*, 61 THE AM. ECON. 91, 104 (1998).

30. OSTROM, *supra* note 27.

31. *Id.*

32. *See generally* Andersson & Ostrom, *supra* note 3.

33. *Id.*

34. Harini Nagendra & Elinor Ostrom, *Polycentric Governance of Multifunctional Forested Landscapes*, 6 INT'L J. OF THE COMMONS 104 (2012).

35. Elinor Ostrom, Roger B. Parks & Gordon P. Whitaker, *Do We Really Want to Consolidate Urban Police Forces? A Reappraisal of Some Old Assertions*, 33 PUB. ADMIN. REV. 423, 428 (1973).

36. *See* Elinor Ostrom, *Citizen Participation and Policing: What Do We Know*, 7 J. OF VOLUNTARY ACTION RES. 102, 107 (1978).

improve resident satisfaction with police forces.³⁷ In 2009, Elinor Ostrom wrote that the researchers “never found a large police department with over 100 officers able to outperform a small- to-medium-size department (25–50 officers) in producing direct services including patrol, traffic control, response services, and criminal investigations.”³⁸

While the police studies are perhaps the most unambiguous findings in support of polycentric systems, a number of studies suggest that polycentric political systems can also result in effective management of natural resources. In the 1960s, Elinor Ostrom examined efforts by southern California communities to stem over-extraction from natural underground water reservoirs. Her study involved a geographic region encompassing seven distinct, partially interconnected underground reservoirs, all of which were being rapidly depleted to satisfy growing water demands caused by increases in population and land usage.³⁹ Compounding growth-related demands for water were water-use laws that encouraged the unfettered extraction of water as a means of establishing expropriation rights.⁴⁰ Rather than relying on the creation of a single, centralized water authority, water users in the region ultimately crafted a water governance system, through a process of experimentation and conflict resolution, which included multiple limited-purpose governmental entities, private companies, and voluntary user associations. The roles and jurisdictions of these entities varied in both scale and purpose.⁴¹ Both Ostrom⁴² and Blomquist⁴³ note that this seemingly chaotic governing system has had a remarkably high level of user compliance with water usage regulations, is adaptable to changing circumstances, and has successfully and efficiently managed water resources over a long period of time.

Polycentric systems have also had successes in forest and wildlife management. For instance, after Nepal implemented community-managed forests and leasehold forestry programs, including the creation of local forest user groups tasked with a degree of local administrative and rulemaking authority, community-managed forests evidenced superior governance than did complete government

37. See, e.g., Elinor Ostrom & Gordon Whitaker, *Does Local Community Control of Police Make a Difference? Some Preliminary Finding* 17 AM. J. OF POL. SCI. 48, 49 (1973) reprinted in POLYCENTRICITY AND LOCAL PUBLIC ECONOMIES 196 (Michael D. McGinnis ed., 2002); Bruce D. Rogers & C. McCurdy Lipsey, *Metropolitan Reform: Citizen Evaluations of Performances in Nashville-Davidson County, Tennessee*, 4 PUBLIUS: THE J. OF FED. 19, 32 (1974).

38. Peter J. Boettke, Jayme S. Lemke & Liya Palagashvili, *Riding in Cars with Boys: Elinor Ostrom's Adventures with the Police*, 9 J. OF INST. ECON. 407, 416 (2013) (quoting THE NOBEL FOUNDATION, *infra* note 42).

39. See generally ELINOR OSTROM, *GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION* (Cambridge Univ. Press 1990).

40. *Id.*

41. *Id.*

42. Elinor Ostrom – *Biographical*, THE NOBEL FOUNDATION, https://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2009/ostrom-bio.html [<https://perma.cc/R3RP-HRXX>].

43. See generally OSTROM, *supra* note 5. This study followed up on Elinor Ostrom's original research.

control of the resource.⁴⁴ Also, after gaining its independence in 1990, Namibia implemented a more polycentric approach to wildlife conservation and, since that time, has seen a significant increase in its wildlife populations.⁴⁵

III. EVOLUTION OF KENYA WATER LAW

Overall, the historical path of Kenya's water governance can be viewed as winding from (a) a highly decentralized pre-colonial approach to (b) a pluralistic approach reliant on a combination of British common law and pre-existing traditional institutions to (c) an ever more centralized system of water permits and government monitoring and enforcement before (d) adopting a more polycentric approach to governance that seeks to involve local stakeholders in the governance of water resources. This progression is, at heart, the result of a continual struggle by the Kenyan governments (both colonial and post-independence) to develop the country's water laws and institutions to match its environmental and socioeconomic realities.

A. Pre-centralization (Until 1900)

During pre-colonial and early colonial times, Kenyan agriculture was dominated by pastoralism and subsistence agriculture. Cultivation was often semi-permanent, allowing crop locations to shift based on availability of water and other resources.⁴⁶ Although no written accounts exist of indigenous water institutions before the arrival of Europeans in the mid-1800s, considerable evidence indicates that communities developed customary practices to govern water access, some of which continue to govern water use in parts of Kenya.⁴⁷ While these local governance regimes had many common attributes, they nevertheless evolved in the absence of any national water law, and were developed by the individual communities to address their own particular social, political, and climatic conditions.

Meinzen-Dick and Nkonya identify the following common traits among the myriad indigenous water management regimes. The regimes tended to recognize the communal ownership of water, with all individuals (and, in some cases, animals) possessing the right to use the water for "primary" uses such as personal domestic consumption or use on household gardens.⁴⁸ Water rights were

44. Webb, *supra* note 11, at 30. See also Nagendra & Ostrom, *supra* note 34 (discussing studies by Heinen and Shreshtha (2007) and Nagendra (2007) which evidence the success of a polycentric approach to forest governance in certain regions in Nepal).

45. Stefan Carpenter, *The Devolution of Conservation: Why CITES Must Embrace Community-Based Resource Management*, 2(1) ARIZ. J. OF ENVTL. L. & POL'Y 17 (2011).

46. L. WINSTON CONE & J. F. LIPSCOMB, *THE HISTORY OF KENYA AGRICULTURE* 42 (L. Winston Cone & J. F. Lipscomb eds., 1972).

47. See David Nilsson & Ezekiel Nyangeri Nyanchaga, *East African Water Regimes: The Case of Kenya*, in *THE EVOLUTION OF THE LAW AND POLITICS OF WATER* 105, 107 (Joseph W. Dellapenna & Joyeeta Gupta eds. 2009); Victor Orindi & Chris Huggins, *The Dynamic Relationship Between Property Rights, Water Resource Management and Poverty in the Lake Victoria Basin*, *AFRICAN WATER LAWS: PLURAL LEGISLATIVE FRAMEWORKS FOR RURAL WATER MANAGEMENT IN AFRICA* 33-1, 3 (2005).

48. Ruth Meinzen-Dick & Leticia Nkonya, *Understanding Legal Pluralism in Water and Land Rights: Lessons from African and Asia*, in *COMMUNITY-BASED WATER LAW AND WATER RESOURCE*

flexible, with access rights being negotiated and re-negotiated, in response to scarcity or external pressures, at the individual and group levels.⁴⁹

Communities likely organized maintenance of water sources, monitored household water use, resolved disputes between users, and meted out social sanctions for unauthorized use. For instance, the Marakwet Escarpment in Kenya's Kerio Valley contains extensive networks of "hill furrow" irrigation systems designed to deliver river water onto the valley floor.⁵⁰ While the exact age of these networks is unknown, they certainly pre-date the arrival of colonists, and they remain in use today in some areas of Africa.⁵¹ Large-scale maintenance or repairs on the irrigation systems, where still in use, is traditionally initiated through the blowing of a horn that has been passed down from generation to generation.⁵² Rights to water access are based on village and clan affiliation, with distribution of those rights occurring after special meetings among representatives from the affected villages.⁵³ Punishments for theft of water are decided by a traditional body, and can include both fines (in the form of livestock or money) and public shaming and ridicule.⁵⁴

Britain in the 1880's had little interest in governing Kenya directly. Rather, it desired only to establish an influence in the region in order to stop slave trading, encourage trade and commerce, and protect its control of the Nile and shipping routes to India via the Suez Canal.⁵⁵ In 1888, Britain chartered the Imperial British East Africa Company (IBEAC) for the purpose of governing current-day Kenya and Uganda.⁵⁶ Of note, the charter mandated that IBEAC respect local laws and customs:

In the administration of justice by the [IBEAC] to the peoples of its territories or to any of the inhabitants thereof, careful regard shall always be had to the customs and laws of the class or tribe

MANAGEMENT REFORM IN DEVELOPING COUNTRIES 12, 16–17 (Barbara van Koppen, Mark Giordano & John Butterworth eds., 2007).

49. Meinzen-Dick & Nkonya, *supra* note 48, at 16. This flexibility characterized the general approach of indigenous African societies regarding land and resource use. Okoth-Ogendo writes, "no particular type of *man-land* relationship (individual or communal) or particular attribute of sovereignty could be said to describe accurately the tenure system of an African people. Man-land relationships (what is here referred to as *access*) had always been specific to a function—cultivation, grazing, hunting or firewood gathering. Thus, in any given community a number of people could hold a right or bundle of rights expressing a specific range of functions." H.W.O OKOTH-OGENDO, TENANTS OF THE CROWN: EVOLUTION OF AGRARIAN LAW AND INSTITUTIONS IN KENYA 17 (1991) (emphasis in original).

50. William M. Adams, Elizabeth E. Watson & Samuel K. Mutiso, *Water, Rules, and Gender: Water Rights in an Indigenous Irrigation System, Marakwet, Kenya*, 28 DEV. & CHANGE 707, 711 (1997).

51. *Id.*

52. *Id.* at 715.

53. *Id.* at 717.

54. *Id.* at 725.

55. THE DEPENDENT EMPIRE AND IRELAND, 1840–1900: ADVANCE AND RETREAT IN REPRESENTATIVE SELF-GOVERNMENT 596 (Frederick Madden & David Fieldhouse eds., 1991).

56. Charter to the Imperial British East Africa Company, 3 September 1888, *in* THE DEPENDENT EMPIRE AND IRELAND, 1840–1900: ADVANCE AND RETREAT IN REPRESENTATIVE SELF-GOVERNMENT 616 (Frederick Madden & David Fieldhouse eds., 1991).

or nation to which the parties respectively belong, especially with respect to the possession, transfer, and disposition of lands and goods, and testate or intestate succession thereto . . . and other rights of property and personal rights.⁵⁷

A mere two years later, however, Britain's newly appointed Chancellor of the Exchequer wrote to the Prime Minister, William Gladstone, complaining of pressure for Britain to take over governance of the region: "the [IBEAC] have 'thrown up the sponge' (being as I imagine, insolvent) and a determined effort is being made to force the British Government to take the *damnosa haereditas*."⁵⁸ Ultimately, geopolitical considerations (specifically, concerns that France and Germany would step into any resulting power vacuum in the region) convinced Britain to take over governing the area.⁵⁹ Britain considered Uganda, with its fertile soil and strategic location, to be of much greater importance than Kenya, but the former was landlocked, and the only practical route to the sea lay through the latter.⁶⁰ Consequently, Britain declared modern-day Kenya (then known as British East Africa) a protectorate in 1895.

Europeans in Kenya initially relied on English common law to establish water rights amongst colons.⁶¹ In brief, the common law doctrine of riparian rights (riparian doctrine) held that riparian property owners were entitled to (a) water that was substantively unaltered in its quantity or quality, and (b) extract or use that water in a manner that did not itself alter the quantity or quality of the water.⁶² The doctrine held that downstream owners that had been damaged by upstream use could seek damages in court. However, while colons may have relied on imported British common law, Britain initially lacked any defined land policy in Kenya and,

57. *Id.* at 618.

58. Letter from Sir William Harcourt to William Gladstone (Sept. 20, 1892), in *THE DEPENDENT EMPIRE AND IRELAND, 1840–1900: ADVANCE AND RETREAT IN REPRESENTATIVE SELF-GOVERNMENT* 619 (Frederick Madden & David Fieldhouse eds., 1991).

59. See Memorandum from Earl of Rosebery on Imperial British East Africa Company (Sept. 16, 1892) in *THE DEPENDENT EMPIRE AND IRELAND, 1840–1900: ADVANCE AND RETREAT IN REPRESENTATIVE SELF-GOVERNMENT* 620 (Frederick Madden & David Fieldhouse eds., 1991) (noting that, should England withdraw from East Africa, "other nations are anxious to obtain a footing on [the Nile]").

60. See Report from Sir Gerald Portal on Uganda (Nov. 1, 1893, in *THE DEPENDENT EMPIRE AND IRELAND, 1840–1900: ADVANCE AND RETREAT IN REPRESENTATIVE SELF-GOVERNMENT* 624 (Frederick Madden & David Fieldhouse eds., 1991); Makau Kiamba, *The Introduction and Evolution of Private Landed Property in Kenya*, 20 *DEV. & CHANGE* 121, 121 (1989).

61. Nilsson & Nyangeri, *supra* note 47, at 108 (noting that a colon is a colonial farmer or plantation owner).

62. As described in the 1893 case *John Young & Co. v. Bankier Distillery Co.*, 1893 A.C. 691, 698 (1893).

"A riparian proprietor is entitled to have the water of the stream . . . flow down as it has been accustomed to flow down to his property, subject to the ordinary use . . . by upper proprietors . . . and to such further use . . . on their part in connection with their property as may be reasonable under the circumstances. Every riparian owner is thus entitled to the water of his stream in its natural flow, without sensible diminution or increase, and without sensible alteration in its character or quality. Any invasion of this right causing actual damage . . . entitles the party injured to the intervention of the Court."

as such, British involvement in Kenya (both directly and through the IBEAC) did not seek to directly interfere with existing indigenous resource management.⁶³

Thus, at the turn of the nineteenth Century, Kenyan water governance was marked by a pluralistic, decentralized approach. Water use by colons relied on the court system to apply common law and fashion *ex post* remedies. Throughout the remainder of Kenya, water governance consisted of a multitude of traditional institutions.

B. Consolidation of Governance by the Colonial State (1900-1963)

At the turn of the twentieth century, the colonial government began to take steps to actively control water usage, rather than relying on the application of common law through the judicial system. The common law was seen as being particularly ill-suited for water management in Kenya, and the next eight decades saw repeated attempts to restrict water extraction and use through the issuance of licenses and the adoption of increasingly strict legislation and rules. Coincident with this increased involvement in colon water usage, the government also asserted its hegemony over Kenya's native areas. In the process, the government overrode or subordinated many indigenous water management institutions.

1. 1900–1909

In 1902, the government passed the Crown Lands Ordinance, which provided that land conveyed to settlers under the ordinance did not confer any right to the waters of any river or lake.⁶⁴ Later that year, the government issued the Rules for Purchase of Land under the Crown Lands Ordinance (the "1902 Rules") which prohibited the interference with or diverting of any stream or body of water that extended beyond the limit of a single landholding without permission.⁶⁵ The 1902 Rules also stated that the use of all lands purchased from the Crown would be subject to the issuance of future irrigation rules.

At the same time that the colonial government began consolidating control over Kenya's water management, it also initiated a series of actions that consolidated control over black Kenyans, in the process significantly eroding their traditional autonomy over their lands and water resources. Much of this erosion was due to economic interests. In late 1901, Britain finished construction of a railroad from Kenya's coast into Uganda at a cost of £5,000,000.⁶⁶ Kenya's

63. Kiamba, *supra* note 60, at 125; CONE & LIPSCOMB, *supra* note 46, at 27; M. P. K. SORRENSON, ORIGINS OF EUROPEAN SETTLEMENT IN KENYA (1968) ("British administration had come to East Africa in name though it would still be years before it was present in reality"). Of course, the colonial expropriation of land and resources may well have had a significant impact on the functioning of pre-existing water governance regimes. Nevertheless, during this period, Britain did not make any formal legal attempts to undermine the functioning of the indigenous regimes.

64. The East Africa Protectorate Crown Lands Ordinance (Sept. 27, 1902) *reprinted in* 95 BRITISH AND FOREIGN STATE PAPERS 1901–02, at 528 (1905).

65. Rules for the Purchase of Land under the Crown Lands Ordinance 1902, No. 76 (1903) THE OFFICIAL GAZETTE OF THE EAST AFRICA AND UGANDA PROTECTORATES (East Africa Protectorate).

66. Memorandum from Sir Charles Eliot on the Protectorate (June 10, 1901), *in* THE DEPENDENT EMPIRE AND IRELAND, 1840–1900: ADVANCE AND RETREAT IN REPRESENTATIVE SELF-GOVERNMENT 634 (Frederick Madden & David Fieldhouse eds., 1991); CONE & LIPSCOMB, *supra* note 46, at 32.

Commissioner⁶⁷ at the time called for increased settlement by Europeans of fertile lands in the Rift Valley and Mau Highlands in order to recoup the costs of constructing and operating the railway.⁶⁸ Britain answered this call by issuing a series of acts and orders-in-council.⁶⁹

The 1901 East Africa (Lands) Order-in-Council granted the Commissioner the ability to alienate “Crown lands,” which were defined as “all public lands within the East African Protectorate which for the time being are subject to the control of his Majesty . . . and all lands which have been or may hereafter be acquired. . . .”⁷⁰ Though the order-in-council did not define the phrase “public lands,” Kenya’s Commissioner interpreted it to apply only to “wastelands.”⁷¹ The next year, the Commissioner issued the Crown Lands Ordinance, which provided, *inter alia*, that the rights of native Africans in land only applied to land under actual occupation, and that the Commissioner could sell or lease “waste and unoccupied” lands without seeking the consent of any indigenous authority.⁷² Land that was not actively occupied by a native Kenyan was considered to be wasteland, and thereby part of the Crown lands.⁷³ This designation, however, failed to take into account the fact that native Kenyans often traditionally retained ownership interests in lands that they were fallowing, and that many pastoralists had traditional territories which were used seasonally or episodically.⁷⁴

2. 1910–1919

A little more than a decade later, the colonial government returned its attention to the issue of water use. In 1915, the colonial government repealed the 1902 Crown Lands Ordinance, and issued a new ordinance by the same name. Like its predecessor, the 1915 Crown Lands Ordinance provided that a conveyance of

67. Between 1895 and 1905, the country’s top political appointees were referred to as “Commissioners.” From 1905 until independence, they were referred to as “Governors.”

68. Eliot, *supra* note 66, at 635; CONE & LIPSCOMB, *supra* note 46, at 27; J. K. Matheson, *White Settlement, in EAST AFRICAN AGRICULTURE: A SHORT SURVEY OF THE AGRICULTURE OF KENYA, UGANDA, TANGANYIKA, AND ZANZIBAR, AND OF ITS PRINCIPAL PRODUCTS* 13, 18 (J.K. Matheson & E.W. Bovill eds., 1950).

69. As explained by the 1910–1911 Encyc. Britannica, there were two classes of orders-in-council. The first consisted of orders issued by the British sovereign on the advice of the privy council. They differed from statutes in that they did not require the approval of Parliament, but the encyclopedia noted that, at the time of its publication, “the principle seems generally accepted that orders in council may be issued on the strength of the royal prerogative, but they must not seriously alter the law of the land.” The second class were orders issued by administrative departments of the government pursuant to authority granted by an act of Parliament. *Order in Council*, THE ENCYC. BRITANNICA: A DICTIONARY OF ARTS, SCIENCES, LITERATURE AND GENERAL INFORMATION 187 (11th ed. 1910–1911).

70. East Africa Lands Order in Council (Aug. 8, 1901), *reprinted in* 95 BRITISH AND FOREIGN STATE PAPERS 1901–02, at 999 (1905). Prior to this order-in-council, the Commissioner had been restricted to only alienating land located within Kenya’s “railway zone.” See Kiamba, *supra* note 60, at 126.

71. Tim O.A. Mweseli, *The Centrality of Land in Kenya: Historical Background and Legal Perspective*, in *ESSAYS ON LAND LAW: THE REFORM DEBATE IN KENYA* 3, 8 (Smokin C. Wanjala ed., 2000).

72. *Id.* at 8–9.

73. CONE & LIPSCOMB, *supra* note 46, at 53.

74. Matheson, *supra* note 68, at 18.

land under the ordinance did not convey any right to water, and prohibited the damming of the water of a spring, river, lake, or stream. But, in a *de facto* continuation of the riparian doctrine the ordinance provided an express use exception for “domestic purposes.”⁷⁵ Curiously, the ordinance did not define what qualified as a “domestic purpose.” Violation of the 1915 Crown Land Ordinance’s water restrictions was punishable by a fine not exceeding £150.

In 1916, at bequest of the Kenyan government, the Director of the Public Works Department proposed the Draft Water Ordinance of 1916.⁷⁶ That draft proposed the “state ownership and control supreme, not only of all rivers and lakes but also of their beds and banks.”⁷⁷ It also called for an end to the reliance on the courts for resolutions over water disputes.⁷⁸ The draft ordinance was not ultimately adopted, but the Governor-in-Council did issue the Crown Lands (Water Permit) Rules of 1919, which represented the colony’s first set of rules specifically addressing water use.⁷⁹ While the rules did not provide any specific restrictions on water usage, they did allow for the possibility of water use permits. The rules stated that all subsequent water licenses and permits issued by the Director of Public Works (who the rules designated as the “prescribed officer” under the 1915 Crown Lands Ordinance) would be deemed to be of full force and effect as if they were set forth in the Rules themselves.

3. 1920–1940

The Kenyan Parliament episodically grappled with the issue of water usage throughout the next two decades. This time period also witnessed continued efforts by the colonial government to subordinate traditional water governance institutions.

a. Legislation Impacting Native Kenyans

The Kenya (Annexation) Order in Council, 1920 (the “Annexation Order”) included in “His Majesty’s Dominions” all territories within the East Africa Protectorate except for those territories contained within the Sultanate of Zanzibar.⁸⁰ Because it did not contain any exemptions for native reserves, the Annexation Order had the effect of categorizing those lands as Crown Lands.⁸¹ A year later, the Kenya Colony Order in Council, 1921 (the “1921 Order”) officially included lands occupied by native Kenyans as Crown Lands, defining the latter as including “all lands occupied by the native tribes of the Colony and all lands reserved for the use of the members of native tribes.”⁸² The Annexation Order and

75. Crown Lands Ordinance (1915) Cap. 140 § 75.

76. Nilsson & Nyanchaga, *supra* note 47, at 110.

77. *Id.*

78. *Id.*

79. The Crown Lands Ordinance, 1915, No. 677 (1919) THE OFFICIAL GAZETTE OF THE EAST AFRICA PROTECTORATE.

80. The Kenya Annexation Order in Council (June 11, 1920), *reprinted in* 113 BRITISH AND FOREIGN STATE PAPERS 1920 at 74–75 (1923).

81. CONE & LIPSCOMB, *supra* note 46, at 76.

82. The Kenya Order in Council (Jun. 27, 1921), *reprinted in* 117 BRITISH AND FOREIGN STATE PAPERS 1923, at 1–2 (1926)

the 1921 Order stripped native Kenyans of virtually all of their rights in their land. The Kenyan Supreme Court recognized as much in a 1921 ruling when it determined that “all native rights . . . [had] disappeared and natives in the occupation of such Crown land became tenants-at-will of the Crown of the land actually occupied. . . .”⁸³

In 1923, the British Parliament passed the Devonshire Declaration, in which the British Parliament formally declared that the Kenyan colonial government regarded itself as exercising a trust on behalf of native Kenyans.⁸⁴ The British government designated reserved lands as being held in trust due, at least in part, to a desire to protect black African interests in the region while reigning in European settlers’ attempts at self-government.⁸⁵ Nevertheless, these developments legally established that the Crown, rather than native Kenyans, would be responsible for owning land and managing affairs on behalf of native populations—the effect of which was to undermine the role of traditional African institutions.⁸⁶

Concurrent with this diminishment of traditional land ownership rights, the early 1920s also witnessed an increased effort by the Kenyan government to increase the productivity of native agriculture. The Department of Agriculture’s Annual Report for 1920 described the native reserves as being “highly fertile,” and stressed that it was “essential” that residents of those reserves “utilize profitably” their lands.⁸⁷ The 1923 Devonshire Declaration stated Parliament’s intent to increase the economic productivity of native Kenyans in order to help them achieve a “higher intellectual, moral and economic level.”⁸⁸ The 1925 Report of the East Africa Commission, which summarized the export of crop production in Kenya for the years 1921–1924, also emphasized the need to devote more resources to increasing agricultural and pastoral output from lands occupied by native Kenyans, stressing the potential for a rapid increase in agricultural production within the native reserves.⁸⁹ Finally, in 1927, the Chief Native Commissioner issued a circular to all Kenyan administrative officers entitled *The Dual Policy of Development* that demanded better agricultural output within the native reserves in order to meet the reserves’ increased food demands.⁹⁰ By the 1930s, the colonial government had established a Ministry of Agriculture to promote market-based agricultural

83. *Isaka Wainaina wa Gathomo v. Murito wa Indangara* (1921) 9 L.R.K. 102, 104 (Kenya).

84. CONE & LIPSCOMB, *supra* note 46, at 57.

85. See generally Daniel M. Stephen, ‘*Brothers of the Empire?*’ *India and the British Empire Exhibition of 1924–25*, 22 TWENTIETH CENTURY BRIT. HIST. 164 (2011).

86. The Devonshire declaration placed formal control over native Kenyan lands and resources in the hands of the colonial government. See generally Ezekiel Nyangeri Nyanchaga, *Historical Timeline on Water Governance in Kenya (1895–2002)*, in GOVERNANCE IN WATER SECTOR—COMPARING DEV. IN KENYA, NEPAL, S. AFR. AND FIN. 18, 21 (2007). As a practical matter, it also enabled the colonial government’s expanded efforts at boosting agricultural productivity among native Kenyans, described *infra* in notes 88–91.

87. CONE & LIPSCOMB, *supra* note 46, at 43.

88. *Id.* at 57.

89. SEC’Y OF STATE FOR THE COLONIES, REPORT OF THE EAST AFRICA COMMISSION 155–58 (1925) (U.K.).

90. See CONE & LIPSCOMB, *supra* note 46, at 65–66.

techniques, and a Betterment Fund to finance irrigation projects, administered by the Native Lands Trust Board.⁹¹

b. Legislation Impacting Water Usage by Both Colons and Native Kenyans

In 1921, the Kenyan National Assembly considered but abandoned a new draft water ordinance after determining that the cost to implement it would be prohibitive.⁹² In 1926, the Director of Kenya's Public Works Department, H.L. Sires, issued a commissioned report containing recommendations regarding Kenya's future water policy.⁹³ Comparing water laws from a number of European countries and former and then-current British colonies, the report determined that a reliance on common law riparianism prevented the efficient use of water resources because the resulting tenure insecurity inhibited development of the resource.⁹⁴ As a remedy, the report recommended that the Kenyan state claim ownership and control over its water resources.⁹⁵ Also in 1926, A.D. Lewis, the Director of Irrigation for South Africa, independently assessed Kenya's water governance.⁹⁶ Like Sires, he also determined that a common law approach was inappropriate for the governance of Kenya's water.⁹⁷

At Lewis' recommendation, Kenya created a Water Legislation Committee, which subsequently produced a draft water bill for consideration in 1928 (the "1928 Draft Water Bill").⁹⁸ Among other things, the 1928 Draft Water Bill proposed to nationalize ownership of all sources of water, including subterranean water, on crown lands.⁹⁹ In support of the proposed bill, Sires argued that the need for a new ordinance had been recognized "for many years by those who have been concerned with the administration of existing water law."¹⁰⁰ He emphasized that achieving the "maximum beneficial use" of water was a matter of "national importance" in light of the fact that Kenya's water resources were "all too scanty and inadequate" for the full development of the country.¹⁰¹

Strong opposition by white farmers prevented the passage of the 1928 Draft Water Bill, and Kenya instead passed a weakened water bill in 1929 (the "1929 Water Ordinance").¹⁰² The 1929 Water Bill contained no language regarding ownership of subterranean waters, but it did provide for state ownership of all

91. *Id.*

92. 2 KENYA NAT'L ASSEMBLY OFFICIAL REC. 594 (1929) (legislative debate on the 1928 Water Bill).

93. Nilsson & Nyanchaga, *supra* note 47, at 110. The authors refer to Sires as "Sikes." However, since the Legislative Council Debates, 1928 Vol. II refers to the Director of Public Works as "Sires," that name will be used herein.

94. *Id.*

95. *Id.*

96. 2 KENYA NAT'L ASSEMBLY OFFICIAL REC. 594-95 (1929) (statement of Mr. Sires).

97. Nilsson & Nyanchaga, *supra* note 47, at 110.

98. *Id.*

99. *Id.* at 111.

100. 2 KENYA NAT'L ASSEMBLY OFFICIAL REC. 594 (1929) (statement of Mr. Sires).

101. *Id.* at 597.

102. Nilsson & Nyanchaga, *supra* note 47, at 111; An Ordinance to make Provision for the Employment and Conservation of Waters and to Regulate Water Supply, Irrigation, and Drainage, No. 35 (1929) OFFICIAL GAZETTE OF THE COLONY AND PROTECTORATE OF KENYA No. 68.

surface waters, and delegated its management to the Water Board, a government body created expressly for that purpose.¹⁰³ The 1929 Water Bill retained some elements of riparianism in that it allowed for domestic uses of water without the need for a permit. Nevertheless, the Bill also tasked the Board with protecting downstream users—a role that had previously been reserved for the courts under British common law.¹⁰⁴

Kenya's status as a British colony meant that the 1929 Water Bill required the assent of the King before it could take legal effect. In July 1930, however, the Secretary of the State informed Kenya's colonial leaders that he could not recommend such assent, voicing concerns that it did not sufficiently protect the interests of residents on the native reserves.¹⁰⁵ In response to this concern, and consistent with the Annexation Order and 1921 Order, in 1934 Kenya's Lands Commission determined that all native reserves would be brought within the jurisdiction of the Water Board, which would be considered as the riparian owner of those territories and trustee for Africans living on the reserves.¹⁰⁶ Based on this interpretation, the 1929 Water Bill received the assent of the British Crown and entered into effect on July 1, 1935.¹⁰⁷ In a corresponding notification in the Kenya Gazette, the Kenyan government described the primary object of the 1929 Water Bill as being to conserve water and maximize its use.¹⁰⁸ The notification also observed that, as of June 25, 1935, more than 1,000 water permits had been issued (not including yearly permits).¹⁰⁹

4. 1941–1963

a. Continued Amendment of Water Law to Centralize Governance

In 1941, six years after the 1929 Water Bill entered into effect, the colonial government again felt compelled to address the issue of water use and formed the Land and Water Conservation Committee. That Committee was tasked with coordinating “in an advisory capacity, with a view to the more effective conservation of the water . . . of Kenya, the efforts of the various authorities empowered . . . to deal with the natural resources of the Colony and the Protectorate.”¹¹⁰ Then, in 1943, the Kenyan government passed the Land and Water Preservation Ordinance. While largely concerned with soil erosion and land use, it

103. Nilsson & Nyanchaga, *supra* note 47, at 111.

104. An Ordinance to make Provision for the Employment and Conservation of Waters and to Regulate Water Supply, Irrigation, and Drainage, No. 35 (1929) OFFICIAL GAZETTE OF THE COLONY AND PROTECTORATE OF KENYA No. 68.

105. *Id.*

106. Nilsson & Nyanchaga, *supra* note 47, at 111. The Native Lands Ordinance, 1938, formally recognized the Native Trust Board as being the landholder for native lands for purposes of the 1929 Water Ordinance.

107. Nilsson & Nyanchaga, *supra* 47, at 111.

108. The Water Ordinance, 1929, General Notice No. 816 (1935) OFFICIAL GAZETTE OF THE COLONY AND PROTECTORATE OF KENYA No. 32.

109. *Id.*

110. Government Notice No. 521 (1941) OFFICIAL GAZETTE OF THE COLONY AND PROTECTORATE OF KENYA No. 25.

did allow the Governor in Council to make rules for the maintenance of water located within a body of water.¹¹¹

After the conclusion of the Second World War, the Kenyan state increased its involvement in water governance, including the allocation of £1.2 million over ten years towards water development.¹¹² State-sponsored activity on the Native Reserves also increased rapidly in the 1950s, after the Agricultural Department commissioned a comprehensive Five Year Plan to increase native Kenyans' agricultural productivity.¹¹³ Many of these activities involved small-scale community projects, in which government-funded dams, boreholes, or wells provided irrigation to communities.

At the same time it increased its role in the development of water infrastructure, the colonial government sought to further consolidate its control over the resource. Motivated by the desire to facilitate the "investigation, conservation, and proper use of water resources,"¹¹⁴ the Kenyan Parliament adopted the Water Ordinance in 1951 (the "1951 Water Ordinance"). Whereas the 1929 Water Ordinance was primarily concerned with the ownership of surface water rights and the removal of the court system as the primary arbiter of water disputes, the 1951 Water Ordinance, as amended, centralized control over water use and designed an entirely new set of institutions to structure and oversee water governance and disputes:

- The Ordinance reaffirmed Crown ownership of all bodies of water in Kenya (including groundwater), and the fact that control over those resources was vested in the Minister responsible for water resources (the "Minister"). Additionally, the Ordinance added an affirmative duty by the Minister to "promote the investigation, conservation, and proper use throughout Kenya of the water supplies in Kenya, and to secure throughout Kenya effective exercise by any authority or person under the control of the Minister of their powers and duties in relation to water."
- The Ordinance conferred emergency powers on the Minister such that, when there was an unforeseen or threatened "serious deficiency" in water available for domestic purposes, the Minister could order users with excess water to share that excess with other users, and could recover payment from the beneficiaries for that provision.
- The Ordinance established a Water Resources Authority (WRA), which consisted of twelve members: one representative of the Minister, an

111. The Kenyan Parliament repealed the Land and Water Preservation Ordinance when it adopted the Agriculture Act in 1955. However, the Agriculture Act preserved any rules and orders issued under the Land and Water Preservation Ordinance, except to the extent that they were in conflict with any provisions therein. See Agriculture Act (1962) Cap. 318 § 7 (Kenya) (Loose-leaf in 11 vols. with updates filed through the supplement of 1976).

112. Nilsson & Nyangeri, *supra* note 47, at 112.

113. CONE & LIPSCOMB, *supra* note 46; see generally R.J.M. SWYNNERTON, A PLAN TO INTENSIFY THE DEVELOPMENT OF AFRICAN AGRICULTURE IN KENYA (1955).

114. A Bill to Make Better Provision for the Conservation, Control and Use of the Water Resources in the Colony and for Purposes Incidental Thereto, No. 396 (1949) OFFICIAL GAZETTE OF THE COLONY AND PROTECTORATE OF KENYA No. 18.

officer of the Ministry responsible for local government, four public officers, and six non-public officers. The WRA duties included: (1) investigating Kenyan water resources and making recommendations regarding its management, (2) surveying existing consumption of and demand for water, and (3) estimating and proposing plans to meet future water requirements.

- The Ordinance also established a Water Apportionment Board (WAB), which was subordinate to the WRA. One of the powers allocated to the WAB was the ability, during a drought or with regard to small watercourses, to require that water users allow an equitable amount of water to pass to other users or to prohibit certain activities deemed to be inequitable (even if doing so overrode a pre-existing permit).
- The Ordinance also divided Kenya into drainage areas as determined by the Water Apportionment Board. The Minister could appoint a Regional Water Board (RWB) for each of these drainage areas. The RWBs were tasked with advising the WRA regarding water demand, usage, and planning in their respective drainage areas.¹¹⁵

Adopted to implement the 1951 Water Ordinance, the 1953 Water (General) Rules¹¹⁶ (the “1953 Water Rules”), as amended, granted the WAB the authority to assign a water bailiff to govern extraction from a body of water when it appeared that the water was not being or was not likely to be divided in accordance with the rights of the users. Water bailiffs were authorized to apportion and regulate the usage of water, and also to shut or regulate any works used in connection with that water. The 1953 Water Rules also expressly prohibited the extraction of more water than could be immediately put to beneficial use.

Regarding state sponsored projects in the native reserves, the colonial government generally allowed native Kenyans to allocate water amongst users according to traditional practices.¹¹⁷ Nevertheless, residents of the native reserves were still expected to comply with Kenya’s newly enacted water laws. Further, the 1953 Water Rules required residents of native reserves to obtain “Community (Reserve Areas) Permits” in order to legally extract water located on or running through the reserves.¹¹⁸ Form No. W.A.B. 13, appended to the 1951 Water Ordinance, limited permits for domestic water extraction for Africans (as opposed to Europeans or Asians) to ten gallons/day (a rate that was five times less than that allocated to non-Africans).

In 1955, the East Africa Royal Commission promulgated a report (the “EARC Report”) that recommended actions designed to facilitate/address a wide

115. The Water Act (1972) Cap. 372 § 24 (Kenya).

116. 1953 Water Rules (1962) Cap. 372 § 3 (Kenya) (Looseleaf in 11 vols. with updates filed through the supplement of 1976).

117. See, e.g., Chris Huggins, *Water Policy and Law in a Water-Scarce Country: Implications for Smallholder Irrigation in Kenya*, in *THE CHANGING FACE OF IRRIGATION IN KENYA: OPPORTUNITIES FOR ANTICIPATING CHANGES IN EASTERN AND SOUTHERN AFRICA* 277, 279 (Herbert G. Blank, Clifford M. Mutero & Hammond Murray-Rust eds., 2002).

118. 1953 Water Rules (1962) Cap. 372 § 3 (Kenya)

range of goals and perceived problems in the East African region.¹¹⁹ With regards to water development, the EARC Report recommendations proposed the creation of a separate water department, entirely devoted to rural water use, which would be responsible to the Minister concerned with land use for rural water development.¹²⁰ This proposed water department was to be divided into two sections: one devoted exclusively to irrigation and the other to general water usage.¹²¹ In a response to the EARC Report, the Governor of Kenya wrote that the implementation of this recommendation would be deferred for further consideration.¹²²

By the time Kenya gained its independence, the central government had assumed control over almost all of rural water management.¹²³ While the native reserves were still allowed to govern their internal water usage, this ability was—at least from a *de jure* standpoint—constrained by the requirement that the reserves as a whole had to obtain community permits. And, given the incredibly low amount of water granted for native Kenyans, as opposed to their non-African counterparts, the governance may have consisted of little more than distributive triage.

b. Creation of Large-Scale Irrigation Schemes

At the same time that the colonial government was consolidating its legal control over agricultural water use, it also extended its reach by creating large-scale irrigation schemes. After the end of World War II, the colonial government began resettling native Kenyans, at times involuntarily, to serve as tenant farmers on government run agricultural development projects. These projects controlled nearly all agricultural decisions of their tenants. Managers appointed by the colonial government determined what crops would be grown, how they would be grown, and where they would be sold.¹²⁴ With decision-making completely centralized, tenants had little to no capacity to adapt their behaviors to respond to changes in market or meteorological conditions.¹²⁵

The creation of the agricultural projects was driven primarily by three interrelated concerns: soil depletion and erosion resulting from improper farming practices, increasing rural populations, and the desire to increase the government's control over residents deemed to be a threat to Kenya's stability. Colons and the state claimed large swaths of land, which, together with an increase in the population of rural black Kenyans, placed demands on land use that disrupted the

119. Andrew James Hood, *Developing the East African: The East Africa Royal Commission, 1953–1955, and its Critics* (May, 1997) (unpublished Ph.D. dissertation, Rice University), <http://scholarship.rice.edu/bitstream/handle/1911/19169/9727564.PDF?sequence=1> [<https://perma.cc/EC4S-RRYB>].

120. Dispatches from the Governor of Kenya (1962) Cap. 13 § 45 (Kenya) (Loose leaf in 11 vols. with updates filed through the supplement of 1976).

121. *Id.*

122. *Id.*

123. Nilsson & Nyangeri, *supra* note 47, at 113.

124. Elizabeth Baldwin et al., *Polycentric Governance and Irrigation Reform in Kenya*, 29 *GOVERNANCE: AN INT'L J. OF POL'Y, ADMIN., AND INST.* 207, 212–215 (2016).

125. *Id.* at 215

traditional practice of periodically fallowing land.¹²⁶ The decrease in fallowing led, in turn, to a decline in soil productivity and an increase in soil erosion.¹²⁷ By the late 1930's administrators throughout Africa recognized soil infertility and erosion as serious problems, and population resettlement as a potential solution.¹²⁸ In 1938, for example, concern over the infertile soils of land occupied by the Mberere tribe led one official to write that the tribe's only hope for economic success was resettlement to better lands.¹²⁹

With the cessation of hostilities at the end of World War II, the United Kingdom significantly increasing funding for colonial development, resulting in renewed interest in resettlement schemes in the late 1940's.¹³⁰ Chambers writes, "European settlement had reduced the land available for African use, exacerbating overpopulation problems and at the same time creating a political situation in which African expansion was regarded as a threat to security. . . . Irrigation in Kenya was . . . designed to have a stabilizing effect."¹³¹ The 1952 Mau Mau rebellion led the colonial state to forcibly relocate large numbers of Kikuyu tribe members who previously had lived in the European Settled Area onto the designated Kikuyu land.¹³² Kikuyu detainees were used to construct three large irrigation settlements.¹³³ Mwea was one of them, and was also Kenya's largest irrigation scheme. Kikuyu detainees considered to be security risks were settled there.¹³⁴

The irrigation schemes initially were administered through a relatively loose coalition of governmental agencies. By 1954, a Joint Irrigation Committee was created to facilitate national level coordination, while local committees operated at the scheme level.¹³⁵ But "[t]hese were not statutory bodies, and their effectiveness . . . depended to a considerable extent on the personalities and co-operation of those who took part."¹³⁶ In 1960, the Ministry of Agriculture assumed primary responsibility for operating the schemes.¹³⁷ Nevertheless, and despite the uniformity of formal policies and statutes, in practice the schemes' managers operated with a large degree of autonomy in implementing and interpreting each scheme's irrigation rules, with little meaningful input from the schemes' tenant farmers.¹³⁸

126. ROBERT CHAMBERS, *SETTLEMENT SCHEMES IN TROPICAL AFRICA: A STUDY OF ORGANIZATIONS AND DEVELOPMENT* 20 (1969).

127. *Id.* at 20–21.

128. *Id.* at 21–22.

129. *Id.* at 22.

130. *Id.* at 23.

131. *Id.* at 24–25.

132. *Id.* at 58.

133. *Id.* at 25.

134. *Id.*

135. E.G. Giglioli, *The National Organisation of Irrigation, in MWEA: AN IRRIGATED RICE SETTLEMENT IN KENYA* 164 (Robert Chambers & Jon Moris eds., 1973).

136. *Id.*

137. *Id.* at 165.

138. *Id.* at 166.

C. Post-Colonial Continuation of Centralized Water Governance (1963–1982)

Kenya's independence coincided with significant changes in land use and distribution. In preparation for the country's independence, the colonial government began purchasing lands from departing colons to be resold to a select group of relatively affluent black Kenyans.¹³⁹ But, largely because of the marginal suitability of much of the land purchased through this program (which, in turn, failed to attract the desired "progressive" black farmers) and concerns over the growing size of the black landless population, the government ultimately abandoned its plan for low density resettlement.¹⁴⁰ Instead, the colonial government used the so-called Million-Acre Scheme to redistribute approximately 1.2 million acres of large-scale land holdings to around 35,000 families for smallholder use.¹⁴¹ In the decades following Kenyan independence, the country experienced a continued increase in population and intensification in agricultural activity.¹⁴²

Despite changes in land use as well as population density and distribution, the post-independence regime largely continued the water governance approach of its colonial predecessors. Kenya amended the 1951 Water Ordinance in 1963 and 1972, but the revisions were minimal.¹⁴³ The amendments added Catchment Boards (tasked with advising the WAB regarding water apportionment and permitting in designated water catchments) and changed the names of Regional Water Boards¹⁴⁴ to "Regional Water Committees." The amendments also afforded these Committees slightly broader, though still purely advisory, influence on the Water Resources Authority. The 1972 Amendment appointed water bailiffs to issue permits and monitor and sanction water usage. However, water permits still required centralized approval. Thus, the practical effect of the 1972 amendment was to require landholders to obtain both local and national approval to acquire a water use permit.¹⁴⁵

Kenya established a National Irrigation Board (NIB) in 1966, which was tasked with the development, control, and improvement of large irrigation settlements.¹⁴⁶ The NIB annually allocated water to the schemes, while the precise irrigation schedules for different water conditions were determined by scheme managers.¹⁴⁷ Despite the strict hierarchical system of decision making, and the presence of formal institutions designed to sanction violations and resolve disputes, many such mechanisms existed on paper only, and the schemes' managers often

139. Christopher Leo, *The Failure of the 'Progressive Farmer' in Kenya's Million-Acre Settlement Scheme*, 16 THE J. OF MOD. AFR. STUD. 619, 621 (1978).

140. *Id.*

141. Christopher Leo, *Who Benefited From the Million-Acre Scheme? Toward a Class Analysis of Kenya's Transition to Independence*, 15 CAN. J. OF AFR. STUD. 201 (1981).

142. Baldwin et al., *supra* note 124, at 6.

143. The Water Act (1972) Cap. 372 § 24 (Kenya).

144. Along with the names of a number of other institutions referenced in the Act.

145. Baldwin et al., *supra* note 124, at 216.

146. Giglioli, *supra* note 135, at 168.

147. Baldwin et al., *supra* note 124, at 215.

failed to adequately monitor water use, sanction violators, or resolve tenants' water conflicts, leading to widespread discontent.¹⁴⁸

In 1974, Kenya adopted a National Water Master Plan (the "Master Plan"), which set a target of making potable water available to all households in Kenya by 2000.¹⁴⁹ That same year, the Kenyan Parliament created the Ministry in Charge of Water Affairs (the "Water Ministry").¹⁵⁰ In addition to taking over the management of governmental water schemes, the Water Ministry assumed control over self-help and County Council schemes.¹⁵¹ Decisions regarding water management were to be made at the national level, with local agencies primarily serving in an advisory capacity.¹⁵² In fact, the agencies at the catchment and district levels lacked the needed resources to address all water governance issues that arose at their respective levels.¹⁵³ For instance, while they were supposed to be the ground-level institutions responsible for permit issuance and enforcement, the water bailiffs were so chronically underfunded that they often lacked the transportation and other resources necessary to effectively undertake those responsibilities.¹⁵⁴ And, while local populations may have adopted their own, more effective governance institutions, they would have been adopted in an *ad hoc* fashion, outside the formal, centralized system of governance. Throughout this time period, illegal water extraction was commonplace.¹⁵⁵

From 1976 to 1981, Kenya conducted an analysis of the National Water Master Plan.¹⁵⁶ Among other things, that study (along with a later study conducted from 1990–1992) highlighted the fact that Kenya lacked the financial resources to achieve the Master Plan's goals.¹⁵⁷ This financial shortcoming particularly hamstrung the Water Ministry's ability to operate and maintain the water service infrastructure under its control.¹⁵⁸ Importantly, the Water Ministry could not properly monitor water users for compliance with water regulations.¹⁵⁹ As already noted, water bailiffs (who were tasked with monitoring and enforcing compliance) often lacked the resources necessary to even issue water permits, let alone ensure their monitoring and enforcement.¹⁶⁰ Compounding this shortcoming was the fact that the unwieldy permitting process meant that the issuance of permits could take several years.¹⁶¹ This combination of delayed permit issuance and ineffectual

148. *See id.* at 215–16.

149. REPUBLIC OF KENYA MINISTRY OF WATER RESOURCES, SESSIONAL PAPER NO. 1 OF 1999, NATIONAL POLICY ON WATER RESOURCES MANAGEMENT AND DEVELOPMENT, at iii (1999).

150. Nyanchaga, *supra* note 86, at 28.

151. REPUBLIC OF KENYA MINISTRY OF WATER RESOURCES, *supra* note 149, at 2; Nyanchaga, *supra* note 86, at 28.

152. REPUBLIC OF KENYA MINISTRY OF WATER RESOURCES, *supra* note 149, at 13–14.

153. *Id.* at 14.

154. Baldwin et al., *supra* note 124, at 216.

155. *Id.*; *see also infra* text accompanying notes 160–163 (discussing various factors that contributed to the frequency of illegal extraction).

156. REPUBLIC OF KENYA MINISTRY OF WATER RESOURCES, *supra* note 149, at 3.

157. *See id.* at 4.

158. *See id.* at 2–3.

159. *Id.* at 17.

160. Baldwin et al., *supra* note 124, at 216.

161. *Id.*

monitoring and enforcement meant that, in practice, water users frequently engaged in illegal extraction.¹⁶²

Other weaknesses identified by the studies included an “over-centralized decision making process” and the absence of specialized courts or tribunals to hear water conflicts.¹⁶³ Further, and most ironically, Kenya’s water laws were recognized as themselves impeding effective water governance in Kenya. In addition to the Water Act, twenty-six other statutes impacted water use, greatly complicating water governance.¹⁶⁴ Moreover, penalties for noncompliance, including illegal extraction, were insufficient to deter violators.¹⁶⁵ The analyses found that the Water Act provided little guidance on how to address conflicts between water users.¹⁶⁶ Those conflicts included disputes between different types of water users (such as agricultural or industrial), between users situated in different districts, and, most commonly, between downstream and upstream users.¹⁶⁷

Two widely reported examples of conflicts between upstream and downstream users occurred in 2000. In the first, which occurred in late February of that year, residents of a village (including the council chairman) barricaded the Nyeri-Nyahurur highway for half a day complaining that illegal over-extraction by upstream irrigators had prevented them from receiving any water for several months. They demanded an audience with the area District Commissioner and rioted when police arrived to disperse them. In the second incident, a few weeks later, a fish farmer complained that he had lost 30,000 trout in his fish farm (worth an estimated US\$53,000) after upstream irrigators illegally diverted the Likii River. The fish farmer threatened to take “other measures” unless the authorities investigated and punished the illegal extractors.¹⁶⁸ There were also numerous, and less widely reported, forms of conflicts between upstream and downstream users, particularly during the country’s episodic droughts. Baldwin *et al.* note that, faced with an absence of legal mechanisms for redress, downstream users “would often tamper with upstream users’ diversions or resort to other illicit forms of retaliation.”¹⁶⁹

162. *Id.*

163. REPUBLIC OF KENYA MINISTRY OF WATER RESOURCES, *supra* note 149, at 13.

164. *Id.* at 17. For instance, the Irrigation Act, enacted in 1967, allowed the designation of any area of land as a national irrigation scheme, after which the National Irrigation Board would be responsible for settling people in that area and arranging for the supply of irrigation water. See Albert Mumma, *Kenya’s New Water Law: An Analysis of the Implications of Kenya’s Water Act, 2002, for the Rural Poor*, in COMMUNITY-BASED WATER LAW AND WATER RESOURCE MANAGEMENT REFORM IN DEVELOPING COUNTRIES 158, 159 (Barbara van Koppen et al. eds., 2007).

165. REPUBLIC OF KENYA MINISTRY OF WATER RESOURCES, *supra* note 149, at 17.

166. *Id.* at 17–18.

167. *Id.* at 17–18; Boniface P. Kiteme & John Gikonyo, *Preventing & Resolving Water Use Conflicts in the Mount Kenya Highland-Lowland System Through Water Users’ Associations*, 22 MOUNTAIN RES. & DEV. 332, 334 (2002); FANUEL NYABORO, CONFLICTS OVER WATER: WHY CONSERVATIONS AND DEVELOPMENT IS KEY FOR NANYUKI WATER RESOURCE USERS ASSOCIATION 1 (SNV Nether. Dev. Org. ed., 2010).

168. Kiteme & Gikonyo, *supra* note 167, at 334.

169. Baldwin et al., *supra* note 124, at 217.

D. The Start of Decentralization of Water Management (1983–2002)

The threat of scarcity-induced water conflicts, combined with a loss of governmental resources resulting from economic recession,¹⁷⁰ led to local and national initiatives to re-involve local communities in various aspects of water management. The first of these initiatives began in 1983, with the adoption of the District Focus for Rural Development policy (the “District Focus” policy), by which the central Kenyan state sought to “hand over” some drinking water services to non-governmental entities.¹⁷¹ Consequently, the Ministry of Water Development emphasized the need to facilitate the formation of community-based “self-help” groups to initiate water projects.¹⁷²

In the early 1990’s, a network consisting of the Swiss-funded Laikipia Research Programme,¹⁷³ the Natural Resources Management Trust, and six Kenyan government ministries initiated the Water Awareness Creation Campaign. This Campaign was aimed at water stakeholders in the Upper Ewaso Ng’iro Basin, a lowland catchment area to the northwest of Mount Kenya that encompasses approximately 37 percent of Kenya’s land area.¹⁷⁴ In 1997, shortly after the conclusion of that campaign, and based on recommendations it generated, water users adapted an existing self-help group to form the first Water User Association (WUA). Designed to coordinate the management of water resources, mitigate conflicts among stakeholders, and facilitate community water projects, another four WUAs emerged by 2001.¹⁷⁵

In 1999, The Water Ministry proposed to address the Water Act’s shortcomings (as identified in the two National Water Master Plan analyses) by taking the following actions (among others):

- Plan and manage water resources on a drainage (rather than an administrative) basis, creating agencies at the national, basin, and sub-basin levels;¹⁷⁶
- Ensure that water legislation is regularly “reviewed, updated, rationalized, enacted and enforced as appropriate;”¹⁷⁷ and

170. See, e.g., REPUBLIC OF KENYA MINISTRY OF WATER RESOURCES, *supra* note 149, at 49; Wambua Sammy, WATER PRIVATIZATION IN KENYA 2 (Heinrich Boll Found., Global Issue Paper No. 8, 2004).

171. IRC INT’L WATER AND SANITATION CTR., WATER SUPPLIES MANAGED BY RURAL COMMUNITIES 57 (1997); Elizabeth Were, Brent Swallow & Jessica Roy, *Water, Women and Local Social Organization in the Western Kenya Highlands* 9 (World Agroforestry Ctr., ICRAF Working Paper No. 12, 2006).

172. Sammy, *supra* note 170, at 2.

173. The Laikipia Research Programme was an interdisciplinary program between the Universities of Nairobi and Bern. It was linked to the Kenyan Ministry of Reclamation and Development of Arid, Semi-Arid and Wastelands, and was funded primarily by the Swiss Development Cooperation. See Hanspeter Liniger & Francis N. Gichuki, *Simulation Models as Management Tools for Sustainable Use of Natural Resources from the Top of Mount Kenya to the Semi-Arid Lowlands* iii (1994) (unpublished manuscript), https://library.wur.nl/isric/fulltext/isricu_i11435_001.pdf [<https://perma.cc/VE8D-4F8J>].

174. See Kiteme & Gikonyo, *supra* note 167, at 332, 334–35; Liniger et al., *Assessing and Managing Scarce Tropical Mountain Water Resources*, 25 MOUNTAIN RES. & DEV. 163, 163–64, 168 (2005).

175. Liniger et al., *supra* note 174, at 168, 170 tbl. 2; Nyaboro, *supra* note 167, at 1.

176. REPUBLIC OF KENYA MINISTRY OF WATER RESOURCES, *supra* note 149, at 14.

- Redefine the role of the central government in water governance to emphasize “regulatory and enabling” functions, rather than direct service provisions, and the support of private sector and community participation in water service provision.¹⁷⁸

E. Polycentric Water Management (2002–Present)

Kenya revised the Water Act in 2002. In a stark departure from the previous colonial-style approach, and consistent with the suggestions made by the Water Ministry three years earlier, the new Water Act establishes regional-level authorities and devolves meaningful responsibilities to them. The Act created a Water Resources Management Authority (WRMA) tasked with, among other things, developing principles and procedures for allocating water resources, monitoring and assessing national water management strategy, and granting applications for water permits and monitoring compliance with their terms.¹⁷⁹ The Water Act granted WRMA the legal capacity (subject to the consent of the Attorney-General) to prosecute offenses arising under the Water Act.¹⁸⁰ The 2002 Water Rules, promulgated pursuant to the Water Act, allowed WRMA to issue orders requiring the cessation or undertaking of activities to ensure compliance with the rules.¹⁸¹ Failure to comply with such an order can result in the imposition of some combination of a 50,000 shilling fine, up to three months imprisonment, and the suspension, alteration or cancellation of a water permit.¹⁸²

While the Act requires the Minister to formulate a national water management strategy,¹⁸³ WRMA is tasked with formulating strategies for the use and management of water within designated catchment areas.¹⁸⁴ For each catchment area, an appointed catchment area advisory committee advises WRMA about water usage, management, and the issuance or cancellation of water permits.¹⁸⁵ These committees are comprised of public officials, farmers or pastoralists, the business community, relevant non-governmental organizations (NGOs), or others selected by WRMA based on their apparent competence in the management of water resources.¹⁸⁶

The Water Act mandates that WRMA “encourage and facilitate” the establishment of WUAs, which the Act refers to by the alternate name of Water Resources Users Associations (WRUAs).¹⁸⁷ In order for a WRUA to be recognized

177. *Id.* at 18.

178. *Id.* at 42.

179. Water Act (2002) Cap. 372 § 7 (Kenya).

180. *Id.* § 8.

181. *See* Water Resources Management Rules (2007) Cap. 171 § 8 (Kenya).

182. *Id.* § 8(3).

183. *See* Water Act (2002) Cap. 372 § 11 (Kenya).

184. *See id.* § 15. Kenyan laws and policy documents use the term “basin” and “catchment” in similar ways, although the term “catchment” has a specific legal meaning under the Act as areas defined by WRMA “from which rainwater flows into a watercourse.” WRMA has designated six catchment areas, as well as numerous sub-catchments. *Id.* §14(1).

185. *See id.* § 16(2).

186. *See id.* § 16(3).

187. *Id.* § 15(5).

by WRMA under the Water Act, it must be legally registered and have a constitution “conducive to collaborative management of the water resources of a particular resource and which promotes public participation, conflict mitigation, gender main-streaming and environmental sustainability.”¹⁸⁸ Once a WRUA is recognized, WRMA is permitted to enter into a memorandum of understanding with it to allow for collaborative management of water.¹⁸⁹ Even if no memorandum of understanding is reached, however, the Water Act requires WRMA to submit a copy of every water use application to a relevant registered WRUA for comment.¹⁹⁰

The WRUAs are tasked with preventing and resolving user conflicts.¹⁹¹ To that end, they must include all stakeholders within a catchment area and permit them to participate in decision making.¹⁹² The legal recognition of a WRUA allows it to assume formal governance functions such as monitoring and enforcement of permits and the implementation of water conservation programs.¹⁹³ Critically, WRUAs are also responsible for crafting water-rationing schedules to equitably distribute water amongst users during times of scarcity.¹⁹⁴ While WRMA cedes much operational control to the WRUAs, it and other government agencies are available as needed to assist with issues of monitoring, sanctioning, and conflict resolution.¹⁹⁵

Facially, the new Water Act also appears to increase the jurisdiction of a Water Appeal Board first established in 1957. In addition to allowing people to appeal the decisions of WRMA, the Water Appeal Board is also empowered to hear and determine water disputes.¹⁹⁶ However, recent decisions by the Kenyan High Court have held that the “additional jurisdiction granted to the Water Appeals (sic) Board is in fact limited,” and is restricted to disputes regarding a “right or proprietary interest which is directly affected by a decision or order . . . concerning a permit or license.”¹⁹⁷ Finally, the new Water Act also significantly increased the penalties associated with violations of the Water Act.¹⁹⁸ Whereas the previous monetary penalty for violations was 5,000 shillings or imprisonment for up to three months (for default of payment), the new penalty was 100,000 shillings, imprisonment for up one year, or both.¹⁹⁹

In 2010, Kenya adopted a new constitution. The constitution generally calls for the recognition of the “right of communities to manage their own affairs and to further their development.”²⁰⁰ More specifically, the constitution states that each county should have its own government, and that each of these county

188. Water Resources Management Rules (2007) Cap. 171 § 10(1) (Kenya).

189. *See id.* § 10(7).

190. *See id.* § 28(1).

191. *See Baldwin et al., supra* note 124, at 218.

192. *See id.*

193. *See id.*

194. *See id.*

195. *See id.*

196. *See Water Act* (2002) Cap. 372 § 87 (Kenya).

197. *St. Nicholas School v. Nairobi City Water & Sewage Co.* (2013) 401 K.L.R. 1 (Kenya).

198. *See Water Act* (2002) Cap. 372 § 105 (Kenya).

199. *See id.*

200. CONSTITUTION art. 174(d) (2010) (Kenya).

governments “shall decentralize its functions and the provision of its services to the extent that it is efficient and practicable to do so.”²⁰¹

F. Calls for Further Decentralization

Despite the sweeping changes instituted by the 2002 Water Act, Kenya continues to grapple with how to best match its water governance approach to its climatic and socioeconomic realities. Policymakers have recently considered—and rejected—two draft policies that would have further devolved water governance to regional and local decision-makers.

The Ministry for Water and Irrigation generated a draft National Water Policy in 2012. While noting that the 2002 Water Act had facilitated greater levels of water user participation in the form of WRAs and Water Association Groups (WAGs), the draft policy also identified as a problem the incomplete devolution of functions to the basin level.²⁰² The draft policy stated that one of the guiding policies for water resources management was that of participatory management approaches, with the goal of facilitating conflict resolution and optimal use of the resources.²⁰³ Similarly, from an institutional design standpoint, the draft policy articulated the devolution of governmental functions to the lowest possible level as a guiding principle.²⁰⁴

In light of the 2010 Constitution, the draft policy called for the creation of a new Water Act.²⁰⁵ The draft policy emphasized the participatory rights enshrined in the Constitution, and thus stated that the right to be informed about the status of water management needed to be institutionalized.²⁰⁶ The draft policy theorizes that such a change will help to peacefully resolve future water conflicts.²⁰⁷

The Kenyan Parliament considered a new draft Water Bill in both 2012 and 2014. Both drafts would have changed the language identifying water resources as property of the state, instead describing water as being “vested in and held by the national government in trust for the people of Kenya.”²⁰⁸ Both drafts also would have established Water Sector Trust Funds to support community-level sustainable water management initiatives.²⁰⁹ Both draft bills would have provided for the designation of “basin areas,” defined as a “defined area from which rainwater flows into a watercourse,”²¹⁰ and created a basin-level management board

201. CONSTITUTION art. 176(2) (2010) (Kenya).

202. See HON. CHARITY KALUKI NGILU, MINISTRY OF WATER AND IRRIGATION, DRAFT OF THE NATIONAL WATER POLICY (2012) § 2.1 (Kenya) (on file with author).

203. See *id.* § 2.2.

204. See *id.* § 1.5.

205. See *id.* § 1.1.

206. See *id.* § 5.4.

207. See *id.*

208. See NGILU, *supra* note 202, at § 3; The Water Bill, No. 7 (2014), KENYA GAZETTE SUPPLEMENT No. 27 § 5.

209. See NGILU, *supra* note 202, § 91(3)(a); see also The Water Bill, No. 7 (2014), KENYA GAZETTE SUPPLEMENT No. 27 § 112(a).

210. NGILU, *supra* note 202, § 11(1); The Water Bill, No. 7 (2014), KENYA GAZETTE SUPPLEMENT No. 27 § 22(1).

or committee.²¹¹ However, the 2012 and 2014 draft bills, differed in how the basic board or committee would be appointed. The 2012 draft bill envisioned the board chairman and members being appointed by the cabinet secretary, in a competitive recruitment process, from among constituents residing within the relevant basin.²¹² The 2014 draft called for the committee to consist of between four and seven members appointed by the Secretary, plus two members appointed by a Council of Governors representing the counties falling within the basin, with the Council selecting representatives from those counties on a rotating basis.²¹³ Additionally, the members selected by the Secretary would have had to be residents from the basin area, and would have included representatives from (a) a ministry dealing with water, (b) farmers or pastoralists within the basin, (c) a public benefits organization engaged in water management within the basin area, and (d) the business community.²¹⁴

Both draft bills called for the basin water boards to help to ensure equitable water sharing through water allocation plans,²¹⁵ but the 2012 version would have provided the boards with significantly more power. In the 2012 version, the water boards were to receive and make decisions regarding water permit applications, whereas in the 2014 version, the role of the board is simply to advise the WRMA regarding such applications.²¹⁶ Similarly, while both versions call for the boards to protect water resources, only the 2012 version tasked the boards with enforcing water regulations.²¹⁷ The 2012 Draft Water Bill would have added as one of the WRMA's express functions the delegation of regulatory functions to Basin Water Resources Board (the 2014 Draft Water Bill did not contain such a requirement).²¹⁸

The draft bills also would have significantly modified how violations of and disputes under the Water Act are addressed. First, the drafts would have further reduced the role of the court system for resolving disputes over water resources. In an apparent response to the High Court's interpretation of the jurisdiction of the WRMA dispute resolution mechanism (i.e., that WRMA could only resolve cases regarding rights under the Water Act, but not commercial disputes or other conflicts), both drafts would have created a new Water Tribunal authorized to hear "any dispute concerning water resources or water services where there is a business

211. See NGILU, *supra* note 202, § 13(1); see also The Water Bill, No. 7 (2014), KENYA GAZETTE SUPPLEMENT No. 27 § 23(1). The previous version of the bill used similar language to define "catchments." In these versions, a catchment refers to a designated area within a naturally occurring basin. See Draft Water Bill, *supra* note 208, § 2(1); see also The Water Bill, No. 7 (2014), KENYA GAZETTE SUPPLEMENT No. 27 § 2(1).

212. See NGILU, *supra* note 202, § 13(5).

213. See The Water Bill, No. 7 (2014), KENYA GAZETTE SUPPLEMENT No. 27 § 24(1).

214. See The Water Bill, No. 7 (2014), KENYA GAZETTE SUPPLEMENT No. 27 § 24(3).

215. See NGILU, *supra* note 202, § 14; see also The Water Bill, No. 7 (2014), KENYA GAZETTE SUPPLEMENT No. 27 § 25.

216. NGILU, *supra* note 202, § 14; The Water Bill, No. 7 (2014), KENYA GAZETTE SUPPLEMENT No. 27 § 25.

217. NGILU, *supra* note 202, § 14; The Water Bill, No. 7 (2014), KENYA GAZETTE SUPPLEMENT No. 27 § 25.

218. NGILU, *supra* note 202, § 9(e).

contract, unless the parties have otherwise agreed to an alternative dispute resolution mechanism.”²¹⁹

Second, the drafts would have decentralized prosecution of water offenses, and greatly increased the penalties associated with criminal violations of the Water Act. The 2002 Water Act provides that the Minister, the WRMA, or the Regulatory Board can initiate criminal proceedings.²²⁰ Both the 2012 and 2014 draft bills would have authorized licensees under the Act to initiate criminal proceedings, and the 2014 draft bill would additionally have granted the same authority to county government executives.²²¹ Both versions would have increased the penalties for offenses up to one million shillings, two years of imprisonment, or both (compared with up to 100,000 shillings and one year of imprisonment under the 2002 Water Act).²²²

IV. ANALYSIS AND LESSONS LEARNED

The history of Kenya’s colonial and post-colonial water law represents an ongoing struggle to match the country’s laws and other institutions to its socioeconomic and environmental realities. In this section, we discuss the poor fit of both the common law riparian doctrine and the centralized approach to water governance in Kenya. We also discuss efforts by stakeholders to work around these ill-suited rules and institutions through the creation of WUAs and how, through their efforts, those users were able to help fundamentally alter the constitutional rules affecting water extraction throughout Kenya. Finally, we discuss lessons learned from Kenya’s experience that might be more broadly applicable to resource governance elsewhere.

A. The Failure of the Riparian Doctrine

British colonists initially imported a governance approach that had evolved to address a very different climate and society. In the United Kingdom, where annual water flows hardly fluctuated and riparian owners had relatively equal standing under the law, water governance could reasonably rely on the judicial system to address water conflicts through the fashioning of *ex post* monetary remedies and injunctions. The approach was ill-suited, however, to a country that experienced extreme differences in precipitation between its wet and dry seasons, lacked the resources to provide easy access to and enforcement of judicial rulings, and had a legal system that advantaged a minority of its population at the expense of the majority.

The ability of users under the riparian doctrine to extract nearly unlimited amounts of water—constrained only by the requirements that the use is “ordinary” and does not materially affect the quantity or quality of water available to

219. NGILU, *supra* note 202, §§ 120, 122(3); The Water Bill, No. 7 (2014), KENYA GAZETTE SUPPLEMENT No. 27 §§ 117(1), 119(2).

220. Water Act (2002) Cap. 372 § 15 (Kenya).

221. NGILU, *supra* note 202, § 118; The Water Bill, No. 7 (2014), KENYA GAZETTE SUPPLEMENT No. 27 § 144.

222. NGILU, *supra* note 202, § 119; The Water Bill, No. 7 (2014), KENYA GAZETTE SUPPLEMENT No. 27 § 145.

downstream users—relies on a core assumption that demand for water will ordinarily not exceed availability. In order for users’ “normal” use of water to not materially impact the whole of the remaining downstream users, the water supply must be relatively abundant compared to aggregated demand. This scenario occurred in the United Kingdom, where almost the entirety of the region receives more than 600 millimeters (mm) of rain per year and where some areas receive in annual rainfall in excess of 3,000 mm.²²³ Kenya, however, experiences an extreme range of rainfall levels. Its coastal region averages between 660 and 1,194 mm/year of rainfall, and areas near Lake Victoria receive as much as 1,930 mm/year.²²⁴ On the other hand, 72 percent of the country receives below 508 mm of rain per year, including some areas that receive as little as 165 mm/year.²²⁵ Thus, the assumption of abundant water supply is simply not applicable to the vast majority of Kenya.

A second underlying assumption of the riparian doctrine is that the supply of water will be relatively constant, such that *ex post* remedies are sufficient to address disputes. In other words, the common law approach assumes little need for flexibility in extraction rights to prospectively or concurrently address water conflicts. Again, this fits conditions in the United Kingdom, but not Kenya. While the United Kingdom does experience some seasonal differences in rainfall, that difference is relatively small. Consider, for instance, the city of Oxford, which has been operating a weather station since 1853. From that date through 2014, Oxford received an average monthly rainfall of 60 mm, with the wettest month (November) averaging 64mm of precipitation and the driest (February) averaging 43 mm.²²⁶

In Kenya, on the other hand, almost the entirety of rainfall occurs during two rainy seasons (from March to May and October to December, respectively), and even those seasons vary in their duration and rainfall levels.²²⁷ Obiero and Onyando note, for example, that Kisumu receives a mean annual rainfall of 1,278 mm from an average of only 139 rainy days, while Lodwar experiences an annual average of only twenty-three rainy days, resulting in a mean annual rainfall of 165 mm.²²⁸ Conditions such as those found in Kenya require flexible governance approaches that can adapt to extreme differences in water availability, from flood conditions to prolonged drought. The reliance on *ex post* remedies requires riparian users to constantly return to the courts for redress and provides no assurance as to the future availability of water.

Finally, the riparian doctrine is conditioned on the fact that all water users have equal access to courts and equal standing under the law. First written in 1886,

223. *UK Climate*, BBC.CO.UK, http://www.bbc.co.uk/schools/gcsebitesize/geography/weather_climate/climate_rev4.shtml [https://perma.cc/3L8Z-6H2Y].

224. ROBERT M. MAXON & THOMAS P. OFCANSKY, *HISTORICAL DICTIONARY OF KENYA 2* (3rd ed. 2014); *Climate: Observations, Projections and Impacts*, MET OFFICE, <http://www.metoffice.gov.uk/media/pdf/b/j/Kenya.pdf> [https://perma.cc/B6TE-AS64].

225. John P.O. Obiero & Japheth O. Onyando, *Climate*, 16 DEVS. IN EARTH SURFACE PROCESSES 39, 41–42 (2013); See *Climate: Observations, Projections and Impacts*, *supra* note 224.

226. *UK Climate-Historic Station Data*, MET OFFICE, <http://www.metoffice.gov.uk/public/weather/climate-historic/#?tab=climateHistoric> [https://perma.cc/Q3DM-79JB].

227. *Climate: Observations, Projections and Impacts*, *supra* note 224.

228. Obiero & Onyando, *supra* note 225, at 42.

A.V. Dicey's *Introduction to the Study of the Law of the Constitution* remarked that the "rule of law" in England was characterized by the fact that:

every man, whatever be his rank or condition, is subject to the ordinary law of the realm and amenable to the jurisdiction of the ordinary tribunals. In England, the idea of legal equality, or of the universal subjection of all classes to one law administered by the ordinary Courts, has been pushed to its utmost limit.²²⁹

Thus, at least in theory, all English landowners could expect to easily seek redress for harm caused by upstream users, regardless of their own status and the status of upstream extractors. Kenya, however, was marked by two clear legal classes of riparian ownership and, hence, water users. The white colons possessed the full ownership rights and access to the judicial system contemplated by the riparian doctrine. Native Kenyans, on the other hand, were stripped of individual ownership rights; ownership was held in trust by the Kenyan state. In order to seek redress, native water users had to ask the government to seek action on their behalf. Before 1935, when the Water Board was tasked with protecting the reserves' water rights, it was unclear to which entity within the colonial government native Kenyans could turn to for redress. Even after 1935, it is likely that residents of the native reserves faced significant economic, logistical, and administrative hurdles to seeking the resolution of water disputes—if they were even aware of the Water Board's fiduciary obligations. In short, while white colons might possess the relative legal equality required by the riparian doctrine, the diminished legal rights of native Kenyans meant that, for all intents and purposes, the doctrine provided them with little or no protection.

B. The Failure of Centralized Governance

By consolidating and centralizing water governance, the colonial and post-colonial governments sought to address the riparian doctrine's glaring shortcomings. Rather than allowing the ambiguous "ordinary use" of water, so long as that use did not interfere with the rights of downstream users, the governments sought to restrict water use at the individual level through the issuance of permits. In place of *ex post* judicial remedies, the state sought to ensure individual compliance by sanctioning permit violators. The governments attempted to address fluctuations in water availability by authorizing water bailiffs to amend permissible rates of extraction in order to ensure an equitable distribution of water resources.

The reliance on permits, however, had several fundamental flaws. First, a centralized permitting system is highly resource intensive. In order to implement a successful monocentric system such as the one implemented in Kenya, the state must: (1) investigate the reasonableness of a permit application by assessing the geological and climatic conditions of the water resource at issue, including the existing and future demands on that resource from other users, (2) engage in ongoing monitoring of resource users to ensure compliance with permits and take measures to punish violators, and (3) undertake an ongoing assessment of water

²²⁹ A.V. DICEY, *INTRODUCTION TO THE STUDY OF THE LAW OF THE CONSTITUTION* 181 (3rd ed. 1889).

conditions and extraction in order to determine whether to amend the permit holders' respective rates of extraction. The combination of these responsibilities demanded manpower and money that neither the colonial nor post-independence governments possessed.

Second, by legally establishing invariable extraction entitlements (subject only to the possibility of emergency alteration by a central authority), the permit system retarded the capacity of local users to engage in local collective action to address changes in water availability or constructively resolve user disputes. Upstream users were legally entitled to extract their full permitted amount, even in times of scarcity. Downstream users had no legal avenues that could provide timely redress during water scarcity, and the permit program that ought to have protected their interests was in disarray, as state officials lacked the resources to effectively enforce permit terms.²³⁰ As a consequence, downstream users often suffered chronic water shortages and resorted to self-help measures ranging from peaceful self-organization to mass protests, riots, and sabotage.

Third, Kenya's use of a centralized permitting system precluded the state from accounting for local needs and conditions. Kenya experiences extreme seasonal and year-to-year fluctuations in precipitation, and its water stakeholders range from large, commercial agricultural estates to nomadic pastoralists. Thus, each water catchment in Kenya has its own unique assortment of users with their own particular needs, and both these users and their respective needs can differ from season to season and from year to year. Kenya's system of permitting simply lacked the flexibility to account for this sort of variation between and within user groups.

In sum, the use of water permits resulted in an unwieldy system that lacked the ability to gauge the appropriateness of permit requests, ensure permit compliance, resolve disputes arising from conflicting permits, or respond in a timely fashion to changes in demand or environmental conditions. These were not lacunae, but rather gaping holes in a system that facilitated extractions by mostly white upstream landowners and greatly diminished the ability of the largely black downstream users to meet their own needs. The inequities in the system, in turn, incentivized disadvantaged stakeholders to engage in extra-legal self-help measures.

C. The Polycentric Reshaping of Water Law to Allow for Flexible Governance and Experimentation

While the poor fit between a monocentric approach and Kenya's geographic, political, economic conditions led to the failure of centralized water governance, that same mismatch also provided the opening for localized stakeholders to experiment with more appropriate governance arrangements. These early experiments were facilitated, in turn, by government agencies, which had a similar interest in fashioning a more effective governance system. Early efforts to reform Kenya's centralized system of water governance came from local stakeholders interacting with and supported by a number of other players with varying and overlapping goals and jurisdictions.

230. Baldwin et al., *supra* note 124, at 11.

The WUAs were a direct result of those early local reform efforts. From a formal legal standpoint, they were merely voluntary governance associations, but the WUAs gained the tacit support of multiple government agencies so that they could make their own local governance arrangements unimpeded. As a result, the WUAs became a viable alternative water governance system that overlapped and worked in concert with the state's formal rules and institutions. In other words, they represented the beginning of a new, polycentric approach to water governance.

Critical to the success of the WUAs was the fact that all stakeholders had at least a potential interest in tailoring water governance to local conditions. Under the monocentric approach, upstream users often had the *de facto* ability to extract as much water as they desired. But, this ability could come with political costs, including the risk of provoking aggressive responses from downstream users, who correctly surmised that the government could not adequately protect their interests. As a consequence, both upstream and downstream users faced incentives to craft a system of governance that would protect all users' interests.²³¹

In practice, the early WUAs demonstrated the capacity to adopt, monitor, enforce, and mediate a much more flexible set of rules than those set out in existing legislation. In 2002, the same year that the revised Water Act institutionalized the WUA approach, Kiteme and Gikonyo reviewed the performance of five preexisting WUAs located in the Ewaso Ngiro North Basin.²³² The authors found that the WUAs had adopted a seasonally-based extraction schedule, with varying degrees of limitations on water extraction during the dry months.²³³ Additionally, while the WUAs generally met on a quarterly basis, they would also conduct special meetings if events required immediate attention.²³⁴ Unlike under the monocentric approach, the WUAs used their own monitors to ensure compliance with water extraction rules, and the WUAs' Executive Boards (composed of representatives from various stakeholder groups) would attempt to mediate and collaboratively resolve the inevitable user conflicts.²³⁵ These arrangements sharply contrasted the formal legal system's reliance on fixed extraction levels (amended only after inequitable circumstances necessitated the appointment of a water bailiff) and centralized monitoring and enforcement of water of water permits.

The success of these early WUAs in experimenting with more flexible local water policies led to the expansion of their roles, in some cases, to include other aspects of resource management.²³⁶ In addition to governing water extraction, WUAs began addressing concerns regarding water pollution and riparian degradation by engaging in education and awareness campaigns, undertaking reforestation of riparian areas, and introducing agricultural best practices.²³⁷ Some of the WUAs also started assisting their members in other ways, such as helping

231. In fact, Liniger et al. note that large-scale upstream horticultural firms co-founded six of the first 13 WUAs and participated in another two. Liniger et al., *supra* note 174, at 168.

232. Kiteme & Gikonyo, *supra* note 167, at 335.

233. *Id.* at 336.

234. *Id.* at 335.

235. *Id.* at 336.

236. *Id.* at 337.

237. *Id.*; Liniger et al., *supra* note 174, at 169.

them to develop supplemental water supplies or diversify their income sources.²³⁸ Kiteme and Gikonyo suggest that some of these developments may have been the result of communication and information exchange between various WUAs.²³⁹ Thus, it appears that this early network of WUAs realized in practice the potential of polycentric systems to facilitate the rapid adoption sharing of successful innovations amongst horizontally situated decision centers.

Innovation swapping also occurred between vertically situated governance units, as the WUAs' successful innovations ultimately led to an amendment of the entire national approach to water governance in the 2002 Water Act. That statute formally recognized the legitimacy of the WUAs (now described as WRUAs), and sought to facilitate that approach throughout the rest of Kenya. By now, more than 400 WRUAs have been formally recognized, and more than half of those have formalized management plans with the WRMA, which allow them to collaboratively manage water resources.²⁴⁰ In this respect, we can see how a polycentric system of governance can allow for local experimentation that, if successful, can be scaled up and, if unsuccessful, does not threaten the integrity of the system as a whole.

In this discussion of polycentricity, it is important to distinguish between polycentric and decentralized systems. While Kenya's water reforms devolved significant decision-making authority from central water agency officials to local WRUAs, this does not imply complete decentralization or an absence of national authority. In fact, national water regulators are responsible for establishing national-scale water policy, coordinating between WRUAs, working with individual WRUAs on water conservation activities, and providing back-up systems for governance functions such as monitoring and conflict resolution on an as-needed basis when the WRUAs are unable to undertake these activities on their own. Polycentric systems are both horizontal (allowing local WRUAs to undertake water governance activities) and vertical (providing for coordination between local and national actors).

D. Lessons from the Kenyan Experience

Given the particularized climatic, racial, and socio-economic challenges faced by its agriculture, what broader lessons can be drawn from Kenya's experimentations in water governance? More than might, at first blush, be supposed.

First, water scarcity and seasonal variation in water availability are not unique to Kenya. Countries throughout the developed and developing worlds must contend with competition over water supplies. Further, the intensity and nature of that competition is likely to vary across seasons and geographic regions within

238. Kiteme & Gikonyo, *supra* note 167, at 337.

239. When writing of the fact that two WUAs had initiated external fundraising to support the creation of alternate sources of income and water, the authors wrote "[o]ther [WUAs] will certainly follow this good example." *Id.*

240. Jampel Dell'Angelo et al., *Multilevel Governance of Irrigation Systems and Adaptation to Climate Change in Kenya*, in *THE GLOBAL WATER SYSTEM IN THE ANTHROPOCENE* 323, 330 (A. Bhaduri et al. eds., 2014).

those countries. Therefore, states must adopt a governance approach that provides the adaptability and responsiveness to balance the competing (and changing) needs of water users and to timely address inevitable user disputes. Monolithic governance regimes are likely to lack the capacity to provide this sort of flexibility and alacrity. A polycentric system of governance, on the other hand, allows for more local decision-making, the possibility of innovation tailored to local conditions, and more rapid responses to changing local conditions.

Second, despite its chaotic appearance, polycentricity can actually facilitate effective governance by allowing for coordination and knowledge exchange between different units and layers of governance.²⁴¹ Policymakers in a centralized governance system often have difficulty gathering information that would allow for the generation of policies suited to a diversity of regional needs.²⁴² They are reliant on the timely provision of information from regional and local agencies and, therefore, vulnerable to both inefficiencies in the exchange of information and the strategic manipulation of information by local and regional actors. In contrast, a polycentric system of governance allows for more rapid exchange of ideas and adoption of successful innovations.

Network theory provides an important insight into the capacity of polycentric systems to facilitate this type of knowledge exchange. The overlap in jurisdiction amongst decision-making centers in a polycentric system allows the centers to directly influence each other, and for individual actors to be simultaneously involved in multiple centers.²⁴³ Consequently, decision centers in a polycentric regime are linked together via mutual influence and commonality of actors into a broader governance network.²⁴⁴

In discussing the impact of networking among firms, Mahmood and Rufin observe that knowledge “spills over” organizational boundaries.²⁴⁵ They write,

[a] growing body of research on networks suggests that the potential for firms to internalize such cross-boundary spillovers is particularly high within networks. . . . Within a cluster [of firms], exchanges of ideas among firms may occur through formal ties or through informal ties, since individuals from different firms often interact in various social settings. . . . Networks provide multiple points of contact across their members and, thus, greater opportunities for open-ended relationships and random learning than those found in strictly planned environments, where relationships are much more rigidly predefined and circumscribed to a specific type of exchange.²⁴⁶

241. The literature suggests that effective governance systems facilitate coordination within and between different levels of decision making. See Baldwin et al., *supra* note 124, at 3.

242. See Wei Cui & Zhiyuan Wang, *The Inefficiencies of Legislative Centralization: Evidence from Provincial Tax Rate-Setting*, 13 CHINA: AN INT’L J. 47, 48 (2015).

243. Michael D. McGinnis, *Networks of Adjacent Action Situations in Polycentric Governance*, 31 POL’Y STUD. J. 51, 52, 58 (2011).

244. *Id.* at 52.

245. Ishtiaq P. Mahmood & Carlos Rufin, *Government’s Dilemma: The Role of Government in Imitation and Innovation*, 30 ACAD. OF MGMT. REVIEW 338, 343 (2005).

246. *Id.* (internal citations omitted).

Given the frequent interactions amongst decision centers in a polycentric regime, and the potential involvement of actors in multiple centers, Mahmood and Rufin's observations about the advantages of networks to firms would appear to be equally applicable to state governance. All else being equal, we would expect more opportunities for learning and the adoption of innovation in a polycentric system of governance than we would in a rigidly hierarchical governance system.

Third, a polycentric system of governance is better equipped to recognize and incorporate local, informal institutions. Nations in all stages of development, and of all degrees of centralization, have a plenitude of informal institutions that contribute to governance and the provision of public goods, including issues involving agricultural water use. The global marketplace, for example, is rife with voluntary certification programs through which sellers signal eco-friendly practices. In the United States, the Food Alliance, for example, offers a sustainability certification to crop producers that meet the organization's standards on a number of issues, including soil and water conservation.²⁴⁷ After the issuance of the certification, the organization reserves the right to audit certificate holders to ensure continued compliance.²⁴⁸ In this way, the Food Alliance informally performs a governance role amongst those who have obtained certification.

In many developing countries, the limitations of the central state often result in the development of informal institutions by local communities to more expressly assume governmental responsibilities. Communities can and frequently do create and enforce their own resource extraction rules. In addition to the WRUAs in Kenya, for example, traditional authorities in some areas of Namibia retained a role in granting access to water and regulating its use throughout a succession of colonial governments.²⁴⁹ Similarly, despite the fact that agricultural systems in India are formally government controlled, in reality "informal institutional arrangements rul[e] the roost."²⁵⁰

A polycentric governance approach provides a greater opportunity for the integration of these informal institutions into the broader governance system. In this way, rather than operating in the absence of or in spite of the formal governing hierarchy, organizations created by informal institutions can become part of the network of overlapping decision centers in a broader polity. As a consequence, a polycentric governance system has the potential to improve both efficiency (as might be the case where industry voluntarily self-regulates) and effectiveness, as in the case of Kenya's WRUAs.

247. Interestingly, the Food Alliance itself formed as the result of an inter-jurisdictional collaboration between Oregon State University, Washington State University, and the Washington State Department of Agriculture. See generally *Food Alliance Producer Certification Program Standards and Procedures Manual*, FOOD ALLIANCE, <http://fadocsstyle.wpengine.com/wp-content/uploads/2016/02/2013-FA-Producer-StandardsProcedures.pdf> [https://perma.cc/P8MZ-WWNJ].

248. *Id.*

249. Thomas Falk, Bernadette Bock & Michael Kirk, *Polycentrism and Poverty: Experiences of Rural Water Supply Reform in Namibia*, 2 WATER ALTERNATIVES 115, 119 (2009).

250. Tushaar Shah & Barbara van Koppen, *Is India Ripe for Integrated Water Resources Management? Fitting Water Policy to National Development Context*, 41 ECON. & POLITICAL WEEKLY 3413, 3416 (2006).

