The Long Road to Integrating Public Health into Sustainable Development of Shared Freshwaters in International Environmental Law: Lessons from Lake Victoria in East Africa

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Abstract

The health dimension of sustainable development and its limits in optimizing health protection has led to a rethinking of the management of shared water resources in international environmental law. This paper discusses human health in the sustainable development of shared waters and its limits using a case study of the sustainable management of the Lake Victoria Basin. It links the public health challenges to the strengths and limitations of the global, East African, and domestic legal regimes for sustainability and environmental governance. The quest to integrate health concerns in the sustainable management of Lake Victoria faces challenges. The substantive legal regimes for tackling health issues and governance mechanisms are weak, fragmented, and ineffective in a framework of adaptive governance. This paper calls for enhanced collaboration among the actors and the reinvigoration of regional and domestic governance mechanisms to promote human health and the environment in the basin.

I. International Environmental Law, Health, and Sustainable Management of Shared Freshwater Resources

A. PROLOGUE: THE CRUX OF THE PROBLEM

International water law has focused largely on the allocation of water quantity and less on the quality and health issues facing water management. But its progressive development, as influenced by international environmental law, has been refocused on addressing...
quality and social concerns related to water management by the integration of sustainable development in the pre-existing legal regimes for water. The health dimension of sustainable development has led to a rethinking of the management of shared water resources, and the case of Lake Victoria demonstrates this. Attempts to integrate health concerns into the sustainable management of Lake Victoria face challenges because the substantive legal regime for tackling health issues and its implementation has been weak.

This paper argues for reinvigorating the centrality of health in sustainable environmental management of shared water resources. Health, environment, and natural resources are interdependent and key aspects of sustainable development. Man-made and natural capital (i.e., health, flora, and fauna) complement each other. As a result, new tools for sustainable health and safety risk assessment integrate human health, ecosystem integrity, and economic concerns. The Rio Declaration reflects the shift towards an anthropocentric approach to environmental law, declaring that "human beings are at the centre of concerns for sustainable development." International human rights law also recognizes the right to a healthy environment, culminating in the recent adoption by the U.N. General Assembly of the human right to water and sanitation. Several global and regional legal instruments incorporate sustainable development. But it is argued that the social pillar of sustainability, which includes health, is not firmly embedded in sustainable development law, despite this concept promoting human health. On the other hand, these instruments have not effectively integrated or implemented health protection. The legal regime for sustainable management of Lake Victoria (Lake) reflects this trend.

This paper is comprised of six parts. Part I focuses on the problematic posits of human health in international environmental law and policy. Part II provides an overview of the environmental health crisis facing the Lake Victoria Basin (Basin) in a global context. Part III presents applicable international law relating to sustainable development, examining its health protection potential in the context of water resource management. Part IV examines the East African community's legal regime for the governance of Lake Victoria in international and comparative legal contexts. Part V is a critique of the health and sustainability of the governance mechanisms for the Basin. Part VI provides conclusions and considers the implications for policy development.

B. HEALTH, SUSTAINABILITY, AND THE BRIDGING OF THE ANTHROPOCENTRIC AND ECO-CENTRIC DIVIDE

A key objective of international environmental law is the protection of human health, which communicates its deep concern for the relationship between human health and

environmental protection. In this relationship, sustainable development, which is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs," helps to integrate this relationship. Health is human capital essential to sustaining the environment for future generations, and it helps refocus sustainability to advance human well-being. Scholars have established three stages in the development of environmental law. First, self-interest of the present generation is anthropocentric, focusing on resource exploitation and protection from pollution. The second stage adds a duty on the present and future generations to preserve our planet. The third stage is the emergence of a non-anthropocentric paradigm with nature itself possessing intrinsic rights in environmental law. In this third stage, the primary concern of environmental law is ecological survival, rather than solely human development and needs. It focuses on the duties of humans toward nature and on the inherent rights of nature. But while many countries "purport to grant their citizens a constitutional 'right' to a healthy environment," courts often construe the right narrowly, focusing on environmental threats to human health. There is a general agreement among scholars that these stages overlap and are not clear-cut. This paper argues that health bridges the anthropocentric and eco-centric divide, as both human health and the natural environment are harmed by degradation from human activity. This reflects scholarly thinking that places health at the core of environmental justice and the duty incumbent upon the present generations towards future generations.

Emerging human rights jurisprudence and treaty law demonstrate a gradual move towards convergence of human and environmental rights. The 1981 African Charter on Human and Peoples Rights (Charter), a major regional human rights treaty, proclaims environmental rights broadly, equally protecting the right of all peoples to the "best attainable state of physical and mental health" and to "a general satisfactory environment." In Social and Economic Rights Action Centre v. Nigeria (Ogoniland case of 2001),

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10. Id. at 552.
11. See Antonio D'Amato, Do We Owe a Duty to Future Generations to Preserve the Global Environment?, 84 AM. J. INT'L L. 190, 190 (1990).
12. Emmenegger & Tschentscher, supra note 9, at 568-576.
14. Emmenegger & Tschentscher, supra note 9, at 572-76.
19. Id. art. 24.
the African Commission on Human and Peoples Rights, the institution that spearheads the implementation of the Charter, concluded that "an environment degraded by pollution and defaced by the destruction of all beauty and variety is contrary to satisfactory living conditions and development as the breakdown of the fundamental ecologic equilibria is harmful to physical and moral health." It held that Article 24 of the Charter imposes an obligation on the state to take reasonable measures "to prevent pollution and ecological degradation, to promote conservation, and to secure ecologically sustainable development and use of natural resources.

The Ogoniland case is a landmark, calling for comprehensive cleanup of lands and rivers damaged by oil operations, environmental and social impact assessments, provision of information on health and environmental risks, and access to regulatory and decision-making bodies. The case integrates "environmental protection, economic development, and guarantees of human rights," affirming the unity of the environmental, social, and economic pillars of sustainable development. Similarly, in the case of Marangopoulos vs. Greece, the European Committee of Social Rights held that the right to health also embodies a right to a healthy environment. The two cases demonstrate the bridging of the eco-centric and anthropocentric divide and how health provides an important element in that linkage. In the 1950s, Mark D. Hollis argued that the foundations of environmental health rest on the essentials of "man's need for and man's use of air, water, food, and shelter." He further argued that the common aspect of this foundation is sanitation and health, which are universal and common necessities to all peoples. A health perspective of sustainable development provides an important basis for examining the sustainability crisis facing Lake Victoria.

II. The Environmental Health and Sustainability Crisis in the Lake Victoria Basin

A. The Global Health Trends

Health is affected to a great measure by environmental conditions. The World Health Organization (WHO) defines environmental health as "the direct pathological effects of chemicals, radiation and some biological agents, and the effects (often indirect) on the health and [well-being] of the broad physical, psychological, social and aesthetic environment." This reflects the WHO constitutional definition of health as "a state of complete physical, mental, and social well-being" and the importance of environmental factors in maintaining health.

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21. Id. ¶ 51.
22. Id. ¶ 52.
27. Id.
physical, mental and social well-being and not merely the absence of disease or infirmity. This also reflects health as psychosocial and physical, "encompass[ing] the continuum between [being] healthy and not healthy," as well as acknowledging that humans are living beings who exist in social environments. Furthermore, there is a direct correlation between availability of freshwater and human health. Diarrheal diseases, which are largely preventable through access to safe drinking water and sanitation, continue to kill children. Global estimates of child deaths due to diarrhea amount to 2.5 million annually, even though a recent estimate put the figure at 1.87 million deaths each year.

It is estimated that 22 percent of all deaths among children under five years old in sub-Saharan Africa, and 23 percent in south Asia, were caused by diarrheal diseases in the year 2000. Freshwater is essential to the survival of humans, flora, and fauna, and it is dwindling globally. A report of the WHO and the United Nations International Children's Emergency Fund (UNICEF) details the inter-linkages between the lack of water and rapid population growth. The report states that about 1.1 billion people lack access to clean water and that 2.4 billion lack sanitation facilities. The U.N. General Assembly's recent Declaration recognized a human right to water and sanitation, which demonstrates its resolve to tackle the global water and sanitation crisis.

B. The Evolving Public Health Disaster in the Lake Victoria Basin

Lake Victoria is shared between Kenya, Uganda, and Tanzania. Its catchment of the principal affluent river Kagera runs through Rwanda and Burundi. The Nile River outflow is an extremely important freshwater resource for the Basin countries of Uganda,

31. See generally Maggie A. Montgomery & Menachem Elimelech, Water and Sanitation in Developing Countries: Including Health in the Equation, 41 ENVTL. SCI. & TECH. 17, 17 (2007).
34. Cynthia Boschi-Pinto, Lana Velebit & Kenji Shibuya, Estimating Child Mortality Due to Diarrhoea in Developing Countries, 86 BULL. WHO 710, 710 (2008).
38. Id.
39. See G.A. Res. 64/292, supra note 5, ¶ 1.
Sudan, Ethiopia, and Egypt. “With an estimated population of 35 million people, the Lake Victoria Basin supports one of the densest and poorest populations in sub-Saharan Africa,” if not the world.\textsuperscript{40} Average per capita income is low, and poverty and unemployment are widespread.\textsuperscript{41} This is compounded by public health threats of HIV/AIDS and malaria, unplanned urbanization, and environmental degradation.\textsuperscript{42} For example, research by Uganda’s Medical Research Foundation found that HIV/AIDS prevalence rates among fishermen on the landing sites around Lake Victoria are between 28 to 30 percent, considerably above Uganda’s national average of 6 percent.\textsuperscript{43} The reduction of the water level of Lake Victoria, due to human activity and climate change, has also increased the prevalence of mosquitoes and malaria.\textsuperscript{44} Water pollution, alongside HIV/AIDS and malaria, is a major cause of mortality of children in the Basin.\textsuperscript{45} Lake Victoria is under pressure from human activities, including destructive fishing, pollution, and erosion of deforested watersheds.\textsuperscript{46} The sources of pollution include untreated human and animal waste, which threaten both human health and the ecosystem.\textsuperscript{47} Water pollution is a public health problem.\textsuperscript{48} Waste pollution contributes to poor water quality and disease in lakeside communities.\textsuperscript{49} This poses a major risk to public health because 70 percent of the Basin population utilizes untreated water.\textsuperscript{50} Contamination of drinking water results from poor sanitation, hygiene, and poor floodwater management.\textsuperscript{51} Water-borne diseases associated with contaminated water and poor sanitation—including typhoid fever, cholera, dysentery, and malaria—reduce life expectancy in the Basin.\textsuperscript{52} A general lack of awareness...
of good hygiene practices, contamination of beach waters through bathing and washing, and uncontrolled waste disposal around the shoreline have led to low standards of health in the Basin.53

C. URBAN POLLUTION AND EUTROPHICATION

Lake Victoria has undergone enormous environmental changes in the recent past.54 For Example, overfishing, degraded watersheds, industrial pollution, and climate change are threatening its ecosystem diversity.55 The Basin faces complex social, economic, political, and technical barriers.56 An environmental impact assessment of the Lake identified overfishing and pollution of the Lake as threatening both the environment and human health.57 Within the Basin, untreated effluent is discharged into feeder-rivers and lakes.58 The number of people without sewers in urban populations around the Lake is high and worsening.59 Microbiological pollution occurs because, while treatment works in municipalities, investment in waste management and enforcement of municipal by-laws are inadequate.60

Another great threat facing Lake Victoria is eutrophication, the response of ecosystems to increases in nutrient loads.61 Eutrophication is caused by effluent, sedimentation, and large-scale farming and industrial production in East Africa.62 Increases in human populations, urbanization, agriculture, and demand for land have led to encroachment of wetlands around the Lake.63 Poor monitoring and enforcement of regulations,64 unsustainable land-use practices,65 forest burning, and soil erosion aggravate eutrophication.66 Chemical pollution due to effluent, industrial discharge, pesticides, medical, oil, and...
and other banned substances poses a severe threat to human health.\textsuperscript{67} In Uganda, expired chemicals, drugs, and partially treated domestic sewage from Kampala are often dumped into waterways that flow into Lake Victoria.\textsuperscript{68} Most industries in the Basin are located in the large towns bordering the lakes: Kampala and Jinja in Uganda, Mwanza and Musoma in Tanzania, and Kisumu in Kenya.\textsuperscript{69} In these cities, the urban and semi-urban growth is rapid and largely unplanned, and municipal authorities poorly manage waste disposal, which ends up in Lake Victoria.\textsuperscript{70} A 2010 report by Uganda's National Environment Management Authority (NEMA) identified the ten worst polluters in Kampala that endangered the Basin ecosystem and public health.\textsuperscript{71} They included the private fishing, beverage, and meat industries around Entebbe, Jinja, and Kampala.\textsuperscript{72}

III. Health and the Evolution of International Sustainable Development Law

A. The Three Pillars of Sustainable Development: From Stockholm to Johannesburg

1. Origin and Evolution

Sustainable development is comprised of three pillars: environmental, economic, and social.\textsuperscript{73} The social pillar includes poverty eradication, access to water and sanitation, health, labor standards, and human rights.\textsuperscript{74} It is argued that the social pillar, where health is situated, has been marginalized in sustainable development law and policy. Several global sustainable development instruments that include health have emphasized the economic over the environmental and the social pillar.\textsuperscript{75} For instance, the 1972 United Nations Conference on Human Environment recognized health concerns in global environmental problems.\textsuperscript{76} Similarly, the Rio Declaration placed human beings at the center of sustainable development, in harmony with nature, laying down a framework for equal

\begin{thebibliography}{99}
\item[68.] Id. at 365.
\item[69.] Scheren et al., supra note 61, at 239.
\item[70.] Eric O. Odada et al., Mitigation of Environmental Problems in Lake Victoria, East Africa: Causal Chain and Policy Options Analyses, 33 AMBIO 13, 20 (2004).
\item[72.] Id.
\item[73.] Robert W. Kates et al., What is Sustainable Development? Goals, Indicators, Values, and Practice, 47 ENV'T: SCI. & POL'Y FOR SUSTAINABLE DEV. 8, 12 (2005).
\item[76.] Id. ¶ 3.
\end{thebibliography}
operationalization of the three pillars. Agenda 21 from the Rio Conference provided for the protection of health, especially primary healthcare. By emphasizing both preventive health strategies and sustainable development, Agenda 21 integrated health and the social pillar into sustainable development. It also energized the health sector as a core actor in shaping international environmental law and policy. But the environmental pillar that was emphasized in Stockholm was rebalanced in 1992 by the Rio Declaration, which declared human beings to be "the central concern of sustainable development" and "entitled to a healthy and productive life in harmony with nature."

The Johannesburg World Summit on Sustainable Development in 2002, which placed health as a priority, brought further efforts to reinvigorate the social pillar. A number of health-related objectives enshrined in the Millennium Development Goals were adopted to encourage states to increase access to sanitation and clean water to improve child health. It called upon parties "to reduce respiratory diseases and other health impacts resulting from air pollution." The Summit called for significant reduction by 2020 of the adverse effects to human health and the environment caused by the use and production of chemicals. It reaffirmed the commitment to fund the Global Fund to Fight AIDS, Tuberculosis, and Malaria, but no additional funding was committed. The pronouncement on the importance of human rights in the provision of healthcare and preventive health services confirmed health as a key aspect of sustainable development. But the Johannesburg Summit added nothing substantially innovative to reinforce the social pillar. No new treaties and few targets from lower profile meetings were agreed. Nonetheless, the summit elevated the significance of health within the social pillar.

2. The Legal Status of Sustainable Development Principles in International Law

An emerging body of principles relating to sustainable development reconciles economic, environmental, and social legal regimes. It is also the case that international
sustainable development law constrains the social pillar. Sustainable development has achieved normative character in international law, assigning rights and obligations and facilitating interpretation. It finds support in the case concerning Gabcikovo-Nagymaros Project between Hungary and Slovakia (Gabcikovo case), where Judge Weeramantry identified the general acceptance of sustainable development principles by the global community. Several global and regional legal instruments provide for sustainable development, such as the Protocol on Sustainable Development of Lake Victoria. It is an emerging area of international law in its own right, integrating environmental, economic, and social law for sustainability. Sustainable development helps to curb the worst social and environmental impacts of economic activities and requires a balancing of the economic, environmental, and social pillars. Yet its legal status remains fluid. Alan Boyle argues that normative uncertainty, coupled with absence of justiciable standards for review, strongly suggest that there is no international legal obligation to develop sustainably. Boyle further opines that decisions on what constitutes sustainability rest primarily with individual governments. Vaughan Lowe argues that sustainable development as a norm of customary international law is unsustainable. Without a strong legal status, it is a challenge to achieve health protection in the context of sustainability. This lack of consensus is relevant to the subsequent discussion on Lake Victoria.

B. HEALTH, SUSTAINABLE DEVELOPMENT, AND SHARED WATER RESOURCES: THE GLOBAL LEGAL REGIME

Water protects health through food and nutrition and the maintenance of a healthy environment but can harm health through waterborne diseases. Hence, international water law is pivotal for health protection. This link has been recognized in Europe by the adoption of the Protocol on Water and Health to the Convention on the Protection and

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95. Segger & Khalfan, *supra* note 93, at 97.
102. Id.
Use of Transboundary Watercourses and International Lakes. The Protocol aims to protect human health through better water management, the protection of water ecosystems, and preventing and reducing waterborne diseases. The legal regime of internationally shared water resources is evolving, especially regarding water quality.

Four international legal principles underpin the management of shared water resources. First, absolute territorial sovereignty grants states the unlimited right to exploit the resources within their territory. Second, absolute territorial integrity provides that no action of another state shall have influence on the territory of another. Third, the concept of limited territorial sovereignty and integrity attempts to reconcile the freedom of use of water resources with the right to freedom from unwanted interferences to the water resource, and it establishes the equality of the rights of each riparian state to an international watercourse. It imposes an obligation to manage shared water and not to interfere with use by other riparian States. Finally, the doctrine of community of interests provides that parties of a shared river have a community of interests in the use of a river, as was held in the River Oder Case and expanded in the Gabčíkovo case. The doctrine includes the common heritage of mankind and common concern for mankind. The key rule of universal application is that only riparian states have a legal right to use shared waters, in absence of their consent.

A number of international legal regimes provide for management of shared waters. The U.N. Convention on the Law of the Non-Navigational Uses of International Watercourses reinforces the legal principles of equitable, reasonable utilization and the

108. Id. at 126.
109. Id., at 135.
115. Id.
119. Id. arts. 5-6.
obligation to prevent causing significant harm to other watercourse states. The protection of public health is one of the requirements under the UN Convention even though it is constrained by it.\textsuperscript{121} The Helsinki Rules form a body of customary international law requiring Basin States to prevent pollution.\textsuperscript{122} Water pollution is defined as "any detrimental change resulting from human conduct in the natural composition, content, or quality of the waters of an international drainage basin."\textsuperscript{123} This provision is a restatement of the obligation of states not to cause serious harm to another, such as through pollution.\textsuperscript{124} But a careful review of the global water legal regimes demonstrates their preoccupation with allocation of water quantity and lesser emphasis on health protection concerns. The evolving state of global water law, such as that for the management of Lake Victoria, provides an incoherent point of reference for regional regimes that seek to address major public health issues. This lacuna accentuates the health deficit at the regional level, such as in East Africa where the sustainability regime is undermined by the existing global legal regimes for the management of shared waters.

C. HEALTH, SUSTAINABLE DEVELOPMENT, AND REGIONALISM: LIMITS AND PROSPECTS

Regional law and policy making presents an important framework for environmental and health governance. Regional policies and programs can be oriented and implemented to respond to local conditions, needs, and priorities. Regional regimes are evolving as drivers of policy and action in environmental health.\textsuperscript{125} Regionalism promotes sustainable development by integrating environmental and social policies into trade and economic accords and their general governance mechanisms.\textsuperscript{126} Regional approaches can succeed if they have effective mechanisms for collective experimentation and sharing experiences. Geographical proximity enables rapid diffusion of practices, promoting adaptation to new conditions. As in the European Union, regionalism can promote crystallization of environmental health standards\textsuperscript{127} and can translate international commitments to the national level.\textsuperscript{128} It may implement regional sustainability priorities,\textsuperscript{129} enhance environmental co-

\begin{itemize}
  \item 120. Id. art. 7.
  \item 121. Id. art. 21(2).
  \item 122. Campione Consolidation, supra note 117, art. 10.
  \item 123. Id. art. 13.
  \item 126. Lome Convention IV, 29 INT’L LEGAL MATERIALS 783 (1990); William Onzivu, Globalism, Regionalism or Both: Health Policy and Regional Economic Integration in Developing Countries, an Evolution of a Legal Regime?, 15 MINN. J. INT’L L. 111, 111 (2006).
  \item 128. Onzivu, supra note 126, at 112.
\end{itemize}

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operation, build capacity, and monitor and enforce environmental policy. For example, in the African context, the African Union has developed a progressive environmental policy culminating in the adoption in 2003 of the African Convention on the Conservation of Nature and Natural Resources. Its Member States committed to accelerating the achievement of water and sanitation goals at their Eleventh Ordinary Session of the Assembly in Sharm El-Sheikh in July 2008. They recognized “the importance of water and sanitation for social, economic, and environmental development” and committed themselves to “promoting integrated management and development of national and shared water resources in Africa.” Regional Economic Communities (RECs), such as the East African Community (EAC), were encouraged to spearhead this agenda in their development planning to ensure that trans-boundary natural resources are protected and utilized in an equitable and sustainable manner. Unfortunately, the African Union has been ambitious, but ineffective, because environmental protection has not been accorded the priority it deserves.

IV. Health and Governance of Sustainable Development in the Case of Lake Victoria: The Legal Regime

A. Applicable Legal Regime of the East African Community

The principal legal instrument for the EAC is the Treaty for the Establishment of the East African Community. It was signed on November 30, 1999 and entered into force on July 7, 2000, heralding the rebirth of the EAC as a major regional economic integration bloc. “The objectives of the community [are] to develop policies and programs aimed at widening and deepening cooperation among the Partner States in political, economic, social, cultural, and technical fields.”

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114. Id. at 1, 3.


116. Id. art. 153.
economic, social[,] and other fields . . . "137 The Treaty envisages the development of programs and policies in diverse areas, including the environmental and health fields.138 Article 5(3) stipulates that:

"[T]he community shall ensure . . . the attainment of sustainable growth and development of the Partner States by the promotion of a more balanced and harmonious development of the Partner States . . . the promotion of sustainable utilization of the natural resources of the Partner States and the taking of measures that would effectively protect the natural environment of the Partner States."

The Treaty contains substantive provisions addressing the environment, natural resource management, tourism, and wildlife management.140 It provides for joint management and utilization of natural resources within the EAC for the mutual benefit of partner States.141 The Treaty also provides for the joint development and adoption of harmonized common policies and strategies for sustainable management of trans-boundary natural resources within the EAC.142 With regard to shared waters, community action is required to "ensure sustainable [utilization] of natural resources like lakes, wetlands, forests and other aquatic and terrestrial ecosystems; and to jointly develop and adopt water resources conservation and management policies that ensure sustenance and preservation of ecosystems."143 The Treaty also aims to promote cooperation on health matters among Community Partner States.144 The Partner States are required to undertake "joint action towards the prevention and control of communicable and non-communicable diseases and . . . pandemics" and epidemics including "vector-borne diseases such as HIV-AIDS, cholera, [and] malaria."145

The EAC has developed two protocols on environmental management: the Protocol for the Sustainable Development of Lake Victoria146 and the Protocol on Environment and Natural Resources Management.147 The Third EAC Development Strategy (2006-2010) (Policy) established "sustainable environmental management and economic utilization of natural resources" as a development objective.148 The Policy identified other strategic interventions, including the preparation of a common water vision and establishment of an East African Water Management Institute.149 The Policy identifies the environmental management of Lake Victoria, combating of HIV/AIDS, and other health threats such

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137. Id. art. 5(1).
138. Id. chs. 19, 21.
139. Id. art. 5(3)(a), (c).
140. Id. arts. 111-16.
141. Id. art. 111.
142. Id. art. 114.
143. Id. art. 111(2)(c)-(d).
144. Id. art. 117.
145. Id. art. 118.
149. Id. at 44.
as cross-cutting interventions and sectoral objectives.\textsuperscript{150} Taken together with relevant international instruments on sustainable development, water, and health to which the East Africa Partner States are parties, the regional instruments provide the legal framework for the sustainable management of Lake Victoria.

B. THE PROTOCOL ON ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT

The Protocol on Environment and Natural Resources Management was adopted by the EAC in 2005.\textsuperscript{151} It provides for cooperation in environment and natural resources management\textsuperscript{152} and promotes sustainable use and management of environmental and natural resources.\textsuperscript{153} EAC States are required to “develop, [harmonize] and adopt common national policies, laws and [programs] relating to the management and sustainable use of water resources” and to utilize water resources in an equitable and rational manner.\textsuperscript{154} The Protocol is not yet operational, but it embodies the common vision of the EAC on environmental issues.\textsuperscript{155} The Protocol highlights the importance of collaborative management of the environment and natural resources in the Community.\textsuperscript{156} The scope of the Protocol is biased towards the economic and environmental pillars because of the absence of health-specific requirements.\textsuperscript{157}

The Protocol also affirmed the commitment of the Partner States to cooperate and to uphold the principle of sustainable development.\textsuperscript{158} The Partner States agreed to cooperate in environment and natural resources management through the development of common policies and the coordination of actions to protect the environment and natural resources.\textsuperscript{159} They committed to ensure that development activities are based on sound environmental policies that do not have adverse impacts on natural resources and the environment.\textsuperscript{160} They also agreed to take all measures conducive to sustainable development, to tackle poverty in East Africa, and to protect the environment and natural resources.\textsuperscript{161} Partner States are required to “take appropriate measures . . . including the adoption of laws and regulations, administrative actions and enforcement measures” to comply with the Protocol.\textsuperscript{162} Partner States commit to refrain from activities that undermine the effectiveness of the Protocol.\textsuperscript{163} The EAC adopted the Regional Environment

\textsuperscript{150} Id. at 36, 39, 41, 50.
\textsuperscript{151} Protocol on Environment and Natural Resources Management, supra note 147, pmbl., art. 51.
\textsuperscript{152} Id. ch. 3.
\textsuperscript{153} Id. art. 40.
\textsuperscript{154} Id. art. 13(1)-(2).
\textsuperscript{155} See id.
\textsuperscript{156} Id. art. 2.
\textsuperscript{157} See id. art. 3.
\textsuperscript{158} See id. ch. 2.
\textsuperscript{159} Id. art. 7(1)(a), (c).
\textsuperscript{160} Id. art. 8(1), (2)(b)-(c).
\textsuperscript{161} Id. art. 8(2)(d).
\textsuperscript{162} Id. art. 40(1).
\textsuperscript{163} See id. art. 43(2).
Impact Assessment Guidelines for shared ecosystems in 2005. It focuses on ecosystems and only peripherally on public health.

C. PROTOCOL ON SUSTAINABLE DEVELOPMENT OF LAKE VICTORIA BASIN

The Protocol on Sustainable Development of Lake Victoria Basin was signed by the Partner States of the EAC. The Protocol addresses environmental concerns in and around Lake Victoria and requires Members’ cooperation on sustainable development, management, equitable utilization of water resources and “improvement in public health with specific reference to sanitation.” The Protocol establishes the Lake Victoria Basin Commission for the sustainable management of the Lake Victoria Basin. It is mandated with a broad range of functions, including guiding implementation of sectoral projects and programs and promoting capacity building and institutional development, especially poverty eradication. A key principle of the Protocol is the “prevention, minimization and control of pollution of watercourses so as to minimize adverse effects on fresh water resources and . . . human health.” While the ecosystem-human health balance is a key objective of the Protocol, the detailed steps prescribed to achieve this balance are biased towards ecosystem protection, with ambivalence on health issues. Reminiscent of the common fragmentation of international legal regimes and lack of issue linkages, a major challenge of the Protocol on Sustainable Governance of Lake Victoria is the lack of integration of global public health standards in its sustainability legal regime.

D. INSTITUTIONAL FRAMEWORKS FOR SUSTAINABILITY IN THE EAST AFRICAN COMMUNITY

The Council of Ministers is the EAC policy organ responsible for developing and adopting regional environmental policy. The implementation of Council decisions is the responsibility of the EAC secretariat, who also oversees national environmental focal points like the National Environment Management Authorities of Uganda and Kenya, the Rwanda Environment Management Authority, the Department of Environment in the


165. See id. ¶ 1.1 (health is only mentioned once in the definition of Environmental Impact Assessment). See id.


167. Id. arts. 7-9.

168. Id. arts. 5-6.

169. Id. art. 3(i).

170. Id. art. 33(1).

171. Id. art. 33(3)(e)-(g), (j).

172. Id. art. 4(2)(i).

173. See id. art. 6(1).


Vice President's Office and National Environmental Management Council of Tanzania, and the Department of Land and Environmental Management in Burundi. Community organs such as the East Africa Legislative Assembly (EALA) and the East African Court of Justice (EACJ) also contribute to environmental and health policy. Four working groups support the Sectoral Committee: the Terrestrial Ecosystems, Aquatic Ecosystems, Pollution Issues and Policy, and the Legal and Institutional Frameworks. A specific health-working group should enhance the link between health and environment, and its absence places health in a policy limbo. The EAC has a health desk, but cross-coordination and integration with other sectoral working groups or the commission on the sustainable use of Lake Victoria faces challenges.

"The EAC secretariat is the executive organ for the East African Community . . . and provides a forum for Partner [States to][harmonize] their laws, policies and standards." The Lake Victoria Basin Commission (LVBC), based in Kisumu, Kenya, is a specialized institution of the EAC that spearheads the "sustainable development and management of natural resources of the Lake Victoria Basin." The Lake Victoria Fisheries Organization (LVFO) based in Jinja, Uganda, provides leadership to harmonize national measures for sustainable use, conservation, and management of the lake’s fisheries resources.

E. THE EAST AFRICAN LEGAL REGIME AND INTERNATIONAL SUSTAINABLE DEVELOPMENT LAW, A COMPARATIVE SYNOPSIS

The U.N. Convention on the Law of the Non-Navigational Uses of International Water Courses incorporates the concepts of sustainable utilization and sustainable development as overarching principles in the management of shared water resources. Watercourse States are required to cooperate to tackle pollution. Like relevant global and regional instruments, the East African legal frameworks do not sufficiently advance the social pillar of sustainable development relative to the economic and, to a lesser extent, the environmental pillar to deal with health issues effectively. The East African legal regime builds on the basic international sustainable development standards in the 1997

178. Id.
179. See id.
181. See Institutional Framework with Regard to EAC Watershed Governance Structure, supra note 177.
182. Id.
183. Id.
185. Id. pmbl., art. 5(1).
186. Id. art. 24(2)(a).
187. Id. art. 21(2)-(3).

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Convention on the Law of the Non-Navigational Uses of International Watercourses, but does not comprehensively address health. This can be contrasted with regional legal regimes that provide a stronger legal foundation for integrating health issues in the management of shared watercourses. First, the European nations have adopted a regional Protocol on Water and Health to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes. Second, the 2002 Senegal River Water Charter recognizes the principles of both sustainable development and the human right to water even though health is not expressly mentioned. Third, the Tripartite Interim Agreement for Co-operation on the Protection and Sustainable Utilization of the Water Resources of the Incomati and Maputo Watercourses emphasizes the importance of both sustainable development and environmental impact assessment for both environmental and human health.

V. A Health and Sustainability Critique of Governance of the Lake Victoria Basin

The key challenges to sustainable development in the region are high population, the attendant pressures from their interaction, and weak legal and institutional arrangements to regulate the pressures and to monitor compliance with applicable laws. This has resulted in overexploitation of fisheries, water pollution, poor waste disposal, and unsustainable management of the Lake. Water governance in the EAC is rooted in legal instruments restrictively focused on utilization and conservation of water. The five Partner States of the EAC have domestic water laws, but their legal effects are domestic and ineffective for regional management of shared ecosystems and public health. This weak governance of the Basin contributes to the challenges of integrating health concerns into its sustainable management, as discussed below.

A. Weak Governance of Sustainability and Focus on the Economic Pillar

The Partner States possess weak sustainable development strategies in fragmented policy instruments, and their implementation is problematic. This is demonstrated by the lack of fully functional, coherent, and decentralized strategies, institutional mechanisms, and capacity for implementation of regional sustainable development policies. The EAC

188. See id. arts. 19(1), 21(2).
189. See generally Protocol on Water and Health, supra note 105.
195. See id.
governance mechanisms have not fostered effective synergies between poverty, health, and environmental protection. The EAC continues to face challenges in synergistic and collaborative interventions to promote health and the environment within its sustainability regime. The EAC's laws and policies are biased towards market-oriented development, with inadequate mitigation of the environmental and health impacts of economic liberalization within the region. For example, the EAC's environmental protocol is not in force. The focus on fast tracking a political federation has relegated environmental and public health issues to the margins. The Third EAC Development Strategy (2006-2010) identified sustainable environment management and economic utilization of natural resources as development objectives. But these have been overshadowed by the primacy of trade liberalization and economic development that reinforces the economic pillar over the environmental and health pillars of sustainability. Efforts to make Lake Victoria green often fail to effectively capture public health concerns. The national development plans of Partner States do not prioritize the health and sustainability challenges facing Lake Victoria. For example, in a bid to attract foreign private investments, Uganda's fisheries policy has arguably prioritized big, private-sector fisheries over small-scale, community-based fishing. Yet big fishing companies in the Basin have been accused of unsustainable fishing practices and pollution of the Lake. In a 2010 report, two private fish companies, Uganda Fish Packers and Ngege Fish Factory, were among the top ten polluters in Uganda and Lake Victoria. In Kenya, some multinationals were accused of setting up activities in swamps; while in Tanzania, poverty reduction policies emphasize the primacy of the private sector over environmental and social development.

B. WEAK ENVIRONMENTAL HEALTH GOVERNANCE

The Protocol on Sustainable Development of Lake Victoria Basin requires Partner States to "create an environment conducive for stakeholders' views to influence governmental decisions on project formulation and implementation." Weak governance causes inequitable economic and social development of populations in the Basin and enables narrow national interests to trump broader EAC social objectives such as health.
Moreover, corruption, lack of accountability, and weak public financial management undermine effective participation of the public and civil society to promote environmental health in the Basin. International conventions to which the Partner States are parties have not been implemented to address the environmental health threats facing the Lake. Domestic public health laws impose standards on regulating clean water by monitoring water pollution from car washing, sewage systems, and flower farms, but these have not been effectively monitored. Nonexistent regional public health laws undermine pollution control efforts to protect the ecosystem and public health in the Basin. It is uncertain whether the recent establishment by the Lake Victoria Environment Management Commission of Public Health and Sanitation office will help advance health protection in the Basin. The EAC's legal and policy frameworks, while seemingly elevated on environmental management, have actually constrained environmental and social pillars of sustainability in the region. For example, while one of the objectives of the Protocol for Sustainable Development of Lake Victoria Basin is health, there are no specific institutional and procedural mechanisms to realize them. States have detracted from domestic sustainability policies in a race to the bottom to attract economic investment without mitigating environmental and health damage. The lack of strategic and comprehensive action to address threats to the Lake exacerbates the problems. The absence of regular reviews of economic, social, and environmental legislation to achieve sustainability in the face of evolving challenges in the Basin undermines sustainable development. In Uganda, primary health and sanitation are devolved to local governments. But limited human and technical expertise, enforcement of public health and environmental laws and municipal bylaws, as well as insufficient involvement of local communities undermine protection of health in East Africa, including in the Basin.

C. SECTORAL AND POLICY FRAGMENTATION: REGIONAL AND DOMESTIC

While the EAC is endowed with a mandate to sustainably manage Lake Victoria, the governance regime remains sectorally fragmented. The EAC declared the Lake Victoria Basin an economic zone and entered into a partnership agreement with several donors such as the World Bank to fight poverty in the Basin. The initiative was aimed at

208. See id. at 33.
212. See Kimani, supra note 197, at 33.
216. See Lubovich, supra note 49, at 16-20; Fredrick Jones Muyodi, Fredrick W.B. Bugenyi & Robert E. Heckey, Experiences and Lessons Learned from Interventions in the Lake Victoria Basin: The Case of Lake Victoria
addressing economic, social, and environmental issues in the Basin, but it did not specifically provide for health. The agreement led to a grant of over $75 million by the Global Environment Facility (GEF) to the East African Community under Phase One of Lake Victoria Environment Management Program that was completed in 2004.217 The Phase One project was aimed, inter alia, "to supply safe water and sustain a disease-free environment."218 Ironically, a health project was not implemented.219 Health was cursorily mentioned under general micro-projects for small communities. One would have thought that the omission of health in Lake Victoria Environmental Management Project Phase One would be comprehensively redressed in Phase Two of the project, but this has not been demonstrated in the Phase Two project objectives.220 The Commission for Sustainable Management of Lake Victoria is the only EAC body that has recently done some minimal health work, conducting epidemiological surveys on HIV/AIDS with only one member of staff.221

Many EAC programs lack coordination with national and local basin initiatives.222 Within regional initiatives, health concerns have not been addressed in an integrated manner.223 "Data and information about Lake Victoria is biased towards academic research" and is without concrete operational plans for action.224 Information systems and retention is weak and available data has not been strategically utilized to steer action in tackling the environmental and social problems facing the Basin.225 Furthermore, corruption hampers effective regulatory reform in the water sector across the region.226 Investments in water and sanitation infrastructure in the region are limited, yet unclear departmental responsibilities for water, sanitation, and sewage in Uganda and Kenya undermine effective intersectoral collaboration.227 In urban areas, there are unclear responsibilities between local authorities (normally mandated for sanitation) and water utilities (normally mandated for sewerage).228 In rural areas, unclear responsibilities between line ministries, such as those for water, health, fisheries, and environment, undermine strategic interventions across East Africa to manage the shared waters of Lake Victoria. The unclear lines of responsi-


217. Muyodi, Bugenyi & Hecky, supra note 216, at 3-4.
219. Id.
220. See Lubovich, supra note 49, at 11.
223. See id. at 28.
224. Id. at 14.
225. Id.
226. Id. at 15.
227. See id. at 22, 43.
228. Water, Sanitation and Basic Hygiene, supra note 209.
bility undermine sectoral funding. There are no common water quality standards across the region where the role of the health sector would have been pivotal. Much of the pollution of the Lake emanates from cities around the Lake such as Kampala, Jinja, Kisumu, Mwanza, and Bukoba. Yet there are no harmonized national and city-specific bylaws relating to water, sanitation, and environmental health to support the Basin’s ecosystem and public health. This, in turn, undermines the integrated management of the Basin. It also undermines consistent monitoring of interventions for sustainability of the Basin.

D. WEAK DOMESTIC ENFORCEMENT AND COMPLIANCE REGIMES

In the face of the weak regional legal regime for health protection in the Lake Victoria Basin, recourse could be had through domestic water laws to protect health. Unfortunately, compliance with and enforcement of these laws are problematic. The Basin population in the three East African countries is uninformed about their water rights. For example, in Tanzania, the lack of an effective mechanism for disseminating information on water rights contributes to resentment and suspicion because some of the rural communities have very low literacy levels. Water rights and laws are written in English and are not translated into local languages such as Kiswahili, Luganda, or Luo, which undermines compliance and enforcement with water use laws by Lake communities. Government support and enforcement of existing legislation against improper natural resource use has been found to be weak in Kenya. Water ministries are centralized and do not involve local communities in planning, monitoring, or management of water resources. The sectoral nature of water management undermines the enforcement of water law because the allocation of responsibility for conserving water resources to several institutions creates procedural difficulties and because institutions often do not enforce law in the hope that other institutions will do so. Difficulty in enforcing laws and bylaws is also attributable to the lenient fines and penalties and a lack of enforcement resources by the water and other enforcement agencies. Furthermore, enforcement and compliance to protect water resources are complicated by competition between environment and other ministries for resources, technical assistance, and influence. Limited collaboration between environment, health, and the water departments undermines water quality enforcement and public health.

229. Id.
230. Id.
234. Id.
In the absence of an effective enforcement regime, a strong public health legal regime would be beneficial. But the Public Health Acts in the three East African countries, excepting Tanzania’s Public Health Act, were adopted in the colonial era and are obsolete.\textsuperscript{237} These laws cannot cope with modern health threats facing the region.\textsuperscript{238} There are public health policy commitments that could address water issues, but omissions or gaps in the laws are evident.\textsuperscript{239} For example, Uganda’s Public Health Act imposes a duty upon local authorities to maintain cleanliness and prevent nuisances.\textsuperscript{240} Nuisances are defined to include dirty wells or water sources, public or private, from which water is used or likely to be used by human beings for drinking or domestic purposes.\textsuperscript{241} All buildings must be constructed with sanitary conveniences and appropriate drainage facilities.\textsuperscript{242} Uganda’s Public Health Rules contain more detailed provisions on health and sanitation in rural areas.\textsuperscript{243} Latrines are to be sited at an appropriate distance from water sources.\textsuperscript{244} No person is permitted to pollute, damage, bathe, or wash in a spring, well, water-hole, dam, or at a place on a lake or river where the public draws water for domestic purposes.\textsuperscript{245} Animals are prohibited from getting into water used by the public for drinking or bathing, and a local administration is authorized to set aside special areas for drawing drinking water or for watering animals.\textsuperscript{246} Contravention of these rules attracts a fine or imprisonment.\textsuperscript{247} But the public health and sanitation laws have not been applied by the health and other enforcement agencies due to lack of personnel at the grassroots, logistical problems, and the low fines that are imposed.

E. LIMITED CAPACITY AND CIVIL SOCIETY PARTICIPATION

There are good and coordinated scientific technical capacities for fisheries management in the Basin, but less so for the ecological and health challenges facing the Basin.\textsuperscript{248} Mechanisms are lacking for the retention, exchange, or dissemination of scientific, technical, and legal information by governments, non-governmental organizations (NGOs), and communities on the Basin. Low public and private investment in sustainable development, onerous donor conditionality in official development assistance, and debt burdens on the Partner States inhibit their ability to equitably advance the three pillars of sustainability. This, in turn, undermines health protection in the Basin. Economic sectors such as mining and manufacturing have significantly expanded while social investments


\textsuperscript{239} See id.

\textsuperscript{240} Id. at 14.

\textsuperscript{241} Id. at 29.

\textsuperscript{242} Id. at 14.

\textsuperscript{243} See id.

\textsuperscript{244} Id.

\textsuperscript{245} Public Health Act, §§ 21-23 (1935) Cap. 281 (Uganda).

\textsuperscript{246} Id. § 57(i)-(k).

\textsuperscript{247} Id. § 35.

\textsuperscript{248} Lubovich, supra note 49.
remain under-resourced. Effective sustainability has been undermined by undue regulation of activities of civil societies by Partner States, as demonstrated by restrictive NGO laws being enacted in Uganda. Language barriers in the Basin also undermine community participation in sustainable development because many communities do not speak English or Kiswahili. Civil society and community participation in the Basin is more pronounced in the fisheries sector, with local communities self-enforcing regulations relating to overfishing or water hyacinth control, but is less so in addressing sanitation, diseases, and general pollution problems of the Basin. The East African Communities Organization for the Management of Lake Victoria (ECOVIC), an umbrella organization, has focused largely on environmental and poverty issues. There is a tendency for NGOs to participate during the life cycle of a donor project with no long-term plans to continue work when such projects are concluded. Public health is not a priority of these NGOs, and the few health NGOs are pre-occupied with diseases and other specific issues detached from the general public health threats facing the Lake.

VI. Proposals for Reform

Following the analysis of the limits of Lake Victoria's sustainability legal regime for public health promotion and protection, a number of options for reform of the status quo are possible. The East African Community, its Member States, and other stakeholders need to adopt an effective adaptive governance framework for the Lake Victoria Basin. Adaptive governance institutions are those "capable of generating long-term, sustainable policy solutions" to complex and dynamic natural resource problems through collaboration among diverse resource users and governmental agencies. Governance is adaptable, extending adaptive management's flexible, iterative approach beyond natural systems to human systems. Ideal adaptive governance reacts to challenges from both ecological and human institutions and systems. Adaptive management focuses on the interaction of resource management and science. It recognizes that, because science is constantly evolving, our understanding of natural systems or the effect of human interactions on these systems is rarely, if ever, complete. Scientific answers are social constructs, and instead of using science to predict outcomes far into the future and setting one-time static policies, adaptive management monitors outcomes and maintains flexibility so that policies can be altered should predictions prove inaccurate or scientific understanding advance. The concept would ensure that institutions, laws, and policies for the management

250. ADAPTIVE GOVERNANCE AND WATER CONFLICT: NEW INSTITUTIONS FOR COLLABORATIVE PLANNING 2-5, 6 (John T. Scholz & Bruce Stiftel eds., 2005).
of Lake Victoria are flexible to address the dynamic health, environmental, and economic challenges facing the Lake as the science, learning, and other evidence evolves. This provides a concrete basis for the following pivotal reforms to embed health more firmly into the sustainable management regime for Lake Victoria.

The East African Community, its Member States, and other stakeholders should also adopt and implement a long-term regional health and sustainability plan for Lake Victoria. This would avoid fragmented management and ensure coherent interventions that execute the three pillars of sustainability to promote public health and ecological integrity in the Basin. The EAC's strategic vision for Lake Victoria and the adoption of the Protocol on Sustainable Development of Lake Victoria is a start, but it requires effective development, implementation, and enforcement of and compliance with the instruments to achieve sustainability. A possible option would be to adopt a separate protocol on health and sustainable management of Lake Victoria. Such a protocol's sole objective would be the protection of human health and ecosystems, thereby tackling the public health challenges facing the Basin. This protocol would address issues such as safe drinking, bathing, and other uses of water, as well as sanitation, waste, and other measures to protect public health around the lake. This protocol would also contribute to the existing East African sustainable development regime by fully integrating the social pillar with the environmental and economic pillars in the management of Lake Victoria.

The stakeholders must adopt and implement a riparian-wide law and harmonize policy. Regional law for the sustainability of the Lake Victoria Basin must cross-fertilize domestic laws and policies of all riparian and catchment States—i.e., Kenya, Tanzania, Uganda, Burundi, and Rwanda. The EAC needs to put in place inter-sectoral coordination mechanisms for legal reform in this area. Domestic law and strategic policies, especially sector-wide frameworks, will need to be fully considered in the progressive harmonization and implementation of regional sustainability frameworks. These frameworks should not simply emphasize economic development and environmental management, but also the promotion of public health in the region. Existing legal reform initiatives such as the UNEP/UNDP Joint Project on Environmental Law and Institutions in Africa should be persuaded to include health within their remit by assisting the EAC in efforts to promote legal reform among Member States that integrate public health and the environment. This, in turn, requires effective governmental regulation to promote the Basin's catchment, which requires control of pollution from cities such as Kisumu, Kampala, and Mwanza. Furthermore, agriculture, forestry, and fisheries in riparian States should be targeted towards contributing to human health and ecosystems in the Basin. These reforms require the EAC to spearhead a comprehensive research and development agenda to promote the economic, social, and environmental pillars of sustainability evenly. This will provide a launch pad for enhanced health protection in the Basin.

Finally, the EAC, Member States, and other stakeholders should foster effective bottom-up civil society and local community participation. The importance of communities in promoting sustainability in the Lake Victoria Basin is demonstrated by the control of water hyacinth and use of traditional fishing methods on the Lake. Community participa-

tion in basic public health programs needs to be increased. By empowering communities, the EAC, Member States, and other stakeholders may help enforce existing and future public health laws, thereby promoting their own health. Convening, encouraging, and supporting community groups and regular consultations directly with institutions of the East African Community will promote this approach. But the voice of local communities around the lake must also be visible within the East African law and policy-making frameworks. This includes the promotion of participation of lake communities in the regional and domestic policy-making processes to promote sustainable management of the lake. The role of the civil society needs to be enhanced, and capacity building and funding should ensure that the three pillars of sustainability—economic, environmental, and social—are evenly addressed in these often donor-driven projects.

VII. Conclusion

This paper has demonstrated that public health protection is not optimized in the international legal regime for sustainable development of freshwater waters. The requirements of global and regional legal regimes applicable to freshwaters are biased towards the allocation of water quantity and access. Water quality and public health issues have not been comprehensively addressed. The anthropocentric and eco-centric divide in environmental protection; the progressive development of the environmental, economic, and social pillars of sustainability; and developments in human rights law highlight the constraints of the freshwater legal regimes for public health protection. The case study of the public health crisis facing the Lake Victoria Basin and the weaknesses of its regional sustainability legal regime for public health protection reinforce this view. These weaknesses are further highlighted by a focus on the economic needs of the basin over social and environmental needs and weak governance of environmental health. This is compounded by corruption and the lack of accountability of regulators, incoherent and weak sustainability, legal and soft policy instruments, regional and domestic sectoral fragmentation, and poor enforcement and compliance mechanisms. This paper adopts an adaptive and collaborative framework to suggest legal and practical options with the objective of re-invigorating public health protection in the sustainable governance of Lake Victoria, both at the East African regional and domestic planes.