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RETHINKING TRANSNATIONAL ENVIRONMENTAL HEALTH GOVERNANCE IN AFRICA: CAN ADAPTIVE GOVERNANCE HELP?*

ABSTRACT

This paper explores options to strengthen environmental law in ways that maximize its health impact in the developing world. A review of environmental treaties including their domestic implementation reveals the weak synergies between health and environmental objectives, compounded by the methodological and conceptual challenges of environmental health discourse. The paper advances adaptive governance as a framework for re-thinking international environmental law to improve health in Africa, but argues that it has its limits. The paper analyses these strengths and limits in the context of evolving regional environmental health governance in Africa. It proposes four principles-: environmental justice, environmental ethics, multi-sectoralism and evaluation to reinforce its potential to improve health and the environment in Africa.

I. INTRODUCTION: THE GOVERNANCE PROBLEM OF HEALTH IN ENVIRONMENTAL LAW - THE CRUX OF THE ARGUMENT

This paper demonstrates the need for an appropriate governance framework to improve public health in the implementation of international environmental law in Africa. It presents a systematic review of options to reinforce environmental management through adaptive governance to improve environmental health in Africa.

The United Nations Environment Program (UNEP) defines environmental governance as multi-level interactions in environmental policy formulation and implementation (i.e. local, national and international) among, but not limited to states, markets, and civil society.¹ It also refers to supra-national interactions and their relationship to governance at all levels through state and non-state actors². These interactions occur within the context of rules, procedures, processes, and widely-accepted behaviour, which possess characteristics of good governance to attain environmentally-sustainable development.³ Health promotion refers to awareness raising, education, technical cooperation, and capacity building, while health protection includes regulatory and legal activities such as investigations, monitoring, casework, public reporting, and advocacy.⁴

¹ United Nations Environment Programme, Definition of Environmental Governance, accessed at http://www.unep.org/training/programmes/Instructor%20Version/Part_2/Activities/Interest_Groups/Decision-Making/Core/Def_Enviro_Governance_rev2.pdf on 20th January 2014.

² Ibid; L.Kotze, *Global Environmental Governance: Law and Regulation for the 21st Century* (2012)(Cheltenham: Edward Elgar Publishing,)17-19.

³ Ibid; F. Biermann, O. Davies, N. van der Grijp, *Environmental Policy Integration and the Architecture of Global Environmental Governance*, *International Environmental Agreements* (2009) 9:351–369.

⁴ W. Onzivu, '(Re) invigorating the World Health Organization's Governance of Health Rights: Repositing an Evolving Legal Mandate, Challenges and Prospects' (2011) 4(3) *African Journal of Legal Studies* 225-256,246.

The progressive development of environmental law highlights the efforts of States and non-state actors to improve its effectiveness which includes the protection of environment and human health. However, nowhere else in the world is there such a need to rethink the importance of environmental law for health protection than in Africa.⁵ The increasing environmental degradation in Africa has impacted both human health and the environment hence environmental law is instrumental for public health protection.⁶ Scholars have explored the contribution of international environmental law in the protection of public health and the mutually reinforcing linkages between environmental and health protection.⁷ Others have explored these inter-linkages in relation to global environmental governance where the health dimension is a core component.⁸ This article embraces this inter-linkage and argues that in law and fact, there is a need to reinforce this connection for the mutual benefit of both health and the environmental protection. This also helps obviate fragmentation in contemporary environmental governance.⁹ As the author has argued elsewhere, limited health protection in international environmental law in Africa is in fact a problem of governance such as poor institutional coordination, limited participation and impact assessments and weak laws and policies.¹⁰ This has not maximized opportunities for health protection.¹¹

The situation in Africa calls for a renewed thinking that promotes effective policy making.¹² Macrory identifies some of the complexities relating to the governance of the “old” environmental law such as water pollution, waste and species protection and the new

⁵ UNEP, *Africa Environment Outlook 3, Our Environment, Our Health* (Nairobi: UNEP, 2013)3.

UNEP, *Africa Environment Outlook 2, Our Environment, Our Wealth* (Nairobi: UNEP, 2006) 9-11.

⁶ Ibid; Y. Von Schirnding, W Onzivu & A O Adede, ‘International Environmental Law and Global Public Health’ (2002) 80(12) *Bulletin of World Health Organization* 970, 972-973.

⁷ Ibid; D. P. Fidler, *Challenges to Humanity's Health: The Contributions of International Environmental Law to National and Global Public Health*, 31 *Envtl. L. Rep.* 10048 (2001).

⁸ J. G Speth and P.M Haas, *Global Environmental Governance*, Pearson Longman, 2007, 71-74, 113, 135;

⁹ S. Bernstein and M. Ivanova, *Institutional Fragmentation and Normative Compromise in Global Environmental Governance: What prospects for re-embedding?* in *Global Liberalism and Political Order: Towards a New Grand Compromise*(S. Bernstein & L.W. Pauly, Eds) SUNY Press 2007, 163-168.

¹⁰ W. Onzivu, ‘International Environmental Law, the Public’s Health and Domestic Environmental Governance in Developing Countries’(2006) 21(4) *American University International Law Review* 597-600, 637-676.

¹¹ W. Onzivu, ‘Re-examining the Effectiveness of Health Protection in Global Environmental Regulation’ in L. Westra, C. Soskolne and D. Spady(eds) *Human Rights and Duties: Sustaining Global Ecological Integrity and Human Health through Science, Ethics and the Law*(London: Routledge, 2012) 301-314.

¹² E. Fisher, B. Lange, E. and C. Carlarne, ‘Maturity and Methodology: Starting a Debate about Environmental Law Scholarship’ (2009) 21(2) *Journal of Environmental Law* 213-250.

environmental concerns such as climate change where the underlying knowledge and science is uncertain and legal techniques and policy solutions are unsettled.¹³ Macrory's assertions resonate in Africa. The major contributing risk factors causing environmental disease¹⁴ in Africa which has huge human, social and economic costs are traditional, "old" environmental health hazards such as the lack of access to safe water, indoor air pollution and lack of sanitation and hygiene.¹⁵ With recent economic growth, urbanization, and continuing industrialization in Africa, modern environmental health hazards such as climate change and transboundary waste have emerged as critical contributors to environmental disease.¹⁶ Improving population health therefore depends on how well both traditional and modern environmental challenges are coherently governed.¹⁷ Morgan and Yeung refer to the "new governance" which emphasizes tools, networks, public and private actors, persuasion and negotiation and enablement skills.¹⁸ This is a stark contrast to the "old governance" that focuses on programs, hierarchies, public vs private actors, command and control and managerial skills.¹⁹ Importantly, the old regulatory tools continue to dominate environmental health regulation in Africa.²⁰ Therefore, in Africa, transitioning from the old to new governance calls for a rethinking of pathways to tackle policy incoherence and institutional fragmentation between health and the environment. It is argued that, a clear health objective in environmental law informed by the concept of adaptive governance can provide a pathway to policy coherence. Despite its limits, adaptive governance is a promising model for Africa for a number of reasons: First, Africa faces acute public health and environmental threats which require a robust and yet flexible governance framework that

¹³ R. Macrory, 'Maturity and Methodology: A Personal Reflection' (2009)21(2) *Journal of Environmental Law* 251-254.

¹⁴ See A. Prüss-Üstün, C. Corvalán C, Preventing Disease through Healthy Environments Towards an Estimate of the Environmental Burden of Disease. Geneva: WHO 2006 stating that environmental diseases are those attributable to environmental hazards.

¹⁵ O. C. Nweke and W. H. Sanders III, 'Modern Environmental Health Hazards: A Public Health Issue of Increasing Significance' (2009) 117(2) *Environmental Health Perspectives* 863-870.

¹⁶ *Ibid.*

¹⁷ World Health Organization, *Environmental Health: A Strategy for the African Region*, AFR/RC52/10. (Brazzaville, Congo: WHO Regional Committee for Africa, 2002).

¹⁸ B. Morgan & K. Yeung, *An introduction to Law and Regulation: Texts and Materials* (Cambridge: Cambridge University Press, 2007) 110-112.

¹⁹ *Ibid*; S. Wolf and N. Stanley, *Wolf and Stanley on Environmental Law* (Abingdon: Routledge, 5th Edn, 2011) 6-12; D. Driessen, 'Alternatives to Regulation? Market Mechanisms and the Environment' in *The Oxford Handbook of Regulation*, (R. Baldwin, M. Cave & M. Lodge, (Oxford: Oxford University Press, 2012) 204-205.

²⁰ W. Onzivu, 'Tackling the Public Health Impact of Climate Change: The Role of Domestic Environmental Health Governance Mechanisms in Developing Countries' (2009) 43(3) *The International Lawyer*, 1311.

evolves with mounting environmental health threats.²¹ Secondly, a paradox of tortured political participatory democracy in Africa and persisting communitarian structures favouring environmental management abound on the continent.²² Finally, environmental health law in Africa requires reform to keep pace with emerging challenges.²³

While, public health law has been a driver of environmental law especially in the developed world,²⁴ the health objective of international environmental conventions is a powerful driver of environmental law and policy implementation in Africa.²⁵ However, in the context of sustainable management of shared freshwaters,²⁶ the transboundary movement of hazardous waste and their disposal,²⁷ and international climate law,²⁸ international environmental legal regimes have not optimized health protection in developing countries. For example, despite

²¹ n 11, above.

²² n 5, above.

²³ n 10, above.

²⁴ S. Bell and D. McGillivray, *Environmental Law* (Oxford: Oxford University Press, 2008) 17-23; R.J. Lazarus, *The Making of Environmental Law* (Chicago: University of Chicago Press, 2004); D Pencheon, C Guest, D Melzer and J.A.M Gray, *Oxford Handbook of Public Health Practice* (Oxford University Press, 2nd ed, 2011) 218; E.Fee and T.M.Brown, 'The Public Health Act of 1848' (2005) 83(11) *Bulletin of the World Health Organization*, 866.

²⁵ n 8 above; P.H Sand, *Effectiveness of International Environmental Agreements: a survey of existing legal instruments* (Cambridge: Cambridge University Press, 1992) 4-15.

²⁶ W. Onzivu, 'The Long Road to Integrating Public Health in the Sustainable Management of Shared Freshwaters: Lessons from Lake Victoria in East Africa' (2012) 46(3) *International Lawyer* 867-892; V. P. Nanda & G. W. Pring, *International Environmental Law for the 21st Century* 17-62, 116 (2003); L Rajamani, *From Stockholm to Johannesburg: The Anatomy of Dissonance in International Environmental Dialogue*, 12 *Rev. Eur. Community & Int'l Envtl L.* 23, 25-26, 30-31 (2003); M. C Segger & A. Khalfan, *Sustainable Development Law: Principles, Practices and Prospects* 96 (Oxford Univ. Press 2004); N Schrijver & F Weiss, *International Law and Sustainable Development: Principles and Practice* (2004); A Boyle, Introduction, in *International Law and Sustainable Development: Past Achievements and Future Challenges* 1, 16 (A. Boyle & D. Freestone, eds., 1999); V Lowe, *Sustainable Development and Unsustainable Arguments*, in *International Law and Sustainable Development*, 19, 30; N. Kimani, *A Collaborative Approach to Environmental Governance in East Africa*, 22 *J. Envtl. L.* 27, 43, 53 (2010).

²⁷ W. Onzivu, '(Re) invigorating the health protection objective of the Basel Convention on Trans-boundary Movement of Hazardous Waste and their Disposal' (2013) *Legal Studies*, 621-649; K Kummer *International Management of Hazardous Wastes: The Basel Convention and Related Legal Rules* (Oxford University Press, 2000); K. Morrow, *The Trafigura litigation and for unlawful trade in hazardous waste: time for a rethink?* *Environmental Liability*, 18; Bali Declaration on Waste Management for Human Health and Livelihood, 2008 accessed at <http://www.basel.int/convention/XX%20Anniversary/Press%20kit/Bali%20declaration.pdf> last visited 20th December 2012.

²⁸ W. Onzivu, 'Health in Global Climate Change Law: The Long Road to an Effective Legal Regime Protecting Public Health and the Climate' (2010) 4 *Carbon and Climate Law Review* 364-382; n 17 above; L. Heinzerling, 'Health Regulation and Governance: Climate Change, Human Health and the Post- cautionary Principle', 96 *Georgetown Law Journal*, 445 at 450; L. Rajamani, 'Addressing the 'Post-Kyoto' Stress Disorder: Reflections on the Emerging Legal Architecture of the Climate Regime'', 58 *International and Comparative Law Quarterly* (2009), 803-834; L. F. Wiley, 'Moving Global Health Law Upstream: A Critical Appraisal of Global Health Law as a Tool for Health Adaptation to Climate Change'', 22 *Georgetown Environmental Law Review* (2010), 439; R. Lazarus, 'Super Wicked Problems and Climate Change'', 94 *Cornell Law Review* (2009), 1153,1173-1174; K. L. Ebi, J. B. Smith and I. Burton (eds.), *Integration of Public Health with Adaptation to Climate Change: Lessons Learned and New Directions* (London: Taylor & Francis, 2005), xviii; L. F. Schipper, 'Conceptual History of Adaptation in the UNFCCC Process', 15 *Review of European Community and International Environmental Law* (2006), 82-92.

the increasing discourse on social sustainability, the interaction between the ‘environmental’ and the ‘social’ continues to be largely uncharted.²⁹ Yet, for ordinary Africans, social and economic concerns often surpass environmental issues.³⁰ This was demonstrated by African support for the elevation of health as a social issue in the World Conference on Sustainable Development (WSSD) in the Johannesburg Plan of Action.³¹ Yet, environmental health governance in Africa continues to be in search of coherence and renewal to protect both health and the environment.³²

While the paper has reviewed significant African specific research, due to the dearth of work on Africa in this area, it draws from scholarship from the developed world jurisdictions where new (adaptive) governance is increasingly institutionalized. This paper re-conceives health protection in environmental law using the concept of adaptive governance which emphasizes proactive rather than reactive policy making. This reflects public health governance where programs, services and institutions emphasize prevention of disease.³³ It echoes the precautionary approach in international environmental law which encourages action to protect the environment and human health despite limited scientific evidence.³⁴ This highlights the importance of upstream environmental factors in promoting health.³⁵ Yet, environmental health law and governance in Africa do not adequately focus on upstream factors.³⁶

²⁹ n11, n10above, 597-600, 637-676; M. Lehtonen, ‘The Environmental–Social Interface of Sustainable Development: Capabilities, Social Capital, Institutions’ (2004) 49 *Ecological Economics* 199–214.

³⁰ Ibid; Economic Commission for Africa, *Sustainable Development Report on Africa, Managing Land-based Resources for Sustainable Development* (Addis Ababa: UNECA, 2008) 23 – 35; OECD, *Analytic Report on Sustainable Development* (Paris: OECD, 2001)1-14.; A. Colantonio, *Social Sustainability: an Exploratory Analysis of its Definition, Assessment Methods Metrics and Tools*. EIBURS Working Paper Series, (2007) 01 Oxford Brooks University, Oxford Institute for Sustainable Development (OISD) - International Land Markets Group, Oxford, UK.

³¹ United Nations, Report of the World Summit on Sustainable Development, Johannesburg, South Africa, U.N. Doc. A/CONF.199/20 (United Nations, New York, 2002), chapter. I, resolution 1, annex; Y von Schirnding, ‘The World Summit on Sustainable Development: Reaffirming the Centrality of Health’ (2005) 1:8. *Globalization and Health* 1-6.

³² n 10 above .

³³ J M. Last (Ed) et al, *A Dictionary of Epidemiology* (Oxford: Oxford University Press, 3rd ed, 1995) 134.

³⁴ Rio Declaration, 1992 Principle 15, Convention on Biological Diversity 1992, Preamble, Framework Convention on Climate Change 1992, Article 3.3, Earth Charter, para 6, Cartagena Protocol on Biosafety to the Convention on Biological Diversity, Article 1; J. Zander, *The Application of the Precautionary Principle in Practice: Comparative Dimensions* (Cambridge: Cambridge University Press, 2010).

³⁵ J. C. Nkomo et al., *The Impacts of Climate Change in Africa*. Report Submitted to the Stern Review on the Economics of Climate Change (London: H.M. Treasury, UK, 2006).

³⁶ C. Bruch, ‘Adaptive Water Management: Strengthening Laws and Institutions to Cope with Uncertainty, Water Resources Development and Management’ in A.K Biswas et al, *Water Management in 2020, Water Management and Development* (Springer, 2009) 89-113; L. F. Wiley,

Elsewhere, I proposed adaptive governance as a valuable framework to strengthen the impact of environmental legal regimes on health protection.³⁷ This paper discusses its specific elements, arguing that without further development, adaptive governance has normative, institutional and implementation limits for health as discussed in section III on the Inter-ministerial Conference on Health and Environment in Africa (hereinafter referred to as the IMCHE).³⁸ While the IMCHE shows that it is possible to mobilize political capital encourage participation in environmental treaty regimes and obviate regulatory fragmentation to maximize environmental and health integration, a more developed concept of adaptive governance would facilitate this process significantly. The paper proposes four pillars to reinforce adaptive governance in environmental health in Africa.

Firstly, adaptive governance requires an environmental justice framework to provide the mechanisms for participation and recognition of all actors in environmental health governance. Secondly, I argue that the promotion of multi-sectoral collaboration among health, environmental and other sectors can enhance adaptive governance. Thirdly, I propose integrating evaluation of environmental legal regimes to strengthen adaptive governance in Africa. Finally, I recommend that environmental ethics be entrenched at the heart of adaptive governance of environmental health in Africa.

II. ADAPTIVE GOVERNANCE

A. The Scope

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.³⁹ This form of governance is adaptable, flexible and repetitive and extends from natural systems to human organizations. It reacts to change in ecological and human institutions and systems.⁴⁰ Adaptive governance recognizes that, because science is constantly evolving, our understanding of natural systems

‘Moving Global Health Law Upstream2: a Critical Appraisal of Global Health Law as a Tool for Health Adaptation to Climate Change’ (2010) 22 *Georgetown International Environmental Law Review* 439.

³⁷ n 11 above; n23; n24 above.

³⁸ Libreville Declaration on Health and Environment in Africa, Libreville 29 August 2008, World Health Organization Regional Office for Africa, accessible at <http://www.afro.who.int/en/regional-declarations.html> on 17th March 2014.

³⁹ J T. Scholz and B. Stiftel (eds) *Adaptive Governance and Water Conflict: New Institutions for Collaborative Planning* (Washington D.C.: Resources for the Future Press, 2005) 5.

⁴⁰ *Ibid*, 2.

or the effect of human interactions on them is rarely complete.⁴¹ Scientific answers are social constructs and instead of long term scientific predictions of outcomes and adopting onetime static policies, adaptive management monitors outcomes and maintains flexibility to alter policies should predictions prove inaccurate or scientific understanding advance. The concept can ensure that institutions and laws flexibly tackle the dynamic global health challenges as science, learning and other evidence evolves.

Adaptive governance rooted in physical and biological sciences has its origins in complexity theory.⁴² At the core of complexity theory is not a cluster of unrelated systems but a complex adaptive system.⁴³ The relationships between the inter-related parts of this system, the combination of their autonomy and interaction, the capacity of the system for self-adaptation, self-reorganization and the potential for new properties emerge.⁴⁴

Three common themes have evolved in the social sciences: the complexity and uncertainty of social life; the need for intensified 'social learning to counteract this uncertainty; and the role of governance systems in facilitating such learning. This has necessitated research into organizational processes and the creation of reflexive institutional frameworks to facilitate learning and innovation across institutions. Moreover, international relations scholarship on states in complex interdependence has focused on developing flexible and adaptive institutions that respond to global change.

Furthermore, work in public law, on learning-centred alternatives to traditional command-and-control regulatory frameworks has spurred experimentalist new governance approaches.⁴⁵ The integration of the social sciences enriches adaptive governance, transcending natural, ecological, human and social processes and institutions. Adaptive governance in environmental health inevitably requires refinements augmented by social theories. Adaptive policy making has been viewed as cautious, macroscopic, incremental,

⁴¹ J.B. Ruhl, 'Thinking of Environmental Law as a Complex Adaptive System: How to Clean up the Environment by Making a Mess of Environmental law' (1997) 34 *Houston Law Review* 933; C. Folke, T. Hahn, P. Olsson, and J. Norberg, 'Adaptive Governance of Socio-ecological Systems' (2005) 30 *Annual Review of Environment and Resources* 441.

⁴² P. Cilliers, *Complexity and Post Modernism* (London: Routledge, 1998), 112-140.

⁴³ J.N Rosenau, *Distant Proximities: Dynamics Beyond Globalization* (Princeton, NJ: Princeton University Press, 2003), 212-213.

⁴⁴ J. N. Rosenau, *NGOs and fragmented authority in globalizing space*. In: Yale Ferguson and Barry R.J. Jones, Eds., *Political space: frontiers of change and governance in a globalizing world.*,(New York: State of New York Press, 2002),pp. 261-280.

⁴⁵ P. Hill, Understanding global health governance as a complex adaptive system, *Global Public Health*, 6(6) (2011) pp.593-605 .

experimental, well grounded and context dependent, flexible, provisional, accountable and sustainable.⁴⁶ The following part discusses the five key features of adaptive governance, as persuasively categorized by Connie and Lang.⁴⁷

Continuous Learning

Adaptive governance focuses on facilitating continuous learning as a *sine qua non* of response to uncertainty and systemic unpredictability of a social system. A onetime view of the world, scientific or normative, is inadequate to reflect dynamic and evolving realities and to respond to continually changing information and understanding. For example, the health impacts of climate change or transboundary waste demonstrate evidence based policy-making which highlights the necessity of continuous learning in adaptive governance.⁴⁸ Learning in adaptive governance is both simple and complex. Simple learning refers to the acquisition of information, the development of new skills, and the building of new competencies.⁴⁹ In simple learning, actors participate in the regulatory process, receive new and updated information, learn how to resolve defined problems more effectively, and adapt their problem-solving skills to changing conditions.

However, complex learning is not simply a response to inadequate information but to the fundamental limitations of human cognition. It goes beyond learning better solutions to distinct problems to redefining that problem and knowledge about it.⁵⁰ Complex learning entails expanding awareness of the limited nature of human knowledge and intrinsic ignorance and capacity for mistake. This learning may require reconstitution of actors' preferences, identities and beliefs and the reconstruction of policy-makers' cognitive map for making sense of their world and redefining it.⁵¹ Enhanced learning can strengthen environmental health governance. The potential implications of the natural and built

⁴⁶ R. S. Whitt, 'Adaptive Policymaking: Evolving and Applying Emergent Solutions for U.S. Communications Policy' (2009) 61(3) Federal Communications Law Journal 483, 500-504.

⁴⁷ R. Cooney & AT.F. Lang, 'Taking Uncertainty Seriously: Adaptive Governance and International Trade', (2007) 18 The European Journal of International Law 523–551.

⁴⁸ A. K. Githeko and A. Woodward, 'International Consensus on the Science of Climate and Health: the IPCC Third assessment Report' in *Climate Change and Human Health, Risks and Responses* (WHO, WMO, UNEP, World Health Organization, 2003) 47-50.

⁴⁹ M.S Gertler and D.A.Wolfe, *Innovation and Social Learning: Institutional Adaptation in an era of Technological Change* (Macmillan/Palgrave, Basingstoke, 2002).

⁵⁰ J. Scott & D. M Trubek, Mind the Gap: Law and New Approaches to Governance in the European Union, *European Law Journal* 8(1) (2002), pp. 1–18. C. F. Sabel, *Learning by Monitoring: The Institutions of Economic Development*, in N. J Smelser & R. Swedberg (eds). *The Handbook of Economic Sociology*(Princeton University Press, 2005).

⁵¹ A. Wendt, *Social Theory of International Politics* (Cambridge: Cambridge University Press, 1999)1-6.

environment for health protection continue to evolve. For example, the gravity and uncertainty of the impact of climate change on human health in Africa requires the collation of relevant scientific and policy evidence for effective action.⁵² Moreover, understanding the limits of policy making without scientific and other evidence are particularly relevant in Africa.⁵³ This requires a high degree of complex but continuous learning to improve health.

Policy-making as experimentation

In adaptive governance, policy-making is a learning process, learning by doing and quasi-experiments. Unforeseen consequences are treated as valuable opportunities for learning. This experimental approach implies that policy makers must act despite uncertainties. Echoing the precautionary principle, adaptive governance is designed to trigger action in conditions of incomplete knowledge. It acknowledges that time and resources are too short to defer action to tackle urgent problems.⁵⁴ Policy interventions are focused towards generating critical information to enhance certainty, knowledge and experience base. Adaptive governance requires deliberate experimentation to generate information.⁵⁵ However, active policy changes must be reversible without risk-taking in decision making.⁵⁶ Such deliberate experimental interventions require resilience, supervisory and accountability mechanisms and the assurance that adaptive interventions do not risk unacceptable and irreversible outcomes.⁵⁷ Precautionary action despite evidentiary uncertainty is pivotal in environmental health.⁵⁸ For example, environmental risk assessment to children has increasingly taken a precautionary approach.⁵⁹

Avoiding Irreversible Harm

⁵² n 20; n 48 above.

⁵³ D. R. F Nelson, C Sandbrook, *Community Management of Natural Resources in Africa: Impacts, Experiences and future Directions* (London: IIED, 2009) 106-110.

⁵⁴ R.D Brunner et al, *Adaptive Governance: Integrating Science, Policy and Decision Making* (Columbia University Press, 2005)2; K.N Lee, 'Appraising adaptive Management' (1999) 3(2) *Conservation Ecology*, 3.

⁵⁵ C.Allan and G.B Stankey, *Adaptive Environmental Management, a Practitioners Guide* (Springer, 2009); C.Walters, 'Challenges in Adaptive Management of Riparian and Coastal Ecosystems' (1997) 1(2) *Conservation Ecology* 1.

⁵⁶ Ibid.

⁵⁷ D. Armitage, F. Berkes & N. Doubleday, *Collaboration, Learning and multi-level Governance: Adaptive Co-management* (Vancouver: UBC Press, 2007) 19, 83; L. Gunderson 'Resilience, Flexibility and Adaptive Management – Antidotes for Spurious Certitude?'(1999) 3(1) *Conservation Ecology* 7.

⁵⁸ M Martuzzi and J. Tickner, 'Introduction – the Precautionary Principle: Protecting Public Health, the Environment and the Future of our Children', in M. Martuzzi and J. Tickner, *The Precautionary Principle: Protecting Public Health, the Environment and the Future of our Children* (Copenhagen: World Health Organization Regional Office for Europe, 2004) 7.

⁵⁹ P J. Landrigan and L Trasande, Applying the Precautionary Principle in Environmental Risk Assessment to Children in WHO Europe in in M Martuzzi and J Tickner, *The Precautionary Principle: Protecting Public Health, the Environment and the Future of our Children* (Copenhagen: World Health Organization Regional Office for Europe, 2004) 121.

Recognition of the uncertain, dynamic, and evolving character of environmental, social, and economic systems leads to a strong emphasis on maintaining the resilience of a system.⁶⁰ The unpredictability of a complex system to engineer a static desired policy requires that policy maintains system resilience, adaptation and evolution. This helps avoid irreversible negative environmental or social conditions, but can restrain subsequent policy options, experimentation and learning. Adaptive governance favours impermanent, reversible policy interventions and adoption of strict oversight mechanisms to encourage or ensure reversibility. The non-linear, random and often evolving catastrophic complex adaptive systems require effective counter responses.⁶¹ Policy responses to uncertainties are selected on their robustness. In this way, irreversible damage to environmental health is circumvented and options for improved health decision making are unfettered. Therefore, environmental regulation that lacks flexible temporal elements inhibits future reform to improve health protection.

Monitoring and Feedback

Policy-making in adaptive governance is an iterative process of review and revision. As Ruhl has opined, “there is no rest for actors in a complex adaptive system”.⁶² Scientific knowledge is not final, but subject to review as new information emerges.⁶³ The smooth functioning of this iterative process depends critically on the progressive development of mechanisms for regular monitoring of processes and outcomes of policy interventions. The outcomes feed back into the policy process, to reassess policy goals, assumptions and objectives.⁶⁴ Such self-conscious monitoring and feedback mechanisms facilitate learning, fine-tune policy instruments, highlight knowledge gaps, reveal the shortcomings of problem-definition and knowledge and create a culture of openness and experimentation in the conduct of policy.⁶⁵ The pathways of knowledge and effective practices to protect human health in environmental regulation are inadequate. The monitoring of the health implications of environmental law in Africa continues to be fragmented and decentralized. Efforts at reforming global

⁶⁰ n 54 above.

⁶¹ D.T. Hornstein, ‘Complexity Theory, Adaptation, and Administrative Law’ (2005) 54 *Duke Law Journal* 913, 929-933.

⁶² J.B. Ruhl, ‘Laws Complexity: A Primer’ (2009) 24 *Georgia State University Law Review* 885, 903.

⁶³ n 54 above.

⁶⁴ R. Cooney & A.T.F. Lang, ‘Taking Uncertainty Seriously: Adaptive Governance and International Trade’ (2007) 18 *The European Journal of International Law* 523–551.

⁶⁵ *Ibid.*

environmental governance would go a long way in addressing synergies between health and the environment. Therefore, monitoring and feedback mechanisms can reinforce the pathways to optimize health protection in environmental law.

Pluralism and Process

Cooney and Lang emphasize that adaptive governance necessitate pluralist approaches to knowledge as its production and application is a socio-political process.⁶⁶ They argue that governance structures are not focused towards identifying a single, correct body of knowledge to guide policy, but on mobilizing alternative knowledge, mapping out uncertainties, and enabling a disciplined process for decision-making in areas of uncertainty.⁶⁷ The aim of policy-making is not solely to accumulate knowledge, but also to discover and highlight the inadequacies of prevailing knowledge frameworks. Policy-making is less about the attainment of a single optimal solution and more about providing a forum for creating consensual knowledge and agreed processes to guide policy.⁶⁸ This implies that environmental health policy-making processes, underlying knowledge assumptions and judgements should be transparent, explicit, and open to scrutiny. Adaptive governance emphasizes open forums for discursive and communicative interaction – information exchange and problem-centred negotiation – in policy formulation. A second implication is the need for broader stakeholder participation in the production and deployment of knowledge. Environmental law stakeholders include actors that inhabit policy spaces such as the conservation of nature and protection of human health. Integrating such multiple perspectives produces better policy that responds to the interests of all stakeholders.⁶⁹

III: STRENGTHS AND LIMITS OF ADAPTIVE GOVERNANCE IN AFRICA

A. General

Adaptive governance, a society's capacity to address feedback and uncertainty can enhance resilience of systems.⁷⁰ Adaptive governance is a very promising framework to strengthen environmental health governance in Africa because it promotes policy learning and experimentation, environmental co-regulation and the implementation of environmental

⁶⁶ Ibid.

⁶⁷ Ibid.

⁶⁸ M. Giampietro, 'Complexity and Scales: The Challenge for Integrated Assessment' (2003) 3(2/3) *Scaling in Integrated Assessment*, 247.

⁶⁹ J. Oglethorpe, *Adaptive Management: From Theory to Practice* (Gland: IUCN, 2002).

⁷⁰ F. Berkes, and C Folke, (eds) *Linking social and ecological systems, management practices and social mechanisms for building resilience* (Cambridge: Cambridge University Press, 1998).

treaties. However, it has constraints which include capture by powerful vested interests, limiting the public character of environmental law, weakening binding environmental law and hampering policy learning.

The benefits and limits of adaptive governance are highlighted in the case of the Inter-ministerial Conference on Health and the Environment in Africa. In August 2008, the IMCHE met for the first time in Libreville.⁷¹ The IMCHE is a conference of Ministers of both Health and Environment from the 52 African States. The general objective of the conference is to secure political commitment for catalyzing the policy, institutional and investment changes required to reduce environmental threats to health and sustainable development.⁷² It is a policy forum that meets every two years and facilitates inter-sectoral dialogue on health and the environment between African ministers of health as well as the environment.⁷³ The IMCHE is supported by a Meeting of Partners (which include donors, regional economic groupings and United Nations agencies) and the Secretariat drawn from WHO and UNEP staff.

Despite its conceptual appeal, the practice of adaptive governance is relatively uncharted territory.⁷⁴ The limited evidence of adaptive governance focuses on studies of traditional management systems in the developed world, with little insight in a developing world context.⁷⁵ Arguably, the primary sites of adaptive governance are specific environmental treaty regimes on climate change, trans-boundary hazardous waste and waters. However, institutionalized regional efforts to redress fragmented environmental health governance have emerged in part through the IMCHE.⁷⁶ These have a potential for generating political and

⁷¹ Libreville Declaration on Health and Environment in Africa, Libreville 29 August 2008, World Health Organization Regional Office for Africa, accessible at <http://www.afro.who.int/en/regional-declarations.html> on 17th March 2014.

⁷² WHO and UNEP, Health Security through Healthy Environments: First Inter-ministerial Conference on Health and Environment in Africa, Libreville - Gabon, 26-29 August 2008, Proceedings, WHO Regional Office for Africa, 2009, 3, 9.

⁷³ C. Y. Dakubo, *Ecosystems and Human Health: A Critical Approach to Eco-health Research and Practice*, Springer, 164-167.

⁷⁴ R. Plummer and D. Armitage. 'A Resilience Based Framework for Evaluating Adaptive Co-management: Linking Ecology, Economics and Society in a Complex World' (2007) 61(1) *Ecological Economics* 62-74.

⁷⁵ D.A Hunt and F. Berkes, 'Learning as you Journey: Anishinaabe Perception of Social-Ecological Environments and Adaptive Learning' (2003) 8(1) *Conservation Ecology* 5.; P. Olsson, L. H. Gunderson, S. R. Carpenter, P. Ryan, L. Lebel, C. Folke, and C. S. Holling, 'Shooting the rapids: navigating transitions to adaptive governance of social-ecological systems' (2006) 11(1) *Ecology and Society* 18; E. Ostrom, *Understanding institutional diversity*, (Princeton University Press, Princeton, New Jersey, 2005).

⁷⁶ WHO and UNEP, Meeting of Partners on the Implementation of the Libreville Declaration on Health and Environment in Africa: The roadmap to support the implementation of the Libreville Declaration on Health and Environment in Africa (2009-2010) (Brazzaville: United Nations Environment Programme and World Health Organization Regional Office for Africa, 2009)10.

normative instruments to integrate health and environmental issues.⁷⁷ While these sites offer pathways for adaptive governance de-facto, they also demonstrate the strengths and limits of the application of adaptive governance in Africa and the need to invigorate it.

The IMCHE reflects similar inter-ministerial efforts to reinforce synergies between health and the environmental sectors to promote international and domestic environmental health. These include in the Americas-the the Pan American Ministers of Health, Environment and Development,⁷⁸ in Asia, the Ministerial forum on Environment and Health,⁷⁹ and in Europe the Ministerial Conference on Environment and Health.⁸⁰ These regional developments resonate in Africa where prospects for implementing adaptive governance are evolving.

The IMCHE attempts to build synergy between health and environmental policy by securing political commitment for catalyzing policy, institutional and investment changes required to reduce environmental threats to health and to promote sustainable development in the region.⁸¹ The IMCHE reflects a cooperative, problem-solving approach to achieve

⁷⁷ Rio Declaration on Environment and Development, Annex I princ. 4, U.N. Doc A/CONF.151/26 (Vol. I) (1992) 31 ILM 874(1992) Principle 1; Agenda 21 Programme of Action for Sustainable Development, P 8.28, U.N. Doc. A/CONF.151/26 (1992).

⁷⁸ Americans in Harmony: Pan American Charter on Health and Environment in Sustainable Human Development, 1995, accessible at <http://www.paho.org/English/HEP/HEQ/Charter-eng.pdf>, last accessed on 14th February 2014; Declaration of Mar de Plata, 2005, Meeting of Ministers of Health and Environment of the Americas, accessed at <http://www.oas.org/hema/english/Documents/MarDelPlataEng.doc>, last accessed on 14 February 2014 ; Achievements of the Summits of the Americas: Progress since Mar de Plata, p.49, accessed at http://www.summit-americas.org/pubs/achievements_mar_del_plata_en.pdf, last accessed on 15th February 2014.

⁷⁹ WHO and UNEP, Charter of the Regional Forum on Environment and Health in Southeast and East Asian Countries - Framework for Cooperation, Ministerial Regional Forum on Environment and Health in Southeast and East Asian Countries 9 August 2007, Bangkok, Thailand, Document MF1/4., accessed at http://www.environment-health.asia/userfiles/file/EH_MF1_MD_%20Final_Charter.pdf, last accessed on 15th February 2014; Part VII, UNEP, Press Release, Bangkok Declaration calls for coordinated action on environment and health, Bangkok 9 August 2007, accessed at <http://www.unep.org/documents.multilingual/default.asp?documentid=516&articleid=5652&l=en>; see also WHO and UNEP, Regional Forum on Environment and Health in Southeast and East Asian Countries Discussion Record, The Joint Thematic Working Group Meeting of the Regional Forum on Environment and Health in Southeast and East Asian Countries 18 April 2008, Jeju, Republic of Korea, EH/TWG2/MR, accessed at [http://www.environment-health.asia/userfiles/file/EH_TWG2_MR%20without%20e-mail\(1\).pdf](http://www.environment-health.asia/userfiles/file/EH_TWG2_MR%20without%20e-mail(1).pdf) , last accessed on 17th February 2014.

⁸⁰ Fifth Ministerial Conference on Environment and Health, Parma Declaration on Health and the Environment, accessed at http://www.euro.who.int/_data/assets/pdf_file/0011/78608/E93618.pdf last accessed at 22 December 2012; WHO Europe, The European Environment and Health Process (2010–2016): Institutional framework, document EUR/55934/7, accessed at http://www.euro.who.int/_data/assets/pdf_file/0016/104443/Parma_EH_Conf_edoc07.pdf, accessed at 17th February 2014.

⁸¹ WHO Regional Office for Africa, *Public Health and the Environment in the African Region, Report on the Work of WHO (2008-2009)* (Brazzaville: WHO 2010) 8, 13-18.

environmental treaty objectives.⁸² In 2008, Member States of the WHO Africa Region adopted the Libreville Declaration on Health and Environment in Africa and committed themselves to implement 11 priority actions to tackle environmental health challenges in Africa. They agreed to establish health and environment strategic alliances (HESA), plans of joint action (PJA) as well as integrated health and environment policies on aspects such as evaluation, assessments, multi-sectoralism, knowledge transfer and compliance at the domestic and international levels.

HESA promotes domestic synergy between health and environmental policy.⁸³ HESA is also a global partnership of WHO, UNEP and other UN system agencies and partners, including African development banks and sub-regional economic organizations for advocacy, resource mobilization, capacity building, technical support, funding and progress monitoring to support HESA. The Libreville Declaration agreed to adopt PJAs, the operational framework that embeds specific domestic programmes on health and environment.⁸⁴ In 2010, the forum adopted the Luanda Commitment to accelerate the implementation of the Libreville Declaration's priorities and broaden participation.⁸⁵ A Joint Statement on Climate Change and Health which urged African countries to tackle the health impacts of climate change was adopted.⁸⁶

As discussed below, the case of IMCHE highlights the nascent potential for adaptive governance in the integration of health and environmental policies in Africa and the challenges faced in attempting to do so.

B. Benefits of adaptive governance

Facilitating policy learning and experimentation

⁸² J. Brunnée, 'Enforcement Mechanisms in International Law and International Environmental Law', in U. Beyerlin and T. Marauhn, (eds.), *Ensuring Compliance with Multilateral Environmental Agreements: A Dialogue Between Practitioners and Academia* (Oxford: Hart Publishing, 2011).

⁸³ WHO Regional Office for Africa and UNEP, the Health and Environment Strategic Alliance for the Implementation of the Libreville Declaration, (Brazzaville, WHO Regional Office for Africa: 2011).

⁸⁴ n 71 above.

⁸⁵ Implementation of the Libreville Declaration on Health and Environment in Africa: Luanda Commitment, Luanda 26 November 2010, accessed at http://www.unep.org/roa/hesa/Portals/66/HESA/Docs/Conference_Outcomes/Luanda_Commitment_Final_en.pdf, last accessed on 14th February 2014.

⁸⁶ African Ministers of Health and Environment Joint Declaration on Climate Change and Health, Luanda 26 November 2010, accessed at http://www.unep.org/roa/hesa/Portals/66/HESA/Docs/Conference_Outcomes/Joint_Statement_on_Climate_Change_and_Health_Final_en.pdf on 1st March 2014.

Adaptive governance extends cross-sectoral learning beyond narrow ecological approaches to include legal and normative approaches in environmental law that addresses the human health dimensions. In the context of IMCHE, The Libreville Declaration and Luanda Commitment emphasize the importance of knowledge and research to inform environmental health policy making in Africa.⁸⁷ Negotiators of these commitments were informed by experts.⁸⁸ Therefore, policy learning is at the heart of the IMCHE. Consequently, the conference encourages countries to expand knowledge, undertake research, training and surveillance on health and the environment. HESA facilitates the implementation of country situation analysis and needs assessment (SANA), that helps generate knowledge for action.⁸⁹ SANA aims to address the drivers that determine environmental and health hazards, their associated risk levels and how to manage these risks. SANAs also review national policies and legislation, technical and institutional capacities, existing and potential inter-sectoral coordination mechanisms, and funding opportunities.

Furthermore, the PJAs involve review of the state of knowledge in national policy, legislation, institutional and technical capacities, inter-sectoral coordination and funding. This helps to tackle the determinants of environmental health risks and options for effective policy integration. The conference institutionalizes health and environmental risk assessment within the HESAs. The IMCHE is a political mechanism that seeks to mobilize scientific and other technical resources to address environmental health issues in Africa.⁹⁰

Furthermore, adaptive governance promotes a precautionary approach to policy making.⁹¹ It helps institutionalize new regulatory tools such as health impact assessments in environmental law and policy. This reflects renewed efforts by the international community to concretize public participation in international law.⁹² Policy learning and experimentation would also reinforce a purposive interpretation of environmental legal instruments at both international and domestic levels as provided for in the Vienna Convention on the Law of

⁸⁷ n10 above .

⁸⁸ International Institute of Sustainable Development (IISD), 'Report of the first Inter-ministerial Conference on Health and the Environment in Africa' 2008 14(1).

⁸⁹ WHO and UNEP, Implementation of the Libreville Declaration on Health and Environment in Africa: country situational analysis and needs assessment for the Preparation of National Plans of Joint Action, Guide, September, 2009, p6

⁹⁰ Luanda Commitment, n 85 above , paras 10(d) (vi), 12(c).

⁹¹ Guidelines for Applying the Precautionary Principle to Biodiversity Conservation and Natural Resource Management, approved by the 67th meeting of the IUCN Council 14-16 May 2007, accessible at http://cmsdata.iucn.org/downloads/ln250507_ppguidelines.pdf, accessed 25th January 2014

⁹² UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, (Aarhus Convention) (1998) ILM 38, 517.

Treaties.⁹³ This is because environmental treaties such as the Stockholm Convention on Persistent Organic Pollutants and the Rotterdam Prior Informed Consent Convention contain both health and environmental objectives. Barak argues that an objective purposive interpretation is a legal construction that reflects the needs of society, an expression of a social ideal and a social construction process.⁹⁴ Despite the primacy of trade over other policy objectives in World Trade Organization (WTO) law and policy, the WTO Dispute Panel has recognized a purposive approach to environmental protection stating that evolving contemporary concerns of the community of nations about the protection and conservation of the environment should be taken into account.⁹⁵ A purposive approach promotes search for new mechanisms for domestic implementation of the health objective of environmental conventions. This in turn strengthens domestic environmental health laws that emphasize prevention in communities, groups and populations.⁹⁶ In fact, the IMCHE reflects this approach because it aims to develop new mechanisms and reinvigorate old ones. An adaptive framework for domestic environmental governance would ensure the development of legal frameworks for greater participation of the health and environment sectors to maximise health protection in the implementation of conventions.⁹⁷ Globally, it would provide an effective operational framework for participation of WHO, UNEP and other global agencies to promote the health objectives of environmental regulation. It is argued that the role of WHO and UNEP in the IMCHE demonstrates the importance of participation in adaptive governance of environmental health. A purposive approach to WHO participation in the IMCHE's policy and normative activities could also reinforce WHO's expansive constitutional mandate to promote health.⁹⁸ While arguably this overlooks the weak capacity of the WHO with a weak history of use of law to promote public health as well as a lack of

⁹³ Vienna Convention on the Law of Treaties, 1155 U.N.T.S. 331, 8 I.L.M. 679, Article 31.

⁹⁴ A. Barak, *Purposive Interpretation in Law* (translated by Sari Bashi) (Princeton: Princeton University Press, 2005) 148; S Elworthy and J. Holder, *Environmental Protection, Texts and Materials* (London, Butterworths, 1997) 167.

⁹⁵ World Trade Organization, Report of the Appellate Body, United States-Import Prohibition of Certain Shrimp and Shrimp Products, 12 October 1998, WT/DS58/AB/R, paras 129-130; C. McLachlan, 'The Principle of Systemic Integration and Article 31(3)(c) of the Vienna Convention' (2005) 54 *International and Comparative Law Quarterly* 279.

⁹⁶ n 10 above.; D. Briggs, *Environmental Health Hazard Mapping for Africa* (Harare: WHO Regional Office for Africa, 2000) 76; D. Briggs, 'Risk Communication and Stakeholder Participation in the Governance of Systemic Environmental Health Risks' *International Journal of Risk Assessment and Management* (2009) 13 (3-4), 195-215.

⁹⁷ n 10 above, n 20, n 26 above; n 27 above.

⁹⁸ WHO, *Basic Documents, Constitution of the World Health Organization* (Geneva, WHO 45th edn, 2006), Preamble; G .Luca Burci, 'Institutional Adaptation without Reform: WHO and the Challenges of Globalization', (2005) 2 *International Organization Law Review* 437- 443; n 24.

enforcement powers like WTO dispute settlement, purposive approaches offer a potential for environmental health norm development and implementation under WHO's auspices.

Furthermore, adaptive governance can facilitate policy experimentation in the development of soft environmental health policy. The IMCHE uses soft instruments such as declarations. They are flexible, incremental and can mature into binding commitments as consensus develops. They can mobilize political capital for adoption of legally binding instruments. There are African precedents of the adoption of multilateral environmental agreements with both environment and health protection objectives. Examples include the African Convention on the Conservation of Nature and Natural Resources⁹⁹ and the Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa.¹⁰⁰ Although their implementation is a challenge due primarily to the lack of resources, they demonstrate the potential for regional cooperation in environmental health issues. Furthermore, African States have adopted soft instruments to address environmental health challenges.¹⁰¹ Such instruments could be viewed as “subsequent agreement” between Parties regarding the interpretation and application of health related provisions of environmental treaties such as the UN Convention on Climate Change.¹⁰² They could also deepen the normative scope of environmental conventions that contain a health objective by clarifying health related treaty obligations, creating institutional frameworks that complement treaty specific mechanisms and creating a forum for progressive dialogue on health in environmental conventions.¹⁰³

Promotes environmental co-regulation

International agencies and programmes such as the United Nations Environment Programme, the World Health Organization, the International Atomic Energy Agency that have both a

⁹⁹ African Convention on the Conservation of Nature and Natural Resources (Algiers) 15 September 1968, in force 9 October 1969, 1001 UNTS 3, revised and agreed Maputo, 11 July 2003, not in force.

¹⁰⁰ Bamako Convention 30 ILM 163 (1991); see also M. Kidd, 'Environmental Law in Africa' in S. Alam, J. H. Bhuiyan, T.M.R. Chowdury and E.J. Techera (eds) *Routledge Handbook of International Environmental Law* (Abingdon: Routledge, 2013) 509, 515-516; C. N. Eze, 'The Bamako Convention on the Ban of the Import into Africa and the Control of the Transboundary Movement and Management of Hazardous wastes within Africa: a Milestone in Environmental Protection?' (2007) 15 *African Journal of International and Comparative Law* 208-229.

¹⁰¹ H.N.B Gopalan, *Environmental Health in Developing Countries: An Overview of the Problems and Capacities*, (2003) 111(90), *Environmental Health Perspectives*, A446-A447, citing Africa's New Partnership for Africa's Development (NEPAD) as one such instrument.

¹⁰² n 28 above; L. Rajamani, 'Addressing the 'Post-Kyoto' Stress Disorder: Reflections on the Emerging Legal Architecture of the Climate Regime' (2009) 58 *International and Comparative Law Quarterly* 803-834.

¹⁰³ n 10, above, n 26 above; n27 above.

health and environmental protection mandate are endowed with powers and obligations as international administrative agencies. While environmental policy integration has been a core concern across nations in recent years, the links between health and environment remain fragmented.¹⁰⁴ Adaptive governance would promote co-regulation of environmental health at the global¹⁰⁵ and domestic levels.¹⁰⁶ This can broaden environmental stakeholders beyond the state and other actors.¹⁰⁷ Multi-stakeholder processes become sites in which regulatory problems are defined, innovative solutions devised, and institutional relationships enhanced to ensure quality and legitimacy of regulatory actions.¹⁰⁸ Monitoring and feedback mechanisms would be re-oriented to promote participation of all health stakeholders. As Scott has argued, international law's interpretative community is now global and states' accountability and conduct is exposed to non-state actor scrutiny.¹⁰⁹ This has enabled professional bodies, trade groups or trade associations to enforce legal rules.¹¹⁰ The broadening of stakeholders facilitates domestic follow up of health objectives of international environmental law. The case of IMCHE also highlights the importance of pluralism in environmental health governance in Africa. The HESA is envisaged as a pluralistic institutional and procedural mechanism.¹¹¹ At the domestic level, the HESA comprises the ministry of health, the ministry of environment as well as relevant development sectors, government departments, civil society, the private sector, grassroots communities, development partners and donors.¹¹² At the international level, HESA is conceived as a global partnership of WHO, UNEP and other agencies within the United Nations (UN) system and other partners including African development banks as well as African sub-regional economic communities.¹¹³ It is argued that HESA in the context of IMCHE answer

¹⁰⁴ N. Carter, *The Politics of the Environment: Ideas, Activism and Policy* (Cambridge: Cambridge University Press, 2nd edn 2007) 293-295; n8 above.

¹⁰⁵ The Inter-Organization Programme for the Sound Management of Chemicals (IOMC), accessed at <http://www.who.int/iomc/en>, accessed on 20th February 2014.

¹⁰⁶ n 10, n20 above.

¹⁰⁷ B.C Karkkainen, 'Collaborative ecosystem governance: Scale, complexity, and dynamism' (2002) 21, *Virginia Environmental Law Journal* 89-243.

¹⁰⁸ J. Freeman, 'Collaborative Governance in the Administrative State' (1997) 45(1) *UCLA Law Review* 1-98.

¹⁰⁹ C. Scott, 'Accountability in the Regulatory State' (2000) 27(1) *Journal of Law and Society* 36-30.

¹¹⁰ C. Scott, 'Analysing Regulatory Space: Fragmented Resources and Institutional Design' (2001) *Summer Public Law* 329, 336.

¹¹¹ J. Ashby, 'Uniting Science and Participation in the Process of Innovation-Research for Development', in B.Pound, S.S.Snapp, C.McDougall and A. Braun (eds), *Managing Natural Resources for Sustainable Livelihoods: Uniting Science and Participation* (London: Earthscan/IDRC: 2003) 1-17.

¹¹² n 85 above.

¹¹³ J. Holder and M.Lee, *Environmental Protection, Law and Policy, Second Edition, Texts and Materials* (Cambridge: Cambridge University Press, 2007) 229.

the call for stronger regional alliances and partnerships to foster sustainable development.¹¹⁴ HESA demonstrates how the health sector can build synergies at both the international and domestic levels. HESA exemplifies a classic example of pluralism of process in environmental health governance where not only governmental but nongovernmental agencies and local communities are envisaged participants in environmental health governance. IMCHE's inhabitants arguably comprise health, environment, economic and other social actors.¹¹⁵ As Cooney and Lang opine, adaptive governance embraces democratic politics where communitarian initiatives are open to everyone with enough at stake to justify participation from their own perspective.¹¹⁶

Adaptive governance can reinforce the effective participation of international organizations beyond WHO and UNEP as well as State and non-State actors in monitoring environmental instruments to protect the public's health.¹¹⁷ At the World Summit on Sustainable Development (WSSD) held in Johannesburg in 2002, the UN General Assembly encouraged: "global commitment and partnerships, especially between Governments of the north and the south, and between Governments and major groups".¹¹⁸

Adaptive governance could also provide a framework for institutionalizing global public-private partnerships (GPPPs) that provide resources, expertise and innovation to promote environmental health in Africa.¹¹⁹ GPPPs have attracted significant resources, knowledge and expertise for health.¹²⁰ This has enabled private actors to exercise decision making powers alongside State actors.¹²¹ For example, the GEF Earth Fund, approved in 2008

¹¹⁴ Johannesburg Plan of Implementation, Chapters 3, 5 and 8; Johannesburg Declaration on Sustainable Development, Johannesburg 2002, from our origins to the future, paras 23, 16, 18 and 27.

¹¹⁵ G. Smith, *Deliberative Democracy and the Environment* (London, Routledge, 2003) 1-3.

¹¹⁶ n 47 above; J. Steele, 'Participation and Deliberation in Environmental Law: Exploring a Problem-Solving Approach' (2001) 21 *Oxford Journal of Legal Studies* 415, 437-438.

¹¹⁷ n 10 above.

¹¹⁸ United Nations. World Summit on Sustainable Development. General Assembly Resolution 56/226. Fifty-sixth session. New York, UN, 2001.

¹¹⁹ K. Buse & A. Waxman, 'Public-Private Health Partnerships: a Strategy for WHO' (2001) 79(8) *Bulletin of the World Health Organization* 748-754.

¹²⁰ A. W. Kenneth and D. Gartner, *The Green Climate Fund and the Future of Environmental Governance: Earth System Governance* (2011) Working Paper No. 16. Lund and Amsterdam: Earth System Governance Project. 8-12; S. Bartsch, *The Global Fund to Fight AIDS, Tuberculosis and Malaria*, in *Global Health Governance and the Fight Against HIV/AIDS* 146 (Wolfgang Hein et al. eds., 2007) 146.

¹²¹ D. Aziz, 'Global Public-Private Partnerships in International Law' (2012) 2(2) *Asian Journal of International Law* 339-374.

mobilizes capital for innovative projects that foster environmentally sound and sustainable economic development, including funding malaria control in Africa.¹²²

Echoing this trend, the IMCHE emphasizes the importance of participation of both public and private actors including development banks and regional integration organizations in promoting environmental health in Africa.¹²³

Promotes implementation of environmental treaties

With the improvements proposed in section IV of this article, adaptive governance has the potential to ensure strong functional basis to reinforce the implementation of health objectives of environmental treaties.¹²⁴ Mechanisms for feedback and monitoring such as impact assessments can inform decision making to enforce legal and normative instruments. Regular reviews contribute to the progressive implementation of environmental treaties. Therefore, adaptive governance could promote tools for enforcement of and compliance with international environmental legal and normative instruments ensuring that health objectives are fully addressed in environmental decision making. At the domestic level, these tools include the adoption of environmental and health action plans, the adoption of implementing legislation, the establishment of national institutions for environmental management and the scaling up of legal, technical and financial capacity.¹²⁵

The IMCHE shows that adaptive governance has real potential to facilitate the implementation of environmental treaties. PJA based SANAs require the review of national policies and legislation, technical and institutional capacities, existing and potential inter-sectoral coordination mechanisms, and funding opportunities to promote their implementation and the forum's wider goals. The Libreville Declaration provides for compliance and evaluation mechanisms with international legal instruments relating to health and the environment. Its commitment to institute health and environmental risk assessments, develop multi-sectoral environmental health programmes and partnerships demonstrate the importance of monitoring and feedback in which review becomes an integral part of the

¹²² The GEF Earth Fund Board Procedures, June 16, 2009, accessed at http://www.thegef.org/gef/sites/thegef.org/files/documents/GEF-Earth-Fund-Board-Procedures_0.pdf last on 20th February 2014; Adrian Burton, towards DDT-Free Malaria Control, *Environ Health Perspect.* 2009 August; 117(8): A344.

¹²³ n 85 above; n 119 above.

¹²⁴ n 11 above.

¹²⁵ n 10 above.

decision making process.¹²⁶ The strained public health systems in much of Africa have failed to cope with modern challenges such as climate change.¹²⁷ Therefore, the IMCHE provides a renewed space to tackle significant environmental health threats in Africa through potentially beneficial adaptive governance.

C. Limits of adaptive governance for health and the environment in Africa

Limits of scientific policy learning in Africa

In public health, policy-making is based on evidence even if it is incomplete.¹²⁸ This principle applies to environmental health, a public health enterprise.¹²⁹ Adaptive governance favours enhancement of expert and scientific evidence in environmental policy. Scholars have argued that greater integration of science in environmental regulation promotes reflexive learning and constant evaluation.¹³⁰ However, emphasis on the centrality of science as a *sine qua non* to effective environmental policy ignores the realities of Africa which lacks resources to develop scientific evidence.¹³¹ While knowledge from other jurisdictions can be transposed into environmental law making in Africa, this is inhibited by intellectual property law constraints and noncompliance with information and technology transfer obligations under international treaties.¹³² It is also arguable that the apparent human misery from environmental threats such as poor water and sanitation obviates any evidentiary basis for regulation.¹³³ A universal regime for public participation in environmental governance could facilitate knowledge diffusion. Yet, despite the opening of the Aarhus Convention to non-

¹²⁶ J. Kemm, 'Health Impact Assessment: A Tool for Healthy Public Policy' (2001) 16(1) Health Promotion International 75-85.

¹²⁷ W. Onzivu, 'International Climate Law, Health Promotion and Evolving Domestic Climate Law in Developing Countries' (special edition, 2013) 18(1) African Yearbook of International Law 257-285 at 261.

¹²⁸ SV Katikireddi, M. Higgins, L. Bond, et al. 'How Evidence Based is English Public Health Policy?' 2011:343 BMJ d7310.

¹²⁹ C. Corvalan, D. Briggs, G. Zielhuis, *Decision Making in Environmental Health: From Evidence to Action* (London: Taylor & Francis, 2000) 15; L.J. Donaldson and G. Scally, *Donaldson's Essential Public Health* (Oxford: Radcliffe Publishing, Oxford, 2009) 536-566; W. Onzivu, 'Mind that Gap: International Climate Law, Health Protection and the United Kingdom's Climate Legislation' (2012) 21(2) 79 at 87; C.A.R. Webster, *Environmental Health Law* (London: Sweet and Maxwell, 1981) 82.

¹³⁰ J. McEldowney and S. McEldowney, 'Science and Environmental Law: Collaboration Across the Double Helix' (2011) 13(3) Environmental Law Review 169-198.

¹³¹ n 11 above.

¹³² M. Van Hoorebek and W. Onzivu, 'Environmental Technology Transfer and Efforts to Fight Climate

Change' (2010) 4(1) Carbon and Climate Review 13-29.

¹³³ W. Onzivu, 'The Long Road to Integrating Public Health in the Sustainable Management of Shared Freshwaters: Lessons from Lake Victoria in East Africa' (2012) 46(3) International Lawyer 867-892.

UN Economic Commission for Europe(UNECE) participation in 2011, its membership remains confined to Europe and African States are yet to embrace the treaty.¹³⁴

The IMCHE highlights the challenges of policy learning and experimentation in Africa. It focuses on generating evidentiary knowledge while lacking mechanisms for developing binding norms to reinforce synergies between health and the environment in Africa.

Moreover, the full integration of local community knowledge for environmental health management is lacking in Africa.¹³⁵ With evidentiary limitations in environmental health integration in Africa, adaptive governance requires options to strengthen it.

Weakening binding environmental law: a neo-liberalist project

Adaptive governance requires that laws are flexible, regularly modified and reviewed.

While the progressive development of environmental law is concomitant with reviews, laws must be predictable. Rapid changes to environmental law could undermine its legitimacy.

The IMCHE demonstrates the challenges of using soft instruments to implement environmental health commitments. While the Libreville, Luanda and other instruments adopted under the auspices of IMCHE have important operational value to improve domestic environmental health,¹³⁶ they are persuasive soft law and not legally binding upon Member States. Furthermore, the declarations fail to clarify the scope and normative content of important tools such as evaluation, environmental health risk assessments and funding. In this context, their potential to contribute to the progressive development of a binding environmental health legal regime is unpredictable.

Garcia Salmones argues that adaptive governance is a political project by Western Nations to foster an international legal order that perpetuates a neo-colonialist *status quo*, a so called “gentler civiliser of (developing) nations”.¹³⁷ It is a potential ploy by the developed world to capture the global governance frameworks to advance their neo-colonialist and neo-liberalist

¹³⁴ UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, (Aarhus Convention) (1998) ILM 38, 517; Economic Commission for Europe, Decision IV/5 on accession to the Convention by non-United Nations Economic Commission for Europe member States, as adopted on 1 July 2011, adopted by Meeting of the Parties to the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, Fourth Session, Chisinau, 29 June–1 July 2011, accessed at http://www.unece.org/fileadmin/DAM/env/pp/mop4/Documents/ece_mp_pp_2011_CRP_3_Accession_e.pdf on 25th February 2014.

¹³⁵ n 10 above. ; M. C. Castro, A. Tsuruta, S.Kanamori, K. Kannady and S.Mkude, ‘Community-based Environmental Management for Malaria Control: Evidence from a Small-Scale Intervention in Dar es Salaam, Tanzania’ (2009) 8 *Malaria Journal* 57.

¹³⁶ n 10 above.

¹³⁷ M. García-Salmones, ‘Taking Uncertainty Seriously: Adaptive Governance and International Trade: A Reply to Rosie Cooney and Andrew Lang’ (2009) 20(1) *European Journal of International Law* 167 – 186.

self-interests to the detriment of the developing world. Her assertion is persuasive in view of the continuing exploitation of Africa's resources facilitated by governments and corporations from the global north¹³⁸ as well as emerging economies like China and India, fuelled by global demand for raw materials.¹³⁹ Therefore, multi-stakeholder participation by corporations and banks that fund them in environmental governance could become a slippery slope towards neo-liberalist natural resource exploitation as in Congo.¹⁴⁰ This is also supported by scholarly exploration of north-south injustices in relation to natural resource and environmental exploitation in the developing world.¹⁴¹

Capture by vested interests and the limits of pluralism

Critics argue that Africa, a region that needs foreign investments and funding, often surrenders its vital natural resources without attainment of critical environmental and public health goals.¹⁴² Participation of all stakeholders in environmental governance has its limits. It could result in regulatory capture by powerful vested interests,¹⁴³ subject to legal challenge by aggrieved stakeholders.¹⁴⁴ Environmental governance that fails to check corporate exploitation of natural resources, health and environmental damage can foster detrimental private self-regulation.¹⁴⁵ For example, profit-seeking oil companies in the Niger Delta have been accused of capture of its environmental regulation.¹⁴⁶ Recurring corporate

¹³⁸ P. Bond, *Looting Africa: The Economics of Exploitation* (London: Zed Books Limited, 2006) 74, 80.

¹³⁹ R. Beri, China's Rising Profile in Africa(2007) 43(3) China Report-Sage Publications , 297-308.

¹⁴⁰ L. Juma, 'The War in Congo: Transnational Conflict Networks and the Failure of Internationalism'(2006) 10 Gonzaga Journal International Law 97 ,104-113.

¹⁴¹ R.P Anand, "Development and Environment: The Case of Developing Countries" (24 Indian Journal of International Law, (1980), 19;T.O Elias, Africa and the Development of International Law, 2nd Rev.Ed.(The Hague: Martinus Nijhoff, 1988); K Mickelson, "South, North, International Environmental Law and International Environmental Lawyers" in J.Brunee & E.Hey, Eds, Yearbook of International Environmental Law, Vol.II(2000) 52.

¹⁴² C. N. Boocock, Environmental Impacts of Foreign Direct Investment in the Mining Sector in Sub-Saharan Africa (Paris: OECD 2020) 20.

¹⁴³ E. A. Kirk and A.D. Reeves, 'Regulatory Agencies and Regulatory Change: Breaking out of the Routine' (2011) 13 Environmental Law Review 155, 159-161.

¹⁴⁴ J. Jones, 'Regulatory Design for Scientific Uncertainty: Acknowledging the Diversity of Approaches in Environmental Regulation and Public Administration' (2007) 19 Journal of Environmental Law, 347.

¹⁴⁵ M. Faure, 'Balancing of Interests: Some Preliminary (Economic) Remarks' in M.Faure and W. Du Plessis (eds), *The Balancing of Interests in Environmental Law in Africa* (Pretoria: Pretoria University Law Press, 2011) 22-25.

¹⁴⁶ K.K.Aaron, 'Perspective: Big Oil,Rural Poverty and Environmental Degradation in the Niger Delta Region of Nigeria'(2005) 11:2 Journal of Agricultural Safety and Health 127-134.

environmental health abuses in Africa demonstrate the poor implementation of international environmental instruments on the continent.¹⁴⁷

In the case of IMCHE, while HESA reflects the importance of pluralism of process, the direct participation of civil societies and communities is defacto limited.¹⁴⁸ In Africa, poor community participation in public policy processes, weak capacities of civil society and capture by vested interests undermine their input into environmental law.¹⁴⁹ The inclusion of regional financial and economic organizations ignores potential regulatory capture of IMCHE processes by vested commercial interests which could undermine public health policy on the continent.¹⁵⁰ Finally, the IMCHE emphasizes pluralism in HESA but less so in the legal instruments it has developed. This highlights the need for a reinforced comprehensive multi-sectoral requirement across the broad spectrum of the regime. Moreover, participatory democracy across Africa remains elusive. Governments often fail to alleviate poverty, unemployment, and oppression without providing citizens with basic health services. Autocratic leadership, administrative inefficiency, political corruption, economic mismanagement and social decay undermine efforts for participatory democratic reforms across Africa.¹⁵¹ This can undermine the potential for adaptive governance in Africa, highlighting the need for enhanced participation.

Constricting the public character of environmental law

Environmental law, largely subject to public law regulation often challenges commercial interests. However, adaptive governance requires a pluralistic amalgam of public and private actors shaping a public legal regime. Yet, corporate private actors in environmental regulation particularly in Africa, often inhabit public, not private, regulatory spaces that address a public good.¹⁵² The United Nations Development Programme (UNDP) defines a global public good as a public good with benefits that are strongly universal in terms of

¹⁴⁷ K. Morrow, *The Trafigura Litigation and Liability for Unlawful Trade in Hazardous Waste: Time for a Rethink?*, (2010) 18(6) *Environmental Liability* 219; n 21 above.

¹⁴⁸ n 6 above, .

¹⁴⁹ M.Faure and W. du Plessis, 'Comparative and Concluding Remarks' in M.Faure and W. Du Plessis (eds), *The Balancing of Interests in Environmental Law in Africa* (Pretoria: Pretoria University Law Press, 2011) 605; S Bell & A Hindmoor, *Rethinking Governance: The Centrality of the State in Modern Society* (Cambridge: Cambridge University Press, 2009) 146-149.

¹⁵⁰ W. Onzivu, 'Regionalism and the Reinvigoration of Global Health Diplomacy: Lessons from Africa' (2012), (7) 1 *Asian Journal of WTO and International Health Law* 67-68.

¹⁵¹ A. A. Adegboye, 'Consolidating Participatory Democracy in Africa: Challenges and the Way Forward' (2013) 9(2) *European Scientific Journal* 241-250.

¹⁵² UNEP, *Africa Environment Outlook 2, Our Environment, Our Wealth* (Nairobi: UNEP 2006) 285-295; B J Richardson, 'Environmental Law in Post Colonial Societies: Straddling the Local-Global Institutional Spectrum' (2000) 11(1) *Colorado Journal of International Environmental Law and Policy* 1-82.

countries, people and generations.¹⁵³ Despite the increasing incorporation of market led instruments, state led command and control mechanisms continue to drive much of environmental health governance in Africa.¹⁵⁴ Environmental co-regulation in adaptive governance reflects nodal governance, a social adaptation accomplished in significant part through the creation and operation of "nodes".¹⁵⁵ Private sector knowledge and capacity may be confined to the node and not fully surrender to the public interest.¹⁵⁶ Moreover, as mentioned above, stakeholder engagement could lead to capture by more powerful voices to the detriment of local community and indigenous voices in environmental health policy.

Hence, adaptive governance contradicts the public character of environmental law in Africa because it embodies competing private and public nodes with divergent vested interests.¹⁵⁷ This is because the increasing role of global public-private partnerships (GPPPs) in environmental health governance in the IMCHE poses challenges. GPPPs are based on an untested amalgam of public and private law, posing challenges to accountability to all stakeholders, participation of end users and the protection of the public interest *vis -a-vis* private interests.¹⁵⁸ Critical legal scholars believe that firstly, a private realm in public law is a mere legal construct.¹⁵⁹ Hence private actors must always submit to the public interest. Secondly, public choice theory argues that law making results from pressures of interest groups, the public and self-interested law makers.¹⁶⁰ The public/private divide is recognized and contracting out, devolution or de-regulation used to reduce public involvement with the private sector. The third conception views law making and implementation as dynamic, non-hierarchical and decentralized with give and take between public-private partnerships with

¹⁵³ United Nations Development Programme, *Providing Global Public Goods: Managing Globalization, 25 Questions and Answers*(UNDP, New York, 2002); I.Kaul, P. Conceicao, K.Le Goulven and R.U Mendoza, How to improve provision of Global Public Goods in *Providing Global Public Goods, Managing Globalization* (I.Kaul, P. Conceicao, K.Le Goulven and R.U Mendoza(Eds), OUP, NY 2003, 23-25.

¹⁵⁴ UNEP, *Africa Environment Outlook 1: Past, Present and Future Perspectives* (Nairobi: UNEP, 2002).

¹⁵⁵ S. Burris, P. Drahos & C. Shearing, 'Nodal Governance' (2005) *Australian Journal of Legal Philosophy* 30;

¹⁵⁶ S. Burris, Symposium: SARS, 'Public Health, and Global Governance: Governance, Micro governance and Health' (2004) 77 *Temple Law Review*, 335.

¹⁵⁷ D. Nejaime, 'When New Government Fails' (2009) 70(2) *Ohio State Law Journal* 323

¹⁵⁸ B.S. Chimni, 'International institutions Today: An Imperial Global State in the Making' (2004) 15 *EJIL* 1.

¹⁵⁹ A. T. Guzman, *How International Law Works: A Rational Choice Theory*(Oxford, Oxford University Press, 2007).

¹⁶⁰ A. Thompson, 'Applying Rational Choice Theory to International Law: Promise and Pitfalls' (2002) 31 *Journal of Legal Studies* 285.

contractually negotiated relationships.¹⁶¹ These theories face challenges with contemporary international environmental law with States as the primary actors and non-state actors as secondary actors. In treaty law and practice, States have the responsibility to negotiate and implement treaties.¹⁶² Hence, adaptive governance may not foster transparency and accountability of private actors who lack primary obligations under international law.¹⁶³

D. Towards an effective adaptive governance of environmental health in Africa

The effective implementation of international agreements with both health and environmental protection objectives require that effective synergies between the dual objectives are created, their policies aligned with each other, and strong institutional mechanisms exist to foster effective collaboration among all inhabitants in the environmental health regulatory space. Notwithstanding its limitations, adaptive governance can contribute towards strengthening health protection in environmental regulation in Africa by institutionalizing its elements such as institutional learning. However persisting challenges include limited participation of all stakeholders, and limited opportunities for political and legal contestations of existing policies as well as weak follow up of agreed soft commitments. The IMCHE highlights the prospects and challenges of institutionalizing adaptive governance in Africa. It exemplifies limits of adaptive governance such as converting scientific evidentiary knowledge to policy, fostering non-binding commitments in environmental law, capture of environmental health policy by vested interests, constraining the public character of environmental law and weak implementation of agreed commitments. However despite the limits, adaptive governance can be a good model for improving environmental health in Africa.¹⁶⁴ To reinforce the benefits of adaptive governance, reduce its shortcomings and to improve its policy relevance to promote environmental health in Africa, the author proposes and explores in the next section four principles; environmental justice, environmental ethics, evaluation and multi-sectoral collaboration to reinforce health in environmental governance in Africa.

¹⁶¹ A van Aaken, 'International Investment Law Between Commitment and Flexibility: A Contract Theory Analysis' (2009) 12(2) *Journal of International Economic Law* 507-538.

¹⁶² J. Klabbbers, *International Law*, (2013) CUP 41-66; A.Aust, *Modern Treaty Law and Practice*, Anthony Aust(2007) CUP.

¹⁶³ C.S.A Koriambanya, 'Note : David and Goliath: Giving the Indigenous People of the Niger Delta a Smooth Pebble-Environmental Law, Human Rights and Re-defining the Value of Life' (2002) 7(Summer) *Drake Journal of Agricultural Law* 493; S. Seck, "Transnational business and environmental harm: A TWAIL analysis of home state obligations" (2011) 3(1) *Trade Law and Development* 164.

¹⁶⁴ n 21,n22, n23

IV. REINFORCING ADAPTIVE GOVERNANCE TO ENHANCE THE HEALTH BENEFITS OF ENVIRONMENTAL LAW IN THE THIRD WORLD: THE FOUR PILLARS

As I have argued elsewhere,¹⁶⁵ to reinforce synergies between health and the environment, a number of measures need to be undertaken. First, domestically, States and other actors need to establish inter-sectoral mechanisms to monitor and promote the implementation of environmental conventions and international agreements. Second, they should develop local capacity in international environmental conventions and their linkages with health. Third, they should improve environmental impact assessments to effectively assess the health impacts of projects and policies. Fourth, they need to adopt and enforce relevant domestic legislation that builds the synergies between health and the environment. While I have made a case for adopting adaptive governance to advance environmental health, it has limits especially in Africa as highlighted by the IMCHE (above). The proposed additional principles are aimed at enhancing accountability, reinforcing binding legal commitments, preventing capture of environmental regulation by vested interests, and ensuring environmental health governance retains the public interest. Therefore, adaptive governance requires the following refinements to improve its efficacy for environmental health in Africa: firstly, an environmental justice framework to address needs such as recognition of all inhabitants of environmental legal regimes; secondly, a legally binding multi-sectoral collaboration to foster participation of all actors in an environmental regulatory space; thirdly, an obligatory evaluation of environmental legal regimes beyond impact assessments and finally, placing environmental ethics at the heart of environmental legal regimes to enhance health protection. Beyond “new” governance, my proposals provide a systematic paradigm to reinforce adaptive governance to address the environmental governance challenges faced in Africa.

A. Environmental justice

Adaptive governance in its classical form requires further refinement to address health and environmental inequalities that afflict Africa. The north-south inequalities are manifested in trade, the environment, global diplomacy, health protection, resource exploitation and technology transfer.¹⁶⁶ Yet, environmental governance in Africa has not provided sufficient

¹⁶⁵ n 10 above, n26 above, n27 above.

¹⁶⁶ L. J. Kotze, ‘Some for all, Forever: A Southern Perspective on Poverty, Access to Water, Environmental Health and the North-South Divide’ in L. Westra, C. Soskolne and D. Spady (eds),

pathways to health protection.¹⁶⁷ The disease burden in low income countries is rooted in the consequences of poverty such as poor nutrition, indoor air pollution and poor access to sanitation as well as health education.¹⁶⁸ This is accentuated by the north- south injustices faced in Africa in relation to natural resource and environmental protection as expounded by the third world approaches to international law (TWAIL) movement.¹⁶⁹ The core of the TWAIL agenda is to “transform international law from being a language of oppression to a language of emancipation—a body of rules and practices that reflect and embody the struggles and aspirations of Third World peoples and which, thereby, promotes truly global justice”.¹⁷⁰ Hence a justice paradigm becomes crucial in reinforcing the efficacy of adaptive governance for environmental health in Africa.

It is proposed that an environmental justice framework is an essential supporting pillar to address issues such as pluralism of process as well as monitoring and enforcement by health actors in environmental governance.

As Ebbesson aptly put it, “any drafting, negotiation, adoption and application of environmental laws induces justice considerations; concerns for the distributive and corrective effects of laws and decisions pertaining to *health, the environment and natural resources*...although well established concepts in environmental law whether based on custom or statutes, appear neutral on their face, a closer study may reveal disproportionate burdening or restricting effects for certain groups or categories when the concepts are applied.”¹⁷¹ He argued that such concerns are both local and global. However, contemporary predominant thinking on environmental justice is incomplete. This requires

Human Rights and Duties: Sustaining Global Ecological Integrity and Human Health through Science, Ethics and the Law (London: Routledge, 2012) 262-263.

¹⁶⁷ n 11 above.

¹⁶⁸ World Resources Institute et al, *World Resources 1998-1999* (Washington: WRI 1998) 1; n 6 above, 599-691.

¹⁶⁹ TWAIL articulates south-north disparities from international legal perspective. See M. Wa Mutua, What is Twail? *American Society of International Law, Proceedings of the 94th Annual Meeting*, pp. 31-39, 2000; See also T.O Elias, *Africa and the Development of International Law*, 2nd Rev.Ed.(The Hague: Martinus Nijhoff, 1988); and O. Aginam, *Global Health Governance: International Law and Public Health in a Divided World*, University of Toronto Press, 2005.

¹⁷⁰ A. Anghie & B. Chimni, *Third World Approaches to International Law and Individual Responsibility in Internal Conflicts*, 2 *Chinese J. Int'l L.* 77 (2003), 79; J. T. Gathii, TWAIL, A brief history of its origins, its decentralized network and a tentative Bibliography, 3(1) *Trade Law and Development*, 26(2001); See also *The Third World and International Order: Law, Politics and Globalization* (Anghie, B. Chimni, K. Mickelson & O. Okafor eds., Martinus Nijhoff 2003); *International Law and the Third World: Reshaping Justice* (R. Falk, B. Rajagopal & J. Stevens eds., 2008); D. French, *Global Justice and the (Ir)relevance of Indeterminacy*, 8 *Chinese J. Int'l L.* 593 (2009). B. Rajagopal, *From Resistance to Renewal: The Third World, Social Movements, and the Expansion of International Institutions*, (2000) 41(2) *Harv. Int'l L.J.*, 529.

¹⁷¹ J. Ebbesson, ‘Introduction: Dimensions of Justice in Environmental Law’ in J. Ebbesson and P.N Okowa, (Eds), *Environmental Law and Justice in Context* (Cambridge: Cambridge University Press, 2009) 1.

the redistribution of environmental health harms and benefits, promoting mechanisms for participation and recognition of all actors as inhabitants of environmental law.

Most understanding of environmental justice focuses on equity or distribution of environmental ills and benefits. For example, the United Nations Millennium Declaration states that, “global challenges must be managed in a way that distributes the costs and burdens fairly in accordance with basic principles of equity and social justice. Those who suffer or who benefit least deserve help from those who benefit most.”¹⁷² Therefore, environmental justice must accomplish; equity in the distribution of environmental risk, recognition of the diversity of the participants and experiences in affected communities, and participation in the political processes which create and manage environmental policy.¹⁷³ Social, environmental and ecological justice becomes integrated as the poor suffer both health and environmental inequity when nature is exploited for selfish economic gain. Environmental justice would facilitate the participation of the health sector in the development and governance of environmental legal regimes to achieve the health objective. For communities harmed by waste and polluted waters in Africa, an environmental justice paradigm would ensure that equity, recognition and participation are integrated.

According to Harvey, the achievement of environmental justice will come only with confronting the fundamental underlying processes, power structures, social relations, institutional configurations, discourses and belief systems that generate environmental and social injustices.¹⁷⁴ A unified harmonized environmental justice is not uniform as it must take account of diversity of stories of injustices, its multiple forms, and the variety of solutions and nuances in experiences of particular locations where injustice occurs around the world.¹⁷⁵ This approach demonstrates the pluralist nature of environmental injustice that reinforces both recognition and participation as its core elements. Therefore, distributive justice enables bridging of the environmental health divide as well as north-south divides on environmental protection. This ensures that an African perspective that values both environmental and human health protection in tandem is embedded in environmental law. Recognition ensures that health is a core inhabitant of an environmental legal regime in the progressive development and implementation of environmental law. Finally, this perspective

¹⁷² United Nations General Assembly, Resolution 55/2, United Nations Millennium Declaration (A/55/L.2, 18 September 2000), paragraph, 6.

¹⁷³ D.Schlosberg, ‘Reconceiving Environmental Justice: Global Movements and Political Theories’ (2004) 13(23) Environmental Politics, 517-540.

¹⁷⁴ D. Harvey, *Justice, Nature, and the Geography of Difference* (Oxford: Blackwell, 1996) 401.

¹⁷⁵ A. R. Hippolyte, ‘Calls for National Intervention in the Toxic Waste Trade With Africa: A Contemporary Issue in Environmental Justice Debate’ (2012) 58 Loyola Law Review 301.

on environmental justice ensures the full participation of the health sector in environmental decisions. The WHO Commission on Social Determinants on Health calls upon the international community to ameliorate the inequitable distribution of power among different classes and groups within society by promoting the participation of excluded groups in decision-making.¹⁷⁶ The WHO call can be institutionalized by ensuring that environmental and health legal instruments applicable to Africa require Parties to consider all environmental justice consequences of their domestic policies and programs on both health and the environment. Promoting ratification by all African States of the Aarhus Convention while adopting domestic procedural legal measures with established institutions for both participation and recognition of both health and environmental stakeholders in the distribution of environmental health burdens and benefits can be initial steps in implementing environmental justice across Africa¹⁷⁷ Therefore, institutionalization with evaluation of environmental justice in policies and programs (as discussed below) can promote justice in health by tackling the environmental burden of disease that unequally falls on the world's poor such as those in Africa.¹⁷⁸ Finally, African States should adopt a regional public participation treaty that can establish mechanisms for institutionalizing environmental justice within the region.

B. Multi-sectoral collaboration

As argued throughout this paper, sectoral fragmentation in environmental governance in Africa has undermined public health. The constituents of environmental regulation often involve the environmental, health and other sectors that reflect the objectives of a specific environmental treaty or other law. The fragmentation of governments into sectoral divisions such as health and the environment may also produce a special interest approach to public policy in which each Ministry tends to act as a sponsor for the interests of the inhabitants in its policy sphere.¹⁷⁹ Multi-sectoralism also reflects the whole of government and nation approach to public health policy making that must be adaptive and mirror the characteristics

¹⁷⁶ WHO, Commission on Social Determinants, *Closing the Gap in a Generation: Health Equity Through Action on the Social Determinants of Health* (Geneva: WHO, 2008).

¹⁷⁷ UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, (Aarhus Convention) (1998) ILM 38, 517; Rhuks Temitope Ako, *Environmental Justice in Developing Countries: Perspectives from Africa and Asia-Pacific*, Routledge (Earthscan), 2004, 24-27.

¹⁷⁸ J. P Ruger, 'Global Health Justice' (2009) (2(3) Public Health Ethics 261-275, 261-263.

¹⁷⁹ n 104 above, 186-187; W. L. Andreen, 'Environmental Law and International Assistance: The Challenge of Strengthening Environmental Law in the Developing World' (2000) 25 Columbia Journal of Environmental Law 17, 21-22.

of complexity, decentralized decision-making and self-organizing social networking to enable stakeholders to respond quickly to unanticipated events in innovative ways.¹⁸⁰ A whole-of-government approach is where a government actively uses formal and informal networks across its different agencies to coordinate the design and implementation of the agencies interventions to increase their effectiveness in achieving the desired objectives.¹⁸¹ This would entail domestic public agencies working across portfolio boundaries to achieve a shared goal and an integrated government response to the critical environment and health integration agenda whether it is policy development, program management and service delivery.

Therefore, to optimize health protection through adaptive governance in international environmental law, there is need for continuing engagement between the various inhabitants of the regulatory space of any specific environmental legal regime. Few international treaties including on the environment directly include a comprehensive multi-sectoral participation as a legal obligation.¹⁸² This is in part due to domestic autonomy of treaty performance in good faith under international law.¹⁸³ For example, the multi-sectoral Ad Hoc Working Group on Long Term Cooperative Action (AWGLCA) was adopted by UN Framework Convention on Climate Change (UNFCCC) COP until 2009.¹⁸⁴

Membership of domestic coordinating mechanism needs to include the health and environment as well as other relevant legal sectors in a legal regime. Significant membership from the health sector as well as expanding its mandate will help to fully enhance equity, participation and recognition for health issues. Governments can formulate policies that create incentives for inter-sectoral collaboration that benefit both health and the environment. Such policies require specific budget appropriation from public funds to minimize sectoral competition with clear remit that focuses on inter-sectoral issues.

A collaborative approach to health in environmental governance helps to tackle health issues in the context of environmental protection. Multi-stakeholder governance must not be state

¹⁸⁰ WHO Regional Office for Europe, Governance for health in the 21st century: a study conducted for the WHO Regional Office for Europe, Document EUR/RC61/Inf.Doc./6, 18 August 2011 accessed at http://www.euro.who.int/_data/assets/pdf_file/0010/148951/RC61_InfDoc6.pdf last accessed on 24th February 2014.

¹⁸¹ OECD, *Whole of Government Approaches to Fragile States* (Paris: OECD, 2006) 14.

¹⁸² WHO Framework Convention on Tobacco Control, Articles 5, 20,22.

¹⁸³ n 82 above; n 39 above.

¹⁸⁴ World Health Organization, Submission to the Ad Hoc Working Group on Long-Term Cooperative Action (AWG-LCA), available at <unfccc.int/resource/docs/2009/smsn/igo/042.pdf> (last accessed on 13th January 2014).

centric but fully include the civil society.¹⁸⁵ Moreover, public health laws in Africa must bolster the political, economic, social, environmental, and institutional challenges of emerging environmental health threats such as climate change. The health-environment linkages need to be comprehensively integrated in decision-making, resource allocation and outreach activities in the progressive development and implementation of international environmental law. Domestic environmental laws need to be reoriented to promote interventions that provide the maximum benefits to human health and environment. Health protection should be key criteria by which environmental measures are determined and implemented. While progress exists on tackling issues of common interest such as drinking water quality, the health sector in Africa lacks the capacity to interact across inter-sectoral issues including the environment.¹⁸⁶ Sustained funding, formal inter-sectoral arrangements on roles and skills development of health staff for environmental negotiations can strengthen the health sector. Regular review of health policies to deal with the environmental sector is required.

C. Evaluation

While some environmental treaties contain monitoring and review frameworks, they still lack clear evaluation mechanisms to assess if the objectives of such instruments are being met to achieve both health and environmental protection goals. This state of affairs exists in domestic environmental legal regimes in Africa where evaluation of legislation is not often a mandatory requirement. Evaluation refers to a careful retrospective assessment of the merit, worth and value of administration, output and outcome of government interventions, intended to play a role in future action.¹⁸⁷ Evaluation aims to produce information about the performance of a law or programme in achieving its objectives.¹⁸⁸ It can contribute to

¹⁸⁵ S. Charnovitz, 'Non-governmental organizations in International Law' (2006)100 American Journal of International Law 348.

¹⁸⁶ NEPAD, Africa Health Strategy, 2007-2015, accessible at [http://www.nepad.org/system/files/AFRICA_HEALTH_STRATEGY\(health\).pdf](http://www.nepad.org/system/files/AFRICA_HEALTH_STRATEGY(health).pdf) accessed on 4th February 2014; James A. Listorti and Fadi M. Doumani, Environmental Health: Bridging the Gaps, accessed at <http://siteresources.worldbank.org/INTURBANHEALTH/Resources/1090754-1248834093497/wholebook.pdf>. on 15th February 2014.

¹⁸⁷ E. Vedung, *Public Policy and Program Evaluation* (New Brunswick NJ: Transaction Publishers. 1997).

¹⁸⁸ D. Grembowski, *The Practice of Health Program Evaluation* (Newbury Park, CA: Sage Publications, Inc. 2000) 3.

assessing the effectiveness of environmental legal regimes for health protection.¹⁸⁹ Without careful evaluation, it is impossible to know whether an environmental law is effective.

According to Bridgman and Dover, “*since policies in practice often drift from their original objective or are imperfect in realising their stated goals, evaluation is essential so government can gauge the effects of a policy and adjust or rethink policy design as appropriate. Such evaluation starts the policy cycle afresh; with a new look at the problem, and a reconsideration of the recommended instruments. Policy is a wheel continually turning, a task never completed. A commitment to evaluation carries analytical rigour through the cycle, and emphasizes that policy is iterative-an endless chain of experiments and rethinking, as policies and programs adjust to their changing circumstances.*”¹⁹⁰ Evaluation measures how specific environmental law helps its stakeholders to achieve the laws goals and requires the assessment of both the process by which the law is implemented (process evaluation) as well as the laws impact on outcomes (outcome evaluation) such as better health and environmental protection.¹⁹¹

Howlett and Ramesh have highlighted the significance of policy evaluation through administrative, judicial and political mechanisms, categorized into effort, performance, effectiveness and efficiency evaluations.¹⁹² In practice, evaluation is guided by inter-alia ethical principles such as commitment to systematic inquiry, competent performance, integrity and honesty, respect for the security and dignity of peoples.¹⁹³ The evaluation of an environmental legal regime commences with an evaluation plan and design and identifies specific steps, procedures, and measures that will be used.

In environmental law, the use of adaptive management often revolves around reviews of the impact of regulation.¹⁹⁴ My argument equally embeds process and outcome evaluation as core aspects of environmental governance. Process evaluation, focusing on steps to achieve

¹⁸⁹ C. Helm and D. Sprinz, ‘Measuring the Effectiveness of International Environmental Regimes’ 2000 44(5) *Journal of Conflict Resolution* 630, 631,640-641.

¹⁹⁰ P. Bridgman and G. Davis, *The Australian Policy Handbook* (Sydney: Allen & Unwin, 3rd Edition, 2004) 130-131.

¹⁹¹ P.H Rossi and H.E Freeman, *Evaluation: A systematic Approach* (NewburyPark, CA: Sage Publications, 5th edn 1993).

¹⁹² M. Howlett and M. Ramesh, *Studying Public Policy: Policy Cycles and Policy Subsystems* (Oxford: Oxford University Press, 2003).

¹⁹³ H. Shue, ‘Ethical Dimensions of Public Policy’ in M. Moran, M. Rein and R. Goodwin (eds), *Oxford Handbook of Public Policy* (Oxford: Oxford University Press, 2008) 709-726.

¹⁹⁴ O. Lobel, ‘The Renew Deal: The Fall of Regulation and the Rise of Governance in Contemporary Legal Thought’ (2004-5) 89 *Minnesota Law Review* 342.

the laws goals comprises two levels of assessment; implementation activities (such as capacity building and technical assistance, other programmatic activities) and the immediate actions such as mobilizing political and public support for the legal regime.¹⁹⁵ Evaluation is largely about measuring the effect of a legal regime on outcomes, results that indicate success or failure. Key outcome indicators must be at the core of the evaluation of a legal regime.

Unfortunately, evaluation of health and environment is not mandatory in environmental regulation. This weakness is compounded by the lack of resources including expertise to undertake complex evaluation of health and environmental objectives of environmental law. In Africa, health and environmental impact assessments are both nascent and inadequate in evaluating environmental objectives.¹⁹⁶

In contrast, many developed countries such as the United Kingdom have established legal and institutional frameworks for integrated environmental impact assessment combining health, social, economic, cultural, physical, biological, and geochemical environments with a growing interest to include health at the core of such assessments.¹⁹⁷ The EU has institutionalized evaluation of laws and policies under its “smart regulation” throughout the policy cycle from design to revision of legislation.¹⁹⁸ The smart regulation attaches high importance to evaluation and this has helped to improve functional quality and effectiveness of new legislation. An Impact Assessment Board provides independent quality control of the Commission's impact assessments and has produced over 400 opinions since its creation in 2006. Another form of evaluation of recently introduced policy instruments (RIPI) in Finland provides a concrete example to embed mandatory evaluation in environmental health law in African jurisdictions.¹⁹⁹

Evaluation could involve carrying out cross-sectoral policy reviews to harmonize environment and health policies, identify opportunities for reciprocal action to address environment and health concerns, and formulate new policies that support inter-sectoral collaboration. Policy reviews on environmental health issues such as water, climate change

¹⁹⁵ J.J. Norton, ‘International Financial Institutions and the Movement Toward Greater Accountability and Transparency: The case of Legal Reform Programmes and the Problem of Evaluation’ (2001) 35 *International Lawyer* 1443 -1453.

¹⁹⁶ n 10.

¹⁹⁷ S.J Milner, C. Bailey, J. Deans, J, D Pettigrew, ‘Integrated Impact Assessment in the UK--Use, Efficacy and Future Development’ (2005) 25 *Environmental Impact Assessment Review* 47-61.

¹⁹⁸ European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Smart Regulation in the European Union, COM(2010) 543 final, Brussels, 8.10.2010, accessible at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0543:FIN:EN:PDF> , accessed on 26th February 2014

¹⁹⁹ P. Kautto and J. Simila, ‘Recently Introduced Policy Instruments and Intervention Theories’ (2005) 11(January) *Evaluation* 55-68.

and hazardous waste will have a cross-sectoral appeal and broad political support from relevant sectors. Such reviews would provide options for improvement of the status quo and enhance the impact of legal instruments on health protection. Impact assessment is a key aspect for consideration in evaluation. Over the past 25 years, most countries have adopted environmental impact assessment (EIA) (often under pressure from multilateral and bilateral donor agencies). Health continues to be a weak element in this framework. EIAs categorize health as determined by environmental factors only, ignoring the social determinants. Yet, EIAs formulate recommendations that put the onus on the health sector, thus transferring to it the hidden costs of mitigation. EIAs may not sufficiently recognize health Ministries as final authorities on health. However, they may lack the capacities, capabilities, and jurisdiction needed to participate effectively in such assessments. Evaluation can promote a health impact assessment (HIA) that ensures that the public health impacts of any new policies are considered. It can tackle the pitfalls of policy learning, participation, monitoring and feedback in adaptive governance as it embodies a specific framework for concrete learning.²⁰⁰ It is also a primary mechanism of institutional accountability, a basis for participation and decision making in environmental governance. Therefore, introducing mandatory evaluation of environmental law by relevant actors could help reinforce adaptive governance as an effective tool to promote the health benefits of environmental law.

D. Environmental ethics

Environmental ethics is the discipline in philosophy that analyses the moral relationship of human beings to, and also the value and moral status of, the environment and its nonhuman contents.²⁰¹ Delineating ethical principles of the African environment is a challenge facing environmental stakeholders in policy formulation and implementation in Africa. Traditional African environmental management values the ethic of not taking more than you need from water, land and air.²⁰² This enables humans to co-exist peacefully with nature and treat it with concern for its worth, survival and sustainability.

According to Aldo Leopold, “while the individual is a member of a community of interdependent parts, the land ethic enlarges the boundaries of this community to include

²⁰⁰ J. Stern, ‘The Evaluation of Regulatory Agencies’ in R Baldwin, M Cave & M Lodge, *The Oxford Handbook of Regulation* (Oxford: Oxford University Press, 2012) 223-254 at 251.

²⁰¹ A. Brennan, and Y Lo, ‘Environmental Ethics’ in E. N. Zalta (ed.), *The Stanford Encyclopedia of Philosophy*, (Fall 2011) accessed at URL = <http://plato.stanford.edu/archives/fall2011/entries/ethics-environmental/> on 27th February 2014.

²⁰² P.A. Ojomo, Environmental Ethics: An African Understanding, (2011) *The Journal of Pan African Studies*, 4:3,102-112.

soils, waters, plants and animals or collectively the land. A land ethic changes the role of humans from conqueror of the land community to a member and citizen of it. It implies respect for his fellow members and also respect for the community as such.²⁰³ This view recognizes humans also as ecological beings, requires emotional and rational respect for the land and possession by humans of an ecological conscience. To Leopold, a thing is right when it tends to preserve the integrity, stability and beauty of the biotic community and wrong if it tends otherwise.²⁰⁴ His land ethic is beyond ecological contexts because it holistically emphasizes populations, communities, species and ecosystems as deserving of moral considerations. Despite some criticisms, the land ethic provides human respect for nature and hence provides an important theoretical link between health and environmental protection through adaptive governance.²⁰⁵ My rethinking of an environmental ethic to reinforce adaptive governance requires human stewardship for the natural world that entails a responsibility to care for the natural world and manage it sustainably for future generations.²⁰⁶ This is because humans have a special ability and power to alter the natural environment and knowledge of the consequence of such actions, for the benefit of future generations and nature. This view recognizes that humanity must be healthy due to their potential to plan and manage adverse impacts on the environment and the duty to preserve the environment. This ethics is dissimilar from the traditional (judeo-Christian) philosophy of humanity's dominion over nature that "man is exclusively divine, all other creatures and things occupy lower and general inconsequential status; man is given dominion over all creatures and things; he is enjoined to subdue the earth."²⁰⁷ It is also dissimilar from the deep ecology ethic which endorses biospheric egalitarianism, the view that all living things are alike in having value in their own right, independent of their usefulness to human purposes.²⁰⁸ It ensures no unnecessary damage to the flora and fauna. This environmental ethic reflects

²⁰³ The Wilderness Society, C. Barakatt, C. Maier "Aldo Leopold's Land Ethic". In C.J. Cleveland (Eds), *Encyclopedia of Earth* (Washington, D.C.: Environmental Information Coalition, National Council for Science and the Environment, September 2, 2008; January 11, 2011) accessed at http://www.eoearth.org/article/Aldo_Leopold's_Land_Ethic. on 1 March 2014.

²⁰⁴ J. Alder and D. Wilkinson, *Environmental Law and Ethics* (Basingstoke: Palgrave Macmillan, 1999) 63-64.

²⁰⁵ J.B Callicott, In *Defense of the Land Ethic* (Albany: State University of New York Press, 1989).

²⁰⁶ M. Stenmark, *Environmental Ethics and Policy Making* (Aldershot: Ashgate Publishing Company, 2002); M. Malden, A. Light and H Rolston, *Environmental Ethics: An Anthology* (Blackwell, Oxford 2003); n 192 above.

²⁰⁷ J. Passmore, *Man's Responsibility for Nature* (London: Duckworth, 2nd ed 1974); I McHarg, 'Values, Process and Form' in J.Lee, H.H.Humphrey and S.D.Ripley, *The Fitness of Man's Environment* (Washington: Smithsonian Institution Press, 1968) 213.

²⁰⁸ P. Carrick, 'Aldo Leopold's Concept of Land Health: Implications for Sound Public Policy', in L. Westra, C.Soskolne and D. Spady (eds), *Human Rights and Duties: Sustaining Global Ecological Integrity and Human Health through Science, Ethics and the Law* (London: Routledge, 2012) 56-63.

nuanced sustainable development.²⁰⁹ Religious ethicists argue that neither sustainable development, nor conservation, nor any other harmony between humans and nature is gained until persons learn to use the earth both justly and charitably. These concepts call for an ethical space and religions offer this space. Rolston argues that science is unable to offer a satisfactory response to the challenges of contemporary environmental policy and religious faith traditions can offer, in the realm of environmental concern, what scientific reasoning cannot: value-laden worldviews that shape lifestyles.²¹⁰ This also reflects Buddhist thought on environmental protection.²¹¹ The religious community has been heavily involved in contributing to reforming environmental policies in Africa.²¹²

Therefore, this conception of environmental ethics would promote human stewardship in environmental governance that mutually fosters health and the environment as a public good, prevents the unfettered destruction of natural resources and maintains an effective balance between human and nature's needs, while promoting global public health.²¹³ Despite a missed opportunity at the Rio plus 20 Declarations, the adoption of a legal instrument that clarifies the scope of each pillar of sustainability is needed. Furthermore, the health deficit in environmental regulation could be cured by adopting a public health pillar of sustainable development.²¹⁴ This could address the ambiguities of public health classed in the social pillar as well as an effective advocacy tool for environmental health protection under the environmental pillar. It will exclude public health as utilitarian that reflects the economic pillar and help to strengthen other aspects of the social pillar.²¹⁵ Therefore, an environmental

²⁰⁹ World Commission on Environment and Development, *Our Common Future* (Oxford University Press, Oxford, 2007), Experts Group on Environmental Law of the WCED, *Environmental Protection and Sustainable Development* (Graham & Trotman, London, 1986), 46; Rio Declaration, 31 ILM 874 (1992) Principle 1; Segger MC and Khalfan A, *Sustainable Development Law: Principles, Practices and Prospects* (Oxford: Oxford University Press, 2004).

²¹⁰ H. Rolston III, 'Saving Creation: Faith Shaping Environmental Policy' (2010) 4 *Harvard Law & Policy Review* 121-148.

²¹¹ S. P James, *Zen Buddhism and Environmental Ethics* (Aldershot: Ashgate, 2004) 74-105.

²¹² L. Rasmussen, *Earth Honoring Faith: Religious Ethics in a New Key* (Oxford: Oxford University Press, 2012) 186, 283, 389; E.W. Orts, 'Climate Contracts' (2011) 29 *Va. Envtl. L.J.* 197; S. M. Awoyemi, A. Gambrell, A. Ormsby and D. Vyas, 'Global Efforts to Bridge Religion and Conservation: Are They Really Working?' Accessed at http://cdn.intechopen.com/pdfs/36535/InTech-Global_efforts_to_bridge_religion_and_conservation_are_they_really_working_.pdf last accessed on 26th February 2014,

²¹³ n 205 above.

²¹⁴ n11 above; A Bugge, H Christian & L Watters, A Perspective on Sustainable Development after Johannesburg on the Fifteenth Anniversary of our Common Future: An Interview with Gro Harlem Brudtland, 15 *Georgetown International Environmental Law Review* 359 (2002-2003).

²¹⁵ K.K. Peiry, Public Health in International Law: the Contribution of the World Summit on Sustainable Development, *Bulletin of the World Health Organization* 80(12) 925.

ethic would provide effective bedrock to strengthen adaptive governance to optimize health protection in environmental law in Africa.

V. CONCLUSION

This paper argues that adaptive governance is the best model to improve health protection in the progressive development of environmental law and its implementation in Africa.

Adaptive governance can facilitate policy experimentation, promote environmental co-regulation and provide a major impetus to effectively implement international environmental obligations at the domestic level. However, the limitations of adaptive governance are recognized. Potentially, it can facilitate capture of environmental law making and implementation by vested corporate and political interests to the detriment of health, the environment and natural resource preservation and the public interest. It could also dilute the impact of environmental legal regimes due to the need for constant reviews and change. However, as exemplified by IMCHE, it is argued that adaptive governance has the potential to improve environmental health in Africa if it is buttressed by pillars to enhance accountability, enhance binding legal commitments, prevent capture of environmental regulation by powerful vested interests, and ensure environmental governance protects the public interest. Therefore, adaptive governance that embeds environmental justice, evaluation, ethics and multi-sectoralism could contribute to reducing the health deficiencies of environmental law and significantly improve public health in Africa.