LAW AND GOVERNANCE FRAMEWORKS FOR OIL SPILL RESPONSE IN NIGERIA: TOWARDS AN ECOLOGICAL RESTORATION APPROACH

by

MENES ABINAMI MUZAN

A thesis submitted to the University of Birmingham for the degree of

DOCTOR OF PHILOSOPHY

UNIVERSITY OF BIRMINGHAM

Birmingham Law School,

College of Arts and Law,

University of Birmingham.

15 September 2024.

ABSTRACT

Much of the world's ecosystems, including those vital to human well-being, have been destroyed despite ongoing nature conservation efforts. One of the best examples is the Niger Delta in Nigeria, which is also one of the world's richest biodiversity hotspots: decades of cumulative crude oil pollution have devastated the region's dense wetland ecosystems. Within the last century, crude oil production has tragically led to massive ecological changes, primarily due to repeated oil spills that have negatively impacted entire ecosystems, destroying biodiversity that provides essential ecosystem services. The 'restoration' of the damaged ecosystems has not been a high priority for Nigerian law and policy, emphasising the 'prevention' of future environmental harms. Instead, Nigeria's law and governance frameworks regarding oil pollution only require remediating specific oil spill sites within limited spatial and temporal parameters while mainly ignoring the restoration of ecosystems destroyed by oil spills and unsuccessful remediation efforts over the years.

This thesis examines the adequacy or otherwise of developing moves towards ecological restoration law in Nigeria by contrasting ecological restoration with environmental remediation law and creating a 'multi-stakeholder' conceptual framework for what is necessary for successful ecosystem restoration governance in that country. This study aims to identify the most critical considerations for laws and regulatory institutions that *ought* to mandate ecosystem restoration. The thesis argues that for public authorities to realise that community involvement is an indelible requirement of successful restoration governance, future ecological restoration legal provisions must explicitly incorporate participation mechanisms. In this light, the thesis contends that local community involvement is crucial to good ecological restoration governance in Nigeria and worldwide today. The results highlight Nigeria's need for law and governance reforms due to fundamental issues with the country's state-centred environmental remediation approach.

ACKNOWLEDGEMENTS

I want to express my profound appreciation to my Lead Supervisor, Dr. Walters Nsoh, whose excellent academic guidance and mentorship have been instrumental in shaping my educational journey. Walters – your brotherly advice, patience, and unwavering faith in my ability to complete this work, even when I doubted myself, have been invaluable. I cannot thank you enough for always going the extra mile. My second supervisor, Professor Aleksandra Cavoski, has been an incredible source of motivation, wisdom, and objectivity throughout this process, and I appreciate her kindness. Aleks – thank you for believing in my potential and subjecting it to the necessary refinement process. I am also grateful to the University of Birmingham and the Birmingham Law School community for offering me a warm, friendly, intellectually stimulating research environment. I wish to mention Dr. Bosko Tripkovic, Dr Andreas Kokkinis, Dr. Samantha Fairclough and the PGR community at Birmingham Law School.

Without the enormous funding required, embarking on this journey would not have been possible for me. I am deeply grateful to the Tertiary Education Trust Fund (TETFUND), Nigeria, for awarding me the Academic Staff Training and Development (AST&D) doctoral scholarship – a special mention to my mentors, Professor Kaniye Ebeku and Professor Ibibia Worika, for supporting my funding application. Several opportunities arose to present parts of this research at academic conferences, for which I remain immensely grateful. My attendance at the Socio-Legal Studies Association (SLSA) Annual Conference, University of York; the Society of Legal Scholars (SLS) Annual Conference, Kings College London; and the Forum for Global Challenges, University of Birmingham, were all made possible thanks to the generosity of the College of Arts and Law (CAL) Research Support Fund, and the CAL Research and Knowledge Transfer Fund, respectively. I was also fortunate to receive external funding from the IUCN World Commission on Environmental Law (IUCN-WCEL) to present a paper at the Oslo

International Environmental Law Conference, University of Oslo, Norway, and from the IUCN Academy of Environmental Law (IUCN-AEL) to present a paper at the IUCN Academy of Environmental Law Annual Colloquium at the University of Eastern Finland, Joensuu, Finland. I cannot overstate the importance of this financial support in enabling my research.

Moving closer home – my family and loved ones, who are all simply fantastic: I am immensely grateful to my parents, Allswell and Patricia Muzan, and my siblings, Mubula, Brenda, Olivia, Bruno, Cappa, and David. Your love, support and encouragement mean the world to me. Thank you all for enduring everything! To my excellent partner, Monika, and my daughters, Golda and Angelica, the best girls and the providers of much-needed distractions when required. You have kept me sane throughout this journey, even when I sometimes lost it. I am happy to make you all proud! The generosity of the numerous people I encountered – formally and informally – who supported me with their time, expertise, and resources was incredible. This journey would not have been possible without their invaluable input – a special mention to all my colleagues, friends and mentors at the University of Port Harcourt, Nigeria, the University of Winchester and the University of Hull. I would also like to thank the leadership and members of Winners Chapel International, Birmingham, for their prayers and spiritual support. Lastly, I thank God Almighty for the grace to come this far; I can do nothing without Him. Thank you, Lord Jesus!

TABLE OF CASES

Nigerian Cases

- *Abiola v. Ijoma* (1970) 2 ANLR.
- *Adediran v Interland Transport* (1991) 9 NWLR (Part 214) 155).
- *Adesanya v President of the Federal Republic of Nigeria* (1981) 1 All NLR 1.
- *Aro v Lagos Island Local Government Council* (2000) FWLR (Part 13) 2132.
- *Atunbi v Shell BP* (Unreported) Suit No. UHC/48/78, 25th November 1974.
- *Busari v Oseni* (1992) 4 NWLR (Part 237) 557.
- *Ejiwunmi v Costain (W.A) Plc.* (1998) 12 NWLR 149, 164H.
- *Gulf Oil Company (Nig) Ltd v Oluba* (2003) FWLR (Part 145) 712.
- *Jonah Gbemre v Shell Petroleum Development Company Nigeria Limited and Others* (unreported) Suit No: FHC/B/CS/53/05, (14 November 2005).
- *Mobil Producing (Nig) Unlimited v LASEPA, FEPA & Others* (2002) 18 NWLR (Part 789) 1.
- *Oronto Douglas v Shell Petroleum Development Company Nigeria Limited and Others*, (unreported) Suit No: FHC/L/CS/573/96, 17 February 1997. The Court of Appeal's decision is reported in (1999) 2 NWLR 466.
- *Social and Economic Rights Action Centre (SERAC) v Nigeria* (2001) AHRLR 60 (ACHPR 2001) Communication 155/96.
- *Shell v Graham Otoko* (1990) 6 NWLR (Pt. 159) 693 at 724 – 725.
- *Shell Petroleum Development Company v Farah* (1995) 3 NWLR (Part 382) 148.

United States Cases

- *American Farm Bureau Federation v USEPA* (3rd Cir. 2013) Case 13–4079.
- *Natural Resources Defence Council Inc. v Train,* 510 F. 2d 692 (D.C. Cir. 1974).

- *Pymatuning Water Shed Citizens for a Hygienic Environment v Eaton,* 644 F. 2d 995 (3rd Cir. 1981).

United Kingdom Cases

- *Fairchild v Glenhaven Funeral Service Ltd* [2002] UKHL 22.
- *Hunter* v *Canary Wharf Ltd* [1997] AC 655 at 687–688

Court of Justice of the European Union

- Case C-117/00 *Commission v Ireland* [2002] ECR I-5335.
- Case C-183/05 *Commission v Ireland* [2007] ECR I-137.
- Case C-209/04 *Commission v Austria (Lauteracher Reid)* [2006] ECR I-2755.
- Case C-258/11 *Peter Sweetman and Others v An Bord Pleanála (Sweetman)* [2013] not yet reported.
- Case C-301/12 *Cascina Tre Pini s.s. v Ministero dell'Ambiente e della Tutela del Territorio e del Mare and Others* (*Cascina Tre Pini*) [2013].
- Case C-383/09 *Commission v France* [2011] ECR I-4869.
- Case C-518/04 *Commission v Greece* [2006] ECR I-42.
- Case C-6/04 *Commission v United Kingdom* [2005] ECR I-9017.

TABLE OF STATUTES

Nigerian Statutes

- Constitution of the Federal Republic of Nigeria (1999 as amended), sections 33(1) and 34(1).
- Department of Petroleum Resources (DPR), *Environmental Guidelines and Standards for the Petroleum Industry in Nigeria* (Abuja: Federal Ministry of Petroleum Resources, 2002).
- Federal Republic of Nigeria, Official Gazette No.65 Volume 101 of July 2014.
- National Environmental Standards and Regulations Enforcement Agency (Establishment) Act No. 57 of 2007.
- National Oil Spill Detection and Response Agency (Establishment) Act No. 15 of 2006, the Federal Republic of Nigeria Official Gazette No. 72 Vol. 93 of 29 December 2006.
- Niger Delta Development Commission (Establishment, etc.) Act 2000, CAP N68 Laws of the Federation of Nigeria 2004.
- Oil Pipelines Act, CAP O7 LFN 2004.
- Petroleum Industry Act of 2021.

United States Statutes

- American Recovery and Reinvestment Act of 2009, Public Law 111–5 (17 February 2009).
- Anderson-Mansfield Reforestation and Revegetation Joint Resolution Act of 1949, 16 USC 581.
- Clean Water Act of 1972, 33 USC 1251.

- Coastal Wetland Planning, Protection, and Restoration Act of 1990, 16 USC 3951 (6).
- Coastal Zone Management Act of 1972, 16 USC 1452(1)(C).
- Comprehensive Everglades Restoration Plan, Public Law 74–738 (1936).
- Estuary Restoration Act of 2000, 16 USC 1455b.
- Executive Order No. 13340 (George W. Bush Jnr.) Establishment of a Great Lakes Interagency Taskforce and Promotion of a Regional Collaboration of National Significance for the Great Lakes (69 F.R. 29043).
- Executive Order No. 13508, (President Barack Obama) Chesapeake Bay Protection and Restoration, 74 F.R. 23099.
- Granger-Thye Act (16 USC 580 g–h).
- Healthy Forests Restoration Act of 2003 (16 USC 6501–6591).
- National Environmental Protection Act, Public Law 91–190 (1970).
- Sikes Act (16 USC 670g).
- Water Resource Development Act of 1996, Public Law 104–303, 12 October 1996.
- Water Resource Development Act of 2000, Public Law 106–541, 11 December 2000.

United Kingdom

- Limitation Act of 1980 (c. 58). Sections. 11(4) and 14.

European Union

- Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus, 25 June 1998, in force 30 October 2001).

- Directive 2004/35/EC of the European Parliament and of the Council of 21 April 2004 on environmental liability concerning preventing and remedying environmental damage [2004] OJ L143.
- Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds [2010] OJ L20/7, replacing the original Birds Directive, Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds [1979] OJ L103/1.
- Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats, wild fauna, and flora [1992] OJ L206/7.

African Union Conventions and Protocols

- African Charter on Human and People's Rights, adopted 27 June 1981, entered into force 21 October 1982, OAU Doc. CAB/LEG/67/3 Rev. 5

International Conventions, Treaties and Protocols

- Agreement for the Implementation of the Provisions of the United Nations Convention of the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, 4 August 1995, S. Treaty Doc. No. 104 – 24, 2167 UNTS 88.
- American Convention on Human Rights (pact of San Jose) signed 22 November 1969, entered into force 18 July 1978, 1144, UNTS 123, Article 21.
- Cartagena Protocol on Biosafety to the Convention on Biological Diversity, 29 January 2000, 39 ILM 1027 (2000).
- Convention on Biological Diversity, 5 June 1992 (1992) 31 ILM 88.

- Convention on the Law of the Sea (Montego Bay, 10 December 1982, in force 16 November 1994).
- Declaration of Principles for the Preservation and Enhancement of the Human Environment, Report of the UN Conference on the Human Environment, Stockholm 5-16 June 1972, (1972) 11 ILM 1416.
- Declaration on the Rights of Indigenous Peoples (UN General Assembly Resolution /RES/61/295, 13 September 1997).
- International Convention for the Prevention of Pollution of the Sea by Oil of 1954, signed in London on 12 May 1954.
- International Covenant of Economic and Social Rights (ICESR) Article 6, 11.
- International Labour Organization Convention Concerning Indigenous and Tribal Peoples in Independent Countries (Geneva, 27 June 1989, in force 5 September 1991).
- Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity, 29 October 2010, UNEP/CBD/COP/DEC/X/1.
- Ramsar Convention on Wetlands of International Importance, Especially as Waterfowl Habitat, adopted 2 February 1971, in force 21 December 1975, 11 *ILM* 969 (1972).
- UN General Assembly, *Universal Declaration of Human Rights*, adopted by General Assembly Resolution 217 A(III) of 10 December 1948.

TABLE OF FIGURES

TABLE OF CONTENTS

CHAPTER ONE:

INTRODUCTION AND THESIS OVERVIEW: THE LAW AND GOVERNANCE OF OIL SPILL RESPONSES IN NIGERIA

1.1 INTRODUCTION

Human activities are depleting ecosystems at a rate never seen before. Despite ongoing nature conservation efforts, many ecosystems, including those crucial for human well-being, have been degraded or destroyed across much of the developing world. The Niger Delta in Nigeria, one of the world's richest biodiversity hotspots,[1] is the best example. However, decades of cumulative crude oil pollution have devastated the region's dense, predominantly wetland ecosystems, home to abundant ecologically and economically valuable biodiversity and provide enormous services.[2] Over the past half-century or so, crude oil production and exploration have tragically led to massive environmental pollution, primarily due to repeated oil spills that have negatively impacted entire ecosystems, destroying and degrading mangroves and other land and water bodies that provide essential social and cultural services and economic sustenance to the predominantly poor local communities.

[1] Convention on Biological Diversity, *Nigeria: Fifth National Biodiversity Report 2015*, available online at CBD Fifth National Report - Nigeria (English version) (last accessed 2 July 2023).

[2] IUCN Niger Delta Panel, *Developing a biodiversity conservation strategy for the Niger Delta: Integrating biodiversity considerations into SPDC's operations* (IUCN: Switzerland, 2018), available online at 2018-014-En.pdf (iucn.org) (last accessed 2 July 2023); also Kaniye S A Ebeku, 'Biodiversity Conservation in Nigeria: An Appraisal of the Legal Regime in Nigeria in Relation to the Niger Delta Area of the Country' 16(3) (2004) *Journal of Environmental Law* 361.

In a recent report, the Bayelsa State Oil and Environmental Commission found failures in oil companies' strategy, prevention, response, and remediation.[3] These findings highlight the pollution catastrophe and its underlying causes, prominent among which are the systemic failings of international oil company operators, the complicity of Nigeria's political classes, and a dysfunctional Nigerian regulatory system.[4] This follows similar findings by the United Nations Environment Programme (UNEP) sometime in 2011.[5]

In Nigeria, however, the legal context of restoring oil-damaged ecosystems and habitats narrowly focuses on the remediation (or rehabilitation) of contaminated lands with practically no reference to ecosystems. This task is typically delegated to a combination of regulatory agencies and authorities, such as the Department of Petroleum Resources (DPR), the National Oil Spill Detection and Response Agency (NOSDRA), and the National Environmental Standards and Regulations Enforcement Agency (NESREA), with ministerial oversight amongst others.[6] In other words, the primary focus of the legal context is on the clean-up of contaminated lands and compensation for ecological damage broadly. In practice, however, remediation systems are designed only to lessen immediate dangers to human health; they are not necessarily intended for the long-term recovery of ecosystems against risks to ecosystem functions, as will be argued subsequently in this thesis.

---

[3] Bayelsa State Oil and Environmental Commission, *An Environmental Genocide: The human and environmental cost of Big Oil in Bayelsa, Nigeria* (London, May 2023) available online at AN ENVIRONMENTAL GENOCIDE (bayelsacommission.org) (last accessed 2 August 2023).

[4] Macdonald Dzirutwe, 'Nigeria needs $12 billion to clean up Bayelsa Oil spills' (*Reuters*, 16 May 2023) available online at Nigeria needs $12 billion to clean up Bayelsa oil spills - report | Reuters (last accessed 2 July 2023).

[5] United Nations Environment Programme (UNEP), *Environmental Assessment of Ogoniland* (Nairobi: 2011). (hereinafter 'UNEP Report')

[6] Uchenna J Orji, 'An appraisal of the legal frameworks for the control of environmental pollution in Nigeria' 38(2) (2012) *Commonwealth Law Bulletin* 321 – 346.

However, modern environmental law could be more futuristic. According to the principles of sustainable development, environmental laws broadly have shifted to a future tense, with the prevention, reduction, or adaptation of ecological impacts taking precedence over their restoration of past damage. Although it is crucial to prevent additional environmental upheaval, maintaining the state of the environment as it currently stands may give a false impression of reality if conditions are already too poor. For instance, it may only be possible to mitigate climate change if fewer forests exist to sequester carbon and other greenhouse gases. It may be easier to sustain agriculture if soils have not become too eroded and contaminated by pollution. In addition to maintaining the current state of the environment, it is now critical that we work to improve it. Restoring ecosystems can boost ecosystem services, restore natural capital, and restart slowed evolutionary processes. Therefore, ecological restoration is a crucial future component of sustainability.

Nigeria's current oil pollution abatement laws are a hybrid of sector-specific regulations and government agencies that enforce those regulations against those responsible for environmental damage.[7] Nigeria's law and governance priority appears biased towards preventing environmental harm from future oil pollution. Still, the need to initiate and accelerate the restoration of damaged ecosystems is largely ignored. In addition, Nigeria's oil pollution law and governance frameworks only mandate remediation of specific oil spill sites within narrow spatial and temporal parameters, mainly ignoring the restoration of flora and fauna populations depleted by oil pollution and unsuccessful remediation efforts. Oil spill remediation laws, as they currently stand, tend to prioritise environmental remediation over ecosystem (or landscape-scale) restoration, with a few notable albeit limited exceptions.

[7] Olarenwaju A Fagbohun, *The Law of Oil Pollution and Environmental Restoration: A Comparative Review* (Lagos: Odade Publishers, 2010); see also Olarenwaju A Fagbohun, 'The Imperatives of Environmental Restoration due to Oil Pollution in Nigeria' 18(2) (2007) *Stellenbosch Law Review* 347.

Despite repeated remediation attempts, official statistics and anecdotal evidence confirm widespread environmental degradation due to inadequate responses to oil spills. Fundamentally, this approach is substantially limited in scope and has thus far failed to improve the health and integrity of the degraded ecosystems from decades of oil pollution.

It is clear from the case of Nigeria that most legal systems today prioritise environmental remediation over ecological restoration. Compared to ecological restoration, environmental remediation is narrower in scope, focusing on specific problems like those caused by mining or oil spills. On the other hand, ecosystem restoration aims to better ecosystems and landscapes. Aesthetic and functional improvements can be made to a former quarry or abandoned brownfield site through rehabilitation. However, an ecosystem's "health, integrity, and sustainability" is restored through ecosystem restoration.[8]

If the law does not consider this, it can cause confusion, squander resources, and produce undesirable results. The best way to stabilise the soil and provide adequate ground cover in a former mining pit may be to replant exotic tree species. However, if the project's focus is ecosystem restoration, that tree species may not be appropriate because it may not provide an ideal bird habitat. From more conventional terms like 'remediation' and 'rehabilitation' to offbeat newcomers like 're-gardening' and 'rewilding.'[9] The language used to describe restoration work constantly evolves to encompass various potential outcomes and approaches. This expansion, from traditional terms like 'remediation' and 'rehabilitation' to newer concepts like 're-gardening' and 'rewilding,' significantly influences the law's ability to establish norms and obligations for ecological restoration.

---

[8] Society for Ecological Restoration (SER), International Science and Policy Working Group, The SER Primer on Ecological Restoration (SER, 2004).

[9] Marcus Hall (ed.), *Restoration and History: The Search for a Useable Environmental Past* (Routledge, 2010); George Monbiot, *Feral: Searching for Enhancement on the Frontiers of Rewilding* (Penguin, 2013); Dave Foreman, 'The Wildlands Project and the Rewilding of North America' 76(2) (1998) *Denver University Law Review* 585.

1.2 RESEARCH OBJECTIVES

The overarching goal of the theses is to determine whether the current legal and governance frameworks for oil spill remediation are compatible with the basic tenets of ecological restoration. The success and sustainability of ecological restoration would require widespread respect for nature, an emotional affinity with it, and an appreciable degree of environmental education on the part of the community concerned. This is because ecological restoration projects are typically implemented over a considerably long period and because humans play a central role in shaping their environment. Thus, as the thesis will argue, multi-stakeholder participation is essential to the 'proper integration of ecological and social considerations' into the decision-making process necessary for successful ecological restoration in light of the high prevalence of illiteracy and unemployment levels (especially among the youth) in Nigeria and many other developing countries.

However, first, the definition of ecological restoration is important when damaged ecosystems need to be managed through a recovery process. It is critical because without agreeing on what restoration encompasses, it may be difficult to set appropriate goals or establish criteria against which outcomes can be measured. American academic Anastasia Telesetsky argues that something is missing from the SER's definition of ecological restoration: 'connecting the worlds of science and law'.[10] As such, she argues that 'there is no internationally agreed upon definition of restoration' and only a few domestic legal definitions for ecological restoration.[11] Examining the practices of state-mandated restoration and focusing on the inherent value of distinct landscapes to people, Telesetsky introduces the concept of the 'ecoscape' as an alternative to the 'current inadequate regime of piecemeal restoration'.[12] She

[10] Anastasia Telesetsky, 'Ecoscapes: The Future of Place-based Ecological Restoration Laws' (2013) 14 *Vermont Journal of Environmental Law* 494, 504.

[11] Ibid (n. 10), 504.

[12] Ibid, 494.

suggests an ecoscape is a landscape (or seascape) that transcends political boundaries and creates boundaries based on sustaining ecological functions and protecting human needs for living landscapes. Since place-based rather than politically bounded, 'ecoscapes' offer new large-scale opportunities to restore the environment. Telesetsky acknowledges the critical role that private (non-state) actors have played in promoting large-scale ecoscape management and then calls for a more active role by state governments, especially at the municipal level, in investing in ecoscape-based restoration. Instructively, she argues that:

> [i]f some degree of ecoscape thinking is not facilitated by our governance systems, further ecosystem collapse will come at our peril…governments need to reassess our current governance schemes of large landscapes and seek extensive public investment immediately in sustaining ecological functions at landscape levels that are large enough to be ecologically meaningful.[13]

Telesetsky makes a more than modest contribution to the literature, especially about how we can re-imagine our relationship with the places that shape us as individuals, communities and nations by focusing on how to bridge the gap between social governance, on the one hand, and ecological restoration on the other hand. She suggests that restoration is the only viable long-term option to address the magnitude of human impacts on the environment. According to her:

> Given the environmental pressures on the planet…we can attempt to interrupt the status quo by reimagining our troubled relationships with the places where we reside and systematically restoring ecologically degraded places so that they can sustain their ecological function.[14]

In emerging debates about mainstream restoration into long-term sustainability law and governance, Telesetsky introduces the ecoscape concept to protect social and environmental values within and across large landscapes. Essentially, her arguments are based in part on Eugen P Odum, who earlier wrote that '[i]t is even more apparent today than it was during the

[13] Ibid, 495, 504.

[14] Ibid, 495 – 496.

early part of the twentieth century that the environmental and social problems need to be addressed from an interdisciplinary and *large scale perspective*'.[15] She then explores three different ways ecological restoration has been incorporated into national law and policy, namely: (i) restoration as historical reconstruction, i.e. restoration past, (ii) restoration as remediation, restitution and project mitigation, i.e. restoration present, and (iii) restoration as the delivery of ecosystem services and markets, i.e. restoration yet to come.[16]

Telesetsky further explains how each approach focuses on only one temporal quality of the restoration debate, mainly to exclude broader ecological concerns. She proposes a selection of government-initiated policy changes that could advance the idea of ecoscape thinking to restore ecological connectivity across currently fragmented large landscapes. First, states should make a political commitment to ecological function at the large-scale landscape level, which may include the need for transboundary collaboration. Second, states should incentivise private action and recognise private success. For instance, she suggests that grants may be needed to cover costs associated with restoring specific ecosystems. Third, states should immediately focus on restoring connectivity to restore threatened ecological functions. Fourth, states should invest in land acquisitions for buffers to further restoration and conservation efforts.[17] The latter is a sensitive issue and may be problematic, especially given uncertain land tenure systems in many countries and uneven power dynamics between communities and governments, as is the case in Nigeria.

Ecological restoration projects in large landscapes require creative collaboration by private and public landholders to ensure their long-term success. The significance of private

[15] See Eugene P Odum, 'Landscape Ecology and Socioeconomics: A Regional Interface of Ecology and Socioeconomics' in J Liu and W M. Taylor (eds.) *Integrating Landscape Ecology Into Natural Resource Management* (Cambridge: Cambridge University Press 2002) 461, 462. (Emphasis added).

[16] Ibid (n.10), 505 – 520.

[17] Ibid, 540 – 544.

landholders in engaging and assisting with the recovery of landscapes has been recognised in another contribution by Telesetsky. Here, she identifies a typology of private actors presently involved in ecological restoration – philanthropists, indigenous people, non-governmental organisations, public-private collaborations and corporate entities. She then critically explores the motivation behind these actors engaging in restoration activities and what it takes to push private landholders beyond the status quo that 'hinders' them from restoring large landscapes. Telesetsky proposed two potential 'government nudges' that might increase private landowner's participation in restoration efforts.

The first nudge, she suggests, includes funding and actively engaging in community and individual discussions (and planning) with private landholders. What comes out strongly from this is that ongoing discussions should involve private landholders in a dynamic process of reflecting on what is happening regarding the ecology of their land and their land-use practices. The second nudge is that 'special purpose districts' be created to actively bring together a range of private and public landholders in a region and to support them in engaging with each other around their region's ecological conditions. She argues that by designation of districts, the government may be able to facilitate community-level restoration work.

Undoubtedly, the law is essential in implementing restoration because decisions are made about which species will be rescued, which land and seascapes will be rehabilitated, and which other ecological processes will continue functioning through regulation and other governance mechanisms. Building on the idea of 'ecoscape thinking' and proposals for policy changes that could advance (and mainstream) ecological restoration into long-term sustainability law and policy, Richardson and Ted Lefroy[18] have identified ways of improving the governance of ecological restoration, drawing mainly from Australian experiences. Their

[18] Benjamin J Richardson and Ted Lefroy, 'Restoration Dialogues: improving the governance of ecological restoration' (2016) 24(5) *Restoration Ecology* 668.

conceptualisation of ecological restoration 'governance' is not simply the official regulation of ecological restoration but rather a more comprehensive, multi-actor process by which societal norms, knowledge, and institutions serve to mediate and advance their collective interests toward desired goals.[19] Richardson and Lefroy believe that ecological restoration activities should be conceptualised as a form of governance, as this lens best captures the multi-actor, collaborative processes by which societies, through governments and private (non-state) entities, seek to achieve environmental outcomes. The crux of their argument is that:

> Successful restoration governance requires addressing questions of scale, scientific knowledge, sociocultural context, financial resourcing, and institutional tractability, which together can best lead to long-term stewardship of a restored ecosystem.[20]

Richardson and Lefroy attempt to distil some key governance challenges for ecological restoration. First, they argue that the sheer scale of ecological restoration, both spatially (i.e. expansive land and seascapes) and temporally (i.e. from deep past to distant future), is a formidable obstacle to its governance: as the scale enlarges, 'it may require involvement of multiple levels of government, in addition to participation by more nongovernment entities – which engenders challenges identified in multilevel governance theory regarding more complex negotiations, introduction of rival policy goals, and difficulties in coordination of many actors'.[21] Second, restoration's 'sociocultural acceptability' challenge is not just about 'consulting', 'engaging' or 'mobilising' local communities in ecological restoration.[22] They argue that communities may need to be intimately involved in the inception and design of ecological restoration projects, including the choice of goals and governing principles.

---

[19] Ramesh Thukur and Luk van Langenhove, 'Enhancing global governance through regional integration' (2006) 12 *Global Governance* 233-240.

[20] Ibid (n. 18), 668.

[21] Ibid, 669.

[22] Dave Egan and others, *Human Dimensions of Ecological Restoration: Integrating Science, Nature, and Culture* (Island Press 2011).

Third, ecological restoration often requires significant capital and labour, especially when toxic contamination must be removed from the environment.[23] The three primary financial sources for ecological restoration are (i) government expenditure or private expenditure under government obligations, such as regulatory requirements or conservation covenants; (ii) voluntary philanthropic money, such as to support community projects; and (iii) commercial approaches which include selling biodiversity and carbon offsets, ecotourism opportunities or altruistic gestures of corporate social responsibility.[24] Fourth, institutional tractability broadly refers to how governance mechanisms dovetail with the existing machinery and are thus potentially more efficacious.[25] Richardson and Lefroy, similar to Telesetsky, conclude by suggesting ways of improving the governance of ecological restoration given the critical governance challenges, notably that 'governance needs adaptive flexibility to monitor performance and make adjustments'.[26] To them, '[t]he greatest untapped financial resource for restoration is the private sector, and specifically, its capacity to use commercial opportunities such as biodiversity offsets, wildlife sanctuaries, ecotourism, and sustainable harvesting of natural resources.'[27]

However, environmental law worldwide dwells on nature's future rather than the past. Rarely does the law seek to repair (or restore holistically) the ubiquitous degraded landscapes and ecosystems in our midst despite emerging duties on states to do so under international environmental law.[28] Some of these interventions are found in 'sporadic acknowledgements of

[23] Benjamin J Richardson, 'Resourcing ecological restoration: the legal context for commercial initiatives' (2016) 24(5) *Restoration Ecology* 686-691.

[24] Ibid (n. 18), 670.

[25] Ibid, 671.

[26] Ibid.

[27] Ibid (n. 18), 672.

[28] Anastasia Telesetsky, An Clique and Afshin Akhtar-Khavari (eds.), *Ecological Restoration in International Environmental Law* (Routledge, 2017) 143-172.

ecological restoration in transnational law',[29] such as in the Convention on Biological Diversity[30] and the European Union Habitats Directive.[31] However, Akhtar-Khavari and Richardson argue that to the extent that environmental law looks to the past to undo some of our mischief, it tends to intervene only in spatially and temporally narrow parameters.[32] According to them, ecological restoration 'remains poorly acknowledged in most environmental laws and policies…and the scale of restoration still falls well short of what is necessary in a present age often described as the Anthropocene'.[33]

Richardson applies and extends these views in another of his contributions, which dwells on nature's recovery. He argues that our laws and governance institutions usually focus on current environmental harms and forget that our past carelessness has already compounded current conditions, which sustainability cannot effectively reverse.[34] Instead, according to him, the law concedes an economic form

> of *environmental* restoration, such as obliging remediation of a former mine or emergency response to a pollution spill, with the aim to return such places to productive use such as housing or farming…the truncated spatial and temporal dimensions of such interventions, while locally beneficial, do not regenerate ecosystems across landscapes or seascapes, and therefore make negligible contribution to mitigating the Anthropocene.[35]

---

[29] Afshin Akhtar-Khavari and Benjamin J Richardson, 'Ecological Restoration and the law: Recovering nature's past for the future' (2017) 26(2) *Griffith Law Review* 147.

[30] Convention on Biological Diversity, Rio de Janeiro, 5 June 1992 (1992) 31 *ILM* 818 (from now on 'CBD').

[31] Habitats Directive, Council Directive 92/43/EEC of 21 May 1992, article 1(a), annexe III, A(c) and B (b), (from now on 'Habitats Directive').

[32] Ibid (n. 29), 147; Afshin Akhtar-Khavari and Benjamin J Richardson, 'Ecological Restoration and the Anthropocene' in Afshin Akhtar-Khavari and Benjamin J Richardson (eds.) *Ecological Restoration Law: Concepts and Case Studies* (Routledge, 2019) 1 – 26.

[33] Ibid (n. 29), 148.

[34] Benjamin J Richardson, 'Restoring layered geographies: ecology, society and time' (2017) 26(2) *Griffith Law Review* 154.

[35] Ibid (n. 34), 156.

Richardson attempts to unveil how state-based and socially driven governance does and ought to address the ecological, social, and temporal layers of our geographies. He argues that restoration must also 'have a social dimension that reconnects people culturally and ethically' to nature beyond the conceptualisation of restoration as a scientific or technical endeavour in which damaged ecological elements and processes are reconstituted.[36] Drawing on examples of legislative frameworks for ecological restoration in Australia[37] and Canada,[38] Richardson highlights three specific problems in legislation that diminish its capacity to facilitate meaningful restoration, which include: (i) the use of inconsistent terminology, such as 'remediate', 'repair', 'rehabilitate', and 'restore'; (ii) legislation rarely articulates the *purpose* of restoration, *priorities* for restoration and performance *criteria* for impact assessment; and (iii) the lack of bespoke tools for undertaking restoration, including community engagement.[39] Beyond assessing current ecological restoration laws, his work broadens our 'temporal vision' by helping us to think about restoration as a means of dealing with our long-term impact on the natural world. He concluded with reflections on how best to improve the governance of ecological restoration to address the 'intertwined' ecological, social and temporal layers.[40]

These inquiries will be conducted to learn more about how the Nigerian legal and governance frameworks can be enhanced to repair the ecological damage caused by oil spills in the Niger Delta. The results will show that Nigeria has severe issues that must be fixed in its oil spill cleanup methods. The analysis's most important takeaway is recognising that community involvement is crucial to good governance in ecological restoration.

[36] Ibid, 157.

[37] Environment Protection and Biodiversity Act 1999 (Cth)

[38] Canadian Environmental Protection Act S.C. 1999, C. 33.

[39] Ibid (n. 34), 161 – 162.

[40] Ibid (n. 34), 167 – 171.

This thesis will examine the adequacy or otherwise of ecological restoration law in Nigeria by distinguishing ecological restoration from environmental remediation law and developing a conceptual framework of what is required for successful ecosystem restoration governance. This research argues that legal reforms for future ecological restoration laws must explicitly incorporate participation mechanisms so that public authorities will understand that community involvement is an indelible requirement of successful restoration governance.[41] Restoration ecology provides crucial guidance on the biological feasibility criterion when considering whether or not to reintroduce a species or how to restore a habitat so that it can support wildlife. Ecological restoration work is a guessing game if the necessary scientific expertise needs to be improved. However, as numerous case studies worldwide demonstrate, restoration objectives and methods are value-laden selections due to incorporating human preferences and beliefs.

Finally, the law must have proper terminology, mandates, and implementation mechanisms to meet the aforementioned criteria. Regarding Nigeria's legal institutions and policy frameworks, legal mechanisms must give [ecological] restoration tractability.[42] As argued in more detail in the thesis, the law should articulate a duty on government regulatory agencies to engage in ecosystem restoration in practicable situations.

1.3 RESEARCH QUESTION

This thesis seeks to answer the following research question:

- To what extent does Nigeria's current law and governance framework for oil spill remediation meet the essential ecological restoration criteria?

[41] Ibid (n. 18), 668 – 673.

[42] Benjamin J Richardson, 'The Emerging Age of Ecological Restoration Law' 25(3) (2016) *Review of European Comparative and International Environmental Law* 277, 278.

To answer the above research question, the thesis poses a series of sub-questions, the examination of which contributes to the resolution of the central research question. Here are some related research questions:

- What regulatory problems are associated with Nigeria's oil spill remediation and ecological damage?
- Where the existing law and governance framework for oil spill remediation is ineffective, what alternative approaches could be proposed?
- What is ecological restoration, and what exactly are its fundamental requirements?
- Does Nigeria's existing law framework meet the essential ecological restoration criteria?
- How can local communities in Nigeria effectively participate in ecological restoration, thanks to the country's law and governance framework?

1.4 RESEARCH METHODOLOGY

Successful ecological restoration governance requires the active participation of the local community as a necessary component of the effective governance of ecological restoration projects. Thus, the thesis investigates whether the current legal and governance framework for oil spill remediation meets the essential criteria for ecological restoration and what alternative approaches could be proposed. In light of this, the thesis will use a combination of methods to provide definitive solutions to the above research questions. Essentially, the thesis will combine doctrinal and some elements of comparative legal analysis. There is broad consensus on the fundamental tenets of doctrinal research, and the doctrinal approach 'has been the dominant legal method in the common law world [from

which the Nigerian legal system derives].'[43] Doctrinal scholarship must critically analyze all applicable legislation and case law to arrive at a statement of the law applicable to the issue.[44]

The doctrinal portion of the thesis will attempt to conduct a gap analysis that can be used to recommend and design a regulatory framework for the Nigerian oil and gas sector that is in line with international best practices in ecological restoration governance. This section of the research will focus on two overarching questions: (a) what are the regulatory problems associated with oil spill remediation and ecological damage in Nigeria, and (b) where the existing law and governance framework for oil spill remediation is lacking, what alternative approaches could be proposed? To provide concrete answers to these questions, the research will conduct an in-depth examination of the existing regulatory frameworks in Nigeria that pertain to the environmental impacts of the oil and gas sector. A review of the best practices in the field and a gap analysis between the existing and proposed frameworks. This is accomplished by considering and adapting to local conditions while learning from global best practices.[45]

This thesis will look into some relevant laws, regulations, and policies that may help restore oil-damaged ecosystems in the country. This thesis will argue that legal provisions for responding to oil spills existed in Nigeria before the modern era. However, the data shows a piecemeal approach, with scant proof of ecological restoration as a central tenet of Nigerian environmental law, limited implementation mechanisms for restoring ecosystems, and a pervasive failure to define ecological restoration clearly within environmental legislation.

---

[43] Terry Hutchinson, 'The Doctrinal Method: Incorporating Interdisciplinary Methods in Reforming the Law' 3 (2015) *Erasmus Law Review* 130, 131.

[44] Terry Hutchinson, 'Vale Bunny Watson? Law Librarians, Law Libraries and Legal Research in the Post-Internet Era' (2014) *Law Library Journal* 579, 584.

[45] See Agenda 21: UN Conference on Environment and Development, UN Doc. A/CONF.151/6/Rev. 1 at para. 8.13 states that: '[l]aws and regulations suited to country-specific conditions are among the most important instruments for transforming environment and development policies into action […]'

Even though most laws, regulations, and policies are aimed more broadly at environmental remediation than ecological restoration, there are times, especially now, when more robust legal structures with practical implementation are needed. The thesis accomplishes this by extensively researching pertinent statutes, regulations, case laws, and scholarly literature.

The comparative legal method is seen as a way of looking at legal problems through comparison 'to gain insights that would be denied to one whose study is limited to the law of a single country'.[46] Traditional comparative law studies have focused on contrasting various countries' legal systems. As Elisa Morgera put it, the 'comparative method can be applied differently to different levels, forms, stages, or aspects of regulation'[47] is generally accepted. We will use this to examine how Nigeria's law and governance structure falls short of what is needed to restore the environment. The 'difficult task of drafting environmental law in a developing country [like Nigeria]'[48] highlights the importance of this conceptual framework. The comparative approach has been widely used to evaluate and suggest improvements to laws and practises, but there are other reasons for its importance. The study will argue that global standards for ecological restoration 'could help leverage national law reform' and provide helpful guidance, making it crucial to investigate international and comparative contexts in ecological restoration law and governance.[49]

[46] See Rudolph B Schlesinger and others, *Comparative Law* 6th ed (University Casebook Series, 1998) 2.

[47] Elisa Morgera, *'*Global Environmental Law and Comparative Legal Methods' 24(3) (2015) *Review of European, Comparative and International Environmental Law* 254, 257.

[48] William L Adreen, 'Environmental Law and International Assistance: The Challenge of Strengthening Environmental Law in the Developing World' 25 (2000) *Columbia Journal of Environmental Law* 17, 27, see also: Edward D McCutcheon, 'Think Globally, (En)Act Locally: Promoting Effective National Regulatory Infrastructure in Developing Nations' 31 (1998) *Cornell International Law Journal* 395, 407 – 408.

[49] See Anastasia Telesetsky, An Cliquet and Afshin Akhtar-Khavari (Eds.) *Ecological Restoration and International Environmental Law* (Routledge, 2017).

As such, the thesis acknowledges that the 'existing policies, laws, and institutions are not appropriately positioned [for] the requisite leverage'[50] in Nigeria's law and governance framework applicable to oil spill remediation. To that end, the thesis references some US and EU domestic laws, case laws, literature, and other relevant sources to discern such lessons. Several key points emerge in support of the contrastive selections made. The United States' membership in the common law world[51] might offer some insights 'to support environmental legal reforms'[52] in the Nigerian context.

1.5 RESEARCH NECESSITY

Due to a lack of attention in practice and academia, this study is essential for understanding the role of national approaches in ecological restoration governance in developing countries. Since this topic is so under-researched,[53] the thesis helps to fill a gap in the existing literature.[54] While this study is essential for determining the most important factors the law should consider when mandating ecological restoration, it does not pretend to provide any neatly packaged "one-size-fits-all" policy proposals to address the thorny issues that define this area of environmental law. As an alternative to the current Nigerian oil spill

---

[50] Olarenwaju A Fagbonhun, *Mournful Remedies, Endless Conflicts and Inconsistencies in Nigeria's Quest for Environmental Governance: Rethinking the Legal Possibilities for Sustainability* (Lagos: Nigerian Institute of Advance Legal Studies, 2012)10 – 11; on the significance of the 'chaos theory' on the UNEP-mandated Ogoniland restoration, see Barisere R Konne 'Inadequate Monitoring and Enforcement in the Nigerian Oil Industry: The Case of Shell and Ogoniland' 47 (2014) *Cornell International Law Journal* 181, 200.

[51] Ibid (n. 12), 131.

[52] Ibid (n. 16), 259.

[53] Ibid (n. 7).

[54] Anastasia Telesetsky, An Clique and Afshin Akhtar-Khavari (eds.), *Ecological Restoration in International Environmental Law* (Routledge 2017); Afshin Akhtar-Khavari and Benjamin J Richardson (eds.) *Ecological Restoration Law: Concepts and Case Studies* (Routledge, 2019); Anastasia Telesetsky, 'Ecoscapes: The Future of Place-Based Ecological Restoration' 14(4) (2013) *Vermont Journal of Environmental Law* 493.

remediation framework, the thesis intends to offer some general observations on the opportunities for ecosystem restoration as a pragmatic legal regime.

Not surprisingly, however, the emerging concept of ecological restoration has received less attention in Nigerian law than the narrower idea of environmental restoration.[55] Some scholarly books and journals offer overviews of Nigeria's oil pollution laws and policies.[56] Oil pollution has had devastating effects on the environment, and the plight of the people living in Nigeria's Niger Delta must be considered in the context of the country's legal and policy framework for dealing with this issue.[57] The region of Nigeria, known as the Niger Delta, has been hit particularly hard by the adverse socio-ecological effects of oil exploration. In addition, the analysis seems to be focused solely on Nigerian law regarding pollution liability and compensation for victims at this time.[58] The difficulties in enforcing environmental protection laws in the oil and gas industry are just one example of the many topics covered in legal scholarship to date.[59]

Currently, no books use ecological restoration as a lens to examine the law and policy of oil spill remediation in Nigeria or anywhere else. However, a select number of scholarly articles examine the legal and governance framework of oil spill response in Nigeria from the

[55] Ibid (n. 7).

[56] Kayode Oyende, *Oil Pollution Law and Governance in Nigeria* (Stirling Horden, 2017); Damilola S Olawuyi, *The Principles of Nigerian Environmental Law* (Addo-Ekiti: Afe Babalola University Press, 2015).

[57] See Kaniye S A Ebeku, *Oil and the Niger Delta People in International Law: Resource Rights, Equity and Environmental Issues* (Koppe, 2006).

[58] Jedrzeg G Frynas, *Oil in Nigeria: Conflict and Litigation between Oil Companies and Village Communities* (Hamburg, New Brunswick, NJ and London: LIT/Transaction, 2000) 207.

[59] Ibid (n. 20); also see Godswill Agbaitoro, Mark Amakoromo and Eddy Wifa 'Enforcement Challenges in the Protection of the Environment from Upstream Petroleum operations in Nigeria: The need for Judicial Independence' 35(3) (2017) *International Energy Law Review* 85.

perspective of ecological restoration.[60] Without such books, obtaining a thorough legal analysis of developing countries' approaches to ecological restoration is impossible. While the more developed legal systems of the global North, such as the United States,[61] The European Union and Australia, have been the primary focus of analysis of national approaches to ecological restoration, disappointingly, the perspectives of ecological restoration as practised in the developing world have been largely ignored. However, due to the differences between Western and developing countries, learning about ecological restoration practices in developing countries and how applicable comparative best practices in ecological restoration governance are becoming increasingly important. However, the current analysis needs to be improved because it does not address the practice of ecological restoration in a way that determines its success or failure without giving much attention to the other pre-conditions. This thesis seeks to address this knowledge gap by investigating the relationship between the governance of oil pollution remediation in Nigeria and the developing concept of ecological restoration law practised in developed countries' legal jurisdictions.

As Richardson puts it, because 'the scale of [ecosystem] restoration still falls well short of what is necessary in [...] the Anthropocene,'[62] ecological restoration is unquestionably the next great challenge for global environmental law and policy. The United Nations General Assembly declared 2021-2030 as the new UN Decade on Ecosystem

[60] Uzuazo Etemire and Menes A Muzan, 'Public Participation and Socio-Economic Justice in Eco-Restoration Law and Governance: The UN Environment–Ogoniland Case Study' in Benjamin J Richardson and Afshin Akhtar-Khavari (eds.) *Ecological Restoration Law: Concepts and Case Studies* (Routledge, 2019) 192.

[61] Mary Doyle and Cynthia Drew, *Large-scale Ecosystem Restoration: Five Case studies from the United States* (Island Press, 2008).

[62] Afshin Akhtar-Khavari and Benjamin J Richardson, 'Ecological Restoration and the law: Recovering nature's past for the future' 26(2) (2017) *Griffith Law Review* 147, 148; see also Margaret A Palmer and J B Ruhl, 'Aligning restoration science and the law to sustain ecological infrastructure for the future' 13 (9) (2015) *Frontiers in Ecology and the Environment* 512 – 519.

Restoration on 1 March 2019, partly because the existing restoration law is non-responsive to the ongoing challenges of restoration practices. The goal is to increase the restoration of degraded ecosystems on a massive scale as a tried and true method of combating the climate crisis, improving food security and water supply, and reversing biodiversity loss.[63] However, many countries and legal systems worldwide (including Nigeria) would require substantial investment in large-scale restoration planning at the national level because the emerging concept of ecosystem restoration in environmental law rarely has a strategic governance framework or widely accepted state practice at the international and domestic levels. Among the most prominent of these would be the modification of existing laws and the adoption of new laws to ease the process of ecological restoration, as well as the adaptation of pragmatic emerging approaches to push the agenda of restoring ecosystems forward.

However, recognising the need for restoration is only the first step, as there are many unknowns (or disagreements) about which areas should be restored first, how they should be restored, and who should do or pay for it. There are still relatively few untouched areas on Earth, but some are relatively undamaged and could be quickly revived (climate change, however, might change that). However, some places have been drastically changed by the development of sprawling cities, intensive farming, and other industries that may never regain their former glory. Ecosystem restoration is often thought possible in 'liminal spaces' severely damaged and largely undisturbed. For example, a liminal space could be a landscape that consists of human settlements interspersed with pockets of native vegetation and wildlife. However, not all liminal environments are good candidates for restoration due to factors like legal restrictions, financial costs, or cultural acceptability.

[63] UN Environment, New UN Decade on Ecosystem Restoration offers an unparalleled opportunity for job creation, food security and addressing climate change (1 March 2019) available online at https://www.unenvironment.org/news-and-stories/press-release/new-un-decade-ecosystem-restoration-offers-unparalleled-opportunity (last accessed 20 May 2020).

As countries begin ecological restoration projects to revive damaged ecosystems and adapt to climate change, the topic of national approaches to ecological restoration will grow in significance over the next decade. The overarching goal of the thesis is to improve the governance of ecological restoration by making it more future—and past-focused.

1.6 THESIS OUTLINE AND STRUCTURE

The thesis is divided into seven chapters, each addressing a specific issue, while Chapter Seven is the overall conclusion of the thesis. Though separate, Chapters Two, Three, Four, Five, and Six collectively formed a critical analysis of the research theme. To begin with, Chapter Two establishes the foundational issues of environmental despoilation in the Nigerian context and starts the discourse to determine whether the current legal and governance frameworks for oil spill remediation are compatible with the tenets of ecological restoration. To achieve this, Chapter Two revisited Nigeria's oil industry's environmental impact in light of recent findings.[64] Several studies on the ecological situation in Nigeria's Niger Delta illustrate the detrimental effects of oil spillage on the surrounding environment.[65] Because of the frequent oil spills, many local communities have been virtually wiped out, the drinking water has been tainted, and the soil composition, vegetation, and ecosystems have been irreparably changed. The contamination of coastal environments brought on by offshore spills, which are significantly larger in scale, has led to a decrease in the number of fish caught in local waters. Similarly, oil spillage has led to the destruction of the mangrove forests. The rainforest, formerly extended across 7,400 square kilometres, has been eradicated.

---

[64] Ibid (n. 3).

[65] Ibid (n. 5); also see Bayelsa State Oil and Environmental Commission, *An Environmental Genocide: The human and environmental cost of Big Oil in Bayelsa, Nigeria* (London, May 2023) AN ENVIRONMENTAL GENOCIDE (bayelsacommission.org) (last accessed 2 August 2023).

Thus, in seeking to determine whether the current legal and governance frameworks for oil spill remediation are compatible with the tenets of ecological restoration, Chapter Two illustrated the fact that decades of extracting, polluting, and [un]sustainable development worldwide has led to a steady decline in biodiversity and a focus on landscapes, ecosystem services, and people's livelihoods. Chapter Two re-examined the issues in the Niger Delta – which herein represents Nigeria – as an example of a country negatively impacted by decades of polluting and developing in the most environmentally unfriendly manner. More specifically, Chapter Two investigated the background, causes, and effects of environmental change caused by oil exploration and production activities in Nigeria — the Niger Delta region was the geographical focal point of this thesis.

In the quest to understand some of the regulatory problems associated with Nigeria's oil spill response and ecological challenges, the primary argument was that the economic interests in Nigeria's oil industry from oil production revenue earnings have not been balanced against the environmental concerns (i.e., oil-induced pollution) in the Niger Delta, but this needs to change. In the same way that global economic expansion has not benefited all of humanity, Nigeria's oil industry has not been of any assistance to the people of the Niger Delta or their environment. Chapter Two paints a picture of the current ecological situation in Nigeria's Niger Delta and illustrates the detrimental effects of oil spillage on the surrounding environment, which is highly condemnable. Chapter Two re-emphasises the fact that Nigeria has severe issues that must be fixed in its oil spill response, invariably begging the question of how the legal and governance frameworks can be enhanced to repair the ecological damage caused by oil spills in the Niger Delta.

Moving on from Chapter Two, Chapter Three outlined a more nuanced conceptual framework for ecological restoration, a topic of significant importance in environmental law and governance. The potential impact of Chapter Three was vital in determining the adequacy

or otherwise of ecological restoration law in Nigeria, as it provided a helpful understanding of possible links between science and the law of ecological restoration and matched advancements in scientific research in the governance of ecological restoration.[66] Chapter Three presented a conceptual framework of an alternative approach that generally defines the parameters of ecological restoration governance. This framework helped determine the objective of the thesis, improving our understanding of ecological restoration as a concept of international environmental law in Chapter Four and serving as the theoretical basis for examining more concrete legal and practical reforms regarding Nigeria's oil spill response moving forward. Chapter Three, therefore, served as a crucial theoretical and conceptual foundation for examining more concrete legal and practical analysis.

In a quest to determine whether the current legal and governance frameworks for oil spill remediation are compatible with the tenets of ecological restoration, Chapter Three sought to provide a better theoretical understanding of ecological restoration in general. The four-quadrant model for ecological restoration serves as a sound theoretical framework that allows ecological issues to be viewed from multiple perspectives and categorises these values into ecological, personal, socio-economic, and cultural values. Having established a theoretical understanding of the value of ecological restoration, Chapter Three further clarified the relationship between ecological restoration on the one hand and remediation, rehabilitation and reclamation on the other hand. The most crucial difference between ecological restoration and these other nature recovery concepts is that the latter focuses on actions and processes that strive to return an ecosystem to pre-existing or historical ecology. The scientific elements of ecological restoration were then discussed, followed by an analysis of the human dimensions of ecological restoration.

[66] Margaret A Palmer and J B Rulh, 'Aligning restoration science and the law to sustain ecological infrastructure for the future' 13(9) (2015) *Frontiers in Ecology and the Environment* 512 – 519.

However, despite the promise of ecological restoration, several environmental philosophers have offered criticisms against the very idea of ecological restoration. Nevertheless, beyond the criticisms, there is a clear need for continued advances in restoration science with enormous potential and exciting prospects for recovering damaged ecosystems. In addition to the four main scientific attributes of restoration analysed, it is essential for ecological restoration also to recognise that it is not simply a scientific phenomenon, but other 'human dimensions' are equally crucial. As the scale of restoration enlarges, it will likely require the involvement of several levels of government, as well as participation from non-state actors, which together produce additional challenges identified in multilevel governance theory, including more complex negotiations, integration of rival policy goals, and coordination of many actors across various tenures towards the joint effort.[67]

Therefore, a more ambitious environmental planning and management system scaled at a landscape level is required to transcend the artificial jurisdictional boundaries of subnational and provincial governments.[68] Importantly, future ecological restoration laws must explicitly incorporate participation mechanisms so that public authorities will understand that community involvement is an indelible requirement of successful restoration governance. With a better understanding of what ecological restoration entails, as in Chapter Three, Chapter Four builds on that understanding, examines the status of ecological restoration in current international environmental law and attempts to identify some principles of international environmental law that could guide the implementation of national ecological restoration approaches moving forward. Although ecological restoration is

[67] Alice Cohen, 'Rescaling Environmental Governance: Watersheds as Boundary Objects at the Intersection of Science, Neoliberalism and Participation' 44 (9) (2012) *Environment and Planning A: Economy and Space* 2207 – 2224.

[68] Michael Vincent McGinnis (ed.) *Bioregionalism* (London: Routledge, 1999).

featured in several soft law agreements, it argued that international environmental law has yet to provide adequate goals, objectives, and principles to drive restoration initiatives and obligations.

Much like domestic law, ecological restoration has not received much attention in international environmental law scholarship until quite recently.[69] However, several multilateral environmental agreements, non-binding declarations and action plans require states to engage in restoration activities. Despite the promise of ecological restoration, its status in the global environmental governance system remains a contentious issue in academic discussions. Nevertheless, the international law context of ecological restoration in Chapter Four was essential to achieving the research objective herein because global standards for ecological restoration could help leverage national legal reforms and provide guidance on best practices. Fundamentally, the question here is why Nigeria, or any other country, should be concerned with applying ecological restoration in their domestic environmental law and governance. The success and sustainability of ecological restoration are deeply intertwined with a widespread respect for nature, an emotional affinity with it, and a significant level of environmental education within the community. This is because ecological restoration projects are typically long-term, and humans have a pivotal role in shaping their ecosystems. Understanding the concept of ecological restoration is crucial in determining the compatibility of Nigeria's legal and governance frameworks for oil spill remediation with its principles. On this basis, Chapter Three delved into the theoretical considerations around ecological restoration, its values, essential components, differences from other ecosystem recovery approaches, and the primary criticisms and responses.

[69] J. Aronson and S. Alexander, 'Ecosystem Restoration is now a Global Priority: Time to Roll up Our Sleeves' (2013) 21(3) *Restoration Ecology* 293.

Building on this theoretical and conceptual framework, Chapter Four explored the status of ecological restoration in current international environmental law. Chapter Four also identified some principles of international environmental law that could guide the implementation of national ecological restoration approaches. Thus, several international law instruments directly or remotely referring to ecological restoration were utilised to accomplish this goal. Some of the international law instruments include the 1982 United Nations Convention on the Law of the Sea (UNCLOS), broadly categorised as a species recovery treaty, the Ramsar Convention on Wetlands, and the Convention on Biological Diversity (CBD) as exemplars of habitat restoration treaties, as well as decisions of the Conference of the Parties to these treaty regimes and academic literature. Conference of the Parties (COP) decisions of international environmental conventions, such as the CBD and others discussed, are hotly contested for their legal standing.[70] The decisions made by the COP are only politically binding on the Convention parties, in any case. Nigeria is a state party to these international treaty regimes, and, as such, efforts were made to understand why Nigeria, like other nations, should apply the concept in their domestic environmental law and policy.

Chapter Four looked at the history and development of ecological restoration under international environmental law and analysed the context of international law in which it exists today. Ecological restoration, species recovery treaties, and habitat restoration treaties that reflect legal commitments were all examined in this chapter as they relate to international law. Taken as a whole, these documents seem to indicate that restoring critical biodiverse habitats and important species, such as endangered species and some commercial species, is

[70] See, for instance, Jutta Brunnée, 'COPing with Consent: Law-Making Under Multilateral Environmental Agreements' 15 (2002) 15 (1) *Leiden Journal of International Law* 1 – 52; also, Annecoos Wiersema, 'The New International Law-Makers? Conferences of the Parties to Multilateral Environmental Agreements' 31 (2009) *Michigan Journal of International Law* 231 – 87.

now a customary obligation in international law. To rephrase, states may have a wish and a duty (or obligation) to restore. To answer why Nigeria should be concerned with applying the concept of ecological restoration in their domestic environmental law and policy, Chapter Four clarified the status of ecological restoration in international environmental law.[71] Assuming that a duty to restore exists under international law, the question is what, if anything, can be gleaned about the nature of that duty from international legal texts. Unfortunately, not much, especially considering how rarely ecological restoration is defined in most documents analysed.

The commitment to restore is primarily a normative requirement in legal texts, and its precise contours are left to be determined by each country. For ecological restoration to be successful, at the very least, it is necessary to agree on a common goal. In light of the commitments made under the various MEAs examined in Chapter Four, ecological restoration appears to be more or less a last-ditch effort. When it is too late to stop environmental damage, the next best thing is to fix what is already broken. States have acknowledged that they have to engage in restoration when a given habitat is in a degraded state, when a particular species is threatened or endangered, or when the carrying capacity of an area drops below what is needed to achieve a maximum sustainable yield for commercially viable species. One must restore only if certain conditions are met; this is not an absolute duty, i.e., ecological restoration is only required when practical or necessary, as evidenced by the abovementioned treaty commitments.

However, the definition of feasibility currently varies from one state to the next. As a result, it is reasonable to conclude that some habitats are beyond repair due to severe degradation. It is also fair to assume that, due to shifting climatic conditions, some habitats, like certain coastal freshwater wetlands across the globe and in Nigeria's Niger Delta, might

[71] Ibid (n. 5), 141.

need to be more amenable to restoration as freshwater wetlands. Hopefully, with its expectations and ambitions, the UN Decade on Ecosystem Restoration could lead to a Protocol on Ecological Restoration to create a baseline of international requirements for efficient national planning and implementation. Therefore, Chapter Four delved into the dynamic and evolving relationship between international environmental law and the science of ecological restoration previously examined in Chapter Three. Understanding this relationship is crucial for Nigeria and other countries, as it will help better apply ecological restoration in their domestic environmental law and governance frameworks. More importantly, it will instil a sense of optimism about the potential of international environmental law to shape the future of ecological restoration.

Lastly, because nearly all ecological restoration projects and activities occur on sovereign territories governed by domestic legal systems, the potential value and influence that international environmental law principles and intergovernmental agreements can have on developing country-specific approaches to ecological restoration cannot be overstated. Thus, the relationship between Chapters Three and Four provided a clearer understanding of the dynamic yet evolving relationship between international environmental law and ecological restoration.

Based on this understanding, Chapter Five examined various national policies to fulfil international legal obligations to restore, considering the principles of international environmental law that could guide the implementation of national ecological restoration approaches, as examined in Chapter Four. Having reviewed the potential values (and influence) of international environmental law principles and intergovernmental agreements on the need to develop country-specific approaches, Chapter Five examined some national and – in the case of the European Union – regional policies to fulfil international legal obligations to restore, as discussed in Chapter Four hitherto. Chapter Five explored lessons

from crucial legislation, case law, and US and European Union literature.[72] The aim was to identify general legal patterns for responding to the ecological challenges discussed in Chapter Two, thereby discerning general approaches within legal systems.

Chapter Five examined the legal and policy frameworks associated with ecological restoration in the US and EU. The chapter focuses on national (and regional) approaches because most international environmental obligations are implemented through domestic and sometimes regional mechanisms, even though most of this work is dedicated to ecological restoration in Nigeria. This is especially true because ecological restoration is always ecosystem-specific. Thus, Chapter Five provides a crucial step in determining the vital factors the law could consider when mandating ecological restoration. As is the case with the thesis broadly, Chapter Five does not pretend to provide any neatly packaged one-size-fits-all lessons to address all the myriad of horny issues that characterise this area of environmental law in Nigeria. Instead, it re-emphasises that the law should articulate a duty on government regulatory agencies to engage in ecosystem restoration in practicable situations. That means ecological restoration laws must explicitly incorporate participation mechanisms so that government regulatory agencies understand that community involvement is an indelible requirement for successful restoration governance.

Chapter Five argued that the United States and EU systems include some of the best practices in ecological restoration. At the outset, despite its wealth and power, the US lost 53 per cent of its mainland wetlands, while degraded lakes and rivers totalled 4.3 million acres and 3.2 million miles. Besides, ecological restoration is seen as the proper legal response by the United States and the European Union to environmental degradation, typically caused by oil pollution or the destruction of wetland habitats. As demonstrated previously, several US

[72] Hendrik Schoukens, 'Habitat Restoration on Private Lands in the United States and the EU: Moving from Contestation to Collaboration? 11(1) (2015) *Utrecht Law Review* 33, 34.

environmental regulations mention the obligation to restore, and ecological restoration concepts have become increasingly crucial in US statutes and agency practices in recent decades. The United States, as we now know, has additional legislation allowing federal agencies to recover civil or criminal costs for environmental damage, which can be put toward restoring resources in addition to the legislation discussed. Arguably, these can be used to compare the Nigerian system to its needs and make changes where necessary.

Further, the legal and policy frameworks in the EU that are associated with ecological restoration were analysed. As a supranational organisation, the EU has enforcement powers, essential competencies, concrete policy targets, and legislation on ecological restoration that could benefit Nigeria. In addition to the core nature legislation examined, the EU has some other relevant instruments for ecological restoration. Against the backdrop of the current ecological situation in Nigeria's Niger Delta and the detrimental effects of oil spillage on the surrounding environment, which, as Chapter Two illustrates, is highly condemnable, Chapter Six – tying up the analysis in Chapters Three, Four and Five – explored the aspects of Nigeria's law and governance frameworks that are not operating as smoothly as they should and the modifications that could or should be made to strengthen those systems.

In Chapter Six, the thesis will answer the overarching research question, i.e., whether Nigeria's law and governance frameworks are consistent with the fundamental principles of ecological restoration under international environmental law – as examined in Chapter Four and the US and EU, as analysed in Chapter Five. Chapter Six analysed the pertinent laws, regulations, and policies that may contribute to restoring oil-damaged ecosystems and habitats in Nigeria. The purpose of carrying out these investigations is to determine whether there are approaches by which Nigeria's legal framework could be improved within the context of restoring damaged ecosystems in the Niger Delta in Chapter Two. Despite broad legal and governance mechanisms, the analysis in Chapter Six reveals a piecemeal approach,

with little evidence of ecosystem restoration nor its recognition as a fundamental pillar of Nigerian environmental law. There was also evidence of limited implementation mechanisms and a pervasive failure to define ecological restoration clearly in any of the statutes analysed. Even where restoration is sought, the legal structures sometimes need to be more robust with practical implementation, even though most of these regulations and associated policies broadly aim for environmental remediation rather than ecological restoration. With this in mind, it is abundantly clear that new approaches are required to improve the restoration of ecosystems from decades of cumulative oil-induced environmental change.

Chapter Six focused on ascertaining how local communities in Nigeria can effectively participate in ecological restoration, thanks to the country's law and governance framework. These findings demonstrate some fundamental problems with Nigeria's oil spill response legal and governance frameworks and point to significant potential for improvement. Indeed, these findings offer some hope for a more effective governance framework in light of the emerging concept of ecological restoration. In summary, this research argues that legal reforms for the governance of ecological restoration in Nigeria must explicitly incorporate participation mechanisms so that public authorities will understand that community involvement is an indelible requirement of successful restoration governance. Given the current situation, however, new ecosystem restoration laws and governance frameworks are needed to improve recovery from decades of cumulative oil-induced ecological change in Nigeria's Niger Delta.

1.7 CONCLUSION

The scope of this research has been established in this chapter by, among other things, providing a background to the fundamental issues that touch on the significance of the research globally and locally. The next chapter examines the impact of decades of oil

pollution in Nigeria on developing in the most environmentally unfriendly manner. The chapter will investigate the background, causes, and effects of environmental change caused by oil exploration and production activities in Nigeria. Following this discussion of a fundamental understanding and analysis of the sources and impacts of oil-induced ecological damage in Nigeria in Chapter Two, we will consider how we might achieve the research objectives earlier articulated in this chapter, i.e., to examine the adequacy or otherwise of ecological restoration law and governance in Nigeria.

CHAPTER TWO

REVISITING THE HISTORY, SOURCES AND IMPACTS OF OIL-INDUCED ECOLOGICAL CHANGE IN NIGERIA

2.1 INTRODUCTION

Over the past 50 years, Nigeria's economy has significantly improved because of oil and gas resource exports derived from the Niger Delta region. In Nigeria, however, the legal context for oil spill response narrowly focuses on the remediation (or rehabilitation) of contaminated lands with no reference to ecosystems. In other words, the legal and governmental frameworks only mandate remediation of specific oil spill sites within narrow spatial and temporal parameters, mainly ignoring the restoration of flora and fauna populations depleted by oil pollution and unsuccessful remediation efforts. This thesis seeks to understand to what extent Nigeria's current law and governance framework for oil spill remediation meet the essential ecological restoration criteria. As this thesis argues, oil spill remediation laws tend to prioritise environmental remediation over a more holistic ecosystem restoration, with a few notable albeit limited exceptions. Despite repeated remediation attempts, official statistics and anecdotal evidence confirm widespread ecological degradation due to inadequate legal and governmental responses to oil spills.

Therefore, in seeking to determine whether the current legal and governance frameworks for oil spill remediation are compatible with the tenets of ecological restoration, this chapter will illustrate the fact that decades of extracting, polluting, and [un]sustainable development worldwide has led to a steady decline in biodiversity and a focus on landscapes, ecosystem services, and people's livelihoods. This chapter will re-examine the issues in the Niger Delta – which herein represents Nigeria – as an example of a country negatively impacted by decades of polluting and developing in the most environmentally unfriendly

manner. The chapter will investigate the background, causes, and effects of environmental change caused by oil exploration and production activities in Nigeria. The investigation will begin with this premise as its point of departure and will centre on the Niger Delta region, which is the geographical focal point of this thesis.

Essentially, this is achieved by drawing on key academic and policy literature, including the 2011 UNEP Environmental Assessment of Ogoniland report, which represents the first and perhaps the most systematic scientific information currently available on the nature and extent of oil contamination and ecological change as a result of decades of exploration and production activities in Nigeria.

2.2 SETTING THE AGENDA: BETWEEN ENVIRONMENT AND ECONOMIC DEVELOPMENT

The world's population has exploded, its economy has developed, and its environment has deteriorated at an unprecedented rate in recent decades. In contrast, the world's population has grown from around 6 billion in 1999 to about 7 billion in 2020.[1] Economic growth has been phenomenal, with an average annual increase in global GDP of 2.9 per cent between 1981 and 1990 and 2.5 per cent between 1991 and 2000.[2] Many countries have been buoyed by this growth's output, which has facilitated progress in the present day. However, the developed countries, which account for about 20 per cent of the world's population but consume 80 per cent of its resources, means that global GDP growth has not benefited all of humanity. In contrast, most people in developing nations like Nigeria barely scrape by. Because of this consumption gap, wealthy nations are encouraged to be

[1] World Bank, *United Nations Population Division World Population Prospects: 2019 Revision*. Available at: https://data.worldbank.org/indicator/SP.POP.TOTL?end=2019&start=1960 (last accessed 24 January 2023).

[2] United Nations, *World Economic and Social Survey 2000: Trends and Policies in the World Economy* (New York: United Nations, 2000).

wasteful and greedy, while developing countries are locked in a desperate struggle for economic survival.

Confoundingly, the unsustainable use of the Earth's resources directly results from the assault on natural resources, destroying ecosystems.[3] Realising that our resource usage is unsustainable has contributed to a shift in human understanding of development away from narrow economic interests, in the case of Nigeria, oil-generated revenue, and toward a more holistic perspective that includes human, social, and environmental factors. This acknowledgement also highlights the importance of managing economic growth in consideration of the needs of both current and future generations and the ecological impacts of development. Nigeria is parred for the course regarding the connections between economic growth and environmental sustainability. Nigeria's land, terrestrial, and marine resources have enormous economic and social value. Still, their exploitation must be balanced against an equally critical need for a healthy, clean environment due to the country's massive population, which currently stands at roughly 200 million people.

Especially in the Niger Delta, where oil exploration has been going on for the past sixty years, the oil industry's rapid expansion in Nigeria has devastated the local ecosystems and economy. Oil spills, gas flaring and venting, the discharge of petroleum-derived hazardous wastes, contamination of controlled water sources, contamination of soil and sediments, and the destruction of entire landscapes and marine ecosystems are some ecological problems associated with the oil industry.[4] Large quantities of petroleum-derived hazardous waste streams, such as oily and toxic sludge, failed equipment, operational discharges, and sabotage of oil facilities, are primarily to blame for these environmental

[3] James K Boyce, *The Political Economy of the Environment* (Edward Elgar, 2002)

[4] Kingsley Eghonghon and others, 'Environmental implications of petroleum spillages in the Niger Delta region of Nigeria: A review' 293 (1) (2021) *Journal of Environmental Management* 112872.

problems.[5] Additionally, illegal oil bunkering and theft pose serious ecological threats, exposing people to health risks and accidental discharges from abandoned oil wells that were not adequately decommissioned.[6] Sadly, the last sixty years of oil exploration have resulted in the massive introduction of toxic contaminants – mostly from petroleum-derived hydrocarbons – into the delicate ecosystems, a high reoccurrence of oil spills that have resulted in an enormous decline in aquatic life, and, most significantly, the extreme prevalence of gas flaring that has led to air pollution, untold impacts on human health, and loss of biodiversity and ecosystem services.[7]

Oil-induced pollution has had both short-term and long-term adverse effects on the ecology of the Niger Delta, endangering human lives and posing a threat to the quality of drinking water, as well as killing off countless species of fish and other marine life, depleting soil fertility, and stunting the growth of plants and crops. The scope and history of oil production in Nigeria, including the ecological makeup of the Niger Delta and the nature and sources of oil-induced pollution, will be laid out in this chapter. The ecological, human health and socio-economic effects of oil extraction and pollution in Nigeria's Niger Delta are investigated further in this chapter. The purpose of re-evaluating these issues, which are by no means new, is to demonstrate how significant the oil industry is to Nigeria's economy and to make the case that the benefits to the economy have not been adequately weighed against the risks to the environment – i.e., balancing oil production revenue on the one hand and oil-induced pollution on the other. Against this background, the next section will present a historical account of oil exploration and production in Nigeria.

---

[5] Ambrose O Ekpu, 'Environmental Impact of Oil on Water: A Comparative Overview of the Law and Policy in the United States and Nigeria' 24 (1) (1995) *Denver Journal of International Law & Policy* 55.

[6] Aniefiok E Ite and others, 'Petroleum Exploration and Production: Past and Present Environmental Issues in Nigeria's Niger Delta' 1(4) (2013) *American Journal of Environmental Protection* 78, 80.

[7] Ibid (n. 4).

2.3 EARLY STAGES OF NIGERIAN OIL EXPLORATION AND PRODUCTION

In 1908, German surveyors working for the Nigerian Bitumen Corporation began prospecting for tar sand deposits in the country's southwestern corner, laying the groundwork for the country's long history of crude oil exploration. Oil exploration did not begin until around 1938, when Shell D'Arcy was granted a sole concessionary right over the entire country after these pioneering efforts were cut short by the outbreak of World War I in 1914. Again, the early oil exploration efforts of Shell D'Arcy were cut short by World War II. However, after World War II ended in 1945, Shell D'Arcy quickly got to work drilling exploratory wells for oil in Nigeria's Niger Delta, and by 1951 they had successfully discovered commercially viable oil reserves. Shell D'Arcy (later renamed Shell BP) held a near-absolute monopoly on the oil exploration industry from 1938 to 1955.[8]

The American Socony-Mobil Oil Company's subsidiary, Mobil Producing (Nigeria) Ltd, obtained an exploration licence in 1955 and began operations the following year under Mobil Exploration Nigeria Incorporated (which later changed its name to Mobil Producing Nigeria in June 1969). During the first week of January 1956, Shell D'Arcy confirmed the first commercial oil discovery in the Tertiary delta at the Oloibiri field in modern-day Bayelsa State. Near the end of 1956, a second oil field was discovered in Afam, now Rivers State. In 1958, the massive Bomu oil field was discovered in Ogoniland, southeast of Port Harcourt, in present-day Rivers State. By February of that year, Shell BP (now Royal Dutch Shell) began exporting crude oil from Oloibiri and Afam oilfields.[9] The same year, Nigeria's

[8] M A Agomo, 'Law and Changing Policy in Nigeria's Oil Industry' in Jelili A Omotola (ed.) *Law and Development* (Lagos: University of Lagos Press, 1986) 86.

[9] Scott R Pearson, *Petroleum and the Nigerian Economy* (Stanford University Press, 1970).

first crude oil shipment to Europe was also marked, solidifying its status as a petroleum-producing nation.[10]

In addition, the oil industry was instrumental in determining the course of Nigeria's economy and politics in the early 1960s. Shell BP started giving up some of its lands in Nigeria when it won independence from British colonial rule in October 1960. Its exploration licences had been changed to prospecting grants that authorised development and production.[11] Due to the oil industry's importance to the Nigerian economy, the country rescinded its sole concession policy in favour of an exclusive exploration right to spur increased output from multinational oil corporations (MNOCs). Consequently, Amoseas, Gulf Oil Company (now Chevron), and Texaco Overseas Nigeria Petroleum Company Unlimited joined in 1961; Société Africaine des Pétroles (now Total Exploration and Production Nigeria Limited), Pan Ocean Oil Corporation, Tennessee Nigeria Limited (Tenneco), and Azienda Generale Italiana Petroli (AGIP) joined in 1962. Ente Nazionale Idrocarburi (ENI) and Philips Oil Company joined in 1964.

In addition, by 1970, the Nigerian federal government established the Department of Petroleum Resources (DPR) Inspectorate Division, and in 1971, Nigeria became a member of the Organization of Petroleum Exporting Countries (OPEC). By 1971, the Nigerian government established the Nigerian National Oil Corporation (NNOC), which by 1977 transitioned into the Nigerian National Petroleum Corporation (NNPC). In 1979, Nigeria nationalised Shell BP's entire holding and renamed Shell BP as the Shell Petroleum Development Company (SPDC) of Nigeria to gain control of the country's oil industry.[12] It is

[10] Lawrence Atsegbua, 'The Development and Acquisition of Oil Licences and Leases in Nigeria' 23(1) (1999) *OPEC Review* 57.

[11] James Bamberg, *British Petroleum and Global Oil 1950 – 1975: The Challenge of Nationalism* (Cambridge: Cambridge University Press, 2000).

[12] Anne W Genova, *Oil and Nationalism in Nigeria, 1970 – 1980* (Ann Arbour, MI: UMI, 2007).

important to note that SPDC has the most extensive acreage and produces about 40 per cent of Nigeria's oil; however, other oil companies have joined in exploration and production over the past several decades.

Since the 1970s, Nigeria's political and economic fortunes have been inextricably linked to the oil industry.[13] The oil industry is the backbone of the Nigerian economy and a significant source of foreign earnings. Crude oil is the primary source of government income, foreign exchange, and economic growth (contributing about 40 per cent to GDP).[14] Nigeria is now Africa's largest oil producer and the world's sixth-largest exporter of crude oil, with over 18 multinational oil companies engaged in oil and gas exploration and production activities in the country's Niger Delta region. As of the end of 2012, OPEC estimated that Nigeria had natural gas reserves of about 5,154 billion cubic metres and oil reserves of over 37 billion barrels.[15]

The Niger Delta region is the lifeblood of Nigeria's oil industry, as it is home to 31 massive oil and gas fields with a combined ultimate recoverable oil of more than 500 million barrels and a production rate of more than 1 million barrels per day (out of a total of about 2.1 million).[16] A defence analyst named Marius Vassiliou found that 17 of the world's largest oil and gas fields are in oceanic regions: Bomu, Oso, Ubit, Assan, Meren, Abo, Bonga, Bonga Southwest, Agbami, etc., to mention just a few examples.[17] It was in 1996 and 2001 that the

[13] Zelda A Elum, Keletso Mopipi and Adanna Henri-Ukoha, 'Oil exploitation and its socio-economic effects on the Niger Delta region of Nigeria' (2016) *Environmental Science and Pollution Research* 12880–12889.

[14] Anthony E Akinlo, 'How important is oil in Nigeria's economic growth?' 5 (2012) *Journal of Sustainable Development* 165–179.

[15] OPEC, *Annual Statistical Bulletin 2012*, (Vienna, Austria: OPEC, 2012) 1, 11; available online: http://www.opec.org/opec_web/static_files_project/media/downloads/publications/Asb2012.pdf

[16] Nuhu George Obaje, *Geology and Mineral Resources of Nigeria* (London: Springer, 2009).

[17] Marius S Vassiliou, *The A to Z of the Petroleum Industry* (Scarecrow Press, 2009).

Bonga and Bonga Southwest fields were discovered; currently, they are managed under a joint venture agreement (JVA) led by the SPDC.

However, despite the country's enormous oil-generated revenue, the Niger Delta is one of Nigeria's most underdeveloped and ecologically degraded regions and, indeed, in the world today. Decades of oil exploration and production have severely degraded the environment in what is described as 'ecological warfare' against the Niger Delta. Unsustainable oil and gas production activities and resulting ecological consequences, such as oil well blow-outs, oil spills and gas flaring, and the like, have caused irreversible ecological and economic damage to the Niger Delta region and its people.[18]

2.4.1 THE NIGER DELTA REGION

Because the Niger Delta is the location from which Nigeria obtains the vast majority of its oil, that region will be the focal point of the remaining work. In light of this, it is necessary to have a meaningful and appreciable definition of the region known as the Niger Delta, not only to understand the regulatory problems associated with Nigeria's oil spill remediation and ecological damage but first to appreciate the nature and impact of oil pollution in that country. The Niger Delta is one of the most prosperous regions in Nigeria because it contains the largest mangrove forest in Africa and the third-largest mangrove forest on the entire planet. It also has a substantial number of natural resources, the most important of which is oil. The Niger Delta is a region found on the West coast of Africa, close to the mouth of the Gulf of Guinea. It is situated in the South-South geopolitical zone of Nigeria.[19] Demographically, the Niger Delta is home to approximately 31 million people and

[18] Augustine Ikelegbe, 'Civil Society, Oil and Conflict in the Niger Delta: Ramifications of Civil Society for a Regional Resource Struggle' 39(3) (2001) *Journal of Modern African Studies* 441–442.

[19] Ibid (n. 6).

occupies about 7.5 per cent of Nigeria's total land area, equivalent to about 70,000 square kilometres.

Politically speaking, the Niger Delta region consists of 185 local government areas and the nine Nian states responsible for oil production.[20] These states are Abia, Akwa Ibom, Bayelsa, Cross River, Delta, Edo, Ondo, and Imo.[21] This region contains more than a thousand oil wells and several oil production facilities, and it is home to more than eight hundred communities focused on oil production.[22] Six of the nine states in the Niger Delta are located in the South-South zone, except for Abia and Imo, in the southeast region, and Ondo State, in the South-West region.

The Niger Delta basin has received more attention than any other river basin because of its significance to Nigeria's economy and the quantity and quality of its petroleum resources in the global crude oil market. Geographically, the Niger Delta is one of the world's largest tertiary delta systems and is responsible for significant hydrocarbon production. Curtis says the world's oil and gas reserves are found in tertiary terrigenous fills on passive continental margins. The Gulf of Mexico, the Beaufort-Mackenzie Delta in Canada, and the Niger Delta in Nigeria are home to some of the largest deposits of these types of hydrocarbons ever discovered.[23] Over the last few decades, approximately 1,182

[20] Patrick Oviasuyi and Jim Uwadiae, 'The Dilemma of the Niger Delta Region as Oil Producing States of Nigeria' 16 (2010) *Journal of Peace, Conflict and Development* 11.

[21] See: Niger Delta Development Commission (Establishment, etc.) Act 2000, CAP N68 s. 2(1) (b).

[22] Leo C Osuji and Chukunedum M Onojake, 'Field reconnaissance and estimation of petroleum hydrocarbon and heavy metal contents of soil affected by the Ebocha-8 oil spillage in Niger Delta, Nigeria' 79(2) (2006) *Journal of Environmental Management* 133–139.

[23] Doris M Curtis, 'Comparative Tertiary petroleum geology of the Gulf Coast, Niger, and Beaufort-Mackenzie delta areas' 21(3) (1996) *Geological Journal* 225–255.

exploration wells have been drilled in the Niger Delta. Data on about 400 d gas fields of varying sizes have been compiled.[24]

The dynamic ecosystem of the region featured abundant freshwater resources, a diverse collection of plant and animal life, and a wide range of habitats suitable for each of these components. The residents of these areas rely on these resources for their basic needs, such as food, shelter, medicine, building materials, furniture, and economic stability. According to several studies, the Niger Delta is considered home to a greater variety of freshwater fish species than any other coastal ecosystem in West Africa.[25] In addition, the vast forests that cover this area are home to various animal species. This will be demonstrated in the following section. It will be shown that the wetlands of the Niger Delta, where most of Nigeria's oil industry is located, are widely considered a vital ecological zone due to their extremely high biodiversity and fragility.

2.5 ECOLOGY OF THE NIGER DELTA REGION

The ecological and socio-economic effects of oil activities in the Niger Delta can be better understood by first gaining basic familiarity with the region's environment and understanding its ecological makeup. Because the area's ecological zones and the region's overall biological diversity are crucial components in understanding the ecosystem, it is essential to discuss these aspects first. There is abundant evidence to suggest that the Niger Delta is rich in renewable and non-renewable natural resources, including oil.[26] The Niger Delta, on the other hand, is home to a wide variety of non-renewable resources, such as crude

[24] Kaniye S A Ebeku, 'Biodiversity Conservation in Nigeria: An Appraisal of the Legal Regime in Nigeria in Relation to the Niger Delta Area of the Country' 16(3) (2004) *Journal of Environmental Law* 361, 362.

[25] For instance: Engobo Emeseh, 'Limitations of Law in Promoting Synergy between Environment and Development Policies in Developing Countries: A Case Study of the Petroleum Industry in Nigeria' 24 (2006) *Journal of Energy, Natural Resources & Environmental Law* 574, 582.

[26] Ibid (n. 24) 362.

oil, natural gas, gravel, sand, clay, and rare earth minerals. These natural resources are considered to be non-renewable.

In addition to a vast network of water resources, the most important renewable resources include a wide variety of economically important timber species, edible and medicinal plants, vegetables, fruits, nuts, seeds, palm wine, and other products derived from palms; a wide range of palm products; and a wide range of timber species. Certain varieties of bamboo and grass are put to productive use in the various homegrown industries found in the area. In the northern Niger Delta, you will find tropical rainforests; in the southern Niger Delta, you will find mangrove forests along the warm coast of the country. Mangrove forests and swamps, frequently submerged by salt water, are at the heart of a delicate ecosystem that is essential for the survival of critical plant and animal life and plays a vital role in the functioning of the local economy.[27]

2.5.1 Ecological Zones

According to Hutchful, the Niger Delta comprises two distinct ecosystems: a tropical rainforest in the north and a mangrove forest along the coast traversed by many rivers, tributaries, and creeks. Both of these ecosystems are distinct from one another.[28] He proposes dividing the coastal area into two parts: the place where the Niger and its tributaries empty into the sea, which is characterised by the prevalence of saltwater rivers, and the area further inland, which is characterised by the majority of freshwater rivers. On the other hand, according to the World Bank, the Niger Delta comprises four separate biomes. These biomes

[27] Collins N Ugochukwu and Jurgen Ertel, 'Negative impacts of oil exploration on biodiversity management in the Niger Delta area of Nigeria' 26(2) (2008) *Impact Assessment and Project Appraisal* 139–147.

[28] Eboe Hutchful, 'Oil Companies and Environmental Pollution in Nigeria' in Claude Ake (ed.) *Political Economy of Nigeria* (London and Lagos: Longman, 1985) 113–140.

are freshwater swamp forests, mangroves, lowland rainforests, and barrier island forests.[29] According to Ugochukwu and Ertel, the categorisation used by the World Bank appears to be more tailored explicitly than the one used by Hutchful.[30] This work aligns with the former categorisation. Freshwater swamp forests cover approximately 11,700 square kilometres of the Niger Delta region. These forests are located in the region's hinterland, away from the mangrove forests in the region's coastal areas. The floodwaters collect in an incredible number of swamps and ponds, which causes the soil to become saturated for most of the rainy season. As a result, this region is exceptionally wet and ecologically fragile. The flood plains of the western and central parts of the Niger Delta are home to the vast majority of the Delta's extensive freshwater wetland areas. On the other hand, the freshwater forest band in the eastern part of the Delta is much thinner due to the higher elevations.

Most of Nigeria's mangroves are located in the Niger Delta, covering an area of approximately 10,240 square kilometres.[31] This makes them the largest mangrove forest in Africa and the third largest globally. One characteristic distinguishing mangrove forests from other types of forests is that they are frequently submerged in salt water. First and foremost, mangrove swamps are an essential component of a delicate ecosystem that plays a vital role in the surrounding area's economy due to their benefits to the fishing industry and other ecosystem services. The lowland rainforest occupies a region of approximately 7,400 square kilometres. Even though a tiny forest is left and only a small fraction of the remaining forest is significant in size or species diversity, oil palms and occasionally mango trees can still survive thanks to swidden agricultural systems, which cover most of the land in this

[29] World Bank, *Defining an Environmental Development Strategy for the Niger Delta* (Vol II, Industry and Energy Operations Division West Central Africa Department, 1995) 55, available online at http://documents.worldbank.org/curated/en/506921468098056629/pdf/multi-page.pdf (last accessed 25 April 2021).

[30] Ibid (n. 27), 141.

[31] Ibid (n. 29).

ecological zone.[32] These systems allow for the survival of oil palms and, occasionally, mango trees.

Additionally, barrier island forests, also known as "beach ridge island" forests, make up the Niger Delta's minor ecological zone. These forests are found in the Niger Delta. This includes the mangrove swamps that are located in the estuary, as well as the wetland ecosystems that are located inland from the coast. There is a band of rainforest species on the island side of the beach ridges, and the freshwater table also creates swamp forests there. Although it has been reported that a significant portion of the forest is inaccessible and in a state of degeneration, there are still sizeable tracts of wood that are unaltered and contain exceptionally high levels of biodiversity. Take, for instance, how well-preserved the Andoni region is; this will serve as an illustration. Because there are still manageable numbers of elephants and hippos on this land, it is being considered for inclusion in a game reserve.[33]

2.5.2 Biological Diversity

The expansive forests of the Niger Delta are home to many different kinds of mammals, reptiles, birds, insects, and other kinds of invertebrates. These forests are primarily composed of mangroves and other types of freshwater swamps. The red mangrove tree, also known as *Rhizophora racemosa*, is a species that can be found in the mangrove forests of the Niger Delta. The stilt-like roots can recognise this species that it has. There are also white and black mangroves, two different types of mangrove trees. The salt fern is more at home on the higher ground of the mangrove forests, whereas the exotic spiny false date, also known as *Nypa fruticans*, is a coloniser of disturbed soil. Despite this, floodplain forests, upland rainforests, and freshwater Raphia swamps exist.

[32] Ibid (n. 27), 141.

[33] Ibid (n. 29).

The mangrove forests are home to a highly diverse array of flora and fauna, some of which include the West African Mona Monkey (*Cercopithecus mona*), the South African Speckle-throated Otter (*Hydrictis maculicollis*), and the Asian Marsh Mongoose (*Atilax paludinosus*).[34] These freshwater swamp forests are home to various primate species, including chimpanzees, the black squirrel, the antelope, and monkeys and apes.[35] The Slater's guenon (*Cercopithecus scateri*) is the only endemic mammal found in Nigeria. It is only found in the delta and the Cross River ecosystems. A greater variety of freshwater fish can be found in the Niger Delta than in any other coastal system in West Africa. In addition, the Niger Delta Wetlands Centre has uncovered 29 near-endemic fish species and 16 endemic fish species that have already been found.

In addition, the Niger Delta is home to ten of Nigeria's newly discovered species, making it one of the country's most biologically diverse regions. In addition to a diverse population of crustaceans and molluscs, the delta is home to many catfish. Some of the most common fish species in the delta include croakers, barracuda, shiny noses, and catfish. Even though there is no record of a comprehensive bird census having ever been carried out in that region, over 330 different species of birds – including parrots and the palm nut vulture – have been identified in the Niger Delta. In addition, the delta is home to many species considered to be in a state of critical endangerment in other parts of the world but are still found in relatively high numbers there. Migratory birds travelling between the northern and southern hemispheres must stop in the Niger Delta.

In conclusion, the region of Nigeria, known as the Niger Delta, is home to a diverse collection of significant plant and animal species on several scales. In addition to its

[34] Ibid (n. 24), 363.

[35] David Moffat and Olof Linden, 'Perception and Reality: Assessing Priorities for Sustainable Development in the Niger Delta' 24 (1995) *Ambio: A Journal of the Human Environment* 527.

substantial oil and gas reserves, the region is home to a rich diversity of wildlife, including many different marine species, verdant farmland, and plentiful forests. Because of the particular vulnerability of these local species to the effects of environmental change, federal law and international law, both protect them.[36] Researchers from the World Bank concluded that "the full significance of the delta's biodiversity remains unknown."[37] This is because new ecological zones and species have been discovered, and large groups of organisms, such as higher plants and birds, have not yet been investigated. According to a condensed investigation conducted by Moffat and Linden, the Niger Delta is the most productive region in Nigeria in terms of the extraction of raw materials.[38]

2.6 OIL-INDUCED ECOLOGICAL CHANGE IN THE NIGER DELTA REGION

At this point, it is essential to conduct an in-depth analysis of the causes and effects of oil pollution in Nigeria's Niger Delta to understand how appropriate legal solutions can be formulated and put into action to address the ecological predicament in the region. Indeed, there is a consensus in the scholarly literature regarding the factors contributing to Nigeria's oil pollution.[39] Notably, there are three primary sources: oil spills, gas flaring and venting, and the discharge of petroleum-derived effluents and hazardous chemicals. Each of these contributes significantly to the problem and will be examined separately.

---

[36] See, for instance, the Ramsar Convention on Wetlands of International Importance, Especially as Waterfowl Habitat, adopted 2 February 1971, in force 21 December 1975, 11 *ILM* 969 (1972) (from now on '*Ramsar Convention*').

[37] Ibid (n. 29).

[38] Ibid (n. 35), 527.

[39] Damilola S Olawuyi, *The Principles of Nigerian Environmental Law* (Afe Babalola University Press, 2015) 177; also see Ibid (n. 6).

2.6.1 Oil Spills

Since the discovery of crude oil, accidents and intentional releases of petroleum hydrocarbons into the environment have caused widespread damage. When oil is extracted from the ground, there is a risk that some of it will leak into nearby waterways or be released onto the land by accident. This is known as an oil spill, which poses a significant threat to the surrounding environment. Unfortunately, the ecological devastation caused by oil spills is widespread, and the Niger Delta is not an outlier.[40] Since the 1950s, oil spill incidents have adversely affected several communities in the Niger Delta. These incidents are connected to petroleum exploration and production activities. They are caused by the accidental or negligent rupture or blow-out of wellheads, flow stations, drilling rigs, oil pipelines, and offshore platforms, among other sources. To give you an example, in April of 2010, there was one of the largest oil spills in the history of the world when 4.9 million barrels of oil continuously leaked out of a BP oil well into the Gulf of Mexico for three months. The oil spill from the Deepwater Horizon in the Gulf of Mexico was responsible for the deaths of five thousand marine mammals, one thousand sea turtles, one million coastal and offshore seabirds, and an unknown number of fish.[41]

In recent years, several catastrophes, including explosions at oil wells and intentional sabotage, have befallen the Niger Delta. Evidence shows that oil spills occurred due to events such as the Shell BP Bomu II well in 1970, the SEFRAP Obagi 21 well in 1972, the Texaco Faniwa oil well in 1980, and the Agip Oyakama pipeline leakage in 1980. These incidents

[40] Ibid (n. 27), 139 – 147.

[41] Alexander Adams, *Summary and Information Concerning the Ecological and Economic Impacts of the BP Deepwater Horizon Oil Spill Disaster*, Natural Resources Defence Council 2, 5 (June 2015), http://www nrdc.org/energy/gulfspill/files/gulfspill-impacts-summary-IP.pdf (last accessed 13 February 2023).

took place between 1970 and 1980.[42] It is estimated that 5,733 accidents occurred between 1976 and 2000, resulting in more than 2.5 million barrels of recoverable crude oil loss.[43] The total amount of oil lost to the environment was more than 1.8 million barrels. The total volume of oil spilt during this period is ten times greater than the amount released due to the disaster that occurred with the Exxon Valdez in Alaska in March of 1989. Another source claims that between the years 1993 and 2007, there were at least 35 oil spills that were reported.[44]

Even more unsettling is that some oil companies operating in Nigeria's Niger Delta have been accused of exaggerating the spilt oil. As According to the inspectorate classification guidelines of the NNPC, oil spills can be categorised as "minor," "medium," or "major."[45] This may help to explain why some oil companies only sometimes report spills. As a result of the fact that many other spills are not frequently reported, the amount of oil that has been spilt to date may be as much as ten times higher than the estimates that have been officially registered. Recent major oil spill incidents in the Niger Delta have attracted much attention from people worldwide due to the devastation they have caused to the environment, the risks they pose to human health, and the damages they have caused as a result.[46] For example, in December 2011, Shell Nigeria reported its worst oil spillage in a decade in the Niger Delta. It is estimated that 40,000 barrels of crude oil were involved in the spillage over

[42] Llyod A Daniel-Kalio and Solomon A Braide, 'The Impact of Accidental Oil Spill on Cultivated and Natural Vegetation in a Wetland Area of Niger Delta, Nigeria' 31(5) (2002) *Ambio: A Journal of the Human Environment* 441–442.

[43] Felix M Edoho, 'Oil transnational corporations: corporate social responsibility and environmental sustainability' 15(4) (2008) *Corporate Social Responsibility and Environmental Management* 210–222.

[44] Ibid (n. 39), 177.

[45] Ibid (n. 6).

[46] Peter C Nwilo and Olusegun T Badejo, 'Impacts and Management of Oil Spill pollution along Nigerian coastal areas' (2006) *Administering Marine Spaces: International Issues* 119.

a day.[47] The primary causes of the oil spill in Nigeria's Niger Delta include a combination of the following: equipment failure, oil blow-outs from flow stations, leakages from an old and corroded network of pipelines and other infrastructure, operational mishaps, sabotage and vandalism of the oil facilities by local militant groups, and a combination of these and other causes.[48]

The Department of Petroleum Resources (DPR) claims that eighty-eight per cent of oil spills can be traced back to equipment failure.[49] Even though decades of oil spills and production discharges in Nigeria's Niger Delta have had disastrous effects on land, freshwater swamps, the marine environment, and human health risks in the affected communities. In 2011, the United Nations issued a report stating that many of the adverse environmental and social effects caused by oil spillage in the Niger Delta were permanent.[50] However, ecosystems have been severely damaged due to oil spills caused by vandalism of pipelines and other facilities. This may have been the result of public apathy toward political engagement or deliberate acts of sabotage.

Hundreds of hydrocarbons can exist independently or in mixtures, and we have yet to determine how each one will influence the health of ecosystems and people. On the other hand, oil spill assessment and remediation work take a more selective approach to dealing with different classes of hydrocarbons because of their potentially harmful effects. The most significant groups, BETEX (benzene, toluene, ethylbenzene, and xylenes) and polycyclic aromatic hydrocarbons, are the subject of many published documents that contain specific

[47] John Vidal, 'Nigeria on alert as Shell announces worst oil spill in a decade' available at: http://www.guardian.co.uk/environment/2011/dec/22/nigerian-shell-oil spill (last accessed 13 February 2023).

[48] DS Olawuyi (n. 39), 178.

[49] Ibid (n. 6).

[50] United Nations Environment Programme (UNEP), *Environmental Assessment of Ogoniland* (Nairobi: UNEP, 2011).

amounts of information (PAHs). The purpose of the thesis is only to attempt to provide a summary.

The BTEX compounds contain a single carbon ring with an aromatic group, most often benzene. They have a low molecular weight and high volatility, contributing to how quickly they dissolve in groundwater. The cracking of petroleum increases the concentration of these compounds (i.e., breaking down high-molecular-weight hydrocarbons into low-molecular-weight compounds). BTEX substances are dangerous because of their mobility and toxicity and because of the ease with which they can enter the human body through the air or water. PAHs are potent air pollutants that can be found in crude oil. They can also be produced as by-products of combustion, particularly at low temperatures that prevent the combustion process from being completed. This category of pollutants is cause for concern because it has been discovered that certain PAH compounds can cause cancer, alter genetic structures, and affect embryos and foetuses.[51] For example, benzene is widely acknowledged as a carcinogen due to evidence suggesting a link between its exposure, cancer development, and other long-term health effects.

2.6.2 Gas flaring and venting

Flaring and venting gas are two standard methods to dispose of associated natural gases produced during petroleum development operations. Flaring gas refers to releasing waste natural gas into the atmosphere by burning it or using some other method. Consequently, most developed countries have significantly cut back on the amount of

[51] Godson REE Ana, Mynepalli KC Sridhar and Godwin O Emerole, 'A comparative assessment of soil pollution by polycyclic aromatic hydrocarbons in 2 Niger Delta communities, Nigeria' 3(3) (2009) *African Journal of Pure and Applied Chemistry* 31–41.

petroleum-associated natural gas that is flared and vented.[52] On the other hand, in developing countries such as Nigeria, a significant amount of gas is wasted by being burned in flares. In countries like Nigeria that do not have modern gas processing and transportation infrastructure, large quantities of associated gas are typically burned off as waste gas using flaring. Nigeria's gas flaring and venting reduction strategies have needed to be more effective over the past few years.[53]

Flaring gas contributes to the acceleration of global warming. The current state of affairs places Nigeria in the unenviable position of being one of the countries with the highest gas flaring statistics; according to the World Bank, Nigeria has the seventh highest gas flaring rate worldwide.[54] Because it flares more than 75 per cent of the associated gas it produces, Nigeria is responsible for daily pollution equivalent to approximately 45 million metric tonnes of carbon dioxide (CO2). It is estimated that only 187.85 billion Standard Cubic Feet (SCF) out of the 226.255 billion SCF produced are used each month. This contrasts with other developed nations, such as Canada and Norway, which have adopted measures to reduce gas flaring and introduced a carbon tax.

In comparison, 39.070 billion SCF, or approximately 18 per cent, are lost due to flaring and venting—more than 123 gas flaring sites in Nigeria's Niger Delta region.[55] The country is generally regarded as having one of the highest carbon footprints of any nation on

[52] Kris Christen, 'Environmental impacts of gas flaring, venting add up' 38(24) (2004) *Environmental Science & Technology* 480.

[53] Aniefiok E Ite and Udo J Ibok 'Gas Flaring and Venting Associated with Petroleum Exploration and Production in Nigeria's Niger Delta' 1(4) (2013) *American Journal of Environmental Protection* 70–77.

[54] World Bank, 'Global Gas Flaring Jumps to Levels Last Seen in 2009' available online: https://www.worldbank.org/en/news/press-release/2020/07/21/global gas flaring-jumps-to-levels-last-seen-in 2009 (last accessed 9 November 2020).

[55] Ibid (n. 53).

the African continent. Burning gas in the Niger Delta daily generates approximately 45.8 billion kilowatts of heat released into the atmosphere.[56]

There is no well-documented empirical research on the effects of gas flaring on Nigeria's physical, chemical, soil, biological, and atmospheric environments and the social environment.[57] Nigeria's physical, chemical, soil, biological, atmospheric, and social environments have harmed energy, human health, natural ecosystem functions, and socio-economic development.[58] In addition, it is estimated that gas flaring and venting causes annual economic losses of $2.5 billion worldwide.[59] The waste of natural gas causes these losses. This is a tragic waste of an opportunity for developing countries like Nigeria, which stand to benefit significantly from the effective utilisation of this energy source both now and in the future.

Burning associated gas produced during oil and gas extraction has several adverse environmental effects. In addition, the flaring of associated gas results in the primary emission of carbon dioxide (CO2), carbon monoxide (CO), and a variety of other air pollutants, such as volatile organic compounds (VOCs). These VOCs include carcinogens and air toxins such as nitrogen oxides (NOx), sulphur dioxide (SO2), toxic heavy metals, and black carbon soot. The most significant consequence of flaring gas has been the accumulation of acid rain. The gas flaring and venting in the Niger Delta contribute to the region's already severe air pollution.[60] Moreover, the incomplete combustion of petroleum-associated gases

[56] Ibid (n. 53).

[57] Temi E Ologunorisa, 'A review of the effects of gas flaring on the Niger Delta environment' 8(3) (2001) *International Journal of Sustainable Development & World Ecology* 249–255.

[58] Ibid (n. 53).

[59] Birnur Buzcu-Guven and Robert Harris, 'Extent, impact, and remedies of global gas flaring and venting' 3(1) (2012) *Carbon Management* 95–108.

[60] Elizabeth A Ajao and Sam Anurigwo, 'Land-based sources of pollution in the Niger Delta, Nigeria' 31(5) (2002) *Ambio: A Journal of the Human Environment* 442.

produces volatile organic compounds, semi-volatile organic compounds, and polycyclic aromatic hydrocarbons (PAHs).

In addition, the phenanthrene/anthracene and fluoranthene/pyrene PAH compound ratios evaluation revealed that most surface soils contain PAHs derived from pyrogenic sources. This finding lends credence to the hypothesis that gas flaring contributes to the contamination of surface soils. Gas flaring concerns oil-producing communities because it risks human health and the ecosystem around the broader economy.[61] The flaring and venting of associated gas produced during the extraction and production of petroleum resources have been linked to several unfavourable outcomes, including the corrosion of zinc roofs in the Niger Delta.[62] Therefore, there is an urgent need for additional research into the impact of gas flaring on the various ecosystems found in the Niger Delta.

There is a spatial gradient in the effects of gas flares on crops' growth. Research has shown a correlation between gas flaring and low agricultural yields,[63] while other research has shown a correlation between gas flaring and health problems in the local community.[64] For example, Dung *et al*. investigated how gas flaring affected the growth of three common crops in the Niger Delta: cassava (*Manihot esculenta*), waterleaf (*Talinum triangulare*), and pepper. [Cassava] is a species of Manihot (*Piper spp*.). The results suggest that a spatial gradient exists in the effects of gas flares on crop development.[65]

---

[61] Marcus Edino, Godwin Nsofor and Leonard Bombom, 'Perceptions and attitudes towards gas flaring in the Niger Delta, Nigeria' 30(4) (2010) *The Environmentalist* 67–75.

[62] Ibid (n. 53); Ologunorisa (n. 57).

[63] Elisha Dung, Leonard Bombom and Tano Agusomu, 'The effects of gas flaring on crops in the Niger Delta, Nigeria' 73(4) (2008) *Geojournal* 297–308.

[64] Imo Ekpo and Ajah Obia, 'The role of gas flaring in the rapid corrosion of zinc roofs in the Niger Delta Region of Nigeria' 30(4) (2010) *The Environmentalist* 347–352.

[65] Ibid (n. 63).

2.6.3 Drilling discharges and hazardous chemical wastes

Before the enactment of oil industry laws and regulations, the major petroleum-derived wastes such as produced water, spent drilling muds, drilling cuttings and scraps that require handling during site abandonment were commonly discharged into coastal waters, swamps, and unlined evaporation ponds. In particular, produced water is the most significant volume waste stream associated with oil and gas exploration and production processes. The chemical composition of the oil field-produced water is complex, including large amounts of dissolved salts, hydrocarbons, heavy metals, organic and inorganic components, naturally occurring radioactive materials (NORMs) and chemicals added in the oil extraction and separation steps.[66] Produced water is discharged into above-ground storage facilities or re-injected into a subsurface formation as a permanent disposal or secondary recovery process during onshore operations. It is discouraging offshore or inshore operations; it is discharged through shoreside outfalls or coastal rim releases (within four miles from shore) cases; past and ongoing disposal practices such as these have caused severe environmental contamination of coastal waters, groundwater water, soils and sediments, vegetation, and marine ecosystems in the Niger Delta.

The improper disposal of produced water on the ground is associated with salt scars and potentially contaminated land that is difficult to remediate. The discharges of petroleum-derived waste streams from oil exploration and production activities are toxic to the coastal waters, soils, vegetation, and sediments near discharge points. For example, it has been noted that the disposal of produced water poses several threats to marine ecosystems, and local effects have been observed in shallow estuarine or coastal waters.[67]

---

[66] Vivian T Andrade and others, 'Toxicity assessment of oil field produced water treated by evaporative processes to produce water to irrigation' 62(3) (2010) *Water Science & Technology* 693–700.

[67] R Will Roach, R Scott Carr and Cynthia L Howard, 'Assessment of produced water impact on two sites in Galveston Bay System' (1993) *Publication GBNEP-23* 135–151.

Although oil spills and discharges of petroleum-derived waste have plagued the natural environment in recent decades, there is an urgent environmental concern for effective disposal and remedial strategies for this highly saline water. Roach *et al.*, in a study, argued that the adverse impacts on mangrove vegetation are the most obvious signs of environmental effects resulting from produced water spills or discharges.[68] In the marine environment, contaminants with petroleum-contaminated produced water are toxic to a wide variety of aquatic or estuarine organisms;[69] therefore, there is no justification for the continuous disposal of produced water into ecologically sensitive areas in Nigeria's Niger Delta. Consequently, it is imperative to urgently develop sustainable ecological management strategies to mitigate the effects of past and present petroleum-derived waste disposal practices in Nigeria's Niger Delta. Against the above discussions, the following section now analyses the ecological impact of oil pollution on the Niger Delta.

2.7 IMPACTS OF OIL-INDUCED ECOLOGICAL CHANGE

Recent research in the field of science has grouped the effects of pollution caused by petroleum hydrocarbons into five broad categories. These include the effects on soil, the impacts on water, the impacts on vegetation, the impacts on aquatic and terrestrial wildlife, and the impacts on human health.

2.7.1 Impact on Soil

Oil can contaminate the soil in several ways, such as through the natural seepage of hydrocarbons in regions containing oil in shallow reservoirs or the accidental spillage of

[68] R Will Roach and others, 'An assessment of produced water impacts in Galveston Bay System' (1992) *US Fish and Wildlife Report, Clear Lake Ecological Services Office, Houston TX*.

[69] Richard Allen and Keith Robinson, 'Environmental Aspects of Produced Water Disposal' *Middle East Oil Show* (Society of Petroleum Engineers, 1993).

crude oil on the ground. Once hydrocarbons come into contact with soil, they change their physical and chemical properties, regardless of the contamination source. However, the degree of change is contingent on the type of soil, the precise composition of the hydrocarbon spill, and the amount released. In the least damaging scenario, such as a small spill of a volatile hydrocarbon on dry sand, the hydrocarbons evaporate quickly, causing minor or insignificant damage to the soil, chemically or physically.

Living things can negatively impact their health by contaminating soil in several ways, including direct contact, ingestion of soil contaminants, and inhaling soil contaminants that have vaporised. In other circumstances, however, when heavy crude oil spills onto clay soil, the chemicals can remain on the soil, changing its permeability, causing toxicity, and degrading or destroying the soil quality. The soil also serves as a reservoir for residual pollution, which releases pollutants into the groundwater or air over a prolonged period, even after the source of pollution has been eliminated or mitigated. Under these conditions, the soil would become a source of environmental contamination.

Significantly, many of the terrestrial ecosystems and shorelines in the communities that make up the Niger Delta are important agricultural lands continuously cultivated and support small and medium-scale enterprises, especially subsistence farming. This is one of the many reasons the Niger Delta is so important. Since 1971, there have been reports of crude oil spilling into agricultural lands in Nigeria's Niger Delta. There have also been reports of early studies on the impact of crude oil on the environment.[70] Different kinds of crude oil can exert either acute or chronic toxicity or a combination of the two on the soil's properties and microflora. High concentrations of petroleum hydrocarbon in the ground lead

[70] R J Snowden and Ikem KE Ekweozor, 'The Impact of a minor oil spillage in the estuarine Niger Delta' 18(11) (1987) *Marine Pollution Bulletin* 595–599.

to oxygen deprivation, ultimately resulting in the asphyxiation and death of the fauna that lives in the soil.[71]

Several other studies have investigated the effect of crude oil contamination of soil on the germination and growth performance of various crops.[72] According to the findings of one such study, the presence of petroleum hydrocarbons in agricultural soil prevented germination. It negatively impacted okra's agronomic growth performance (*Abelmoschus esculentus*), leading to a low crop yield.[73] Consequently, oil spills have far-reaching implications for the agricultural productivity of the areas that have been affected and multiplier effects on the socioeconomic well-being of the communities.

2.7.2 Impact on groundwater and surface water

Onshore oil production activities can also occur in rivers or swampy areas and offshore in deep-sea facilities. These activities are in addition to land-based operations. Oil can get into the water either through direct spills on offshore facilities or through spills on land but eventually make its way to water bodies via wind, rain, surface flow, or subsurface flow. No matter how they get in, there will be adverse effects. There is no way around it. Oil spills can cause both physical and chemical impacts on water.

On the other hand, the precise chemical composition of the hydrocarbon, its physical characteristics, and the degree of concentration all play a role in determining the nature and severity of such effects. Even minute quantities of oil contamination can prevent oxygen transfer in the water column, affecting the marine ecosystem and marine life-support systems,

---

[71] Ibid (n. 22), 134.

[72] Ayodele Oyedeji and others, 'Effect of Crude Oil-Contaminated Soil on Germination and Growth Performance of Abelmoschus esculentus L Moench – A widely Cultivated Vegetable Crop in Nigeria' 3(10) (2012) *American Journal of Plant Sciences* 1451–1454.

[73] Ibid.

including fish and seabirds. Even minute amounts of highly toxic hydrocarbons, such as benzene, are sufficient to render water unfit for human consumption.[74]

2.7.3 Impact on Vegetation

The effect that oil pollution has on vegetation is contingent on several factors, including the nature and extent of the chemicals that are present, the point in the plants' life cycles or stages of development that are at issue, and the route by which the plants come into contact with the hydrocarbon. The spilt oil can come into direct contact with vegetation in several different ways, including through spillage on the roots, stems, and leaves of the vegetation, through spillage onto the soil, through dissolved hydrocarbons in the groundwater in the root zone of the foliage, or through the air that surrounds the vegetation.[75] The degree to which various types of vegetation are affected by hydrocarbons varies widely. Even though some fires tend to be contained in a small area, widespread fires can alter species diversity across significant areas, particularly in forest regions. Oil spills have caused large fires in Nigeria, which have resulted in the complete or partial eradication of the country's plant life. This is because incidents of oil spillage should be responded to more quickly and effectively.

2.7.4 Impact on marine and terrestrial wildlife

Oil spills can have a wide range of adverse effects on marine and terrestrial wildlife. The types of hydrocarbons that were spilt, the number of spilt hydrocarbons, the temperature at the time of the incident, and the season, will all play a role in determining the severity of

[74] Kirk T O'Reilly, Renae I Magaw and William G Rixey *Predicting the Effect of Hydrocarbon and Hydrocarbon-Impacted Soil on Groundwater*. American Petroleum Institute 14. Available at: www.api.org/ehs/groundwater/upload/14_Bull.pdf (last accessed 13 February 2020).

[75] Eduardo Zeiger, *The Effect of Air Pollution on Plants: A Companion to Plant Physiology,* (Fourth Edition, 2006).

the damage. For instance, oil that has been dissolved or emulsified in the water column can cause contamination of plankton, algae, fish eggs, and invertebrate larvae.[76] Because of the smothering effects of thick, weathered oil that makes its way to the coastline, intertidal benthic invertebrates in sediments subjected to tidal variations are particularly at risk. Deposits become reservoirs of hydrocarbon contamination.

Marine life, such as fish, can be harmed when they ingest oil or prey contaminated with oil or breathe through their gills. Fish eggs and larvae are at risk, especially when oil enters nursery areas like mangroves or other wetland areas. Fur and feathers lose their insulating quality when they come into direct contact with crude oil, adversely affecting marine birds and mammals with hair. Heavily oiled birds can lose their ability to fly and buoyancy, ultimately leading to death. To clean themselves, birds ingest the oil, which can have potentially lethal or sub-lethal effects by causing damage to the liver and kidneys, among other organs.

The chemical complexity of petroleum hydrocarbons and organic contaminants presents many vital challenges for exposure science in marine ecosystems supporting productive fisheries in Nigeria and worldwide. These challenges are essential for the advancement of exposure science. The immediate effects of large-scale oil spills and pollution in coastal areas are well documented; most oil-producing communities' marine and terrestrial ecosystems and shorelines are heavily impacted. For instance, the effects of oil pollution on the diversity and functionality of fish and turtle communities in the Niger Delta

[76] US Fish and Wildlife Service, *Effects of Oil on Wildlife and Habitat* (2010). Available online: http://alaska fws.gov/media/unalaska/Oil%20Spill%20Fact%20Sheet.pdf (last accessed 13 February 2020).

have been reported.[77] Defoliation and mortality of mangrove trees have been observed in swamplands affected by oil spills.[78]

Determining which chemicals in complex oil mixtures are responsible for early life-stage toxicity in fish can be challenging when significant toxic effects are associated with crude oil contamination in the shorelines. In the marine environment, the oil slick floats on the water's surface and is carried to the shorelines by wind and wave action. This invariably affects the quality of the soil. It is unavoidable that the earth, vegetation, and other terrestrial ecosystem components will be impacted whenever oil spillage occurs onshore or near the shore. The contamination of the marine environment caused by oil spills and accidental discharges of petroleum, which has not been effectively remedied, has led to the degradation of the dense mangrove forests in the Niger Delta, the destruction of ecosystems, and a significant decline in the number of fish and agricultural yields that local communities rely on to support their economies. According to a summary provided by Greenpeace International, the following are some of the overall consequences of oil pollution in Nigeria's Niger Delta:

> We witnessed the slow poisoning of the waters of this country. The destruction of vegetation and agricultural land by oil spills that occur during petroleum operations […] we do not have pipe borne water here; our only source of drinking water is the surrounding stream and creeks. Everywhere you go, you will see dead fish and layers of crude oil. Still, we can no longer drink the water because it has been polluted.[79]

Sadly, this account by Greenpeace International seems to be putting it lightly, but unfortunately, it is the current state of affairs in the region.

---

[77] Luca Luiselli and Godfrey O Akani, 'An indirect assessment of the effects of oil pollution on the diversity and functioning of turtle communities in the Niger Delta, Nigeria' 26(1) (2003) *Animal Biodiversity and Conservation* 57–65.

[78] Olof Linden and Arne Jernelov, 'The mangrove swamp: an ecosystem in danger' 9(2) (1980) *Ambio: A Journal of the Human Environment* 81–88.

[79] Greenpeace International, 'Shell Shocked: The Environmental and Social Costs of Living with Shell in Nigeria' (1994), available online: http://archive.greenpeace.org/comms/ken/hell html. (last accessed 13 February 2020).

2.7.5 Impact on Human Health

Hydrocarbons derived from petroleum contain hundreds of different chemical compounds, all of which have unique effects on human health, regarding how much exposure they cause and how toxic they are. Many other chemical compounds, including volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs), can be found in crude oil. In addition, it may contain polycyclic aromatic hydrocarbons (PAHs), sulphur, nitrogen-containing compounds, and metals. Petroleum hydrocarbons behave differently in the environment, and this difference in behaviour determines whether or not they will be found in the air, water, soil, sediment, food, or any other medium with which people come into contact. People can unknowingly consume petroleum hydrocarbons released into the environment by oil spills when they breathe in contaminated air, bathe in contaminated water, consume contaminated fish, drink contaminated water, or accidentally eat or touch oil-contaminated soil or sediment.

The following effects are directly influenced by the amount of exposure and the time it was received. Although there are petroleum hydrocarbons that are soluble in water, there are also petroleum hydrocarbons that exist in water as a distinct oil phase. When humans of any age use oil-contaminated surfaces or groundwater for activities such as bathing, cooking, or drinking, they risk being exposed to oil contamination. Similarly, people of any age risk being exposed to petroleum hydrocarbons that have evaporated into the atmosphere. Drinking contaminated water, bathing in contaminated water, collecting shellfish in contaminated water, and coming into contact with or accidentally ingesting contaminated sediment while engaging in these activities put crew members and their communities at risk of exposure. The vast majority of foods are not likely to be significant sources of exposure to petroleum

hydrocarbons; however, farmers can suffer direct exposure to petroleum hydrocarbons if they come into contact with contaminated soil during their daily work.

If the concentration levels are high enough, the types of chemicals present in crude oil and released during an oil spill, or its combustion can cause short-term respiratory problems and skin and eye irritations in humans. The acute effects of oil exposure on human health are reasonably well understood; dermal exposure causes redness, oedema, dermatitis, skin rashes, and blisters. Similarly, inhalation exposure can lead to red, watery, and itchy eyes, coughing, throat irritation, shortness of breath, headaches, and confusion.[80] In contrast, ingesting hydrocarbons can lead to symptoms such as nausea and diarrhoea. It is reasonable to anticipate that the contamination of the environment caused by oil spills will affect people's livelihoods and overall quality of life, which will, in turn, cause stress among the members of the communities that are adversely affected. Stress, on its own, can hurt human health.

There is no question that significant oil spills in the Niger Delta hurt human health and well-being. Even many years after the contamination was cleaned up, residents of the Niger Delta have been forced to endure the hardship of drinking polluted water that still contains traces of oil and hydrocarbon compounds. There are also long-term effects on people's health caused by the chemical dispersants and reagents used during the clean-up. Asthma, breathing difficulties and pain, headaches, nausea, throat irritation, and chronic bronchitis are some symptoms experienced by many people in the Niger Delta.[81] Flaring gas has been linked to several adverse health effects, including various respiratory conditions – asthma and bronchitis, loss of hearing, issues with the skin, and even severe complications

[80] Francisco Aguilera and others, 'Review on the effects of exposure to spilled oil on human health' 30(4) (2010) *Journal of Applied Toxicology* 291–301.

[81] Environmental Rights Action, 'Gas Flaring in Nigeria: A Human Rights, Environmental and Economic Monstrosity' Amsterdam, June 2005, Available at: www.eraction.org (last accessed 13 February 2023).

during childbirth. Because of these concerns, substantive legal actions have been brought in the area of toxic tort for exposure to potentially harmful chemical substances.[82]

In the case of *Jonah Gbemre v Shell*,[83] in which the Federal High Court found that gas flaring and oil spillage by Shell in the course of their oil production activities in the applicant's community were violations of the fundamental right to a healthy environment and the dignity of human persons, it was held that it was a violation of the absolute right to health. In addition, it has also been held that it violates the fundamental right to dignity of human persons. This right is guaranteed by both the Constitution of the Federal Republic of Nigeria[84] and the African Charter on Human and Peoples Rights.[85] Both documents state that every person has the right to enjoy the best possible physical and mental health within their reach.[86] Several international documents guarantee individuals the right to health care. For instance, the 1948 Universal Declaration of Rights (UDHR)[87] provides everyone with the right to a standard of living sufficient for their and their family's well-being.[88] This socioeconomic right also includes the right to adequate housing.

2.7.6 Social and Economic Impacts

In the Niger Delta, oil spillage has caused individuals and small and medium-scale businesses in the commercial fishing, shrimp, and oyster industries to lose their means of

[82] See *Abiola v Ijoma* (1970) 2 ANLR.

[83] *Jonah Gbemre v Shell Petroleum Development Company Nigeria Limited and Others* (unreported) No. FHC/B/CS/53/05, (14 November 2005).

[84] Constitution of the Federal Republic of Nigeria (1999), sections 33(1) and 34(1).

[85] African Charter on Human and People's Rights, adopted 27 June 1981, entered into force 21 October 1982, OAU Doc. CAB/LEG/67/3 Rev. 5

[86] Ibid, Article 16.

[87] UN General Assembly, *Universal Declaration of Human Rights*, adopted by General Assembly Resolution 217 A(III) of 10 December 1948.

[88] Ibid, Article 25.

subsistence and income. These industries include oyster farming, shrimp farming, and commercial fishing. The oil spill hurt those who own and operate boats used for transportation, hotel owners, travel and tourism agencies, owners of rental property, and other local businesses in the region.[89] It could be argued that spilling oil violates several international and national laws designed to protect people's rights to how they support themselves. States must comply with certain global treaties and conventions, including those that acknowledge rights to subsistence as fundamental human rights.[90] For instance, the right to food is justifiable globally, despite being recognised as part of the right to an adequate standard of living.[91]

In addition, even though they do not carry the force of law, several United Nations declarations and resolutions provide significant and influential normative interpretations of subsistence rights, including access to traditional foods. For instance, Article 25 of the Universal Declaration of Human Rights recognises the right to food as part of the right to an adequate standard of living.[92] This is justifiable not only on the national level but also on the international level. Because of this, some aspects of a community's culture are jeopardised whenever an oil spill disrupts their ability to cultivate food or when they lose the ability to produce foods that have traditionally been a part of their diet.[93]

The loss of property or the destruction of property due to significant oil spills in the Niger Delta is closely related to the loss of subsistence experienced in the region. Therefore,

---

[89] Zelda A Elum, Keletso Mopipi and Adanna Henri-Ukoha, 'Oil exploitation and its socio-economic effects on the Niger Delta region of Nigeria' (2016) *Environmental Science and Pollution Research* 12880–12889.

[90] See the Universal Declaration of Human Rights (UDHR) 1948 Article 23; and the International Covenant of Economic and Social Rights (ICESR), Article 6.

[91] Ibid, Article 11.

[92] Jean Ziegler, *The Right to Food* (Report of the Special Rapporteur on the right to food to the Commission on Human Rights 57th Session, 2001) UN Doc E/CN.4/2001/53.

[93] Ibid (n. 39) 181.

to protect subsistence rights, international environmental law imposes a duty on polluting corporations, following the polluter-pays principle, to provide victims of oil spills with adequate compensation for the economic and monetary losses incurred as a direct result. For instance, in compliance with this obligation, after the explosion of the Deepwater Horizon, BP announced a $20 billion escrow fund that would be used to compensate businesses in affected areas of Louisiana, Mississippi, Alabama, Florida, and Texas, particularly those whose financial livelihoods suffered as a result of the oil spill.[94] This fund would compensate businesses in affected areas of Louisiana, Mississippi, Alabama, Florida, and Texas, especially those whose financial livelihoods suffered due to the oil spill.[95]

In the Niger Delta, major oil spills almost always cause damage to residential and commercial properties in the immediate area. The use of toxic chemicals and oil dispersants to assist in the clean-up of significant oil spills also causes property damage, resulting in the forcible displacement and evacuation of people living in affected areas from their homes. Because of an oil spill, for instance, more than 200,000 people in the Niger Delta have been evicted from their homes against their will.[96] Such a loss of property violates the constitutional rights to the free and exclusive ownership of property and the right to enjoy one's property, protected by the constitutions of many countries, including Nigeria, and by international law.[97]

---

[94] BP Press Release, *'BP establishes $20 billion claims fund for Deepwater Horizon spill and outlines dividend decisions'* (16 June 2010), available at BP establishes $20 billion claims fund for Deepwater Horizon spill and outlines dividend decisions | News and insights | Home (last accessed 2 July 2022).

[95] Reuters, Factbox: BP settlement payouts to coastal states in 2010 oil spill' (2 July 205), available at Factbox: BP settlement payouts to coastal states in 2010 oil spill | Reuters (last accessed 2 July 2020).

[96] Ibid (n. 39) 181.

[97] American Convention on Human Rights (pact of San Jose) signed 22 November 1969, entered into force 18 July 1978, 1144, UNTS 123, Article 21; see also African Charter on Human and People's Right, adopted 27 June 1981, entered into force 21 October 1982, OAU Doc. CAB/LEG/67/3 Rev. 5

The African Court on Human Rights upheld the right to property in the much-celebrated *Social and Economic Rights Action Centre v Nigeria*.[98] In this case, the African Human Rights Court found that the government of Nigeria violated the right to property of the Ogoni people in Nigeria's Niger Delta as a result of its condoning and facilitating the operations of oil corporations in Ogoni land. The Commission also concluded that the destruction of housing and the forcible removal of residents from their homes constituted a violation of the implied right to housing and the protection against being forcibly evicted, derived from the express rights to property, health, and family. These rights were found to have been violated.[99] This case was a victory for property rights advocates not only in Africa but also around the world.

2.8 CONCLUSION

In the quest to understand some of the regulatory problems associated with Nigeria's oil spill response and ecological challenges – as will be explored further in this thesis, this chapter has sought to provide a background of the history and scope of oil production in Nigeria, including, among other things, the Niger Delta's ecological composition and the nature and sources of oil-induced pollution. Specifically, the chapter has focused on the Niger Delta and the region's socio-economic effects of oil pollution and also highlighted the significance of the oil industry to Nigeria's economy. The primary argument has been that the economic interests in Nigeria's oil industry from oil production revenue earnings have not been balanced against the environmental concerns (i.e., oil-induced pollution) in the Niger Delta, but this needs to change. In the same way that global economic expansion has not

[98] (2001) AHRLR 60 (ACHPR 2001) Communication 155/96.

[99] (2001) AHRLR 60 (ACHPR 2001) Communication 155/96.

benefited all of humanity, Nigeria's oil industry has not been of any assistance to the people of the Niger Delta or their environment.

Several studies on the current situation in Nigeria's Niger Delta illustrate the detrimental effects of oil spillage on the surrounding environment.[100] Because of the frequent oil spills, many local communities have been virtually wiped out, the drinking water has been tainted, and the soil composition, vegetation, and ecosystems have been irreparably changed. The contamination of coastal environments brought on by offshore spills, which are significantly larger in scale, has led to a decrease in the number of fish caught in local waters. Similarly, oil spillage has led to the destruction of the mangrove forests. The rainforest, formerly extended across 7,400 square kilometres, has been eradicated. Estimates suggest that between 5 and 10 per cent of mangrove ecosystems have been destroyed by oil, which acidifies the soil, thereby preventing cellular respiration and depriving plant roots of oxygen.

For example, communities across the Niger Delta suffer from a severe lack of basic amenities even though oil production has brought in billions of dollars over many years.[101] The operators of the oil industry, particularly Shell, have caused significant damage to the ecological resources that the people rely on for subsistence. On the other hand, the government of Nigeria is complicit in the current ecological predicament, even though it has both a significant stake in the industry and a responsibility to protect the environment.[102] This circumstance created a complex relationship between the various stakeholders, characterised

[100] Ibid (n. 5); also see Bayelsa State Oil and Environmental Commission, *An Environmental Genocide: The human and environmental cost of Big Oil in Bayelsa, Nigeria* (London, May 2023) AN ENVIRONMENTAL GENOCIDE (bayelsacommission.org) (last accessed 2 August 2023).

[101] Richard Boele, Heike Fabig and David Wheeler, 'Shell, Nigeria, and the Ogoni. A Study in Unsustainable Development: The Story of Shell, Nigeria, and the Ogoni People – Environment, Economy, and Relationships: Conflict and Prospect for Solution 9(2) (2001) *Sustainable Development* 74.

[102] Barisere R Konne 'Inadequate Monitoring and Enforcement in the Nigerian Oil Industry: The Case of Shell and Ogoniland' 47 (2014) *Cornell International Law Journal* 181, 183.

by enduring mistrust and blame. This was juxtaposed against the deteriorating ecological conditions of the impacted communities, and it was maintained by a remediation regime lacking in strength.[103] After some time had passed, Nigeria's government felt compelled to conduct an environmental assessment and propose an integrated strategy for restoring the country's environment. The study, completed and released in 2011, is notable for being the first piece of systematic scientific research to be made available regarding the character of oil contamination and the scope of ecological damage.[104]

While the overarching goal of the theses is to determine whether the current legal and governance frameworks for oil spill remediation are compatible with the tenets of ecological restoration, this chapter examined Nigeria as an example of a country negatively impacted by decades of extracting, polluting, and developing in the most environmentally unfriendly manner. The chapter investigated the background, causes, and effects of environmental change caused by oil exploration and production activities, thus prompting a re-examination of Nigeria's laws and policies regarding oil pollution response in Chapter Six. However, before that, Chapter Three will present a conceptual framework of an alternative approach that generally defines the parameters of ecological restoration governance. This framework will help us determine the objective of the thesis, improve our understanding of ecological restoration as a concept of international environmental law in Chapter Four, and serve as the theoretical basis for examining more concrete legal and practical reforms regarding Nigeria's oil spill response moving forward.

[103] Ibid (n. 50).

[104] Ibid (n. 50), 8.

CHAPTER THREE:

A THEORETICAL AND CONCEPTUAL FRAMEWORK FOR THE GOVERNANCE OF ECOLOGICAL RESTORATION

3.1 INTRODUCTION

The overarching goal of this thesis is to determine the compatibility of current legal and governance frameworks for oil spill remediation with the principles of ecological restoration. To achieve this goal, Chapter Two has painted a picture of the current ecological situation in Nigeria's Niger Delta and illustrates the detrimental effects of oil spillage on the surrounding environment, which is highly condemnable. Many small villages have been essentially wiped out as a result of repeated oil spills, drinking water contamination, and irreversible changes to soil composition, vegetation, and ecosystems. The pollution of coastal ecosystems caused by far more significant offshore accidents has resulted in a decline in the number of fish captured in local seas. Similarly, oil spills have caused the degradation of mangrove habitats. The rainforest, which formerly covered 7,400 square kilometres, has been obliterated and fostered by a remediation regime that is lacking in strength. Chapter Two re-emphasises the fact that Nigeria has severe issues that must be fixed in its oil spill response, invariably begging the question of how the legal and governance frameworks can be enhanced to repair the ecological damage caused by oil spills in the Niger Delta.

This chapter, therefore, serves as a crucial theoretical foundation for examining more concrete legal and practical reforms in Chapter Six. Moving on from Chapter Two, this chapter will outline a more nuanced conceptual framework for ecological restoration, a topic of significant importance in environmental law and governance. The potential impact of Chapter Three is significant in determining the adequacy or otherwise of ecological restoration law in Nigeria, as it could provide a helpful understanding of possible links

between science and the law of ecological restoration and match advancements in scientific research in the governance of ecological restoration.[1] As a result, this chapter presents a comprehensive framework that is arguably an alternative governance approach. This framework, which is urgently needed, applies to Nigeria and broadly to countries with historically similar legal cultures, environmental governance challenges, and other extractive industries such as the mining industry.

By comprehending these complexities and developing solutions, this chapter aims to outline a more nuanced conceptual framework for ecological restoration that addresses the pressing issues in environmental governance, demonstrating the research's significance, thoroughness and depth. However, to provide a helpful understanding of potential links between science and the law of ecological restoration, it is important at this stage to have a brief overview of the concept of ecological restoration, which the next section seeks to provide.

3.2 AN OVERVIEW OF THE CONCEPT OF ECOLOGICAL RESTORATION

When an ecosystem's health, integrity, and sustainability are threatened, ecological restoration can begin the recovery process or speed up the process already underway. Human activities have often caused or contributed to the ecosystem's degradation, damage, transformation, or destruction that needs restoration. Natural agencies like wildfire, floods, storms, and volcanic eruptions can cause or exacerbate these impacts on ecosystems to the point where the ecosystem can never recover to its pre-disturbance state or its historical developmental trajectory. Ecosystem restoration is the process of putting a system back on its original course. Therefore, original conditions should serve as the basis for the restoration

[1] Margaret A Palmer and J B Rulh, 'Aligning restoration science and the law to sustain ecological infrastructure for the future' 13(9) (2015) *Frontiers in Ecology and the Environment* 512 – 519.

plan. Because of modern limitations and conditions, a restored ecosystem may take a different developmental path from its original one. In a severely disturbed ecosystem, reconstructing its past course may be impossible.

However, the overall course and its limits can be established through research into comparable intact ecosystems, analysis of regional environmental conditions, familiarity with ecological, cultural, and historical reference data, and knowledge of the pre-existing structure, composition, and functioning of the damaged ecosystem. Baseline ecological data and predictive models can be used together to plot the historic trajectory or reference conditions; following these conditions during restoration should help guide the ecosystem back to better health and stability. A proposal to restore an ecosystem requires careful consideration because it involves a long-term investment of land and resources. A group decision is more likely to be respected and carried out than an individual one. Therefore, it is in all parties best interest to launch a restoration project through mutual agreement. Once the decision to restore has been made, the process must be planned and executed methodically, and the ecosystem's recovery must be closely monitored. Careful planning becomes even more critical when a complex landscape of interconnected ecosystems is the restoration unit.

The type and duration of past disturbances, cultural conditions that have shaped the landscape, and current constraints and opportunities all shape the restoration interventions used in a project. In its simplest form, restoration is the process of removing or altering a disturbance to allow natural recovery to occur on its own accord. Dam removal, for instance, can restore a previous cycle of flooding. Depending on the severity of the damage and the extent to which invasive exotic species have spread, restoration may also necessitate the intentional reintroduction of native species that have been lost. Multiple, prolonged causes often contribute to the degradation or transformation of an ecosystem, leading to a significant loss of its historical components. It is possible to completely obstruct a degraded ecosystem's

developmental trajectory, making natural recovery appear to be indefinitely postponed. Ecological restoration attempts to restart the processes that will set the ecosystem back on its original course in any of these situations. When the intended action is achieved, the manipulated ecosystem may no longer need intervention to maintain its future health and integrity.

At this point, ecological restoration will be considered complete. Even after an ecosystem has been restored, it usually needs ongoing management to protect against the reintroduction of invasive species, the effects of human activity, climate change, and other factors. When it comes to the need for ecosystem management, a restored ecosystem is essentially identical to a pristine ecosystem of the same type. Ecosystem restoration and management are two ends of the spectrum using similar intervention strategies. However, while ecological restoration seeks to aid or kickstart the recovery process, management is designed to ensure the ecosystem's continued health once it has been restored. Cultural practices that have stood the test of time are still used to manage some ecosystems, especially in developing nations. Human actions have a positive feedback loop on these cultural ecosystems, increasing their resilience and ensuring their continued health. Population growth and other external pressures have harmed many cultural ecosystems, necessitating their restoration. Supporting the cultural survival of indigenous peoples and their languages as living libraries of traditional ecological knowledge is essential to restoring such ecosystems.

Ecological restoration actively seeks and may even require sustained involvement from local residents. Traditional cultural conditions are undergoing unprecedented global change right now. Ecological restoration may accept and even promote novel, culturally appropriate and sustainable practices sensitive to and productive of current conditions and limitations. Thus, the North American emphasis on restoring pristine landscapes is mainly irrelevant in places like Europe, where cultural landscapes are the norm, or in large parts of

Africa, Asia, and Latin America, where ecological restoration is untenable unless it manifestly bolsters the ecological base for human survival. The fact that human actions and natural systems can reinforce one another is a significant motivational factor in ecological restoration. Not surprisingly, there has been a surge of interest in ecological restoration across the globe. In most cases, cultural beliefs and practices inform and shape restoration efforts. With its emphasis on the historically rich concept of "recovery," the definition presented in the following section, which has been officially endorsed by the Society for Ecological Restoration International, is sufficiently general to allow a wide variety of approaches to restoration.

This chapter aims to lay the theoretical groundwork for the subsequent chapters, providing more in-depth legal and practical analysis by developing a nuanced conceptual framework for ecological restoration.

3.3 WHAT IS ECOLOGICAL RESTORATION?

Scientist-created definitions may help fill the void left by the need for a universally accepted explanation of ecological restoration. No widely accepted definition of restoration exists, and very few definitions exist in domestic law, as Anastasia Telesetsky puts it.[2] Definitions developed through scientific consensus may help bridge this gap. As the primary scientific field supporting ecological restoration efforts, restoration ecology is, not surprisingly, a young field of study, as is ecological restoration as a subfield of environmental law. Ecological restoration can be thought of from many different angles. As Andre Clewell

[2] Anastasia Telesetsky, 'Ecoscpaes: The Future of Place-based Ecological Restoration Laws' 14 (4) (2013) *Vermont Journal of Environmental Law* 493, 502.

and James Aronson defined,[3] ecological restoration is the deliberate resumption of natural processes that were disrupted when an ecosystem was impaired.[4]

Further, from a conservationist's point of view, ecological restoration brings back lost species in the face of a new extinction crisis brought on by human activity. Thus, ecological restoration recovers ecosystem services that people benefit from a socioeconomic standpoint. People gain respect for local ecosystems when they are involved in restoration decision-making, and this respect grows when people actively engage in restoration activities. This is why, from a cultural perspective, ecological restoration is a way to strengthen communities, institutions, and interpersonal relationships through participation in a common pursuit. Finally, from an individual standpoint, ecological restoration helps us heal by re-establishing our connections to the natural world. The underlying theme in these different takes on ecological restoration is the idea that, since nature provides for our survival, we are acting in our self-interest by helping preserve it.

Some of the best definitions of ecological restoration can be found in Bradshaw, who explains that when humans engage in restoration, they merely facilitate a natural ecological process.[5] An ecosystem will go through ecological succession if it is damaged or disturbed by human activities such as fire, volcanic eruption, mining, urbanisation, pollution, etc. Eventually, the ecosystem will entirely recover to its original or new state. Anthony Bradshaw suggests ecological restoration by neglect describes how an ecosystem recovers from damage through natural succession. Like neglecting a child, a garden, a house, etc., neglecting an ecosystem may result in its restoration to its pre-degradation state, but it also

---

[3] Andre Clewell and James Aronson, *Ecological Restoration: Principles, Values, and Structure of an Emerging Profession* (Washington DC: Island Press, 2013) 3.

[4] The word 'impaired' is used loosely here to mean 'disturbed', 'destroyed', 'degraded' or 'damaged', and these words are used interchangeably throughout the thesis.

[5] Anthony D Bradshaw, 'Ecological principles and Land Reclamation practice' 11 (1984) *Landscape Planning* 35 – 48.

may have unintended consequences; in the case of degraded ecosystems, the results of restoration by neglect are often undesirable. Bradshaw intended for the term 'restoration' to be used only when the objective was to repair a degraded ecosystem and return it to its natural state.

Bradshaw, who has spent most of his career restoring mining-affected areas in the United Kingdom, has found that many of these sites are so severely degraded that restoring them to their original ecosystems is impossible. Instead of abandoning a damaged mine site, which often results in an area of bare ground with high erosion rates, it is preferable to repair the damage so that the restored ecosystem functions better. In such cases, he argued for a process of 'replacement,' in which the degraded site is restored to the point where it can sustain a healthy ecosystem, complete with all of the necessary life and its associated trophic levels and diversity, but one that is not identical to the original ecosystem. The term 'reclamation' appeared in later Bradshaw writings to describe this revitalisation process.[6] Although there are many similarities between reclamation and ecological restoration, the latter focuses on all aspects of ecosystem services while the former only addresses the biogeochemical function.

On the other hand, Stuart Allison claims that the SER definition is the most common one used in the field.[7] The SER first defined ecological restoration as "the process of intentionally altering a site to establish a defined, indigenous, historic ecosystem," with the ultimate goal of "to emulate the structure, function, diversity, and dynamics of the specified ecosystem."[8] Using a 'snapshot approach' to restoration, as this definition did, quickly

---

[6] Anthony D Bradshaw, 'Introduction and Philosophy' in Martin R Perrow and Anthony J Davy (eds.) *Handbook of Ecological Restoration: Vol. 1 Principles of Restoration* (Cambridge: Cambridge University Press, 2002) 23 – 29.

[7] Stuart K Allison, *Ecological Restoration and Environmental Change: Renewing Damaged Ecosystems* (London: Earthscan, 2014) 4.

[8] Eric S Higgs, 'What is Good Ecological Restoration?' 11 (1997) *Conservation Biology* 338, 340.

became unpopular among ecologists. The term 'ecological restoration' needed to be re-defined after it became clear to ecologists that ecosystems are not fixed but rather subject to dynamic equilibrium and that abandoning a site can have restorative effects (known as "ecological restoration by neglect"). In 1995, the SER proposed a different definition of ecological restoration as "the process of renewing and maintaining ecosystem health."[9] Due to the lack of a concrete definition for 'ecosystem health,' this second definition was largely aspirational, even though it allowed for more leeway in achieving restoration goals. "Ecological restoration is the process of helping a degraded, damaged, or destroyed ecosystem recover," the SER says now.

Although it does not say much about the restoration process, the most widely cited definition of restoration is the 2004 SER definition, which will be used throughout the thesis. The SER provided a detailed statement on the methods and outcomes of ecological restoration in the primer's introduction.

> Ecological restoration is an intentional activity that initiates or accelerates the recovery of an ecosystem with respect to its health, integrity and sustainability. Frequently, the ecosystem that requires restoration has been degraded, damaged, transformed or entirely destroyed as the direct or indirect result of human activities […] restoration attempts to return an ecosystem to its historic trajectory.[10]

In addition, Allison notes two significant takeaways from the broader SER definition of ecological restoration. The first is that restorationists choose to engage in ecological restoration on purpose so that a degraded ecosystem can eventually regain some or all of its original functions (i.e., improved health, integrity and sustainability). Restoring an ecosystem means working to get it back to how it was before it was disturbed.[11] Therefore, ecological restoration is not limited to merely restoring an ecosystem to its pre-damaged state; it must

[9] Ibid (n. 8).

[10] Ibid (n. 8).

[11] Ibid (n. 7) 4.

also result in an ecosystem functionally and aesthetically similar to its pre-damaged state.[12] Second, we recognise that even without the human-induced damage, the original, pre-damaged ecosystem would have been dynamic, changing in response to external and internal forces. Ecosystems need to be restored to continue to change and adapt as they would have without the human interference that caused the need for restoration in the first place.[13] Telesetsky is critical of the 2004 SER definition of ecological restoration because, as she puts it, "something is missing from the definition in terms of connecting the ecologically defined world that is the subject of scientific investigation to the socially constructed world where governance resides - in other words, connecting the worlds of science and law."[14] The idea that ecologists have no business proposing definitions with socio-legal implications may seem reasonable at first glance. Still, it overlooks the fact that restoration is fundamentally a human-centred practice. To the extent that they propose definitions of ecological restoration, ecologists should emphasise the social aspect as a central operational component.

Furthermore, even if we want to erase our hands from processes meant to be 'natural,' it is counterproductive to advance the self-sustaining goals of ecological restoration by failing to recognise humans and our governance systems as social agents. However, we can begin to grasp that science alone will not guarantee successful ecological restoration once we recognise that humans will be making decisions about what to restore and how to restore it. Even if specific restoration outcomes could be accomplished with the help of science and technology, for example, they could be easily undone by self-interested societal governance systems. Ecological revitalization calls for both scientific exploration and community involvement. Ecological restoration is a term that expresses both scientific and socio-

[12] Ibid (n. 12).

[13] Ibid (n. 12).

[14] Ibid (n. 2) 493, 503.

ecological processes, which is crucially important. This is why the SER separates natural landscapes from cultural landscapes, defined as those "that have developed under the joint influence of natural processes and human-imposed organisation."[15] Recognizing that the long-term success of ecological restoration, on the one hand, depends on socially constructed ideas of large landscapes and also socially constructed tools of governance is, therefore, necessary to round out the SER definition. Ecological restoration efforts must therefore be rooted in a simultaneously cultural and natural landscape. Some places we consider natural landscapes, like parks and reserves, are cultural landscapes. Decisions made at the international, national, and local levels affect how 'natural' areas are used and how they are protected. Even though restoring a single meadow is an essential first step in restoring an entire ecosystem, such efforts will fall short unless they are systematically connected across artificial and political boundaries to address the larger ecosystem (or landscape) concerns of connectivity.

Following in Telesetsky's footsteps, Benjamin Richardson argues that reimagining ecological restoration as something other than a purely scientific or technical endeavour in which degraded ecological components and processes are repaired is necessary. Instead, it should include a social component that helps people feel more in tune with nature's biorhythms and ethical principles. Richardson also warns that we risk missing the larger cultural and governance malaise that limits society's ability to compensate for past ecological losses if we view ecological restoration as merely a matter of scientific expertise, albeit a crucial one. While scientific knowledge is crucial, it is not enough to motivate people to

[15] Society for Ecological Restoration International Science & Policy Working Group, *The SER Primer on Ecological Restoration* (Society for Ecological Restoration International 2004), section 4.

change their behaviour; instead, efforts should be made to involve the communities most directly impacted by environmental degradation.[16]

With this understanding of ecological restoration, it is therefore fundamental to also develop an understanding of the importance of restoring ecosystems, which is what the next part seeks to provide.

3.4 WHY IS ECOLOGICAL RESTORATION IMPORTANT?

There has never been a more critical time to repair degraded ecosystems. The United Nations (UN) declared 2021–2030 as the 'Decade on Ecosystem Restoration to combat the climate crisis, improve food security, and stop biodiversity loss.'[17] Achieving the SDGs, especially those related to climate change, poverty eradication, food security, water, and biodiversity conservation, relies heavily on the restoration of ecosystems.[18] Restoring degraded ecosystems is an effective way for humans to partner with nature in the fight against the global Coronavirus (COVID-19) pandemic, which, at a time, was considered humanity's greatest threat.[19] Forests, mangroves, and peatlands, all examples of thriving ecosystems, can absorb as much as a third of humans' carbon dioxide (CO2) emissions.[20] Due to its widespread application and adoption among disaster risk management practitioners,

---

[16] Benjamin Richardson, 'Restoring layered geographies: ecology, society and time' 26(2) (2017) *Griffith Law Review* 154, 155.

[17] Truman P Young and Mark W Schwartz, 'The Decade on Ecosystem Restoration is an impetus to get it right' (2019) *Conservation Science and Practice* 145; see also Nathan J Waltham and others, 'UN Decade on Ecosystem Restoration 2021 – 2030: What chance for Success in Restoring Coastal Ecosystems?' 7 (2020) *Frontiers in Marine Science* 71.

[18] UNEP/FAO Factsheet, 'The UN Decade on Ecosystem Restoration 2021-2030' (February 2020). Available online at UNDecade.pdf (unep.org) (last accessed 13 May 2021).

[19] The Build Back Better approach to disaster recovery was introduced in 2006 by former American President Bill Clinton, the UN Secretary-General's Special Envoy for Tsunami Recovery.

[20] Ibid.

policymakers, and researchers, Priority 4 of the Sendai Framework for Disaster Risk Reduction 2015-2030 was expanded in 2015 to include the build-back better.[21]

For the economy to recover from the COVID-19 crisis sustainably and resiliently, a return to 'business as usual' and environmentally destructive investment patterns and activities must be avoided, as found in a recent study by the Organization for Economic Cooperation and Development (OECD).[22] Social and economic losses could exceed those caused by COVID-19 if global environmental emergencies like climate change and biodiversity loss can progress unchecked. Rather than focusing solely on speeding up the process of getting economies and livelihoods back on their feet, economic recovery packages should be created with 'building back better'[23] in mind.

Instead, the goal of recovery policies should be to encourage the kinds of investment and behavioural shifts that make societies more resistant to the kinds of shocks that are inevitable in the long run. Well-being and acceptance are prioritised in this approach. Resilience to climate impacts, slowing biodiversity loss, increasing the circularity of supply chains, and alignment with long-term emission reduction goals are also essential factors in determining whether recovery packages can rebuild more effectively.[24] The world's population is expected to reach 9 billion by 2050. Without sacrificing any more forests, we must ensure that our soils are in good condition to store more nutrients and grow plants of higher quality to feed everyone.[25] Healthy ecosystems are home to many different species.

---

[21] Glen Fernandez and Iftekhar Ahmed, "Build back better approach to disaster risk recovery: Research trends since 2006' 8 (2019) *Progress in Disaster Science* 100121.

[22] OECD, 'Building back better: A sustainable, resilient recovery after COVID 19'. OECD Policy Responses to Coronavirus (COVID-19) 5 June 2020. Available online at Building back better: A sustainable, resilient recovery after COVID-19 (oecd.org) (last accessed 7 June 2021).

[23] Ibid.

[24] Ibid.

[25] Ibid (n. 8).

One million animal and plant species are in danger of extinction, but we can help them by restoring these areas.[26]

Furthermore, by 2030, restoring 350 million hectares of degraded landscapes will boost rural economies, contributing to poverty alleviation and worth US$9 trillion in ecosystem services.[27] Some of the world's richest biodiversity hotspots can be saved, along with the storm protection, fisheries, and carbon storage provided by coastal and marine ecosystems, which can be restored.[28] It is believed that restoring wetlands can offer 14 per cent of the mitigation potential needed to limit global warming to 2°C, even though between 20 per cent and 50 per cent of global blue carbon ecosystems (highly productive vegetated coastal ecosystems like mangroves, salt marshes, and seagrass beds) have already been converted or degraded.[29] In the wake of the COVID-19 pandemic, resilient societies will be built partly through ecological restoration, including measures to create green jobs.[30]

3.5 THE VALUE OF ECOLOGICAL RESTORATION

Decisions about the goals and methods to be used in ecological restoration are fraught with value because they reflect people's individual preferences and worldviews. Andre Clewell and James Aronson provide an insightful theoretical analysis of the value of ecological restoration, arguing that the reluctance to discuss why we should restore ecosystems stems from a lack of consideration for human values and that individuals choose to participate in ecological restoration for a wide range of motivations.[31] For instance, many

[26] Ibid.

[27] Ibid (n. 18).

[28] Michael Elliot and others, 'Estuarine, coastal and marine ecosystem restoration: Confusing management and science – A revision of concepts' 74 (2007) *Estuarine, Coastal and Shelf Science* 349 – 366.

[29] Ibid (n. 18)

[30] Ibid (n. 28).

[31] Ibid (n. 3), 3.

would point to the pressing nature of current threats to ecosystems and the planet; these individuals want to help find solutions to the problems that have led to the degradation of our natural resources and the extinction of species. However, some believe that helping with ecological recovery is a meaningful way to fulfil their personal values, ambitions, and lives. Ecological restoration is something people who care about the environment may want to advocate for because it helps to redeem the interconnectedness of the biosphere, improves ecosystem services, promotes environmental education, provides recreational opportunities, enhances the aesthetic values of natural areas, and recovers sacred (or religious) sites. Although values can be met immediately through (the practice of) ecological restoration, most values are met indirectly by restored ecosystems.

Improvements in ecosystem services are an example of an "objective and pragmatic" value, while aesthetic enhancements are an example of a "subjective and emotional" value. While some values are experienced individually, such as the satisfaction one gains from working to repair environmental damage, others are experienced on a collective community level, such as the strengthened bonds between neighbours as a result of working together on a restoration project and based on the work of contemporary philosopher Ken Wilber,[32] who distinguished between objective and subjective, as well as individual and collective categories, Clewell and Aronson constructed a four-quadrant model for ecological restoration (see Figure 1). Wilber's generic model can be used to effectively portray the emerging field of integral ecology, which provides a lens through which ecological issues can be seen from various angles.[33]

[32] Ken Wilber, *A Theory of Everything, An Integral Vision for Business, Politics, Science and Spirituality* (Boston: Shambhala, 2001).

[33] Sean *Esbjörn-Hargens* and Michael E Zimmerman, *Integral Ecology: Uniting Multiple Perspectives on the Natural World* (New York: Random House, 2009).

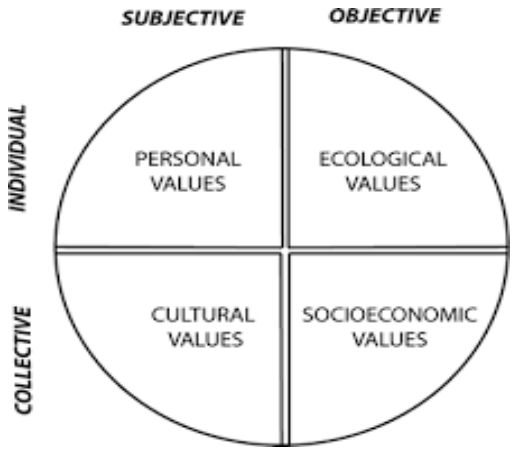

Figure 1: Clewell and Aronson's four-quadrant model for ecological restoration.[34]

First, viewed from left to right, it can be divided into two halves, one dealing with subjective values and the other with objective ones. Although economists have had some success in trying to empirically measure objective values empirically, measuring subjective values is more difficult because they express opinions and emotional responses.[35] The top left quadrant represents our emotional response to ecological damage. When viewed in a vertical plane, the quadrant has an upper hemisphere concerned with individuals and a lower hemisphere concerned with groups sharing a common culture and social environment.[36] Damage to the environment can provoke anger. It offends our aesthetic sensibilities or shocks us because it is shocking that our cultures would allow it to happen. As a result of our emotional responses, we might become directly involved in ecological restoration as professionals or indirectly as sponsors, financiers, volunteers, or concerned citizens. Such actions allow us to take charge of a problem that affects us all and work toward a solution.

[34] Ibid (n. 3), 16.

[35] Jenniffer S Lerner, 'Emotion and Decision Making' 66 (2015) *Annual Review of Psychology* 799 – 823.

[36] Ibid (n. 3), 17.

In addition, the ecological features we value as indicators of a whole and functioning biosphere can be found in the upper right quadrant. Understanding natural areas, their biophysical components, and ecological processes allow us to respond rationally to ecological damage in this quadrant. Ecological revitalisation thus permits the restoration of lost qualities and the values we ascribe to them. Collective societal and economic values of compromised ecosystem services are shown in the lower right quadrant. Increased flows of ecosystem services, made possible by ecological restoration, are associated with a robust economy, reduced economic distress, and a more significant potential for social integration. Damage to ecosystems may have increased our vulnerability to floods, increased the cost of treating our water or caused our go-to seafood to become more expensive or harder to come by. In other words, our ecosystem has been damaged, which has led to a decline in our standard of living, decreased happiness, and even an increased risk of death.

The degradation of ecosystems has encroached upon the lower left quadrant, where our shared cultural values are located. When an important place like a park or a place of worship is vandalised or otherwise desecrated, the community feels a sense of loss. Our dedication will strengthen our neighbours and the community's social cohesion as we work together to restore what we have lost if we respond as a group. As a result, we will gain a deeper understanding of our surroundings. For instance, by participating in ecological restoration projects, kids can learn valuable lessons in natural history and ecological literacy or "eco-literacy".[37] This means that first-hand experience complements the knowledge of biodiversity they have gained from books and documentaries. Once those working on a restoration project fully grasp the depths of the biodiversity concept, an environmental ethic can be formulated. Whether directly or indirectly, participating in ecological restoration allows us to satisfy these values collectively, strengthening the nature-culture nexus.

[37] Ibid.

Even though ecological restoration can satisfy many (but not all) subjective values, once ecosystems are restored, they can accommodate all of humanity's needs. Personal values are met through performance, or the "process" of ecological restoration, except for a few aesthetic values. Some cultural values are met through implementation, such as those related to eco-literacy, that are met through direct experience at project sites and the strengthening of social cohesion. Remember that the four quadrants are delineated by two parallel lines, signifying a certain amount of autonomy. This division was done on purpose, as professionals are naturally inclined to zero in on the area most closely related to their work or expertise. Wilber warns that people who only care about one section of the diagram cannot see the big picture and how everything fits together.[38]

In addition, everyone contributing to ecological restoration brings their unique viewpoint and values to the table. So, environmentalists, who see restoration solely in terms of ecological recovery, will gravitate toward the rightmost quadrant of ecological values. On the other hand, management staff care more about restoring ecosystem services like water quality and biodiversity. They are attracted to the quadrant of socio-economic values and are less concerned with the ecological details. People who are driven by factors external to themselves tend to cluster in the upper left. Ecological restoration work is done by those who feel a deep need to either restore a connection with nature or atone for the harm their culture has caused to the natural world. Still, others are driven by cultural factors; for example, a teacher may be overjoyed that a schoolyard restoration project is increasing students' ecological literacy to levels that would be impossible to achieve in the classroom alone.

However, the point is for all parties involved in an ecological restoration project to be aware of the values from all four quadrants, not just those that align with their own. With this broader perspective, a project that satisfies values from just one quadrant can have greater

[38] Ibid (n. 32).

significance. Many restoration projects have values in only one or two quadrants explicitly stated as satisfied. If an ecological restoration project is well-planned and comprehensive, it will achieve all four goals.[39] We will now delve into some of the finer points of the values met by ecological restoration in each of the four directions.

3.5.1 Ecological Values

From a scientific standpoint, the most important ecological value of ecosystem restoration is the restoration of damaged ecosystems to their original state of ecological health and wholeness.[40] These benefits are achieved through restoration efforts at a project site that improve the biophysical conditions of an ecosystem. After that, other characteristics emerge independently of human intervention due to the biological processes inherent to every ecosystem. These factors help sustain the entire biosphere by, among other things, controlling atmospheric oxygen and carbon dioxide levels, aiding in the thermal reflection of solar radiation, and providing a haven for threatened species. This chapter delves deeper into some of these characteristics.

Indeed, restoring ecosystems may appear to many as a no-brainer objective. But it is essential to recognise that the values guiding ecological restoration goals are just as subjective as any other set of goals. Mark Davis, Lawrence Slobodkin,[41] and Robert Lackey[42] have argued that concepts like ‘damage,’ ‘repair,’ ‘integrity,’ and ‘health’ are not objective in the scientific sense because they carry with them a variety of values. Consider the paradox that an ecosystem that has been ‘damaged’ by one person is actually ‘improved’ by another.

---

[39] Ibid (n. 3), 18.

[40] Ibid (n. 3), 19.

[41] Mark A Davis and Lawrence B Slobodkin, ‘The Science and Values of Restoration Ecology’ 13 (2004) *Restoration Ecology* 13 – 26.

[42] Robert T Lackey, ‘Societal Values and the Proper Role of Restoration Ecologists’ 2 (2004) *Frontiers in Ecology and the Environment* 45 – 46.

A malarial swamp and an intensively managed cornfield qualify as 'healthy' ecosystems. Neither state can be considered "healthy" outside of the context of an individual's priorities and standards.[43]

3.5.2 Personal Values

Getting to the bottom of why we, as individuals, would want to restore ecosystems is the first step toward comprehending our values.[44] According to Clewell and Aronson, the three most common responses are summarised below, each reflecting slightly different (individual) values. First, we consider the "re-entry value" that William Jordan popularised when he described restoration as a means to re-establish a rapport with the natural world.[45] Jordan gave several examples of how one can experience nature. Having an encounter with nature is enjoyable, but returning to its natural setting is much more so. In contrast to ecological restoration, Jordan is correct in saying that none of these other methods "offers complete immersion in nature through the exercise of the full range of our abilities as human beings,"[46] i.e., as creators, inhabitants, and bona fide members of the natural world. In this way, ecological restoration allows people to participate in biological processes as active agents rather than as technicians brought in from outside. Since ecological restoration aims to repair environmental damage actively, re-entry (or reconnection) lifts the individual above the hopelessness that is understandably prevalent among preservationists. Motivated by the knowledge that they contribute to halting environmental degradation, people take up this cause. The desire to return to natural settings is deeply ingrained in most developed parts of the world and is commonly associated with leisure activities. We revitalise ourselves by

[43] Ibid.

[44] Ibid (n. 3), 20.

[45] William R Jordan, 'Restoration and the Re-entry of Nature 4 (1986) *Restoration and Management Notes* 2.

[46] Ibid.

partaking in satisfying pursuits that provide a welcome diversion from the pressures of daily life and the necessity of earning a living. Another unquestionable feature of re-entry that often goes unnoticed is the opportunity to take in nature's beauty. Simply taking in the rare sight of a majestic mountain range is not enough; the simple aesthetic response to a fish's sleeping symmetry and flashing colours as it swims by - or as a fisherman reels it in - is just as important. As an ecosystem recovers from damage and returns to health, the restoration process immerses the observer in a world of aesthetic impressions and emotions. A person's appreciation for beauty, and in the best cases, their cultural yearnings and sense of self, can motivate them to engage in ecological restoration.

The second response, which Paddy Woodworth calls the "environmental crisis response value,"[47] may be the primary motivation for individuals to enter the field of restoration ecology. This response acknowledges that the world and its human population are in environmental trouble and that it is better to act now to ensure our future well-being.[48] Those willing to accept individual responsibility for the environmental damage their culture causes will find ecological restoration an appealing solution because it can be seen as an immediate and tangible way to repair the damage done to the environment.[49] The third reaction is an "experience of oneness" with nature, wherein those involved in ecological restoration realise they are inseparable from the ecosystem they are trying to restore.[50] A flash of insight like this can happen at any time, even amid tedious project work, and it can be compelling. It is hard to describe because such a private, subjective experience defies

[47] Paddy Woodworth, 'What Price Ecological Restoration' (2006) *The Scientist* 39 – 45.

[48] Ibid.

[49] William R Jordan, 'Sunflower Forest: Ecological Restoration as the Basis for a New Environmental Paradigm' in Dwight A Baldwin Jr., Judith DeLuce and Carl Pletsch, (eds). *Beyond Preservation: Restoring and Inventing Landscapes* (Minneapolis: University of Minnesota Press, 1994) 17 – 34.

[50] Andre Clewell, 'Resistance to Restoration' 19 (2001) *Ecological Restoration* 3 – 4.

explanation. Strong incentives that penetrate the depths of our psyches include re-entry, environmental crisis response, and the feeling of oneness. According to Clewell and Aronson:

> We rationalise that we entered the field of [ecological] restoration because we took a course in that subject in college or because we were offered a job with a firm or institution that was doing [ecological] restoration. The chances are that we took that course or considered that job because it resonated with our yearnings to fulfil one or more of these related values.[51]

This sense of oneness with nature is invaluable for those working in ecological restoration, but it also benefits project administrators, financiers, and government officials who shape public policy concerning natural resources. Everyone can benefit from this same foundation in values to understand the significance of restoring ecosystems and maintain the patience and dedication required to see it through.

3.5.3 Socio-economic Values

All living things, including humans, rely on natural resources such as oxygen, water, food, and building materials. Nature is also valuable because it provides ecosystem services such as preventing soil erosion and delaying surface runoff that could otherwise lead to flooding. We may or may not be cognizant of these natural benefits depending on our lifestyles and environments. Those who live in rural areas, especially those living in poverty, are often far more knowledgeable than those who do not depend directly on natural goods and services for their well-being. Current market transactions and public policy do not accurately reflect nature's actual value; however, it is clear that many people are re-evaluating their and society's values in light of growing awareness and concern about environmental problems.

[51] Ibid (n. 3), 21.

On top of that, ecosystems supply a wide variety of natural products and services that humans can put to good use and upon which all economies ultimately rest. Those in need can access these items easily because they are free. Some recent interdisciplinary works[52] and the Millennium Ecosystem Assessment project have increased our understanding of the diversity and significance of natural ecosystems' contributions to human well-being and their decline and inability to sustainably provide the services necessary to continue this growth.[53] More recently, the Economics of Ecosystems and Biodiversity (TEEB) study describes ecosystem services more simply as 'the direct and indirect contributions of ecosystems to human wellbeing'.[54]

Thanks to economic globalisation, most of these natural goods have synthetic or cultivated substitutes, at least for the wealthy. However, these alternatives are either unavailable or prohibitively expensive for most of the world's population. Furthermore, cost-benefit analysis shows that substitution has global costs, so it is best to avoid it if possible. Considering the varied ecosystem services that ecosystems provide makes this introspection all the more critical. Policymakers who manage and regulate natural resources refer to the combined benefits of nature as ecosystem services. When ecosystem services are threatened, it affects our economic and social systems.

[52] For instance, see Walter E Westman, 'How Much Are Nature's Services Worth? 197 (1997) *Science* 960 – 964; see also Gretchen Daily, (ed) *Nature's Services* (Washington DC: Island Press, 1997).

[53] Millennium Ecosystem Assessment, A Framework for Assessment (2005). Available at: https://www.unenvironment.org/resources/report/ecosystem-and-human-well-being-framework-assessment (last accessed on 9 March 2020).

[54] The Economics of Ecosystems and Biodiversity (TEEB), Mainstreaming the Economics of Nature: A Synthesis of the Approach, Conclusions and Recommendations of TEEB (2010), 33.

3.5.4 Cultural Values

The ecosystems we restore may serve to fulfil the values of a particular culture. Ecological restoration, for instance, often focuses on restoring degraded ecosystems at well-known locations like parks and reserves, where people congregate for outdoor, nature-based recreation or at sacred sites which hold religious (or spiritual) significance for their visitors.[55] We may take part in environmental stewardship programmes at the regional level, helping to repair public spaces that tourists have abused. To encourage native species to return to breeding areas, we may assist local communities in cleaning up and repairing a polluted stream channel and restoring a riparian forest ecosystem along its course. A strong sense of place and community is fostered when people with shared values unite to improve their local landscape through an ecological restoration project.[56]

Restoring ecosystems, also known as "restoring habitat," is crucial because it creates that biodiversity can be preserved. Much ecological restoration has been carried out in educational institutions for the purpose of knowledge production.[57] For instance, in the 1930s, when transportation was more limited, the Curtis Prairie at the University of Wisconsin Arboretum was restored so that university students studying ecology could access the prairie.[58] Many outreach initiatives emphasise the value of biodiversity, and the term "biodiversity value" is widely used in both the popular and scientific press, demonstrating the widespread cultural interest in biodiversity. Ecological restoration projects give participants a unique perspective on biodiversity that cannot be gained from watching nature documentaries at home. It is possible to compare ecological study to the cultural activity of teaching.

---

[55] See P S Ramakrishnan 'Rehabilitation of Degraded Lands in India: Ecological and Social Dimensions' 7 (1994) *Journal of Tropical Forest Science* 39 – 63.

[56] Andre Clewell, 'Downshifting' 13 (1995) *Restoration and Management Notes* 171 – 175.

[57] David W Orr, *Earth in Mind* (Washington DC: Island Press, 1994).

[58] William R Jordan, *The Sunflower Forest: Ecological Restoration and the New Communion with Nature* (Berkeley: University of California Press, 2003).

Ecological restoration is often held up as a litmus test for ecological theory, as John Harper[59] and Anthony Bradshaw proposed.[60] Many values drive ecological restoration, and most people can appreciate some of them. Ecological restoration's sequential and cumulative nature reduces the scope of possible experiments, lending credence to this optimistic view. However, restorationists can address these issues with research designs and statistical methods. As a result, ecological restoration will have a relatively easy time gaining global acceptance as playing a significant role in addressing the formidable environmental challenges of the twenty-first century once the message has been effectively communicated to the general public.[61]

At this point, it is essential to understand ecological restoration's criticisms and contested issues, especially regarding its terminology, purpose, and methods, if we are to improve its governance and its contribution to sustainability.

3.6 SOME CRITICISMS OF ECOLOGICAL RESTORATION

Like conservation biology, ecological restoration is a crisis discipline in which we must act without complete information and, consequently, without full control over the results.[62] Recognising our limitations and that all systems have 'unknown unknowns' should prompt us to treat the systems we restore with reverence and humility. Environmental philosophers like Robert Elliot[63] and Eric Katz[64] have contributed significantly to the debate

[59] John L Harper, 'The Heuristic Value of Ecological Restoration' in William R Jordan, Michael E Gilpin and John D Ader (eds.) *Restoration Ecology A Synthetic Approach to Ecological Research* (Cambridge: Cambridge University Press, 1987) 35 – 45.

[60] Anthony D Bradshaw, 'Restoration: An Acid Test for Ecology' in Jordan, Gilpin and Ader (n. 59) 23 – 29.

[61] Ibid (n. 3), 27.

[62] Ibid (n. 7), 4, 211.

[63] Robert Elliot, 'Faking Nature' 25 (1982) *Inquiry: An Interdisciplinary Journal of Philosophy* 81 – 93. Elliot later expanded his argument and somewhat modified his views in his book.

[64] Eric Katz, 'The Problem of Ecological Restoration' 18 (1996) *Environmental Ethics* 222 – 224.

by arguing that ecological restoration is doomed to fail despite its apparent benefits. In a seminal work in environmental ethics in 1982, Elliott argued against the restoration thesis, which holds that degraded or damaged natural environments can be brought back to their original condition without suffering a significant loss in value. Elliot's original argument against the restoration thesis centred on the idea of forgery and deception, as his provocative title suggests. He used artwork as an analogy to show how the object's origin and history significantly affect its value.[65] A work that is an exact copy of another but was not created by the same artist is not valued as much as the original. At least some of the worth of artistic creation is determined by the time and place in which it was made.

Restored natural environments, which Elliot argued should not be called "natural" because they result from human intervention, are subject to the same criticisms. Even when the two forests' biological complexity, diversity, and beauty are comparable, and even when our experiences of the two forests are similar, a forest replanted after extensive logging is less valuable than a forest with a continuous natural history. Before we learn that it is a fake, a forgery in the visual arts, or a restored or recreated natural landscape, it can give us aesthetic pleasure. However, our assessment will shift once we have more information about the object's backstory. He defends this 'special instance of an indexical theory of intrinsic value' as "naturalist and subjectivist" in nature.[66] If a thing's worth were determined solely by its intrinsic properties, then the restoration thesis would be hard to disprove since a perfect copy would have the same inherent properties as the original.[67] However, the essential qualities are not limited to the thing itself; they can also be relational, such as the context in which the item was created.

---

[65] Eric Katz, 'Book review: Faking Nature: The Ethics of Environmental Restoration' 3 (2) (1998) *Ethics and the Environment* 201 – 205.

[66] Robert Elliot, *Faking Nature: The Ethics of Environmental Restoration* (London: Routledge, 1997) 5, 16.

[67] Ibid (n. 66), 12 – 15.

To follow up on Elliot's initial criticism of the restoration thesis based on the analogy with artworks, Katz made a series of arguments about the normative problem of ecological restoration based on the presence of human intentionality and design. The critical factors in determining an artwork's value are its origin, historic continuity, or authenticity.[68] We want to know who the artist was (or is) and the time and place in which the work was created so that we can properly evaluate it. If the identity of the human artist responsible for a piece of prehistoric or ancient art cannot be established, we at least seek information about the period and location in which it was created. In terms of price, a piece of art would be considered a "knockoff" if it looked like it was created by the same artist or dated to the same era. Keeping the past in the past is also crucial. It is essential to know that artwork has survived the test of time relatively unscathed and in its original form. When these two criteria – originality and historic integrity – are combined, we arrive at the concept of authenticity, which states that the artwork we see today is the same artwork created by a particular artist (or at a specific time and place) in the past, unaltered by subsequent events.[69]

Katz's original essay, in which he outlined his position, has a title more divisive than Elliot's.[70] Katz disagrees with comparing natural landscapes to works of art, but he acknowledges that a restored landscape is an artefact rather than a fake. According to Katz, natural things do not have any particular function or purpose, but artefacts do; therefore, restored environments are artefacts because humans construct them for the express purpose of restoration. Consequently, they are intrinsically linked to the view that humans can and should shape the natural world to suit their needs (anthropocentrism). Katz argues that restoration is a "technical fix" that attempts to manipulate nature to satisfy human needs

[68] Eric Katz, 'Further Adventures in the Case against Restoration' 34 (2012) *Environmental Ethics* 67, 70.

[69] Ibid.

[70] Eric Katz, 'The Big Lie: Human Restoration of Nature' (1992) *Research in Philosophy and Technology* 2.

despite its claim to imitate and honour nature. This instinct to dominate nature is the root cause of our environmental problems.

3.6.1 …Some responses to the Critics

Eric Higgs[71] and Steven Vogel[72] have given convincing rebuttals to the arguments advanced against ecological restoration by Elliot and Katz, as outlined above. To better understand ecological systems, Higgs investigates how humans interact with them. Higgs draws this conclusion by contrasting the popularity of technologically developed wilderness (Disney's Wilderness Lodge) with naturally grown wilderness (Jasper National Park). As Higgs points out, the Jasper landscape challenges our concept of wilderness because it is both a remarkably wild place and marked and shaped by human activities for thousands of years, despite its reputation for pristine beauty. For those working on repairs, this presents yet another obstacle. If Jasper is untouched, then at what point would restoration be necessary? To expand on Higgs:

> Disney, however, is in the business of selling programmed experience: consummation through consumption of reality or, more accurately, virtual reality. In doing this, Disney is ultimately involved in the production of landscapes and the selling of stories about nature.[73]

The physical manifestations of a significant cultural shift in our attitude toward places and things we regard as nature-themed wildernesses produce a muddled understanding of what a genuine wilderness should be.[74] This indicates that changes in society, such as technological development, shifts in cultural perspective, and variations in our perceptions and

---

[71] Eric Higgs, *Nature by Design: People, Natural Process, and Ecological Restoration* (Cambridge, Massachusetts: MIT Press, 2003).

[72] Steven Vogel, 'The Nature of Artifacts' 25 (2003) *Environmental Ethics* 149 – 168.

[73] Ibid (n. 71), 50.

[74] Ibid (n. 71), 56.

understanding of the wilderness, play a significant role in determining the best restoration method.

Vogel has analysed Elliot's and Katz's arguments and dismantled the binary oppositions based on the human-natural divide and, more importantly, the natural-artificial divide that Katz posits. He intended to defend ecological restoration as both a policy and a project and make the case that a restored environment, potentially an artefact, is still natural. To paraphrase Vogel's clear statement:

> I do not think restoration projects are forgeries or lies, and indeed I think they can be quite valuable in terms of improving the environment we inhabit […] To understand the nature of artifacts, I suggest, is also to see value in more than simply the attempt to recapture or imitate "natural" landscapes.[75]

Vogel argues that, for two main reasons, the distinction between the human and the natural dissolves as soon as it is articulated. First, there is not much nature left if we define "natural" as an area where humans have never intervened; what we think of as "natural" is often the result of human activity. The second is that human nature is natural, having evolved in the same way as all other forms of life. In light of this, the argument that a landscape that humans have restored cannot be natural is illogical.[76] Vogel argues that because of our evolved capabilities – large brains, opposable thumbs, etc. – we are incapable of doing anything that is, in fact, unnatural. To look at it another way, the mental and physical adaptations we have developed over millions of years are the "artefacts" we create.[77]

Having established the theoretical value of ecological restoration, the following section will discuss the connection to and differences between ecological restoration and other interventions equally useful in recovering degraded or damaged ecosystems.

---

[75] Ibid (n. 72).

[76] Ibid.

[77] Ibid.

3.7 ECOSYSTEM RECOVERY AND ECOLOGICAL RESTORATION

Ecological restoration aims to create self-sufficient ecosystems that retain the features of 'past or least-disturbed landscapes.'[78] In this sense, according to the definition provided by the Society for Ecological Restoration (SER), it is similar to other efforts to restore ecosystems by altering the local flora, fauna, and geology.[79] It is important to note that the terms 'remediation,' 'rehabilitation,' 'reclamation,' and 'restoration' have all been 'used interchangeably in the scientific literature or in government reports and policy papers'[80] as practices or activities that aim equally to improve the biophysical conditions of degraded ecosystems. Therefore, in practice, these actions, among others, are often misunderstood to be ecological restoration. Although 'all of these activities can overlap with and may qualify as ecological restoration,' the SER clarifies in its 2004 Primer that ecological restoration is distinct from rehabilitation, reclamation, and remediation.[81] To properly place ecological restoration within the broader context of natural recovery, it is essential to recognise the interconnections between the various "ecological interventions" and establish clear boundaries between them.

As will become apparent in the following sections, this distinction is critical for establishing a foundational scientific understanding of ecological restoration and legal standards and obligations.

[78] Ibid (n. 3), 5.

[79] Ibid (n. 15), section 10.

[80] Ana T Lima and others, 'The legacy of surface mining: Remediation, restoration, reclamation and rehabilitation' 66 (2016) *Environmental Science and Policy* 227 – 233.

[81] Ibid (n. 15).

3.7.1 Ecological Restoration and Remediation

Ecological restoration works to bring back both the living organisms and the non-living parts of an ecosystem that are necessary for its survival. However, the term 'remediation' refers to the clean-up of a contaminated area (terrestrial or aquatic) to remove or isolate contaminants from the environment and is thus very different from ecological restoration. Ecological restoration projects at sites contaminated by chemical disasters or oil spills may need to include remediation as a 'task' during site preparation.[82] There are many different methods for cleaning up polluted environments; which one is used depends on the contaminated medium (air, water, or soil) and the nature of the substance (which could be anything from industrial chemicals to heavy metals).[83] Physical, chemical, or biological remediation strategies may be used.[84] Chemical remediation entails washing contaminated soil with clean water, reagents, and solvents that can leach the contaminants from the soil.[85] In contrast, physical remediation primarily entails soil replacement and thermal desorption and is labour-intensive, costly, and better suited for small, contaminated sites.[86] Because of the introduction of solvents and reagents during remediation, this approach is expensive and threatens other environmental media.

---

[82] Ibid (n. 3), 206.

[83] Helena I Gomes, Celia Dias-Ferreira and Alexandria B Ribeiro, 'Overview of in situ and ex-situ remediation technologies for PCB-contaminated soils and sediments and obstacles for full-scale application' 445-446 (2013) *Science of the Total Environment* 237 – 260.

[84] David M Hamby, 'Site remediation techniques supporting environmental restoration activities – a review' 191 (1996) *Science of the Total Environment* 203 – 224; see also: Mee Wei Lim, Ee Von Lau and Phaik Eong Poh, 'A comprehensive guide of remediation technologies for oil contaminated soil – present works and future directions' 109(1) (2016) *Marine Pollution Bulletin* 14 – 45.

[85] Ibid (n. 3), 209.

[86] Faisal I Khan, Tahir Hussein and Ramzi Hejazi, 'An overview and analysis of site remediation technologies' 71 (2004) *Journal of Environmental Management* 95 – 122.

When it comes to biological remediation methods, Clewell and Aronson make a strong case for the distinction between phytoremediation and bioremediation. Through phytoremediation, living green plants or their roots are used to fix or absorb contaminants from soil, lowering the concentration of pollutants in the soil and, by extension, the risk they pose to the environment and human health.[87] Greenhouse gases like carbon dioxide are often released into the atmosphere during this process, even though it is efficient at removing pollutants.[88] Conversely, bioremediation uses ostensibly cheap technologies to aid in the natural biodegradation of hydrocarbons by providing the nutrients, and oxygen microbes need.[89] When comparing the two types of remediation, the key differences are:

> Phytoremediation is the process of removing toxic metals or other substances from the soil or substrate, using plant species known to accumulate the substances in their tissues [...] Bioremediation is the term describing a large suite of techniques that help decontaminate a site. It refers to the process of introducing bacteria that metabolise petroleum, of which a number of natural species have been identified, isolated and grown in quantity for application on soils or in waters containing oil spills.[90]

Remediation, or cleaning up a contaminated site, must occur before the land can be used for anything else. Thus, the ultimate goal of remediation is to achieve a decontaminated or contaminant-free area by focusing on a specific environmental media (soil, water, human health, etc.) and proposing remedial actions to solve it. However, ecological restoration offers

[87] Nenibarini Zabbey, Kabari Sam and Adaugo T Onyebuchi, 'Remediation of contaminated lands in the Niger Delta, Nigeria: Prospects and challenges' 586 (2017) *Science of the Total Environment* 952, 957.

[88] Valerie Cappuyns, 'Environmental impacts of soil remediation activities: quantitative and qualitative tools applied on three case studies' 52 (2013) *Journal of Cleaner Production* 145 – 154.

[89] Sridha Susarla, Victor F Medina and Steven C McCutcheon, 'Phytoremediation: an ecological solution to organic chemical contamination' 18 (2002) *Ecological Engineering* 647 – 658.

[90] Ibid (n. 3), 206.

to ‘remediate’ the polluted site and restore the pre-existing ecosystem functions.[91] To restore an ecosystem means to make one ‘suitably integrated into a larger ecological matrix or landscape’[92] beyond the contaminated site, whereas remediation implies remedying. The focus of remediation is on the steps taken to restore degraded ecosystems rather than the final result.

3.7.2 Ecological Restoration and Rehabilitation

Rehabilitation of an ecosystem: for ecological enhancements in grasslands, arid rangelands, and grassy woodlands, the term “rehabilitation” has been favoured in some scientific writings. The SER Primer defines rehabilitation as the “repair of ecosystem processes, productivity and services.” At the same time, ecological restoration aims to restore the original ecosystem’s function, structure, and biotic integrity regarding species composition and community composition. Although they both “fundamentally focus on historic or pre-existing ecosystems as models or references,” ecological restoration and rehabilitation pursue different ends and use other methods. Dennis Cooke argues that to ‘rehabilitate’ an ecosystem would imply repairing and replacing the essential or primary ecosystem structures and functions which have been altered or eliminated by disturbance. Rehabilitation essentially

> […] emphasises re-establishing important missing and altered species, habitats and processes and reducing or eliminating stressors such as external loading. Rehabilitation [which is fundamentally different from ecological restoration] does not have as its only goal the enhancement of human-centred activities, nor does it attempt to produce a close approximation of a pre-disturbance ecosystem.[93]

[91] Ibid (n. 3), 228.

[92] Ibid (n. 15), section 3.

[93] Ibid.

Rehabilitation, as argued for by Cooke (and rightly so) in the context of nature restoration, is similar to "medical rehabilitation," the goal of which is to restore a patient to as close to their pre-illness state as is practical without claiming to restore them to their original condition. For example, in medicine, even the most catastrophic injuries can often be treated successfully by restoring or replacing a patient's structural integrity and functional abilities through surgical procedures.

Surgical and physical rehabilitation can return an injured person to a life that resembles their previous one, primarily if the risk of further injury can be eliminated through protective measures. In medical rehabilitation, the primary focus is not on the often-impossible task of restoring the patient to their pre-injury state but on achieving a sufficient rehabilitation of essential processes and structures to return to their previous level of functioning or return to their prior level of independence. Clewell and Aronson agree with Cooke's medical rehabilitation analogy when they state that it is assumed that lost functionality and ecosystem services can be regained through new species' introduction (or acceptance of the introduction).[94] Therefore, it is unlikely that an ecosystem can be restored to its pre-impairing state in cases where it has been drastically altered by human activities, such as at mine sites. Rehabilitation may be a workable option, which does not fix the ecosystem's original biotic integrity.

3.7.3 Ecological Restoration and Reclamation

Reclamation is an older term for transforming unproductive land, wetlands, or shallow seas into economically viable agriculture, aquaculture, or forestry environments.[95] Decision-makers usually settle on reclamation if restoring the original

[94] Ibid (n. 3), 203.

[95] Ibid (n. 3), 203.

is not possible due to time constraints, but it is necessary to recoup ecosystem services that the original ecosystem provided.[96] While rehabilitation and ecological restoration may share many similarities, the two practices focus on different aspects of ecosystem services. In this case, the repair is concerned with improving biogeochemical function. Reclamation may result in a "replacement ecosystem" if its goal is to restore biogeochemical function without using the original ecosystem's species but rather those that provide the same function. For example, the Dutch constructed seawalls along their entire coastline in the thirteenth century to use the low-lying estuaries and tidelands for farming.[97] In modern times, however, 'reclamation' is commonly associated with mined lands, the main objective being the stabilisation of the terrain, improvements in landscape appearance and aesthetics and the return of land to a more 'useful purpose'.[98]

After the ores have been extracted, the resulting pits are reclaimed by backfilling them with overburden spoils or with tailings consisting of uneconomic materials (known as "tailings"). This fits in line with the theory that:

> [r]eclamation […] requires that backfilled and physically reclaimed land be stabilised and revegetated with grasses and legumes or another cover, which may consist of a single species of plant that may or may not be native. Regard for public safety and health are also factors in reclamation designs, but without regard to ecological conditions informed by a reference site.[99]

---

[96] Chris Powter and others, 'Regulatory history of Alberta's industrial land conservation and reclamation program' 92 (2012) *Canadian Journal of Soil Science* 39 – 51.

[97] See: Jan P Bakker and Theunis Piersma, 'Restoration of Intertidal Flats and Tidal Salt Marshes' in Jelte van Andel and James Aronson (eds.) *Restoration Ecology: The New Frontier* (Oxford: Oxford University Press, 2006), 174 – 192.

[98] Ibid (n. 52), section 10.

[99] Ibid (n. 3), 205.

A new study has found that striking an 'equilibrium' between land use and wetland regeneration is essential to reduce the tension between rapid economic development and coastal ecological stability.[100] Consequently, they argue that assessing the conditions of reclaimed wetland areas and minelands is crucial to better inform future ecological restoration efforts, especially in developing countries.[101] It is important to note that 'biological reclamation is essential if the soil is to be stored beyond the shelf-life period',[102] making topsoil an integral part of land reclamation in mining areas. Other processes, such as mitigation, rewilding, and ecological engineering, have aided ecosystem recovery.[103] However, this section will only cover remediation, rehabilitation, and reclamation because of chapter length limitations.

Ecological restoration differs significantly from the other nature recovery concepts we have discussed because it prioritises re-establishing an ecosystem to its 'historical ecological trajectory,' or original state. The SER defines an ecological trajectory as "any given trajectory is not narrow and specific," meaning that any given trajectory can describe the path of development taken by any given ecosystem over time.[104] Conversely, a trajectory "accepts" a limited but extensive set of possible ecological expressions across time. Ecological restoration begins with a focus on preserving pre-development conditions. Resetting an ecosystem to its original state has indeed generated some heated debate. It is "generally accepted that a return to past ecosystems, indeed a return to the past in general, is,

[100] Wenting Wu, and others. 'Impacts of coastal reclamation on wetlands: Loss, resilience, and sustainable management' 210 (2018) *Estuarine, Coastal and Shelf Science* 153 – 161.

[101] Ibid.

[102] Mrinal K Ghose, 'Management of topsoil for geo-environmental reclamation of coal mining areas' 40 (2001) *Environmental Geology* 1405 – 1410.

[103] Ibid (n. 3), 5 – 6.

[104] Ibid (n. 15), section 4.

strictly speaking, not possible; history cannot be repeated," write van Andel and Aronson,[105] two prominent scientists who have warned against trying to change the past.

Despite this caveat, there is an obvious need for further progress in ecological restoration science, which has enormous potential and exciting prospects for restoring damaged or degraded ecosystems.

3.8 THE ART AND SCIENCE OF RECONSTRUCTING ECOSYSTEMS

When an ecosystem can 'sustain itself structurally and functionally' and exhibits adequate 'resilience to normal ranges of environmental stress and disturbance,'[106] we say that the ecosystem has been "restored." In 1997, Higgs described what makes for effective ecological restoration. His first criterion was that effective restoration must include a 'historic component.'[107] According to Higgs, effective ecological restoration in those days had to be based on what had been there on the site before it was disturbed. It had to replicate the previously prevailed conditions to the greatest extent possible. Although likely, Higgs will not be as insistent about making historical conditions the most important aspect of good ecological restoration today, he nonetheless continues to stress that good ecological restoration needs to consider the pre-disturbance ecosystem.[108] This is because he believes that ecological restoration must consider past conditions, or else it is not a complete restoration in some way.

---

[105] Jelte van Andel and James Aronson, 'Introduction' in Jelte van Andel and James Aronson (eds.) *Restoration Ecology: The New Frontier* (Wiley-Blackwell, 2012) 293 – 296.

[106] Ibid (n. 15), section 10.

[107] Ibid (n. 7), 4.

[108] Eric Higgs and Richard J Hobbs, Wild design: principles to guide interventions in protected areas, in David N Cole and Laurie Young (eds.) *Beyond Naturalness: Rethinking Park and Wilderness Stewardship in an Era of Rapid Change* (Washington DC: Island Press, 2010) 234 – 252.

Higgs considers ecological restoration to be a complicated field of study, the success of which depends on adhering to the following four principles: (1) ecological integrity (the restored ecosystem should serve to preserve biodiversity and other critical ecological properties); (2) historical fidelity (the restored ecosystem should be based on the ecosystem that was damaged by previous human activity); (3) focal practices (restoration should generate meaning for humans by regularly working with nature); and (4) ecological sustainability (an acknowledgement that when restoring habitat we are making choices about the future of that habitat but that we must also plan for natural places taking over and modifying the habitat once our initial efforts at restoration end).[109] Higgs thinks that restoration practitioners should take the lead in the process of helping to restore not only nature but also the relationship between humans and the natural world because they are critical players in determining how nature is defined and used.[110]

Aronson and colleagues published an article in 1993 in which they initially advocated for restoring ecological attributes.[111] Subsequently, Clewell prepared a more generalised list of ecological characteristics,[112] which was later included in the SER Primer in 2004. Indeed, the SER Primer offers a comprehensive explanation of the elements that make up ecosystem recovery, including the following:

> An ecosystem has recovered – and is restored – when it contains sufficient biotic and abiotic resources to continue its development without further assistance or subsidy. It will sustain itself structurally and functionally. It will demonstrate resilience to

[109] Ibid (n. 71).

[110] Eric Higgs, 'The two-culture problem: ecological restoration and the integration of knowledge' 13 (2005) *Restoration Ecology* 159 – 164.

[111] James Aronson and others, 'Restoration and Rehabilitation of Degraded Ecosystems in Arid and Semi-arid Lands: A View from the South' 1 (1993) *Restoration Ecology* 8 – 17.

[112] Andre Clewell, 'Restoring for Natural Authenticity' 18 (2000) *Ecological Restoration* 216 – 217.

> normal ranges of environmental stress and disturbance. It will interact with contiguous ecosystems in terms of biotic and abiotic flows and cultural interactions.[113]

In addition, in their seminal work, Clewell and Aronson have identified and described a few ecological characteristics that characterise ecosystems as having successfully been restored. According to their argument, the appearance of these characteristics indicates that ecological recovery has occurred satisfactorily. These four components are examples of directly attainable elements from biophysical interventions at ecological restoration project sites. These include the following: (1) an appropriate species composition as determined by the reference model, (2) the initial development of community structure, (3) an abiotic environment that supports the biota, and (4) a landscape context that facilitates expected flows and exchanges of organisms and materials within surrounding areas and that does not pose a threat to the restored ecosystem. They contend that the other ecological characteristics are indirectly attainable and emerge due to interactions between organisms and their abiotic environment rather than due to manipulations at project sites.

The indirect attributes will likely be accomplished if the interventions to achieve the direct objectives are carried out effectively. On the other hand, in contrast to the four direct attributes, the indirect qualities are not easily measurable and need to be documented. If an ecosystem possesses these eleven characteristics, one can assert that it is living in a state or condition of wholeness, regardless of whether or not the ecosystem has been restored. The term ‘holistic ecological restoration’ refers to ecological restoration work intended to return an impaired ecosystem to wholeness concerning all eleven characteristics, as informed by a well-prepared reference model.[114] This type of restoration work is called “holistic ecological restoration.” Diagrammatic representations of the eleven ecological attributes can be found in Figure 2. These representations indicate how each ecological attribute influences the others as

[113] Ibid (n. 15).

[114] Ibid (n. 3), 91.

an ecosystem returns to health. These ecological characteristics will now be examined individually, emphasising those that can be directly obtained.

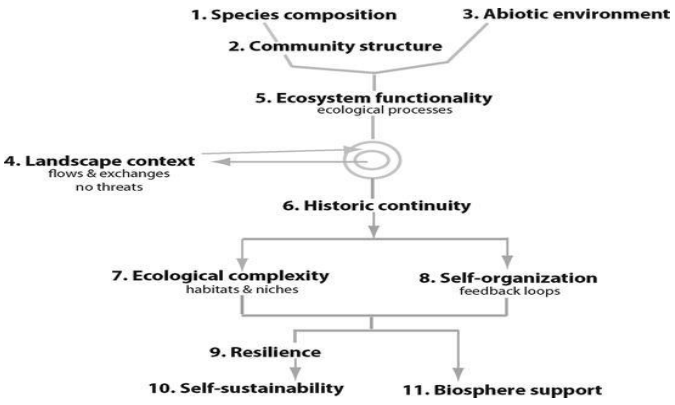

Figure 2: Eleven ecological attributes, their principal relationships, and their approximate order of appearance as an ecosystem develops during and after ecological restoration.[115]

3.8.1 Species composition

Following the recommendations of the reference model, an ecosystem that has been restored should comprise a comprehensive assemblage of potentially coadapted species. The species should include representatives of all known functional groups; the species should be native, and there should be as few invasive organisms as possible. In an ecosystem, the composition of the plant species represents the most fundamental trophic level, and the composition of the plant species both influences and, in the end, governs other ecosystem characteristics. Therefore, ensuring that the plant species composition of both terrestrial and aquatic systems is comprehensive and appropriate is essential to their functioning.

[115] Ibid (n. 3), 92.

In a perfect world, the composition of the plant species would consist of the same species present in the ecosystem before it was damaged, except that species belonging to the same functional group could be substituted for them when necessary. The justification for replacing species presupposes a more extensive regional species pool for a community than at a particular locality, such as the restoration project site. This is because the justification for substituting species depends on this premise. Because the under-representation of species may result in an ecosystem that is not as functional as before the impairment, the restored ecosystem should have roughly the same number of plant species as before the impairment. It would be possible to introduce additional species to stimulate competition, benefiting the species that can thrive under adverse conditions.

Because of their mobility and propensity to find and occupy suitable habitats, animal species typically only need to be purposefully introduced into new environments. It is possible that animals will not voluntarily return to habitats that have been restored but have become separated as a result of 'fragmentation.' Because of this, it is sometimes necessary to breed animals in captivity, relocate them, and reintroduce them to preserve their components. This has been attempted in various degrees all over the world, although one could argue that it has been done more for the conservation of rare species *ex-situ* and the re-establishment of spectacular, wide-ranging wildlife (like mountain sheep, for example) than for the restoration of ecological systems in their natural environments.[116]

Providing suitable habitats for animals that are typical of the ecosystem or landscape that will be restored, regarding food and water resources, cover, and territorial space, is one of the primary focuses of designing the restoration project. In cases of landscape restoration that frequently involve extreme isolating and fragmenting of areas, the reintroduction of

[116] Donald A Falk and Peggy Olwell, 'Scientific and Policy Considerations in Restoration and Reintroduction of Endangered Species' 94 (1992) *Rhodora* 287, 296.

animals may be of greater significance than the reconstitution of plant communities. The principles and practises of wildlife management are integrated into ecological restoration, which has become a subfield within the larger field of ecological restoration.[117] Wildlife restoration is one of its subfields. Reintroducing top predators, in particular, can be essential in ecological restoration.

3.8.2 Community structure

The biotic community's structural development is aided by establishing species populations in sufficient abundance and distribution across the project site. Community structure is a place's three-dimensional shape, physiognomy, or architecture and can be broken down into vertical and horizontal dimensions. Community structure is distinct from species composition, although it ultimately reflects the species that compose it. The abundance and proximity of organisms, as well as the degree of homogeneity or heterogeneity of species populations, all play a role in shaping the distinctive organisation of organisms within biotic communities. Ecological processes occur on surfaces made possible by structural complexity; the more surfaces there are, the more likely it is that different organisms will interact.[118]

The cellular structure and cellular texture of plants are both significant contributions. Although the spatial distribution of species is more likely to provide structure, vertical stratification of the vegetation and sedentary benthos, like oysters, may offer significant structural support. In addition to biotic structures, the abiotic environment provides its own, such as rock outcrops and other topographic unconformities. The structure of an ecosystem is

[117] Michael L Morrison, *Wildlife Restoration: Ecological Concepts and Practical Applications* 2nd ed. (Washington DC: Island Press, 2010).

[118] Ibid (n. 3), 100.

enhanced not only by large pieces of wood but also by other forms of dead organic matter, such as hummus. Ecological restoration projects should make room for the growth of community structure by introducing desirable species and eliminating undesirable ones. The eventual composition of a community depends on factors such as the distance between out planted nursery stock and the extent to which a given species is distributed across a project site. A limited amount of community evolution can be attributed to restoration practice at most ecological restoration project sites. After a project is finished, most of the physical infrastructure is built due to natural growth and population shifts.

3.8.3 Abiotic environment

The physical infrastructure of a recovered ecosystem, known as the abiotic environment, must accommodate the changing biota if the restored ecosystem maintains the desired species composition and community structure. Alterations to hydrology, water quality, and soils are the primary causes of physical environment degradation in terrestrial and wetland systems; salinity is just as much of a problem in coastal ecosystems. The water table, the amount of seasonal moisture available, the amount of soil saturation or inundation, and other aspects of hydrology may be affected by ditching and drainage or impoundment and flooding.[119] Reduced catchment residence time, higher peak discharges, and longer interstitial periods of low discharge are all typical results of human interference with hydrology. As a result of plant and animal stress brought on by shifts in the timing of moisture availability, ecosystems may decline due to all of these alterations. Organic matter in soils is vulnerable to oxidation if they dry out.

Erosion, compaction, and mechanical damage to soils from overgrazing livestock or trafficking by heavy equipment are just a few examples of humans' many adverse effects on

[119] Ibid (n. 3), 101.

the planet's soils. Similarly, prolonged saturation and inundation can cause soils to become anoxic, making them unsuitable for life. Soil retention of excess nutrients and altered pH at ecological restoration project sites on former agricultural lands can draw in aggressively competitive r-strategists and invasive species. Sawdust or woodchips are sometimes used to amend the soil at these locations because they attract fungi that break down cellulose and metabolise nitrogenous compounds, decreasing fertility. The topsoil and its rich nutrient content have been removed from some areas to reduce or eliminate pollution. Hydrological changes that affect water quality and seasonal changes in water volume, such as stream discharge, cause degradation and damage to aquatic systems. Other causes include changes to water quality, such as increased turbidity, pollution, water chemistry and temperature, and changes to the substrate, such as scouring, dredging, and sedimentation.[120]

Additionally, hydrological change problems can be solved in two ways: by restoring the pre-impairment hydroperiod through physical environment repair or by introducing a new ecosystem better adapted to the new hydroperiod. When the hydrology of an ecosystem has been irreversibly altered, as it might be due to an impoundment or other public works projects, the latter may be the only viable option. In these cases, impoundment would represent a condition that has crossed a point of no return and can never be undone. For subsequent manipulations of the biota, like the deliberate re-establishment of vegetation, to be successful, the physical environment must be repaired as thoroughly and carefully as possible. A project's duration and budget can balloon far beyond what was necessary to do the job properly in the first place if the physical environment is retrofitted during the project's execution stage. Whether or not a given area can support a self-sufficient ecosystem of a particular type, comprised of reproductive species populations of an appropriate biota, is the ultimate test of the environment's suitability.

[120] Ibid (n. 3), 102.

3.8.4 Landscape context

Ecosystems rely on the free movement of organisms, energy, water, nutrients, and other matter across and between ecosystems and landscapes. An essential part of restoring an ecosystem is getting these processes back to normal. In this regard, migratory birds serve as prime examples. While migrating from its northern breeding grounds in Canada to its southern wintering grounds in Ecuador, the blackburnian warbler (*Setophaga fusca*) carries the essentials: water, nutrients, and energy. An ecological restoration project's landscape setting must be considered during planning. The success of the restoration effort may be compromised by the degree to which the landscape has deteriorated. Think for a second about a site for ecological restoration that had previously had its surrounding landscape cleared of vegetation for more permanent land use. Animals may be unable to enter or exit the construction area.

In essence, the landscape context in which a restoration project is implemented significantly determines the project's final quality. Before implementing a restoration project, stakeholders and project sponsors should know any existing or potentially deficient landscape context.[121] Potential threats to the restored ecosystem's health and integrity in the surrounding landscape that may affect the quality of a project should be eliminated as much as possible. For instance, if the surrounding landscape is cleared, surface runoff may quickly move onto the project site, where it may cause erosion or deposit sediment. One of the restoration tasks may involve negotiating with neighbouring property owners (or managers) to eradicate colonies of invasive plant species on this cleared land if they pose an invasion risk. Treating invasive species that have repeatedly colonised an area from outside would be much more expensive than eradicating them at their source. Controlled burning is one of the most divisive topics because of liability fears. When a restoration project calls for an

[121] Ibid (n. 3), 103.

intentional fire, the project managers can approach the neighbouring landowner and explain how the fire will help them by reducing fuel loads and improving their habitat. However, an adjacent landowner might sue to stop necessarily prescribed burns if they fear for their possessions in the burned area. Occasionally, landowners or farmers can be compensated monetarily for the right to burn around the perimeter of a restoration site to maintain a firebreak.[122]

Scientists must work with the public to restore people and ecosystems now that they know they have a hand in determining at least the initial conditions and desired outcomes of restoration projects.[123]

3.9 THE INTERSECTION OF SCIENCE AND POLICY AS IT RELATES TO ECOLOGICAL RESTORATION

Restoration obligations and, ultimately, restoring degraded ecosystems can be hampered by a lack of understanding among lawyers and policymakers of the (ecological) complexities that underpin ecological restoration. While there has been a wealth of scientific research on ecological restoration, there must be more reforms to the law and governance surrounding ecological restoration.[124] Two-way influences are in the relationship between ecological restoration science and the law. For one thing, ecological restoration law relies heavily on restoration science. In contrast, ecological restoration duties imposed by law play a significant role in putting scientific findings into practice.[125] Consequently, ecological restoration as an environmental law and governance norm has yet to be explored critically.

[122] Ibid (n. 3), 104.

[123] Ibid (n. 12), 9.

[124] An Cliquet and Kris Decleer, 'Linking restoration science and law' in Afshin Akhtar-Khavari and Benjamin J Richardson (eds.) *Ecological Restoration Law: Concepts and Case Studies* (London: Routledge, 2019)119.

[125] see Ibid (n. 1) 512 – 519.

However, the relationship between ecological restoration science and the law needs to be better understood through academic discussions.[126]

To rephrase, ecological restoration must be viewed as part of a larger legal framework that specifies what it is when it must be done, and how it will be carried out. Ecological restoration, however, is more of a human-centred practice than a purely scientific phenomenon, and governance is a critical operational component in this context.[127] While scientific evidence is crucial for environmental law, competing theories within the scientific community can make it more challenging to create and implement decisions in this area of law. This means that many questions related to ecological restoration projects may arise, such as: what ecological targets or constraints are present; what restoration measures are appropriate and can be applied; how restoration success should be monitored; and so on.

3.10 RESTORING ECOSYSTEMS AND HOW IT AFFECTS PEOPLE

In addition to the previously listed scientific characteristics, any form of ecological restoration must acknowledge that it is not merely a scientific phenomenon but a human-centred practise where 'governance is a key operational component'.[128] This has implications for the governance processes necessary to support the monitoring of restored ecosystems, which is essential to ensure that restoration programmes are being carried out effectively. To keep stakeholders, such as local communities and funders, invested and supportive of the stewardship of restored ecosystems, it is necessary to implement governance processes that effectively convey the scientific attributes discussed in section 3.6 above to stakeholders.[129]

---

[126] Ibid (n. 2), 494; see also Benjamin J Richardson, 'The Emerging Age of Ecological Restoration Law 25 (3) (2016) *Review of European Comparative and International Environmental Law* 277.

[127] Ibid (n. 2), 503.

[128] Ibid (n. 2), 503.

[129] Benjamin Richardson and Ted Lefroy, 'Restoration dialogues: improving the governance of ecological restoration' 24(5) (2016) *Restoration Ecology* 668, 670.

3.10.1 Community acceptance and participation

To begin with, reconciling different scientific methodologies to fit the cultural context is difficult because the science of ecological restoration is often contentious. Ecosystem restoration is not only a scientific effort but also usually requires the participation of local communities.[130] Humans are a part of nature and a significant force in shaping the places they call home, so restoring ecosystems is a cornerstone of human interaction with the natural world. As outlined by Benjamin Richardson, the social acceptability criterion of ecological restoration rests on four pillars. The selected environmental baseline reflects human values and preferences for a specific era and ecological conditions, even though many environmental baselines could be a starting point for restoring ecosystems. This is a paraphrase of Telesetsky:

> [p]sycholgically, humans are directly motivated to restore places that are important for the quality and nature of lives and tapping into this motivation can have benefits for all species.[131]

Despite the continued significance of expert scientific advice in making well-informed social choices, this is, ideally, a social choice for any given community rather than a decision for scientific experts alone. Second, local opposition to restoration projects can sabotage clean-up efforts. The reintroduction of wolves to certain US national parks[132] and beavers to the United Kingdom,[133] both part of ecological restoration efforts, have met significant opposition from farmers and other local constituents. The principle of intra-generational

---

[130] Dave Egan and others, 'Why People Matter in Ecological Restoration', in Dave Egan and others (eds.), *Human Dimensions of Ecological Restoration: Integrating Science, Nature and Culture* (Washington DC: Island Press, 2011), 1; see: Ibid (n. 71).

[131] Ibid (n. 3), 494.

[132] *CCN News*, 'Wolves' Return to Yellowstone Sparks Controversy' (12 November 1997).

[133] *The Guardian*, 'Rewilding Britain: Bringing Wolves, Bears and Beavers Back to the Land', (19 September 2014) available at Rewilding Britain: bringing wolves, bears and beavers back to the land | Environment | The Guardian (last accessed 20 February 2021).

equity is central to environmental law. It should be considered when making decisions regarding social impacts and inequities in allocating (ecological) costs and benefits. Ecosystem restoration projects should be administered to ensure that no group or geographic area bears an unfair share of the financial burden. For instance, since forestry, farming, and even cultural practices may need to cease or scale back, the affected users may be entitled to financial compensation for loss of economic sustenance.

Third, restoring an ecosystem takes much work and, in many cases, the dedication of a large group of local volunteers who are often needed over several years. In other words, even if restoration ecologists and other scientists have the expertise to design efficient restoration projects, they will likely need more time to supply the labour required to carry them out reliably. The value of community involvement cannot be overstated for Indigenous peoples with longstanding ties to the land, intricate traditional knowledge – which the scientists may not necessarily have – and management skills that could directly contribute to its restoration.[134] Local communities and indigenous peoples have significantly contributed to some ecosystem restoration projects, such as the Gondwana Link in Western Australia.[135] This includes the transmission of traditional information about plants, animals, and ecological processes, as well as modern techniques of farming and stewardship.[136] Lastly, repairing ecosystems can help people feel more at home and appreciate the natural world. Taking care

[134] Marty Lee and Paul Hancock, 'Restoration and Stewardship Volunteerism' in Dave Egan and others (n. 130), 23.

[135] Neil D Burrows, Andrew A Burbridge and Phillip J Fuller, 'Integrating Indigenous Knowledge of Wildland Fire and Western Technology to Conserve Biodiversity in an Australian Desert'. Bridging Scales and Epistemologies: Linking Local Knowledge and Global Science in Multi-Scale Assessments (Conference Proceedings: Alexandria, Egypt 17 – 20 March 2004).

[136] M Kat Anderson, *Tendering the Wild: Native American Knowledge and the Management of California's Natural Resources* (University of California Press, 2005); Wayne Barbour and Christine Schlesinger, 'Who's the Boss? Post-colonialism, Ecological Research and Conservation Management on Australian Indigenous Lands' 13(1) (2012) *Ecological Management and Restoration* 36.

of the land as a group or in a community restoration project is a beautiful way to learn about the environment and connect with the local community. Edward Wilson states humans have 'biophilic tendencies,' or a deep longing for the outdoors. [137]

However, biophilia is unlikely to thrive without nurturing like any other human affection.[138] Wherever people only come into contact with rats, pigeons, feral cats, etc., it is doubtful that they will develop an appreciation for biodiversity. People who have never experienced anything, but city life are not likely to understand the complexities of ecosystems or the importance of protecting them. The decline in people's contact with wild or natural places is a symptom of modern society's emphasis on urbanisation. It presents one of the most significant challenges to making ecosystem restoration a social priority. The question then becomes how to pique public interest in ecosystem restoration. How local communities are engaged and involved, such as consultation, education, and compensation, are just as critical as the motivations for doing so. Public participation opportunities should be mandated, in addition to the emphasis that environmental law typically places on such opportunities. Artists, musicians, writers, and other members of the entertainment industry are sometimes enlisted to help spread the word and keep people interested in ecosystem restoration projects. In Southern Australia, for example, artists have been enlisted to aid in a massive restoration project that aims to re-establish wildlife corridors so that locals can better comprehend the past and future ecological changes being engineered by the initiative. [139]

Currently, the most comprehensive international statement on these issues is the 2001 Aarhus Convention on Access to Information, Public Participation in Decision-Making, and

[137] Edward O Wilson, *Biophilia* (Massachusetts: Harvard University Press, 1984).

[138] Ibid (n. 12), 199.

[139] Benjamin J Richardson and Jonna Razzaque, 'Public Participation in Environmental Decision-Making', in Benjamin J Richardson and Stepan Wood (eds.) *Environmental Law for Sustainability* (Hart, 2006), 165.

Access to Justice in Environmental Matters.[140] All three aspects of the Aarhus Convention could help make ecological restoration decisions. The UN Declaration on the Rights of Indigenous Peoples (UNDRIP)[141] and the International Labour Organization's (ILO) Convention Concerning Indigenous and Tribal Peoples in Independent Countries[142] both affirm Indigenous people's rights to their territory and natural resources and to participate in and even control environmental decision-making, which is instructive given the importance of Indigenous participation in restoration governance. The UN Convention to Combat Desertification places strict guidelines on community involvement in anti-desertification programmes. Ironically, these things can potentially increase public interest in and support for ecosystem restoration initiatives. Domestic law contains several provisions acknowledging the public's role in environmental decision-making; however, these provisions are not usually explicitly linked to ecosystem restoration; despite this, they can muster greater public participation in ecological restoration initiatives.

Thus, future ecological restoration laws must explicitly incorporate participation mechanisms if public authorities and recognise that community involvement is an irreplaceable requirement of successful restoration governance.[143]

[140] Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus, 25 June 1998, in force 30 October 2001).

[141] International Labour Organization Convention Concerning Indigenous and Tribal Peoples in Independent Countries (Geneva, 27 June 1989, in force 5 September 1991).

[142] Declaration on the Rights of Indigenous Peoples (UN General Assembly Resolution /RES/61/295, 13 September 1997).

[143] Ibid (n. 126), 288.

3.11 AN INCLUSIVE 'MULTI-STAKEHOLDER' CONCEPTUAL FRAMEWORK FOR ECOLOGICAL RESTORATION

The largely government-centred approach to ecological restoration governance has its roots in the age-old political thought of rational elitism. A better approach must be sought from it due to its inadequacies in achieving adequate restoration, as will be proposed in this thesis. Experts or 'elites' with specialised training and experience, such as government administrators and heads of powerful economic enterprises, are posited as the best candidates to make decisions for the common good under this theory.[144] Environmental governance is viewed as 'complex and technical, requiring primarily technical and administrative expertise,'[145] rather than the general public's opinions. This oligarchical political theory may permit some public participation in addressing societal issues, albeit inadequately, but this is not its strong suit.[146] However, as was hinted at earlier in the section above and will be argued further, this approach is woefully inadequate for guaranteeing efficient ecological governance and restoration in Nigeria. The terrible environmental track records of the countries of Eastern Europe before 1991 and of China, which share a similar political culture, provide a clear illustration of this position.[147]

---

[144] Frank Bealey, 'Democratic Elitism and the Autonomy of Elites' 17 (3) (1996) *International Political Science Review* 319, 323.

[145] Ibid (n. 139), 165, 170

[146] Barry Barton, 'Underlying Concepts and Theoretical Issues in Public Participation in Resource Development', in Donald N Zillman, Alastair R Lucas and George R Pring (Eds.), *Human Rights in National Resource Development: Public Participation in the Sustainable Development of Mining and Energy Resource* (Oxford: Oxford University Press, 2002), 77, 85-86; See also Barry Checkoway and John Van Til, 'What Do We Know about Citizen Participation? A Selective Review of Research' in Stuart Langton (ed.), *Citizen Participation in America* (Massachusetts: Lexington Books, 1978), 25, 27.

[147] Patricia Birnie, Alan Boyle and Catherine Redgwell, *International Law and the Environment* 3rded, (Oxford: Oxford University Press, 2009), 289.

As a result, we need to find a way out of the 'elites' stranglehold on the restoration process by opening up governance to other stakeholders. Public and stakeholder involvement 'is an indelible element of successful restoration governance,' as Benjamin Richardson rightly argues.[148] Principle 10 of the Rio Declaration on Environment and Development states, '[e]nvironmental issues are best handled with the participation of all concerned citizens, at the relevant level.'[149] This principle was established in 1992. Principle 7 of the Rio Declaration states, '[s]tates shall co-operate in a spirit of global partnership to conserve, protect, and restore the health and integrity of the Earth's ecosystem.'[150] This principle explicitly links broad stakeholder involvement and partnership with successful ecological restoration.

This is consistent with the principles of "environmental democracy," as intended.[151] The idea of environmental democracy contradicts the ideals of rational elitism. It is part of the more extensive classical theory of participatory democracy, i.e., government by the people as opposed to a small group of "elites".[152] Environmental democracy is a relatively new but well-established political concept. It reflects the growing acknowledgement that the public, including community members and NGOs, has a critical role to play in ensuring effective ecological governance as a stakeholder and must be allowed to participate and partner with the traditional actors—governments and developers—to achieve this goal. The public and relevant stakeholders must have a voice in environmental policymaking for

[148] Ibid (n. 126), 288.

[149] Adopted by the UN Conference on Environment and Development (UNCED), 3-14 June 1992; (1992) 31 ILM 874.

[150] Ibid.

[151] See generally Michael Mason, *Environmental Democracy* (London: Palgrave MacMillan, 1999).

[152] See Mary Grisez Kweit and Robert W Kweit, *Implementing Citizen Participation in a Bureaucratic Society: A Contingency Approach* (New York: Praeger, 1981), 7, 35; and Nelson M Rosenbaum, 'Citizen Participation and Democratic Theory', in S Langton (n. 116), 43, 44 – 48.

ecological restoration. This idea calls for establishing appropriate legal, political, and other mechanisms.[153]

Ecological restoration could be time-consuming and expensive because of the scale of the problem. From various angles, public and stakeholder partnership at the appropriate level is crucial to fostering effective ecological restoration governance.[154] Members of affected communities and interested stakeholders can make vital contributions to the restoration process in terms of expertise, local knowledge, and provision of the workforce, which is often required to be on the ground for many years despite the short-sighted view of rational elitists. Regarding the varied 'experience, expertise, and capacity'[155] that Agenda 21 describes, NGOs, for instance, can quickly bring this to bear for the benefit of the restoration process.[156] Indigenous peoples' abilities and traditional understanding of ecological processes have also been put to good use in restoration projects.[157]

While a solid scientific foundation is essential for ecological restoration, social factors are just as important. Even if a government, private company, or other organisation has all the necessary scientific knowledge, it can only measure or ascertain vital value judgements by consulting the affected communities.[158] To rephrase, 'value judgement may fill gaps in knowledge; determine appropriate levels of safety... [and] decide between fundamentally

[153] Gyula Bándi, 'Introduction into the Concept of Environmental Democracy', in Gyula Bándi (ed.), *Environmental Democracy and Law: Public Participation in Europe* (Europa Law Publishing, 2014), 3 – 7.

[154] Ibid (n. 126), 285, 287.

[155] Peter Willetts, 'The Impact of Promotional Pressure Groups on Global Politics', in Peter Willets (ed.), *Pressure Groups in the Global System* (London: Pinter, 1982), 185; see also Thomas Princen and Matthias Finger, *Environmental NGOs in World Politics* (London: Routledge, 1994), 34.

[156] Agenda 21, Chapter 27.

[157] See Ibid (n. 135).

[158] Ibid (n. 156), 101.

divided interests'.[159] Thus, public participation is essential for successful eco-restoration. When considering what kind of environmental baseline an eco-restoration project should aim for, one must consider the 'human values and preferences for one time period and natural conditions.'[160] This is primarily (though not exclusively) a matter of consensus within the affected community.

In addition, ecological restoration initiatives are typically carried out over a very long time frame. Since humans play such a significant role in determining the condition of their environment, the success and sustainability of such projects would necessitate a deep appreciation for and connection to the natural world, as well as a significant amount of environmental education on the part of the community. Humans can gain and improve on these values of respect and affinity. It has been rightly suggested that by participating in the implementation and governance of the restoration projects: '[t]he intimate grassroots participation of communities in restoration projects, in which people take to the field, tending the landscape, can enhance their intimacy with the nonhuman world'.[161]

In agreement with Jean-Jacques Rousseau, Carole Pateman writes, '[t]he major function of participation [is] an educative one, educative in the very widest sense'.[162] This means that active participation in ecological restoration and its governance would increase environmental literacy among participants. The same holds for enhancing the general public's ecological knowledge and consciousness. Communities can 'learn about new problems and

[159] Maria Lee and Carolyn Abbot, 'The Usual Suspects? Public Participation under the Aarhus Convention' 66 (2003) *Modern Law Review* 80, 84.

[160] Ibid (n. 126), 286.

[161] Ibid (n. 126), 287.

[162] See Carole Pateman, *Participation and Democratic Theory* (Cambridge: Cambridge University Press, 1970) 42 – 43, 31 – 33.

solutions'[163] and 'discover their own real interests'[164] and needs when they take part in eco-restoration projects on the ground level, as this approach encourages introspection about 'preferences and priorities' and their 'values and beliefs'[165] in the context of environmental issues.

As a result of its scope, ecological restoration has the potential to interfere with significant economic and social activities, as well as cause inconvenience for locals. Some residents may be forced to relocate due to restoration efforts, and altering or eliminating certain land and river uses may be necessary.[166] As a result of these societal shifts, people entrusted with maintaining cultural traditions, such as rituals and customs, may feel the effects. Farmers, fishermen, hunters, and landowners will all be affected commercially. Because of this, affected local groups may become strongly opposed to ecological restoration, leading to conflict between these groups and those who support restoration projects, as has happened in the US[167] and the UK.[168]

Widespread stakeholder participation and partnership are critical because they would help build understanding and a level of consensus among the stakeholders, thereby reducing the likelihood of opposition and conflict and ensuring the peace and cooperation of various stakeholders.[169] Norman Wengert argues that it will improve understanding and tolerance, rapid changes in values and opinions, lessen bias and mistrust and boost confidence and

[163] Ann Richardson, *Participation* (London: Routledge & Kegan Paul, 1983), 55.

[164] Ibid (n. 163), 56; Peter Bachrach, 'Interests, Participation, and Democratic Theory', in J Roland Pennock and John W Chapman (Eds.), *Participation in Politics* (New York: Lieber-Atherton, 1975), 39, 40.

[165] Paul Burton, 'Conceptual, Theoretical and Practical Issues in Measuring the Benefits of Public Participation 15 (3) (2009) *Evaluation*, 263, 266.

[166] Ibid (n. 126), 286 – 287.

[167] Ibid (n. 132).

[168] Ibid (n. 133).

[169] Daniel J Fiorino, 'Citizen Participation and Environmental Risk: A Survey of Institutional Mechanisms' 15 (2) (1990) *Science, Technology and Human Values*, 226, 234.

trust.[170] The imposition of disproportionate costs on one stakeholder or community or inequities in the distribution of the benefits are two conflict triggers that can be identified and mitigated as effectively and as early as possible by ensuring stakeholder involvement in ecological restoration. The potential for conflict and unwarranted opposition to ecological restoration is significantly weakened in favour of the project's success with these in place, as is the acceptance of and sense of 'ownership' over the project among the community. Even though this storey is about city revitalisation, it supports our current position:

> [H]aving had a hand in the planning, residents are already predisposed to accept the plans they feel they have helped create, even though the plans finally involve changes in the neighbourhood they would not have agreed to without prior discussion […][171]

Ecological restoration projects, particularly in developing countries like Nigeria, can cost a lot of money, and financial corruption is a genuine concern that needs to be addressed. Furthermore, broad stakeholder participation in ecological restoration projects has the potential to introduce elements of transparency and accountability into the governance of ecological restoration initiatives.[172] This could prevent the phenomenon known as 'agency capture,' which is detrimental to the timely completion of any restoration project.[173] More public participation in restoration projects would help reduce the prevalence of 'agency capture' and other forms of financial corruption that thrive in an atmosphere of secrecy and general exclusion.

---

[170] Norman Wengert, 'Citizen Participation: Practice in Search of a Theory' 16 (1976) *Natural Resources Journal,* 23, 26 – 27.

[171] William C Loring, Frank L Sweetser and Charles F Ernst, *Community Organisation for Citizen Participation in Urban Renewal* (Massachusetts: Cambridge Press, 1957), 220.

[172] Ibid (n. 126), 277.

[173] Uzuazo Etemire, *Law and Practice on Public Participation in Environmental Matters: The Nigerian Example in Transnational Comparative Perspective* (London and New York: Routledge, 2015), 85.

Although difficulties may be associated with public involvement in ecological governance, the government may need to allocate substantial administrative and financial resources to guarantee high-calibre participation, even in the current global economic downturn. Additionally, it may cause the project's execution to be postponed, even if it is urgently needed, so that all relevant inputs can be received and considered. However, with well-managed participation processes, even these problems can be kept to a manageable level. In any case, the 'benefits vastly outweigh the disbenefits' of public participation in environmental issues, as the saying goes.[174] States recognize the benefits of public participation in environmental decision-making, and these norms should be extended in practice to ecological restoration governance.[175] Additionally, since the environment is a common good – one that is essential to human survival[176] – it is only reasonable and proper for the general public to be afforded sufficient opportunities to participate in decision-making that affects this common good rather than limiting such participation to a select group of administrators and private entities.

In light of the preceding conceptual framework, we will now examine the UNEP-Ogoniland restoration project as an example of what an ecological restoration could entail. This, in turn, will be used to evaluate the effectiveness of Nigeria's ecological restoration law and governance as against the state-centred environmental remediation regime in Chapter Six.

[174] George R Pring and Susan Y Noe, 'The Emerging International Law of Public Participation Affecting Global Mining, Energy, and Resources Development' in D N Zillman, A R Lucas and G Pring (n. 146), 11, 26.
[175] Ibid (n. 140).
[176] Ludwig Krämer, 'Transnational Access to Environmental Information' 1 (1) (2012) *Transnational Environmental Law*, 95 – 104, 97 and 103.

3.12 CONCLUSION

To determine whether the current legal and governance frameworks for oil spill remediation are compatible with the tenets of ecological restoration, Chapter Two examined the negative impacts of decades of polluting and developing in the most environmentally unfriendly manner in Nigeria; Chapter Three sought to provide a better theoretical understanding of ecological restoration in general. While more legal and practical analysis will be provided in the subsequent chapters, this chapter has analysed the value of ecological restoration as a concept. The four-quadrant model for ecological restoration serves as a sound theoretical framework that allows ecological issues to be viewed from multiple perspectives and categorises these values into ecological, personal, socio-economic, and cultural values. Having established a theoretical understanding of the value of ecological restoration, this chapter has clarified the relationship between ecological restoration on the one hand and remediation, rehabilitation and reclamation on the other hand. The most crucial difference between ecological restoration and these other nature recovery concepts is that the latter focuses on actions and processes that strive to return an ecosystem to pre-existing or historical ecology. The scientific elements of ecological restoration were then discussed, followed by an analysis of the human dimensions of ecological restoration.

However, despite the promise of ecological restoration, several environmental philosophers have offered criticisms against the very idea of ecological restoration. But beyond the criticisms, there is a clear need for continued advances in restoration science with enormous potential and exciting prospects for recovering damaged ecosystems. In addition to the four main scientific attributes of restoration analysed, it is essential for ecological restoration also to recognise that it is not simply a scientific phenomenon, but other ‘human dimensions’ are equally crucial. As the scale of restoration enlarges, it will likely require the involvement of several levels of government, as well as participation from non-state actors,

which together produce additional challenges identified in multilevel governance theory, including more complex negotiations, integration of rival policy goals, and coordination of many actors across various tenures towards the joint effort.[177]

Therefore, a more ambitious environmental planning and management system scaled at a landscape level is required to transcend the artificial jurisdictional boundaries of subnational and provincial governments.[178] Importantly, future ecological restoration laws must explicitly incorporate participation mechanisms so that public authorities will understand that community involvement is an indelible requirement of successful restoration governance. With a better understanding of what ecological restoration entails, as in Chapter Three, Chapter Four will, building on that understanding, examine the status of ecological restoration in current international environmental law and attempt to identify some principles of international environmental law that could guide the implementation of national ecological restoration approaches moving forward. Although ecological restoration is featured in several soft law agreements, international environmental law has yet to provide adequate goals, objectives, and principles to drive restoration initiatives and obligations.

Nevertheless, the international law context of ecological restoration in Chapter Four is essential to achieving the research objective herein because global standards for ecological restoration could help leverage national legal reforms and provide guidance on best practices. Fundamentally, the question here is why Nigeria, or any other country, should be concerned with applying ecological restoration in their domestic environmental law and governance.

---

[177] Alice Cohen, 'Rescaling Environmental Governance: Watersheds as Boundary Objects at the Intersection of Science, Neoliberalism and Participation' 44 (9) (2012) *Environment and Planning A: Economy and Space* 2207 – 2224.

[178] Michael Vincent McGinnis (ed.) *Bioregionalism* (London: Routledge, 1999).

CHAPTER FOUR:

THE EMERGING LEGAL FRAMEWORK FOR ECOLOGICAL RESTORATION UNDER INTERNATIONAL ENVIRONMENTAL LAW

4.1 INTRODUCTION

The success and sustainability of ecological restoration are deeply intertwined with a widespread respect for nature, an emotional affinity with it, and a significant level of environmental education within the community. This is because ecological restoration projects are typically long-term, and, as has been demonstrated in Chapter Three, humans have a pivotal role in shaping their ecosystems. Understanding the concept of ecological restoration is crucial in determining the compatibility of Nigeria's legal and governance frameworks for oil spill remediation with its principles. On this basis, Chapter Three, preceding, delved into the theoretical considerations around ecological restoration, its values, essential components, differences from other ecosystem recovery approaches, and the primary criticisms and responses. Building on this conceptual framework, Chapter Four will now explore the status of ecological restoration in current international environmental law. In doing so, this chapter will strive to identify some principles of international environmental law that could guide the implementation of national ecological restoration approaches.

Thus, several international law instruments directly or remotely referring to ecological restoration will be utilised to accomplish this goal. Some of the international law instruments include the 1982 United Nations Convention on the Law of the Sea (UNCLOS), broadly categorised as a species recovery treaty, the Ramsar Convention on Wetlands, and the Convention on Biological Diversity (CBD) as exemplars of habitat restoration treaties, as well as decisions of the Conference of the Parties to these treaty regimes and academic literature. Notable among these international environmental treaty regimes is the fact that

Nigeria is a state party. Therefore, Chapter Four will delve into the dynamic and evolving relationship between international environmental law and the science of ecological restoration previously examined in Chapter Three. Understanding this relationship is crucial for Nigeria and other countries, as it will help better apply ecological restoration in their domestic environmental law and governance frameworks. More importantly, it will instil a sense of optimism about the potential of international environmental law to shape the future of ecological restoration.

Nevertheless, the international law context of ecological restoration in Chapter Four is essential to learn more about how Nigerian legal and governance frameworks can be improved to adequately respond to the ecological damage caused by oil spills in the Niger Delta, as global standards for ecological restoration could help leverage national legal reforms and provide guidance on best practices. Undoubtedly, there are several references to Nigeria, which will be developed in Chapter Six. On this note, the next section will begin by exploring the concept of ecological restoration in international soft law.

4.2 ECOLOGICAL RESTORATION UNDER INTERNATIONAL SOFT LAW

Ecological restoration has indeed been happening for a while. Still, as Lawrence Walker and Peter Bellingham point out, it is only in the last half-century that it has been recognised as a binding obligation under international environmental law.[1] Only when the first multilateral environmental agreements (MEAs) were ratified in the early 1970s did a coherent worldwide legal framework for ecological restoration begin to take shape. Since then, states have signed several conventions to advance two basic types of ecological restoration. Species-specific recovery restoration agreements are included in the first group,

[1] Lawrence Walker and Peter Bellingham, *Island Environments in a Changing World* (Cambridge: Cambridge University Press, 2012) 201.

while habitat restoration agreements are included in the second group and are no less admirable.

Whether ecological restoration should be a duty of action or outcome has been discussed in the academic community with mixed results. However, ecological restoration is seen as a duty of action or means rather than a duty of outcome. States are rarely held accountable for their failure to do so. When meeting international responsibilities, a state has far more leeway to act when a duty of conduct is applied to ecological restoration since it can decide what constitutes adequate restoration through its internal governance systems. However, under an obligation of result, states must reach a predetermined outcome during negotiations. Kees Bastmeijer[2] and Dolly Jorgensen's analysis[3] of the duties of ecological restoration under international biodiversity law is a fascinating place to begin a discussion of this topic. In examining the incorporation of ecological restoration as part of the global biodiversity targets within the Convention on Biological Diversity (CBD), Jorgensen argues that the failure to define ecological restoration before writing it into its targets will pose future problems when evaluating progress towards biodiversity goals.[4]

Despite this, the role of ecological restoration in the international environmental governance system is still largely debated in the academic community. That 'international environmental law provides little instruction on nation states to practise eco-restoration,'[5] as Benjamin Richardson persuasively puts it, exemplifies the above point. Given that global

[2] Kees Bastmeijer, 'Ecological Restoration in International Biodiversity Law: A Promising Strategy to address our failure to Prevent?' in Michael Bowman, Peter Davies and Edward Goodwin (eds.) *Research Handbook on Biodiversity and Law* (Edward Elgar, 2016) 387.

[3] Dolly Jørgensen, 'Ecological Restoration in the Convention on Biological Diversity Targets' 22 (12) (2013) *Biodiversity and Conservation* 2977, 2978.

[4] Ibid (n. 3).

[5] Benjamin Richardson, 'The Emerging Age of Ecological Restoration Law' 25(3) (2016) *Review of European Community and International Environmental Law* 277, 280.

standards may help nations foster effective local nature recovery, it is worthwhile to investigate the international law background for ecological restoration.

The international legal framework for 'ecological restoration [...] began to evolve in the early 1970s with the first multilateral environmental agreements' as described in recent literature by prominent specialists.[6] The modern ecological restoration movement 'is in part a response to the industrial revolution and the current dynamics of economic globalisation,'[7] the authors write. Telesetsky, Clique, and Akhtar-Khavari suggest that states began to devote significant political and economic capital in the 1960s to respond jointly to environmental risks after discovering the transboundary nature of these problems. In response to environmental contamination and the depletion of natural resources, these political efforts resulted in one of the earliest modern international declarations addressing these issues. In this context, McCormick writes, 'the Stockholm conference was the single most influential event in the evolution of the global environmental movement and of a global environmental consciousness', which influenced much of contemporary international environmental law and, by extension, ecological restoration.[8]

Based on this, the following section will examine the soft law context of ecological restoration by 'tracing' the historical evolution and development of ecological restoration in international environmental law, beginning with the 1972 Stockholm Declaration. However, it is essential to note that this is a non-exhaustive list as other peripheral agreements would be considered less 'within the scope' of this chapter.

[6] Anastasia Telesetsky, An Cliquet and Afshin Akhtar-Khavari (eds.), *Ecological Restoration in International Environmental Law* (London: Routledge, 2017).

[7] Ibid (n. 5), 61 – 82.

[8] See John McCormick, *The Global Environmental Movement* 2nd ed. (Wiley & Sons 1995), 127.

4.2.1 The 1972 Stockholm Declaration

The Stockholm Declaration, adopted at the United Nations Conference on the Human Environment (UNCHE)[9] in 1972, contains one of the earliest direct references to restoration. The Stockholm Conference resulted from pre-conference meetings that sought to incorporate environmental considerations into human decision-making[10] as a follow-up to the 1968 Biosphere Conference organised by UNESCO in Paris.[11] Specifically, Principle 3 states, '[t]he capacity of the earth to produce vital renewable resources must be maintained and, wherever practicable, restored or improved.'[12] This is the only principle in the Stockholm Declaration that explicitly references ecological restoration. Although the Stockholm Declaration is not legally binding, it does reflect the consensus of states. As argued by Akhtar-Khavari and Telesetsky, it has served as international evidence of state practice in support of the application of several international environmental law principles.[13]

The Stockholm Conference's introductory statements generally reflect a desire for states to pursue ecological restoration as a remedial action. There was unabashed hopefulness in some of the comments about restoration's potential gains. The Preparatory Committee for the Stockholm Conference saw the Draft Declaration as a document supporting the concept of

[9] Declaration of Principles for the Preservation and Enhancement of the Human Environment, Report of the UN Conference on the Human Environment, Stockholm 5-16 June 1972, (1972) 11 ILM 1416 ('Stockholm Declaration').

[10] Lynton Caldwell, *International Environmental Policy: Emergence and Dimensions* (Durham: Duke University Press, 1984).

[11] UNESCO: Intergovernmental Conference of Experts on the Scientific Basis for Rational Use and Conservation of the Resources of the Biosphere (Paris, 1968); available at Results - UNESCO Digital Library (last accessed 10 March 2021).

[12] UN Conference on the Human Environment, A/CONF.48/4 Annex Draft Text of a Preamble and Principles of the Declaration of the Human Environment, 1972 (hereinafter 'Stockholm Declaration'), Principle 3.

[13] Afshin Akhtar-Khavari and Anastasia Telesetsky, 'From protection to restoration: A Challenge for environmental governance' in Douglas Fisher (ed.), *Research Handbook on Fundamental Concepts of Environmental Law* (Edward Elgar, 2016), 50, 60.

‘restoration’ and improving the Earth’s natural resources. They met intending to draft a final declaration for the conference delegates:

> [t]hat would serve to stimulate public opinion and community participation for the protection and betterment of the human environment and, where appropriate, for the restoration of its primitive harmony, etc., in the interest of present and future generations. It would also provide guiding principles for Governments in their formulation of policy and set objectives for future international cooperation.[14]

The Declaration was envisioned as a document of universally recognised principles recommending action by individuals, states, and the international community, as representatives of several states stated at the Second Preparatory Meeting for the Stockholm Conference.[15] An Intergovernmental Working Group was established to draft the Stockholm Declaration’s guiding principles. The following language was included in Principle 3 of the final draft by the Intergovernmental Working Group: ‘The capacity of the earth to produce vital renewable resources must be maintained and, wherever practicable, restored or improved,’[16] states agree. The inclusion of the term ‘common conviction’ in Principle 3 suggests that the “restoration” of critical renewable resources essential to human needs is a matter of international ‘common concern’.

Further, the term “natural resources” is defined in Principle 2 as the ‘air, water, land, flora and fauna, and especially representative samples of natural ecosystems.’ Still, the terms ‘restoration’ and ‘renewable resources’ were not negotiated in the Stockholm Declaration. The term ‘renewable resources’ can be safely assumed to refer to those natural elements

[14] Stockholm Conference Report First Session: Report of the Preparatory Committee for the for the United Nations Conference on the Human Environment, First Session, UN Doc. A/CONF.48/PC/6 (10 – 20 March 1970).

[15] Stockholm Conference Report Second Session: Report of the Preparatory Committee for the for the United Nations Conference on the Human Environment, Second Session, UN Doc. A/CONF.48/PC/9 (8 – 19 February 1971).

[16] Stockholm Declaration (n. 8), Principle 3.

governments have determined to have economic value for humans. Since the emphasis was primarily on the 'enhancement of the human environment,'[17] these elements of nature could include, for example, tradeable commodities like fish stocks and timber. Considering that the Stockholm Conference was predicated on the idea that man is both a 'creature and moulder of his environment,'[18] the emphasis on restoring economically valuable resources was not unexpected. Hence, the preamble of the Declaration observed that the 'improvement of the human environment is a major issue which affects the well-being of peoples and economic development throughout the world'.[19] The 'massive and irreversible harm to the earthly environment on which our life and well-being depend'[20] has been countered with the suggestion that ecological restoration, as a form of 'enhancement of the human environment,' could be the solution.

In addition, the Stockholm Declaration is illuminating current perspectives on restoration, and it has continued to define discussions not only among international policymakers but also among domestic policymakers. Principle 3 suggests that, as of 1972, restoration was understood as primarily serving human production ends, which would limit its applicability to natural resource management. Similarly, Principle 3 states that restoration will be pursued only 'wherever practicable,' implying that states were aware of the potential financial barriers to reviving specific 'vital renewable resources' and the technical challenges of restoring degraded ecosystems. It is also important to note that the Stockholm Declaration is one of the few international legal instruments to distinguish between "restored" and "improved" in Principle 3 of the Stockholm Declaration.

[17] Ibid (n. 8), Preamble.

[18] Ibid (n. 8), Preamble, para. 1.

[19] Ibid (n. 8), Preamble, para. 2.

[20] Ibid (n. 8), Preamble, para. 6.

In 1971, the word ‘restoration’ meant ‘the act of restoring to a former state or position [...] or to an unimpaired or perfect condition,’ while the word ‘restore’ meant ‘to bring back to the original state [...] or to a healthy and vigorous state’.[21] Based on this interpretation, it is possible that state negotiators at that time meant to use the term “restored” to return an ecologically autonomous resource to its previous state. However, states could seek to create an ‘improved’ capacity for natural resources where re-establishing ecological autonomy is not possible through alternative programmes, such as aquaculture, to increase fish stocks. As the Declaration was negotiated in 1972, the word “restored” may have raised the bar for state performance. Because of this, the term “improved” was chosen, which may have been intended to allay states’ fears about how much they were required to reach a state of restoration.

The shape that Stockholm Principle 3 was drafted in is also an essential factor. Principle 3 of the Stockholm Declaration was written using the passive voice, as were a number of the other principles. Who is tasked with seeing that Principle 3’s aims are realised? ‘Protection and improvement of the human environment is [...] the duty of all Governments,’[22] the states agreed in the Declaration’s preamble. The preamble sets the tone for what is expected from all parties – states and non-state actors – regarding environmental protection and improvement more generally and ecological restoration more narrowly. When it comes to environmental policy and action on a large scale, it will be ‘local and national governments will bear the burden of large-scale environmental policy and action within their jurisdictions’.[23] Restoring something requires ‘the acceptance and responsibility by citizens

[21] See The Compact Edition of Oxford English Dictionary (Oxford University Press, 1971).

[22] Ibid (n. 8), Preamble, para. 2.

[23] Ibid (n. 8), Preamble, para. 7.

and communities and by enterprises and institutions at every level, all sharing equitably in common efforts,'[24] as the preamble puts it.

According to the Stockholm Declaration, states have agreed to consider the possibility that they may have obligations to assist in restoring essential natural resources if doing so is both economically and technically or biologically feasible. Despite the lack of a legally recognisable restoration ethos, this could be a precursor to a more widespread international discussion of humanity's role in mediating nature. Therefore, states at the Stockholm Conference understood that society depended on nature and that nature depended to some extent on humanity,[25] thus rejecting the idea that humankind oversees wildlife. As stated in the Declaration's introductory paragraph:

> […] we can achieve for ourselves and our posterity a better life in an environment more in keeping with human needs and hopes. For the purpose of attaining freedom in the world of nature, man must use knowledge to build, in collaboration with nature, a better environment. To defend and improve the human environment for present and future generations has become an imperative goal for humanity […][26]

As earlier noted, while Principle 3 is the only one in the Stockholm Declaration that explicitly references restoration, other principles provide some context for the type of restoration work currently being pursued through various international organisations like the Global Partnership for Forest and Landscape Restoration.[27] For instance, Principle 24 establishes international cooperation as a levelling mechanism, stating that 'all countries, big and small, on an equal footing'[28] should work together to protect and improve ecosystems. The

[24] Ibid.

[25] Ibid (n. 12), 63.

[26] Ibid (n. 8), Preamble, para. 6.

[27] See The Global Partnership on Forest and Landscape Restoration was launched in 2003 by IUCN, WWF and the Forestry Commission of Great Britain. Since then, nearly 30 governments and international and non-governmental organisations have joined, available at Home | Global Partnership on Forest and Landscape Restoration (forestlandscaperestoration.org) (last accessed 13 March 2021).

[28] Ibid (n. 8), Principle 24.

Stockholm Declaration broadly suggests that states should ensure that multinational organisations – such as United Nations (UN) bodies – play a coordinated, efficient and dynamic role in protecting and improving the environment.[29] To effectively 'control, prevent, reduce, and eliminate adverse environmental effects resulting from activities conducted in all spheres,'[30] states are urged to join international organisations and work together through bilateral and multilateral cooperative agreements.

Additionally, states at the Stockholm Conference realised that "political will" was crucial to actualising the norms embodied in the principles adopted. At the Stockholm Conference, many of the presenters agreed with the statements made in the section titled 'Brief Summary of the General Debate':

> […] man possessed the skills to foresee and avert ecological misfortunes and to create a much happier and richer world, but that *no positive advances could be made without political will.*[31]

Therefore, the states that participated in the Stockholm Conference negotiated several recommendations as an action plan in the spirit of cooperation and recognition of the power of 'political will' available at such a historic global gathering. States agreed to promote 'soil restoration' by recommending that the Secretary General of the United Nations, in conjunction with the appropriate UN bodies, provide capacity training to support soil restoration, even though there was no explicit attempt to highlight the broader concepts of ecosystem restoration in the action plan.[32]

Finally, the remark about the Stockholm Declaration's lack of binding legal force can be applied to ecological restoration even though it was initially made in the context of the

[29] Ibid (n. 8), Principle 25.

[30] Ibid (n. 8), Principle 24.

[31] Brief Report of the United Nations Conference on the Human Environment, Stockholm, 5 -16 June 1972, A/Conf.48/14/Rev.1, at 49 – 50, para. 64. (emphasis added).

[32] United Nations Doc. A/CONF.48/PC/16 (1972, recommendation 15).

emerging practice of international environmental policymaking. Principle 3 of the Stockholm Declaration can be seen as laying the groundwork for future multilateral negotiations to establish ecosystem restoration as a viable policy option in situations where natural resources management through conservation is no longer practical. For instance, Principle 3's use of the word "must" suggests that global states recognise the possibility that ecosystem restoration is crucial to the long-term well-being of humans.

4.2.2 The Rio Declaration of 1992

Twenty years after the Stockholm Conference, the international community met at the United Nations Conference on Environment and Development (UNCED). To further refine the guiding principles that state, international organisations, and non-state actors would apply to 'respect the interests of all' and 'protect the integrity of the global environmental and developmental system,'[33] 1992 UNCED or "Earth Summit" sought to build on the successes of the Stockholm Conference. The Rio Conference saw the adoption of two treaties with substantive obligations requiring restoration: the Convention to Combat Desertification[34] and the Convention on Biological Diversity.[35]

Adopting the Rio Declaration, which, as was previously noted, was negotiated as an extension of the 1972 Stockholm Declaration to reflect concerns about mainstreaming human development into environmental protection, was the other significant outcome of 1992 UNCED. Bringing together hopeless thinking

[33] UN Conference on Environment and Development, Rio de Janeiro, Rio Declaration on Environment and Development, 13 June 1992, (1992) 31 ILM 874 (hereinafter 'Rio Declaration').

[34] UN Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, especially in Africa, Paris 14 October 1994, 33 ILM 1328 (1994) (hereinafter 'UNCCD').

[35] Convention on Biological Diversity, 5 June 1992 (1992) 31 ILM 88 (hereinafter 'CBD').

was difficult, even though the Rio Declaration's negotiation history vastly differed from that of the Stockholm Declaration. Seven global Northern and Southern delegates worked together on the approved text at the Rio Conference. At an early meeting, states presented 136 proposals for adopting potential principles. At the last meeting of the Preparatory Committee, there was still no working draft of the Declaration.[36]

Surprisingly, only Principle 7 of the 27 adopted as part of the Rio Declaration in 1992 uses the word "restoration" at all. Principle 7's first part states, '[s]tates shall cooperate in a spirit of global partnership to conserve, protect, and restore the health and integrity of the Earth's ecosystem.'[37] In contrast, the second part of the principle introduces the concept of common but differentiated responsibilities under IEL.[38] One could argue that by tying together the two parts of Principle 7, the 'developed states' have a special responsibility to aid the "other states" (the developing states) in 'conserving, protecting, and restoring' by providing technological aid and financial resources. Even though it is not explicitly stated in Principle 7, developed countries may have a "differentiated responsibility" to aid in restoration efforts, especially in former colonies where massive amounts of natural resources, such as timber, biodiversity, and minerals (gold, copper, diamonds, etc.), were exploited during the pre-colonial and colonial eras.

While legitimate post-colonial concerns about making amends for environmental wrongs may have inspired the drafting of Principle 7, the language

[36] Howard Mann, 'The Rio Declaration' 86 (1992) *Proceedings of the American Society of International Law*, 450 – 453.

[37] Ibid (n. 33), Principle 7.

[38] See Philippe Cullet, 'Principle 7: Common but Differentiated Responsibilities' in Jorge E Viñuales (ed.) *The Rio Declaration on Environmental and Development: A Commentary* (Oxford: Oxford University Press, 2015), 229.

that emerged from the process reveals some interesting linguistic choices. For starters, the term "Earth's ecosystem" does not accurately express the term 'ecosystem' as used by restoration ecologists, referred to in Principle 7. An ecosystem is defined as a dynamic complex of plant, animal, and micro-organism communities and their non-living environment interacting as a functional unit'[39] in the CBD, which, as earlier stated, was adopted at the same time as the Rio Declaration. Contrarily, ecologists argue that Earth is home to many distinct ecosystems. To bolster the principle of common but differentiated responsibilities by '[r]ecognizing the integral and independent nature of the Earth, our home,'[40] may have been the original intent. However, states looking for new directions in domestic environmental law and policy are not helped by choosing the Earth as a unit that is ultimately to be restored.

The expression that states should cooperate and work together to 'conserve, protect, and restore' is, to put it mildly, ambiguous, as is the choice of the word "and" in that expression. Since "conserve" in Principle 7 necessitates some legal protection, using "protect" seems superfluous. The phrase "conserve [...] and restore" rather than "conserve [...] or restore" seems to imply, perhaps unintentionally, that a state would conserve and protect the "Earth's ecosystem" up to a specific condition of 'health and integrity',[41] after which the ecosystem would presumably be depleted. The states would work together to revive the planet's ecosystem after its depletion. Telesetsky and others argue this point, stating that Principle 7:

[39] Ibid (n. 35), Article 2.

[40] Ibid (n. 33), Preamble.

[41] Ibid (n. 12), 67.

> […] probably should be read to mean that states are expected to […] implement parallel conservation and restoration strategies because some [ecosystems] are in need of conservation attention while other [ecosystems] that have already experienced serious degradation now need restoration. This seems to be a logical and practical reading of what the principle requires of states.[42]

Furthermore, even though the principles of the Rio Declaration were adopted as aspirational measures instead of binding commitments, the neglect of the first half of Principle 7 remains significant. To justify their requests for additional time to comply with IEL treaty obligations or to urge states in the Global North to provide adequate resources and technical assistance to support states in the Global South in their pursuit of sustainable development, states in the Global South frequently cite and rely upon a now legalised principle of "common but differentiated responsibilities". However, in contrast to the attention given to the second half of Principle 7, there has been a lot less effort since then dedicated to pursuing cooperation through global partnerships for the conservation or restoration of ecosystems.

Despite some ambiguities and vague language, Principle 7 has come a long way since its introduction in Principle 3 of the Stockholm Declaration, which referred to restoration. The emphasis on restoration shifted from a narrow focus on restoring ecosystem provisioning services in the 1972 Stockholm Declaration to much broader holistic concepts of restoration for ecosystem health and integrity in the 1992 Rio Declaration. Considering the widespread concern that the Rio Conference would divert international attention from environmental protection, this is an impressive normative shift.[43]

---

[42] Ibid (n. 5), 71.

[43] David Wirth, 'The Rio Declaration on Environment and Development: Two Steps Forward, One Step Back, or Vice Versa' 29 (1995) *Georgia Law Review*, 599 – 653.

4.2.3 …and Agenda 21

In addition to the Rio Declaration, a similar action plan to the one formulated at the 1972 Stockholm Conference, as earlier noted, was agreed to at the Earth Summit. This 40-chapter action plan captioned 'Agenda 21' was drafted based on a 'global consensus and political commitment at the highest level' to further the development and environmental protection objectives. Importantly, Agenda 21 was designed to be a workable document containing concrete goals, activity proposals, and implementation strategies. Interestingly, the concept of ecological restoration is threaded throughout the Agenda 21 chapters as an action item. For instance, in the section titled "combating deforestation," states committed to working together toward the goal of 'enhancing the protection, sustainable management of all forests, and the greening of degraded areas, through forest rehabilitation, afforestation, reforestation, and other rehabilitative means.'[44] This can be done by planning forest 'rehabilitation' activities to:

> […] restore productivity and environmental contributions, giving particular attention to human needs for economic and ecological services, wood-based energy, agroforestry, non-timber forest products and services, watershed and soil protection, wildlife management, and forest genetic resources.[45]

While this human-centred anthropocentric focus on forest restoration's end goals has been called into question, many current projects still have ecosystem service motivations at their core.[46]

[44] Earth Summit, Agenda 21, the United Nations Programme of Action: the final text of agreements negotiated by Governments at the United Nations Conference on Environment and Development (UNCED), 3 – 14 June 1992, Rio de Janeiro, Brazil. A/CONF.151/26/Rev.1. (hereinafter Agenda 21), Chapter 11 (B).

[45] Ibid.

[46] See, for instance, US Forest Service: United States Forest Service Collaborative Forest Landscape Restoration Program Overview, available at Overview (fs fed.us) (last accessed 23 March 2021).

The states also agreed to 'combat land degradation through, among other things, intensified soil conservation, afforestation, and reforestation activities'[47] in the chapter titled "combat desertification and drought." The state, 'at the appropriate level and with the support of the relevant international and regional organisations, should take corrective measures to restore the productivity of drylands'[48] to accomplish this. Governments should fund 'integrated research programmes on protecting, restoring, and conserving water and land resources'.[49] These instances may help prove that people's reliance on the natural world is a significant motivator for restoration efforts since money put into these kinds of projects is typically invested in people's growth to increase the productivity of their natural resources. The oceans chapter of Agenda 21 shares this same dedication to productivity for human ends. The states must 'restore populations of marine species levels that can produce the maximum sustainable yield as qualified by relevant environmental and economic factors'[50] concerning the resources of the high seas and within waters under their national jurisdiction.

For most developing countries – including Nigeria, where land tenure is fragmented, the "multi-stakeholder approach" to restoration outlined in Agenda 21 is still crucial to the success of the effective restoration. In the chapter titled "conservation of biodiversity," Agenda 21 urges countries to work 'with the support of indigenous people and their communities, non-governmental organisations and other groups, including the business and scientific

[47] Ibid (n. 44), Chapter 12 (B).

[48] Ibid (n. 44), Chapter 12.18.

[49] Ibid (n. 44), Chapter 12.23(b).

[50] Ibid (n. 44), Chapter 17, para 17.46(b) and para 17.74(c).

communities'[51] to restore and repair degraded ecosystems. The chapter on ocean preservation adopts a similar multi-stakeholder strategy. The 'restoration of altered critical habitats' should be a part of any proposed integrated coastal zone plan,[52] and coastal states like Nigeria are urged to develop integrated management for sustainable development of the coastal regions with help from the academic and private sectors, NGOs, local communities, resource user groups, and Indigenous peoples.[53] When taken as a whole, the Rio Declaration and Agenda 21 appear to have contradictory views on restoration, as evidenced by:

> [o]n the one hand, restoration is regarded as a utilitarian exercise to recover vital human commodities as indicated in the forest and ocean chapters of Agenda 21. On the other hand, restoration is designated as a therapeutic exercise to recover global 'health and integrity'. These dual justifications for restoration persist in contemporary discourses on state-directed ecological restoration.[54]

The recognition of ecosystem restoration in IEL reached a tipping point in 1992. When discussing the role of science in facilitating environmental management and sustainable development, Agenda 21 dedicated a chapter to restoration. States would have to 'develop further restoration ecology' to improve scientific understanding and thus their ability to respond to 'short- and long-term perturbations' to terrestrial, freshwater, coastal, and marine ecosystems.[55] Surprisingly, these justifications for ecosystem restoration are still valid today.

[51] Ibid (n. 44), Chapter 15.5.

[52] Ibid (n. 44), Chapter 17(h).

[53] Ibid (n. 44), Chapter 17, para 17.6.

[54] Ibid (n. 12), 69.

[55] Ibid (n. 44), Chapter 35, para 35.12(e).

4.2.4 'Rio + 20' and Sustainable Development Goals (SDGs)

The United Nations Conference on Sustainable Development (UNCSD), also known as "Rio+20," was convened twenty years after the Rio Declaration to assess the state of sustainable development and the obstacles standing in its full realisation. The need to achieve sustainable development was reaffirmed in the Rio+20 outcome document, *The Future We Want*:

> Promoting integrated and sustainable management of natural resources and ecosystems that supports inter alia economic, social and human development while facilitating ecosystem conservation, regeneration and restoration and resilience in the face of new and emerging challenges.[56]

The Future We Want 'explicitly recognised restoration as a key environmental management strategy that could be mainstreamed into economic decision-making',[57] reflecting critical normative developments on how restoration is regarded in international law. The section of *The Future We Want* dealing with fish stock restoration is more specific in its goals than the rest of the document, written in the more general aspirational language. For example, it lays out a series of steps states can take, such as adopting science-based management plans, decreasing or halting fishing catch efforts, managing bycatch and discards more efficiently, and using impact assessments.[58]

Subsequently, in 2015, states adopted the Sustainable Development Goals (SDGs) through the United Nations General Assembly as a set of goals and targets to continue measuring progress towards internationally shared objectives.[59] The SDGs

---

[56] The Future We Want. Resolution adopted by the General Assembly on 27 July 2012. UN Doc. A/RES/66/288. (11 September 2012) para. 4.

[57] Ibid (n. 5), 75.

[58] Ibid (n. 56), para 168.

[59] Transforming Our World: the 2030 Agenda for Sustainable Development. The General Assembly adopted a resolution on 25 September 2015. UN Doc. A/RES/70/1 (21 October 2015).

are voluntary but represent a concerted effort by states to identify problems and develop plans to solve them jointly. The SDGs include explicit references to restoration in only one of their seventeen goals and six of their 169 targets. Goal 15 of the Sustainable Development Goals is to the effect that states are obligated to 'Protect, restore, and promote sustainable use of terrestrial ecosystems; sustainably manage forests; combat desertification; halt and reverse land degradation; and halt biodiversity loss'.[60] To this end, states have adopted three near-term goals using restoration as a tool for environmental management:

> By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements [...][61]

Goal 14 of the SDGs focuses on the conservation and sustainable use of the oceans, seas, and marine resources. It includes the targets of 'restoring fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics'[62] and taking action by 2020 to restore coastal and marine areas to achieve healthy and productive oceans. A 'gradual transition in community thinking on the various roles for ecological restoration in international law'[63] is most evident in the "soft" non-binding declarations and action plans in the Stockholm Declaration, the Rio Declaration, Agenda 21, The Future We Want, and the SDGs. According to Telesetsky and others:

[60] Ibid.

[61] Ibid.

[62] Ibid (n. 59) Targets 14.2 and 14.4.

[63] Ibid (n. 12), 74.

> [w]hile there has been a recognition since 1972 that society at large has a role to play in [ecological] restoration, it is only since 1992 that holistic ecological restoration has become a shared objective. The relationship between conservation and restoration has become more apparent over the decades as the concept of [ecological] restoration has become mainstreamed. The relationship between sustainable development and ecological restoration has also been clarified […][64]

4.2.5 International Environmental Law Principles Relating to Ecological Restoration

Telesetsky, Clique, and Akhtar-Khavari argue that the polluter pays principle,[65] the precautionary principle and the principle of prevention[66] are the (substantive) environmental law principles that could inform the implementation of national and international ecological restoration efforts, even if they are not directly related to the evolution of restoration in international law. However, principles are normative concepts, while rules of law are prescriptive and guarantee a particular result.[67] Instead, principles help direct behaviour and may help justify certain policy decisions globally, regionally and nationally. However, over time, principles can develop into customary obligations or be referenced in judicial decisions and binding treaty obligations, allowing states to create more precise directions for applying a particular principle of law.

---

[64] Ibid (n. 5), 78 – 79.

[65] Ibid (n. 33), Principle 16; Priscilla Schwartz, 'The polluter-pays principle' in Malgosia Fitzmaurice, David M Ong and Panos Mekouris (eds.) *Research Handbook on International Environmental Law* (Edward Elgar 2010), 182.

[66] Nicholas de Sadeleer, 'The principles of prevention and precaution in international law: two heads of the same coin?' in Fitzmaurice, Ong and Mekouris (eds.), 243.

[67] Ulrich Beyerlin, 'Different types of norms in international environmental law: policies, principles and rules' in Daniel Bodansky, Jutta Brunee and Ellen Hey (eds.) *The Oxford Handbook of International Environmental Law* (Oxford: Oxford University Press, 2008), 433.

When cleaning up polluted areas, the precautionary principle in environmental law is necessary. The precautionary principle finds expression in numerous environmental law treaties and 'is defined by taking measures to prevent potential harm to humans and the environment resulting from potentially damaging policies and actions in the face of scientific uncertainty'.[68] Precautionary measures are those taken in advance to protect against potential dangers.[69] As Stuart Allison puts it, 'ecological restoration is a crisis discipline, and as such, we often have to make decisions before we know enough to predict outcomes of our efforts with high precision.'[70]

When restoration practitioners must choose which reference model will serve as a target for a restoration project, the absence of complete scientific uncertainty may come into play.[71] A state may require an industry to invest in restoration activities when that industry engages in habitat-intensive activities like mining or petroleum extraction within the bounds of the legal obligations owed to the community. The polluter pays principle, which holds that those who cause harm should also bear the cost of fixing the damage they have caused, is increasingly codified in laws that make industries clean up polluted soil.

However, the analysis in this chapter does not cover whether ecological restoration should be an obligation of conduct or a result. However, if we believe the research presented in chapter 4, ecological restoration must be a resultant obligation. However, from an environmental protection standpoint, it is worth wondering if it is sufficient for states to enter into broad commitments of conduct, where it may be hard to determine compliance and even harder to ascertain whether compliance actually or eventually produces optimal ecological

[68] Minna Pyhälä, Anne C Brusendorff and H Paulomäki, 'The precautionary principle' in Fitzmaurice, Ong and Mekouris (eds.), 203.

[69] Jonathan B Wiener, 'Precaution' in D Bodansky, J Brunee and E Hey (eds.) 597, 598.

[70] Stuart K Allison, *Ecological Restoration and Environmental Change: Renewing Damaged Ecosystems* (London: Routledge 2012), 71.

[71] Ibid (n. 5), 80.

results, such as the recovery of species, the abiotic environment and landscape. Even though the previously mentioned multilateral aspirations and action plans provide some context for ecological restoration in international environmental law, it is nonetheless crucial to understand how ecological restoration obligations are worded in some MEAs.

Therefore, the following sections of this chapter will examine some ecological restoration treaties that prioritise the recovery of specific species.

4.3 ECOLOGICAL RESTORATION IN SPECIES CONSERVATION TREATIES

Most of the earliest treaties in international environmental law concerned themselves with wildlife and the recovery of species that had become endangered due to a lack of coordinated governance systems, overexploitation, or both. However, some of the few treaties that do recognise restoration have restrictions on their scope, terminology, and mechanisms for carrying it out. The United Nations Convention on the Law of the Sea (UNCLOS),[72] the leading treaty for the marine environment, has relatively few provisions dealing with ecological restoration. A coastal state's obligation to 'restore populations of harvested species' to 'produce maximum sustainable yield' is spelt out in the treaty.[73] Nevertheless, restoring a marine ecosystem is not the same; it is a functional, perhaps anthropocentric, goal. The UN Fish Stocks Agreement, which deals with managing and conservating migratory and non-migratory fish populations, also includes limited restoration provisions.[74]

[72] Convention on the Law of the Sea (Montego Bay, 10 December 1982, in force 16 November 1994).

[73] Ibid, Articles 61 and 119.

[74] Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (New York, 4 December 1995, in force 11 December 2001).

The following section examines the environmental restoration responsibilities outlined in UNCLOS (1982) and the Straddling Stocks Agreement (1995). Both agreements reflect a 'functional approach to restoration' prioritising the return of economically valuable species.[75]

4.3.1 The 1982 UN Convention on the Law of the Sea

After several decades of negotiations, in 1982, states adopted the UNCLOS. Although the treaty encompasses topics as wide-ranging as marine pollution and piracy, the treaty was broadly designed to rationalise managing marine resources. Parties to the UNCLOS agreed that part of fisheries management would include restoration. Thus, the obligation to restore appears in two sections of the treaty, namely Articles 61 and 119, which have to do with the total allowable catch for commercially harvested species. States agreed within the exclusive economic zone, a jurisdictional area of about 200 nautical miles as measured from specified territorial basepoints, that coastal states such as Nigeria must take:

> Measures […] to maintain or restore populations of harvested species at levels which can produce the maximum sustainable yields, qualified by relevant environmental and economic factors, including the economic needs of coastal fishing communities and the [particular] requirements of developing States, and taking into account fishing patterns, the interdependence of stocks and any generally recommended international minimum standards, whether subregional, regional or global.[76]

Ecological restoration activities in all ocean waters are required of parties under Articles 61 and 119. The states must consider the 'effects on species associated with or dependent upon harvested species to maintain or restore populations of such associated or dependent species above levels at which their reproduction may become seriously threatened'.[77] By extending

[75] Ibid (n. 5), 84.

[76] Ibid (n. 72), Article 61 (2).

[77] Ibid (n. 72), Article 61 (4).

its lexical scope beyond economically important marine species, this language may represent an early attempt at an ecosystem approach. In addition, the high seas, the area of jurisdiction beyond the 200-nautical-mile exclusive economic zones, are subject to the same restoration language as in Article 61. This treaty provision is one of the few instances in which states have agreed to an obligation of result about restoration.

The UNCLOS ecological restoration obligation is a result-driven obligation based on a functional restoration scheme to ensure sufficient commodity levels for commercial harvests. This means that states must take action to restore harvested species to maximum sustainable yield levels before determining a total allowable catch and must also consider the possibility of restoring species' that are 'associated or dependent' on harvest species. Because of this, the authors of Articles 61 and 119 recognised that, in practice, ecological restoration could not be limited to just targeting harvested species but instead must include a broader web of species, such as those that form essential habitats for harvested species like coral or those that are part of a target species' food chain.

Earlier in this chapter, we saw that a treaty provision requiring states to engage in the 'restoration of stocks' could leave room for states to interpret how they will comply. An obligation of result, as shown by UNCLOS Article 61, can give parties much leeway depending on the terms of the negotiation. Fisheries managers are divided on the 'maximum sustainable yield' concept from the restoration.[78] When maximum sustainable yields are established for fishing zones based on political rather than ecological considerations, it can be challenging to reduce catch quotas, even when faced with evidence of dwindling fish populations. It is up to individual states to take whatever steps they deem necessary to advance restoration goals for the species of focus and any dependent species. To facilitate

[78] Carmel Finley, *All the Fish in the Sea: Maximum Sustainable Yield and the Failure of Fisheries Management* (Chicago: University of Chicago Press, 2011).

passive restoration, states may implement measures such as creating marine protected areas or temporarily suspending fishing activities. The United States and Canada restock their salmon populations yearly thanks to hatcheries. Although restocking is expected in the fisheries industry, its viability as a stand-alone ecological restoration method is questionable due to the high mortality rate of restocked fish.[79]

A general unconditional obligation to restore is distinguished from a duty based on the unique requirements of developing States in both Article 61 and Article 119 obligations. This implies that the common but differentiated responsibility principle works in both clauses. In light of rising food security concerns, it is possible that developing states with fewer resources than other states will be granted permission to increase total allowable catch to meet the immediate needs of fishers while also investing fewer resources than other states into restoration efforts. There is growing concerned that depleting fishery resources may result from setting a total allowable catch without designing and implementing a restoration plan. Even when a state cannot detect unreported fishing activity or engage in ecosystem-based fishery management research, the common but differentiated responsibility principle to national fishery management allows developing coastal states to continue to accept the operation of distant water-flagged vessels in their coastal waters to generate revenue.[80]

4.3.2 ...and the 1995 Straddling Fish Stocks Agreement

In addition, in 1995, state parties negotiated a post-UNCLOS implementation agreement on conserving and managing migratory and straddling fish stocks.[81] Article 119 of

[79] Culum Brown and Rachel Day, 'The future of stock enhancements: lessons from hatchery practice from conservation biology' 3 (2002) *Fish and Fisheries* 82 – 83.

[80] Ibid (n. 5), 87.

[81] Agreement for the Implementation of the Provisions of the United Nations Convention of the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly

the UNCLOS reaffirmed principles by coastal and distant water fishing states. These principles are designed to preserve and restore target and dependent stocks. When applying the precautionary principle to stock recovery, the Straddling Stocks Agreement goes above and beyond the UNCLOS. The agreement requires member states to establish benchmarks for stock levels that 'correspond to the state of the resource'.[82] According to the 'best scientific information available,'[83] these benchmarks would be determined for each stock. The agreement called for states to set two reference points for straddling stocks and highly migratory stocks collectively and cooperatively: a conservation reference point or limited reference point 'to constrain harvesting within safe biological limits within which the stocks can produce maximum sustainable yield' and a target reference point for management purposes.[84] Given the variety of production states in which stocks can be found, it is necessary to establish stock-specific reference points.[85]

States are expected based on the precautionary reference points 'to maintain or restore populations of harvested stocks, and where necessary associated or dependent species, at levels consistent with previously agreed precautionary reference points'.[86] States should immediately implement conservation and management measures to reverse the decline in species when a harvested stock or dependent stock falls below a limit reference point or is at risk of falling below such reference point.[87] Specifically, states are expected to take agreed-

Migratory Fish Stocks, 4 August 1995, S. Treaty Doc. No. 104 – 24, 2167 UNTS 88 (hereinafter 'Straddling Stocks Agreement').

[82] Ibid, Article 3(b).

[83] Ibid, Article 6(3)(b) and Annex II (1).

[84] Ibid (n. 81), Annex II (2).

[85] Paul D Spencer and Jeremy S Collie, 'Patterns of population variability in marine fish stocks' 6 (1997) *Fisheries Oceanography* 188 – 204.

[86] Ibid (n. 81), Annex II (4).

[87] Ibid (n. 81), Annex II (5).

upon conservation and management measures 'to restore the stocks' as part of the pact.[88] The following examples of subsequent non-binding state agreements that have reinforced this approach:

> When precautionary or limit reference points are approached, measures should be taken to ensure that they will not be exceeded. These measures should be pre-negotiated. If such reference points are exceeded, recovery plans should be implemented immediately to restore the stocks.[89]

This is a reasonable quantitative method for identifying the point at which a party's restoration obligations are triggered. However, much discretion remains with institutional actors, as with restoration practice. As one group of fisheries experts observed, the precautionary reference points required by the Agreement 'reflect individual organisations' interpretations and implementations of precautionary management'.[90] Political considerations may override the need for careful ecological management when determining precautionary reference points. The United Nations Convention on the Law of the Sea and the Straddling Stocks Agreement of 1995 form the existing legal regime, and both of these documents are geared toward restoring fish as commodities.

Restoring stocks to a population level that still allows harvesting according to a maximum sustainable yield formula has been the focus of restoration management. In a regime of increasing pollution or low productivity, more is needed to focus solely on reducing fishing efforts by creating no-fish areas or limiting fishing seasons to restore stocks.[91] There may also be a need for carefully considered interventions to improve habitat

---

[88] Ibid (n. 81), Article 6 (3) (b), 6(4) and Annex II (4).

[89] Food and Agriculture Organization, *FAO Code of Conduct for Responsible Fisheries 1995*, section 6.5.4.

[90] Wendy L Gabriel and Pamela M Mace, A Review of Biological Reference Points in the Context of the Precautionary Approach, Proceedings, 5th NMFS NSAW, 1999. NOAA Tech. Memo. NMFS-F/SPO-40.

[91] John Caddy and Juan Sejio, 'This is more difficult than we thought! The responsibility of scientists, managers and stakeholders to mitigate the unsustainability of marine fisheries' 360 (1453) (2005) *Philosophical Transactions Royal Society London Biological Sciences* 59 – 75.

conditions. That being said, the following section details several MEAs bargained to address habitat restoration.

4.4 ECOLOGICAL RESTORATION IN HABITAT RECOVERY TREATIES

One simple legal strategy for restoring species involves funding the establishment of hatcheries or nurseries where new generations of fish can be bred. However, access to appropriate habitat is crucial to the next generation's success once it leaves the hatchery or nursery. Early in the development of modern environmental law, states realised they needed to work together to support domestic efforts to recover habitat if endangered species had any chance of returning. Two distinct types of international cooperation are reflected in the treaties aimed at restoring habitat. For example, the Ramsar Convention on Wetlands of international importance[92] requires each state party to nominate sites and then develop management plans for those sites, which may include conservation techniques akin to those employed in protected areas, as examined in more detail below:

4.4.1 The Ramsar Convention on Wetlands

States negotiated the Ramsar Convention on wetlands in 1971 in response to the worldwide pressure to transform wetland areas into dry land and the effects on wildlife, especially migratory birds. To ensure the conservation of wetlands and waterfowl, states agreed to identify wetlands of 'international importance and to manage them according to "wise use" principles. However, the terms "conservation" and "wise use" are not defined in the convention. The obligation to restore is implicit in Article 4(2) of the Ramsar Convention. It states that:

[92] Ramsar Convention on Wetlands of International Importance Especially as Waterfowl habitat, 9 February 1971, in force 21 December 1975 (hereinafter 'Ramsar Convention').

> [w]here a contracting party in its urgent national interest, deletes or restricts the boundaries of a wetland included in the List, it should as far as possible compensate for any loss of wetland resources, and in particular it should create additional nature reserves for waterfowl and for the protection, either in the same area or elsewhere, of an adequate portion of the original habitat.[93]

Restoration of wetlands is a possible indirect means of increasing waterfowl populations. In reality, states may have to restore a different type of habitat to serve as a reserve if no other similarly situated habitat is available. The convention's requirement to 'endeavour through management to increase waterfowl populations on appropriate wetlands'[94] is another necessary provision.

One of the foremost conventions influencing the discussion of how states should design and implement efficient (wetlands) habitat restoration efforts is the Ramsar Convention on Wetlands. Over two decades after the initial treaty negotiation, a series of resolutions and recommendations considered authoritative interpretations of obligations under the convention show that restoration was considered a priority for the Ramsar Convention framework.[95] However, ecological restoration is only tangentially addressed in the Ramsar Convention's official text. Extensive focus has been on the Ramsar restoration strategy in COP decisions, guidance documents, and implementation practises.[96]

In 1990, during the 4th Conference of the Parties to the Convention, it was suggested that all states 'examine the possibility' of wetland restoration projects, mainly to restore degraded wetlands.[97] The parties at the 5th COP in 1993 noted that despite the Convention being in

---

[93] Ibid, Article 4(2).

[94] Ibid, Article 4(4).

[95] Article 6(2)(d) and (f) of the Convention provides for the Conference of the Parties with the competency respectively to 'make general or specific recommendations to the Contracting Parties regarding the conservation, management and wise use of wetlands and their flora and fauna' and 'to adopt other recommendations, or resolutions, to promote the functioning of this Convention'.

[96] Ibid (note 2), 392.

[97] Recommendation 4.1 Wetland Restoration (1990).

effect, an unacceptable number of wetland areas were being converted to dry land. A concerted effort to 'restore degraded wetlands and compensate for lost wetlands' is part of the 'conservation and management of wetlands of international importance' to which the parties, including Nigeria, committed.[98] Meanwhile, interested parties have requested that the Standing Committee investigate the feasibility of compiling a technical guide for wetland restoration that considers the effects of climate change and rising sea levels.

Six years later, in 1996, at the 6th COP, the parties to the Ramsar Convention agreed to prioritise wetland restoration as a form of 'nature restoration' that can benefit both humans and waterfowl by enhancing ecosystem services.[99] The Contracting Parties were urged to incorporate wetland restoration into their national nature conservation, land and water management policies and to give 'higher priority to the restoration of wetlands'.[100] In 1999, at the 7th COP, it was emphasised that each party to the Ramsar Convention should launch a national programme to restore degraded wetlands. Therefore, it was requested that a research programme be conducted to 'assess the lost processes, functions, composition, and values of wetland areas.'[101] However, the resolution did recommend that states define their 'restoration objectives and priorities [...] with reference to lost wetland functions, processes, and components,'[102] even if the final decision on how to define restoration rests with the states. It is crucial to conduct some environmental assessment before beginning a restoration programme, as recommended by Resolution 7.17. This suggestion is vital because it clarifies that, although restoration is often a remedial strategy for environmental impact, restoration

[98] Resolution 5.1. The Kushiro statement and the framework for the Convention implementation (1993), Annex 1.

[99] Recommendation 6.15 Restoration of Wetlands (1996).

[100] Recommendation 6.15 Restoration of Wetlands (1996).

[101] Resolution 7.17. Restoration as an element of national planning for wetland conservation and wise use (1999).

[102] Ibid, paras 11 and 15.

efforts may also have environmental impacts, leading to long-term environmental degradation.

A significant new benchmark for assessing the feasibility of restoration is introduced in the Ramsar Convention documentation, which has important implications for strategic environmental assessment.[103] A COP resolution specifies that the target condition (ecological character) described in the management plan's objectives rather than the 'site condition at the time the wetland was listed' should be used as the 'baseline' for evaluating the success of restoration efforts at Ramsar sites.[104] To assess the potential future effects of a project, this interpretation offers a fresh viewpoint on what can constitute a baseline. In other words, for environmental assessment purposes, the unachieved target can still be the baseline condition against which impacts are measured even if a restoration objective, such as a water quality target, has not yet been achieved.

In addition, the Convention parties were urged to identify and initiate peatland and mangrove ecosystem restoration efforts at the 8th COP in 2002.[105] Most importantly, the Ramsar parties negotiated the 'Principles and Guidelines for Wetland Restoration,' concluding that 'restoration cannot be a substitute for wetlands protection' as part of the Convention's implementation.[106] The terms 'restoration' and 'rehabilitation' are used synonymously throughout the Ramsar Convention documents, as the principles and guidelines point out. Although the term restoration could mean 'return to pre-disturbance conditions,' the resolution provides a broader definition. Hence, 'restoration' was defined as

[103] Resolution X.17. Environmental Impact Assessment and Strategic Environmental Assessment: Updated Scientific and Technical Guidance (2008).

[104] Ibid, 15, para. 25.

[105] Resolution 8.17 Guidelines for global action on peatlands (2002); Resolution 8.32 Conservation, integrated management and sustainable use of mangrove ecosystems and their resources (2002).

[106] Ibid, Resolution 8.16 Principles and Guidelines for Wetland Restoration (2002).

'projects that promote a return to original conditions and projects that improve wetland functions without necessarily promoting a return to pre-disturbance conditions'.[107]

To avoid using 'hard structures or extensive excavation,' ecological engineering can be incorporated into wetland restoration as the primary principle for parties to incorporate into their work.[108] States should prioritise planning efforts on catchment basins consisting of wetland and upland areas and restoring ecosystem functions.[109] Also meaningful are transparent community participation, consistent management and monitoring, and, where appropriate, incorporating traditional management that gives equal weight to flexible management.[110] No public assessment of the principles and guidelines' impact on restoration projects has been done. It must be clarified if the resolution's content reaches the national wetland managers making crucial restoration-project-level decisions.[111]

When establishing a common understanding of how states might determine appropriate restoration goals and objectives and implement those plans, the Ramsar Convention framework is arguably the most robust of all international regimes.[112] The state parties have been meeting recently to discuss how their initiatives can complement ecological restoration initiatives already under other international frameworks. The Ramsar state parties, for example, assessed the Aichi Targets within the CBD framework in 2012 to determine how Ramsar projects could contribute to achieving these targets. Goal 5 of the Aichi Targets is to halve the loss of all natural habitats by significantly reducing habitat degradation and

[107] Ibid, Annex I, para. 3.

[108] Ibid, Annex 1, paras 10 – 11.

[109] Ibid, Annex 1, paras 13 – 14.

[110] Ibid, Annex 1, paras 17 – 18.

[111] Gwen van Boven, An Evaluation of the Use and Utility of Ramsar Guidance: A Report to Ramsar Scientific & Technical Review Panel and Ramsar Secretariat (2007), para. 8. Available online at Ramsar Guidance: (last accessed 23 August 2021).

[112] Ibid (n. 5), 99.

fragmentation; Goals 14 and 15 are to protect and restore biodiversity and combat climate change. Accordingly, Ramsar Strategy 1.8 stipulates that states must:

> [i]dentify priority wetlands and wetland systems where restoration or rehabilitation would be beneficial and yield long-term environmental, social, or economic benefits, and implement the necessary measures to recover these sites and systems.[113]

In 2008, at the 10th Conference of the Parties (COP), states acknowledged the Changwon Declaration on human well-being and wetlands, which stated that restoration was crucial to improving livelihoods and water quality and sustainable agriculture and fisheries, protecting biodiversity and adapting to climate change.[114] In addition, subsequent COPs have continued to address restoration work under the Ramsar Convention, even though Resolutions 7.17 and 8.16 are critical documents in defining state restoration obligations. Many states have stressed the importance of wetlands and how they can mitigate the effects of climate change on flooding.[115] In addition, parties were urged to make the restoration of river basins, lake basins, aquifer basins, associated wetlands, lowland wetlands, coastal wetlands, and peatlands a top priority as part of their response to climate change.[116]

At the 11th COP of the Ramsar Convention in 2012, the parties acknowledged that government intervention to restore wetlands might not be sufficient and urged public and private actors to work in partnership.[117] The parties accepted 'the modesty of the efforts invested in restoring wetlands'[118] and committed to increasing those efforts in the proposed 2016 – 2024 Strategic Plan from 2015. According to the plan, 'vital ecosystem functions and

[113] Resolution 11.3. Adjustments to the Strategic Plan 2009 – 2015 for the 2013 – 2015 triennium (2012) Appendix 1, page 7.

[114] Resolution 10.3. Changwon Declaration on human well-being and wetlands (2008) Annex.

[115] Resolution 10.24. Wetlands and Climate Change (2008) para. 18.

[116] Ibid, paras 30 – 32.

[117] Resolution 11.20. Promoting sustainable investment by the public and private sectors to maintain the benefits people and nature gain from wetlands (2012), Annex I, para. 10.

[118] The Ramsar Strategic Plan 2016 – 2024, Resolution XII.2 (2015) para. 24.

the ecosystem services they provide to people and nature are fully recognised, maintained, restored, and wisely used'[119] to fulfil the goals of the Ramsar Convention for the conservation and sustainable use of all wetlands. Specifically, the parties agreed to a goal of 'effectively conserving and managing the Ramsar site network' with a target of either maintaining or restoring 'the ecological character of Ramsar sites'.[120] To maximise the benefits of wetlands for 'biodiversity conservation, disaster risk reduction, livelihoods, and climate change mitigation and adaptation,'[121] states must try to restore degraded wetlands and address wetlands outside the Ramsar site network. Participants in the Ramsar Convention see these goals as supplementary to the CBD's Aichi Targets.

The parties to the Ramsar Convention have been working hard since 1999 to build support for ecological restoration as a long-term conservation strategy for wetlands. Ramsar has been working to protect wetland values for various management purposes, including biodiversity and human use. Most states now have domestic implementation programmes to back this up. There may be more opportunities for coordination and collaboration under the convention, especially in helping least-developed states by transferring technical know-how and financing for restoration projects, even though the convention has largely left implementation of restoration standards to each party. This is why, in 2015, the parties agreed to back regional initiatives such as training and capacity-building centres to implement the Convention better.[122]

Although the Ramsar Convention provides compelling examples of the positive impact restoration has on habitat conservation, it faces the same challenge as other MEAs in that its success is contingent on the reasonable faith efforts of parties rather than any clear

[119] Ibid, Annex, 5.

[120] Ibid, 14, Target 5.

[121] Ibid, 14, Target 12.

[122] Resolution 12.8. Regional initiatives 2016 – 2018 in the framework of the Ramsar Convention (2015).

legal accountability frameworks.[123] There has been an honest-to-goodness effort to implement ecological restoration in recent years. Still, when multiple ecosystems are declining, it is reasonable to wonder if the current efforts are too little or too late. With no verification system in place, developing states like Nigeria that have Ramsar sites merely report on the ecological character of sites.[124] We do not know if the ongoing restoration efforts will be successful rehabilitation projects.[125] The rapid site assessment tool known as the Ramsar Site Management Effectiveness Tracking Tool relies on self-monitoring, which can be undermined by political concerns like an internal conflict of interests among domestic agencies, depending on who is responsible for filling out the form.[126] Third-party verification efforts may play a formal role in assisting state monitoring of the ecological health of their Ramsar sites and other wetlands, in addition to the many civil society groups that already support the implementation of the Ramsar Convention.

In contrast with the MEAs we have already covered, the CBD embraces ecological restoration as a central strategy for restoring ecosystems. Subsequently, the CBD State parties have negotiated a voluntary scheme to enhance accountability with qualitative targets that would qualify as obligations of results if they were legally binding, as shown in the following section.

[123] Ibid (n. 5), 101.

[124] Ibid (n. 92), Article 32.

[125] The Ramsar Strategic Plan 2016 – 2024, Annex I, Ramsar Goals and Targets, Target 12 Baseline and Indicators.

[126] Resolution 12.5. Evaluation of the Management and Conservation Effectiveness of Ramsar Sites (2015) Annex I.

4.4.2 The 1992 Convention on Biological Diversity

State parties, for example, must 'rehabilitate and restore degraded ecosystems and promote the recovery of threatened species'[127] under the CBD's broad restoration approach, reflecting an obligation of conduct. Furthermore, under Article 14, which deals with impact assessment and adverse impacts, the CBD instructs the COP to 'examine on the basis of studies to be carried out, the issue of liability and redress, including restoration and compensation, for damage to biological diversity, except where such liability is a purely internal matter'.[128] However, '[t]he Conference of the Parties has not yet made any decisions on what restoration activities would satisfy redress for biodiversity loss,'[129] as some observers put it. Several provisions in the CBD, including Article 8(f) and Article 14, implicitly require states to engage in restoration activities. For instance, Article 8(h) states that parties must 'as far as possible and as appropriate [to] prevent the introduction of, control or eradicate those alien species'[130] that pose a threat to ecosystems, habitats, or species. 'Especially when such species are interfering with the ability of an ecosystem to return to a particular historical trajectory with certain characteristic ecological structure and function,'[131] the management and eradication of alien species may be considered an example of ecological restoration. Article 9 also implies a restoration obligation by state parties to 'adopt measures for the recovery and rehabilitation of threatened species and for their reintroduction into their natural habitats under appropriate conditions'.[132]

To realise the CBD's objective of restoration beyond these provisions in the convention texts, the CBD, like the Ramsar Convention, depends on the post-convention

[127] Ibid (n. 35), Article 8(f).

[128] Ibid, Article 14.

[129] Ibid (n. 5), 115.

[130] Ibid (n. 35), Article 8(h).

[131] Ibid (n. 5), 115.

[132] Ibid (n. 35), Article 9 (c).

efforts of the parties. The CBD Strategic Plan, several COP resolutions, and national biodiversity plans are just a few examples of what states have done post-convention to fulfil their obligation to restore. These post-convention frameworks will aid the development of a comprehension of the standing of ecological restoration in international law.

4.4.2.1 …and the Strategic Plan for Biodiversity 2011 – 2020

The CBD parties adopted the Aichi Biodiversity Targets in 2010 as part of the "CBD Strategic Plan 2011-2020" as part of their concerted effort to strengthen the convention's domestic implementation. Two of the twenty Aichi Biodiversity Targets, 14 and 15, explicitly mention restoration and function as result-based obligations. Targets 14 and 15 aim to do the following by outlining their expected results in detail:

> By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded […]
> By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems [...][133]

Although there is a lack of clarity regarding what is meant by 'restored' and 'restoration' in Aichi Biodiversity Targets 14 and 15, the protection of essential ecosystem services seems to be the underlying assumption of both targets. Article 8(f) of the CBD imposes on each party the obligation to develop and implement national targets and strategies to achieve those targets. The international legal obligations for ecosystem restoration are given more excellent universal value by their domestication. Although many countries, especially in the Global South, 'have

[133] COP-10 Decision X/2 (2010), Strategic Plan for Biodiversity (2011-2020), Aichi Biodiversity Targets on Ecosystem restoration and resilience.

extended the deadline by which they intend to meet the Aichi Targets.'[134] It is interesting to note that several countries have voluntarily submitted national strategies (and approaches) involving restoration activities.

In contrast, according to the CBD Secretariat's report, 190 of the 196 CBD Parties – including Nigeria – have developed NBSAPs under Article 6 of the Convention.[135] The CBD Secretariat states that these national targets 'have not been specifically established within the Aichi Biodiversity Targets.'[136] Still, some of these national targets can be connected to the Aichi Biodiversity Targets and the 2020 implementation framework.

Several decisions that require direct action by states to achieve restoration have also been adopted at nearly every COP to the CBD. Though not legally binding, these rulings reflect political commitments and normative developments.[137] The parties were urged to 'achieve the restoration of habitats, including their biological diversity component,'[138] as stated at the third Conference of the Parties in 1996. Decision III/9 reflects the intention for restoration to be holistic and complex enough to accommodate for the 'diversity within species,

[134] Ibid (n. 5), 124.

[135] Secretariat of the CBD, 'Latest National Biodiversity Strategy and Action Plans'. Available at https://www.cbd.int/nbsap/about/latest/ (last accessed 6 December 2019). Nigeria's NBSAP was received on 30 December 2015.

[136] Secretariat of the CBD, 'Find National Targets'. Available at: https://www.cbd.int/nbsap/targets/ (last accessed 9 December 2019). Nigeria's national target as part of the Aichi targets 14 and 15 is that 'By 2020, up to 15% of the areas of degraded ecosystems in Nigeria are under programmes for restoration and sustainable management'.

[137] Robin Churchill and Geir Ulfstein, 'Autonomous institutional arrangements in multilateral environmental agreements: a little-notice phenomenon in international law' 94 (4) (2000) *American Journal of International Law* 636 – 642.

[138] COP-3 Decision III/9 (1996).

between species, and of ecosystems,'[139] which is becoming increasingly important as biological diversity and ecosystems continue to decline.

Also, with regards to mountain area habitats, the 6th COP to the CBD urged parties to 'develop and implement programmes to restore degraded mountain ecosystems and protect natural dynamic processes and maintain biological diversity in order to enhance the capacity of mountain ecosystems to resist and adapt to climate change or recover from its negative impacts'.[140] To 'promote forest restoration, including reforestation and afforestation, in line with sustainable forest management through, among other things, the Global Partnership on Forest Landscape Restoration and other regional cooperation mechanisms,'[141] CBD parties were urged at the COP in 2008.

The CBD state parties did not start prioritising restoration as an issue until 2012. As a result of the COP to the CBD in 2012, states adopted a decision on "Ecosystem Restoration" to strengthen restoration efforts under Article 8(f).[142] Several other points of view on the best way to promote ecosystem restoration are captured in Decision XI/16, which notes that 'restoration is not a substitute for conservation.'[143] Still, instead, a measure taken only as a last resort when preventing damage has proven impossible. As part of Decision XI/16, states agreed 'depending on national circumstances' to undertake additional commitments, including implementing restoration provisions of previous COP decisions, identifying ecosystems that may be eligible for restoration, using best practices for

[139] Ibid (n. 35), Article 2.

[140] Decision VII/27 (2004), Action 1.2.1.

[141] Decision IX/5 (2008), para. 2(g).

[142] Decision XI/16. Ecosystem Restoration, UNEP/CBD/COP/DEC/XI/I (2012).

[143] Ibid.

restoration as well as promoting ecosystem restoration that will 'restore critical ecosystem functions and the delivery of benefits to the people'.[144] Subsequently, in 2014, at the Conference of the Parties to the CBD, states acknowledged the need for more study to enhance efforts to implement the Strategic Plan for Biodiversity 2011-2020 and the Aichi Targets. In particular, the state parties to the CBD acknowledged the

> […] need for better understanding of ecosystem processes and functions and their implications for ecosystem conservation and restoration; ecological limits, tipping points, socio-ecological resilience and ecosystem services; and improved methodologies and indicators for monitoring ecosystem resilience and recovery, in particular for vulnerable ecosystems.[145]

Decision XII/19, titled "Conservation and Restoration," expressed concern that 'not enough progress has been made' toward achieving Aichi Biodiversity Targets 14 and 15, which explicitly require restoration in the post-CBD framework.[146] In particular, the decision urges states and other stakeholders to take action to raise awareness of restoration efforts by doing things like 'develop spatial planning approaches at the landscape and seascape level [...] to promote ecosystem restoration,' 'promote, where appropriate, holistic and integrated planning for ecosystem...restoration in indigenous and local community conserved areas,' and 'provide appropriate incentives to promote [...] sustainable management and best practices in the conservation and restoration of ecosystems at national and subnational levels, in the public and private sectors'.[147] However, this decision does signal the need for states to cooperate on restoration across boundaries to achieve large-scale restoration objectives. It

[144] Ibid, (n. 142), section 1.

[145] Decision XII/1. (2014) Annex I.

[146] Decision XII/19 (2014).

[147] Ibid, para 4(a)–(h).

highlights the importance of initiatives that can network across various public and private actors to achieve restoration goals.

Since its establishment under Article 25 of the CBD, the Subsidiary Body on Scientific, Technical, and Technological Advice has advanced a common understanding of ecological restoration. Defined as 'the process of actively managing or assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed to sustain ecosystem resilience and conserve biodiversity,'[148] ecological restoration is a method for repairing damaged ecosystems and preserving biodiversity. The CBD Subsidiary Body stresses that restoration is not a replacement for conservation but that 'an enabling institutional framework' should be developed to facilitate restoration efforts in various habitats and with a wide range of actors and goals.[149] States are expected to 'improve or establish a legal and policy framework for the protection and restoration of ecosystems' including developing 'as appropriate, laws, regulations, policies and other requirements for protecting, and restoring vulnerable habitats'.[150] Soft law has the potential to 'shape the implementation of pre-existing duties,'[151] as evidenced by the Conference of the Parties' decisions, national strategies and initiatives by the Subsidiary body, and similar developments.

So, ecological restoration has been gaining steam among states internationally, with much focus on how individual countries can meet their ecological restoration commitments. As a result, the obligation to undertake restoration 'is regarded largely as an obligation of conduct or means rather than an obligation of result.'[152] In practice, even though 'none of the

[148] Protected Areas and Ecological Restoration, Note by the Executive Secretary, UNEP/CBD/SBSTTA/20/12 (2016).

[149] Ibid, Annex I, paras 5 and 8.

[150] Ibid, para. 14B (1).

[151] Ibid (n. 5), 139.

[152] Ibid (n. 5), 83.

texts define what the term means in the context of the [treaty].'[153] Based on this understanding, the next section will examine the normative status of ecological restoration within contemporary international environmental law.

4.5 INTERNATIONAL ENVIRONMENTAL LAW AND ECOLOGICAL RESTORATION

Undeniably, ecological restoration is gradually making its way into international environmental law. States generally agree that they have a minimum legal obligation to identify degraded ecosystems and incorporate restoration efforts into national biodiversity strategies. Some authors have argued that 'there may be an emerging customary obligation for states to participate in restoration actively.'[154] Even though the UNCLOS, the Ramsar Convention, the CBD, and several other treaties impose obligations to restore landscapes, these obligations 'are only beginning to be mainstreamed into practice at the community, municipal, or business level,'[155] meaning that international law alone is not enough to achieve all ecological restoration goals. States have made binding international commitments to pursue ecological restoration through various instruments. However, for countries like Nigeria, domesticating these commitments requires complex negotiation among multiple actors, including landowners and other land users.

When looking at international legal frameworks, such as COP decisions and recommendations, it becomes clear that there is surprisingly little information about evaluating whether the texts' general restoration obligations are being met. Richardson put it this way:

[153] Ibid (n. 3), 2978.

[154] Ibid (n. 5), 129.

[155] Ibid (n. 5), 137.

> The key conclusion is that eco-restoration is not yet a fundamental goal of the global environmental law system, on par with the philosophy of sustainability. It is acknowledged in a piecemeal manner in some instruments, but without the necessary status as a fundamental pillar of global environmental governance. Even in the so-called 'soft law' instruments where one commonly finds more expansive policy aspirations, reference to eco-restoration is sparse. Overall, international environmental law provides little direction or obligation on nation states to practice [ecological] restoration.[156]

Although some encouraging developments on the national level could be helpful, as we will see in the next chapter, there currently needs to be internationally agreed standards to gauge whether a state is progressing towards satisfying its restoration obligations. The international community should devote time and energy to negotiating common standards for ecological restoration projects if it wants tangible socio-ecological benefits. Current global political commitments, such as the Aichi Targets and the United Nations Decade on Ecosystem Restoration, where a broad spectrum of states have agreed to undertake substantial restoration efforts, highlight the need for some minimum standards.

The ecological impact of these international efforts, in terms of recovering valuable habitats and species, and the social sustainability of these efforts, in terms of being supported by local communities, require a greater degree of uniformity in their design and implementation moving forward.

4.5.1 The UN Decade on Ecosystem Restoration (2021-2030): Towards a Legal Framework for Ecological Restoration.

Aligning with the final decade of the SDGs, the United Nations General Assembly declared 2021-2030 the UN Decade on Ecosystem Restoration on March 1, 2019. The decade aims to reverse ecosystem degradation to combat the climate crisis, improve food security,

[156] Ibid (n. 5), 280.

and halt biodiversity loss. The decade's focus on restoration is intended to help achieve the SDGs by reversing the effects of global warming and other climate-related problems and stopping biodiversity loss.[157] The efforts made during this decade will help speed up ongoing restoration efforts, especially the Bonn Challenge and related forest initiatives. Although preparations have begun, competing theories about its potential outcomes exist.[158] We can approach the Decade on Ecosystem Restoration with an open mind and not assume we have all the answers. Instead, it can serve as an impetus for better integration between society, practitioners, and scientists; better research and analysis into the efficacy of restoration; and more intelligent monitoring and accountability.[159]

As the UN Decade on Ecosystem Restoration begins, a binding Protocol on Ecological Restoration to the CBD that commits states to seek to develop restoration strategies in collaboration with other social sectors could be one way to implement a plan to promote effective governance in the context of ecological restoration.[160] The CBD Subsidiary Body has recommended that states engage in near-term ecosystem restoration planning, which should form the basis of any future restoration protocol. The CBD's Conference of the Parties can approve new protocols with a two-thirds majority vote.[161] The parties to any protocol must ratify it under their respective national treaty ratification procedures. Both the

[157] UNEP/FAO Factsheet, 'The UN Decade on Ecosystem Restoration 2021-2030' (February 2020). Available at UNDecade.pdf (unep.org) (last accessed 13 May 2021).

[158] See Nigel Dudley and others, 'The UN Decade on Ecosystem Restoration (2021 – 2030): What can Protected Areas Contribute? 26(1) (2020) *Parks* 111; Forum for Global Challenges, *'Restoring Nature: The role of the UN Decade of Ecosystem Restoration 2021-30'.* The University of Birmingham, 3-5 February 2021.

[159] Truman P Young and Mark W Schwartz, 'The Decade on Ecosystem Restoration is an impetus to get it right' 1 (12) (2019) *Conservation Science and Practice* 145.

[160] An Cliquet, Anastasia Telesetsky, Afshin Akhtar-Khavari and Kris Decleer, 'Upscaling Ecological Restoration: towards a new legal principle and protocol on ecological restoration in international law' (2022) *Restoration Ecology*. Available online: https://doi.org/10.1111/rec.13560 (last accessed 11 September 2023); see also Ibid (n. 5), 140.

[161] Ibid (n. 35), Article 23(4)(c).

Cartagena Protocol on Biosafety[162] provides more detail on the convention's provisions regarding the transfer of species, and the Nagoya Protocol on Access and Benefit Sharing,[163] which provides a legal approach to the fair use and sharing of resources, was negotiated and adopted by the CBD parties.

Moreover, state parties may want to discuss the possibility of negotiating a Protocol on the ecological restoration of habitats and species to establish a baseline of global best practices for national restoration planning. Given the widespread species and habitat restoration duties across international legal regimes, such a negotiating exercise may prove especially fruitful. As a focal point for technology transfer and financing, a restoration protocol could help Nigeria and other countries in the Global South communicate their socio-ecological restoration goals in a standardised way. Possible topics for such a protocol must include the need for broader stakeholder involvement, restoration baselines, ongoing monitoring, planning, and cross-border coordination. A legal framework for the exchange of technical expertise and financial resources to aid in national restoration efforts could be provided by a protocol.

Of course, the political will of states is necessary for this to be politically feasible. The time may be suitable for a legal agreement prescribing minimum national standards for ecological restoration to help states fulfil their obligation to restore degraded ecosystems and species in light of the specific restoration goals set in the Aichi Targets and the 2030 SDGs. The Strategic Plan for Biodiversity could include this as a 'related means of implementation'[164] if the CBD Conference of the Parties adopts the proposed agenda.

---

[162] Cartagena Protocol on Biosafety to the Convention on Biological Diversity, 29 January 2000, 39 ILM 1027 (2000).

[163] Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity, 29 October 2010, UNEP/CBD/COP/DEC/X/1.

[164] Decision XII/31 (2014).

Although nine years seems like a long time, we are sprinting to reverse ecosystem damage and species extinction.

4.6 CONCLUSION

This chapter looked at the history and development of ecological restoration in international environmental law and analysed the context of international law in which it exists today. Ecological restoration, species recovery treaties, and habitat restoration treaties that reflect legal commitments were all examined in this chapter as they relate to international law. Taken as a whole, these documents seem to indicate that restoring critical biodiverse habitats and important species, such as endangered species and some commercial species, is now a customary obligation under international law. To rephrase, states may have a wish and a duty (or obligation) to restore. To answer why Nigeria should be concerned with applying the concept of ecological restoration in their domestic environmental law and policy, this chapter clarified the status of ecological restoration in international environmental law.[165] Assuming that a duty to restore exists under international environmental law, the question is what, if anything, can be gleaned about the nature of that duty from international legal texts. Unfortunately, not much, especially considering how rarely ecological restoration is defined in most documents.

The commitment to restore is primarily a normative requirement in legal texts, and its precise contours are left to be determined by each country. For ecological restoration to occur, at the very least, it is necessary to agree on a common goal. In light of the commitments made under the various MEAs examined in this Chapter, ecological restoration appears to be more or less a last-ditch effort. When it is too late to stop environmental damage, the next best thing is to fix what is already broken. States have acknowledged that

[165] Ibid (n. 5), 141.

they have to engage in restoration when a given habitat is in a degraded state, when a particular species is threatened or endangered, or when the carrying capacity of an area drops below what is needed to achieve a maximum sustainable yield for commercially viable species. One must restore only if certain conditions are met; this is not an absolute duty. Ecological restoration is only required when practical or necessary, as evidenced by the abovementioned treaty commitments.

However, the definition of feasibility currently varies from one state to the next. As a result, it is reasonable to conclude that some habitats are beyond repair due to severe degradation. It is also fair to assume that, due to shifting climatic conditions, some habitats, like certain coastal freshwater wetlands across the globe and in Nigeria's Niger Delta, might need to be more amenable to restoration as freshwater wetlands. Hopefully, with its expectations and ambitions, the UN Decade on Ecosystem Restoration could lead to a Protocol on Ecological Restoration to create a baseline of international requirements for efficient national planning and implementation. Lastly, because nearly all ecological restoration projects and activities occur on sovereign territories governed by domestic legal systems, the potential value and influence that international environmental law principles and intergovernmental agreements can have on developing country-specific approaches to ecological restoration cannot be overstated. Thus, the relationship between Chapters Three and Four will help us understand the dynamic yet evolving relationship between international environmental law and ecological restoration.

Based on this understanding, Chapter Five will examine various national policies to fulfil international legal obligations to restore, considering the principles of international law that could guide the implementation of national ecological restoration approaches, as examined in Chapter Four. Having reviewed the potential values (and influence) of international law principles and intergovernmental agreements on the need to develop

country-specific approaches, Chapter Five will analyse some national policies implemented to fulfil international legal obligations for ecological restoration. It will use the US and EU experiences, where applicable, to identify general legal patterns to address the ecological challenges discussed in Chapter Two.

CHAPTER FIVE:

ECOLOGICAL RESTORATION LAW AND GOVERNANCE IN THE UNITED STATES AND THE EUROPEAN UNION

5.1 INTRODUCTION

The overriding purpose of this thesis is to ascertain the effectiveness of Nigeria's current legal and governance frameworks for oil spill response in the light of ecological restoration principles. To this end, Chapter Four explored the global legal contexts for ecological restoration by broadly focusing on the potential value and influence of international environmental law principles and intergovernmental agreements on developing country-specific approaches to ecological restoration governance. This was done because the commitment to restore at the global level is primarily a normative requirement in legal texts, and each country determines its precise contours. Therefore, considering that nearly all ecological restoration projects and activities occur on sovereign territories governed by domestic legal systems, Chapter Five will now attempt to analyse some national and – in the case of the European Union – regional policies to fulfil international legal obligations to restore, as discussed in Chapter Four hitherto. This chapter will explore lessons from crucial legislation, case law, and literature in the US and the European Union.[1] Where applicable, as well as other sources, to identify general legal patterns and learn how to respond to the ecological challenges discussed in Chapter Two so that general approaches within legal systems can be discerned.

Therefore, this chapter aims to discuss the legal and policy frameworks in the US and EU associated with ecological restoration. The chapter focuses on national (and regional)

[1] Hendrik Schoukens, 'Habitat Restoration on Private Lands in the United States and the EU: Moving from Contestation to Collaboration? 11(1) (2015) *Utrecht Law Review* 33, 34.

approaches because most international environmental obligations are implemented through domestic and sometimes regional mechanisms, even though most of this work is dedicated to ecological restoration in Nigeria. This is especially true because ecological restoration is always ecosystem specific. Thus, this chapter will provide a crucial step in determining the vital factors the law could consider when mandating ecological restoration. As is the case with the thesis broadly, Chapter Five does not pretend to provide any neatly packaged one-size-fits-all lessons to address all the myriad of horny issues that characterise this area of environmental law in Nigeria. Instead, it re-emphasises that the law should articulate a duty on government regulatory agencies to engage in ecosystem restoration in practicable situations. That means ecological restoration laws must explicitly incorporate participation mechanisms so that government regulatory agencies understand that community involvement is an indelible requirement for successful restoration governance.

However, before discussing the national and regional approaches to ecological restoration governance, it is vital to justify the choice of the US and EU as significant examples, which the next section sets out to accomplish.

5.2 UNITED STATES AND THE EUROPEAN UNION: SIGNIFICANT EXAMPLES

Despite its significant wealth and power, the United States has suffered a substantial loss of 53 per cent of its mainland wetlands, 4.3 million acres of degraded lakes and 3.2 million miles of rivers. This underscores the pressing need for ecological restoration, a response that the United States and the European Union (EU) have deemed appropriate for environmental degradation, often caused by pollution or habitat destruction, primarily due to construction and urban developments. The importance of ecological restoration concepts has been increasingly recognized in US statutes and agency practices in recent decades.

Fundamentally, as a supranational organisation, the EU has enforcement powers, essential competencies, concrete policy targets, and more robust legislation on ecological restoration. This means they can be used to compare the Nigerian system to its needs and make changes where necessary, especially since the US and the EU, like Nigeria, are signatories to the 1992 Convention on Biodiversity, as we have seen in the previous chapter. Therefore, this chapter argues that the United States and the EU systems include some of the best examples of ecological restoration law and governance,[2] that could benefit the Nigerian system, which begs for reforms.

Ecological restoration of degraded ecosystems is a problem in every state across the globe.[3] The United States, for instance, despite its global wealth and ability to act, lost nearly 53 per cent of its mainland wetlands. The US Department of the Interior, Fish and Wildlife Service and the National Research Council, as far back as the 1990s, found that 3.2 million miles of rivers and streams and 4.3 million acres of lakes were in poor condition.[4] Therefore, much more is required than international law to accomplish domestic goals.[5] In this chapter, the thesis will examine several national legal strategies and policies for encouraging ecological restoration in the US. Despite some striking similarities, the legal standards developed to address ecosystem restoration vary widely from one state to the next. The United States, as will be seen in this chapter, has additional legislation that allows federal

[2] Jonathan Verschuuren, 'Effectiveness of Nature Protection Legislation in the European Union and the United States: the Habitats Directive and the Endangered Species Act' in Martin Dietrich and Jan van der Straaten (eds.), *Cultural Landscapes and Land Use: The Nature Conservation-Society Interface* (Kluwer, 2004) 39 – 67.

[3] James Aronson and Sasha Alexander, 'Ecosystem Restoration is now a Global Priority: Time to Roll up Our Sleeves' 21(3) (2013) *Restoration Ecology* 293.

[4] Thomas E Dahl, *Wetlands Losses in the United States 1780s to 1980s* (US Department of the Interior, Fish and Wildlife Service, Washington, DC 1990); National Research Council, *Restoration of Aquatic Ecosystems: Science, Technology, and Public Policy* (National Academy Press 1992) 6 and 10.

[5] Anastasi Telesetsky, An Cliquet and Afshin Akhtar-Khavari (eds.), *Ecological Restoration in International Environmental Law* (London: Routledge, 2017) 173.

agencies to recover civil or criminal costs for environmental damage, which can then be used to restore resources in addition to the legislation discussed below.[6]

While all of these national systems can potentially restore ecological function to degraded ecosystems, only a minority of them treat ecological restoration as a fundamental state obligation and value.[7] Ecological restoration is approached in a much more functional manner as a programmed response to a specific degraded biome or geographic area. When ecological restoration is mentioned in national or regional laws without specifying a location, it is typically an alternative to conservation or a technical remedy to improve ecological attributes in that area. It is only sometimes recognised as a necessary landscape-level environmental protection measure to be realised by society.

Most restoration work done by states is ad hoc, occurring in response to some unforeseen event threatening progress toward human development. Most importantly, more landscape-level coordination between national ecological restoration efforts must be done. Except for a few large ecosystem restoration projects like the Florida Everglades, the government must be more actively involved in planning restoration efforts and financing. Further, most national restoration interventions have focused on enforcing restoration orders for specific types of ecosystem damage or providing emergency funding to local, community, and non-profit organisations working to repair ecological damage. Given the emphasis placed in Chapter Five on the need for states striving to meet the Aichi Targets on restoration to implement short-term ecosystem restoration plans that should include the creation or expansion of an enabling framework for effective governance of ecosystem restoration

[6] See, for instance, the United States Clean Water Act of 1972, 33 USC 1321(f)(5), which provides trustee powers to the President or an authorised representative of a state to recover costs for restoring natural resources damaged by oil or hazardous substances and to apply these recovered sums to 'restore, rehabilitate, or acquire the equivalent of such natural resources.

[7] Ibid (n. 7), 173.

projects, the level of government involvement in ecological restoration work may rapidly change in the years to come.[8]

Several regional environmental treaties can serve as the legal basis for ecological restoration, but this area's EU policy and legal framework stand out.[9] The EU is a supranational organisation with the authority to make and enforce laws, pursue specific policy goals, and enact legislation relating to ecological restoration. Ecological restoration obligations in EU Member States can also be understood through the lens of recent case law from the European Court of Justice.

As we saw in Chapter Four, even in cases where states envision ecological restoration in terms of forming global ecological networks, the actualisation of such networks is contingent on varied national contexts, legal traditions and histories. National approaches to fulfilling international legal duties to restore are especially relevant because almost all restoration projects are on sovereign territories governed by domestic legal systems.[10] It is on this note that we now turn to examine the US approach.

5.3 ECOLOGICAL RESTORATION IN THE UNITED STATES: A PARTNERSHIP-BASED APPROACH TO RECOVERY AFTER CONSERVATION

The concept of ecological restoration is deeply rooted in American domestic environmental law.[11] Some people consider the National Environmental Protection Act (NEPA) the most important environmental law in the United States because it acknowledges the 'critical importance of restoring and maintaining environmental quality to the overall

[8] Benjamin J Richardson and Ted Lefroy, 'Restoration Dialogues: improving the governance of ecological restoration' 24(5) (2016) *Restoration Ecology* 668.

[9] Ibid (n. 7), 143.

[6] Cindy L van Dover and others, 'Ecological restoration in the deep sea: desiderata' 44 (2014) *Marine Policy* 98–106.

[11] Ibid (n. 7), 143 – 172.

welfare and development of man.'[12] NEPA mandated that all federal agencies 'make available to States, counties, municipalities, institutions and individuals advice and information useful in restoring, maintaining, and enhancing the quality of the environment.'[13] To further improve the quality of life for citizens, government agencies must 'use all practicable means, consistent with the requirements of the Act and other essential considerations of national policy'[14] to do so. The eagerness with which US agencies have adopted the concept of ecosystem services may be explained by the fact that these policies have emphasized improving the 'quality of the human environment.' For instance, the Federal Emergency Management Agency (FEMA) is mandated to 'take action to restore and preserve the natural and beneficial values served by floodplains'[15] as part of NEPA's implementing regulations.

Multiple US federal departments and agencies have environmental revitalization initiatives on their agenda. For instance, to better fisheries through reopening rivers, reconnecting coastal wetlands, restoring coral reefs, and rebuilding shellfish populations, the National Oceanic and Atmospheric Administration (NOAA), a department of the Department of Commerce, established a Restoration Centre in 1991 to coordinate policy on habitat restoration.[16] Non-governmental organisations like The Nature Conservancy, American Rivers, and Restore America's Estuaries play a significant role in NOAA's efforts.[17] If there are overarching legal approaches to ecological restoration, the United States holds that

[12] Public Law 91–190 (1970), s. 101(a).

[13] Ibid, s. 102(2)(F).

[14] 40 CFR 1500.2(f).

[15] 44 CFR 9.2(b)(7).

[16] NOAA Habitat Conservation, Restoration Centre.

[17] Elizabeth Schrack and others, *Restoration Works: Highlights from a Decade of Partnership between The Nature Conservancy and the National Oceanic and Atmospheric Administration* (The Nature Conservancy 2012) xi.

ecological restoration is the proper response to environmental degradation caused by pollution or habitat destruction. Several environmental legislation and regulations, notably water quality laws, refer to a restoration duty.

5.3.1 Clean Water Act of 1972

This Act aims 'to restore and maintain the chemical, physical and biological integrity of the Nation's waters',[18] as stated in the Clean Water Act 1972. To achieve this, they planned to implement waste treatment management programmes, establish 'fishable' and 'swimmable' interim water quality standards, and eliminate pollutant discharges into navigable waters.[19] Although the term "restore" is not defined in the Clean Water Act, its use suggests that the authors are concerned with the ecosystem benefits that clean water provides. State practises under the Act indicate that the baseline for restoration is determined by the designation of use of a given water body, even though no restoration reference point is provided in the congressional text.[20] Fishable, swimmable, agricultural, industrial, and maritime are all common uses.

The Clean Water Act authorises several different types of geographically targeted restoration efforts. For instance, the Chesapeake Bay Restoration Act of 2000 authorised the use of federal funds to support water quality improvement projects in Maryland, Virginia, Delaware, and the District of Columbia to assist with revitalising Chesapeake Bay and its

[18] Clean Water Act 1972, 33 USC 1251.

[19] Ibid.

[20] Water Quality Standards, 40 CFR 131.10 ('Each State must specify appropriate water uses to be achieved and protected. The classification of the State's waters must consider the use and value of water for public water supplies, protection, and propagation of fish, shellfish and wildlife, recreation in and on the water, agricultural, industrial, and other purposes, including navigation. In no case shall a State adopt waste transport or assimilation as a designated use for any waters of the United States).

watersheds.[21] To 'restore the ecological health of the Basin,' the Lake Pontchartrain Basin Restoration Act was enacted in Louisiana.[22] The Long Island Sound Restoration Act gave wetland restoration off the coast of New York state legal backing.[23] Other initiatives to improve water quality focus on Lake Champlain and the Great Lakes.[24] Most of these restoration programmes were mandated by law and are geared toward helping NGOs, state and local governments, and academic institutions obtain funding for targeted management initiatives.

The Chesapeake Bay Restoration Act specifically mentions restoring habitat for wetlands, riparian forests, and other associated Chesapeake Bay habitats, which is on the list of possible restoration management objectives.[25] Despite these laws, there are still significant disconnects between the law and the management of the Bay for different ecological values. At the 'current level and scope of pollution control within the Chesapeake Bay's watershed, restoration of the Chesapeake Bay is not expected for many years,'[26] Former US President Barak Obama, in an executive order in 2009, called for increased public and private investment in Chesapeake Bay restoration. In light of these concerns, the EPA has increased its efforts to enforce the Clean Water Act's regulations on non-point nutrient and sediment pollution sources. The industry has contested this authority.[27]

Like many restoration programmes, water-quality restoration efforts are wider than

[21] Ibid (n. 20), 33 USC 1267.

[22] Ibid (n. 20), 33 USC 1273.

[23] Ibid (n. 20), 33 USC 1269.

[24] Ibid (n. 20), 33 USC 1270; Ibid (n. 20), 33 USC 1268.

[25] Ibid (n. 20), 33 USC 1267(g)(1).

[26] Executive Order No. 13508, (President Barack Obama) Chesapeake Bay Protection and Restoration, 74 F.R. 23099.

[27] *American Farm Bureau Federation v. USEPA* (3rd Cir. 2013) Case 13–4079 (appealing a judgment finding that EPA's introduction of Total Maximum Daily Load caps on nitrogen, phosphorus and sediment loadings were legal for waters throughout the entire 64,000-square-mile Chesapeake Bay watershed).

individual states' borders. The United States' legal responsibilities to enhance the quality of the Great Lakes – its most significant source of freshwater – are spelt out in Section 1268 of the Clean Water Act. Canada and the United States agreed in 1978 to 'restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem,'[28] which is the basis for these responsibilities. The United States developed the Lakewide Management Plan to restore and protect the beneficial uses of the open waters of each Great Lake in a systematic and comprehensive ecosystem approach.[29] In addition to the Lakewide Management Plan, there will also be a Remedial Action Plan that focuses on the 'beneficial uses of areas of concern'[30] and serves the same purpose. It is anticipated that the clean-up of the polluted sediment will happen simultaneously with the restoration of the aquatic habitat.[31] Around 140 US-funded programmes focused on environmental restoration and management objectives in the Great Lakes region in 2004, with coordination provided by the Great Lakes Interagency Task Force, which comprises 11 cabinet members and heads of the agency.[32]

[28]1978 Great Lakes Water Quality Agreement, available at http://epa.gov/greatlakes/glwqa/1978/articles.html#AGREEMENT%20BETWEEN%20CANADA (last accessed 6 April 2021).

[29] Ibid (n. 20), 33 USC 1268(3)(I).

[30] Ibid (n. 20), 33 USC 1268(3)(J).

[31] Ibid (n. 20), 33 USC 1268(12)(B).

[32] Executive Order No. 13340 (George W. Bush 2004) Establishment of a Great Lakes Interagency Taskforce and Promotion of a Regional Collaboration of National Significance for the Great Lakes (69 F.R. 29043); Agencies that cooperate in the Taskforce include EPA, Department of State, Department of Interior, Department of Agriculture, Department of Commerce, Department of Housing and Urban Development, Department of Transportation, Department of Homeland Security, Department of the Army, Department of Health and Human Services and Council on Environmental Quality.

5.3.2 Coastal Zone Management Act of 1972

Additional water quality-related restoration obligations are spelt out in the Coastal Zone Management Act (CZMA). Some of these responsibilities are like those under the uncapped Clean Water Act. They require the federal government to encourage and aid states in managing coastal development to improve, safeguard, and restore the quality of coastal waters.[33] By mandating the creation of management measures 'for nonpoint source pollution to restore and protect coastal waters,'[34] the CZMA expands on the Clean Water Act's proactive approach to non-point source pollution. Lands that could be 'restored to conserve, enhance, or restore ecological function effectively'[35] are prioritized for protection under the Act, which includes a land conservation programme to acknowledge the land and water nexus in the coastal zone. The legislation is targeted at restoring specific habitats in response to their decline.

5.3.3 Estuary Restoration Act of 2000

The Estuary Restoration Act is helpful legislation for restoring ecosystem function after ending conservation efforts.[36] This legislation was crafted in response to a nationwide decline in healthy estuary habitat and mandated the reclamation of 1,000,000 acres of the estuary by 2010.[37] After the bill was signed into law, the federal government committed to establishing 'effective estuary habitat restoration partnerships among public agencies at all levels of government and [...] new

[33] 16 USC 1452(1)(C).

[34] 16 USC 1455b.

[35] 16 USC 1456–1.

[36] Public Law-106–457.

[37] Ibid, s. 106(b).

partnerships between the public and private sectors.'[38] This included a standardised approach to monitoring estuary habitat, a standardised method for tracking restoration acreage, and a national estuary habitat restoration strategy. Habitat restoration partnerships aim to restore habitats for wildlife such as migratory birds, fish, and shellfish, improve surface and groundwater, ensure flood control, and provide opportunities for outdoor recreation.[39]

The Estuary Restoration Act provides a significant definition for restoration that reflects certain essential understandings of ecological science overlooked mainly by other statutes, making it stand out among the many US laws that reference ecological restoration obligations. To achieve a self-sustaining system that is integrated into the surrounding landscape, it is necessary to engage in "estuary habitat restoration activity," which is defined as 'an activity that results in improving degraded estuaries or estuary habitat or creating estuary habitat (including both physical and functional restoration).'[40] This definition clarifies that ecological functions and structures have been restored to an acceptable level for the system to continue functioning without human intervention. This definition also implies the importance of landscape-level system management in addressing significant concerns like ensuring connectivity, compatibility, and redundancy.

The Estuary Restoration Act allows interpretation in determining adequate restoration levels. The creation of new habitats in estuaries: a case for restoration? Simply put, the term "restoration" implies that the entity sponsoring the activity has some starting point from which to restore ecological values rather than create

[38] Ibid, s. 102(2).

[39] Ibid, s. 106(d)(3).

[40] Ibid, s. 103(4).

entirely new values. The Estuary Act's current wording could lead to the development of new ecosystems that may or may not be able to continue performing the same ecological roles as their predecessors. Is it permissible, for instance, to plant a mangrove forest where a salt-water estuary once stood and then count that forest as a restored "estuary habitat" considering the Act?

The Act does not stipulate that the restoration work must take a holistic approach. Activities that "improve estuary habitat" may be chosen by government agencies or partnerships between public and private actors and may include re-establishing chemical, physical, hydrologic, and biological estuary features and components; cleaning up pollution; controlling invasive species; re-introducing endemic species; constructing reefs; and so on.[41] For a federal or regional programme to be eligible for funding under the Act, it must be 'developed with the substantial participation of appropriate public and private stakeholders.'[42]

5.3.4 Coastal Wetland Planning, Protection, and Restoration Act of 1990

Louisiana, the US state with the most extensive coastal wetlands, is the primary focus of the Coastal Wetland Planning, Protection, and Restoration Act, which complements the Estuary Restoration Act and the Coastal Zone Management Act.[43] The term "coastal wetlands restoration project" in this law is 'any technically feasible activity to create, restore, protect, or enhance coastal wetlands through sediment and freshwater diversion, water management, or other measures that aid in the long-term restoration or protection of the physical, chemical, and biological integrity of coastal wetlands in the State of

[41] Ibid, s. 103(4)(B).

[42] Ibid, s. 103(6)(A).

[43] Robert Dean, *New Orleans and the Wetlands of Southern Louisiana* (The Bridge, National Academy of Engineering 2006) 36.

Louisiana'.[44] This definition expands the concept of what constitutes restoration, presenting some of the same interpretive challenges as the broad definition of "estuary habitat restoration activities." When defining ecological "restoration," words like "protect" and "create" seem out of place. The work of protection comes before the work of restoration. While creating a barrier island in front of a wetland along the coast can help protect the wetland behind it, is it truly restoration to create an island where none previously existed? Because restoration is typically a more conservative process than a fully-fledged creative one, understanding the distinction is important.

While restoration requires human intervention, as we have seen in Chapter 4, its goal is to preserve the entire ecosystem, even the parts we do not fully comprehend. This is not an effort to change the landscape so that it no longer resembles any of the ecosystems that served as a reference point. Important choices may soon need to be made about constructing new landscape elements; however, these are not restoration efforts per se.

5.3.5 Comprehensive Everglades Restoration Plan

Of all the major ecological restoration projects in the United States, the Comprehensive Everglades Restoration Plan has garnered the most attention from the general public. This project, which spans 16 counties, aims to improve the long-term viability of the Everglades and Florida Bay ecosystems by restoring historical aspects of South Florida's hydrology. Multiple parties are involved in the restoration effort, including the federal government (represented by the US Army Corps of Engineers), the state of Florida, and local municipalities. This project, costing $11.9 billion, is in response to an earlier federal infrastructure act. It is the responsibility of the federal government to 'improve or participate in the improvement of navigable waters or their tributaries for flood control purposes, if the

[44] 16 USC 3951 (6).

benefits to whomsoever they may accrue, are more than the estimated cost, and if the lives and social security of the people are otherwise adversely affected,'[45] as stated in the Flood Control Act of 1936. The first phase of the Central and Southern Florida project was authorised by the US Congress in 1948. It involved the construction of 30 pumping stations, 212 control and diversion structures, 990 miles of levees, 978 miles of canals, and 25 navigation locks, all of which would significantly impact the hydrology of Southern Florida.[46] In 1989, the US Congress passed the Everglades National Park Expansion Act, which gave the Secretary of the Army the authority to change the Central and Southern Florida project to increase water deliveries to the park as part of his duties as commander of the Army Corps of Engineers.[47]

To the extent possible, the Secretary 'shall take steps to restore the natural hydrological conditions within the park,'[48] as stated in the law. Environmental benefits alone 'shall not require further economic justifications'[49] for the Secretary's restoration efforts. The Comprehensive Everglades Restoration Plan (CERP) was authorised by the Water Resource Development Act of 1996 after the United States Congress realised that long-term environmental damage was occurring outside Park boundaries in the 1990s.[50] To 'ensure the protection of water quality in, the reduction of freshwater loss from, and the improvement of the environment of the South Florida ecosystem and to achieve and maintain the benefits to the natural system and human environment described in the Plan,'[51] Congress approved the

[45] Public Law 74 –738 (1936).

[46] Development of the Central and South Florida Project, Comprehensive Everglades Restoration Plan (CERP) — Everglades Restoration Initiatives (last accessed 6 April 2021).

[47] Public Law 101–229, 13 December 1989; Section 104(a)(1).

[48] Ibid.

[49] Ibid, s. 104(a)(3).

[50] Public Law 104–303, 12 October 1996.

[51] Public Law 106–541, 11 December 2000, Section 601(b)(1)(A); additional amendments have been made to the plan in 2007 Public Law 110–114, 8 November 2007, particularly regarding financing including

CERP as part of the Water Resource Development Act of 2000. It is estimated that 30 years and $9.5 to 11.9 billion will be needed to complete the restoration work.[52] While the primary goal of the CERP is to improve water quality, the project's broader goals include launching ecosystem restoration and community sustainability initiatives.[53] Restoration, herein defined as 'recovery and sustainability of the defining characteristics of the greater Everglades ecosystems,'[54] is the ultimate target of the collaborative efforts currently underway as part of the CERP.

5.3.6 Ecological Restoration Policy of the US Forest Service

The United States Department of Agriculture's Forest Service has adopted an "ecological restoration policy" to guide its efforts to restore forests and grasslands in addition to wetlands, coastal areas, and estuaries. The US Forest Service, in its role as guardian of the country's forests, has been trying to adapt to the effects of climate change in the form of bark beetle infestations and rising rates of wildfire caused by decades of fire suppression policies. To 'guide the achievement of sustainable management and ecological integrity under changing environmental conditions, such as those driven by a changing climate and increasing human uses,'[55] the Forest Service proposed in 2013 to add a chapter on "ecological restoration" to its

approximately $1.3 trillion for the restoration, water supply, flood control and protection of water quality for the Indian River Lagoon in Florida and $375 million for Picayune Strand restoration.

[52] USACE South Florida Restoration Office, US Army Corps of Engineers Jacksonville District and South Florida Water Management District; About CERP: Brief Overview, available at Comprehensive Everglades Restoration Plan (CERP) — Everglades Restoration Initiatives (last accessed 6 April 2021).

[53] CERP, The Plan in Depth, available at Comprehensive Everglades Restoration Plan (CERP) — Everglades Restoration Initiatives (last accessed 6 May 2021).

[54] Recover: REstoration, COordination, VERification (January 2012), available at Comprehensive Everglades Restoration Plan (CERP) — Everglades Restoration Initiatives (last accessed 6 April 2021).

[55] Federal Register Vol. 78, No. 177 (12 September 2013), Department of Agriculture, Ecological Restoration Policy, p. 56202.

Forest Service Manual. This directive was finalized in 2014, and the incorporation of restoration into the Forest Service Manual should affect a wide range of agency activities, such as those undertaken 'to restore watershed condition and function,' 'to control invasive species,' 'to re-create natural stream channel complexity,' 'to improve or re-establish habitat for threatened and endangered species,' and 'to restore natural fire regimes.'[56]

Particularly intriguing about this 2014 directive is the Forest Service's indication that it wants to draw a line between the more general term "restoration," which is already a part of existing Forest Service programmes, and "ecological restoration." Forest Service's restoration projects have traditionally included revegetation to increase range value, reforestation, fuel reduction, and the rehabilitation of wildlife, fish, and game species, all of which fall under the purview of existing laws.[57] Restoration is defined in the directive in terms consistent with those used by the Society for Ecological Restoration as

> […] the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed. Ecological restoration focuses on re-establishing the composition, structure, pattern, and ecological processes necessary to facilitate terrestrial and aquatic ecosystem sustainability, resilience, and health under current and future conditions.[58]

This definition in the directive is perhaps the most comprehensive and definitely the most science-based definition of 'ecological restoration' in current US national law. The new directive offers a different level of agency engagement by requiring all resource management programs to pursue 'ecological restoration' and all planning to include ecological restoration goals. The goals should be established:

> […] within the framework defined by laws; Indian treaties and Tribal values and

[56] Ibid.

[57] Anderson-Mansfield Reforestation and Revegetation Joint Resolution Act of 1949, 16 USC 581; Granger-Thye Act (16 USC 580 g–h), Sikes Act (16 USC 670g); Healthy Forests Restoration Act of 2003 (16 USC 6501–6591).

[58] Federal Register, p. 56208 (FSM s. 2020.5).

> desires; regulations; public values and desires; natural range of variation; current and likely future ecological capabilities; a range of climate and other environmental change projections; the best available scientific information; and technical and economic feasibility to achieve desired conditions for National Forest System lands.[59]

While the directive's definition of "ecological restoration" is a bit vague, the other definitions suggest that managers should plan their restoration work in the context of a "natural range of variation" (NRV) to 'facilitate terrestrial and aquatic ecosystem sustainability, resilience, and health under current and future conditions.' To aid in evaluating ecological integrity, NRVs 'help identify key structural, functional, compositional, and connectivity characteristics, for which plan components may be important for either maintenance or restoration of such ecological conditions'[60] by establishing a reference period that includes a historic range of ecosystems in each area. Except in cases where ecosystems have been "irreversibly altered," the directive states that "ecological restoration activities" must be 'planned, authorized, implemented, monitored, and evaluated within the context of the NRV, current and desired conditions, and the potential for future changes in environmental conditions due to climate change and human uses.'[61] The United States Forest Service's 'ecological restoration' strategy focuses on recreating an ecosystem's original composition, structure, function, and connectivity by returning it to its pre-degradation state. Climate change may necessitate adjustments to restoration strategies, and amendments to restoration plans may be necessary to adapt to stressors such as climate change.

Building partnerships is essential to the success of wetland restoration and other forms of water quality restoration, and the US Forest Service is no exception. The increasing demand for ecosystem services is growing faster than our current treatments and restoration

[59] Ibid, 56207 (FSM s. 2020.3(2)).

[60] Ibid, 56208 (FSM s. 2020.5).

[61] Ibid, 56207 (FSM s. 2020.3(5)).

work, and the scale of work needs to be revised to influence the growing impact trend.[62] For this reason, the Forest Service's Region 5 for California has launched 'An All Lands Approach to Ecological Restoration: Working Across Boundaries with our Partners'[63]. The Region has published a comprehensive ecological restoration plan with numerous proposed projects in each national forest.[64] It is especially noteworthy how much consideration was given to the plan's long-term restoration goals.

Over the past few decades, there has been a growing emphasis on including ecological restoration principles in US laws, regulations, and agency practices. There appears to be a growing focus on planning for long-term 'ecological restoration,' which may be motivated by the realization that the status quo threatens essential natural resources like fish (especially salmon) and timber. Restoration as an active and holistic strategy of national renewal rather than a piecemeal effort is reflected in the Forest Service directive and the Estuary Restoration Act.

Landscape planning and ecological recovery have replaced reversing declining environmental trends as the focus of restoration efforts in the United States over the past few decades. Restoration has become a priority for US federal agencies, especially those tasked with protecting public lands and potentially helping public lands respond more robustly to climate change impacts, thanks to the increasing financing for restoration projects becoming available through the various laws detailed above.[65] During the Great Recession of 2007 –

[62] Pacific Southwest Region, National Forest Service, Ecological Restoration, Region 5 - Land & Resource Management (usda.gov) (last accessed 9 May 2021).

[63] Ibid.

[64] Region 5, Ecological Restoration Implementation Plan (2019), SNF Land and Resource Management Plan, Monitoring and Evaluation Report, 2009-2017 (usda.gov) (last accessed 9 May 2021).

[65] See, for instance, US Department of Interior, National Park Service Draft Environmental Assessment, Ecological Restoration Plan on Department of Interior in Western Pima County, Arizona (2014), which proposes to restore desert areas by removing invasive species and removing undesignated vehicles routes.

2009 in the United States, the government allocated funds for restoration as part of its economic recovery plan. Millions of dollars were allocated to support the restoration of Bureau of Land Management lands, restoration projects under the California Bay-Delta Restoration Act, and US fish and wildlife habitat restoration work as part of the American Recovery and Reinvestment Act, whose goal was in part 'to preserve and create jobs and promote economic recovery' as well as 'to invest in [...] environmental protection.'[66]

5.4 RESTORATION OF ECOSYSTEMS IN THE EUROPEAN UNION

The European Commission's new Biodiversity Strategy for 2020, adopted in 2011, outlines several primary goals for ecological restoration.[67] The primary goal of the new strategy is:

> to halt the deterioration in the status of all species and habitats covered by EUnature legislation and achieve a significant and measurable improvement in their status so that by 2020, compared to current assessments: (i) 100 more habitat assessments and 50% more species assessments under the Habitats Directive show an improved conservation status, and (ii) 50% more species assessments under the Birds Directive show a secure or improved status.[68]

Only 17 per cent of the world's habitats are in good conservation status. Additionally, other animal species have a favourable opinion rate of 17 per cent. The percentage of birds that are favourable is 52 per cent.[69] The following measurable objectives result from the target

[66] American Recovery and Reinvestment Act of 2009, Public Law 111–5 (17 February 2009).

[67] European Commission, Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions, 'Our life insurance, our natural capital: an EU biodiversity strategy to 2020' (COM (2011) 244 final, 2011) (further referred to as EU Biodiversity Strategy); the Council of the European Union endorsed the Biodiversity Strategy in its Decision of 21 June 2011 (EU Biodiversity Strategy to 2020 – Council conclusions, 11978/11).

[68] Ibid (n. 70), Target 1.

[69] M O'Brian, 'Policy background to target 1 of EU – Biodiversity Strategy – rationale, actions which EU plans and what EU wants to achieve', ALTER-NetConference (Gent, 28 November 2012).

of a 50 per cent increase in the number of protected species and a 100 per cent increase in the number of protected habitats. By the year 2020, we need to have seen that 34 per cent of habitats (plus 100 per cent of the current level) and 26 per cent of species (plus 50 per cent of the current level) are in secure or improved conservation status and that nearly 80 per cent of bird species (plus 50 per cent of the current level) are as well.[70] Importantly for restoration, the target calls for "improvement" of the status, which indicates the work required to meet the 2020 biodiversity headline target.[71]

Accelerating the completion of the Natura 2000 network and making the network fully operational through effective management and restoration of the sites, shifting from "non-deterioration" to 'effective management and restoration,' are necessary to achieve this goal and ensure that the conservation status of habitats and species protected under the Birds and Habitats Directives is maintained or improved.[72] This goal includes several specific tasks. Action 1c requires that Member States ensure that management plans or equivalent instruments are developed and implemented on time for all Natura 2000 sites, outlining conservation and restoration measures.

By 2020, ecosystems and their services will be maintained and enhanced by establishing green infrastructure and restoring at least 15 per cent of degraded ecosystems.

[70] The 2020 headline target is: 'Halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020 and restoring them in so far as feasible while stepping up the EU contribution to averting global biodiversity loss'.

[71] European Commission, Commission Staff Working Paper. Impact Assessment. Accompanying the document Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions, 'Our life insurance, our natural capital: an EU biodiversity strategy to 2020' (COM (2011) 244 final, 2011) 26.

[72] Ibid, 38.

This is the most explicit restoration-related target.[73] Thus, the international goal established in 2010 at the Biodiversity Convention is incorporated into this target.[74] The goal was established because fragmentation is largely to blame for the decline of many EU ecosystems and the loss of the services they provide. The goal is to incorporate green infrastructure into spatial planning to sustain and improve ecosystem services and restore degraded ecosystems. Among other things, it will improve the practical connectivity of ecosystems within and beyond Natura 2000 areas.[75] According to a 2011 Commission Working Paper, restoration is defined as follows:

> The restoration of ecosystems and their services is understood as actively assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed, although natural regeneration may suffice in cases of low degradation. The objective should be the return of an ecosystem to its original community structure, natural complement of species, and natural functions to ensure the continued provision of services in the long term, although in cases of extreme degradation, the focus on specific services may be justified.[76]

Restoration on this scale would be extremely expensive, if not impossible, according to a study of the costs of achieving Target 2 of the Biodiversity Strategy.[77] Costs associated with restoring essential species, properties, processes, and functions of ecosystems are estimated in the study.[78]

---

[73] An Cliquet, Kris Decleer and Hendrik Schoukens, 'Restoring Nature in the EU: The only way is up?' in Charles-Hubert Born and others (eds.), *The Habitats Directive in its EU Environmental Law Context: European Nature's Best Hope?* (London: Routledge, 2015) 265.

[74] Ibid (n. 70), 5.

[75] Ibid.

[76] European Commission, *Commission Staff Working Paper*, (n. 74) 21, 22.

[77] Graham Tucker and others, *Estimation of the financial needs to implement Target 2 of the EU Biodiversity Strategy: Report to the European Commission* (London: Institute for European Environmental Policy, 2013) 31.

[78] Ibid, 60.

Does this mean 15 per cent of all degraded ecosystems? That's another question that comes to mind. Since every ecosystem in the EU is partially damaged, 15 per cent of the continent should be revitalised. Target 2 cost estimates are based on the assumption that 15 per cent of degraded areas in each ecosystem type will be restored. For instance, if 10 per cent of an ecosystem's area is degraded, only 1.5 per cent of the ecosystem's total area needs to be restored.[79] It may take more than 15 per cent to achieve a favourable conservation status for the species and habitats covered by the Birds and Habitats Directives.

The Commission recommended a minimum of 15 per cent restoration but acknowledged that there are circumstances under which a higher level of restoration (such as 30 per cent) might be warranted. The EU has set a more stringent overall goal than the worldwide one. Second, the EU is the world's most divided continent, and the law requires much fixing, especially considering Brexit. Therefore, the Commission's implicit recognition of the legal obligations on restoration in the nature directives discussed below is not to be taken as a denial of these responsibilities. Third, many ecosystems can help prevent and adapt to climate change's effects, so the Commission believes a more significant amount of restoration will be financially beneficial. However, the Commission argues that because it is still being determined how much restoration would occur under existing EU policy and whether additional efforts would be needed to reach 30 per cent, an initial minimum compliance level with international commitments of 15 per cent has been chosen.[80]

The European Parliament raised the bar in a resolution passed in April 2012,[81] requiring a positive conservation status for at least 40 per cent of habitats and species by 2020 and for 100 per cent (or nearly 100 per cent) of habitats and species by 2050. The EU's more

[79] Ibid, 58.

[80] Ibid (n. 74) 27–28.

[81] European Parliament resolution of 20 April 2012 on 'Our life insurance, our naturalcapital: an EU biodiversity strategy to 2020' (2011/2307(INI)).

ambitious headline target and its 2050 vision necessitate a much loftier restoration target, which the Parliament hopes the EU will establish. The Parliament demands that the Commission provide a precise definition of "degraded ecosystems" and establish a starting point from which future improvements can be evaluated. Furthermore, to develop a truly green infrastructure, it is important to encourage the creation of natural environments in various settings, not just in designated areas. Nonetheless, resolutions by the European Parliament reflect a political will to act in a certain way, despite not being legally binding.

As there are currently no policies focusing on ecosystem services and no strategic framework for net loss and restoration, the measures required under target 2 are new policy measures.[82] Target 2 of the EU Biodiversity Strategy includes the following concrete actions: by 2014, Member States will, with the help of the Commission, develop a strategic framework to set priorities for ecosystem restoration at sub-national, national, and EU levels (action 6a). The scope of the needed repairs and the criteria for prioritisation must be specified within this framework.[83] To further encourage the rollout of green infrastructure across the EU's urban and rural settings, the Commission is also tasked with creating a Green Infrastructure Strategy by the end of 2012. (action 6b). The Commission established a Green Infrastructure Strategy in 2013.[84] The second goal's sub-goal, "no net loss of biodiversity and ecosystem services," has the same goal. By 2015, the Commission will have completed additional research and proposed an initiative to guarantee no net loss of ecosystems and the services they provide (for instance, through compensation or offsetting schemes) (action

[82] Ibid (n. 74), 43.

[83] Ibid (n. 74), 41.

[84] See European Commission, *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Green Infrastructure (GI) – Enhancing Europe's Natural Capital* (COM (2013) 249 final 2013).

7b).[85] If we want to prevent the overall decline in ecosystems and the services they provide, we may need to adopt a no net loss strategy. Both the Habitats Directive and the Environmental Liability Directive stipulate monetary compensation in the event of damage.[86]

However, under EU law, systematically compensating for losses outside of Natura 2000 is not required, resulting in net losses.[87] Having EU-wide legislation requiring no net loss of ecosystems is one possibility.[88] Although the precise scope and implementation of the no net loss initiative are still up for debate,[89] the no net loss target may be significant for restoration outside of Natura 2000 areas. The Council emphasised the need for 'further work to operationalise the "no net loss" objective of the Strategy for areas and species not covered by existing EU nature legislation and of ensuring no further loss or degradation of ecosystems and their services' in its Conclusions adopted on June 23, 2011. Conservation losses in one geographical or otherwise defined area are balanced by a gain elsewhere, provided that this principle does not entail any impairment of existing biodiversity as protected by EU nature legislation;[90] this is the preliminary definition of the no net loss concept. The mitigation hierarchy must be strictly adhered to ensure that development projects do not negatively or

[85] On no net loss, see the Commission website, European Commission, official website (europa.eu) (last accessed 4 December 2022).

[86] Directive 2004/35/EC of the European Parliament and of the Council of 21 April 2004 on environmental liability concerning preventing and remedying environmental damage [2004] OJ L143.

[87] There is debate on the extent of applying the Environmental Liability Directive outside Natura 2000 sites; see Valerie Fogleman, 'The threshold for liability for ecological damage in the EU: mixing environmental and conservation law' in Charles-Hubert Born and others (eds.), *The Habitats Directive in its EU Environmental Law Context: European Nature's Best Hope?* (London: Routledge, 2015).

[88] Ibid (n. 74), 42.

[89] Working Group on no net loss of ecosystems and their services. Sub-Group on the scope and objectives of the no net loss initiative (12/7/2013); see Commission website European Commission, official website (europa.eu) (last accessed 4 December 2022).

[90] EU Biodiversity Strategy to 2020 – Council conclusions, 11978/11 (21 June 2011) 5.

positively affect biodiversity. The question is where and which species and habitats need to be restored.[91]

The primary focus of the EU's Biodiversity Strategy is on the habitats and species protected by the Birds and Habitats Directives. Goal 2 focuses on repairing ecosystems and restoring their associated services. It is possible that this goal could extend beyond the habitat types and species covered by the Habitats and Birds Directives. It is important to note that the Green Infrastructure (GI) Strategy is not restricted to the Habitats Directive's listed habitat types. Green Infrastructure is defined as:

> [a] strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services. It incorporates green spaces (or blue if aquatic ecosystems are concerned) and other physical features in terrestrial (including coastal) and marine areas. On land, GI is present in rural and urban settings.[92]

Measures within the Natura 2000 network are the primary focus of Target 1. Nonetheless, the 15 per cent restoration goal can also be accomplished outside the Natura 2000 network. As there is already a restoration goal for the Natura 2000 network (goal 1), the 15 per cent goal should be achieved primarily outside of the network. However, the two goals are interdependent; measures taken to achieve target 1 will help accomplish goal 2, and goal 2 will help restore the larger environment, which is crucial to the integrity of the Natura 2000 network and connectivity goals.[93]

---

[91] Frederik H Kistenkas, 'Rethinking European Nature Conservation Legislation: Towards Sustainable Development' 10(1) (2013) *Journal for European Environmental & Planning Law* 83.

[92] European Commission, *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Green Infrastructure (GI) – Enhancing Europe's Natural Capital* (COM (2013) 249 final 2013).

[93] Ibid (n. 80), 29.

5.4.1 General Ecological Restoration Obligations Under EU Law

The Birds Directive[94] and Habitats Directive[95] both include language about restoring natural habitats. That '[t]he preservation, maintenance, or restoration of a sufficient diversity and area of habitats is essential to the conservation of all species of birds,' as stated in the Birds Directive's preamble, is a prime example. Member States 'shall take the necessary measures to preserve, maintain, or re-establish a sufficient diversity and area of habitats for all the species of birds referred to in Article 1,' as stated in Article 3 and Article 1 of the Birds Directive. Restoring previously lost biotopes and establishing new ones is part of 'preserving, maintaining, and re-establishing biotopes and habitats.'[96]

Restored areas are mentioned explicitly in the Habitats Directive. The Habitats Directive defines "conservation" as a series of measures required to maintain or restore the natural habitats and the populations of species of wild fauna and flora at a favourable status'.[97] Restoring something can also be understood in other ways. According to Article 1(k) of the Habitats Directive, a site is designated as a Site of Community Importance (SCI) if it plays a significant role in sustaining or restoring an advantageous conservation status. A Special Area of Conservation (SAC) is where 'appropriate conservation measures are applied to maintain or restore, at a favourable conservation status'.[98] Neither rule explains what "restoration" means or lists any objectives. According to Article 2, section 1 of the Habitats Directive, the treaty's overarching goal is to ensure biodiversity throughout European

[94] Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds [2010] OJ L20/7, replacing the original Birds Directive, Directive 79/409/EEC of 2 April 1979 on the conservation ofwild birds [1979] OJ L103/1.

[95] Directive 92/43/EEC of 21 May 1992 on conserving natural habitats, wild fauna, and flora [1992] OJ L206/7.

[96] Ibid (n. 97), Articles 3 and 2, c – d.

[97] Ibid (n. 98), Article 1(a).

[98] Ibid (n. 98), Article 1(l).

territory by conserving natural habitats, wild fauna, and flora. This is considered a result obligation.[99] Actions taken under this directive must be planned to ensure that wild fauna and flora of Community interest continue to have a favourable conservation status.[100] The European Environment Agency found that 65 per cent of the habitat types listed in Annex I were given adverse assessments. In fact, "unfavourable – bad" accounts for nearly 40 per cent of all ratings, making up more than half of the total. Only 17 per cent of habitats have received positive ratings across the EU. The conservation status is a mystery for 18 per cent of habitat type evaluations. In most of the Earth's biogeographical regions, unfavourable habitats account for more than 70 per cent of all areas evaluated.

The overall percentage of species in the EU whose conservation status was deemed favourable was only 17 per cent. Fifty-two per cent of the responses were negative, with 22 per cent calling it "unfavourable – bad" and 30 per cent calling it "unfavourable - inadequate." Approximately 31 per cent of species evaluations need more data.[101] Restoration measures are legally required to reach a favourable conservation status for many habitats and species, which is the overarching goal of the Habitats Directive.[102]

Habitat conservation and species protection are two main pillars of the larger goal of maintaining or restoring a favourable conservation status. Ecological restoration

---

[99] European Commission, *Managing Natura 2000 Sites: The Provision of Article 6 of the Habitats Directive 92/43/EEC* (Office for Official Publications of the European Communities, Luxembourg, 2000) 18.

[100] Ibid (n. 98), Article 2, s. 2.

[101] European Environment Agency, *EU 2010 biodiversity baseline* (Technical Report 12/2010,Copenhagen 2010) 19–21.

[102] See also Jonathan Verschuuren, 'Climate Change: Rethinking Restoration in the European Union's Birds and Habitats Directives' 28 (4) (2010) *Ecological Restoration* 431–39, 432; see also, Jonathan Verschuuren, 'Connectivity: is Natura 2000 only an ecological network on paper?' in Charles-Hubert Born and others (eds.), *The Habitats Directive in its EU Environmental Law Context: European Nature's Best Hope?* (London: Routledge, 2015).

commitments may be included either explicitly or implicitly in the area and species protection articles.

5.4.2 Site Designation for Ecological Restoration

According to the Habitats Directive:

> A coherent European ecological network of special areas of conservation shall be set up under the title Natura 2000. This network, composed of sites hosting the natural habitat types listed in Annex I and habitats of the specieslisted in Annex II, shall enable the natural habitat types and the species' habitats concerned to be maintained or, where appropriate, *restored* at a favourable conservation status in their natural range.[103]

The phrase 'where appropriate' does not mean that Member States can decide whether to take restoration measures at their discretion; rather, it will depend on the conservation status of the habitats in question. When their conservation status improves, it is ideal to keep things as they are. Otherwise, they must be reinstated. Member States are required to include SPAs designated under Directive 79/409/EEC (Article 3, Section 1, Habitats Directive) in the Natura 2000 network.

Article 4 of the Habitats Directive requires the designation of SACs. The criteria outlined in Annex III of the Habitats Directive should be used for the designation. In the first stage of designation (site proposals by Member States), the criteria for designating the sites under the Habitats Directive include restoration possibilities.[104] As required by the Commission Decision on a site information format for Natura 2000 sites, the Standard Data Form[105] details the types of habitats found at the site and evaluates those habitats. Annex III,

[103] Ibid (n. 98), Article 3 (l).

[104] Ibid (n. 98), Annex III, A, c and Annex III, B, b.

[105] The Standard Data Form is a form that is submitted by the Member State when designating the site.

A, c includes data on the state of preservation and potential for restoration of the specific natural habitat type.

To determine if and to what extent a particular habitat type could be restored at the site in question, the criteria's sub-criterion on restoration possibilities is applied. There are two parts to the site's potential restoration evaluation. First, there is the scientific feasibility, which requires an in-depth understanding of the habitat type's structure and functions as well as the specific management plans and prescriptions needed to restore it, to do things like (1) maintain or increase the fraction of land covered by that habitat type, (2) restore the specific structure and functions that are necessary for its long-term maintenance, and (3) maintain or restore a favourable conservation status for its typical spec. Second, the evaluation can determine the value of restoration from a conservation perspective. The rarity and severity of threats to this habitat type must be considered. Using 'best expert judgement,' the ranking system should look like this: I: very easy to restore; II: somewhat easy to restore; III: very hard or impossible to restore.[106]

5.4.3 Ecological Restoration Measures

After adopting a Site of Community Importance, the state must set priorities:

> […] in light of the importance of the sites for the maintenance or restoration, at a favourable conservation status, of a natural habitat type in Annex I or a species in Annex II and for the coherence of Natura 2000, and in light of the threats of degradation or destruction to which those sites are exposed.[107]

Article 6, section 1 of the Habitats Directive mandates that the Member States put conservation measures commensurate with the ecological needs of the habitat types and the

[106] Commission Implementing Decision of 11 July 2011, 2011/484/EU concerning a site information format for Natura 2000 sites (notified under document C (2011) 4892) [2011] OJ L198.

[107] Ibid (n. 98), Article 4, s. 4.

species present at the sites. This may include appropriate management plans and statutory, administrative, or contractual measures. Since restoration is included in the definition of conservation, the conservation obligations in Section 1 of Article 6 should also be read as including restoration requirements. Article 6, section 1 establishes a general conservation regime which applies to all SACs of the Natura 2000 network without exception and to all natural habitat types of Annex I and species of Annex II present on the sites, except for those designated as non-significant in the Natura 2000 Standard Data Form.

For non-important species, such as a relict population, Cliquet, Decleer, and Schoukens argue that it may be necessary to implement restoration measures.[108] Species and habitats that need protection can change over time. New ecological information, information that was initially missing, or the appearance of new species at a site due to natural events or climate change all necessitate revisions to the Standard Data Form.[109] However, removing habitats or species from the Standard Data Form will be challenging because conservation (and restoration) measures are required for those listed. A similar argument could be made for delisting habitats and species from the Standard Data Form, in line with Article 9, which allows for declassifying an SAC due to natural developments. Not so for species extinction or the destruction of habitats caused by the lack of management measures on the part of the Member State.

The location of the necessary restoration work within a Natura 2000 site is another open question. The amount of restoration work required to achieve a favourable conservation status for the habitats and species for which a Natura 2000 site was designated means that the number of sites where restoration is conducted will vary from site to site. As we have seen, the drive toward improved conservation measures is grounded in a sense of duty. Article 61

[108] Ibid (n. 76), 265.

[109] Ibid (n. 102).

of the Agreement stipulates that conservation (and restoration) efforts must be consistent with the ecological needs of the habitat types listed in Annex I and the species listed in Annex II at the sites in question. The ecological prerequisites are based on science and can only be established on a case-by-case basis.[110]

5.4.4 … Avoiding Habitat Deterioration

Member States must 'take appropriate steps to avoid [...] the deterioration of natural habitats and the habitats of species and disturbance of the species for which the sites have been designated' per Article 6, paragraph 2 of the Habitats Directive. The Member States' failure to take into account the obligations for each site on its own when defining the conservation objectives of the Natura 2000 network at the state level and then translating these to the site level is a major failure to fulfil this commitment. Restoration work may be required as part of the duty to prevent deterioration. The Court ruled in 2002 that the authorities in Ireland needed to stabilise the overgrazing problem and ensure that damaged habitats were allowed to recover after a case involving the deterioration of Red Grouse habitat was brought against the country, highlighting the urgent need for your actions.[111]

On the issue of site declassification, the Advocate General wrote a preliminary ruling opinion for an Italian case (*Cascina Tre Pini*)[112] Article 6(2) [...] requires the member states to protect SCIs against deterioration. A Member State's failure to fulfil those obligations to afford protection does not warrant the withdrawal of protected status […] Member States should take the necessary measures to restore the site'.[113] However, there are still open

[110] Ibid (n. 102), 18.

[111] Case C-117/00 *Commission v Ireland* [2002] ECR I-5335, para 31.

[112] Opinion Advocate-General Kokott, Case C-301/12 *Cascina Tre Pini s.s. v Ministero dell'Ambiente e della Tutela del Territorio e del Mare and Others* (*Cascina Tre Pini*) [2013], para 50.

[113] Ibid.

questions about whether restoring habitats and species is possible or desirable. Habitat loss and degradation may be permanent. Attempts to reintroduce extinct species may have little chance of success. For instance, black grouse are only allowed in certain parts of Flanders. The species has vanished from Flanders, and the prospects for a successful reintroduction are slim to none. Whether or not restoration goals for those species should be included in such a scenario is debatable.

Should habitat restoration efforts be undertaken if only a portion of a site's habitat is negatively impacted? Let us say that a portion of a Natura 2000 site has a poor conservation status due to habitat fragmentation and inadequate upkeep. However, other parts of the same site have a more favourable conservation status for the same habitat type. Overall, the site's habitat has received a positive assessment. Is it adequate to conserve the "good" parts of the site while disregarding the "bad" parts? Does the law not require resolving the unfavourable aspect? Article 6, paragraph 2 of the Habitats Directive forbids any degradation of habitats or species' natural environments. When a site comprises a mosaic of spatially isolated sub-sites in a matrix landscape with site-specific differences in species communities, we argue that deterioration of even a portion of the site should be prohibited, even if the conservation status of the entire site is favourable. But does this mean you have to take extra steps to restore the habitat? The directive and the guidelines need to provide a clear answer. However, it is reasonable to assume that a lack of proper restoration and maintenance measures for the habitat type at hand in a sub-site will most likely lead to the extinction of relict species and a further decrease in the sizes of the populations of the target species at the site level, in addition to decreased connectivity and metapopulation functioning. Therefore, remediation efforts are likely to be required. Exceptions must be made for habitat types with less than favourable status due to ecologically sound measures intended for other habitat types or species in the same subsite.

The Advocate General's opinion in the *Cascina Tre Pini* case supports the view that action is necessary for partial deterioration. In this case, an initial inquiry was made regarding whether or not the SCI list should be reviewed consistently (SCIs). 'Such reviews are to be undertaken when there are signs that an SCI or certain parts of it no longer meet nature conservation requirements,'[114] the Advocate General writes. In his opinion, the Advocate General cites Article 11 of the Habitats Directive, which mandates monitoring the conservation status of ecosystems and species of community interest. Including Article 11 in the part of the directive that addresses site conservation demonstrates the particular focus on SCIs. As stated in Article 4, section 4, "for the maintenance at or restoration to a favourable conservation status of species and habitats in the SCI concerned," Article 6 (1)'s "conservation measures" and Article 6 (2)'s "protection obligations" must all be taken into account when conducting SCI monitoring. States can take 'supplementary measures' to safeguard the site and restore damaged components before considering declassification.[115]

A preliminary ruling issued by the Court in 2013 (the so-called Sweetman case) also mentioned the destruction of a portion of a site.[116] Approximately 1.47 hectares of limestone pavement within Ireland's Lough Corrib SCI would only be recovered if a proposed road were built. Article 6, section 3 of the Habitats Directive mentions 'an adverse effect on the integrity of the site,'[117] which has prompted preliminary questions about its meaning. To the

[114] Ibid (n. 115) para 57.

[115] Ibid, paras 60–63 (emphasis added).

[116] Preliminary ruling in Case C-258/11, *Peter Sweetman and Others v An Bord Pleanála Sweetman* [2013] not yet reported.

[117] Article 6, Section 3 Habitats Directive states: 'Any plan or project not directly connected withor necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site given the site's conservationobjectives. In light of the conclusions of the assessment of the implications for thesite and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project

planning commission's mind, site damage need not be incompatible with having no negative impact on the site's integrity.

However, the Court ruled that a site needs to be preserved at a favourable conservation status for the purposes of Article 6, section 3, to ensure that its integrity as a natural habitat is not compromised. This means ensuring the site's essential features, like the presence of a particular type of natural habitat that was the impetus for its designation, are protected for the long term.[118] A plan or project is considered detrimental to a site's integrity if, after conducting an appropriate assessment, the authority determines that it will result in the permanent and irreparable loss of all or a significant portion of a priority natural habitat type.[119] Specifically, the threatened habitat is a high-value habitat type (limestone pavement). The Court will likely reach the same conclusion for habitats that aren't high on the priority list.

5.4.5 Compensation and Mitigation through Ecological Restoration

If a plan or project threatens a Natura 2000 site, restoration efforts may be implemented as mitigation measures under Article 6, paragraph 3 of the Habitats Directive. Suppose a plan or project must go forward despite a negative assessment of the site's implications and the lack of alternative solutions due to compelling reasons of overriding public interest, including those of a social or economic nature. In that case, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of the site is maintained. Recreating a habitat on a new or expanded site that will be incorporated into Natura 2000 is one form of compensation, as is improving habitat on a portion of the site

---

only after ascertaining that it will not adverselyaffect the integrity of the site concerned and, if appropriate, after obtaining the general public's opinion.'

[118] Ibid (n. 119) para 39.

[119] Ibid, para 46.

or another Natura 2000 site in a manner proportional to the loss incurred as a result of the project, as outlined in the Commission's guidelines for Article 6.[120] Restoration in existing sites is mentioned as a compensatory measure in Article 6, section 4 of the guidelines for Natura 2000 sites. This includes either recreating the lost habitat in proportion to the loss caused by the plan or project or restoring the habitat to ensure the maintenance of its conservation value and compliance with the site's conservation objectives.[121] However, compensation must be in addition to the Member State's required contribution to the Natura 2000 network under the directives.[122] Given the above, it is clear that ecological restoration is, in many cases, already an obligation due to the unfavourable conservation status.[123]

In addition, the Commission mandates that the compensation be fully operational when the damage is felt at the affected site. Overcompensation for the interim losses would be necessary under certain circumstances where this cannot be fulfilled entirely.[124] Some authors, like Jonathan Verschuuren, argue that the Habitats Directive should include more precise guidelines.[125] Several Member States propose restoration measures as compensatory measures in European Commission Opinions concerning applying Article 6, section 4 of the Habitats Directive.[126] The Commission found several gaps in the information provided by the Member States in its evaluation of the requested derogations. Usually, a timetable for implementing the compensatory measures is provided; however, it is only sometimes described when the expected results will be achieved concerning the function that

[120] Ibid (n. 102), 45.

[121] European Commission, *Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/ EEC* [2007/2012], 14.

[122] Ibid (n. 102), 45.

[123] Donald McGillivray, 'Compensating Biodiversity Loss: The EU Commission's Approach to Compensation under Article 6 of the Habitats Directive 24(3) (2012) *Journal of Environmental Law* 417 – 450.

[124] European Commission, *Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/ EEC* [2007/2012], 14.

[125] Ibid (n. 105) 431–39, 432.

[126] See the Commission opinions on the European Commission official website (europa.eu) (last accessed 4 December 2022).

compensation areas should fulfil, such as restoring habitats or creating newly suitable areas for species.

Many of the cases analysed do not explain the conditions in the areas where the compensatory measures take place, and the techniques and methods proposed for implementing the proposed compensatory measures are not described in most of the cases analysed, making it difficult to assess their actual feasibility and possible effectiveness.[127] It remains to be seen how much the compensated areas can help the Natura 2000 network by maintaining or increasing biodiversity.[128]

5.4.6 Ecological Restoration Outside the Natura 2000 Network

Habitats and species outside of Natura 2000 sites are also subject to the restoration requirements of the Habitats Directive. Article 2 of the Habitats Directive states that the directive's goal is to preserve natural habitats, wild flora, and fauna in the European territory of Member States to ensure biodiversity.[129] Preserving or restoring natural habitats, wild fauna, and flora of Community interest to a good conservation status is required.[130] To achieve this overarching objective, it is critical to designate and manage the Natura 2000 network properly. Articles 11 and 17 of the Habitats Directive also make this abundantly clear, which mandates monitoring and reporting. Additional restoration efforts may be necessary if monitoring reveals a decline in the conservation status of the habitats and species. This may necessitate the creation of new Natura 2000 protected areas (if essential for

---

[127] European Commission, Implementation of Article 6(4), first subparagraph, of Council Directive 92/43/EEC (Habitats Directive). Period 2007–2011. Summary report (Brussels 2012) 8.

[128] On compensation and no net loss, see Donald McGillivray, 'Compensatory Measures Under Article 6(4) of the Habitats Directive: no net loss for Natura 2000?' in Charles-Hubert Born and others (eds.), *The Habitats Directive in its EU Environmental Law Context: European Nature's Best Hope?* (London: Routledge, 2015).

[129] Ibid (n. 98), Article 2, s. 1.

[130] Ibid (n. 98), Article 2, s. 2.

reaching a favourable conservation status of habitats or habitats of species). The Court's precedents support this interpretation of the designation as an ongoing procedure.[131]

In addition, the Habitats Directive's stipulations on connectivity include duties to restore larger landscape areas. The Habitats Directive states in Article 3, paragraph 3 that the Member States shall endeavour to improve the ecological coherence of Natura 2000 by maintaining and, where appropriate, developing features of the landscape which are of significant importance for wild fauna and flora. Further, the 'Member States shall endeavour, where they deem it necessary, in their land-use planning and development policies and, in particular, to improve the ecological coherence of the Natura 2000 network, to encourage the management of features of the landscape which are of major importance for wild fauna and flora,' it says in Article 10.[132] The Green Infrastructure Strategy will rely heavily on these pieces of writing. Green infrastructure is a strategically planned network of natural and semi-natural areas, including green and blue spaces and other ecosystems, designed and managed to deliver a wide range of ecosystem services at various scales.[133] Besides its ecological functions, green infrastructure, as a planning tool, contributes to social and economic benefits, achieving sustainable, resilient, inclusive, and competitive urban areas.

To the extent that species and habitats within a designated site may be impacted by events occurring outside the site, the obligation to prevent deterioration and disturbance under Article 6, section 2 of the Directive extends to those activities.[134]

---

[131] Case C-209/04, *Commission v Austria (Lauteracher Ried)* [2006] ECR I-2755.

[132] Art 3, s. 3.

[133] Renato Monteiro, Jose C Ferreira and Paula Antunes, 'Green Infrastructure Planning Principles: An Integrated Literature Review' 9 (12) (2020) *Land* 525.

[134] Ibid (n. 102) 24; see also Case-6/04, *Commission v United Kingdom* [2005] ECR I-9017, para. 34.

5.4.7 Restoring Endangered Species and Their Natural Ecosystems

Articles 12 and 13 of the Habitats Directive require Member States to take the necessary measures to establish a system of strict protection for the species listed in Annex IV in their natural range, prohibiting several activities like killing and disturbing animal species and collecting and destroying plants. The measures taken to protect species are not just applicable to areas in the Natura 2000 network; their reach is far broader than that. The Commission's species protection guidelines state that Article 12 protection measures should help achieve the Directive's overarching goal of preserving or restoring a species' favourable conservation status. In a case brought by Greece regarding the Milos viper, the Court ruled that the system of strict protection requires the implementation of consistent and well-coordinated preventative measures.[135] Therefore, the breeding and resting habitats of the animals in Annex IV must withstand the rigorous protection system outlined there.

The Commission believes that Article 12 does not require the restoration of habitats for species listed in Annex IV as being protected because proactive habitat management measures (such as restoration of habitats/populations and improvement of habitats) are not an obligation under Article 12. However, they may be under Article 6.[136] The French government used the guidance document to justify its apparent lack of effective proactive habitat measures in a recent Court case, the so-called European hamster case (Alsace, France).[137] Advocate General Kokott, however, countered this line of reasoning by stating that the fact that proactive habitat management measures are typically linked to territorial protection under Articles 4 and 6 of the Habitats Directive does not, in and of itself, preclude

[135] Case C-518/04 *Commission v Greece* [2006] ECR I-42, para 16; also, Judgment of11 January 2007 in Case C-183/05 *Commission v Ireland* [2007] ECR I-137, para 30.

[136] European Commission, *Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC* (Brussels, 2007) 20.

[137] Case C-383/09 *Commission v France* [2011] ECR I-4869.

such measures from also being included in the protection of species under Article 12, section 1 of the Habitats Directive.[138] This is especially true for species like the European hamster because no safe havens are set aside. According to the Advocate General, bans are defensive, and their primary goal is to prevent the deterioration of the current situation. And yet, 'prohibitions can also help to restore or improve habitats in so far as they enable positive natural developments to take place,'[139] as the saying goes.

The Advocate General elaborated further that precautions must be taken to prevent further degradation and destruction of the breeding sites or resting places. Any actions that reduce or eliminate the ecological value of nesting and resting areas are destructive. However, protections against deterioration and destruction are pointless in places devoid of hamster burrows. Such actions are warranted for the European hamster's eventual return to those areas and are likely required to improve the species' conservation status in Alsace. However, the measures mandated by Article 12, section 1(d) of the Habitats Directive only apply to sites already used for breeding or resting by the species in question. The Commission has not claimed that a specific type of land management is essential for the successful conservation of those populations anywhere other than close to their burrows.[140] This is unfortunate from a conservation and ecological standpoint, as relict populations may need protection in addition to their traditional breeding and resting areas.

Because France may not have previously provided the European hamster with adequate protection, Advocate General Kokott disagreed with the European Commission that there is an obligation to restore depleted hamster populations. This, however, was required by the established protocol. The Advocate General agreed that strict protection measures for the

[138] Opinion AG Kokott, *Commission v France*, para 44.

[139] Ibid (n. 141), para 45.

[140] Ibid (n. 141), para 50.

European hamster needed to be put in place and that past failures may give rise to an obligation on the part of Member States to provide for restoration. However, the Commission made no restoration claims during the pre-litigation process or in the application, only making them indirectly in the reply, which is an improper broadening of the proceedings' subject matter.[141]

The Court did not provide definitive guidance on whether Member States are obligated to bring endangered species populations back up to the levels they were before 1994. However, France did need to devise adequate countermeasures to stop the downward trend. Many of the hamster's former range has been designated as "repopulation areas," where stricter regulations on expanding maize crops and urbanisation projects are in place. By analysing the French repopulation efforts, the Court demonstrated its openness to the idea of imposing a duty to restore a species that has fallen into unfavourable conservation status, at least in those instances where the decline of a protected species can be traced back to a failure in the protection policy of a Member State.

From the above, it is apparent that the Habitats Directive provides a sufficient legal framework for restoration measures, albeit somewhat oblique. Restoration commitments are in place both inside and outside of Natura 2000 sites. Outside the Natura 2000 network, ecological restoration requirements under the Habitats Directive primarily concern connectivity measures and the restoration of species and species habitats. Within and outside of Natura 2000, the EU Biodiversity Strategy clarifies that restoration is a primary objective. The 15 per cent ecosystem restoration goal is broader than the goal for the Natura 2000 network and includes ecosystems and habitats not covered by the Birds and Habitats Directives.

[141] Ibid (n. 141), para 51.

5.5 CONCLUSION

This chapter has examined the laws and policies of the United States and the EU that have been implemented to fulfil international legal obligations to restore. The chapter draws on legislation, case law from both jurisdictions, academic literature, and other sources, where applicable, to discern general approaches within these legal systems and identify areas in which Nigeria's design could be improved within the context of ecological restoration. It was argued in this chapter that the United States and the EU systems include some of the best practices in ecological restoration. At the outset, despite its wealth and power, the US lost 53 per cent of its mainland wetlands, while degraded lakes and rivers totalled 4.3 million acres and 3.2 million miles.

Besides, ecological restoration is seen as the proper legal response by the United States and the European Union to environmental degradation, typically caused by oil pollution or the destruction of wetland habitats. As demonstrated previously, several US environmental regulations mention the obligation to restore, and ecological restoration concepts have become increasingly crucial in US statutes and agency practices in recent decades. The United States, as we now know, has additional legislation allowing federal agencies to recover civil or criminal costs for environmental damage, which can be put toward restoring resources in addition to the legislation discussed. Arguably, these can be used to compare the Nigerian system to its needs and make changes where necessary.

As a supranational organisation, the EU has enforcement powers, essential competencies, concrete policy targets, and legislation on ecological restoration that could benefit Nigeria. It is argued in this chapter that the United States and the EU systems include some lessons in ecological restoration for Nigeria. Further, the legal and policy frameworks in the EU that are associated with ecological restoration were analysed. In addition to the core nature legislation examined, the EU has some other relevant instruments for ecological

restoration. Considering that nearly all ecological restoration projects and activities occur on sovereign territories governed by domestic legal systems, this chapter attempted to analyse some national and – in the case of the European Union – regional policies to fulfil international legal obligations to restore, as discussed in Chapter Four hitherto.

Against the backdrop of the current ecological situation in Nigeria's Niger Delta and the detrimental effects of oil spillage on the surrounding environment, which, as Chapter Two illustrates, is highly condemnable, Chapter Six will – following the analysis in Chapters Three, Four and Five – explore the aspects of Nigeria's law and governance frameworks that are not operating as smoothly as they should and the modifications that could or should be made to strengthen those systems.

CHAPTER SIX:

LAW AND GOVERNANCE FRAMEWORKS FOR OIL SPILL RESPONSES IN NIGERIA: FROM ENVIRONMENTAL REMEDIATION TO ECOLOGICAL RESTORATION

6.1 INTRODUCTION

This thesis has sought to determine whether Nigeria's current oil spill remediation law and governance framework match the necessary ecological restoration standards. Essentially, these inquiries are being conducted to learn more about how the Nigerian legal and governance frameworks can be enhanced to repair the ecological damage caused by oil spills in the Niger Delta. Chapter Five examined the legal and governance frameworks for ecological restoration in the United States and the European Union to identify areas where Nigeria's design could be improved. Following that, this chapter will examine the aspects of Nigeria's legal and governance approaches that are not operating as smoothly as they should, as well as the modifications that could or should be made to strengthen those systems – using the concept of ecological restoration as its lens. In this chapter, the thesis will attempt to answer the overarching research question, i.e., whether Nigeria's law and governance frameworks are consistent with the fundamental principles of ecological restoration under international environmental law – as examined in Chapter Four and the US and EU, as has been analysed in Chapter Five.

To accomplish this, Chapter Six will draw on the analysis of the conceptual framework for successfully restoring degraded ecosystems in Chapter Three while also tying together the principles underpinning international environmental law analysed in Chapter Four and the study of the national and regional approaches for ecological restoration in Chapter Five. The purpose of carrying out these investigations is to determine whether there

are approaches by which Nigeria's legal framework could be improved within the context of restoring damaged ecosystems in the Niger Delta in Chapter Two. This chapter focuses on ascertaining how local communities in Nigeria can effectively participate in ecological restoration, thanks to the country's law and governance framework. These findings demonstrate some fundamental problems with Nigeria's oil spill response legal and governance frameworks and point to significant potential for improvement. Indeed, these findings offer some hope for a more effective governance framework in light of the emerging concept of ecological restoration.

6.2 LEGAL FRAMEWORKS FOR OIL SPILL RESPONSES IN NIGERIA

Without a doubt, crucial aspects of restoring oil-degraded environments would call for the leadership of government regulators and some input from the polluters themselves. A legal framework with clear mandates and procedures is, therefore, necessary to restore ecosystems that have been damaged for a variety of reasons. For instance, regulation can be essential when restoration requires complex coordination across various tenures and involves many stakeholders, including resource users. In Nigeria, however, the legal context of restoring oil-damaged ecosystems and habitats narrowly focuses on the remediation (or rehabilitation) of contaminated lands with practically no reference to ecosystems. This task is typically delegated to a combination of regulatory agencies and authorities, such as the now-defunct Department of Petroleum Resources (DPR), the National Oil Spill Detection and Response Agency (NOSDRA), the National Environmental Standards and Regulations Enforcement Agency (NESREA), and more recently, the Nigerian Upstream Petroleum Regulatory Commission (NUPRC) and the Nigerian Midstream and Downstream Regulatory Authority (NMDPRA), with ministerial oversight amongst others. In other words, the

primary focus of the legal context is on the clean-up of contaminated lands and compensation for ecological damage broadly.

In practice, however, remediation systems are designed only to lessen immediate dangers to human health; they are not necessarily intended for the long-term recovery of ecosystems against risks to ecosystem functions. Regarding the response to oil spills, the attempts to restore oil-damaged ecosystems through statutes date back to the time of the colonial settlers, when the Oil Pipelines Act[1] was passed in 1956. Since then, other statutes include the Environmental Guidelines and Standards for the Petroleum Industry of 2022 (EGASPIN) and the National Oil Spill Detection and Response Agency (Establishment) Act of 2006.[2] These legislations, including the National Environmental Standards and Regulations Enforcement Agency (Establishment) Act of 2007 and, more recently in 2021, the Petroleum Industry Act (PIA), have been enacted since the beginning of the post-1988 environmental era. It is important to note that the exclusive legislative list has always included all matters relating to mines and minerals, including oil fields, oil mining, geological surveys, and natural gas. Thus, the unfettered powers of the federal government to legislate on these matters.[3]

An examination of the environmental laws that regulate (or have a bearing) on oil spill response in Nigeria will be carried out in this chapter to ascertain the degree, if any, to which the fundamental principles of ecological restoration, examined previously in Chapter Three, have been acknowledged in the elements that comprise Nigeria's legal and governance frameworks for oil spill response. It is necessary to conduct a concise review to provide insight into the nature and significance of legal mandates and procedures within the

[1] Oil Pipelines Act, CAP O7 LFN 2004.

[2] National Oil Spill Detection and Response Agency (Establishment) Act of 2006, No. 15 of 2006.

[3] Olarenwaju A Fagbohun, *The Law of Oil Pollution and Environmental Restoration: A Comparative Review* (Odade Publishers, 2010), Chapter 7.

environmental laws that could potentially assist in restoring degraded ecosystems.[4] An analysis of the following laws and policies will accomplish this:

6.2.1 Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN)

One of the far-reaching initiatives to establish guidelines, standards, and procedures for environmental control of the petroleum industry in Nigeria began in 1991 when the Department of Petroleum Resources (DPR), relying on authority conferred by existing legislation, issued interim guidelines for the monitoring, handling, treatment, and disposal of effluents, oil spills, and chemicals drilling mud and drill cuttings by lessees and oil operators. These guidelines covered the monitoring, handling, treatment, and disposal of these materials by lessees and oil operators. The Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN) were published for the first time in 1991. Then they were revised in 2002, with the following goals in mind:

(1) Establish guidelines and standards for the environmental quality control of the petroleum industry, taking into account existing local conditions and planned programmes,
(2) Provide, in one volume, for the operator and other interested persons a comprehensive, integrated document on pollution abatement technology, guidelines and standards for the Nigerian petroleum industry,
(3) Standardize the environmental pollution abatement and monitoring procedures, including the analytical methods for various parameters.

The petroleum industry comprises six operation stages: exploration, production, terminal operation, hydrocarbon processing, oil transportation, and marketing.[5] It is essential to note

[4] Uchenna J Orji, 'An appraisal of the legal frameworks for the control of environmental pollution in Nigeria' 38(2) (2012) *Commonwealth Law Bulletin* 321 – 346.

[5] Ibid (n. 3), 320.

that, out of the three fundamental regulatory standards, namely the effluent standards, management practises, and ambient quality standards, the first two standards have been developed, and the development of the third standard is currently underway. This was done so that practical evaluation and monitoring of the discharge into the environment could occur. At this point, assessing the ecological restoration mechanisms that EGASPIN has made available is indispensable. The development of these effluent end-of-the-pipe standards was motivated by the belief that they provide some leeway in terms of flexibility and knowledge regarding the type of ma many different ways the petroleum industry manages to control pollutants. In addition, many variations in the management practice are typical of the conditions in Nigeria, which were not available in the past. Detailed and comprehensive ecological data specific to Nigeria's requirements were unavailable in the past, but they are now accumulating in the scientific literature. Even though EGASPIN makes it abundantly clear that revisions and amendments to the guidelines and standards shall be issued as required, it is also expressly stated that the said guidelines and standards shall not absolve the operator or licensee from complying with other applicable laws and regulations.

According to paragraph 4 of Part II of the EGASPIN, which addresses exploration and development operations, licensees and operators who wish to conduct environmental audits or reviews are required to do audits. These audits aim to facilitate the management control of environmental practices and assess compliance with the management system and regulatory compliance. Drilling operations must have comprehensive spill prevention and countermeasure plans that the Director has approved of Petroleum Resources in the case of an oil spill prevention and countermeasure plan. This requirement is also applicable to the previous sentence. According to paragraph 5.1.1, any time there is a spillage of crude oil, it must be reported to the Director of Petroleum Resources in the appropriate format. In addition, within twenty-four hours of receiving a spill notification, a team called the Joint

Spillage Investigation (JSI) must be formed to investigate the spill. This team must include representatives from the community, the Licensee/Operator/Spiller, and the DPR.

Also, certification for cleaning up spills of crude oil and chemicals is provided in paragraph 5.1.2. According to this provision, the clean-up efforts for any natural oil, product, or chemical spillage inland or near the coast must be subjected to clean-up certification, as specified in the relevant forms. Under this provision, licensees and operators must keep a register of potentially polluted sites (PPS) or sites that have been impacted. This is done to further assist in the management control of environmental practices (PIS). The Department of Petroleum Resources would be responsible for the clean-up, remediation, and certification of these types of sites. The Director of Petroleum Resources is the appropriate authority to approve any rehabilitation or rehabilitation method used to clean up and restore impacted areas. This ensures that the sites are returned to their original state. Production and operations are discussed in Part III of the EGASPIN.

In contrast, terminal operations, hydrocarbon processing operations, oil and gas transportation, and marketing operations are discussed in Parts IV–VI, respectively. Part VII concludes with a discussion of marketing operations. The strategy for environmental management that is taken into account by all of these provisions, particularly concerning oil spill countermeasure plans, is comparable to the one outlined in Part II. The only change that has been made to Part V is that the DPR is now required to take the necessary and appropriate actions to protect human health and welfare if, in the event of a disaster or emergency resulting from the spillage of crude oil or any of those chemical products that are likely to affect or impact a third party, the response of the licensee is inadequate. This is the only change that has been made to Part V. The continued growth of the oil industry in Nigeria has revealed a need to plan, protect, and enhance the ecological resources in the areas of oil operation prudently for a better and healthier environment for humans. Part VIII of the

EGASPIN, which provides for the standardisation of environmental abatement procedures, began by first acknowledging this fact.

Part VIII of the EGASPIN provides for standardising environmental abatement procedures. Studies have shown a direct correlation between the activities that involve petroleum and the subtle shifts that take place in aquatic and terrestrial ecosystems. In addition, studies have shown that these activities impact cultural and historical resources. As a result of this conclusion, it is clear that a different strategy is required to protect, clean up, and restore these degraded ecosystems. Environmental Impact Assessment (EIA) and Environmental Evaluation (post-impact) Report were named as the two methods outlined in paragraph 1.3 of Part VIII as being how the objectives can be attained (EER). The purpose of the EIA is not to justify decisions that have already been made but rather to evaluate the environmental impacts of a plan of action that has been proposed.

In contrast, the EER seeks to evaluate the already "polluted" or "impacted" environment to determine the extent of ecological damage and to design strategies for protection and restoration. In other words, the EER aims to evaluate the environment as it currently exists. The Environmental Impact Assessment (EIA) and the Environmental Effects Report (EER) are two additional mechanisms that complement the primary tools formerly utilised in enforcing regulatory requirements within the oil industry. These primary tools include (a) compliance monitoring; (b) revocation of licences and leases; (c) sanctions (or fines); (d) compensation; and (e) interim guidelines on waste discharge. These additional mechanisms, the EIA and the EER are meant to complement the main. Whether these provisions are effectively complied with and implemented is questionable, even though the requirements for EI and EER under the EGASPIN are commendable and could be considered comprehensive. A discussion of contingency planning for preventing, controlling, and responding to spills of hazardous substances can be found in Part VIII, Paragraph B.

Because of these provisions, all operators in the petroleum industry are required to create a document known as an oil spill contingency plan. This plan outlines the sequential actions that should be taken during an oil spill and explains how they should be controlled. The method for dealing with an oil spill must be presented to the Director of Petroleum Resources to be approved, and it serves three primary purposes, which are as follows:

(1) To ensure that the environment is protected,

(2) To ensure that workforce, equipment and funds are available to contain and clean up oil spills effectively, and

(3) To ensure that good record-keeping is maintained and accurate information concerning the spill is disseminated to the public and the government.

The content of the oil spill contingency plan must also reflect statements on the following: policy on oil pollution, prevention and management, among other things, purpose and objective of the oil spill contingency plan as it affects the operator's operations, description of facilities and areas of operation, an organisational chart showing the chain of command for the spill control together with responsibilities of principal staff, a plan of equipment content which should contain the should contain a minimum number of appropriate containment equipment that can effectively be used in the environment within which the facility is operated, a containment procedure and clean-up of spills, modern communication network system linking all facilities owned and operated by the operator,[6] the disposal plan for oil and debris, the press release procedure, the procedure for accurately recording the spill and the cost of clean-up, and the procedure for remediation and rehabilitation of affected areas.

It is unequivocally stated in Section VIII of the EGASPIN that the spiller is the party responsible for restoring the natural state of any environment that has been altered to the

[6] This segment of the plan shall detail specific internal procedure for informing personnel within the organizational chart and procedure for reporting spill to outside bodies.

greatest extent possible. Any restorative processes that are going to be undertaken need to conduct an adequate evaluation of the biological sensitivities of the environment that has been damaged. When a sensitive environment has been disrupted, a post-spill impact assessment study needs to be carried out so that the level of damage that has been caused can be determined, as well as an estimate of how long it will take for the environment to recover fully. The operator or owner of a facility responsible for a spill that results in severe environmental impacts must monitor the environment while simultaneously engaging in activities designed to restore it. The remediation process needs to work toward achieving an acceptable minimum oil content as well as other target values (quality levels that are ultimately targeted) for BTEX, metals, and polycyclic aromatic hydrocarbons (PAHS) in the environment that were harmed:

(1) For all waters, there shall be no visible oil sheen after the first 30 days of the occurrence of the spill, no matter the extent of the spill,

(2) For swamp areas, there shall not be any sign of oil stain within the first 60 days of the incident,

(3) For land/sediment, the quality levels ultimately aimed for (target value) is 50mg/kg of oil content.

Part VIII stipulates that an operator is responsible for the containment and recovery of any spill discovered within its operational area, regardless of whether or not the source of the spill is known. This responsibility applies to spills of unknown origin. Before being used, the Director of Petroleum Resources must approve chemicals designed to clean up oil within Nigeria and its territorial waters (except coastal and inland waters).[7]

According to item 4.2 of Part VIII, every operator must create a fingerprint of their crude oil on a field-by-field basis, which must then be submitted to the Director of Petroleum

[7] See item 3 of paragraph B of Part VIII.

Resources. This helps to identify any oil spills that may have occurred quickly. Suppose it is established that an operator has incurred costs in the clean-up of a spill for which he is not responsible. In that case, the operator shall be reasonably compensated, up to the extent of recovering all damages caused by the spill, through funds that the government or the oil industry has established to compensate those who have incurred costs in the clean-up of a spill for which they are not responsible. Essentially, the operator is responsible for taking appropriate and prompt action to contain, clean up, and dispose of the spill.

Item 6, paragraph B of Part VII requires the licensee or operator to inform the Director of Petroleum Resources within 24 hours and simultaneously an Initial Remedial Action (IRA) plan to prevent containment migration to control oil spillages that impact underground water. This is done to control oil spillages that affect underground water. This preliminary corrective action plan for Petroleum Resources must first receive approval from the Director. Within one month of the occurrence, the licensee or operator must assess the contamination site-specific by identifying the source, plume location migration, and possible receptors. This assessment must be completed. After that, the licensee or operator is responsible for implementing recovery, treatment, monitoring, and rehabilitation programmes following the directives issued by the Director of Petroleum Resources. When such spillages, leakages, and contamination occur, and when the response by the licensee or operator is inadequate, the Director of Petroleum Resources reserves the right to take the necessary and appropriate action to safeguard human health and welfare. This action may include taking legal action if required. If this occurs, the licensee or operator is responsible for recovering all expenses reasonably incurred.

The liability and compensation regime was laid out at the end of Part VIII in Paragraph B. According to this regime, the person who caused the spill is the one responsible for paying compensation for any damage caused by the spill. When more than one person is

responsible for the spill, the liability will be joint and several. Direct negotiation between landlords and operators will occur to determine the settlement terms for damages or compensation. If a direct settlement cannot be reached, parties must resort to alternative dispute resolution methods such as arbitration or judicial adjudication. In cases where compensation is being decided through arbitration, the compensation to be paid will be determined by the Compensation Tribunal. The EGASPIN's Part IX discusses the available implementation, enforcement, powers, and sanctions. It establishes a phased implementation schedule for existing and new point sources and registration requirements to accomplish these goals.

Even though EGASPIN does not define the term "authorised inspector," it is possible to deduce from the general tone of the regulations that this term refers to a person who has been recognised or designated in this capacity by the Department of Petroleum Resources. According to paragraph 4 of Part IX, an authorised inspector must complete this task to validate the client's adherence to the accepted guidelines and standards. Without a doubt, EGASPIN is extremely thorough and has the best intentions. On the other hand, one apparent shortcoming is that all monitoring, compliance and enforcement powers are centralised in the DPR and the Director of Petroleum Resources without corresponding checks and balances.

6.2.2 National Oil Spill Detection and Response Agency (Establishment) Act of 2006

An initiative of the Federal Ministry of Environment, the National Oil Spill Detection and Response Agency (NOSDRA) Act, was approved by the Federal Executive Council. The National Oil Spill Detection and Response Agency (NOSDRA) is a government agency that the Federal Ministry of Environment will supervise under this Act. The Agency is responsible for implementing the National Oil Spill Contingency Plan (NOSCP) in Nigeria as part of the country's obligation under the International Convention on Oil Pollution Preparedness,

Response and Co-operation 1990, of which Nigeria is a signatory, by ensuring a timely and effective response to oil pollution incidents in Nigeria.[8] As a result, NOSDRA has been tasked with playing a significant part in ensuring that oil spill sites in Nigeria are cleaned up and remediated appropriately. In furtherance of its statutory objectives, the NOSDRA promulgated the Oil Spill Recovery, Clean-up, Remediation, and Damage Assessment Regulations of 2011, which essentially set the parameters for oil-related environmental damage and remediation in Nigeria.[9] This was done to further the NOSDRA's statutory objectives.

NOSDRA is established as a corporate body with perpetual succession.[10] Its general and special functions are:

(1) be responsible for surveillance and ensure compliance with all existing environmental legislation and the detection of oil spills in the petroleum sector,
(2) receive reports of oil spillages and coordinate oil spill response activities throughout Nigeria,
(3) coordinate the implementation of the NOSCP as may be formulated, from time to time, by the Federal Government,
(4) coordinate the implementation of the NOSCP for the removal of hazardous substances as may be issued by the Federal Government,
(5) ensure the coordination and implementation of the NOSCP within Nigeria, including within 200 nautical miles from the baseline for which the breath of the territorial waters of Nigeria is measured,
(6) undertake surveillance, reporting, alerting and other response activities as they relate to oil spillages,
(7) encourage regional cooperation among member states of the West African sub-region and in the Gulf of Guinea for combatting oil spillage in Nigeria's contiguous waters.

[8] Eghosa A Ekhator, 'Environmental Protection in the Oil and Gas Industry in Nigeria: the roles of Government Agencies' 5 (2013) *International Energy Law Review* 196, 200.

[9] Ibid (n. 2), s. 26.

[10] Ibid (n. 2), s. 1(2).

It is reasonable to expect that the Agency will be able to fulfil its responsibilities meaningfully and efficiently because its functions and the Director-General's powers are sufficiently broad.[11] The National Oceanic and Atmospheric Disaster Response Authority (NOSDRA) must identify the need to restore ecosystems as part of its response programme and oil spill policies within the context of its enabling statute. In this regard, it must be able to develop as part of its contingency plan a programme for the protection of flora and fauna, assess ecosystem damage and injuries to natural resources caused by oil pollution (both in the past and the present), establish restoration facilities, establish appropriate funding mechanisms, and develop restoration plans for adversely affected wildlife resources and habitats. In addition, it must be able to create restoration plans for adversely affected wildlife resources and habitats. If degraded ecosystems are not brought back to health, humans, plants, and animals will never be able to live in those areas again safely. Without ecosystem restoration, prevention and control of oil spills will be ineffective and amount to giving oil spill governance a narrow focus.

In addition, NOSDRA has broad powers that it exercises through relevant departments of the Ministries of Health, Transport, Information, Water Resources, Agriculture and Rural Development, Aviation, Science and Technology, Defence, the National Emergency Management Authority (NEMA), and the Nigerian Police. These powers allow NOSDRA to enforce the observance of its policies or any environmental law, determine the extent of the damage, provide security, evacuate victims of oil spills, and monitor response efforts.[12] In addition, NOSDRA is responsible for evacuating victims based on the Minister's recommendation; the President makes appointments to the Board, including

[11] Ibid (n. 2), s. 7(g)(ii).

[12] Ibid (n. 2), ss. 7(g)(ii), 19(1) and (2), and Second Schedule.

the Chairman.[13] However, the Minister may be able to make recommendations for the Chairman and the representative from the Ministry of Environment; however, he should not have been saddled with the responsibility of making nominations for the representatives of the Federal Ministries and other bodies indicated under section 2 (2) (b). In its place, the appointment of these appointees ought to have been based on the recommendation of the relevant ministries or respective agencies to allow for the appointees' independence. In addition, the reason(s) why the proposal in the draught bill to have representatives of the oil-producing states and two persons from non-governmental organisations on the Board was scrapped must be clarified. These are primary stakeholders, and the Board would have been even stronger if they had been included. Other stakeholders are expected to participate in restoration processes and procedures to make the efforts effective.

There is a case to be made that the makeup of the Governing Board of NOSDRA will make cultivating some level of productive communication and cooperation possible. Not only will the various stakeholders be able to share information, plan, and decide on the policies and programmes of the Agency, but they will also be able to ensure that their decision-making authorities are aware of the factors that will impact the functions of the Agency and will be able to develop early consensus. This is because they will be able to ensure that their decision-making authorities are aware of the factors that will impact the functions of the Agency. It can be assumed that everyone agrees with the policies being enforced. There will be little room for debate about the outcomes after the fact in that scenario. As a result, there will be few opportunities to assess the usefulness of programmes after they have been implemented. Notably, section 9(1)(c) of the draft bill states that the Director General of the Agency must be an officer who holds a rank equivalent to that of Chief Executive Officer in the Nigerian National Petroleum Corporation (NNPC), which is a significant shareholder in

[13] Ibid (n. 2), s. 2(4).

all oil and gas projects. This provision is essential because it ensures that the Agency's Director General will be qualified. A regulatory agency must have a Chief Executive Officer who is separate from that of the NNPC for the agency to be successful in its efforts to regulate the NNPC and its partners. Nevertheless, this provision was eliminated for reasons best known to the legislator who drafted the bill.

It is expected of NOSDRA that it will maintain a fund that will allow it to carry out its functions. This fund is expected to comprise the take-off grant from the federal government, the annual subvention from the consolidated revenue, counterpart funding as may be provided by the State or Local Government, loans and grants from national, bilateral, and multilateral agencies, and other internally generated revenues. In addition, the Agency possesses the authority to take in donations. This point must be driven home: the Agency can only operate efficiently if given sufficient funding to undertake its statutory mandate of providing a practical framework for responding to oil spills. Sadly, however, nothing in the statute references ecological restoration.

6.2.3 National Environmental Standards and Regulations Enforcement Agency (Establishment) Act of 2007

The National Environmental Standards and Regulations Enforcement Agency (NESREA) is a federal government agency that was established due to the passage of the NESREA Act. This agency is responsible for protecting and developing the environment in Nigeria and for matters related to this responsibility. The New Energy Security and Resilience Act (NESREA Act) is a more prominent piece of legislation in terms of the progression of the law. On the contrary, it is a belated response of the law to what was then a revolutionary change in the regulatory structure and enforcement of environmental laws in

Nigeria at the time. The Federal Environmental Protection Agency (FEPA) was established due to the passage of the Federal Environmental Protection Agency (FEPA) Act.

Consequently, when FEPA was finally abolished in 1999, the functions it had been responsible for were transferred to the Federal Ministry of the Environment. There were high hopes that the FEPA Act would be revised to consider the new information and that specific provisions deemed unclear would be clarified in the new legislation during such a revision. These hopes were satisfactory. Nonetheless, this was only eight years after the NESREA Act was enacted in July 2007.

The Department of Petroleum Resources (DPR) is a regulatory body responsible for encouraging the full development of Nigeria's petroleum resources while ensuring compliance with all petroleum laws and regulations to protect the environment. Therefore, it was subject to a severe conflict of interest, which increased the concern that there will always be instances in which DPR's interest is aimed more toward maximising oil production profits than protecting the environment. This conflict of interest was subject to a severe conflict of interest, which increased the concern. This caused the situation to become even direr.

The provisions of section 2 of the NESREA Act state that the objectives of the Agency are the protection and development of the environment, the conservation of biodiversity and the sustainable development of Nigeria's natural resources in general and environmental technology, as well as the coordination and liaison with relevant stakeholders both within and outside of Nigeria on matters about the enforcement of environmental standards, regulations, rules, laws, policies, and guidelines.[14] These same principles were applied to the organisational structure of several of the Agency's functions. After that, the NESREA altered how it carried out its responsibilities by excluding the oil and gas industry

[14] National Environmental Standards and Regulations Enforcement Agency (Establishment) Act 2007, s. 7(a) – (f).

from its purview. This brought about a change in the way its functions were characterised.[15]

According to the provisions of Section 7, the Agency must:

1. Enforce compliance with regulations on the importation, exportation, production, distribution, storage, sale, use, handling and disposal of hazardous chemicals and waste other than in the oil and gas sector;[16]
2. Enforce through compliance monitoring, the environmental regulations and standards on noise, air, land, seas, oceans and other water bodies other than in the oil and gas sector;[17]
3. Enforce environmental control measures through registration, licensing and permitting systems other than in the oil and gas sector;[18]
4. Conduct an environmental audit and establish a data bank on regulatory and enforcement mechanisms of environmental standards other than in the oil and gas sector;[19]
5. Create public awareness and provide environmental education on sustainable environmental management, promote private sector compliance with environmental regulations other than in the oil and gas sector and publish general scientific or other data resulting from the performance of its functions.[20]

The Agency has the authority to conduct public investigations on pollution and the degradation of natural resources, except for oil spillage investigations.[21] In addition, the oil and gas industry was not included in NESREA's powers to submit for the approval of the Minister's proposal to evolve and review existing environmental guidelines, regulations, and

[15] Damfebo K Derri and Sylvanus E Abila, A Critical Examination of the National Environmental Standards and Regulations Enforcement Agency (Establishment) Act 2007' in Festus Emiri and Gowon Deinduomo (eds.), *Law and the Petroleum Industry in Nigeria: Current Challenges – Essays in Honour of Justice Kate Abiri* (Lagos: Malthouse Press, 2009), 10.

[16] Ibid (n. 14), s. 7(g).

[17] Ibid (n. 14), s. 7(h).

[18] Ibid (n. 14), s. 7(j).

[19] Ibid (n. 14), s. 7(k).

[20] Ibid (n. 14), s. 7(l).

[21] Ibid (n. 14), s. 8(g).

standards.[22] In the end, there is a provision in section 29 that states that the Agency is required to cooperate with other government agencies to remove any pollutant, except for those related to oil and gas, that is discharged into the environment of Nigeria. Additionally, the Agency must enforce the application of the best clean-up technology currently available and implement the best appropriate management practices.

When looking at the provisions of sections 7, 8, and 29, which excluded the oil and gas sector and the removal of any pollutants related to it, one can conclude that the law was structured in such a way solely to enable the DPR to have oversight of environmental protection concerning the oil and gas sector. This conclusion can be reached after looking at the provisions of those sections. To arrive at such a conclusion, however, presents a challenge because section 3 of NESREA, which governs the composition of the Governing Council of the Agency, stipulates that a representative of the Oil Exploration and Production Companies in Nigeria must serve on the Council.[23] In addition, according to the provision of section 7(c), one of the functions of the Agency is to enforce compliance with the requirements of international agreements, protocols, conventions, and treaties on the environment, including the criteria about climate change, oil and gas, and a variety of other topics. The cumulative impact of sections 3 and 7(c) suggests that NESREA can still play some part, in conjunction with DPR, in monitoring and supervising the oil and gas industry.

It is possible that the NESREA Act needs to be clarified rather than providing a more consistent framework for monitoring and compliance with environmental laws and regulations in the sector.[24] This is because of the inevitable nature of the situation. This does have the potential to have negative repercussions for the enforcement of laws. If NESREA is

[22] Ibid (n. 14), s. 8(k).

[23] Ibid (n. 14), s. 3(c)(vii).

[24] Barisere R Konne, 'Inadequate Monitoring and Enforcement in the Nigerian Oil Industry: The Case of Shell and Ogoniland' 47 (2014) *Cornell International Law Journal* 181.

eventually interpreted as not applying to the oil and gas sector, then the broader implication of this would be that the enlargement of 'court' to include 'State High Court'[25] will not extend to environmental matters that arise concerning oil and gas because these will still be governed by section the 1999 Constitution, which provides as follows:

> […] the Federal High Court shall have and exercise jurisdiction to the exclusion of any other court in civil causes and matters, mines and minerals (including oil fields, oil mining, geological surveys and natural gas.[26]

Last but not least, any uncertainty regarding the exclusive jurisdiction of the Federal High Court was put to rest in the case of *Shell Petroleum Development Company (Nig) v. Isaiah*.[27] In this case, the court ruled that oil spillage from an oil pipeline is a thing that is associated with, related to, arising from, or ancillary to mines and minerals. This includes oil fields, oil mining, geological surveys, and natural gas. The subsequent case of *Shell Petroleum Development Company (Nig) v. Fishermen*[28] was decided following this decision.

6.2.4 The Petroleum Industry Act of 2021

The Nigerian government introduced the new Petroleum Industry Act (PIA) on 16 August 2021. The new law changes the governance and regulatory architecture and introduces new rules for oil companies' community development interventions. Highlights of the new regime include reshaping the Nigerian National Petroleum Corporation (NNPC) into a commercial entity, the Nigeria National Petroleum Company Limited (NNPC Limited). With the PIA coming into effect, the Department of Petroleum Resources (DPR), an arm of the old NNPC that was responsible for regulating the petroleum industry, has been replaced with two new regulatory bodies, the Nigerian Upstream Petroleum Regulatory Commission

[25] Ibid (n. 14), s. 37.

[26] Constitution of the Federal Republic of Nigeria (CFRN) 1999, s. 251(1)(n).

[27] (2002) 11 NWLR (Pt. 723) 168, 179.

[28] (2002) 4 NWLR (Pt. 758) 505.

(NUPRC) and the Nigerian Midstream and Downstream Regulatory Authority (NMDPRA), responsible for the upstream and midstream/downstream sectors, respectively.

Before the passing into law of the Petroleum Industry Act (PIA), the industry was governed and regulated by the old Petroleum Act 1969 (as amended). The Petroleum Act needed to be more flexible and adapt to current technologies, as well as good administrative governance and accountability in the industry. However, it will be recalled that the new Petroleum Industry Act (PIA) was delayed by many amendments and setbacks dating back to 2000 before it was enacted into law.

6.2.1.1 Nigerian Upstream Regulatory Commission

Section 4 of the PIA 2021 established the Nigerian Upstream Regulatory Commission, a pivotal entity in the industry. The Commission is vested with the authority and control over the operational and marketing activities of the upstream petroleum industry. By enforcing all relevant national laws and international standards, the Commission oversees all activities in the upstream sector. It is also responsible for ensuring compliance with all leases, licenses, permits, and authorizations granted to businesses in the industry. These technological endeavours include, among others, collaboration, drilling, design, building, and management of upstream facilities (Ede, 2021). Under section 10 of the PIA 2021, the Commission replaces the Department of Petroleum Resources (DPR) and Petroleum Inspectorate Division. The PIA grants the Commission the power to supervise commercial activities by approving field development plans, controlling costs, and carrying out Ministerial orders.

6.2.1.2 Nigerian Midstream and Downstream Regulatory Authority

The Nigerian Midstream and Downstream Regulatory Authority, a significant development in the industry, is a corporate body with its own Governing Council presided over by the Minister of Petroleum, as established by section 52 of the PIA 2021. The Authority is to be managed by a Governing Board responsible for setting policies and administration according to the Act. The Board is led by a non-executive Commissioner, appointed by the President and confirmed by the Senate, who serves a five-year term extendable for another five years. Another noteworthy provision is the 1% tax on petroleum goods in Nigeria's wholesale market. The Act's declared goal is to replace controlled pricing with those set by market forces.

However, like the now-defunct DPR, the new Commission and Authority will be responsible for granting licences to companies and ensuring the profitability of the petroleum business as their primary mandate. However, the PIA also gives new agencies powers related to environmental regulation that potentially conflict with their commercial duties and undermine other federal agencies like the Federal Ministry of Environment and National Oil Spill Detection and Response Agency (NOSDRA). Sections of the PIA that could be interpreted as granting the Commission and Authority powers to override other federal agencies and prioritise the oil industry's profitability, among other considerations, further exacerbate concerns over the effectiveness of the new governance structure.

6.3 LEGAL MANDATES AND PROCEDURES: ENVIRONMENTAL REMEDIATION

Broadly, legal mandates and procedures in Nigeria could be described as environmental remediation and presently exist within four broad contexts that emanate from the initial analysis. The first discerning character of these legal contexts is that they are industry-specific regulations about the resources sector that require remediation (or

rehabilitation) of discrete sites with discernible temporal and spatial parameters, such as an oil spill site.[29] This legal context, which commonly involves waste removal, revegetation and improved aesthetics, is usually included in license conditions for resource development. While such interventions may help return the land to productive use with collateral environmental benefits, they are undertaken within narrow perimeters. They do not function on a broader ecosystem (or landscape) scale that can engender systemic improvements. The EGASPIN exemplify the above point.[30]

The second notable character of the legal context described previously focuses on the remediation of contaminated lands, a task usually assigned by regulatory authorities (for instance, the Department of Petroleum Resources, NOSDRA, NESREA, etc.) to current landowners, even if previous occupants caused the damage. While these interventions can be significant locally – especially for reducing public health risks – they do not aim to restore ecosystems' integrity, health and function. The legal standards for remediation may be limited to allow future land uses, such as for housing or further industrial development, which is quite different from recreating original conditions.[31] A third legal scenario for restoration in Nigeria is within statutory penalties imposed for causing environmental damage, whose only mechanism for obliging restoration is in response to an offence against 'anyone who has unlawfully damaged the environment'.[32] The recently repealed Oil and Gas Pipeline Regulations 1995 is a classic example of these provisions.[33]

[29] George Tordoff, Alan J Banker and Arthur Willis, 'Current Approaches to the Revegetation and Reclamation of Metalliferous Mine Wastes' 41(2) (2000) *Chemosphere* 219.

[30] See section 6.2.1 above.

[31] Benjamin J Richardson, 'The Emerging Age of Ecological Restoration Law' 25(3) (2016) *Review of European, Comparative and International Environmental Law* 277, 282.

[32] Marie-Louise Larsson (ed.), *The Law of Environmental Damage: Liability and Reparation* (Martinus Nijhoff, 1999).

[33] Ibid.

These provisions are limited because they need to empower authorities to initiate restoration when no offence has occurred, and much damage ensues from legally authorised activities.[34] As the preceding analysis reveals, common law remedies for nuisance or negligence may provide redress, along with occasional legislative regimes – like the EGASPIN – that allow victims of environmental harm to recover compensation from perpetrators. An alternative means of redress is civil liability claims to recover the cost of private injuries to human health or property. Apart from the high costs and evidential hurdles to succeeding with a civil liability suit, the broad focus is on compensating persons rather than paying for restoring damaged ecosystems.[35] The Oil Pipelines Act of 1956 contains representative provisions in this regard.[36]

Fourth, the final legal character for restoration in Nigeria is in the broad statutory functions of public agencies that manage or supervise the use of lands and waters. These laws offer broad plenary powers to engage in various restorative interventions. Conversely, their often vague, aspirational tone creates room to do nothing. Especially without performance criteria or statutory definitions, it is unclear how one determines whether 'proper weight' or 'consideration' has been given to these restoration duties. Nor do these legislations offer any specific tools for undertaking restoration. And finally, in nearly all the statutes, legislation is entirely silent about restoration. Practically, the undefined terminology may diminish public accountability for restoration activities and foster diverse and potentially counter-productive practices.[37]

However, beyond the statutory framework for remediation in Nigeria discussed above, there is also the EGASPIN which are non-legally binding guidelines. Overall, the

[34] Ibid (n. 31), 281.

[35] Ibid (n. 32).

[36] Ibid (n. 32).

[37] Ibid (n. 31), 283.

EGASPIN is crucial in addressing the ecological, social and economic consequences caused by oil spills in Nigeria and minimising the negative impacts of oil pollution.

6.4 A STATE-CENTRED APPROACH FOR ECOLOGICAL RESTORATION GOVERNANCE

The bodies enforcing environmental standards and the regulatory regime that underpins them have lacked capacity, independence and influence. They have not been fit for purpose. To begin with, degraded ecosystems often necessitate government oversight and participation from polluters to start the restoration process. However, community support and public involvement are usually necessary for a restoration exercise to succeed in the long run. This includes but is not limited to providing helpful information and feedback, conducting an adequate damage assessment, ensuring safe passage to relevant sites, and providing local expertise and labour.[38] To be effective, these 'opportunities for community participation need to be legally mandated',[39] as Richardson rightly posits.

Rooted in the political dogma of rational elitism, the state-based approach to ecological restoration governance has been the dominant paradigm in the field. It posits that environmental decision-making in the public sphere should be delegated almost exclusively to professionals with specialised training and experience, such as government administrators and heads of businesses. Under this model, citizens are not given a voice because the environmental policy is complex and technical, requiring primarily technical and administrative expertise. This oligarchical political theory may permit some public participation, albeit insufficiently, even if it does not place a high value on public

[38] See generally Ibid (n. 31), 286 – 288.

[39] Ibid (n. 31), 287.

participation to address societal issues.[40] As this thesis argues, this approach may be inadequate for addressing the social and ecological acceptability and justice issues that accompany ecological restoration projects.

In developing countries like Nigeria, state-based and state-driven restoration governance is still the norm, if it exists at all. On the one hand, different states have enacted laws and policies to facilitate varying degrees of restoration. On the other hand, governance and regulatory institutions are set up to implement these legal regimes and carry out enforcement actions against those responsible for environmental degradation. It is all overseen by bureaucrats at some level of government. Beyond government officials as standards enforcers and responsible polluters, there is typically little to no room for other stakeholders within this conventional restoration governance structure to participate and contribute meaningfully to the process of ecosystem recovery.

Unfortunately, this is how the principal legal instruments in Nigeria that require oil companies to remediate or clean up oil spills in public spaces are implemented.[41] The Oil Spill Recovery, Clean-up, Remediation, and Damage Assessment Regulations of 2011, which were issued by Nigeria's National Oil Spill Detection and Response Agency (NOSDRA), for instance, and include provisions for an oil spill Joint Investigation Visit (JIV).[42] Oil spills are supposed to be investigated by a JIV team comprised of representatives from the polluter, the affected community, and the government,[43] who will then sign a report confirming the dates of the spill and

[40] See Uzuazo Etemire, *Law and Practice on Public Participation in Environmental Matters: The Nigerian Example in Transnational Comparative Perspective* (London and New York: Routledge, 2015), 222 – 223.

[41] For instance, see Ibid (n. 2; n. 14).

[42] Akpofure Rim-Rukeh, 'Oil Spill Management in Nigeria: SWOT Analysis of the Joint Investigation Visit (JIV) Process' 6 (2015) *Journal of Environmental Protection* 259–271.

[43] Ibid.

investigation, the cause of the spill, the amount of oil spilt, and the affected area.[44] Decisions about who is responsible for what and how much damage must be repaired to the environment will be based in part on the findings of this report. This procedure provides a window of opportunity for public input, albeit one that is often ignored or ignored only partially. This is how Amnesty International describes it:

> [I]n practice, this involvement is relatively limited and tokenistic. Moreover, very few member of the community are able to participate in the process; [if at all] the oil companies generally deal with chiefs – or those they designate - and youth leaders, who are almost invariably male [to the exclusion of women] … [Also,] community representatives have been asked to sign incomplete forms… Communities are frequently denied a copy of the JIV form, even after signing it… There is also anecdotal evidence of bad practice in securing community signatures. In one case reported to Amnesty International, individuals were paid to sign a JIV. In another case, a company contractor is alleged to have signed a JIV, even though he was not from the community.[45]

As a result, government regulators continue to hold sway over restoring polluted ecosystems to the exclusion of other interested parties. Regrettably, the Nigerian government has turned to this old-fashioned form of administration to reverse the catastrophic ecological decline in Ogoniland and other communities in the Niger Delta region. It is no surprise that the strategy has not been able to guarantee the adequate restoration of oil-degraded environments so far, as this was one of the main points alluded to by UNEP in its claim that the environment of developing countries is in grave danger due to the lack of adequate protection mechanisms. Therefore, government regulators continue to hold sway over restoring polluted environments to the exclusion of other interested parties. Unsurprisingly, the strategy has not been able to guarantee the adequate restoration of oil-degraded environments, as this was one of the main

[44] Amnesty International, *Bad Information: Oil Spill Investigations in the Niger Delta* (London: Amnesty International Publications, 2013), 14.

[7] Ibid (n. 44), 40 – 41.

points alluded to by UNEP in its claim that the environment of developing countries is in grave danger due to the lack of adequate protection mechanisms.[46]

In all honesty, Nigeria has some policies and legislation that could help clean polluted areas, as we have seen previously. However, at the outset, these tend to be more concerned with the narrower concept of environmental remediation than the broader concept of ecological restoration. Relevant provisions concerning oil and other contaminating substances pollution of land and water bodies exemplify this second point.[47] Section 25, for instance, only obliges the responsible licensee or lessee to 'take prompt steps to control and, if possible, end it [i.e. the pollution]' and, according to section 46 (c), where the oil production licence or lease is terminated, if at all, the holder is only mandated to 'take reasonable steps to restore as far as possible to their original condition the surface of the relevant area […] damaged in the course of his operation.'[48] Just like the Petroleum Regulations, the 2006 NOSDRA Act that governs the detection and response to oil spillages in Nigeria focuses primarily on the 'clean up'[49] of impacted sites and does not deal with more systemic eco-restoration issues, such as restoring flora and fauna that have been eradicated over time.

Even worse, Amnesty International is correct in pointing out that 'some provisions in oil industry legislation appear to facilitate environmental damage.'[50] In contrast to the standard case of environmental damage due to an oil spill, such a provision has no corresponding ecological protection or restoration obligations. In the case of the Oil Pipelines

[46] Alexandra Juras, 'The Bali Guidelines for Development of National Legislation on Access to Information, Public Participation and Access to Justice in Environmental matters', a presentation at the First Meeting of Focal points appointed by Governments of the Signatory Countries of the Declaration on the Implementation of Principle 10, held in Santiago de Chile, on 6 – 7 November 2012.

[47] Ibid (n. 4).

[48] Ibid (n. 4), s. 25.

[49] See Ibid (n. 2) s. 5 (b) and (c); and s. 6 (3).

[50] Ibid (n. 44), 45.

Act,[51] for instance, licensees are permitted to engage in environmentally destructive activities on any land or areas covered by their permit or licence;[52] licensees are only required to compensate those who are directly harmed by the activities,[53] but they are under no obligation to repair the damage they cause.

Indeed, administrative, criminal, and civil law regimes in Nigeria govern environmental liability and remedies to prevent environmental wrongdoing, repair polluted environments, and compensate victims.[54] In contrast to the first two regimes, the civil liability regime is primarily operated by private legal persons, allowing them to judicially participate in environmental governance and address pollution issues affecting them through the rules of torts law. To the same extent as the other two, however, it has largely failed to provide most victims of environmental degradation with a viable platform for establishing and holding oil companies like Shell and the Nigerian National Petroleum Corporation (NNPC) accountable for environmental wrongs liable to restore the environment, and liable to (adequately) compensate the victims.[55]

However, in many situations, access to justice is impeded by the need to comply with the legal control mechanisms of the civil liability regime, which are designed mainly in an unduly stringent manner, and create obstacles to ensuring environmental restoration and (adequate) victim compensation. One such mechanism is a statute of limitation that sets the

[51] Ibid (n. 1).

[52] Ibid (n. 1), s. 5(1).

[53] Ibid (n. 1), s. 6(2).

[54] Olarenwaju A Fagbonhun, *Mournful Remedies, Endless Conflicts and Inconsistencies in Nigeria's Quest for Environmental Governance: Rethinking the Legal Possibilities for Sustainability* (Lagos: Nigerian Institute of Advance Legal Studies, 2012), 47.

[55] Ibid (n. 54), 48.

clock ticking from the time of the act or omission complained of,[56] rather than the more practical alternative adopted by some jurisdictions,[57] which sets the clock ticking from the time the victim became aware of the damage, its significance, and the entity responsible.

An additional crucial issue is that the aggrieved party must serve a pre-action notice on the potential defendant before filing an action, with the goal of providing a forum for the parties to settle the dispute outside of court.[58] In Nigeria, the enabling law of government agencies, including those with environmental responsibilities, typically requires a pre-action notice of several months.[59] The trial court loses all authority to hear the case if the litigant does not provide the required notice unless the defendant fails to raise the issue, in which case it is treated as a mere procedural irregularity.[60] However, a law requiring pre-action notice in a blanket and mandatory manner can easily frustrate the goal (and even the litigant) because the environmental risk is of such a nature that a timely injunction, even if given *ex parte,* is what may be required to avert possibly irreversible damage to the environment.[61] Fagbohun notes,[62] however, that in some jurisdictions, (1) the court stays proceedings until

[56] This is exemplified by section 12(1) of the NNPC Act, Cap N123, Laws of the Federation of Nigeria, 2004, which provides a one-year limitation period. For an example of the restrictive stance of the Nigerian court on the issue of limitation of action, see *Gulf Oil Company (Nig) Ltd v Oluba* (2003) FWLR (pt 145) 712.

[57] For instance, see ss. 11(4) and 14 of the Limitation Act, 1980 (United Kingdom); See Olarenwaju Fagbohun and G U Ojo, 'Resource Governance and Access to Justice: Innovating Best Practice in Aid of Nigeria's Oil Pollution Victims' 2 (2012) *NIALS Journal of Environmental Law.*

[58] Niki Tobi, 'Environmental Litigation', in S Simpson and Olarenwaju Fagbohun (eds.), *Environmental Law and Policy* (Lagos: Law Centre, Faculty of Law, Lagos State University, 1998) 177, 191.

[59] For example, see Ibid (n. 14), s. 32 (1) provides a one-month pre-action notice before any action can be commenced against the respective bodies.

[60] See *Aro v Lagos Island Local Government Council* (2000) FWLR (pt. 13) 2132, and the more recent Nigerian Supreme Court decision in *Mobile Producing (Nig) Unlimited v LASEPA, FEPA & Ors* ((2002) 18 NWLR (pt. 789) 1.

[61] Ibid (n. 54), 66 – 67.

[62] Ibid (n. 54), 68.

the notice is given rather than dismissing or striking out the suit;[63] (2) approves that particular public interest suits can be brought without the notice;[64] or (3) does not require the notice where the environment is threatened by severe or irreversible damage.[65]

Furthermore, plaintiffs must prove that they have legal standing to file suit. However, in Nigeria, only plaintiffs whose direct private legal right has been or is in danger of being adversely affected by the act complained of are granted standing, widely regarded as overly restrictive, especially in environmental matters.[66] To qualify as a plaintiff in environmental litigation, a person must either have a direct personal and proprietary relationship with the subject matter of the litigation or suffer unique damages due to violating a public right.[67] Indeed, many lawsuits against Nigerian oil industry operators like Shell and the NNPC have been unsuccessful due to this restrictive rule.[68] Tunde Ogowewo argues that this outdated and in need of liberalisation rule[69] has a "court-closing" effect because it 'immunises from

[63] See *Pymatuning Water Shed Citizens for a Hygienic Environment v Eaton,* 644 F. 2d 995 (3rd Cir. 1981).

[64] See *Natural Resources Defence Council Inc. v Train,* 510 F. 2d 692 (D.C. Cir. 1974).

[65] See, for instance, s—505 (e) of the Clean Water Act, 1948 (as amended).

[66] See *Adesanya v President of the Federal Republic of Nigeria* (1981) 1 All NLR 1; and *Ejiwunmi v Costain (W.A) Plc.* (1998) 12 NWLR 149, 164H. Although some Nigerian courts have deviated from this restrictive rule in favour of broader standing rights in a few cases (e.g., see *Adediran v Interland Transport* (1991) 9 NWLR (pt 214) 155), the restrictive standing rule remains the norm. Jedrzeg G Frynas, *Oil in Nigeria: Conflict and Litigation between Oil Companies and Village Communities* (Hamburg, New Brunswick, NJ and London: LIT/Transaction, 2000) 207; and Mohammed T Ladan, 'Judicial Approach to Environmental Litigation in Nigeria', a paper presented at the 4–Day Judicial Training Workshop on Environmental Law in Nigeria, in Abuja, Nigeria, on 5 – 9 February 2007, 16.

[67] Ibid (n. 54), 70.

[68] See *Oronto Douglas v Shell Petroleum Development Company Nigeria Limited and Ors*, Unreported Suit No: FHC/L/CS/573/96, 17 February 1997. The Court of Appeal's decision is reported in (1999) 2 NWLR 466.

[69] As noted by Niki Tobi JCA in the case of *Busari v Oseni* (1992) 4 NWLR (pt. 237) 557, who called for the concept of standing in Nigeria to 'move with time to take care of unique and challenging circumstances in the litigation process' and to 'accommodate the dynamics and sophistication of the legal system.'

judicial review a substantial aspect of the [non-]exercise of governmental power,'[70] making it more challenging to bring a successful public interest suit or to hold private entities, such as oil companies, accountable through private action for causing damage to a public environmental media and, thus, liable to pay compensation to the aforementioned parties.

The need for, and the difficulty of, establishing strict causation in civil claims is another major obstacle for plaintiffs in Nigeria. In this case, the plaintiff has the burden of proving that the defendant's actions led to the pollution that ultimately resulted in the plaintiff's injuries. This requires expensive and time-consuming scientific evidence collection, the accuracy of which cannot be guaranteed (for example, whether or to what extent the pollution and injury resulted from the defendant's activities or other sources and factors). This has been a significant obstacle for victims of oil pollution in Nigeria seeking environmental and economic justice,[71] as affected locals are often too poor to secure the necessary scientific evidence. Even where funding is available, environmental damage and human injury may have occurred long after the pollution. In an effort to make the burden of proving causation less onerous for plaintiffs, new methods are being proposed[72] and adopted,[73] provided they are fair to all parties involved. Therefore, the Nigerian judicial system and the legislature can no longer ignore the problem.

---

[70] Tunde I Ogowewo, 'Wrecking the Law: How Article III of the Constitution of the United States Led to the Discovery of a Law of Standing to Sue in Nigeria' 26 (2000) *Brooklyn Journal of International Law* 527, 542.

[71] See, for instance, *Shell v Graham Otoko* (1990) 6 NWLR (pt. 159) 693 at 724 – 725; and *Atunbi v Shell BP* (Unreported) Suit No. UHC/48/78, 25th November 1974.

[72] For instance, see *Fairchild v Glenhaven Funeral Service Ltd* [2002] UKHL 22, where the less burdensome 'but for' test was applied to the injury case. See John Bates, William Birtles, and Charles Pugh, *Liability or Environmental Harm* (London: Lexis Nexis, 2004).

[73] For instance, for the suggestion of plausible presumption as sufficient evidence in some cases, where plausible see Hubert Bocken, 'The Compensation of Ecological Damages', in Peter Wetterstein (ed.), *Harm to the Environment: The Right to Compensation and the Assessment of Damages* (Oxford: Clarendon Press, 1997) 144.

In fact, the lack of adequate public input in Nigeria's environmental law-making and reform processes is largely connected to the creation and support of these age-old limitations in the country's environmental laws, which have left the environment of Ogoniland in a severely degraded state and its people further impoverished.[74] Therefore, a former Deputy Senate President in Nigeria observed the need for a shift in this partially undemocratic approach: "If we must tag our laws as people's laws, it is only reasonable and moral for the process to be [...] truly people-driven."[75] When it comes to issues like ecological devastation and its repercussions, the current state regime cannot be accurately described as "people's laws" or mainly in tune with the core interest of the people. This is especially true given that many laws regulating the oil industry's impact on the environment in Nigeria were enacted when the country was under military rule, and public input was not as highly valued as it is in today's more democratic settings.

To better highlight and substantially address the inadequacy in the scope of the present regimes in meeting their ecological needs, affected oil-bearing communities and other relevant non-state actors should be allowed meaningful participation in such processes. This point, about the repercussions of lacking public input in environmental law-making is also pertinent for many nations worldwide. That is because it is one of the issues that the UNEP Governing Council[76] adopted the Guidelines for the Development of National Legislation on Information, Public Participation, and Access to Justice in Environmental Matters (Bali

[74] Ibid (n. 40), 222 – 223.

[75] Ike Ekweremadu, 'Opening Address', delivered at the International Conference on Law Reform and Law-making Process in Nigeria, held in Abuja, Nigeria, on 16 July 2012, http://www nassnig.org/nass/news.php?id=366 (last accessed 25 April 2021).

[76] See General Assembly Resolution (XXVII), art 1, available online at http://www.unep.org/PDF/UN_GA_2997.pdf.

Guidelines)[77] to solve.[78] The Guidelines were drafted with input from civil society and governments worldwide to guide states, 'primarily developing counties,' as stated in the Guidelines' introductory clause. In addition, Nigeria has no independent (governance) oversight of environmental restoration, which could be seen as a step towards ecological restoration. The lack of independent oversight by the appropriate government institutions means that restoration obligations imposed on oil and gas companies are not adequately applied or enforced. Joint venture agreements between the Nigerian government (represented by the Nigerian National Petroleum Corporation, or NNPC) and international oil companies are the reality of oil production in Nigeria. The reality is that the relevant government agencies have been unable to effectively play their role as regulators in relation to the activities of oil companies, even though the two parties are essentially business partners and are (directly and indirectly) responsible for environmental degradation in Ogoniland.[79]

The government's massive economic gains from the oil industry could be quickly impacted by practical measures to hold oil companies accountable for the effects of their operations on ecosystems. As a result, government regulatory agencies have become vulnerable to the phenomenon of 'agency capture' in Nigeria due to the importance of oil companies to the national economy and the economic power they invariably wield in the country. A failure in governance occurs when the agency tasked with protecting the public interest becomes compromised by the very company it was created to oversee.[80]

---

[77] Adopted by the Governing Council of UNEP, UNEP/GCSS.XI/11, Decision SS. XI/5, Part A, 26 February 2010.

[78] For instance, see Guideline 13 of the Bail Guidelines.

[79] Ibid (n. 24), 195.

[80] Michael E Levine and Jennifer L Forrence, 'Regulatory Capture, Public Interest, and the Public Agenda: Towards a Synthesis' 6 (1990) *Journal of Law, Economics, and Organisation* 167 – 197; Nancy P Spyke, 'Public Participation in Environmental Decision-Making at the New Millennium: Structuring New Spheres of Public Influence' 26 (1999) *Boston College Environmental Affairs Law Review*, 263, 275.

According to a report by Amnesty International, 'powerful business actors whose word appears to be law in some cases' have outgrown Nigeria's regulators' ability to effectively police their industry. As a result, it is easy to see why restoration governance in Ogoniland and elsewhere in the Niger Delta has failed. It also shows why any ecological restoration project may face the same fate if its governance structure is not made independent and protected from undue pressure from any one stakeholder. In this context, the argument has been made, and rightly so, that broad stakeholder participation in governance is essential to guaranteeing transparency, combating 'agency capture,' and protecting the governance process from ill-intentioned influence.[81]

Furthermore, the primary driver and enforcer of the governance structure in Nigeria, as in many other developing countries, the relevant state agencies, need more resources and capacity to restore degraded environments. For instance, the now-defunct Department of Petroleum Resources (DPR) was responsible for enforcing compliance with environmental laws, regulations, and guidelines in the oil industry and ensuring restoration after ecological damage.[82] Yet, according to the UNDP's evaluation, "its [i.e., the DPR's] effectiveness has been seriously hampered by inadequate personnel, funding, equipment, and logistics support [...] The sordid environmental condition [in the Niger Delta] reflects institutional failures."[83] Additionally, the World Bank notes that "[l]acking monitoring and basic office equipment, the Department [DPR] is currently not able to perform its duties and is limited to obtaining Oil Company spill reports."[84]

---

[81] See Ian Ayres and John Braithwaite, *Responsive Regulation* (Oxford: Oxford University Press, 1992).

[82] See http://www.dpr.gov.ng.

[83] United Nations Development Programme (UNDP), *Niger Delta Human Development Report* (Abuja: UNDP, 2006), 310.

[84] World Bank, *Defining an Environmental Development Strategy for the Niger Delta* (Vol II, Industry and Energy Operations Division West Central Africa Department, 1995) 55, available online at

As a result, regulators must now rely too heavily on the oil companies that are ultimately responsible for pollution to do their jobs effectively. This creates favourable conditions for the polluter to 'capture,' control, and compromise the regulator in a counterproductive way to the success of restoration efforts. Amnesty International's empirical research supports this:

> In each case, Ministry employees pointed to a lack of basic resources, including vehicles to travel to sites to investigate pollution, and laboratories to analyze samples of water and soil. … Staff [at one Port Harcourt office of the Ministry of Environment], speaking on condition of anonymity for fear of losing their jobs, confirmed that they often had to call oil companies to obtain a vehicle to visit a reported spill site, and they regularly had to rely on oil companies for analysis of soil and water samples and for other data.
>
> [NOSDRA officials] in Port Harcourt… said that they still have to depend on the oil companies for analysis of spills and for transport. The Agency still has neither a boat nor a helicopter – both vital for monitoring oil spills in a delta with both onshore and offshore oil operations.[85]

The fact that this problem persists, as documented in the most recent UNEP Report on Ogoniland,[86] only highlights the importance of including additional stakeholders in the governance and implementation of restoration projects. Involving them should increase openness and provide some of the knowledge needed to lessen oil polluters' sway over the clean-up effort.

The PIA has also not adequately addressed the conflicting and overlapping roles of different regulatory bodies, which would, in particular, continue to hamstring effective environmental regulation. For instance, NOSDRA, which sits within the Ministry of the

---

http://documents.worldbank.org/curated/en/506921468098056629/pdf/multi-page.pdf (last accessed 25 April 2021).

[85] Ibid (n. 44), 44.

[86] United Nations Environment Program, *Environmental Assessment of Ogoniland*, (Nairobi: UNEP, 2011), (hereinafter 'UNEP report'), 12.

Environment, has traditionally held responsibility for overseeing oil spill preparedness, detection and response but has not had the power to shut down operations or enforce fines. The DPR, housed within the Ministry of Petroleum Resources, had the power to impose sanctions. However, it operated to a different set of standards to NOSDRA and rarely used its powers to discipline oil producers. The standards in DPR's updated "Environmental Guidelines and Standards for the Petroleum Industry in Nigeria" (EGASPIN) are less rigorous in many respects than those mandated by NOSDRA and, in many areas, do not reflect accepted international practice.

A lack of capacity has traditionally compounded these weaknesses in institutional design and standards. For instance, NOSDRA still lacks the powers and capabilities to supervise the IOCs and relies on them to facilitate its access to pollution sites. This limits NOSDRA's independence and effectiveness and creates further conflicts of interest. As a result, much of the regulatory process inherently serves and is compromised and captured by the interests of the companies it is meant to police.

While the Nigerian federal government works out the modalities for the new institutions, the failures of the regulatory framework remain valid as the PIA fails to address the issue of responsibility for historical oil pollution and the institutional shortcomings that enable the scale of oil industry pollution and societal upheaval as experienced in the Niger Delta. Many aspects of Nigeria's legal framework allow polluters to escape scrutiny and accountability. In most advanced industrialised countries, two basic principles - 'polluter pays' and 'no fault liability' - form the cornerstone of the legal regime for regulating extractive industries. Taken together, they mean that those who own and operate facilities are responsible for the damage caused by their pollution, even if they are not at fault.

Unfortunately, these concepts are at least partially absent from the body of Nigerian law. Consequently, oil companies assert that if they can show that a leak was not their fault,

they presume they are not responsible for paying compensation. Perhaps then, it is not surprising that the oil companies claim that almost 90 per cent of leaks are due to sabotage, a finding they believe frees them of liability for compensating the victim. However, despite this general perception, Nigerian laws do not give oil companies absolute immunity from liability in all instances of sabotage. Where an oil company has been negligent and failed to take 'reasonable measures to prevent' foreseeable sabotage, they are still legally liable to pay compensation.

Sadly, this process is reinforced by inconsistency and other weaknesses in the legal framework, including a lack of legislation reflecting international standards on regulating asset integrity, none of which is suitably addressed by PIA legislation. Moreover, some of the fines laid out in statute for breaches of key elements of legislation have not been updated for many years and, as a result, are sometimes too low to act as a disincentive to poor behaviour by oil producers. Furthermore, unlike other jurisdictions, such as the UK, where regulators can impose administrative fines and other sanctions, this is not so in Nigeria, where the decision by the Court of Appeal prevents regulators from imposing penalties unless they have a court order. This process, in practice, could take years.

Furthermore, the problems posed by the legal framework are further compounded by the enormous challenges individuals and communities face in accessing justice. There are no fast-track avenues for compensation, and plaintiffs often lack the resources to pursue action through the courts. It is usually the case that well-funded IOC defendants are simply able to bog down proceedings on an almost indefinite basis to prevent any unfavourable rulings. However, the NUPRC may now determine compensation under section 101 of the PIA. If effectively applied, this section may mean compensation may be determined by the regulators instead of the courts.

Finally, the threat of sanctions, such as fines and licence revocation, is typically the only (or significant) approach used by state-driven restoration processes to secure compliance with the restoration responsibilities of liable polluters. It is like this in Nigeria.[87] Unfortunately, this system is flawed and needs to pressure oil polluters to comply with the law or guarantee sufficient restoration substantially. The fines are so low that they will not even cover the cost of the polluter's damage to the environment, and they will not serve as a deterrent to others.[88] Although some oil licences and leases have been revoked in the past, Amnesty International found no evidence that this was done based on environmental damage.[89] More importantly, the federal government lacks the political will to institute an effective sanctions regime that will rock the boat in the oil industry, in which it is a significant stakeholder through various joint venture agreements with direct polluters.

Given current affairs, a different approach to oil spill response governance is necessary to ensure successful ecological restoration. As an alternative to the state-based strategy, this chapter will examine the UNEP's proposed ecological restoration project in Ogoniland, which takes a multi-stakeholder approach.

6.5 LAW AND GOVERNANCE AGENDA FOR ECOLOGICAL RESTORATION

On a global scale, developing countries such as Nigeria are significant models of state-centred remediation governance in the face of degraded ecological conditions. In Nigeria, state laws and policies designed to ensure restoration to varying extents support the implementation of these legal regimes by government regulatory agencies and the

[87] Uzuazo Etemire and Menes Abinami Muzan, 'Governance and regulatory strategies beyond the state: stakeholder participation and the ecological restoration of Ogoniland' 26 (2) (2017) *Griffith Law Review* 275, 281.

[88] Ibid (n. 54); (n. 44), 52.

[89] Ibid (n. 44), 52.

enforcement of sanctions against those responsible for environmental degradation. [90] Over the past decade, ecological restoration has gained significant traction, becoming increasingly prominent in international and regional treaties, coalitions, and United Nations conventions. This growing recognition underscores the importance of ecological restoration in addressing global environmental challenges.[91] Many developed and developing countries are currently engaged in large-scale landscape restoration projects. This global commitment to ecological restoration underscores its importance and the need for collective action to address environmental degradation.[92]

Developed nations like the United States and the EU have ushered in many state laws and policies relating to ecological restoration and ecosystem services.[93] Furthermore, the European Commission, as we have seen in Chapter Five, has been at the forefront of some of these regional efforts through its Biodiversity Strategy programme, which set a target to restore, or more accurately, to 'begin restoring 15 per cent of all degraded ecosystems in the European Union' by the year 2020.[94] Recently, a multilateral initiative has been launched to achieve land degradation neutrality. According to the Convention on Combating Desertification, 'ecological restoration is one of the key components' of this initiative.[95] Of particular importance in all these national, regional, and global efforts are conservation projects like the Comprehensive Everglades Restoration programme and Trees for Life in Scotland, which are pretty similar to the Ogoniland restoration project and could ultimately

[90] Ibi (n. 87), 281.

[91] Anne Tolvanen and James Aronson, 'Ecological restoration, ecosystem services, and land use: a European perspective' 21 (4) (2016) *Ecology and Society* 47.

[92] Christer Nilsson and Asa L Aradóttir, 'Ecological and Social Aspects of Ecological Restoration: New Challenges and Opportunities for Northern Regions' 18 (4) (2013) *Ecology and Society* 35.

[93] See Chapter Five, Ecological Restoration in the US and the EU, below.

[94] Ibid.

[95] Mark S Reed and Lindsay C Stringer, *Land Degradation, Desertification and Climate Change* (Routledge, New York: 2016).

serve to provide international best practice standards for the governance of the Ogoniland restoration project.

Despite the restoration's similarity in governance beyond the state,[96] there are a few places where governance differences appear to crop up in ecological restoration projects in developing nations. Trees for Life is a registered charity in the UK working to 'restore the Caledonian forest and its unique wildlife' to the Scottish Highlands, and the 'vast majority of their work is carried out by volunteers,' in contrast to the Ogoniland ecological restoration project, which lacks a clearly defined legal basis and as such may not be very sustainable in the long run. For this reason, this 'grassroots restoration project' seeks to 'help the natural regeneration of the Scottish highlands' by planting native species of trees, removing non-native species, and fencing seedlings to protect them from overgrazing by deer and sheep. Ultimately, the objective is to 'create a fully restored, healthy ecosystem, which will include the reintroduction of missing wildlife species.'[97] As such, it serves as a model for the long-term viability of eco-restoration (i.e., "working in cooperation with nature") and as proof that ecological restoration techniques can 'inspire similar projects elsewhere in the UK and around the world.'[98]

Also in Western Australia is the Gondwana Link project, a large-scale conservation and restoration initiative that aims to reconnect and conserve landscapes from the tall wet forests of the far southwest to the dry woodland systems bordering the Nullarbor Plain and 'repair some of the ecological damage' caused by human activity.[99] Goals include 'restoring

---

[96] Afshin Akhtar-Khavari and Benjamin J Richardson, 'Ecological restoration and the law: recovering nature's past for the future' 26 (2) (2017) *Griffith Law Review* 147 – 148.

[97] *BBC News*, 'Forest restoration project begins', available at: http://news.bbc.co.uk/2/hi/uk_news/scotland/highlands_and_islands/8340505.stm, 3 November 2009.

[98] See Trees for Life, *'What we do'*, https://treesforlife.org.uk/work/ (last accessed 25 April 2021).

[99] See Bush Heritage Australia, 'Gondwana Link' https://www.bushheritage.org.au/what-we-do/regional-partnerships/gondwana-link (last accessed 25 April 2022)

ecosystem function and securing native habitat'[100] within a biodiversity hotspot through reforestation of previously cleared land, management, and protection of existing remnants. This, however, does not imply that the programmes and groups collaborate closely; rather, it indicates that the programmes' and groups' results are highly consistent. Gondwana Link Ltd – a limited liability company formed specifically for restoration purposes – works to improve the 'fitting together' for the final product, but 'it is the groups who have responsibility for achieving substantial change' in their respective domains.[101]

As the case of Nigeria demonstrates, however, unlike in most developed countries, the governance of restoration activities in most developing countries must indeed prioritise social acceptability and justice, especially when considering the critical factors that were alluded to earlier. Given the disparity in socio-economic development between these (North-South) divides, this governance model entails 'restoring livelihoods' in accordance with the sustainable development agenda of countries in the South. In this regard, the provision of social amenities such as access to affordable primary healthcare, as recommended by UNEP, and the provision of an alternative means of livelihood and other forms of engagement considering that the people (i.e., farmers, fishermen, traders, illegal artisanal refiners, etc.) depend on the ecosystem for their survival is crucial to the success of restoration projects in developing countries.

Flowing from the above, in a recent study of the governance structure in the Ogoniland restoration project, it was rightly concluded that:

> [b]eyond shattering the orthodoxy of the state-based approach and pointing to the relatively new paradigm of a stakeholder-driven system as the future of eco-restoration for any regulatory system that would be effective, […] eco-restoration

[100] Jonson Justin, 'Ecological restoration of cleared agricultural land in Gondwana Link: lifting the bar at Peniup' 11 (1) (2010) *Ecological Management and Restoration* 16.

[101] Gondwana Link, 'Achieving the vision' http://www.gondwanalink.org/whatshapwhere/default.aspx (last accessed 25 April 2022).

> [governance] is not just about proper democratic procedures but also about restoring the participating communities themselves. While the core focus of the [UN Environment] restoration strategy was on the restoration of the damaged ecosystem of Ogoniland, its recommendations demonstrated that holistic eco-restoration [in developing countries] can hardly be termed successful without the restoration of the affected community.[102]

In light of this, it was and must be ensured that the Ogoni community could reap the social and economic rewards of the restoration effort equitably. Establishing this connection between ecological restoration and community restoration is crucial for at least two reasons: (a) community members are an essential part of the ecosystem, and (b) ecosystem restoration can only be considered complete with the restoration of the community, considering that most Ogoni people live in extreme poverty.[103] The Ogoniland restoration project demonstrated that ensuring the social acceptability of ecological restoration initiatives in developing countries requires addressing a wide range of socio-economic indicators, including providing adequate healthcare.[104] Given the scope of ecological restoration, it can interfere with significant economic and social activities and cause inconvenience for the local population.

The success and sustainability of ecological restoration projects would require widespread respect for nature, an emotional affinity with it, and an appreciable degree of environmental education on the part of the community concerned. This is because ecological restoration projects are typically implemented over a considerably long period and because humans play a central role in shaping their environment. Thus, multi-stakeholder participation is essential to the 'proper integration of ecological and social considerations' into the decision-making process necessary for successful ecological restoration in light of

[102] Ibid (n. 87), 294.

[103] Federal Ministry of Environment, 'Hydrocarbon Pollution Remediation Project Activities Yearbook 2017' (hereafter 'HYPREP Activities'), 23. available at (hyprep.gov.ng) (last accessed 19 December 2018).

[104] Ibid (n. 87), 290; see also Ibid (n. 103).

the high prevalence of illiteracy and unemployment levels (especially among the youth) in Nigeria and many other developing countries.[105]

Unlike in Scotland, for instance, where volunteers govern ecological restoration activities and carry out the vast majority of the restoration work, and unlike in Australia, where smaller area programmes cohesively 'fit together' to produce a significant landscape change,[106] HYPREP may find recruiting community members to work as 'volunteers' in extensive landscape restoration activities challenging.[107] Access to environmental information is lacking in Nigeria. Still, initiatives like Gondwana Link and Trees for Life could introduce international best practice principles (and standards) to help fill this void. The Gondwana Link project may be best understood not so much as a (single) extensive landscape restoration programme but as several smaller area programmes fitting together cohesively to produce a significant landscape change. This approach is consistent with Nigeria's emerging 'multi-stakeholder governance model' of ecological restoration. Given the extensive level of economic "cooperation" between Nigeria and countries of the European Union, ecological restoration initiatives like Trees for Life in Scotland can potentially serve as a possible knowledge base for the Ogoniland restoration governance model. This is crucial because of HYPREP's expanded responsibilities, which will be covered in the next section.

The next section of the thesis will discuss the current situation and ongoing efforts towards ecological restoration, focusing on ensuring social acceptability and ecological justice in the Ogoniland restoration project.

[105] Ibid (n. 40), 89 – 90.

[106] Trees for Life, *'What we do'*.

[107] Gondwana Link, *'Achieving the vision'*.

6.6 THE OGONILAND ECOLOGICAL RESTORATION PROJECT: AN EXAMPLE OF THE MULTI-STAKEHOLDER GOVERNANCE APPROACH

The largely multi-stakeholder approach of the Ogoniland ecological restoration project and the governance structure proposed by the UNEP is a fundamental and distinctive feature of the project. This alternative structure is essential to the successful execution of the Ogoniland ecological restoration project, founded on the discussions presented earlier in the conceptual framework of this thesis. In particular, the UNEP report involves and places responsibility on three key stakeholders to effectively govern and execute the project. These three key stakeholders are the government of Nigeria, the oil companies operating in Ogoniland, and the Ogoni community, which includes the civil society.[108] UNEP is also identified as an equal stakeholder in the project. The organisation carried out the assessment, designed the governance structure, and continues to oversee as the project is carried out. It is essential to begin one's examination of the restoration project and its legal and governance structure at the very beginning of the project. This is necessary to discover precisely how the project represents a paradigm shift from the norm in Nigeria and how it could serve as a valuable model for other nations worldwide, particularly regarding participation in ecological restoration. In this context, one must first understand the positive ramifications of the novel involvement of UNEP as a critical stakeholder in the Nigerian government's efforts to restore the ecosystem in Ogoniland. The Nigerian government invited UNEP to participate in the restoration of Ogoniland.

Since the beginning of oil exploration in Ogoniland, the relationship between the communities there, on the one hand, and the Nigerian government and oil industry operators, on the other, has been marked by conflicts and a lack of trust resulting from unmet expectations of sustainable development and ecological restoration. This has prevented

[108] Ibid (n. 86), 224.

meaningful and progressive dialogue between the actors for many years.[109] The UNEP-led approach 'represented the only tangible [and transparent] option for possibly breaking the decades of deadlock while providing the government and stakeholders with a potential foundation upon which trust might be built, and action might be taken' to remedy the socio-ecological challenges faced by the Ogoni people.[110] This was because UNEP was a neutral stakeholder and held credibility with all other parties. In addition, UNEP designed the project with the participation of multiple stakeholders. These stakeholders included international and local experts, the government of Nigeria, oil company representatives, e.g., Shell, and community members within and around Ogoniland.[111] This has, up to this point, assisted in improving the project's social acceptability, which is essential for its successful execution.[112]

In addition, because a sound scientific basis is essential to any ecological restoration project's success,[113] UNEP used its robust technical and scientific expertise – which Nigerian regulatory agencies like the NESREA and NOSDRA lack – to assess and design the Ogoni ecological restoration project.[114] This was done to ensure that the project would be successful. Given factors such as insufficient human resources, dwindling public funds, and bureaucratic bottlenecks, one could argue that this is beyond what the government of Nigeria and other similar developing countries could have put in place if the evaluation and design of the project had been left solely up to them. This fact lends credibility to the essential contributions that non-traditional stakeholders can make to ecological restoration projects, contributions that will be unavailable under an essentially state-driven remediation system. In

[109] Ibid (n. 103), 8.

[110] Ibid (n. 103), 6.

[111] Ibid (n. 103), 8.

[112] See Chapter Three on the Theoretical and Conceptual Framework for Ecological Restoration Governance above.

[113] Ibid (n. 31), 286.

[114] Ibid (n. 103), 6 – 7.

this light, but also demonstrating its independence and unbiased nature about the oil industry operators who bore the financial burden for the study, UNEP noted the ineffective scientific remediation methods employed by the oil companies, i.e., Shell, which have led to failed remediation exercises in the past.[115] This demonstrates that UNEP is independent and unbiased about the oil industry operators who bore the financial burden for the study. The research revealed that heavy contamination was still present at one location forty years after an oil spill, despite numerous attempts to clean it up.[116]

Notably, the participation of UNEP – which made it possible for other stakeholders, such as the Ogoni community and NGOs, to take part in the design process of the project – has arguably helped to expand the focus of restoration from the limited environmental perspective as instituted by the (Nigerian) state, to that of ecological, which is much broader in nature. This is a significant contribution. This point is important because, when focused on environmental issues, most legal systems worldwide have primarily concentrated on more superficial problems rather than issues more fundamental in nature, such as ecological restoration agendas.[117] During the course of the UNEP study, when several different stakeholder's points of view were being compiled regarding the nature and extent of the impact of oil pollution, it was difficult to miss the fact that what was required was an ecological restoration rather than an environmental remediation exercise; however, this was not the case.[118] This is a significant departure from the method traditionally used in many developing countries, such as Nigeria, to design national environmental-related regimes. In these countries, the process typically excludes substantial input from relevant stakeholders,

[115] Ibid (n. 103), 12.

[116] Ibid (n. 103), 9.

[117] Ibid (n. 31), 277.

[118] However, while one may find references to 'environmental restoration' in the UNEP report (E.g., see UNEP report, pages 12, 13, 15, and 16), the details and substance of the restoration programme majorly point to ecological restoration, going by the earlier provided distinction between both concepts in Chapter Three.

resulting in a regime with an inadequate scope to address a given ecological challenge, as the Nigerian situation reveals.

It should come as no surprise that the activity of ecosystem restoration, in contrast to those emphasising the environment, is large-scale, extensive and takes a significant amount of time. Therefore, the recommendations made by the UNEP go beyond the remediation of oil-contaminated sites to improve their aesthetics and functionality. Instead, they are intended to have a much broader scope. They are geared toward restoring the 'health, integrity, and long-term sustainability' of the Ogoniland ecosystem per the standards of ecological restoration discussed previously. Therefore, the UNEP report makes several recommendations, including the following: the establishment of '[l]ocal nurseries... so that healthy, indigenous plants will be available to regenerate heavily impacted mangrove stands;' 'containing the spread of [alien and] invasive species;' excluding restoration approaches that will 'alter the [Ogoniland] ecology;' and seeking and instituting restoration approaches that are appropriate in the context of Ogoniland based on the ecology and hydrology.

In particular, considering the deficiencies in the existing Nigerian regulatory agencies with environmental restoration mandates, the UNEP suggested the creation of an 'Ogoniland Environmental Restoration Authority' to oversee the implementation of the Ogoniland ecological restoration project.[119] This recommendation was made because the Ogoniland restoration project is currently being implemented. In addition, it was suggested that staff members who were seconded from other government institutions should 'largely' rather than solely make up the Authority. Because of this, there is room for the participation of other non-traditional stakeholders in the processes. As a result of this recommendation, the Nigerian government has established the Hydrocarbon Pollution Remediation Project (HYPREP), an agency of the Federal Ministry of Environment, to supervise the restoration process. In

[119] Ibid (n. 86), 211.

August 2016, a 13-member Governing Council and this organisation's 12-member Board of Trustees were formally inaugurated.[120] To their credit, both governing bodies are composed of high-level government officials, the UNEP (which has observer status), representatives of the relevant oil industry operators, non-governmental organisations (NGOs), the Ogoni community, and other communities within the Niger Delta region.[121] It has been determined that the makeup of the restoration authority is acceptable to all of the various stakeholders who were involved. To this point, the body has been actively engaged in the extensive preparations necessary to get ready for the start of the actual physical restoration exercise.

In addition, UNEP proposed a new and expanded mandate for the Presidential Implementation Committee (PIC), which was initially established to monitor the implementation of the assessment project. This is part of the new governance structure that will assist in implementing the report. Following the completion of that task, it was suggested that a new mandate be given to the PIC to oversee HYPREP. This mandate stipulated that the membership of the PIC should be expanded to include 'representatives from stakeholders with an interest in the restoration project.'[122] In addition, to ensure that the recommendations of the report are initiated and put into action, it was suggested that several Technical Working Groups be established. These groups will be made up of specialists with a wide range of skills and knowledge, and they will come from the following areas: the community, academia, federal and state governments, and the oil industry.[123] As a direct consequence of the arguments presented earlier, the participation of such a wide variety of stakeholders in the governance and implementation of the restoration project would significantly contribute to an

[120] *Financial Watch,* 'Buhari Inaugurates Board of Trustees for Implementation of the UNEP Report on Ogoniland', http://www financialwatchngr.com/2016/08/04/buhari-inaugurates-board-trustees-implementation-unep-report-ogoniland/, 4 August 2016.

[121] Ibid.

[122] Ibid (n. 86), 230.

[123] Ibid (n. 86), 230 – 231.

increase in the level of transparency and accountability within the system, as well as a reduction in the likelihood of the project is captured and controlled by a single interest. These are some of the weak links in the state-driven remediation system.

Furthermore, most Ogoni people live in abject poverty.[124] Since people experiencing poverty are the primary victims of environmental degradation, it is arguable that, under the state-driven remediation system, the focus has primarily been on 'compensatory restoration' rather than actual ecological restoration of the degraded environment. This is because people experiencing poverty are the primary victims of ecological degradation. Paying monetary compensation to individuals or communities adversely affected by environmental damage and providing a few social and physical amenities could be considered compensatory restoration.[125] The government and oil companies could provide these amenities. These measures are typically regarded as inadequate and only temporary when implemented. Their primary aim is to placate rather than restore the socioeconomic status of the communities impacted by ecological disasters. Although the socioeconomic well-being of those whose livelihoods have been disrupted by oil pollution is of the utmost importance, the point is that it should not be addressed in place of, or as necessarily distinct from, the requirement for ecological restoration, as the state-driven approach tends to imply.

This problem was addressed by the alternative UNEP strategy, which suggested a detailed ecological restoration programme that viewed land and water as places that humans inhabit and presumably valued as something other than fungible commodities.[126] However, it demonstrates how an elaborate ecological restoration effort of this nature could deliver two

[124] Amos A Idowu, 'Human Rights, Environmental Degradation and Oil Multi-National Companies in Nigeria: The Ogoniland Episode' 17(2) (1999) *Netherlands Quarterly of Human Rights* 161, 166, 167.

[125] Ibid (n. 24), 176.

[126] Anastasia Telesetsky, 'Ecoscpaes: The Future of Place-based Ecological Restoration Laws' 14 (4) (2013) *Vermont Journal of Environmental Law* 493, 521.

benefits: achieving ecological restoration in Ogoniland while simultaneously having the spill-over effect of improving the socio-economic well-being of the Ogoni people. In light of this, in addition to allowing for community and civil society involvement in the governance of the extensive restoration project, provisions are made for the impacted community to also take advantage of the socio-economic benefits of projects of this nature. To make it abundantly clear that members of the Ogoni community are required to be involved in the many aspects of the actual restoration exercise, including the various working groups that are proposed to actualize the remediation recommendations,[127] the UNEP advises:

> The proposals outlined in this report have the potential to bring in substantial new investment, employment opportunities and a new culture of cooperation into Ogoniland. The Ogoni community should take full advantage of the opportunities that will be created by these developments. These projects potentially offer the community an unprecedented opportunity to be at the forefront of a world class environmental restoration project that will improve their living conditions and livelihoods and provide them with skills that can be exported nationally, regionally and internationally. This is a transformative moment, and the Ogoni community should endeavour to seize it in a positive manner.[128]

UNEP has recommended that the Nigerian government establish a Centre of Excellence for Ecological Restoration as a permanent investment and development that should result from the Ogoni restoration project. The Nigerian government has accepted this recommendation.[129] It is intended that 'people outside Ogoniland and the wider Niger Delta (including from other countries)'[130] would be able to enrol at this centre of learning. This Centre is meant to be a repository for the wealth of information that can be gained from the Ogoni restoration exercise, information that can then be used to help other communities in the Niger Delta and

[127] Ibid (n. 86), 229 – 230.

[128] Ibid (n. 86), 229.

[129] Ibid (n. 86), 227.

[130] Ibid.

'many other parts of the world'[131] with similar ecological challenges. In addition to serving as an avenue for education, training, and research on ecological restoration issues, the Centre will also provide social and economic benefits to the people of Ogoniland by drawing in 'visiting experts, students, and visitors from overseas' and thereby increasing the number of available jobs in the region.[132]

Furthermore, the multi-stakeholder approach takes a different path than the predominantly 'adversarial' approach of the state-driven remediation system in employing sanctions and penalties to enforce ecological restoration mandates, which, in any case, have proven to be largely ineffective. The latter system still assigns blame where it belongs, but it does so in a friendly way. It wants to push forward its ecological restoration proposal by emphasising values like collaboration, mutual aid, and partnerships, which are crucial to effective ecological restoration, especially in the presence of well-channelled citizen pressure. This fresh take on the situation is working quite smoothly so far.

For instance, the critical actors in the oil industry paid for the two-year environmental assessment of Ogoniland not because of any legal obligation but because of this lenient approach. Additionally, the oil industry operators with prevailing interests in Ogoniland (currently SPDC and NNPC)[133] and the Federal Government of Nigeria as a major shareholder in both these entities agreed and have begun implementing the recommendation requiring them to establish and finance the Ecological Restoration Fund for Ogoniland (to be managed by HYPREP)[134] with an initial capital injection of $1billion,[135] representing initial

[131] Ibid.

[132] Ibid.

[133] Ibid (n. 86), 227. SPDC is the Shell Petroleum Development Company, Shell's Nigerian subsidiary, and NNPC is the Nigerian National Petroleum Corporation.

[134] Ibid (n. 86), 16.

[135] *The Nation,* 'We will Restore Ogoni Ecosystem, says Buhari', http://thenationonlineng.net/will-restore-ogoni-ecosystem-says-buhari/, 5 August 2016; see also: Shell Nigeria, 'Frequently asked questions on the UNEP

costs for the first five years only.[136] It shows that a lack of resources will not hamper the restoration exercise and its governance, as the state-based model is prone to do. Indeed, bearing in mind the high cost of ecological restoration and the need for sufficient funding, it is crucial to get the major players in the oil industry on board to help pay for it, all within a transparent and open framework.

Lastly, the Ogoniland ecological restoration exercise was accepted by all parties involved as comprehensive and all-encompassing because it makes no distinction between areas where environmental damage was caused by the illegal exercise of rights under a permit or licence granted under the Oil Pipelines Act and areas where environmental damage was caused by the lawful execution of rights under a permit or licence (to exclude restoration liability as earlier alluded to under the state-driven system). When taken as a whole, this robust multi-stakeholder approach can bring enormous benefits to the ecological restoration efforts by, for instance, recruiting more specialists and workers, enhancing public environmental education, bolstering transparency and accountability, reducing stakeholder conflicts, and so on. In other words, allowing for public participation in the project helps the new endeavour avoid the typical weaknesses and pitfalls of the state-driven model, such as inadequate mechanisms for transparency and accountability, the high possibility of 'agency capture,' flawed human and material resources, insufficient public engagement, and the consequential likelihood of conflicts among the various stakeholders.

environmental assessment of Ogoniland', http://www.shell.com ng/sustainability/environment/unep-environmental-assessmen-of-ogoniland/unep-faq.html (last accessed 25 April 2021).

[136] Ibid (n. 86), 227.

6.7 CONCLUSION

This chapter investigated the pertinent laws, regulations, and policies that may contribute to restoring oil-damaged ecosystems and habitats in Nigeria. Despite broad legal and governance mechanisms, the analysis reveals a piecemeal approach, with little evidence of ecosystem restoration nor its recognition as a fundamental pillar of Nigerian environmental law. There was also evidence of limited implementation mechanisms and a pervasive failure to define ecological restoration clearly in any of the statutes analysed. Even where restoration is sought, the legal structures sometimes need to be more robust with practical implementation, even though most of these regulations and associated policies broadly aim for environmental remediation rather than ecological restoration. With this in mind, it is abundantly clear that new approaches are required to improve the restoration of ecosystems from decades of cumulative oil-induced environmental change.

CHAPTER SEVEN:

CONCLUSION, RESEARCH FINDINGS, CHALLENGES AND OPPORTUNITIES

7.1 CONCLUSION

The previous chapters of this thesis each addressed a specific issue, while Chapter Seven will now provide the overall conclusion and research findings of the thesis. Though separate, Chapters Two, Three, Four, Five, and Six collectively formed a critical analysis of the research theme. To begin with, Chapter Two establishes the foundational issues of environmental despoilation in the Nigerian context and starts the discourse to determine whether the current legal and governance frameworks for oil spill remediation are compatible with the tenets of ecological restoration. To achieve this, Chapter Two revisited Nigeria's oil industry's environmental impact in light of recent findings.[1] Several studies on the ecological situation in Nigeria's Niger Delta illustrate the detrimental effects of oil spillage on the surrounding environment.[2] Because of the frequent oil spills, many local communities have been virtually wiped out, the drinking water has been tainted, and the soil composition, vegetation, and ecosystems have been irreparably changed. The contamination of coastal environments brought on by offshore spills, which are significantly larger in scale, has led to a decrease in the number of fish caught in local waters. Similarly, oil spillage has led to the destruction of the mangrove forests. The rainforest, formerly extended across 7,400 square kilometres, has been eradicated.

Thus, in seeking to determine whether the current legal and governance frameworks for oil spill remediation are compatible with the tenets of ecological restoration, Chapter Two

[1] see Bayelsa State Oil and Environmental Commission, *An Environmental Genocide: The human and environmental cost of Big Oil in Bayelsa, Nigeria* (London, May 2023) AN ENVIRONMENTAL GENOCIDE (bayelsacommission.org) (last accessed 2 August 2023).

[2] Ibid.

illustrated the fact that decades of extracting, polluting, and [un]sustainable development worldwide has led to a steady decline in biodiversity and a focus on landscapes, ecosystem services, and people's livelihoods. Chapter Two re-examined the issues in the Niger Delta – which herein represents Nigeria – as an example of a country negatively impacted by decades of polluting and developing in the most environmentally unfriendly manner. More specifically, Chapter Two investigated the background, causes, and effects of environmental change caused by oil exploration and production activities in Nigeria — the Niger Delta region was the geographical focal point of this thesis. In the quest to understand some of the regulatory problems associated with Nigeria's oil spill response and ecological challenges, the primary argument was that the economic interests in Nigeria's oil industry from oil production revenue earnings have not been balanced against the environmental concerns (i.e., oil-induced pollution) in the Niger Delta, but this needs to change. In the same way that global economic expansion has not benefited all of humanity, Nigeria's oil industry has not been of any assistance to the people of the Niger Delta or their environment.

Chapter Two paints a picture of the current ecological situation in Nigeria's Niger Delta and illustrates the detrimental effects of oil spillage on the surrounding environment, which is highly condemnable. Chapter Two re-emphasised the fact that Nigeria has severe issues that must be fixed in its oil spill response, invariably begging the question of how the legal and governance frameworks can be enhanced to repair the ecological damage caused by oil spills in the Niger Delta.

Chapter Three presented a conceptual framework of an alternative approach that generally defines the parameters of ecological restoration governance. This framework helped determine the objective of the thesis, improving our understanding of ecological restoration as a concept of international environmental law in Chapter Four and serving as the theoretical basis for examining more concrete legal and practical reforms regarding Nigeria's

oil spill response moving forward. Chapter Three, therefore, served as a crucial theoretical and conceptual foundation for examining more concrete legal and practical analysis. Moving on from Chapter Two, Chapter Three outlined a more nuanced conceptual framework for ecological restoration, a topic of significant importance in environmental law and governance. The potential impact of Chapter Three was vital in determining the adequacy or otherwise of ecological restoration law in Nigeria, as it provided a helpful understanding of possible links between science and the law of ecological restoration and matched advancements in scientific research in the governance of ecological restoration.[3] This framework, which is urgently needed, applies to Nigeria and broadly to countries with historically similar legal cultures, environmental governance challenges, and other extractive industries such as the mining industry.

In a quest to determine whether the current legal and governance frameworks for oil spill remediation are compatible with the tenets of ecological restoration, Chapter Three sought to provide a better theoretical understanding of ecological restoration in general. The four-quadrant model for ecological restoration serves as a sound theoretical framework that allows ecological issues to be viewed from multiple perspectives and categorises these values into ecological, personal, socio-economic, and cultural values. Having established a theoretical understanding of the value of ecological restoration, Chapter Three further clarified the relationship between ecological restoration on the one hand and remediation, rehabilitation and reclamation on the other hand. The most crucial difference between ecological restoration and these other nature recovery concepts is that the latter focuses on actions and processes that strive to return an ecosystem to pre-existing or historical ecology.

[3] Margaret A Palmer and J B Rulh, 'Aligning restoration science and the law to sustain ecological infrastructure for the future' 13(9) (2015) *Frontiers in Ecology and the Environment* 512 – 519.

The scientific elements of ecological restoration were then discussed, followed by an analysis of the human dimensions of ecological restoration.

However, despite the promise of ecological restoration, several environmental philosophers have offered criticisms against the very idea of ecological restoration. But beyond the criticisms, there is a clear need for continued advances in restoration science with enormous potential and exciting prospects for recovering damaged ecosystems. In addition to the four main scientific attributes of restoration analysed, it is essential for ecological restoration also to recognise that it is not simply a scientific phenomenon, but other 'human dimensions' are equally crucial. As the scale of restoration enlarges, it will likely require the involvement of several levels of government, as well as participation from non-state actors, which together produce additional challenges identified in multilevel governance theory, including more complex negotiations, integration of rival policy goals, and coordination of many actors across various tenures towards the joint effort.[4]

Therefore, a more ambitious environmental planning and management system scaled at a landscape level is required to transcend the artificial jurisdictional boundaries of subnational and provincial governments.[5] Importantly, future ecological restoration laws must explicitly incorporate participation mechanisms so that public authorities will understand that community involvement is an indelible requirement of successful restoration governance. With a better understanding of what ecological restoration entails, as in Chapter Three, Chapter Four builds on that understanding, examines the status of ecological restoration in current international environmental law and attempts to identify some principles of international environmental law that could guide the implementation of national

[4] Alice Cohen, 'Rescaling Environmental Governance: Watersheds as Boundary Objects at the Intersection of Science, Neoliberalism and Participation' 44 (9) (2012) *Environment and Planning A: Economy and Space* 2207 – 2224.

[5] Michael Vincent McGinnis (ed.) *Bioregionalism* (London: Routledge, 1999).

ecological restoration approaches moving forward. Although ecological restoration is featured in several soft law agreements, it argued that international environmental law has yet to provide adequate goals, objectives, and principles to drive restoration initiatives and obligations.

Nevertheless, the international law context of ecological restoration in Chapter Four was essential to achieving the research objective herein because global standards for ecological restoration could help leverage national legal reforms and provide guidance on best practices. Fundamentally, the question here is why Nigeria, or any other country, should be concerned with applying ecological restoration in their domestic environmental law and governance. The success and sustainability of ecological restoration are deeply intertwined with a widespread respect for nature, an emotional affinity with it, and a significant level of environmental education within the community. This is because ecological restoration projects are typically long-term, and humans have a pivotal role in shaping their ecosystems. Understanding the concept of ecological restoration is crucial in determining the compatibility of Nigeria's legal and governance frameworks for oil spill remediation with its principles. On this basis, Chapter Three delved into the theoretical considerations around ecological restoration, its values, essential components, differences from other ecosystem recovery approaches, and the primary criticisms and responses.

Building on this theoretical and conceptual framework, Chapter Four explored the status of ecological restoration in current international environmental law and identified some principles of international environmental law that could guide the implementation of national ecological restoration approaches. Thus, several international law instruments directly or remotely referring to ecological restoration were utilised to accomplish this goal. Some of the international law instruments include the 1982 United Nations Convention on the Law of the Sea (UNCLOS), broadly categorised as a species recovery treaty, the Ramsar Convention on

Wetlands, and the Convention on Biological Diversity (CBD) as exemplars of habitat restoration treaties, as well as decisions of the Conference of the Parties to these treaty regimes and academic literature. Notable among these international environmental treaty regimes is the fact that Nigeria is a state party. Therefore, Chapter Four delved into the dynamic and evolving relationship between international environmental law and the science of ecological restoration previously examined in Chapter Three. Understanding this relationship is crucial for Nigeria and other countries, as it will help better apply ecological restoration in their domestic environmental law and governance frameworks. More importantly, it will instil a sense of optimism about the potential of international environmental law to shape the future of ecological restoration.

Chapter Four looked at the history and development of ecological restoration under international environmental law and analysed the context of international law in which it exists today. Ecological restoration, species recovery treaties, and habitat restoration treaties that reflect legal commitments were all examined in this chapter as they relate to international law. Taken as a whole, these documents seem to indicate that restoring critical biodiverse habitats and important species, such as endangered species and some commercial species, is now a customary obligation in international law. To rephrase, states may have a wish and a duty (or obligation) to restore. To answer why Nigeria should be concerned with applying the concept of ecological restoration in their domestic environmental law and policy, Chapter Four clarified the status of ecological restoration in international environmental law.[6] Assuming that a duty to restore exists under international law, the question is what, if anything, can be gleaned about the nature of that duty from international legal texts.

[6] See Chapter Four on the Emerging Legal Framework for Ecological Restoration under International Environmental Law above.

Unfortunately, not much, especially considering how rarely ecological restoration is defined in most documents analysed.

The commitment to restore is primarily a normative requirement in legal texts, and its precise contours are left to be determined by each country. For ecological restoration to be successful, at the very least, it is necessary to agree on a common goal. In light of the commitments made under the various MEAs examined in Chapter Four, ecological restoration appears to be more or less a last-ditch effort. When it is too late to stop environmental damage, the next best thing is to fix what is already broken. States have acknowledged that they have to engage in restoration when a given habitat is in a degraded state, when a particular species is threatened or endangered, or when the carrying capacity of an area drops below what is needed to achieve a maximum sustainable yield for commercially viable species. One must restore only if certain conditions are met; this is not an absolute duty, i.e., ecological restoration is only required when practical or necessary, as evidenced by the abovementioned treaty commitments.

However, the definition of feasibility currently varies from one state to the next. As a result, it is reasonable to conclude that some habitats are beyond repair due to severe degradation. It is also fair to assume that, due to shifting climatic conditions, some habitats, like certain coastal freshwater wetlands across the globe and in Nigeria's Niger Delta, might need to be more amenable to restoration as freshwater wetlands. Hopefully, with its expectations and ambitions, the UN Decade on Ecosystem Restoration could lead to a Protocol on Ecological Restoration to create a baseline of international requirements for efficient national planning and implementation. Lastly, because nearly all ecological restoration projects and activities occur on sovereign territories governed by domestic legal systems, the potential value and influence that international environmental law principles and intergovernmental agreements can have on developing country-specific approaches to

ecological restoration cannot be overstated. Thus, the relationship between Chapters Three and Four provided a clearer understanding of the dynamic yet evolving relationship between international environmental law and ecological restoration.

Based on this understanding, Chapter Five examined various national policies to fulfil international legal obligations to restore, considering the principles of international environmental law that could guide the implementation of national ecological restoration approaches, as examined in Chapter Four. Having reviewed the potential values (and influence) of international environmental law principles and intergovernmental agreements on the need to develop country-specific approaches, Chapter Five examined some national and – in the case of the European Union – regional policies to fulfil international legal obligations to restore, as discussed in Chapter Four hitherto. Chapter Five explored lessons from crucial legislation, case law, and US and European Union literature.[7] The aim was to identify general legal patterns for responding to the ecological challenges discussed in Chapter Two, thereby discerning general approaches within legal systems.

Chapter Five examined the legal and policy frameworks associated with ecological restoration in the US and EU. The chapter focuses on national (and regional) approaches because most international environmental obligations are implemented through domestic and sometimes regional mechanisms, even though most of this work is dedicated to ecological restoration in Nigeria. This is especially true because ecological restoration is always ecosystem specific. Thus, Chapter Five provides a crucial step in determining the vital factors the law could consider when mandating ecological restoration. As is the case with the thesis broadly, Chapter Five does not pretend to provide any neatly packaged one-size-fits-all

[7] See Chapter Five on Ecological Restoration in the US and the European Union above. See also: Hendrik Schoukens, 'Habitat Restoration on Private Lands in the United States and the EU: Moving from Contestation to Collaboration? 11(1) (2015) *Utrecht Law Review* 33, 34.

lessons to address all the myriad of horny issues that characterise this area of environmental law in Nigeria. Instead, it re-emphasises that the law should articulate a duty on government regulatory agencies to engage in ecosystem restoration in practicable situations. That means ecological restoration laws must explicitly incorporate participation mechanisms so that government regulatory agencies understand that community involvement is an indelible requirement for successful restoration governance.

Chapter Five argued that the United States and EU systems include some of the best practices in ecological restoration. At the outset, despite its wealth and power, the US lost 53 per cent of its mainland wetlands, while degraded lakes and rivers totalled 4.3 million acres and 3.2 million miles. Besides, ecological restoration is seen as the proper legal response by the United States and the European Union to environmental degradation, typically caused by oil pollution or the destruction of wetland habitats. As demonstrated previously, several US environmental regulations mention the obligation to restore, and ecological restoration concepts have become increasingly crucial in US statutes and agency practices in recent decades. The United States, as we now know, has additional legislation allowing federal agencies to recover civil or criminal costs for environmental damage, which can be put toward restoring resources in addition to the legislation discussed. Arguably, these can be used to compare the Nigerian system to its needs and make changes where necessary.

Further, the legal and policy frameworks in the EU that are associated with ecological restoration were analysed. As a supranational organisation, the EU has enforcement powers, essential competencies, concrete policy targets, and legislation on ecological restoration that could benefit Nigeria. In addition to the core nature legislation examined, the EU has some other relevant instruments for ecological restoration. Against the backdrop of the current ecological situation in Nigeria's Niger Delta and the detrimental effects of oil spillage on the surrounding environment, which, as Chapter Two illustrates, is highly condemnable, Chapter

Six – tying up the analysis in Chapters Three, Four and Five – explored the aspects of Nigeria's law and governance frameworks that are not operating as smoothly as they should and the modifications that could or should be made to strengthen those systems.

In Chapter Six, the thesis attempts to answer the overarching research question, i.e., whether Nigeria's law and governance frameworks are consistent with the fundamental principles of ecological restoration under international environmental law – as examined in Chapter Four and the US and EU, as has been analysed in Chapter Five. Chapter Six analysed the pertinent laws, regulations, and policies that may contribute to restoring oil-damaged ecosystems and habitats in Nigeria. The purpose of carrying out these investigations is to determine whether there are approaches by which Nigeria's legal framework could be improved within the context of restoring damaged ecosystems in the Niger Delta in Chapter Two. Despite broad legal and governance mechanisms, the analysis in Chapter Six reveals a piecemeal approach, with little evidence of ecosystem restoration nor its recognition as a fundamental pillar of Nigerian environmental law. There was also evidence of limited implementation mechanisms and a pervasive failure to define ecological restoration clearly in any of the statutes analysed. Even where restoration is sought, the legal structures sometimes need to be more robust with practical implementation, even though most of these regulations and associated policies broadly aim for environmental remediation rather than ecological restoration. With this in mind, it is abundantly clear that new approaches are required to improve the restoration of ecosystems from decades of cumulative oil-induced environmental change.

Chapter Six focused on ascertaining how local communities in Nigeria can effectively participate in ecological restoration, thanks to the country's law and governance framework. These findings demonstrate some fundamental problems with Nigeria's oil spill response legal and governance frameworks and point to significant potential for improvement. Indeed,

these findings offer some hope for a more effective governance framework in light of the emerging concept of ecological restoration.

7.2 SUMMARY OF RESEARCH FINDINGS

Based on the previous discussion and analysis, the thesis has provided a critical evaluation of the efficacy of the multi-stakeholder governance structure as a prerequisite for a successful ecological restoration exercise, particularly against the backdrop of and as a superior alternative to the traditional state-driven environmental remediation approach. This has been done to demonstrate that the multi-stakeholder governance approach is a more effective alternative to the conventional state-driven remediation approach. Although the chapter focused primarily on Nigeria, the critical discussion highlighted the need for state-based approaches to ecological restoration. This is the case in several developing countries where large multinational corporations constituting the economic nerve centre are also significantly responsible for ecological degradation.

Based on its theoretical foundation examined in Chapter Three, the concept of the multi-stakeholder approach was evaluated and found to have the potential to break through the constraints of the state-based remediation approach, thereby ensuring that an ecological restoration project will be a success. Inadequate independent oversight, "agency capture," and even financial corruption are characteristics of the majority of state-based systems for restoration. However, the discussion in this chapter demonstrates that these drawbacks are mitigated by the 'sunshine effect' that results from multiple stakeholders participating in the governance process. The limited scope of the restoration strategies of state-based systems worldwide, which primarily target environmental remediation rather than ecological restoration, can be easily expanded through the participation of communities that are well-informed and directly affected as stakeholders. The state-based system frequently lacks

reliable and objective international experts and local knowledge and value preferences, which are often essential to guaranteeing the success of an ecological restoration project. On the other hand, the multi-stakeholder approach makes up the central part of the process.

In addition, the study's findings demonstrated that the state-driven remediation approach to ecosystem recovery has a poor track record of easing environmental tensions and resolving environmental conflicts, both of which are obstacles to ecological restoration. Given the propensity of those in positions of state power to rely on coercive measures that are typically ineffective, they have instead shown a tendency to amplify them. The situation in Ogoni demonstrates that the multi-stakeholder approach, which emphasises the importance of cooperation and collaboration when addressing socio-ecological problems, has significantly brought allegedly "warring" parties together to work peacefully towards an ordinary restoration course.

State-based environmental remediation systems are increasingly faced with inadequate financial and human resources, making it difficult for them to manage ecological restoration projects that are extensive in nature effectively. The multi-stakeholder approach helps to boost the resources that are available for restoration over a prolonged period and in a transparent manner. This is because public funds are being stretched thinner and thinner worldwide. In addition, the analysis presented in this paper demonstrates that the approach based on stakeholders has the potential to advance the ecological restoration agenda more effectively than anything that the system based on states can accomplish. This revelation should be the foundation for reforms to the existing legal regimes and institutional practices pertinent to Nigeria's ecological restoration.

Even though the primary objective of the UNEP restoration strategy was to repair the harmed ecosystem in Ogoniland, the recommendations made by the process demonstrated that comprehensive ecological restoration could only be considered successful with the

restoration of the eco-involvement of the harmed community. Beyond shattering the orthodoxy of the state-based remediation approach and pointing to the relatively new paradigm of a multi-stakeholder system as the future of ecological restoration for any regulatory system that would be effective, the thesis is also of value internationally for highlighting that ecological restoration is not just about proper democratic procedures but also about restoring the participating communities themselves. In other words, the study demonstrates that ecological restoration is not just about democratic processes but also about restoring the participating communities.

Therefore, as mentioned earlier, preparations were made to ensure that the impacted community can take full advantage of the socioeconomic benefits resulting from the restoration effort. The establishment of this relationship between ecological restoration and community restoration is essential for at least two reasons: (1) the members of the community are such an essential component of the ecosystem that the restoration of the latter cannot be considered to be finished without the restoration of the former; and (2) members of the community are sometimes coerced by socioeconomic hardship into engaging in practices that are detrimental to the environment to ensure their survival, such that if the hardship were to be alleviated, the community members would be less likely to engage in such practises.

In conclusion, every environmental project and governance approach will, at some point or another, be confronted with difficulties that call for ongoing monitoring and the development of potential solutions. Naturally, as mentioned earlier, neither the UNEP report nor its multi-stakeholder approach addresses all possible scenarios or answers all questions that have arisen or will arise over the course of the many years of the project. This is especially true, but not exclusively, about the legal concerns outside the scope of the UNEP's undertaking. Given this fact, all interested parties in the ecological restoration project would need to foresee the challenges discussed earlier and additional challenges and think of far-

reaching solutions that align with what was discussed earlier. The potential problems are already halfway solved if the relevant stakeholders collaborate to find answers.

7.3 THE PRESENT-FUTURE OF ECOLOGICAL RESTORATION LAW AND GOVERNANCE IN NIGERIA

In particular, UNEP recommended the creation of an Ogoniland Environmental Restoration Authority (OERA) to oversee the implementation of the Ogoniland ecological restoration project in light of the deficiencies in existing Nigerian institutions with environmental restoration mandates.[8] It was also suggested that government employees be seconded to the Authority 'largely,' though not exclusively. There is room for additional parties to get involved here. To carry out this suggestion, the government of Nigeria established the Hydrocarbon Pollution Remediation Project (HYPREP) and, in August 2016, inaugurated its 13-member Governing Council and 12-member Board of Trustees to manage the restoration process.[9] Thus, according to a former Minister of Petroleum resources:

> […] in July 2012, the President approved the establishment of the Hydrocarbon Pollution Restoration Project (HYPREP) as a Special Unit under the Ministry of Petroleum Resources. HYPREP is the vehicle for the implementation of the actionable recommendations of the United Nations Environment Program (UNEP) report on Environmental Restoration in Ogoniland. I have signed the draft gazette for the establishment of HYPREP and it has been forwarded to the Ministry of Justice for

[8] See Chapter Four on the Emerging Legal Framework for Ecological Restoration under International Environmental Law above.

[9] *Financial Watch*, 'Buhari Inaugurates Board of Trustees for Implementation of the UNEP Report on Ogoniland', (4 August 2016), available online at http://www.financialwatchngr.com/2016/08/04/buhari-inaugurates-board-trustees-implementation-unep-report-ogoniland/ (last accessed 25 April 2021).

publication. This document will provide the rule of law guiding the implementation of the UNEP Report.[10]

To clean up Ogoniland and other affected areas in the Niger Delta region, the previous administration of President Goodluck Jonathan established the Hydrocarbon Pollution Restoration Project (HYPREP) as a vehicle. In July 2014, a gazette was scheduled to be issued. Due to the importance of getting input from as many people as possible, preliminary meetings were held in Abuja, Nigeria, in September and October 2014. Stakeholders then met in Geneva, Switzerland, in November 2014 and again in Abuja, Nigeria, on June 23 and July 28 and 29, 2015. After much discussion, it was decided that the HYPREP Extraordinary Gazette[11] should be revised to respect the statutory responsibilities of pre-existing agencies.[12]

This revised Gazette was submitted to the Federal Executive Council for approval after being revised to make the institutional structure more open and transparent regarding assigned roles and responsibilities.[13] This process was driven by the HYPREP Governing Council, the Board of Trustees, and the Project Coordinator, all of whom were detailed in the reviewed Gazette. As a result, HYPREP's original "mandate," which only applied to Ogoniland, has been expanded to address petroleum hydrocarbon contamination nationwide, starting with Ogoniland. The Hydrocarbon Pollution Restoration Program (HYPREP), formerly overseen by the Federal Ministry of Petroleum Resources, is now known as the Hydrocarbon Pollution Remediation Project (HYPREP) and is under the jurisdiction of the Federal Ministry of Environment.

---

[10] *Vanguard*, 'UNEP Report: We're tackling Ogoni clean-up with sincerity – Allison-Madueke', (9 August 2014), available online at https://www.vanguardngr.com/2014/08/unep-report-tackling-ogoni-clean-sincerity-alison-madueke/(last accessed 25 April 2021).

[11] Federal Republic of Nigeria, Official Gazette No.65 Volume 101 of July 2014.

[12] Federal Ministry of Environment, 'Ogoniland Clean-up' available online at http://environment.gov.ng/index.php/ogoni (last accessed 25 April 2021).

[13] Ibid.

Each body's leadership includes respected government members, UNEP (in an observer capacity), representatives from the oil industry, NGOs, the Ogoni people, and other Niger Delta communities.[14] All parties involved in the restoration project appear satisfied with the authority's composition. The body has been engaged in extensive preparations thus far for the actual physical restoration exercise. To ensure the UNEP report is effectively implemented, a committee comprised of Permanent Secretaries from the Ministries of Environment, Niger Delta Affairs, Budget and National Planning, Justice, Petroleum Resources, and the Office of the National Security Adviser was formed.[15]

UNEP also proposed a new and improved mandate for the Presidential Implementation Committee (PIC), which was initially set up to oversee the implementation of the assessment project as part of the new governance structure to aid in implementing the report. After that, it was proposed that the PIC be given new authority over the HYPREP by inviting 'representatives from stakeholders with an interest in the restoration project' to join the PIC.[16] Several Technical Working Groups were also proposed to implement the report's recommendations, with membership drawn from federal and state agencies, academic institutions, the oil industry, and the local community.[17] As a natural extension of the preceding arguments, including such a wide range of people in the decision-making and execution of the restoration project would strengthen the system's weak links, such as transparency and accountability, and lessen the likelihood that the project will be captured and controlled by a single interest.

---

[14] Ibid.

[15] Federal Ministry of Environment, 'Hydrocarbon Pollution Remediation Project Activities Yearbook 2017' (hereafter 'HYPREP Activities'), 23. available at (hyprep.gov.ng) (last accessed 19 December 2018).

[16] United Nations Environment Programme (UNEP), *Environmental Assessment of Ogoniland* (Nairobi: 2011). (hereinafter 'UNEP Report'), 230.

[17] Ibid (n. 16), 230 – 231.

Commendably, HYPREP is currently conducting multi-stakeholder consultations and enlightenment programmes in partnership with community interest groups, including illegal artisanal refiners, on the need to cease their illegal activities as the restoration project is about to commence to address the socio-economic agenda of restoring livelihoods.[18] The Minister of State for Environment in Nigeria recently gave an assurance in one of these meetings, which focused on a suitable and conducive work environment, procurement processes, re-pollution of the environment, Multi-stakeholders collaboration, and Operational process. Accordingly:

> […] regular meetings of sort should be held to inform the public about the activities of HYPREP. Federal Government [is] commitment to clean-up of impacted areas in Ogoniland and the restoration of livelihood. To achieve this […] Government is partnering the United Nations Institute for Training and Research (UNITAR) to carryout holistic restoration of both the ecosystem and livelihood of the people of Ogoni.[19]

Moving forward, it is essential to highlight the potential of roundtable meetings as a regular forum for sharing updates on HYPREP's activities with the public and soliciting stakeholder input to improve efficient project delivery. The former Project Coordinator, Dr Marvin Dekil, made a similar observation about HYPREP's preparations for the start of restoration work:

> [w]e [i.e., HYPREP] have visited several communities across all the [four Local Government Areas of Ogoniland]. We have gone to impacted communities and carried out initial sensitization of Ogoni leaders, women and youth's representatives. Village meetings, Town hall meetings, Focus group discussions were all deployed as tools to reaching out to the communities.'[20]
>
> [HYPREP has] carried out mapping of existing water facilities in all Four Local Government Areas of Ogoniland, embarked on Sensitization Campaigns to impacted

[18] See *Daily Trust*, 'FG begins Ogoniland Clean-up August – HYPREP' (25 April 2018), available online at https://www.dailytrust.com ng/fg-begins-ogoniland-clean-up-august-hyprep html. (last accessed 25 April 2021).

[19] Ibid (n. 15).

[20] Ibid (n. 15).

> Communities, allotted sites to demonstration companies to showcase their remediation technologies, engaged with Ogoni leaders, artisan refiners and other relevant stakeholders, held framing workshops with Shell Petroleum Development Company and the United Nations System [UNITAR] in Nigeria on the best approach to the implementation of the project.[21]

For this reason, HYPREP is contemplating a 'training and enterprise development' curriculum for the project, and the Office of the Vice President is working on a programme to facilitate the spread of modular refineries throughout the Niger Delta.[22] For this reason, UN Environment has emphasised the importance of the Ogoni community's timely access to relevant sites for the success of the restoration exercise. It has been stated that, "[c]ommunity members should avoid protracted negotiations over access by oil spill response teams because this means that responses to spills are delayed, resulting in a far greater environmental impact."[23]

Community support and public participation are typically necessary for a restoration exercise's success in several areas, including but not limited to providing helpful information and feedback, adequate damage assessment, access and safe passage to relevant sites, and local expertise and labour.[24] The Ogoni community is taking a proactive stance against individuals or groups that engage in illegal activities like bunkering to address the challenge of continuous environmental pollution from activities of oil theft and illegal artisanal refining

[21] Ibid (n. 15).

[22] Ibid (n. 15); see also: *Vanguard*, '10 Modular refineries getting ready – Osibanjo' (31 December 2017), available online at https://www.vanguardngr.com/2017/12/10-modular-refineries-getting-ready-osinbajo/(last accessed 25 April 2021).

[23] Ibid (n. 15).

[24] See Benjamin J Richardson, 'The Emerging Age of Ecological Restoration Law' 25(3) (2016) *Review of European, Comparative and International Environmental Law* 277, 286 – 288.

of petroleum products as an obstacle to the Ogoniland restoration project.[25] The President of KAGOTE, a socio-cultural organisation of Ogoni people, made the following statement at a recent High-level Stakeholders Roundtable Meeting organised by HYPREP:

> [o]n suitable and conducive work environment, [HYPREP should] put in place an appropriate Security Plan before the actual remediation work starts.[26]

All sources of continuous contamination, such as the artisanal refining that is currently underway in the creeks, must be brought to a swift end before the restoration exercise begins for it to be successfully executed, and this is in line with the strong recommendation of the UNEP to the Ogoni community to take a proactive stand against individuals illegally engaged in activities polluting the environment.[27]

Another recommendation, 'on the provision of emergency measures,' was implemented by HYPREP's launch of Health Outreach Activities across all four of Ogoni's Local Government Areas to collect primary data for future health research. Bori Model Primary Health Centre in Khana was the starting point for the programme in December 2017, and Ogale Eleme was where it came to a close in January 2018. Consequently, HYPREP believes:

> [t]he Health Impact Assessment Study is aimed at studying the impact of oil pollution on the health of the people of Ogoniland and it is the preliminary stage of the study. The next phase would involve the United nations system and other local and international bodies.[28]

According to HYPREP data, 65 surgical procedures were performed in the areas of herniorrhaphy, appendectomy, and lumpectomy, with a total of 2,848 patients receiving

---

[25] *The Guardian*, 'At Ogoni day, MOSOP cautions indigenes against bunkering' (5 January 2017), available online at http://guardian.ng/news/at-ogoni-day-mosop-cautions-indigenes-against-bunkering/ (last accessed 25 April 2021).

[26] Ibid (n. 15).

[27] Ibid (n. 16), 13, 17.

[28] Ibid (n. 15).

treatment and 2,963 receiving qualitative health education during the first phase of the Health Outreach programme.[29] What is more intriguing is that we are already well into the second phase of the medical outreach programme.[30] Since Ogoni's water quality did not meet WHO standards and most communities had trouble getting their hands on clean water, HYPREP established a Committee on Water to identify and evaluate existing water facilities in the four local government areas of Ogoni with an Action Plan:

> [t]o design and implement an Ogoniland Water Development and Reticulation Strategy that meets the WHO water quality standard accessibility requirements. Consideration shall be given to the kind of state of the art water technology in line with WHO standards.[31]

On this note, future research would need to examine some of the challenges and opportunities of the inclusive- multi-stakeholder approach.

7.4 CHALLENGES AND OPPORTUNITIES

Considering that every environmental project and governance approach would, at some point or another, be confronted with some challenges, interested stakeholders would be required to engage with both the positive and negative aspects of the project. In this light, evaluating the new multi-stakeholder approach to ecological restoration in Ogoniland developed by UNEP would only be complete by identifying and addressing some possible implementation challenges. It is within this context that the following topics have been brought up and are currently being discussed:

---

[29] Ibid (n. 15).

[30] See HYPREP, 'HYPREP begins second phase of free medical outreach program in Ogoniland', available online at http://hyprep.gov ng/2018/04/20/hyprep-begins-second-phase-of-free-medical-outreach-program-in-ogoniland/ (last accessed 2 May 2021).

[31] Ibid (n. 15).

7.4.1 Financial Viability

Ecological restoration is a high-priced endeavour that requires substantial initial and ongoing financial investment.[32] UNEP recommends establishing the special fund mentioned earlier with backing from oil industry operators with prevailing interests in Ogoniland and the federal government of Nigeria to finance the Ogoniland restoration exercise. The government and oil industry operators have not publicly disputed their share of financial responsibility for the Ogoniland restoration scheme. Still, it is possible that they will not be able to bear the total cost of the project or that they will encounter unexpected setbacks and conflict along the way.

Since the UNEP study's conclusion, the government of Nigeria (which relies heavily on oil revenue) and the oil industry's operators have seen significant decreases in revenue due to the fall and instability in oil prices.[33] Importantly, experience has shown that (in addition to the challenge of declining revenues) the government policy is such that environmental costs must be weighed against the costs of other socio-economic aspirations like education and infrastructural development to ensure that adequate funds are made available to the various agencies charged with the duty of environmental protection.[34] Considering the 'chaotic system within which the Nigerian government operates'[35] and that environmental funding has not traditionally been a top priority, ensuring sustainable financing for the proposed

[32] Benjamin Richardson and Ted Lefroy, 'Restoration dialogues: improving the governance of ecological restoration' 24(5) (2016) *Restoration Ecology* 668, 686; Anastasia Telesetsky, 'Ecoscpaes: The Future of Place-based Ecological Restoration Laws' 14 (2013) *Vermont Journal of Environmental Law* 493, 501.

[33] Nigeria is, in fact, currently experiencing an economic recession.

[34] Amos A Idowu, 'Human Rights, Environmental Degradation and Oil Multi-national Companies in Nigeria: The Ogoniland Episode' 17(2) (1999) *Netherlands Quarterly of Human Rights* 161,176.

[35] Barisere R Konne, 'Inadequate Monitoring and Enforcement in the Nigerian Oil Industry: The Case of Shell and Ogoniland' 47 (2014) *Cornell International Law Journal* 181, 200.

Ogoniland restoration is crucial. Since these are global problems, it is essential to identify and actively pursue additional funding sources for ecological restoration initiatives.[36]

In light of the preceding, governments must play a more significant role in mainstreaming long-term restoration by creating adequately funded programmes and offering incentives to private actors.[37] According to Richardson and Lefroy, funding restoration can come from various philanthropic sources like private donations or government grants. Alternatively, it can be forced upon businesses through remediation obligations or cost-recovery penalties for environmental offenders.[38] Notably, environmental legislative enactments in Nigeria, some discussed in Chapter 3, stipulate establishing and maintaining a fund into which loans and grants-in-aid from national, bilateral, and multilateral agencies shall be paid, so this is a viable idea to put into action.[39] Some authors argue that the only way to restore Ogoniland affordably would be to establish an indigenous oil company owned by the Ogoni people and use its profits from its operations.[40]

7.4.2 Maintaining Environmental Quality

While it is crucial to prevent further environmental upheavals, maintaining what is left may be an illusion if current conditions are already too degraded.[41] Ogoniland has not seen oil production since 1993, but the facilities there have yet to be shut down and decommissioned. The pollution and environmental damage have only worsened as the

[36] Ibid (n. 36), 686.

[37] Ibid, Telesetsky (n. 32), 540.

[38] Ibid, Richardson and Lefroy (n. 32), 686.

[39] See, for instance, the National Oil Spill Detection and Response Agency (Establishment) Act of 2006, No. 15 of 2006, s. 11 (a), (b) and (c); (n. 75), s. 13 (1) and (2).

[40] Ibid (n. 35), 202.

[41] Benjamin J Richardson, 'The Emerging Age of Ecological Restoration Law' 25(3) (2016) *Review of European, Comparative and International Environmental Law* 277.

infrastructure has deteriorated from exposure to the elements and acts of vandalism.[42] Theft and sabotage of oil infrastructure are genuine issues in Nigeria. Reports of illegal tapping of self-flowing, abandoned oil wells in Ogoniland, some of which have resulted in spills and fires, are standard.

However, immediate action is required to stop already contaminated sites from serving as additional contamination sources. To combat this issue, the Ogoni people have taken and must maintain a strong stance against those who partake in illegal activities like bunkering.[43] This is in line with UNEP's strong recommendation that the Ogoni community take decisive action against individuals illegally engaged in activities that pollute the environment, as all sources of continuous contamination, such as the artisanal refining that is currently underway in the creeks, must be brought to a swift end before the restoration exercise begins.[44]

Challenges to the security system and access limitations further compound the restoration efforts' success. Community unrest, violent demonstrations, and armed insurgency have all hampered oil company operations in Ogoniland at various times.[45] It has also been reported that local communities frequently require payment to grant access to sites needing restoration.[46] Indeed, some locals often block clean-up crews from reaching oil spill sites. A significant barrier to effective ecological restoration would be maintaining safe and unimpeded access for international experts and volunteers in the face of renewed hostilities.[47]

---

[42] Ibid (n. 16), 25.

[43] See Ibid (n. 25).

[44] Ibid (n. 16), 13, 17.

[45] Ibid (n. 34), 169.

[46] Tunde O Imoobe and Tanshi Iroro, 'Ecological Restoration of Oil Spill Sites in the Niger Delta, Nigeria' 11 (2) (2009) *Journal of Sustainable Development in Africa* 57, 59.

[47] See: *The Daily Post,* 'MOSOP calls for end of hostilities in Ogoni communities' (21 December 2016) available online at http://dailypost.ng/2016/12/21/mosop-calls-end-hostilities-ogoni-communities/, (last accessed 25 April 2021).

Due to longstanding cultural norms, visitors to Ogoniland must undergo extensive consultations before setting foot on any sacred ground. The UNEP assessment team was rarely in danger, and local authorities always ensured their safety to the fullest extent possible.

However, there were a few occasions when the team had to cancel fieldwork due to security concerns.[48] The UNEP team was often denied entry to specific locations for reasons that needed to be made clear.[49] Thus, UNEP has emphasised the role of the Ogoni community in ensuring timely access to relevant sites if the restoration exercise is to be successful, saying, '[c]ommunity members should avoid protracted negotiations over access by oil spill response teams as this means that responses to spills are delayed, resulting in a far greater environmental impact.'[50]

7.4.3 The Will of the Political System

The initial estimate of one billion dollars that UNEP provided will not cover the restoration project's total cost.[51] It is impossible to overstate the importance of securing a more significant financial commitment, which can come from the government through financial incentives for public-private partnerships. Since it is the responsibility of the Nigerian government to establish these independent institutions, there have been concerns raised about the possibility of a delay in the implementation of the recommendations made by the UNEP,[52] as well as the possibility that these recommendations will 'go unimplemented'[53]

[48] Ibid (n. 16), 91.

[49] Ibid.

[50] Ibid (n. 16), 17.

[51] Ibid (n. 16), 226.

[52] Saheed Alabi, 'Country Reports: Nigeria Recent Developments in the Niger Delta of Nigeria' 1 (2012) *IUCN Academy of Environmental Law e-Journal* 167.

[53] Ibid (n. 35), 200.

in the long term. It has been suggested that once such agencies have been established, the government should accord them autonomy to carry out their functions. Although the Nigerian government has implemented some of the recommendations, including the appointment of the governing council and Board of Trustees[54] and the public launch of the restoration programme,[55] this has been suggested even though the government has already taken steps to implement the recommendations. This will ensure that their work is not affected by repeated political acts of tinkering with how they operate, which will render them seemingly useless in realising the goals for which they were established in the first place.[56]

If the political will required by the Nigerian government to continue to play its role under the scheme and ensure adequate funding is lacking, it could constitute an obstacle to the successful ecological restoration of Ogoniland, particularly in cases where these institutions are not accorded a good level of autonomy. If this political will is lacking, it could constitute an obstacle to the successful ecological restoration of Ogoniland. To this end, interested civil society organisations and the Ogoni community should continue to be vigilant regarding implementing the UNEP report. They should continue to put pressure on the government to adhere to the plan and continue to do its part. In addition, the government should continue to pull its weight.

[54] *The Vanguard*, 'Buhari appoints governing council, board for Ogoniland cleanup', (30 July 2016) available online at http://www.vanguardngr.com/2016/07/buhari-approves-governing-council-board-ogoniland-cleanup/, (last accessed 25 April 2021).

[55] Ibid (n. 16).

[56] Ibid (n. 34), 183.

BIBLIOGRAPHY

- Alexander Adams, *Summary and Information Concerning the Ecological and Economic Impacts of the BP Deepwater Horizon Oil Spill Disaster*, Natural Resources Defence Council 2, 5 (June 2015), http://www.nrdc.org/energy/gulfspill/files/gulfspill-impacts-summary-IP.pdf (last accessed 13 February 2023).
- William L Adreen, 'Environmental Law and International Assistance: The Challenge of Strengthening Environmental Law in the Developing World' 25 (2000) *Columbia Journal of Environmental Law* 17, 27.
- Godswill Agbaitoro, Mark Amakoromo and Eddy Wifa 'Enforcement Challenges in the Protection of the Environment from Upstream Petroleum operations in Nigeria: The need for Judicial Independence' 35(3) (2017) *International Energy Law Review* 85.
- M A Agomo, 'Law and Changing Policy in Nigeria's Oil Industry' in Jelili A Omotola (ed.) *Law and Development* (Lagos: University of Lagos Press, 1986) 86.
- Francisco Aguilera and others, 'Review on the effects of exposure to spilled oil on human health' 30(4) (2010) *Journal of Applied Toxicology* 291–301.
- Elizabeth A Ajao and Sam Anurigwo, 'Land-based sources of pollution in the Niger Delta, Nigeria' 31(5) (2002) *Ambio: A Journal of the Human Environment* 442.
- Afshin Akhtar-Khavari and Anastasia Telesetsky, 'From protection to restoration: A Challenge for environmental governance' in Douglas Fisher (ed.), *Research Handbook on Fundamental Concepts of Environmental Law* (Edward Elgar, 2016) 50, 60.
- Afshin Akhtar-Khavari and Benajmin J Richardson, 'Ecological Restoration and the Anthropocene' in Afshin Akhtar-Khavari and Benjamin J Richardson (eds.) *Ecological Restoration Law: Concepts and Case Studies* (London: Routledge, 2019) 1 – 26.
- Afshin Akhtar-Khavari and Benjamin J Richardson (eds.) *Ecological Restoration Law: Concepts and Case Studies* (London: Routledge, 2019).

- Afshin Akhtar-Khavari and Benjamin J Richardson, 'Ecological restoration and the law: recovering nature's past for the future' 26 (2) (2017) *Griffith Law Review* 147 – 148.
- Anthony E Akinlo, 'How important is oil in Nigeria's economic growth?' 5 (2012) *Journal of Sustainable Development* 165–179.
- Saheed Alabi, 'Country Reports: Nigeria Recent Developments in the Niger Delta of Nigeria' 1 (2012) *IUCN Academy of Environmental Law e-Journal* 167.
- Richard Allen and Keith Robinson, 'Environmental Aspects of Produced Water Disposal' *Middle East Oil Show* (Society of Petroleum Engineers, 1993).
- Stuart K Allison, *Ecological Restoration and Environmental Change: Renewing Damaged Ecosystems* (London: Earthscan, 2014) 4.
- Ambisisi Ambituuni, Jaime Amezaga and Engobo Emeseh, 'Analysis of Safety and Environmental Regulations for Downstream Petroleum Operations in Nigeria: Problems and Prospects' 9 (2014) *Environmental Development* 43.
- Amnesty International, *Bad Information: Oil Spill Investigations in the Niger Delta* (London: Amnesty International Publications, 2013), 14.
- Godson REE Ana, Mynepalli KC Sridhar and Godwin O Emerole, 'A comparative assessment of soil pollution by polycyclic aromatic hydrocarbons in 2 Niger Delta communities, Nigeria' 3(3) (2009) *African Journal of Pure and Applied Chemistry* 31–41.
- M Kat Anderson, *Tendering the Wild: Native American Knowledge and the Management of California's Natural Resources* (California: University of California Press, 2005).
- Vivian T Andrade and others, 'Toxicity assessment of oil field produced water treated by evaporative processes to produce water to irrigation' 62(3) (2010) *Water Science & Technology* 693–700.
- James Aronson and others, 'Restoration and Rehabilitation of Degraded Ecosystems in Arid and Semi-arid Lands: A View from the South' 1 (1993) *Restoration Ecology* 8 – 17.

- James Aronson and Sasha Alexander, 'Ecosystem Restoration is now a Global Priority: Time to Roll up Our Sleeves' 21(3) (2013) *Restoration Ecology* 293.
- Lawrence Atsegbua, 'The Development and Acquisition of Oil Licences and Leases in Nigeria' 23(1) (1999) *OPEC Review* 57.
- Ian Ayres and John Braithwaite, *Responsive Regulation* (Oxford: Oxford University Press, 1992).
- Peter Bachrach, 'Interests, Participation, and Democratic Theory', in J Roland Pennock and John W Chapman (Eds.), *Participation in Politics* (New York: Lieber-Atherton, 1975) 39, 40.
- Jan P Bakker and Theunis Piersma, 'Restoration of Intertidal Flats and Tidal Salt Marshes' in Jelte van Andel and James Aronson (eds.) *Restoration Ecology: The New Frontier* (Oxford: OUP, 2006) 174 – 192.
- James Bamberg, *British Petroleum and Global Oil 1950 – 1975: The Challenge of Nationalism* (Cambridge: Cambridge University Press, 2000).
- Gyula Bándi, 'Introduction into the Concept of Environmental Democracy', in Gyula Bándi (ed.), *Environmental Democracy and Law: Public Participation in Europe* (Europa Law Publishing, 2014) 3 – 7.
- Wayne Barbour and Christine Schlesinger, 'Who's the Boss? Post-colonialism, Ecological Research and Conservation Management on Australian Indigenous Lands' 13(1) (2012) *Ecological Management and Restoration* 36.
- Barry Barton, 'Underlying Concepts and Theoretical Issues in Public Participation in Resource Development', in Donald N Zillman, Alastair R Lucas and George R Pring (Ed), *Human Rights in National Resource Development: Public Participation in the Sustainable Development of Mining and Energy Resource* (Oxford: Oxford University Press, 2002) 77, 85-86.

- Kees Bastmeijer, 'Ecological Restoration in International Biodiversity Law: A Promising Strategy to address our failure to Prevent?' in Michael Bowman, Peter Davies and Edward Goodwin (eds.) *Research Handbook on Biodiversity and Law* (Edward Elgar, 2016), 387.
- John Bates, William Birtles, and Charles Pugh, *Liability or Environmental Harm* (London: Lexis Nexis, 2004).
- Bayelsa State Oil and Environmental Commission, *An Environmental Genocide: The human and environmental cost of Big Oil in Bayelsa, Nigeria* (London, May 2023) available online at AN ENVIRONMENTAL GENOCIDE (bayelsacommission.org) (last accessed 2 August 2023).
- *BBC News,* 'Forest restoration project begins', available at: http://news.bbc.co.uk/2/hi/uk_news/scotland/highlands_and_islands/8340505.stm, 3 November 2009.
- Frank Bealey, 'Democratic Elitism and the Autonomy of Elites' 17 (3) (1996) *International Political Science Review* 319, 323.
- Ulrich Beyerlin, 'Different types of norms in international environmental law: policies, principles and rules' in Daniel Bodansky, Jutta Brunee and Ellen Hey (eds.) *The Oxford Handbook of International Environmental Law* (Oxford: Oxford University Press 2008) 433.
- Patricia Birnie, Alan Boyle and Catherine Redgwell, *International Law and the Environment* 3rd ed (Oxford: Oxford University Press, 2009) 289.
- Hubert Bocken, 'The Compensation of Ecological Damages', in Peter Wetterstein (ed.), *Harm to the Environment: The Right to Compensation and the Assessment of Damages* (Oxford: Clarendon Press, 1997) 144.
- Richard Boele, Heike Fabig and David Wheeler, 'Shell, Nigeria, and the Ogoni. A Study in Unsustainable Development: The Story of Shell, Nigeria, and the Ogoni People –

Environment, Economy, and Relationships: Conflict and Prospect for Solution 9(2) (2001) *Sustainable Development* 74.

- James K Boyce, *The Political Economy of the Environment* (Edward Elgar, 2002).
- BP Press Release, *'BP establishes $20 billion claims fund for Deepwater Horizon spill and outlines dividend decisions'* (16 June 2010), available online at BP establishes $20 billion claims fund for Deepwater Horizon spill and outlines dividend decisions | News and insights | Home (last accessed 2 July 2022).
- Anthony D Bradshaw, 'Ecological principles and Land Reclamation practice' 11 (1984) *Landscape Planning* 35 – 48.
- Anthony D Bradshaw, 'Introduction and Philosophy' in Martin R Perrow and Anthony J Davy (eds.) *Handbook of Ecological Restoration: Vol. 1 Principles of Restoration* (Cambridge: Cambridge University Press, 2002) 23 – 29.
- Anthony D Bradshaw, 'Restoration: An Acid Test for Ecology' in William R Jordan, Michael E Gilpin and John D Ader (eds.) *Restoration Ecology A Synthetic Approach to Ecological Research* (Cambridge: Cambridge University Press, 1987) 23 – 29.
- Brief Report of the United Nations Conference on the Human Environment, Stockholm, 5 -16 June 1972, A/Conf.48/14/Rev.1, at 49 – 50, para. 64.
- Herbert Broom, *A Selection of Legal Maxims: Classified and Illustrated* (New Jersey: The Lawbook Exchange Ltd., 2000).
- Culum Brown and Rachel Day, 'The future of stock enhancements: lessons from hatchery practice from conservation biology' 3 (2002) *Fish and Fisheries* 82 – 83.
- Jutta Brunnée, 'COPing with Consent: Law-Making Under Multilateral Environmental Agreements' 15 (1) (2002) *Leiden Journal of International Law* 1 – 52.
- Neil D Burrows, Andrew A Burbridge and Phillip J Fuller, 'Integrating Indigenous Knowledge of Wildland Fire and Western Technology to Conserve Biodiversity in an Australian Desert'.

Bridging Scales and Epistemologies: Linking Local Knowledge and Global Science in Multi-Scale Assessments (Conference Proceedings: Alexandria, Egypt 17 – 20 March 2004).

- Paul Burton, 'Conceptual, Theoretical and Practical Issues in Measuring the Benefits of Public Participation 15 (3) (2009) *Evaluation* 263, 266.
- Bush Heritage Australia, 'Gondwana Link' https://www.bushheritage.org.au/what-we-do/regional-partnerships/gondwana-link (last accessed 25 April 2022).
- Birnur Buzcu-Guven and Robert Harris, 'Extent, impact, and remedies of global gas flaring and venting' 3(1) (2012) *Carbon Management* 95–108.
- John Caddy and Juan Sejio, 'This is more difficult than we thought! The responsibility of scientists, managers and stakeholders to mitigate the unsustainability of marine fisheries' 360 (1453) (2005) *Philosophical Transactions Royal Society London Biological Sciences* 59 – 75.
- Lynton Caldwell, *International Environmental Policy: Emergence and Dimensions* (Durham: Duke University Press, 1984).
- Valerie Cappuyns, 'Environmental impacts of soil remediation activities: quantitative and qualitative tools applied on three case studies' 52 (2013) *Journal of Cleaner Production* 145 – 154.
- *CCN News*, 'Wolves' Return to Yellowstone Sparks Controversy' (12 November 1997).
- CERP, The Plan in Depth, available at Comprehensive Everglades Restoration Plan (CERP) — Everglades Restoration Initiatives (last accessed 6 May 2021).
- Barry Checkoway and John Van Til, 'What Do We Know about Citizen Participation? A Selective Review of Research' in Stuart Langton (ed.), *Citizen Participation in America* (Massachusetts: Lexington Books, 1978) 25, 27.
- Kris Christen, 'Environmental impacts of gas flaring, venting add up' 38(24) (2004) *Environmental Science & Technology* 480.

- Robin Churchill and Geir Ulfstein, 'Autonomous institutional arrangements in multilateral environmental agreements: a little-notice phenomenon in international law' 94 (4) (2000) *American Journal of International Law* 636 – 642.
- Andre Clewell and James Aronson, *Ecological Restoration: Principles, Values, and Structure of an Emerging Profession* (Washington DC: Island Press, 2013) 3.
- Andre Clewell, 'Downshifting' 13 (1995) *Restoration and Management Notes* 171 – 175.
- Andre Clewell, 'Resistance to Restoration' 19 (2001) *Ecological Restoration* 3 – 4.
- Andre Clewell, 'Restoring for Natural Authenticity' 18 (2000) *Ecological Restoration* 216 – 217.
- An Cliquet and Kris Decleer, 'Linking restoration science and law' in Afshin Akhtar-Khavari and Benjamin J Richardson (eds.) *Ecological Restoration Law: Concepts and Case Studies* (London: Routledge, 2019) 119.
- An Cliquet, Anastasia Telesetsky, Afshin Akhtar-Khavari and Kris Decleer, 'Upscaling Ecological Restoration: towards a new legal principle and protocol on ecological restoration in international law' (2022) *Restoration Ecology*. Available online at https://doi.org/10.1111/rec.13560 (last accessed 11 September 2023).
- An Cliquet, Kris Decleer and Hendrik Schoukens, 'Restoring Nature in the EU: The only way is up?' in Charles-Hubert Born and others (eds.), *The Habitats Directive in its EU Environmental Law Context: European Nature's Best Hope?* (London: Routledge, 2015) 265.
- Alice Cohen, 'Rescaling Environmental Governance: Watersheds as Boundary Objects at the Intersection of Science, Neoliberalism and Participation' 44 (9) (2012) *Environment and Planning A: Economy and Space* 2207 – 2224.
- Commission Implementing Decision of 11 July 2011, 2011/484/EU concerning a site information format for Natura 2000 sites (notified under document C (2011) 4892) [2011] OJ L198.

- Convention on Biological Diversity, *Nigeria: Fifth National Biodiversity Report 2015*, available online at CBD Fifth National Report - Nigeria (English version) (last accessed 2 July 2023).
- COP-10 Decision X/2 (2010), Strategic Plan for Biodiversity (2011-2020), Aichi Biodiversity Targets on Ecosystem restoration and resilience.
- Philippe Cullet, 'Principle 7: Common but Differentiated Responsibilities' in Jorge E Viñuales (ed.) *The Rio Declaration on Environmental and Development: A Commentary* (Oxford: Oxford University Press, 2015), 229.
- Doris M Curtis, 'Comparative Tertiary petroleum geology of the Gulf Coast, Niger, and Beaufort-Mackenzie delta areas' 21(3) (1996) *Geological Journal* 225–255.
- Thomas E Dahl, *Status and Trends of wetlands in the conterminous United States 1986 to 1997* (US Department of the Interior, Fish and Wildlife Service: Washington, DC 2000); available online at Status and Trends of Wetlands in the Conterminous United States 1986 to 1997 (fws.gov) (last accessed 7 August 2022).
- Thomas E Dahl, *Wetlands Losses in the United States 1780s to 1980s* (US Department of the Interior, Fish and Wildlife Service, Washington, DC 1990).
- *Daily Trust*, 'FG begins Ogoniland Clean-up August – HYPREP' (25 April 2018), available at: https://www.dailytrust.com.ng/fg-begins-ogoniland-clean-up-august-hyprep.html. (last accessed 25 April 2021).
- Gretchen Daily, (ed.) *Nature's Services* (Washington DC: Island Press, 1997).
- Llyod A Daniel-Kalio and Solomon A Braide, 'The Impact of Accidental Oil Spill on Cultivated and Natural Vegetation in a Wetland Area of Niger Delta, Nigeria' 31(5) (2002) *Ambio: A Journal of the Human Environment* 441–442.
- Mark A Davis and Lawrence B Slobodkin, 'The Science and Values of Restoration Ecology' 13 (2004) *Restoration Ecology* 13 – 26.

- Nicholas de Sadeleer, 'The principles of prevention and precaution in international law: two heads of the same coin?' in Malgosia Fitzmaurice, David M Ong and Panos Mekouris (eds.) *Research Handbook on International Environmental Law* (Edward Elgar 2010) 243.
- Robert Dean, *New Orleans and the Wetlands of Southern Louisiana* (The Bridge, National Academy of Engineering, 2006) 36.
- Declaration of Principles for the Preservation and Enhancement of the Human Environment, Report of the UN Conference on the Human Environment, Stockholm 5-16 June 1972, (1972) 11 ILM 1416.
- Damfebo K Derri and Sylvanus E Abila, 'A Critical Examination of the National Environmental Standards and Regulations Enforcement Agency (Establishment) Act 2007' in Festus Emiri and Gowon Deinduomo (eds.), *Law and the Petroleum Industry in Nigeria: Current Challenges – Essays in Honour of Justice Kate Abiri* (Lagos: Malthouse Press, 2009), 10.
- Development of the Central and South Florida Project, Comprehensive Everglades Restoration Plan (CERP) — Everglades Restoration Initiatives (last accessed 6 April 2021).
- Donald N Dewees, 'The Role of Tort Law in Controlling Environmental Pollution' 18 (4) (1992) *Canadian Public Policy* 425 – 442.
- Mary Doyle and Cynthia Drew, *Large-scale Ecosystem Restoration: Five Case studies from the United States* (Island Press, 2008).
- Nigel Dudley and others, 'The UN Decade on Ecosystem Restoration (2021 – 2030): What can Protected Areas Contribute? 26 (1) (2020) *Parks* 111.
- Elisha Dung, Leonard Bombom and Tano Agusomu, 'The effects of gas flaring on crops in the Niger Delta, Nigeria' 73(4) (2008) *Geojournal* 297–308.

- Macdonald Dzirutwe, 'Nigeria needs $12 billion to clean up Bayelsa Oil spills' (*Reuters*, 16 May 2023) available online at Nigeria needs $12 billion to clean up Bayelsa oil spills - report | Reuters (last accessed 2 July 2023).
- Earth Summit, Agenda 21, the United Nations Programme of Action: the final text of agreements negotiated by Governments at the United Nations Conference on Environment and Development (UNCED), 3 – 14 June 1992, Rio de Janeiro, Brazil. A/CONF.151/26/Rev.1., Chapter 11 (B).
- Kaniye S A Ebeku, 'Biodiversity Conservation in Nigeria: An Appraisal of the Legal Regime in Nigeria in Relation to the Niger Delta Area of the Country' 16(3) (2014) *Journal of Environmental Law* 361.
- Kaniye S A Ebeku, *Oil and the Niger Delta People in International Law: Resource Rights, Equity and Environmental Issues* (Koppe, 2006).
- Marcus Edino, Godwin Nsofor and Leonard Bombom, 'Perceptions and attitudes towards gas flaring in the Niger Delta, Nigeria' 30(4) (2010) *The Environmentalist* 67–75.
- Felix M Edoho, 'Oil transnational corporations: corporate social responsibility and environmental sustainability' 15(4) (2008) *Corporate Social Responsibility and Environmental Management* 210–222.
- Dave Egan and others, 'Why People Matter in Ecological Restoration', in Dave Egan and others (eds.), *Human Dimensions of Ecological Restoration: Integrating Science, Nature and Culture* (Washington DC: Island Press, 2011), 1.
- Kingsley Eghonghon and others, 'Environmental implications of petroleum spillages in the Niger Delta region of Nigeria: A review' 293 (1) (2021) *Journal of Environmental Management* 112872.
- Eghosa A Ekhator, 'Environmental Protection in the Oil and Gas Industry in Nigeria: the roles of Government Agencies' 5 (2013) *International Energy Law Review* 196, 200.

- Imo Ekpo and Ajah Obia, 'The role of gas flaring in the rapid corrosion of zinc roofs in the Niger Delta Region of Nigeria' 30(4) (2010) *The Environmentalist* 347–352.
- Ambrose O Ekpu, 'Environmental Impact of Oil on Water: A Comparative Overview of the Law and Policy in the United States and Nigeria' 24 (1) (1995) *Denver Journal of International Law & Policy* 55.
- Ike Ekweremadu, 'Opening Address', delivered at the International Conference on Law Reform and Law-making Process in Nigeria, held in Abuja, Nigeria, on 16 July 2012, http://www.nassnig.org/nass/news.php?id=366 (last accessed 25 April 2021).
- Michael Elliot and others, 'Estuarine, coastal and marine ecosystem restoration: Confusing management and science – A revision of concepts' 74 (2007) *Estuarine, Coastal and Shelf Science* 349 – 366.
- Robert Elliot, 'Faking Nature' 25 (1982) *Inquiry: An Interdisciplinary Journal of Philosophy* 81 – 93.
- Robert Elliot, *Faking Nature: The Ethics of Environmental Restoration* (London: Routledge, 1997) 5, 16.
- Zelda A Elum, Keletso Mopipi and Adanna Henri-Ukoha, 'Oil exploitation and its socio-economic effects on the Niger Delta region of Nigeria' (2016) *Environmental Science and Pollution Research* 12880–12889.
- Emgobo Emeseh, 'Limitations of Law in Promoting Synergy between Environment and Development Policies in Developing Countries: A Case Study of the Petroleum Industry in Nigeria' 24 (2006) *Journal of Energy, Natural Resources & Environmental Law* 574, 582.
- Environmental Rights Action, 'Gas Flaring in Nigeria: A Human Rights, Environmental and Economic Monstrosity' Amsterdam, June 2005, Available at: www.eraction.org (last accessed 13 February 2023).

- Sean Esbjörn-Hargens and Michael E Zimmerman, *Integral Ecology: Uniting Multiple Perspectives on the Natural World* (New York: Random House, 2009).
- Uzuazo Etemire and Menes A Muzan, 'Public Participation and Socio-Economic Justice in Eco-Restoration Law and Governance: The UN Environment–Ogoniland Case Study' in Benjamin J Richardson and Afshin Akhtar-Khavari (eds.) *Ecological Restoration Law: Concepts and Case Studies* (London: Routledge, 2019) 192.
- Uzuazo Etemire and Menes Abinami Muzan, 'Governance and regulatory strategies beyond the state: stakeholder participation and the ecological restoration of Ogoniland' 26 (2) (2017) *Griffith Law Review* 275, 281.
- Uzuazo Etemire, *Law and Practice on Public Participation in Environmental Matters: The Nigerian Example in Transnational Comparative Perspective* (London and New York: Routledge, 2015), 85.
- EU Biodiversity Strategy to 2020 – Council conclusions, 11978/11 (21 June 2011) 5.
- European Commission, Commission Staff Working Paper. Impact Assessment. Accompanying the document Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions, 'Our life insurance, our natural capital: an EU biodiversity strategy to 2020' (COM (2011) 244 final, 2011) 26.
- European Commission, Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions, 'Our life insurance, our natural capital: an EU biodiversity strategy to 2020' (COM (2011) 244 final, 2011); the Council of the European Union endorsed the Biodiversity Strategy in its Decision of 21 June 2011 (EU Biodiversity Strategy to 2020 – Council conclusions, 11978/11).
- European Commission, *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions,*

Green Infrastructure (GI) – Enhancing Europe's Natural Capital (COM (2013) 249 final 2013).

- European Commission, *Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC* [207/2012] 14.
- European Commission, *Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC* (Brussels, 2007) 20.
- European Commission, Implementation of Article 6(4), first subparagraph, of Council Directive 92/43/EEC (Habitats Directive). Period 2007–2011. Summary report (Brussels 2012) 8.
- European Commission, *Managing Natura 2000 Sites: The Provision of Article 6 of the Habitats Directive 92/43/EEC* (Office for Official Publications of the European Communities, Luxembourg, 2000) 18.
- European Environment Agency, *EU 2010 biodiversity baseline* (Technical Report 12/2010, Copenhagen 2010) 19–21.
- European Parliament resolution of 20 April 2012 on 'Our life insurance, our natural capital: an EU biodiversity strategy to 2020' (2011/2307(INI)).
- Olarenwaju A Fagbohun and G U Ojo, 'Resource Governance and Access to Justice: Innovating Best Practice in Aid of Nigeria's Oil Pollution Victims' 2 (2012) *NIALS Journal of Environmental Law.*
- Olarenwaju A Fagbohun, 'Criminal Sanctions in Aid of Environmental Objectives in Nigeria – The Case for a Reasoned Approach' in Dominic A Badaiki (ed.) *Landmarks in Legal Development* (Choice Publication, New York, 2003).
- Olarenwaju A Fagbohun, 'The Imperatives of Environmental Restoration due to Oil Pollution in Nigeria' 18(2) (2007) *Stellenbosch Law Review* 347.
- Olarenwaju A Fagbohun, *The Law of Oil Pollution and Environmental Restoration: A Comparative Review* (Lagos: Odade Publishers, 2010).

- Olarenwaju A Fagbonhun, *Mournful Remedies, Endless Conflicts and Inconsistencies in Nigeria's Quest for Environmental Governance: Rethinking the Legal Possibilities for Sustainability* (Lagos: Nigerian Institute of Advance Legal Studies, 2012)10 – 11.
- Donald A Falk and Peggy Olwell, 'Scientific and Policy Considerations in Restoration and Reintroduction of Endangered Species' 94 (1992) *Rhodora* 287, 296.
- Federal Ministry of Environment, 'Hydrocarbon Pollution Remediation Project Activities Yearbook 2017'.
- Federal Ministry of Environment, 'Ogoniland Clean-up' available at: http://environment.gov.ng/index.php/ogoni (last accessed 25 April 2021).
- Glen Fernandez and Iftekhar Ahmed, "Build back better approach to disaster risk recovery: Research trends since 2006' (2019) 8 *Progress in Disaster Science* 100121.
- *Financial Watch,* 'Buhari Inaugurates Board of Trustees for Implementation of the UNEP Report on Ogoniland', http://www.financialwatchngr.com/2016/08/04/buhari-inaugurates-board-trustees-implementation-unep-report-ogoniland/, 4 August 2016.
- Carmel Finley, *All the Fish in the Sea: Maximum Sustainable Yield and the Failure of Fisheries Management* (Chicago: University of Chicago Press, 2011).
- Fiorino, 'Citizen Participation and Environmental Risk: A Survey of Institutional Mechanisms' 15 (2) (1990) *Science, Technology and Human Values* 226, 234.
- Valerie Fogleman, 'The threshold for liability for ecological damage in the EU: mixing environmental and conservation law' in Charles-Hubert Born and others (eds.), *The Habitats Directive in its EU Environmental Law Context: European Nature's Best Hope?* (London: Routledge, 2015).
- Food and Agriculture Organization, *FAO Code of Conduct for Responsible Fisheries 1995*, section 6.5.4.

- Dave Foreman, 'The Wildlands Project and the Rewilding of North America' 76(2) (1998) *Denver University Law Review* 585.
- Forum for Global Challenges, *'Restoring Nature: The role of the UN Decade of Ecosystem Restoration 2021-30'.* The University of Birmingham, 3 – 5 February 2021.
- Jedrzeg G Frynas, *Oil in Nigeria: Conflict and Litigation between Oil Companies and Village Communities* (Hamburg, New Brunswick, NJ and London: LIT/Transaction, 2000) 207.
- Wendy L Gabriel and Pamela M Mace, A Review of Biological Reference Points in the Context of the Precautionary Approach, Proceedings, 5th NMFS NSAW, 1999. NOAA Tech. Memo. NMFS-F/SPO-40.
- General Assembly Resolution (XXVII), art 1, available online at http://www.unep.org/PDF/UN_GA_2997.pdf.
- Anne W Genova, *Oil and Nationalism in Nigeria, 1970 – 1980* (Ann Arbour, MI: UMI, 2007).
- Mrinal K Ghose, 'Management of topsoil for geo-environmental reclamation of coal mining areas' 40 (2001) *Environmental Geology* 1405 – 1410.
- Helena I Gomes, Celia Dias-Ferreira and Alexandria B Ribeiro, 'Overview of in situ and ex-situ remediation technologies for PCB-contaminated soils and sediments and obstacles for full-scale application' 445-446 (2013) *Science of the Total Environment* 237 – 260.
- Gondwana Link, 'Achieving the vision' http://www.gondwanalink.org/whatshapwhere/default.aspx (last accessed 25 April 2022).
- Great Lakes Water Quality Agreement 1978, available at http://epa.gov/greatlakes/glwqa/1978/articles.html#AGREEMENT%20BETWEEN%20CANADA (last accessed 6 April 2021).
- Greenpeace International, 'Shell Shocked: The Environmental and Social Costs of Living with Shell in Nigeria' (1994), available online at http://archive.greenpeace.org/comms/ken/hell.html. (last accessed 13 February 2020).

- Marcus Hall (ed.), *Restoration and History: The Search for a Useable Environmental Past* (Routledge, 2010).
- David M Hamby, 'Site remediation techniques supporting environmental restoration activities – a review' 191 (1996) *Science of the Total Environment* 203 – 224.
- John L Harper, 'The Heuristic Value of Ecological Restoration' in William R Jordan, Michael E Gilpin and John D Ader (eds.) *Restoration Ecology A Synthetic Approach to Ecological Research* (Cambridge: Cambridge University Press, 1987) 35 – 45.
- Eric Higgs and Richard J Hobbs, Wild design: principles to guide interventions in protected areas, in David N Cole and Laurie Young (eds.) *Beyond Naturalness: Rethinking Park and Wilderness Stewardship in an Era of Rapid Change* (Washington DC: Island Press, 2010) 234 – 252.
- Eric Higgs, 'The two-culture problem: ecological restoration and the integration of knowledge' 13 (2005) *Restoration Ecology* 159 – 164.
- Eric Higgs, 'What is Good Ecological Restoration?' 11 (1997) *Conservation Biology* 338, 340.
- Eric Higgs, *Nature by Design: People, Natural Process, and Ecological Restoration* (Cambridge, Massachusetts: MIT Press, 2003).
- Eboe Hutchful, 'Oil Companies and Environmental Pollution in Nigeria' in Claude Ake (ed.) *Political Economy of Nigeria* (London and Lagos: Longman, 1985) 113–140.
- Terry Hutchinson, 'The Doctrinal Method: Incorporating Interdisciplinary Methods in Reforming the Law' 3 (2015) *Erasmus Law Review* 130.
- Terry Hutchinson, 'Vale Bunny Watson? Law Librarians, Law Libraries and Legal Research in the Post-Internet Era' (2014) *Law Library Journal* 579, 584.
- Hydrocarbon Pollution Remediation Project (HYPREP), 'HYPREP begins second phase of free medical outreach program in Ogoniland', (20 April 2018) available at:

http://hyprep.gov.ng/2018/04/20/hyprep-begins-second-phase-of-free-medical-outreach-program-in-ogoniland/ (last accessed 2 May 2021).

- Amos A Idowu, 'Human Rights, Environmental Degradation and Oil Multi-National Companies in Nigeria: The Ogoniland Episode' 17(2) (1999) *Netherlands Quarterly of Human Rights* 161, 166, 167.
- Augustine Ikelegbe, 'Civil Society, Oil and Conflict in the Niger Delta: Ramifications of Civil Society for a Regional Resource Struggle' 39(3) (2001) *Journal of Modern African Studies* 441–442.
- Tunde O Imoobe and Tanshi Iroro, 'Ecological Restoration of Oil Spill Sites in the Niger Delta, Nigeria' 11 (2) (2009) *Journal of Sustainable Development in Africa* 57, 59.
- Aniefiok E Ite and others, 'Petroleum Exploration and Production: Past and Present Environmental Issues in Nigeria's Niger Delta' 1(4) (2013) *American Journal of Environmental Protection* 78, 80.
- Aniefiok E Ite and Udo J Ibok 'Gas Flaring and Venting Associated with Petroleum Exploration and Production in Nigeria's Niger Delta' 1(4) (2013) *American Journal of Environmental Protection* 70–77.
- IUCN Niger Delta Panel, *Developing a biodiversity conservation strategy for the Niger Delta: Integrating biodiversity considerations into SPDC's operations* (IUCN: Switzerland, 2018), available online at 2018-014-En.pdf (iucn.org) (last accessed 2 July 2023).
- IUCN, The Global Partnership on Forest and Landscape Restoration 2003, available at Home | Global Partnership on Forest and Landscape Restoration (forestlandscaperestoration.org) (last accessed 13 March 2021).
- William R Jordan, 'Restoration and the Re-entry of Nature 4 (1986) *Restoration and Management Notes* 2.

- William R Jordan, 'Sunflower Forest: Ecological Restoration as the Basis for a New Environmental Paradigm' in Dwight A Baldwin Jr., Judith DeLuce and Carl Pletsch, (eds) *Beyond Preservation: Restoring and Inventing Landscapes* (Minneapolis: University of Minnesota Press, 1994) 17 – 34.
- William R Jordan, *The Sunflower Forest: Ecological Restoration and the New Communion with Nature* (Berkeley: University of California Press, 2003).
- Dolly Jørgensen, 'Ecological Restoration in the Convention on Biological Diversity Targets' 22 (12) (2013) *Biodiversity and Conservation* 2977, 2978.
- Alexandra Juras, 'The Bali Guidelines for Development of National Legislation on Access to Information, Public Participation and Access to Justice in Environmental matters', a presentation at the First Meeting of Focal points appointed by Governments of the Signatory Countries of the Declaration on the Implementation of Principle 10, held in Santiago de Chile, on 6 – 7 November 2012.
- Jonson Justin, 'Ecological restoration of cleared agricultural land in Gondwana Link: lifting the bar at Peniup' 11 (1) (2010) *Ecological Management and Restoration* 16.
- Erci Katz, 'Book review: Faking Nature: The Ethics of Environmental Restoration' 3 (2) (1998) *Ethics and the Environment* 201 – 205.
- Eric Katz, 'Further Adventures in the Case against Restoration' 34 (2012) *Environmental Ethics* 67, 70.
- Eric Katz, 'The Big Lie: Human Restoration of Nature' (1992) *Research in Philosophy and Technology* 2.
- Eric Katz, 'The Problem of Ecological Restoration' 18 (1996) *Environmental Ethics* 222 – 224.
- Faisal I Khan, Tahir Hussein and Ramzi Hejazi, 'An overview and analysis of site remediation technologies' 71 (2004) *Journal of Environmental Management* 95 – 122.

- Frederik H Kistenkas, 'Rethinking European Nature Conservation Legislation: Towards Sustainable Development' 10(1) (2013) *Journal for European Environmental & Planning Law* 83.
- Barisere R Konne 'Inadequate Monitoring and Enforcement in the Nigerian Oil Industry: The Case of Shell and Ogoniland' 47 (2014) *Cornell International Law Journal* 181, 200.
- Ludwig Krämer, 'Transnational Access to Environmental Information' 1 (1) (2012) *Transnational Environmental Law*, 95 – 104, 97 and 103.
- Mary Grisez Kweit and Robert W Kweit, *Implementing Citizen Participation in a Bureaucratic Society: A Contingency Approach* (New York: Praeger, 1981) 7, 35.
- Robert T Lackey, 'Societal Values and the Proper Role of Restoration Ecologists' 2 (2004) *Frontiers in Ecology and the Environment* 45 – 46.
- Mohammed T Ladan, 'Judicial Approach to Environmental Litigation in Nigeria', a paper presented at the 4–Day Judicial Training Workshop on Environmental Law in Nigeria, in Abuja, Nigeria, on 5 – 9 February 2007, 16.
- Marie-Louise Larsson (ed.), *The Law of Environmental Damage: Liability and Reparation* (Martinus Nijhoff, 1999).
- Mark Latham, Victor E Schwartz and Christopher Appel, 'The Intersection of Tort and Environmental Law: Where the Twain's should meet and depart' 80 (2) (2011) *Fordham Law Review* 737 – 773.
- Maria Lee and Carolyn Abbot, 'The Usual Suspects? Public Participation under the Aarhus Convention' 66 (2003) *Modern Law Review* 80, 84.
- Marty Lee and Paul Hancock, 'Restoration and Stewardship Volunteerism' in Dave Egan and others (eds.), *Human Dimensions of Ecological Restoration: Integrating Science, Nature and Culture* (Washington DC: Island Press, 2011) 23.

- Jenniffer S Lerner, 'Emotion and Decision Making' 66 (2015) *Annual Review of Psychology* 799 – 823.
- Michael E Levine and Jennifer L Forrence, 'Regulatory Capture, Public Interest, and the Public Agenda: Towards a Synthesis' 6 (1990) *Journal of Law, Economics, and Organisation* 167 – 197.
- Mee Wei Lim, Ee Von Lau and Phaik Eong Poh, 'A comprehensive guide of remediation technologies for oil contaminated soil – present works and future directions' 109(1) (2016) *Marine Pollution Bulletin* 14 – 45.
- Ana T Lima and others, 'The legacy of surface mining: Remediation, restoration, reclamation and rehabilitation' 66 (2016) *Environmental Science and Policy* 227 – 233.
- Olof Linden and Arne Jernelov, 'The mangrove swamp: an ecosystem in danger' 9(2) (1980) *Ambio: A Journal of the Human Environment* 81 – 88.
- William C Loring, Frank L Sweetser and Charles F Ernst, *Community Organisation for Citizen Participation in Urban Renewal* (Massachusetts: Cambridge Press, 1957), 220.
- Luca Luiselli and Godfrey O Akani, 'An indirect assessment of the effects of oil pollution on the diversity and functioning of turtle communities in the Niger Delta, Nigeria' 26(1) (2003) *Animal Biodiversity and Conservation* 57 – 65.
- Howard Mann, 'The Rio Declaration' 86 (1992) *Proceedings of the American Society of International Law*, 450 – 453.
- Michael Mason, *Environmental Democracy* (London: Palgrave MacMillan, 1999).
- John McCormick, *The Global Environmental Movement* 2nd ed. (Wiley & Sons 1995), 127.
- Edward D McCutcheon, 'Think Globally, (En)Act Locally: Promoting Effective National Regulatory Infrastructure in Developing Nations' 31 (1998) *Cornell International Law Journal* 395, 407 – 408.

- Donald McGillivray, 'Compensating Biodiversity Loss: The EU Commission's Approach to Compensation under Article 6 of the Habitats Directive 24(3) (2012) *Journal of Environmental Law* 417 – 450.
- Donald McGillivray, 'Compensatory Measures Under Article 6(4) of the Habitats Directive: no net loss for Natura 2000?' in Charles-Hubert Born and others (eds.), *The Habitats Directive in its EU Environmental Law Context: European Nature's Best Hope?* (London: Routledge, 2015).
- Michael Vincent McGinnis (ed.) *Bioregionalism* (London: Routledge, 1999).
- Millennium Ecosystem Assessment, A Framework for Assessment (2005). Available at: https://www.unenvironment.org/resources/report/ecosystem-and-human-well-being-framework-assessment (last accessed on 9 March 2020).
- David Moffat and Olof Linden, 'Perception and Reality: Assessing Priorities for Sustainable Development in the Niger Delta' 24 (1995) *Ambio: A Journal of the Human Environment* 527.
- George Monbiot, *Feral: Searching for Enhancement on the Frontiers of Rewilding* (Penguin, 2013).
- Renato Monteiro, Jose C Ferreira and Paula Antunes, 'Green Infrastructure Planning Principles: An Integrated Literature Review' 9 (12) (2020) *Land* 525.
- Elisa Morgera, 'Global Environmental Law and Comparative Legal Methods' 24(3) (2015) *Review of European, Comparative and International Environmental Law* 254, 257.
- Michael L Morrison, *Wildlife Restoration: Ecological Concepts and Practical Applications* 2nd ed. (Washington DC: Island Press, 2010).
- National Research Council, *Restoration of Aquatic Ecosystems: Science, Technology, and Public Policy* (National Academy Press, 1992) 6 and 10.

- Christer Nilsson and Asa L Aradóttir, 'Ecological and Social Aspects of Ecological Restoration: New Challenges and Opportunities for Northern Regions' 18 (4) (2013) *Ecology and Society* 35.
- Peter C Nwilo and Olusegun T Badejo, 'Impacts and Management of Oil Spill pollution along Nigerian coastal areas' (2006) *Administering Marine Spaces: International Issues* 119.
- M O'Brian, 'Policy background to target 1 of EU – Biodiversity Strategy – rationale, actions which EU plans and what EU wants to achieve', ALTER-NetConference (Gent, 28 November 2012).
- Kirk T O'Reilly, Renae I Magaw and William G Rixey *Predicting the Effect of Hydrocarbon and Hydrocarbon-Impacted Soil on Groundwater*. American Petroleum Institute 14. Available at: www.api.org/ehs/groundwater/upload/14_Bull.pdf (last accessed 13 February 2020).
- Nuhu George Obaje, *Geology and Mineral Resources of Nigeria* (London: Springer, 2009).
- OECD, 'Building back better: A sustainable, resilient recovery after COVID 19'. OECD Policy Responses to Coronavirus (COVID-19) 5 June 2020. Available at: Building back better: A sustainable, resilient recovery after COVID-19 (oecd.org) (last accessed 7 June 2021).
- Tunde I Ogowewo, 'Wrecking the Law: How Article III of the Constitution of the United States Led to the Discovery of a Law of Standing to Sue in Nigeria' 26 (2000) *Brooklyn Journal of International Law* 527, 542.
- Damilola S Olawuyi, *The Principles of Nigerian Environmental Law* (Addo-Ekiti: Afe Babalola University Press, 2015).
- Temi E Ologunorisa, 'A review of the effects of gas flaring on the Niger Delta environment' 8(3) (2001) *International Journal of Sustainable Development & World Ecology* 249–255.
- OPEC, *Annual Statistical Bulletin 2012*, (Vienna, Austria: OPEC, 2012) 1, 11; available online at

http://www.opec.org/opec_web/static_files_project/media/downloads/publications/Asb2012.pdf

- Uchenna J Orji, 'An appraisal of the legal frameworks for the control of environmental pollution in Nigeria' 38(2) (2012) *Commonwealth Law Bulletin* 321 – 346.
- David W Orr, *Earth in Mind* (Washington DC: Island Press, 1994).
- Leo C Osuji and Chukunedum M Onojake, 'Field reconnaissance and estimation of petroleum hydrocarbon and heavy metal contents of soil affected by the Ebocha-8 oil spillage in Niger Delta, Nigeria' 79(2) (2006) *Journal of Environmental Management* 133–139.
- Patrick Oviasuyi and Jim Uwadiae, 'The Dilemma of the Niger Delta Region as Oil Producing States of Nigeria' 16 (2010) *Journal of Peace, Conflict and Development* 11.
- Ayodele Oyedeji and others, 'Effect of Crude Oil-Contaminated Soil on Germination and Growth Performance of Abelmoschus esculentus L Moench – A widely Cultivated Vegetable Crop in Nigeria' 3(10) (2012) *American Journal of Plant Sciences* 1451–1454.
- Kayode Oyende, *Oil Pollution Law and Governance in Nigeria* (Stirling Horden, 2017).
- Pacific Southwest Region, National Forest Service, Ecological Restoration, Region 5 - Land & Resource Management (usda.gov) (last accessed 9 May 2021).
- Margaret A Palmer and J B Ruhl, 'Aligning restoration science and the law to sustain ecological infrastructure for the future' 13 (9) (2015) *Frontiers in Ecology and the Environment* 512 – 519.
- Carole Pateman, *Participation and Democratic Theory* (Cambridge: Cambridge University Press, 1970) 42 – 43, 31 – 33.
- Scott R Pearson, *Petroleum and the Nigerian Economy* (Stanford University Press, 1970).
- Chris Powter and others, 'Regulatory history of Alberta's industrial land conservation and reclamation program' 92 (2012) *Canadian Journal of Soil Science* 39 – 51.

- Thomas Princen and Matthias Finger, *Environmental NGOs in World Politics* (London: Routledge, 1994) 34.
- George R Pring and Susan Y Noe, 'The Emerging International Law of Public Participation Affecting Global Mining, Energy, and Resources Development' in Donald N Zillman, Alastair R Lucas and George R Pring (Eds.), *Human Rights in National Resource Development: Public Participation in the Sustainable Development of Mining and Energy Resource* (Oxford: Oxford University Press, 2002) 11, 26.
- Minna Pyhälä, Anne C Brusendorff and H Paulomäki, 'The precautionary principle' in Malgosia Fitzmaurice, David M Ong and Panos Mekouris (eds.) *Research Handbook on International Environmental Law* (Edward Elgar, 2010) 203.
- P S Ramakrishnan 'Rehabilitation of Degraded Lands in India: Ecological and Social Dimensions' 7 (1994) *Journal of Tropical Forest Science* 39 – 63.
- Recover: REstoration, COordination, VERification (January 2012), available at Comprehensive Everglades Restoration Plan (CERP) — Everglades Restoration Initiatives (last accessed 6 April 2021).
- Mark S Reed and Lindsay C Stringer, *Land Degradation, Desertification and Climate Change* (Routledge, New York: 2016).
- Region 5, Ecological Restoration Implementation Plan (2019), SNF Land and Resource Management Plan, Monitoring and Evaluation Report, 2009-2017 (usda.gov) (last accessed 9 May 2021).
- *Reuters*, Factbox: BP settlement payouts to coastal states in 2010 oil spill' (2 July 2015), available at Factbox: BP settlement payouts to coastal states in 2010 oil spill | Reuters (last accessed 2 July 2020).

- Benjamin J Richardson and Jonna Razzaque, 'Public Participation in Environmental Decision-Making', in Benjamin J Richardson and Stepan Wood (eds.) *Environmental Law for Sustainability* (Hart, 2006) 165.
- Benjamin J Richardson and Ted Lefroy, 'Restoration Dialogues: Improving the Governance of Ecological Restoration' 24 (5) (2016) *Restoration Ecology* 668 – 673.
- Benjamin J Richardson, 'Restoring layered geographies: ecology, society and time' 26(2) (2017) *Griffith Law Review* 154, 155.
- Benjamin J Richardson, 'The Emerging Age of Ecological Restoration Law 25(3) (2016) *Review of European Comparative and International Environmental Law* 277.
- Ann Richardson, *Participation* (London: Routledge & Kegan Paul, 1983) 55.
- Akpofure Rim-Rukeh, 'Oil Spill Management in Nigeria: SWOT Analysis of the Joint Investigation Visit (JIV) Process' 6 (2015) *Journal of Environmental Protection* 259–271.
- R Will Roach and others, 'An assessment of produced water impacts in Galveston Bay System' (1992) *US Fish and Wildlife Report, Clear Lake Ecological Services Office, Houston TX*.
- R Will Roach, R Scott Carr and Cynthia L Howard, 'Assessment of produced water impact on two sites in Galveston Bay System' (1993) *Publication GBNEP-23* 135–151.
- Nelson M Rosenbaum, 'Citizen Participation and Democratic Theory', in Stuart Langton (ed.), *Citizen Participation in America* (Massachusetts: Lexington Books, 1978) 43, 44 – 48.
- Rudolph B Schlesinger and others, *Comparative Law* 6th ed (University Casebook Series, 1998) 2.
- Hendrik Schoukens, 'Habitat Restoration on Private Lands in the United States and the EU: Moving from Contestation to Collaboration? 11(1) (2015) *Utrecht Law Review* 33, 34.
- Elizabeth Schrack and others, *Restoration Works: Highlights from a Decade of Partnership between The Nature Conservancy and the National Oceanic and Atmospheric Administration* (The Nature Conservancy, 2012) xi.

- Priscilla Schwartz, 'The polluter-pays principle' in Malgosia Fitzmaurice, David M Ong and Panos Mekouris (eds.) *Research Handbook on International Environmental Law* (Edward Elgar, 2010) 182.
- Secretariat of the CBD, 'Find National Targets'. Available at: https://www.cbd.int/nbsap/targets/ (last accessed 9 December 2019).
- Secretariat of the CBD, 'Latest National Biodiversity Strategy and Action Plans'. Available online at https://www.cbd.int/nbsap/about/latest/ (last accessed 6 December 2019).
- Shell Nigeria, 'Frequently asked questions on the UNEP environmental assessment of Ogoniland', http://www.shell.com.ng/sustainability/environment/unep-environmental-assessmen-of-ogoniland/unep-faq.html (last accessed 25 April 2021).
- R J Snowden and Ikem KE Ekweozor, 'The Impact of a minor oil spillage in the estuarine Niger Delta' 18(11) (1987) *Marine Pollution Bulletin* 595–599.
- Society for Ecological Restoration International Science & Policy Working Group, *The SER Primer on Ecological Restoration* (Society for Ecological Restoration International 2004), section 4.
- Paul D Spencer and Jeremy S Collie, 'Patterns of population variability in marine fish stocks' 6 (1997) *Fisheries Oceanography* 188 – 204.
- Nancy P Spyke, 'Public Participation in Environmental Decision-Making at the New Millennium: Structuring New Spheres of Public Influence' 26 (1999) *Boston College Environmental Affairs Law Review*, 263, 275.
- Stockholm Conference Report First Session: Report of the Preparatory Committee for the for the United Nations Conference on the Human Environment, First Session, UN Doc. A/CONF.48/PC/6 (10 – 20 March 1970).

- Stockholm Conference Report Second Session: Report of the Preparatory Committee for the for the United Nations Conference on the Human Environment, Second Session, UN Doc. A/CONF.48/PC/9 (8 – 19 February 1971).
- Sridha Susarla, Victor F Medina and Steven C McCutcheon, 'Phytoremediation: an ecological solution to organic chemical contamination' 18 (2002) *Ecological Engineering* 647 – 658.
- Anastasia Telesetsky, 'Ecoscapes: The Future of Place-Based Ecological Restoration' 14(4) (2013) *Vermont Journal of Environmental Law* 493.
- Annastasia Telesetsky, An Cliquet and Afshin Akhtar-Khavari, *Ecological Restoration and International Environmental Law* (London: Routledge, 2017).
- The Compact Edition of Oxford English Dictionary (Oxford University Press, 1971).
- *The Daily Post,* 'MOSOP calls for end of hostilities in Ogoni communities' (21 December 2016) available at http://dailypost.ng/2016/12/21/mosop-calls-end-hostilities-ogoni-communities/ (last accessed 25 April 2021).
- The Economics of Ecosystems and Biodiversity (TEEB), Mainstreaming the Economics of Nature: A Synthesis of the Approach, Conclusions and Recommendations of TEEB (2010), 33.
- The Future We Want. Resolution adopted by the General Assembly on 27 July 2012. UN Doc. A/RES/66/288. (11 September 2012) para. 4.
- *The Guardian*, 'At Ogoni day, MOSOP cautions indigenes against bunkering' (5 January 2017), available at: http://guardian.ng/news/at-ogoni-day-mosop-cautions-indigenes-against-bunkering/ (last accessed 25 April 2021).
- *The Guardian*, 'Rewilding Britain: Bringing Wolves, Bears and Beavers Back to the Land', (19 September 2014) available at Rewilding Britain: bringing wolves, bears and beavers back to the land | Environment | The Guardian (last accessed 20 February 2021).
- *The Nation,* 'We will Restore Ogoni Ecosystem, says Buhari', http://thenationonlineng.net/will-restore-ogoni-ecosystem-says-buhari/, 5 August 2016.

- *The Vanguard*, 'Buhari appoints governing council, board for Ogoniland cleanup', (30 July 2016) available at http://www.vanguardngr.com/2016/07/buhari-approves-governing-council-board-ogoniland-cleanup/ (last accessed 25 April 2021).
- Niki Tobi, 'Environmental Litigation', in S Simpson and Olarenwaju Fagbohun (eds), *Environmental Law and Policy* (Lagos: Law Centre, Faculty of Law, Lagos State University, 1998) 177, 191.
- Anne Tolvanen and James Aronson, 'Ecological restoration, ecosystem services, and land use: a European perspective' 21 (4) (2016) *Ecology and Society* 47.
- George Tordoff, Alan J Banker and Arthur Willis, 'Current Approaches to the Revegetation and Reclamation of Metalliferous Mine Wastes' 41(2) (2000) *Chemosphere* 219.
- Transforming Our World: The 2030 Agenda for Sustainable Development. The General Assembly adopted a resolution on 25 September 2015. UN Doc. A/RES/70/1 (21 October 2015).
- Trees for Life, *'What we do'*, https://treesforlife.org.uk/work/ (last accessed 25 April 2021).
- Graham Tucker and others, *Estimation of the financial needs to implement Target 2 of the EU Biodiversity Strategy: Report to the European Commission* (London: Institute for European Environmental Policy, 2013) 31.
- Collins N Ugochukwu and Jurgen Ertel, 'Negative impacts of oil exploration on biodiversity management in the Niger Delta area of Nigeria' 26(2) (2008) *Impact Assessment and Project Appraisal* 139–147.
- UN Conference on Environment and Development, Rio de Janeiro, Rio Declaration on Environment and Development, 13 June 1992, (1992) 31 ILM 874.
- UN Conference on the Human Environment, A/CONF.48/4 Annex Draft Text of a Preamble and Principles of the Declaration of the Human Environment, 1972, Principle 3.

- UN Environment, New UN Decade on Ecosystem Restoration offers an unparalleled opportunity for job creation, food security and addressing climate change (1 March 2019). See https://www.unenvironment.org/news-and-stories/press-release/new-un-decade-ecosystem-restoration-offers-unparalleled-opportunity (last accessed 20 May 2020).
- UNEP, 'Protected Areas and Ecological Restoration', Note by the Executive Secretary, UNEP/CBD/SBSTTA/20/12 (2016).
- UNEP/FAO Factsheet, 'The UN Decade on Ecosystem Restoration 2021-2030' (February 2020). Available at UNDecade.pdf (unep.org) (last accessed 13 May 2021).
- UNESCO: Intergovernmental Conference of Experts on the Scientific Basis for Rational Use and Conservation of the Resources of the Biosphere (Paris, 1968); available at Results - UNESCO Digital Library (last accessed 10 March 2021).
- United Nations Development Programme (UNDP), *Niger Delta Human Development Report* (Abuja: UNDP, 2006), 310.
- United Nations Environment Programme (UNEP), *Environmental Assessment of Ogoniland* (Nairobi: UNEP, 2011).
- United Nations, *World Economic and Social Survey 2000: Trends and Policies in the World Economy* (New York: United Nations, 2000).
- US Department of Interior, National Park Service Draft Environmental Assessment, Ecological Restoration Plan on Department of Interior in Western Pima County, Arizona (2014).
- US Fish and Wildlife Service, *Effects of Oil on Wildlife and Habitat* (2010). Available online: http://alaska.fws.gov/media/unalaska/Oil%20Spill%20Fact%20Sheet.pdf (last accessed 13 February 2020).
- US Forest Service: United States Forest Service Collaborative Forest Landscape Restoration Program Overview, available online at Overview (fs.fed.us) (last accessed 23 March 2021).

- USACE South Florida Restoration Office, US Army Corps of Engineers Jacksonville District and South Florida Water Management District; About CERP: Brief Overview, available at Comprehensive Everglades Restoration Plan (CERP) — Everglades Restoration Initiatives (last accessed 6 April 2021).
- Jelte van Andel and James Aronson, 'Introduction' in Jelte van Andel and James Aronson (eds.) *Restoration Ecology: The New Frontier* (Wiley-Blackwell, 2012) 293 – 296.
- Gwen van Boven, An Evaluation of the Use and Utility of Ramsar Guidance: A Report to Ramsar Scientific & Technical Review Panel and Ramsar Secretariat (2007), para. 8. Available online at Ramsar Guidance: (last accessed 23 August 2021).
- Cindy L van Dover and others, 'Ecological restoration in the deep sea: desiderata' 44 (2014) *Marine Policy* 98–106.
- Daan P van Uhm and Rick C Nijman, 'The convergence of environmental crime with other serious crimes: Subtypes within the environmental crime continuum' 19 (4) (2020) *European Journal of Criminology* 542 – 561.
- *Vanguard*, '10 Modular refineries getting ready – Osibanjo' (31 December 2017), available online at: https://www.vanguardngr.com/2017/12/10-modular-refineries-getting-ready-osinbajo/ (last accessed 25 April 2021).
- *Vanguard*, 'UNEP Report: We're tackling Ogoni clean-up with sincerity – Allison-Madueke', (9 August 2014), available online at: https://www.vanguardngr.com/2014/08/unep-report-tackling-ogoni-clean-sincerity-alison-madueke/ (last accessed 25 April 2021).
- Marius S Vassiliou, *The A to Z of the Petroleum Industry* (Scarecrow Press, 2009).
- Jonathan Verschuuren, 'Climate Change: Rethinking Restoration in the European Union's Birds and Habitats Directives' 28 (4) (2010) *Ecological Restoration* 431–39, 432.

- Jonathan Verschuuren, 'Connectivity: is Natura 2000 only an ecological network on paper?' in Charles-Hubert Born and others (eds.), *The Habitats Directive in its EU Environmental Law Context: European Nature's Best Hope?* (London: Routledge, 2015).
- Jonathan Verschuuren, 'Effectiveness of Nature Protection Legislation in the European Union and the United States: the Habitats Directive and the Endangered Species Act' in Martin Dietrich and Jan van der Straaten (eds.), *Cultural Landscapes and Land Use: The Nature Conservation-Society Interface* (Kluwer, 2004) 39 – 67.
- John Vidal, 'Nigeria on alert as Shell announces worst oil spill in a decade' (22 December 2011) available online at http://www.guardian.co.uk/environment/2011/dec/22/nigerian-shell-oil spill (last accessed 13 February 2023).
- Steven Vogel, 'The Nature of Artifacts' 25 (2003) *Environmental Ethics* 149 – 168.
- Lawrence Walker and Peter Bellingham, *Island Environments in a Changing World* (Cambridge: Cambridge University Press, 2012) 201.
- Nathan J Waltham and others, 'UN Decade on Ecosystem Restoration 2021 – 2030: What chance for Success in Restoring Coastal Ecosystems?' 7 (2020) *Frontiers in Marine Science* 71.
- Norman Wengert, 'Citizen Participation: Practice in Search of a Theory' 16 (1976) *Natural Resources Journal* 23, 26 – 27.
- Walter E Westman, 'How Much Are Nature's Services Worth? 197 (1997) *Science* 960 – 964.
- Jonathan B Wiener, 'Precaution' in Daniel Bodansky, Jutta Brunee and Ellen Hey (eds.) *The Oxford Handbook of International Environmental Law* (Oxford: Oxford University Press, 2008) 597, 598.
- Annecoos Wiersema, 'The New International Law-Makers? Conferences of the Parties to Multilateral Environmental Agreements' 31 (2009) *Michigan Journal of International Law* 231 – 87.

- Ken Wilber, *A Theory of Everything, An Integral Vision for Business, Politics, Science and Spirituality* (Boston: Shambhala, 2001).
- Peter Willetts, 'The Impact of Promotional Pressure Groups on Global Politics', in Peter Willets (ed.), *Pressure Groups in the Global System* (London: Pinter, 1982) 185.
- Edward O Wilson, *Biophilia* (Massachusetts: Harvard University Press, 1984).
- David Wirth, 'The Rio Declaration on Environment and Development: Two Steps Forward, One Step Back, or Vice Versa' 29 (1995) *Georgia Law Review* 599 – 653.
- Paddy Woodworth, 'What Price Ecological Restoration' (2006) *The Scientist* 39 – 45.
- World Bank, 'Global Gas Flaring Jumps to Levels Last Seen in 2009' available online at https://www.worldbank.org/en/news/press-release/2020/07/21/global gas flaring-jumps-to-levels-last-seen-in 2009 (last accessed 9 November 2020).
- World Bank, *Defining an Environmental Development Strategy for the Niger Delta* (Vol II, Industry and Energy Operations Division West Central Africa Department, 1995) 55, available online at http://documents.worldbank.org/curated/en/506921468098056629/pdf/multi-page.pdf (last accessed 25 April 2021).
- World Bank, *United Nations Population Division World Population Prospects: 2019 Revision*. Available at online: https://data.worldbank.org/indicator/SP.POP.TOTL?end=2019&start=1960 (last accessed 24 January 2023).
- Wenting Wu, and others. 'Impacts of coastal reclamation on wetlands: Loss, resilience, and sustainable management' 210 (2018) *Estuarine, Coastal and Shelf Science* 153 – 161.
- Truman P Young and Mark W Schwartz, 'The Decade on Ecosystem Restoration is an impetus to get it right' (2019) *Conservation Science and Practice* 145.
- Nenibarini Zabbey, Kabari Sam and Adaugo T Onyebuchi, 'Remediation of contaminated lands in the Niger Delta, Nigeria: Prospects and challenges' 586 (2017) *Science of the Total Environment* 952, 957.

- Eduardo Zeiger, *The Effect of Air Pollution on Plants: A Companion to Plant Physiology,* (Fourth Edition, 2006).
- Jean Ziegler, *The Right to Food* (Report of the Special Rapporteur on the right to food to the Commission on Human Rights 57th Session, 2001) UN Doc E/CN.4/2001/53.