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EFFECTIVENESS OF INTERNATIONAL ENVIRONMENTAL LAW IN ADDRESSING TRANSBOUNDARY HARM AND PROMOTING ENVIRONMENTAL JUSTICE

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ABSTRACT

Environmental harm is constitutively indifferent to political boundaries. Yet the mechanisms through which international law purports to address transboundary environmental damage remain fragmented, asymmetrically enforced, and ill-suited to the structural complexity of contemporary challenges. Beginning from the foundational architecture of the Trail Smelter Arbitration (1941)[1] and the Rio Declaration on Environment and Development (1992)[2], the article evaluates whether the no-harm rule and the polluter pay principle the twin pillars of IEL accountability remain adequate to modern environmental governance. The article employs doctrinal research and analytic methods to examine the effectiveness of international environmental law (IEL) in addressing transboundary environmental harm and advancing environmental justice across three contemporary dimensions climate-induced loss and damage, cross-border pollution, and the environmental impacts of multinational corporations.

The article opines that despite considerable maturity in the normative architecture of IEL, particularly in light of the ICJ Advisory Opinion on Obligations of States in Respect of Climate Change,[3] the Loss and Damage Fund operationalised at COP28;[4] the emerging transnational influenced Uganda's domestic environmental framework under the National Environment Act 2019 and the constitutional right to a clean and healthy environment under Article 39 of the Constitution of Uganda;[5] as well as judicial enforcements in Advocates Coalition for Development and Environment (ACODE) v Attorney General[6] and Green watch (U) Ltd v Uganda Electricity Transmission Company Ltd and Attorney General;[7] the contemporary environmental challenges arising from oil development in the Albertine Graben and the East African Crude Oil Pipeline;[8] and the transboundary implications of environmental degradation within the Nile basin;[9] a structural enforcement deficit, chronic attribution difficulties, and a politically entrenched resistance to compensatory liability collectively undermine the transformative potential of IEL. The article concludes that environmental justice demands not merely incremental normative elaboration but a fundamental reconfiguration of international accountability structures.

Keywords: *Transboundary harm, Environmental Justice, Effectiveness of International Environmental Law, Contemporary challenges*

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[1] *Trail Smelter Arbitration (United States v Canada)* (1941) 3 RIAA 1905
[2] Rio Declaration on Environment and Development (adopted 14 June 1992) UN Doc A/CONF.151/26 (Vol I), Principle 2
[3] *Obligations of States in Respect of Climate Change* (Advisory Opinion) [2025] ICJ (forthcoming/most recent advisory proceedings reference)
[4] UNFCCC, 'Outcome of the First Global Stocktake and Operationalisation of the Loss and Damage Fund' (COP28, Dubai, 2023)
[5] Constitution of the Republic of Uganda 1995, art 39; National Environment Act 2019
[6] *Advocates Coalition for Development and Environment (ACODE) v Attorney General* Constitutional Petition No 0100 of 2004 (High Court of Uganda)
[7] *Greenwatch (U) Ltd v Uganda Electricity Transmission Company Ltd and Attorney General* Misc Cause No 140 of 2001 (High Court of Uganda).
[8] TotalEnergies, *Tilenga Project Environmental and Social Impact Assessment Report* (2020); Advocates Coalition for Development and Environment (ACODE), *Oil and Gas Development in Uganda* (2019)
[9] Convention on the Law of the Non-Navigational Uses of International Watercourses (adopted 21 May 1997, entered into force 17 August 2014) 2999 UNTS 77

PART I: INTRODUCTION

There is a foundational irony at the heart of international environmental law. The discipline has, since the mid-twentieth century, generated a vast and sophisticated normative architecture treaties, customary rules, soft-law instruments, tribunal decisions, and multilateral institutions ostensibly designed to hold states accountable for the environmental consequences of their activities.[10] Yet the communities most severely harmed by transboundary pollution, climate-induced loss and damage, and the environmental depredations of multinational corporations are, in practice, the least likely to secure accountability, compensation, or meaningful remediation.[11] The relationship between the sophistication of the normative framework and the quality of environmental outcomes is, at best, attenuated. This article interrogates that gap.

The problem is structural. Environmental harm is transnational by nature. Greenhouse gas emissions released from the factories of historically industrialised nations alter climatic patterns affecting agricultural systems; sulphur dioxide discharged in one state could produce acid deposition in another; and toxic effluents generated by multinational corporate activities may extend beyond the jurisdictional reach of any single court.[12] The legal architecture designed to address these harms, however, remains organised primarily around the state as the unit of obligation, the bilateral relationship as the paradigm of dispute, and consent as the basis of binding obligation.[13] Where harm is diffuse, multi-causal, historically cumulative, and inflicted by private actors insulated behind complex corporate structures, this architecture proves inadequate.

While Part I of the article deals with Introduction, Part II analyses the foundational principles of IEL on transboundary harm, examining the Trail Smelter Arbitration[14] and the Rio Declaration on Environment and Development.[15] Part III evaluates IEL's effectiveness across three contemporary challenges: climate-induced loss and damage, cross-border pollution, and multinational corporate environmental liability. Part IV assesses the adequacy of the no-harm rule and the polluter pays principle as operative legal instruments. Part V advances a reform agenda. The central argument is that the gap between IEL's normative aspiration and its operational effectiveness is not accidental but reflects deep structural features of the international legal order, demanding that environmental justice necessities be addressed.

PART II: THE FOUNDATIONAL ARCHITECTURE: TRAIL SMELTER AND RIO DECLARATION ON ENVIRONMENT AND DEVELOPMENT

Trail Smelter Arbitration (1941); Sovereignty, Harm, and the Birth of the No-Harm Rule

The Trail Smelter Arbitration between the United States and Canada remains the locus classicus of international law on transboundary environmental harm.[16] A Canadian lead-zinc smelter in Trail, British Columbia emitted sulphur dioxide fumes that caused extensive damage to orchards, farms, and timber in the State of Washington. The Arbitral Tribunal, constituted under the 1935 Convention for the Settlement of Difficulties Arising from Operation of Smelter at Trail, issued its principal award in 1941.[17] Its central holding has been quoted so often as to acquire the character of a constitutional text in IEL:

Under the principles of international law, as well as of the law of the United States, no State has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the

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[10] Philippe Sands and Jacqueline Peel, *Principles of International Environmental Law* (4th edn, CUP 2018)
[11] Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2023: Synthesis Report* (2023)
[12] ibid, Ministry of Water and Environment (Uganda), *National Climate Change Policy* (2015)
[13] Daniel Bodansky, Jutta Brunnée and Lavanya Rajamani, *International Climate Change Law* (OUP 2017)
[14] *Trail Smelter Arbitration (United States v Canada)* (1941) 3 RIAA 1905
[15] Rio Declaration on Environment and Development (adopted 14 June 1992) UN Doc A/CONF.151/26 (Vol I)
[16] *Trail Smelter Arbitration (United States v Canada)* (1941) 3 RIAA 1905
[17] Convention for the Settlement of Difficulties Arising from Operation of Smelter at Trail (US–Canada) (1935)

properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence.[18]

The Tribunal ordered Canada to pay compensation for past damage and established a regulatory regime to control future emissions.[19] The normative significance of the award was threefold. First, it affirmed that sovereignty does not confer an unlimited right to pollute: the *sic utere tuo ut alienum non laedas* ( ) principle, drawn from domestic property law, was transposed to the inter-state plane. Second, it established that the state is internationally responsible for the environmental consequences of private industrial activities occurring within its territory. Third, it provided the template for reparation through compensation for demonstrated damage, grounding environmental liability in the general law of state responsibility.

Scholars have rightly noted the limitations of the Trail Smelter paradigm.[20] The Tribunal's holding was carefully bounded: harm must be 'serious', causation must be established by 'clear and convincing evidence, and the relationship is bilateral and point-to-point. These requirements, modest in the context of cross-border smelter fumes, become near-insuperable in the context of diffuse, multi-state, historically accumulated atmospheric greenhouse gas concentrations. As Birnie, Boyle and Redgwell observe, the Trail Smelter paradigm was 'designed for bilateral, essentially territorial disputes' and 'does not easily translate to global commons problems'.[21]

Nevertheless, the Tribunal's core holding was progressively affirmed and generalised. In Corfu Channel (1949) and the Nuclear Tests Cases (1974), the ICJ articulated a general obligation on states to ensure that activities within their territory do not cause damage to the rights of others.[22] In Gabčíkovo-Nagymaros Project (1997), the Court confirmed that the obligation not to cause significant transboundary environmental harm had crystallised into a rule of customary international law.[23]

The Rio Declaration (1992): Normative Codification and the Justice Dimension

The Rio Declaration on Environment and Development, adopted at the 1992 UN Conference on Environment and Development, marks the second constitutive moment of the modern IEL order.[24] As a soft-law instrument, it does not create binding obligations; but its twenty-seven principles have exercised an influence on treaty-making and judicial reasoning disproportionate to their formal legal status.[25]

Principle 2 restates and expands Trail Smelter, by establishing that states have the sovereign right to exploit their own resources, and the responsibility to ensure that activities within their jurisdiction or control 'do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction'.[26] Principles 7 and 11 introduce the concept of Common But Differentiated Responsibilities (CBDR), acknowledging that developed states bear a greater share of responsibility for global environmental degradation by virtue of their accumulated emissions and greater technological and financial resources.[27] Principle 16 embeds the polluter pays principle.[28] Principle 15 enshrines the precautionary principle.[29] Both were subsequently incorporated into binding treaty instruments: CBDR

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[18] *Trail Smelter* (n 1) 1965
[19] Ibid
[20] Philippe Sands, Jacqueline Peel, Adriana Fabra and Ruth MacKenzie, Principles of International Environmental Law (4th edn, CUP 2018) 199–202.
[21] Patricia Birnie, Alan Boyle and Catherine Redgwell, International Law and the Environment (3rd edn, OUP 2009) 143
[22] Corfu Channel Case (United Kingdom v Albania) [1949] ICJ Rep 4, 22; Nuclear Tests Cases (Australia v France) [1974] ICJ Rep 253, 457
[23] Gabčíkovo-Nagymaros Project (Hungary/Slovakia) [1997] ICJ Rep 7, para 53
[24] Rio Declaration on Environment and Development (adopted 14 June 1992) UN Doc A/CONF.151/26 (Vol I)
[25] Philippe Sands and Jacqueline Peel, *Principles of International Environmental Law* (4th edn, CUP 2018)
[26] Rio Declaration on Environment and Development (1992) UN Doc A/CONF.151/26, Principle 2
[27] ibid, Principles 7 and 11. See also Daniel Bodansky, 'The United Nations Framework Convention on Climate Change: A Commentary' (1993) 18 Yale Journal of International Law 451, 501
[28] Rio Declaration (n 6) Principle 16. The OECD first articulated the PPP in its 1972 Guiding Principles Concerning International Economic Aspects of Environmental Policies: OECD Doc C(72)128
[29] Rio Declaration (n 6) Principle 15; Cartagena Protocol on Biosafety (adopted 29 January 2000) 2226 UNTS 208, Preamble

in the UNFCCC (1992) and Paris Agreement (2015)[30] the precautionary principle in the Cartagena Protocol on Biosafety (2000).

The Rio Declaration's most significant achievement, however, may lie in the register of justice rather than law. By articulating CBDR, affirming the right to development alongside environmental responsibility, and situating environmental governance within the obligations owed to present and future generations, the Declaration embedded a distributive justice dimension in IEL that has animated the loss and damage debate ever since. The framework it articulated was, however, only as strong as the political will to implement it. The core tension, observed presciently by Birnie, Boyle and Redgwell, is that IEL suffers from treaty congestion, implementation deficits and weak enforcement.[31] Rio generated normative momentum; it could not generate compliance.

PART III: CONTEMPORARY CHALLENGES, THREE CASE STUDIES IN THE LIMITS OF IEL

A. Climate-Induced Loss and Damage: The Architecture of Non-Liability

1. The Structural Exclusion of Accountability

Climate change is the most acute and structurally revealing test of IEL's capacity to address transboundary harm. The Paris Agreement's nationally determined contributions (NDC) system is built on voluntary pledges rather than legally binding emission reduction targets.[32] This was a deliberate political compromise: the price of universal ratification was the exclusion of binding mitigation commitments. The result is that the primary legal mechanism for preventing transboundary climate harm relies on the good faith of states whose dominant economic interests lie in delaying the transition away from fossil fuels.

The treatment of loss and damage those climate impacts that cannot be prevented through mitigation or adapted to through adjustment crystallises the accountability deficit most sharply. The COP27 decision confirmed that the loss and damage agenda item was premised as based on cooperation and facilitation and [not] involving liability or compensation.[33] This language is the direct product of US and EU insistence that climate finance arrangements must not be characterised as compensation for internationally wrongful acts a characterisation that would trigger the law of state responsibility and potentially expose developed states to claims for the full measure of climate damages. The formal exclusion of liability does not eliminate the underlying legal arguments for compensation; it merely forecloses one avenue for pursuing them within the UNFCCC framework.

2. COP27 and COP28: Historic Breakthrough and Structural Inadequacy

After three decades of demands from developing countries and small island states, a historic breakthrough was achieved at COP27 in November 2022. Parties agreed to establish new funding arrangements for loss and damage, creating a Transitional Committee of twenty-four members mandated to operationalise the fund by COP28. As McDonnell writes, the agreement represents a significant, historic win for developing countries and civil society.[34]

At COP28 in Dubai in December 2023, the Loss and Damage Fund was formally operationalised under the Financial Mechanism of the UNFCCC, with the World Bank serving as interim trustee for a period of four years.[35] And yet, as Verheyen notes, 'there remains much work to be done'.[36] Total pledges by early 2025 stood at approximately USD

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[30] UNFCCC (1992) 1771 UNTS 107, Art 3(1); Paris Agreement (2015) 3156 UNTS, Art 2(2)
[31] [31]Birnie, Boyle and Redgwell (n 3) 4
[32]Paris Agreement (n 10) Art 4(2). On the deliberate choice of voluntarism, see Daniel Bodansky, 'The Paris Climate Change Agreement: A New Hope?' (2016) 110 AJIL 288, 289–291.

[33] UNFCCC, Decision 2/CP.27 and 2/CMA.4 (November 2022): the agenda item was formally premised as 'based on cooperation and facilitation and [not] involving liability or compensation'
[34] Madeleine McDonnell, 'The COP27 Decision and Future Directions for Loss and Damage Finance' (2023) 32(3) Review of European, Comparative and International Environmental Law 416, 418
[35] UNFCCC, Decision 5/CMA.5, 'Operationalization of the New Funding Arrangements, including a Fund, for Responding to Loss and Damage' (December 2023), Appendix I
[36] Roda Verheyen, 'Loss and Damage, Climate Victims, and International Climate Law: Looking Back, Looking Forward'

768 million against an estimated annual need of over USD 400 billion less than 0.2% of the finance required. The choice of the World Bank as trustee drew sustained criticism from the G77 and China Group, who argued that the Bank's history of charging interest on loans to developing countries made it an inappropriate custodian. More fundamentally, the fund's non-liability character means that contributions are gifts, not obligations.

From an environmental justice perspective, this structure is deeply problematic. As Naylor and Ford observe, developing countries experience fifteen times more victims of natural disasters than developed nations, yet bear minimal historical responsibility for the GHG concentrations that intensify those disasters.[37] The Loss and Damage Fund, as currently designed, asks the victims of this injustice to depend on the generosity of its perpetrators, a structure that is politically unstable, ethically inadequate, and legally incoherent.[38]

3. The ICJ Advisory Opinion (2025): Normative Advance, Operational Caution

The most significant legal development of the contemporary period is the ICJ Advisory Opinion on Obligations of States in Respect of Climate Change, delivered on 23 July 2025.[39] Requested by the UN General Assembly in Resolution 77/276 (2023)[40] following a Vanuatu-led initiative, the proceedings attracted participation from 96 states and 11 international organisations, the highest in ICJ history.

The Opinion's holdings are normatively significant. The Court unanimously affirmed that the Paris Agreement, UNFCCC, and Kyoto Protocol create legally binding obligations; that the 1.5°C temperature goal constitutes the governing legal standard for assessing NDC adequacy; that states have limited discretion in designing NDCs, which must become progressively more ambitious; and that the general obligations of due diligence to prevent significant transboundary environmental harm apply to all states in respect of GHG emissions.[41] On state responsibility, the Court held that the general rules of state responsibility remain applicable alongside the climate treaty regime.[42] The ICJ's Opinion was preceded by the ITLOS Advisory Opinion of May 2024, which found that anthropogenic GHG emissions into the ocean constitute pollution of the marine environment under UNCLOS, triggering due diligence obligations for all state parties.[43]

The advisory opinion is not legally binding. Its authority is persuasive rather than obligatory. It is expected, however, to exert significant influence on domestic climate litigation which has already been transformed by decisions including Urgenda Foundation v Netherlands[44] and Klimaseniorinnen v Switzerland[45] as well as future UNFCCC negotiations on climate change.[46] Whether states will accept its framing of climate change as triggering obligations under customary international law, treaty law, and human rights law as a basis for binding legal obligation remains to be seen.

B. Cross-Border Pollution: The Limits of Sectoralisation

Beyond climate, cross-border pollution exposes the chronic weakness of a sectoralised IEL framework. The principal instruments include the UNECE Convention on Long-Range Transboundary Air Pollution (CLRTAP, 1979) and its

(2023) Transnational Environmental Law 1, 4

[37] Andrew Naylor and James Ford, 'Vulnerability and Loss and Damage following the COP27 of the UN Framework Convention on Climate Change' (2023) 23 Regional Environmental Change 38, 2. UNDP notes that developing countries face 15 times more natural disaster victims than developed nations

[38] See Paris Agreement (n 10) Art 8(1); COP27 Decision 2/CP.27 (n 13). The non-liability disclaimer was inserted at US insistence as a condition of agreement on the fund architecture

[39] ICJ, Advisory Opinion on Obligations of States in Respect of Climate Change (23 July 2025), para 73 ('existential threat')

[40] ICJ, Advisory Opinion on Obligations of States in Respect of Climate Change (23 July 2025), para 73 ('existential threat')

[41] ICJ Advisory Opinion (n 19) paras 184, 224, 241, 245 and operative paragraphs

[42] ibid, para 223: the climate treaty regime does not 'expressly or implicitly exclude' the application of general state responsibility rules

[43] ITLOS, Advisory Opinion on Climate Change and International Law (21 May 2024) Case No 31, para 232

[44] *Urgenda Foundation v State of the Netherlands* (Ministry of Infrastructure and the Environment) (Supreme Court, 20 December 2019) ECLI:NL:HR:2019:2007

[45] *Verein KlimaSeniorinnen Schweiz and Others v Switzerland* App No 53600/20 (ECtHR, 9 April 2024)

[46] United Nations Framework Convention on Climate Change (adopted 9 May 1992, entered into force 21 March 1994) 1771 UNTS 107

eight protocols; the Basel Convention on Hazardous Wastes (1989) UNCLOS Part XII and the UN Watercourses Convention (1997). The ICJ's elaboration of the customary duty to conduct environmental impact assessments for activities with a risk of significant transboundary harm, affirmed in Pulp Mills on the River Uruguay (2010), supplements the treaty framework.[47]

Each of these instruments addresses a specific medium or waste stream within a defined geographic scope. CLRTAP's limitation to the UNECE region means that transboundary air pollution in Sub-Saharan Africa or South Asia where economic growth is rapidly increasing industrial emissions falls outside any comparable binding regime.[48] The resulting framework is fragmented rather than systemic.

The East African context illustrates the specific governance challenge for the Global South. Lake Victoria shared by Uganda, Kenya, and Tanzania is subject to transboundary pollution from industrial effluent, agricultural runoff, and municipal waste from all three riparian states.[49] The Lake Victoria Basin Commission, established under the EAC framework, has limited enforcement capacity and operates primarily through coordination rather than binding obligation.[50] As Kameri-Mbote has noted, the gap between normative commitment and practical governance in shared East African water bodies reflects the general condition of environmental governance in the region.[51]

The Pulp Mills case,[52] while affirmatively establishing the customary EIA obligation, simultaneously illustrated the limits of ICJ adjudication in pollution disputes. Argentina failed to convince the Court that Uruguay had breached its substantive obligations, despite evidence of pollution from the Botnia pulp mill.[53] The evidentiary burden demonstrating significant harm attributable to specific activities proved insurmountable in practice.[54] This is a recurrent pattern: the substantive obligations of IEL are broad; the evidentiary requirements for establishing breach are demanding; and institutional capacity for independent environmental assessment in disputed contexts remains inadequate.

C. Multinational Corporations: The Governance Gap and Its Partial Closure

1. The Architecture of Evasion

The governance gap in MNC environmental accountability is perhaps the most politically entrenched failure of IEL. Under traditional international law, corporations are not direct subjects bearing primary legal obligations; liability is determined by domestic law. This creates a structural opportunity for regulatory arbitrage: MNCs incorporate in jurisdictions with favourable liability regimes, operate through chains of subsidiaries in host states with weak environmental standards, and insulate parent companies from liability for the acts of locally incorporated entities. In Ruggie's formulation, this is a governance gap that permits corporations to exploit weak governance environments with impunity.[55]

The UN Guiding Principles on Business and Human Rights (UNGPs), endorsed by the Human Rights Council in 2011, represent the most significant international response.[56] Built on three pillars the state duty to protect, the corporate responsibility to respect, and access to remedy the UNGPs provide a normative framework for corporate

[47] Case concerning Pulp Mills on the River Uruguay (Argentina v Uruguay) [2010] ICJ Rep 14, para 204. The EIA obligation is now generally accepted as customary: Sands et al (n 2) 601
[48] Convention on Long-Range Transboundary Air Pollution (adopted 13 November 1979, entered into force 16 March 1983) 1302 UNTS 217
[49] Food and Agriculture Organization (FAO), *Uganda Fisheries and Aquaculture Sector Overview* (2019); Ministry of Water and Environment (Uganda), *State of the Environment Report for Uganda 2020*
[50] Treaty for the Establishment of the East African Community (adopted 30 November 1999, entered into force 7 July 2000); Protocol for Sustainable Development of Lake Victoria Basin (2003)
[51] Patricia Kameri-Mbote, 'Water, Conflict, and Cooperation: Lessons from the Nile River Basin' (2007) 4 *Law, Environment and Development Journal* 1
[52] *Pulp Mills on the River Uruguay (Argentina v Uruguay)* (Judgment) [2010] ICJ Rep 14
[53] Ibid
[54] ibid para 204
[55] John Ruggie, 'Business and Human Rights: The Evolving International Agenda' (2007) 101(4) AJIL 819, 821
[56] UN Guiding Principles on Business and Human Rights (2011) UN Doc A/HRC/17/31

accountability. Their limitations are structural, however. The corporate ‘responsibility to respect’ is a standard of conduct voluntarily undertaken, not a binding obligation. The UN Open-Ended Intergovernmental Working Group to negotiate a binding business and human rights treaty has made slow progress, facing opposition from major developed states.

2. The Niger Delta Litigation: A Landmark in Transnational Accountability

The litigation arising from Shell’s operations in Nigeria’s Niger Delta represents one of the most consequential developments in transnational corporate environmental accountability of the post-2020 period. In Okpabi and Others v Royal Dutch Shell Plc [2021] UKSC 3, the UK Supreme Court unanimously reversed the Court of Appeal and held that the claims of approximately 42,500 members of the Ogale and Bille communities could proceed in the UK courts. The Court found it arguable that the parent company owed a common law duty of care to the claimants given the nature and extent of Shell’s control over its subsidiary’s environmental operations.[57]

In June 2024, London’s High Court of Justice ruled that Shell and its former Nigerian subsidiary could be sued for oil pollution dating back decades, directly rejecting Shell’s invocation of a five-year statute of limitations. The judge found that where a company has failed to remediate persistent pollution, that continuing failure constitutes an ongoing tort. Damilola Olawuyi, UN Independent Expert on Business and Human Rights, described the ruling’s continuing liability doctrine as having far reaching’ implications beyond Nigeria, across Africa and even to other continents.[58] The case is scheduled for full trial in 2027.

In a similar vein in Dutch proceedings, the Hague Court of Appeal found Shell civilly liable for oil spills in three Nigerian villages in decisions culminating in 2021.[59] Bertram describes the ruling as a blueprint for similar claims before European courts, affirming the anchor jurisdiction doctrine that permits Dutch courts to exercise jurisdiction over claims against Dutch-domiciled parent companies for the acts of their foreign subsidiaries. Together, Okpabi and Milieudefensie represent significant judicial narrowing of the corporate veil in transnational environmental cases achieved, however, through decade-long litigation and enormous resource costs rather than through any systematic international legal framework that is less time and resource consuming.

The EU Corporate Sustainability Due Diligence Directive (CS3D), adopted in 2024, represents the most significant legislative step toward mandatory corporate due diligence for environmental impacts along global value chains.[60] While not a treaty creating international obligations on corporations, the CS3D signals a regulatory shift of potentially profound extraterritorial significance major corporations operating in the EU must now map, prevent, and remedy adverse environmental impacts across their supply chains globally.

PART IV: EVALUATING THE ADEQUACY OF NO-HARM RULE AND POLLUTER PAYS PRINCIPLE

A. No-Harm Rule: Customary Authority, Operational Limits

The no-harm rule is now entrenched as a rule of customary international law applicable to environmental harm.[61] Its affirmation in the ICJ’s 2025 Advisory Opinion in the context of anthropogenic GHG emissions marks a significant normative advance: the principle has been extended from the bilateral smelter-to-forest paradigm of Trail Smelter Arbitration[62] to encompass the global atmospheric commons. This is substantial, because it means all states

[57] Okpabi and Others v Royal Dutch Shell Plc and Shell Petroleum Development Company of Nigeria [2021] UKSC 3, para 147 per Lord Hamblen

[58] Okpabi and Others v Royal Dutch Shell Plc and Shell Petroleum Development Company of Nigeria [2021] UKSC 3, para 147 per Lord Hamblen

[59] Milieudefensie v Royal Dutch Shell (Hague Court of Appeal, 26 November 2021); Daniel Bertram, ‘Transnational Experts Wanted: Nigerian Oil Spills before the Dutch Courts’ (2021) 33(2) Journal of Environmental Law 423, 424

[60] EU Corporate Sustainability Due Diligence Directive (CS3D) 2024/1760, OJ L, 5 July 2024. See Vedanta Resources Plc v Lungowe [2019] UKSC 20 as judicial precursor

[61] *Gabčíkovo-Nagymaros Project (Hungary v Slovakia)* [1997] ICJ Rep 7

[62] *Trail Smelter Arbitration (United States v Canada)* (1941) 3 RIAA 1905

regardless of specific treaty obligations are subject to a customary obligation of due diligence to prevent significant transboundary environmental harm.[63]

Yet the rule's operational limitations in modern conditions are profound. Four are particularly significant.

First is the attribution problem. Trail Smelter's fumes were traceable to a single facility in a single country. Climate change involves cumulative emissions from all states over 200 years, with each state's marginal contribution to any specific weather event being scientifically contested and legally near-impossible to establish by 'clear and convincing evidence. The ILC Articles on Prevention of Transboundary Harm (2001) attempt to address this by calibrating the obligation as one of due diligence rather than strict liability and by defining 'significant harm' with sufficient breadth.[64] But due diligence obligations do not, on their own, generate compensatory liability where harm occurs, the attribution requirement remains formidable.[65]

Second is the threshold problem. The rule applies only where harm is 'significant'. The slow-onset impacts of climate change gradual salinisation of coastal agricultural land, incremental sea-level rise, progressively shifting rainfall patterns may individually fall below any significant harm threshold while collectively constituting civilisation-threatening damage for small island states. IEL has not developed a credible framework for aggregating sub-threshold cumulative harm into a legally actionable claim.

Third is the non-state actor problem. The no-harm rule binds states, not corporations. Where MNC activities cause transboundary environmental harm, the obligation falls on the host state to regulate those activities with due diligence. In practice, the legal chain is multiple links too long to provide effective accountability. The Okpabi and Milieudefensie decisions were achieved by routing claims through domestic tort law, not through the no-harm rule's inter-state machinery.

Fourth is the prospectivity problem. The rule was designed to prevent future harm and compensate established bilateral damage. It provides no mechanism for addressing the deep historical injustice of accumulated environmental harm two centuries of industrialisation that produced the GHG concentrations responsible for current climate impacts. Reform proposals range from strict liability regimes for ultra-hazardous activities[66] to establishing international environmental tribunals with broader standing rules and innovative evidentiary frameworks.

B. Polluter Pays Principle: Economic Logic, Legal Fragility

The polluter pays principle has an elegant economic logic: by requiring polluters to internalise environmental costs, it simultaneously deters pollution and ensures that the costs of remediation fall on those responsible for causing the pollution. As a principle of international law, however, its practical effectiveness is substantially compromised.

The first problem is the non-binding character of Principle 16. Rio Declaration Principle 16 requires only those national authorities should endeavour to promote the internalisation of environmental costs a formulation that is aspirational, domestic in orientation, and permissive. There is no binding international instrument requiring states to implement the PPP in their international relations. The result is a patchwork of domestic carbon pricing schemes with enormous variation in stringency, undermining the principle's effectiveness as a global deterrent.

Second is the corporate arbitrage problem. In the MNC context, the PPP is routinely frustrated by limited liability corporate structures and regulatory competition among host states.[67] As the Niger Delta case demonstrates after

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[63] ibid, Rio Declaration on Environment and Development (adopted 14 June 1992) UN Doc A/CONF.151/26 (Vol I), Principle 2

[64] International Law Commission, *Draft Articles on Prevention of Transboundary Harm from Hazardous Activities* (2001) UN Doc A/56/10

[65] Ibid

[66] Vienna Convention on Civil Liability for Nuclear Damage (1963, as amended 1997) 1063 UNTS 265. The nuclear liability regime is the most developed strict liability framework in IEL

[67] Philippe Sands and Jacqueline Peel, *Principles of International Environmental Law* (4th edn, CUP 2018)

more than three decades, even spectacular litigation producing landmark judgments falls well short of making whole the communities that have borne the cost of Shell's operations.[68]

Third, the PPP sits in tension with CBDR in the climate context.[69] A strict application would allocate costs to current polluters regardless of historical responsibility, potentially requiring rapidly developing economies with high current emissions to bear financial obligations equivalent to historically responsible industrialised states. Reconciling these principles requires political choices that IEL has so far made only at the level of aspiration.[70]

Fourth, the PPP's financing logic for loss and damage is structurally excluded. The PPP would, applied consistently, require historically high-emitting developed states to finance the full costs of loss and damage attributable to their emissions.[71] The structural exclusion of liability from the Loss and Damage Fund is, in economic terms, a refusal to apply the PPP to climate change a refusal that is partly attributional and partly political.[72]

C. Environmental Justice as a Corrective Framework

The inadequacy of the no-harm rule and the PPP as standalone instruments points toward the need for a complementary framework grounded in environmental justice. The most significant development is the UN General Assembly's recognition of the right to a clean, healthy, and sustainable environment in Resolution 76/300 (2022)[73] a right that provides a direct legal pathway to accountability without requiring proof of significant transboundary harm or navigating the complexities of state responsibility.

The European Court of Human Rights decision in Klimaseniorinnen v Switzerland[74] represents the most advanced judicial application of this framework to date. The Grand Chamber found that Switzerland had violated Article 8 of the ECHR by failing to take adequate measures to mitigate climate change. The Court's reasoning drew directly on the Paris Agreement's temperature goals and IPCC scientific findings to determine the content of the state's positive obligation, demonstrating that human rights law can function as a complementary enforcement mechanism for IEL obligations, bypassing the attribution and threshold requirements that constrain the no-harm rule.[75]

The Escazú Agreement, which entered into force in 2021 for Latin America and the Caribbean, operationalises Principle 10 of the Rio Declaration through binding obligations on access to information, public participation, and access to justice in environmental matters.[76] It provides a model for analogous instruments in other regions. A binding access-rights protocol for the African continent, building on the African Convention on Conservation of Nature and Natural Resources, would significantly advance environmental justice within the East African Community context.[77]

PART V: TOWARDS STRUCTURAL REFORM: AN AGENDA FOR IEL

The foregoing analysis converges on a consistent diagnosis: the normative framework of IEL is, in its principles, broadly adequate. The failure is structural and political. As Guruswamy observes, many of IEL's failures can be traced to the influence of powerful state and corporate interests in negotiating treaties that provide the appearance

[68] *Okpabi and others v Royal Dutch Shell plc and another* [2021] UKSC 3; see also international litigation concerning environmental harm in the Niger Delta
[69] Rio Declaration on Environment and Development (adopted 14 June 1992) UN Doc A/CONF.151/26 (Vol I), Principle 7
[70] Daniel Bodansky, Jutta Brunnée and Lavanya Rajamani, *International Climate Change Law* (OUP 2017)
[71] Intergovernmental Panel on Climate Change (IPCC), *AR6 Synthesis Report* (2023)
[72] UNFCCC, 'Operationalisation of the Loss and Damage Fund' (COP28, 2023)
[73] UNGA Resolution 76/300 (28 July 2022) UN Doc A/RES/76/300; Human Rights Council Resolution 48/13 (8 October 2021) UN Doc A/HRC/RES/48/13
[74] *Verein KlimaSeniorinnen Schweiz and Others v Switzerland* App No 53600/20 (ECtHR, 9 April 2024)
[75] Paris Agreement (adopted 12 December 2015, entered into force 4 November 2016); IPCC (n 5)
[76] Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean (Escazú Agreement) (adopted 4 March 2018, entered into force 22 April 2021)
[77] African Convention on the Conservation of Nature and Natural Resources (revised, adopted 11 July 2003)

of environmental commitment while preserving economic advantage.[78] Reform must therefore address not merely technical deficiencies in existing rules but the political economy of IEL's production.

Four reforms are urgently required. First is mandatory corporate due diligence in international law. The EU CS3D represents a significant step, but a unilateral one that leaves the governance gap intact outside the EU's sphere of influence.[79] A binding international instrument on corporate environmental due diligence building on the UNGPs and cognate with the CS3D model would create universal rather than unilateral obligations. The OEIGWG negotiations remain the appropriate forum for this project.[80]

Second is the transformation of the Loss and Damage Fund from a voluntary pledge mechanism to a rights-based, adequately capitalised institution. The ICJ's 2025 Advisory Opinion, by affirming that the general rules of state responsibility apply alongside the climate treaty regime[81] and by acknowledging the obligations arising from significant harm to the climate system, provides a legal foundation for arguing that contributions to the Loss and Damage Fund are discharges of legal obligation, not acts of charity. This argument should be pressed in treaty negotiations, in domestic litigation, and in the continuing development of customary international law.

Third, the institutional architecture of IEL must be reformed to provide broader access to justice for transboundary harm victims. Regional courts, including the African Court on Human and Peoples' Rights and the East African Court of Justice, should be empowered to receive environmental harm claims from individuals and communities, with standing rules that do not require proof of significant harm as a precondition for filing.[82]

Fourth, the fragmentation of IEL must be addressed through systemic rather than sectoral integration. The Kunming-Montreal Global Biodiversity Framework (2022) illustrates both the potential and the limits of ambitious multilateral frameworks: transformative targets without the monitoring and enforcement mechanisms to ensure compliance.[83] A Global Pact for the Environment consolidating IEL's principles into a binding framework convention remains the most structurally coherent response to fragmentation.[84] The normative foundation laid by Rio, the 1992 conventions, and the ICJ's recent advisory jurisprudence is strong enough to support such an instrument.

PART VI: CONCLUSION AND RECOMMENDATIONS

International environmental law stands at a peculiar juncture. It has, over eight decades of development since Trail Smelter Arbitration[85] produced a normative architecture more sophisticated than any prior era in the history of international law. The no-harm rule is entrenched as a custom of IEL[86]; the Rio Declaration's principles have shaped a generation of treaty-making[87]; the ICJ has affirmed, in its most widely-participated advisory opinion in history, that the Paris Agreement[88] creates binding obligations and that the 1.5°C goal constitutes a legal standard the Loss; and Damage Fund has been operationalised after thirty years of struggle; and domestic courts in the United Kingdom and the Netherlands have begun to pierce the corporate veil to hold parent companies accountable for the environmental acts of their subsidiaries in foreign jurisdictions.[89] These are real advances.

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[78] Ludwik Guruswamy, International Environmental Law in a Nutshell (5th edn, West Academic 2017) 23

[79] European Union, Corporate Sustainability Due Diligence Directive (Directive (EU) 2024/… pending final numbering)

[80] UN Human Rights Council, 'Open-ended intergovernmental working group on transnational corporations and other business enterprises with respect to human rights'

[81] ICJ Advisory Opinion (n 19) para 223

[82] Protocol to the African Charter on Human and Peoples' Rights on the Establishment of an African Court on Human and Peoples' Rights (adopted 1998, entered into force 2004); Treaty for the Establishment of the East African Community (1999)

[83] Kunming-Montreal Global Biodiversity Framework (2022) CBD/COP/DEC/15/4; New Collective Quantified Goal on Climate Finance (COP29, Baku, 2024)

[84] Laurent Fabius and others, 'Global Pact for the Environment' (Draft, 2017)

[85] *Trail Smelter Arbitration (United States v Canada)* (1941) 3 RIAA 1905

[86] *Gabčíkovo-Nagymaros Project (Hungary v Slovakia)* [1997] ICJ Rep 7

[87] Rio Declaration on Environment and Development (adopted 14 June 1992) UN Doc A/CONF.151/26 (Vol I)

[88] Paris Agreement (adopted 12 December 2015, entered into force 4 November 2016)

[89] *Okpabi and others v Royal Dutch Shell plc and another* [2021] UKSC 3; *Urgenda Foundation v State of the Netherlands* (Supreme Court, 20 December 2019) ECLI:NL:HR:2019:2007

Yet the central argument of this article is that the advances are insufficient. The no-harm rule cannot adequately address diffuse, multi-state, historically cumulative harm.[90] The polluter pays principle lacks binding international force and is routinely circumvented by corporate structure and regulatory arbitrage.[91] The Loss and Damage Fund is dramatically undercapitalised and deliberately structured to avoid liability.[92] The governance gap for MNCs remains wide.[93] And the structural power asymmetries of the international system in which those least responsible for environmental degradation suffer its worst consequences are reproduced rather than challenged by the current framework.[94]

Environmental justice demands more. It demands a Loss and Damage mechanism built on the logic of legal obligation, not charitable donation. It demands binding corporate due diligence obligations at the international level, not voluntary guidelines supplemented by domestic tort litigation waged over decades. It demands adjudicatory access for the communities most harmed by transboundary environmental degradation, including in East Africa and the Pacific. And it demands, ultimately, a political reckoning with the fact that the international legal order has been designed, in significant part, by those with the least interest in accountability for environmental harm.

The ICJ's 2025 Advisory Opinion, for all its normative significance, cannot compel states to fund the Loss and Damage mechanism adequately, cannot force corporations to remediate the Niger Delta, and cannot accelerate the phaseout of fossil fuels. What it can do is to begin evolving jurisprudence of international environmental law to hold open the legal possibility of accountability and deny powerful actors the comfort of believing that impunity is permanent.

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[90] Philippe Sands and Jacqueline Peel, *Principles of International Environmental Law* (4th edn, CUP 2018)
[91] OECD, 'Recommendation on Guiding Principles Concerning International Economic Aspects of Environmental Policies' (1972)
[92] UNFCCC (n 5)
[93] John Ruggie, 'Business and Human Rights: The Evolving International Agenda' (2007) 101 *AJIL* 819
[94] Intergovernmental Panel on Climate Change (IPCC), *AR6 Synthesis Report* (2023)

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