

State Responsibility for Transboundary Environmental Harm and Global Accountability in International Law

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ABSTRACT

Transboundary environmental damage poses a structural challenge to the conventional framework of state responsibility in international law. This conventional framework, based on discrete violations and linear causation, is increasingly inadequate in the context of climate change, rising emissions, and hazardous industrial activities. This paper examines the relationship between the 2006 Draft Principles on the Allocation of Compensation for Transboundary Damage Arising from Hazardous Activities and the 2001 Responsibility of States for Internationally Wrongful Acts (ARSIWA). It argues that both instruments serve as complementary elements of an emerging framework of environmental responsibility.

Cumulative damage is often analysed using the ARSIWA's breach-based approach, which is guided by a series of conduct and due diligence requirements. In contrast, the Draft Principles consider the allocation of compensation arising from lawful but hazardous activities. Their coexistence reflects a layered model of accountability that integrates corrective and distributive logics, with a focus on collective environmental interests, without displacing established legal obligations. The article's final argument is that ARSIWA and the 2006 Draft Principles should not be understood as two competing systems, but rather as elements of a layered accountability system within contemporary international environmental governance.

Keywords: State responsibility; Environmental Liability Obligations; Climate Change Law; Due Diligence; Erga Omnes

INTRODUCTION

Environmental degradation exposes a fundamental tension within contemporary international law. Classical state responsibility relies on discrete wrongful acts, and linear causal relationships, where responsibility is assumed to arise only when conduct attributable to a state violates an international obligation [1,2,3]. However, transboundary pollution, climate change, and systemic industrial hazards operate through cumulative and diffuse processes, often producing cross-border impacts through regulatory omissions or otherwise lawful activities. As a result, the classical breach-based model increasingly appears inadequate.

This paper addresses the following research question: how can international law reconcile breach-based state responsibility with liability mechanisms to effectively govern transboundary environmental harm?

The paper contends that the relationship between responsibility and liability reflects not fragmentation, but an evolutionary transformation of environmental accountability. Climate change does not undermine the logic of ARSIWA; rather, it reveals its adaptive potential.

When read together with the 2006 Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising from Hazardous Activities, the relationship between responsibility and liability becomes clearer [4]. It addresses the allocation of loss coming from legal but risky operations, the picture becomes more complicated [5]. While the Draft Principles assist in ensuring a fair distribution of losses caused by residual risk, the International Law Commission's Articles on State Responsibility for Internationally Wrongful Acts (ARSIWA) address systematic breaches. When seen as a whole, these instruments demonstrate a gradual shift from isolated fault-based accountability to a systematic approach to environmental risk.

METHODS

This study utilizes a qualitative doctrinal methodology based on the investigation of secondary legal sources. It evaluates ARSIWA and the 2006 Draft Principles via a systematic legal analysis, positioning both institutions alongside wider changes in international environmental law. The research focuses on International Court of Justice (ICJ) jurisprudence, International Law Commission (ILC) guidelines, and corresponding treaty frameworks. This doctrinal approach is

enhanced with analytical interpretation to analyze how legal concepts addressing environmental harm and state accountability are changing in response to complex and cumulative issues.

LITERATURE REVIEW

Recent scholarship suggests that the traditional breach-based model of state responsibility is being reinterpreted to include cumulative and systemic environmental harms. Adrian Leonhard Klein (2024) argues that ARSIWA is conceptually capable of addressing climate responsibility, although its practical application remains underdeveloped [6]. Vanessa S.W. Tsang on the other hand, places climate mitigation duties within a human rights and *Erga Omnes* framework, thereby expanding the normative reach of due diligence obligations [7].

Other researchers, such as Aakash Malik have emphasized the enduring importance of the no-harm and due diligence principles in transboundary environmental issues, but they also highlight enforcement gaps in international governance [8].

Building on this doctrinal foundation, Elisa Morgera's further demonstrates that regulatory adequacy and state conduct are central to contemporary climate disputes [9]. In addition, Klaus Schmalenbach has analyzed state responsibility and liability in the context of broader institutional and legal mechanisms for addressing transboundary harm [10].

While current research emphasizes the relevance of both responsibility and liability frameworks, insufficient attention has been dedicated to their systematic integration. This paper addresses that gap by conceptualising these regimes as part of a structured accountability system.

Responsibility and Liability in the Climate Context

State Responsibility under ARSIWA

Article 2 ARSIWA sets out two cumulative conditions: conduct attributable to the state and conduct that constitutes a breach of an international obligation [11]. Articles 4-11 expand the scope of attribution beyond formal organs to include entities exercising governmental authority and, in some cases, private actors under the direction of the state [12]. In the environmental context, omission and regulatory failure present major challenges [13]. Harm can result from diffuse emissions, industrial activity, or inadequate enforcement. The key question is whether the state has exercised due diligence in fulfilling its preventive obligations.

ICJ jurisprudence supports the preventive duty. In the *Pulp Mills on the River Uruguay* case, environmental protection duties were identified as obligations of conduct [14]. The state must adopt legislative, administrative, and monitoring measures commensurate with the risk, but is not obliged to ensure absolute prevention [15]. Breach is therefore assessed based on regulatory adequacy, scientific knowledge, and foreseeability.

Climate change challenges this framework, as it involves cumulative emissions, multi-level sources, and probabilistic causal chains [16,17,18]. ARSIWA does not require a single catastrophic event; rather, a long-term failure to reduce well-

established risks can constitute non-conformity with the obligation to prevent transboundary harm.

The forthcoming ICJ Advisory Opinion on *Climate Change Obligations of States (2025)* further illustrates this evolution. It recognises that environmental harm often arises from the aggregate effects of lawful activities rather than isolated wrongful acts. The opinion indicates a paradigm shift in environmental governance, challenging the classical causation model in which breaches directly trigger reparations [19].

The Court observes that environmental and climate harms often arise not from deliberate misconduct, but from the aggregate effects of lawful operations, which cross national borders under paras 45 to 48 and 52. This necessitates a nuanced accountability framework in which responsibility and liability operate as complementary mechanisms.

Under paras 50 to 53, responsibility primarily serves to remedy non-compliance. It said that the states have an obligation to prevent harm within their own jurisdiction and to mitigate transboundary impacts through international cooperation. Under paras 54 to 57, liability has a forward-looking, risk-allocation logic.

It institutionalizes compensation mechanisms that do not depend on fault, recognizing that some environmental harm, such as irreversible loss of biodiversity or rising sea levels, cannot be specifically attributed to a single actor. The ICJ thus places breach-based responsibility within a broader risk-oriented governance framework, which indicates that modern environmental law is integrating traditional fault principles with pre-emptive, sector-specific regulatory measures [20].

Notably, paras 49 and 58 of the Advisory Opinion emphasize that judicial evaluation is increasingly prioritizing regulatory adequacy over evidence of misconduct. Courts are encouraged to assess whether states have implemented robust climate policies, conducted meaningful environmental impact assessments, and participated in cross-border consultations [21]. This approach institutionalizes a hybrid accountability model, where preventive risk governance and corrective obligations are intertwined to ensure a more systemic response to the diffuse and cumulative impacts of climate change [22-23].

Composite Acts and Cumulative Harm

Article 15 ARSIWA introduces the concept of composite acts, where multiple actions or omissions collectively constitute wrongful conduct [24]. Climate harm is an example of cumulative injury: no single emission is decisive, but the damage accumulates over time. This temporal aggregation overcomes fragmentation in diffuse environmental damage by allowing chronic regulatory failure to be characterised as continuing wrongful conduct. It shifts the focus from isolated acts to systemic patterns of behaviour. This approach shifts the focus from isolated violations to systemic conduct, incorporating environmental realities while maintaining formal breach requirements.

According to the Advisory Opinion, due diligence is a practical idea that brings together state sovereignty and international interdependence [25]. In paras 62 to 66, the Court emphasized that governments must maintain regulatory vigilance

proportionate to the possibility of predicted transboundary environmental harm. This necessitates context-sensitive oversight, which includes continual monitoring, environmental impact evaluations, and consultation with the state or community that will be affected.

The ICJ emphasized that due diligence remains a context-sensitive and somewhat vague aspirational objective. States are expected to maintain regulatory vigilance proportionate to the risk of foreseeable transboundary environmental harm, including through environmental impact assessments, continuous monitoring, and consultation with affected states [26]. States must be flexible in their promises to account for differing capacities, previous emissions, and vulnerability to climate dangers under paragraphs 68 to 72 [27].

However, this flexibility ensures that norms such as emissions reduction objectives, adaptation techniques, and the protection of endangered ecosystems serve as concrete guidance for behavior rather than undercutting normative expectations [28]. The Court argues that due diligence obligations go beyond procedural observance to include substantive prudence, due to the global environmental framework, which fills the gap between anticipatory liability and preventative duty [29-30].

The ICJ Advisory Opinion essentially follows two logics: it upholds state discretion while establishing internationally uniform standards that make governments accountable for predictable and avoidable environmental damage. By emphasizing both regulatory adequacy and proportionality, the Court has presented a legal architecture that is capable of supporting strategic climate litigation and provides a persuasive benchmark for domestic courts to assess state action or inaction.

Legal Consequences

Part Two of ARSIWA regulates remedies. Article 30 mandates cessation and assurances of non-repetition which in the environmental context may require the cessation of polluting activity or the reform of regulatory systems [31]. Article 31 establishes the obligation of full reparation, where Article 35 includes restitution, and Article 36 compensation, and lastly, Article 37 talks about satisfaction [32].

Where ecosystems are irreversibly damaged, restitution is often impossible, making compensation all the more important. In *Certain Activities Carried Out by Nicaragua in the Border Area*, the ICJ determined the extent of environmental harm by awarding compensation based on restoration costs and ecosystem valuation, ensuring that non-commercial environmental injury is legally compensable [33]. The ICJ awarded compensation based on restoration costs and ecosystem valuation, recognising non-commercial environmental damage.

In the case of symbolic or reputational injury, satisfaction, including formal acknowledgment, supplements tangible remedies. Thus, ARSIWA thus provides a coherent remedial structure; however, establishing breach and causation remains challenging in complex environmental contexts.

Erga Omnes Obligations and Standing

Article 48 ARSIWA allows states that are not directly injured parties to invoke responsibility if the obligation is owed to the international community (*Erga Omnes*). ICJ rulings in cases like *South Africa vs. Israel*, and *Application of the Genocide Convention* have upheld collective standing in pledges to protect fundamental communal interests. The procedural scope may be expanded and reliance on specific injury might be reduced if environmental preservation were viewed as a common interest. Although the substantive responsibility requirements would remain unchanged.

Liability under the 2006 Draft Principles

The Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising out of Hazardous Activities deal with lawful but hazardous activities mentioned under Principle 2(c), where liability arises only when harm materializes, rather than when a breach is proven. This regime emphasizes preventive regulation, prompt compensation, and financial security mechanisms, e.g. insurance, compensation funds.

In contrast to ARSIWA, it operates under a distributive logic focused on risk allocation and cost internalisation. Together, these frameworks reflect a transition from episodic fault-based responsibility to comprehensive environmental risk governance.

DISCUSSION

An Integrated Accountability Framework

The relationship between ARSIWA and the 2006 Draft Principles reflects a structural evolution. It does not indicate fragmentation. The ARSIWA preserves the classical model of attribution, breach, and reparation, which is based on corrective justice. In contrast, the Draft Principles deal with lawful but hazardous activities and adopt a distributive logic focused on risk allocation and compensation.

These regimes are conceptually distinct but functionally complementary. ARSIWA addresses breaches of international obligations, while the Draft Principles focus on the allocation of loss resulting from lawful but hazardous activities. This is in place to respond to infractions as ARSIWA provides a legal framework for responding to such breaches. Liability applies when harm materializes despite regulatory compliance, so that residual risk is not externalized.

Together, they form a layered architecture, where corrective and distributive rationales coexist within a broader environmental risk governance framework.

Due Diligence and Systemic Breach

Due diligence acts as a doctrinal bridge between sovereignty and interdependence. It transforms the broad idea of preventative measures into context-sensitive regulatory adequacy requirements. The question of whether governments have taken proper legislative, administrative, and supervisory steps in response to known transboundary threats is becoming increasingly significant in judicial evaluation.

Article 15 of the ARSIWA outlined for the system initiatives, as the concept of composite acts is particularly significant in the climate context. It enables the recognition of cumulative

emissions and regulatory omissions as continuing wrongful conduct, avoiding fragmentation. They allow for the identification of a long-standing pattern of omission as continuing wrongful conduct, thus avoiding the artificial fragmentation of responsibility. The central question thus shifts from isolated acts to systemic regulatory alignment. This may be consistent with evolving scientific standards, while maintaining the constraints of the principle of non-retroactivity.

Collective Interests and Risk Internalisation

Recognising environmental obligations as *Erga Omnes* restructures the procedural dynamic. Invoking responsibility is no longer limited to specially injured states, thereby strengthening the enforceability of norms protecting the global commons. While the substantive elements of breach remain unchanged, collective standing places responsibility within a broader compliance ecosystem, including adjudication, negotiation, and cooperative governance mechanisms.

The Draft Principles further strengthen this architecture by institutionalising compensation mechanisms, financial security requirements, and risk-spreading devices. These instruments internalise the external costs of hazardous activity, but without obliterating the distinction between wrongfulness and lawful risk.

Collectively, responsibility and liability do not represent an abandonment of the classical doctrine; rather, they represent a recalibration. International environmental law is increasingly operating on a hybrid model: breach-based accountability, based on due diligence, and structured allocation of residual risk. This synthesis strengthens both the coherence and adaptability of the international legal response to transboundary environmental harm.

CONCLUSION

Transboundary environmental harm challenges the classical breach-based model of state responsibility. This study demonstrates that the 2001 International Law Commission Articles on Responsibility of States for Internationally Wrongful Acts (ARSIWA) and the 2006 Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising out of Hazardous Activities are not competing regimes; rather, they function as complementary mechanisms.

ARSIWA addresses systemic and cumulative harms through appropriate precautionary action. This is coordinated action and ongoing enforcement, while maintaining corrective justice and adapting to complex environmental realities. In contrast, the draft policy ensures the distribution of harms arising from lawful but risky activities, thereby creating a framework for future-oriented liability and risk management.

Collectively, they form a layered framework that integrates preventive regulation, compensation, and collective environmental interests, including *Erga Omnes* obligations. Rather than fragmenting accountability, this hybrid model integrates responsibility and liability, enabling international law to respond coherently to diffuse and long-term environmental risks. With the goal of promoting equitable and sustainable

global environmental governance, it reflects an evolutionary process in which traditional fault-based notions are being challenged.

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