



Globalization and the Transformation of Environmental Law: Challenges for National Environmental Governance

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ABSTRACT

Globalization has fundamentally transformed the structure, sources, actors, and implementation of environmental law. Environmental problems such as climate change, biodiversity loss, transboundary pollution, deforestation, and marine degradation increasingly transcend national borders, making purely domestic regulatory approaches insufficient. This article examines how globalization influences the transformation of environmental law and identifies the principal challenges it creates for national environmental governance. The study employs normative legal research with conceptual, statutory, and international legal approaches. Primary legal materials include major international environmental instruments, while secondary materials consist of scholarly literature concerning global environmental law, environmental governance, international trade, and environmental rule of law.

Keywords: globalization, environmental law, environmental governance, environmental rule of law, sustainable development



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1. INTRODUCTION

Globalization has become one of the most influential forces shaping contemporary legal, economic, political, and institutional structures. The increased movement of capital, commodities, technology, information, investment, and production across national borders has created unprecedented levels of interdependence among states. Although globalization has generated opportunities for economic development and technological exchange, it has also intensified environmental pressures whose consequences are not confined to the jurisdiction in which they originate. Climate change, biodiversity loss, transboundary air pollution, marine pollution, deforestation, illegal wildlife trade, and the

international movement of hazardous substances demonstrate that environmental degradation increasingly possesses a transnational dimension.

The transboundary character of contemporary environmental problems challenges the traditional assumption that environmental regulation can be effectively governed exclusively within the territorial jurisdiction of sovereign states. National environmental legislation remains fundamental, but environmental risks generated by globally interconnected economic activities cannot always be adequately addressed through isolated domestic measures. Kulovesi et al. (2019) argue that environmental governance is particularly illustrative of the emergence of global law because it increasingly blurs distinctions between national and international law, public and private regulation, and formal and informal normative arrangements. The emergence of global environmental law therefore reflects the growing interaction among international norms, domestic environmental regulations, private standards, transnational institutions, courts, corporations, non-governmental organizations, and local communities.

Globalization has also transformed the relationship between economic activity and environmental regulation. International trade and foreign investment can promote technological innovation, efficiency, and access to cleaner production methods. At the same time, global production chains may relocate environmentally intensive activities across jurisdictions, create pressure for regulatory competition, and distribute environmental costs unevenly between developed and developing countries. Copeland et al. (2022) emphasize that the relationship between globalization and environmental quality is complex because international trade may influence pollution, natural-resource exploitation, transportation emissions, environmental policy, and the geographical distribution of environmentally harmful production. Consequently, globalization cannot simply be classified as environmentally beneficial or environmentally destructive. Its effects are significantly mediated by regulatory institutions and the effectiveness of environmental governance.

From a legal perspective, globalization has encouraged the diffusion of environmental principles across jurisdictions. Principles such as sustainable development, prevention, precaution, polluter pays, environmental impact assessment, public participation, intergenerational equity, and access to environmental information increasingly influence domestic legislation and judicial reasoning. The circulation of these principles demonstrates that contemporary environmental law is no longer developed solely within national political and legislative processes. Instead, legal ideas increasingly travel between international institutions, treaties, domestic courts, transnational networks, and private governance systems (Kulovesi et al., 2019).

This transformation has become particularly evident in global climate governance. The Paris Agreement connects international climate commitments with domestic legal and policy structures through nationally determined contributions (NDCs). Under Article 4 of the Paris Agreement, Parties are required to prepare, communicate, and maintain successive NDCs and pursue domestic mitigation measures aimed at achieving those

contributions (United Nations Framework Convention on Climate Change [UNFCCC], 2015). The mechanism illustrates a significant transformation in international environmental governance because internationally agreed objectives are implemented through nationally determined regulatory measures rather than a uniform global command-and-control system.

Recent evidence further demonstrates the increasing connection between international climate commitments and national environmental law. The UNFCCC's 2025 NDC synthesis reported that 97% of the Parties covered by the report provided information concerning legal and policy frameworks supporting implementation of their new NDCs, while climate-related legal and policy instruments were identified across sectors such as energy, environment, agriculture, transport, water, waste, urban planning, and infrastructure (UNFCCC, 2025). This indicates that international environmental commitments increasingly influence the development and restructuring of national regulatory frameworks.

A similar transformation can be observed in biodiversity governance. The Kunming-Montreal Global Biodiversity Framework (KMGBF), adopted in 2022 under the Convention on Biological Diversity, establishes four long-term goals and 23 targets for 2030. It encourages governments to revise and implement national biodiversity strategies, targets, policies, planning mechanisms, and regulatory measures. Particularly important is Target 14, which calls for the integration of biodiversity and its multiple values into policies, regulations, planning, development processes, strategic environmental assessments, environmental impact assessments, and relevant economic activities (Convention on Biological Diversity [CBD], 2022). The framework therefore demonstrates how global environmental commitments can shape domestic policy and regulatory reform without completely eliminating national discretion.

Globalization has also expanded the number and diversity of actors involved in environmental governance. States remain central institutions in creating and enforcing environmental law, but they no longer exercise exclusive authority over environmental governance. International organizations, multinational corporations, financial institutions, non-governmental organizations, indigenous peoples, local communities, scientists, transnational advocacy networks, consumers, and courts increasingly influence environmental standards and practices. Hunter (2022) argues that excessively state-centric approaches to international environmental law are increasingly inadequate because many environmental harms are generated by private actors, while individuals and local communities often directly bear the consequences of ecological degradation.

The growing recognition of environmental rights has further transformed environmental governance. Environmental protection is increasingly linked with human rights, environmental justice, procedural rights, and constitutional governance. In 2022, the United Nations General Assembly recognized the right to a clean, healthy, and sustainable environment as a human right. This development reflects the broader movement toward rights-based environmental governance, in which environmental

degradation is not merely treated as a regulatory or administrative issue but also as a matter concerning human dignity, equality, health, and justice (United Nations General Assembly UNGA, 2022).

However, the internationalization of environmental norms does not automatically guarantee effective environmental protection. The existence of environmental legislation may coexist with weak enforcement, inadequate institutional capacity, corruption, limited access to justice, insufficient monitoring, or political resistance. The United Nations Environment Programme (UNEP, 2023) emphasizes that environmental rule of law requires more than the formal adoption of laws. Effective governance depends on institutions, rights, civic engagement, enforcement, accountability, and access to justice. Its global assessment covering 193 United Nations Member States demonstrates that environmental governance continues to face substantial implementation challenges despite considerable legal development.

The tension between international environmental commitments and national sovereignty represents another critical issue. Environmental globalization may encourage convergence toward global standards, but states differ substantially in their economic structures, institutional capacities, environmental vulnerabilities, technological resources, and developmental priorities. Uniform regulatory expectations can therefore impose disproportionate burdens on states with limited financial and administrative capacity. Developing countries may simultaneously be required to promote economic development, alleviate poverty, compete for international investment, and comply with increasingly sophisticated environmental standards.

Trade-related environmental policies illustrate this problem. Environmental standards adopted by major markets can influence production practices beyond their territorial borders because exporters may have to comply with sustainability requirements as a condition of market access. Banga (2022) argues that international trade and environmental initiatives can create particular challenges for developing countries, especially when new environmental trade measures are introduced without adequate technology transfer, financial resources, and policy space. Global environmental governance therefore contains a distributional dimension: the costs and benefits of environmental regulatory transformation are not necessarily shared equally.

These developments raise a central legal question: how does globalization transform environmental law, and what challenges does this transformation create for national environmental governance? This question is important because globalization does not eliminate the state as the principal institution responsible for environmental regulation. Rather, it changes the context in which states formulate, implement, and enforce environmental law (.

This article argues that globalization has transformed environmental law from a predominantly territorially bounded regulatory system into a multilayered governance framework characterized by interaction among international law, national legislation,

transnational norms, private regulation, environmental rights, and non-state actors. Nevertheless, transformation at the normative level does not necessarily produce equivalent improvements in environmental outcomes. The effectiveness of globalized environmental law ultimately depends on the ability of national institutions to translate global commitments into legitimate, coherent, enforceable, and context-sensitive domestic regulatory frameworks.

Accordingly, this study aims to analyze the principal mechanisms through which globalization transforms environmental law and identify the major challenges that arise for national environmental governance. It specifically examines the internationalization of environmental norms, the emergence of regulatory pluralism, the relationship between globalization and sovereignty, trade-environment interactions, environmental rights, implementation gaps, and the continuing importance of environmental rule of law.

RESEARCH METHODE

This study employs normative legal research using qualitative legal analysis. Normative legal research is appropriate because the principal object of analysis is the development, interaction, and transformation of legal norms governing environmental protection within national, international, and transnational contexts. Rather than measuring environmental outcomes through statistical analysis, the study examines the normative structures through which globalization influences environmental law and governance.

Three complementary approaches are employed. First, the conceptual approach is used to examine the concepts of globalization, global environmental law, environmental governance, sovereignty, environmental rule of law, regulatory convergence, and sustainable development. The concept of global environmental law is particularly important because it provides an analytical framework for understanding environmental regulation beyond the conventional separation between domestic and international law. Kulovesi et al. (2019) describe contemporary environmental law as increasingly characterized by normative arrangements that cross established boundaries between public and private authority and between domestic and international governance.

Second, an international legal instrument approach is employed to analyze major international environmental frameworks that influence national environmental governance. These include the Paris Agreement, the Convention on Biological Diversity and the Kunming-Montreal Global Biodiversity Framework, as well as relevant United Nations instruments concerning environmental rights. These materials are examined to identify how international norms establish objectives, procedural obligations, reporting mechanisms, policy expectations, and implementation frameworks that subsequently interact with national legal systems.

Third, a literature-based analytical approach is used to examine contemporary scholarship concerning globalization, environmental law, international trade,

environmental governance, state sovereignty, and environmental rule of law. Secondary legal materials consist primarily of peer-reviewed journal articles, academic books and chapters, and institutional reports produced by organizations such as UNEP and the UNFCCC.

The legal materials are analyzed through descriptive, interpretative, and analytical methods. Descriptive analysis identifies major patterns in the globalization of environmental law. Interpretative analysis examines the meaning and regulatory implications of relevant environmental principles and international commitments. Analytical synthesis is subsequently used to evaluate the tensions between global environmental norms and national governance capacities.

The study does not attempt to evaluate one national legal system or provide a quantitative comparison among countries. Instead, it adopts a general analytical perspective to identify recurring governance challenges arising when global environmental expectations interact with national legal institutions. The analysis is therefore intended to develop a conceptual and normative explanation of the transformation rather than establish causal relationships through empirical measurement.

2. RESULT AND ANALYSIS

Globalization and the Internationalization of Environmental Law

One of the most important consequences of globalization is the internationalization of environmental law. Environmental regulation has historically been strongly associated with state sovereignty because governments exercise authority over land, natural resources, licensing, pollution control, spatial planning, and administrative enforcement within their territories. However, contemporary ecological problems increasingly undermine the practical adequacy of purely territorial regulation.

Climate change illustrates this problem most clearly. Greenhouse gas emissions produced in one jurisdiction contribute to atmospheric changes whose consequences are globally distributed. Similarly, biodiversity loss may undermine ecosystem services of global importance, while marine pollution and transboundary air pollution may generate consequences far beyond the territory where harmful activities occur. These characteristics create a structural need for international cooperation.

The Paris Agreement demonstrates a hybrid form of global-national environmental governance. It establishes common international goals but allows states to determine their national climate contributions. This model recognizes both global ecological interdependence and the continuing importance of national sovereignty. NDCs are consequently an important bridge between international environmental law and domestic regulatory governance (UNFCCC, 2015).

The increasing incorporation of international environmental commitments into domestic legal and policy frameworks suggests that globalization has not made national environmental law irrelevant. Instead, it has expanded its regulatory context. Domestic environmental legislation increasingly operates within networks of global commitments, reporting mechanisms, scientific standards, financial arrangements, and transnational expectations.

The Kunming–Montreal Global Biodiversity Framework provides another example. Its implementation architecture requires national targets, strategies, monitoring, reporting, and policy integration. The framework explicitly promotes coherence between biodiversity conventions and other international institutions while recognizing the roles of indigenous peoples, local communities, governments, and non-state stakeholders (CBD, 2022). This illustrates the shift from environmental governance based primarily on isolated legal instruments toward more integrated systems of global and domestic regulation.

Regulatory Convergence and Legal Pluralism

Globalization encourages the diffusion of environmental principles, regulatory approaches, and institutional models across national jurisdictions. Environmental impact assessment, access to environmental information, public participation, pollution licensing, corporate environmental disclosure, sustainability standards, and climate-related regulation increasingly appear in multiple legal systems.

This process can generate regulatory convergence, but convergence should not necessarily be equated with complete legal harmonization. National environmental systems continue to reflect different constitutional traditions, administrative structures, economic conditions, ecological circumstances, and development priorities. Globalization therefore produces a form of legal pluralism in which multiple legal and normative systems operate simultaneously.

Kulovesi et al. (2019) explain that global environmental law reflects the growing relevance of norms that transcend traditional distinctions between domestic and international law and between state and non-state authority. From this perspective, environmental governance does not develop exclusively through international treaties or national statutes. It may also be influenced by corporate sustainability commitments, financial standards, environmental certification systems, scientific institutions, transnational litigation, and civil society advocacy.

Such pluralism creates opportunities for innovation. A successful environmental legal principle developed in one jurisdiction may influence regulatory reform elsewhere. Judicial reasoning concerning climate responsibility or environmental rights can also travel between legal systems. However, pluralism can simultaneously create problems of legitimacy, accountability, and legal certainty. Rules produced by private or transnational

actors may affect national economic activities without passing through conventional democratic legislative processes.

The challenge for national environmental governance is therefore to benefit from global regulatory innovation without abandoning constitutional principles concerning legal authority, democratic accountability, transparency, and public participation.

Globalization, Sovereignty, and National Regulatory Autonomy

Globalization does not eliminate state sovereignty, but it changes the practical conditions under which sovereignty is exercised. States formally retain authority to legislate within their territories. In practice, however, environmental regulatory decisions increasingly respond to international treaties, global markets, transnational supply chains, investor expectations, scientific standards, financial institutions, and environmental advocacy networks.

This creates a tension between national regulatory autonomy and international environmental responsibility. If environmental problems have cross-border consequences, unrestricted national sovereignty may be insufficient as a foundation for environmental governance. Conversely, excessive external influence over domestic policy can create legitimacy concerns, particularly where international environmental expectations fail to account for differences in development levels and institutional capacity.

Hunter (2022) argues that international environmental law needs to move beyond an excessively state-centric framework because environmental harms are frequently generated by private actors and experienced directly by individuals and communities. This observation is especially important in a globalized economy in which multinational corporations may operate across multiple jurisdictions while production, consumption, finance, and environmental impacts are geographically separated.

National governments consequently face the task of regulating actors whose activities extend beyond territorial borders. Effective environmental governance increasingly requires transnational regulatory cooperation, corporate accountability mechanisms, information exchange, supply-chain transparency, and coordination among national authorities.

However, globalization should not become a justification for weakening national democratic control over environmental policy. The legitimacy of environmental governance depends not only on compliance with international objectives but also on meaningful public participation and the ability of domestic institutions to adapt international norms to national constitutional, social, and ecological conditions.

International Trade and Environmental Regulation

The relationship between international trade and environmental law represents one of the most contested dimensions of globalization. Trade liberalization can generate economic growth, promote technological diffusion, and increase access to environmentally efficient goods. At the same time, increased production and transportation can intensify environmental pressures, while differences in national environmental standards may influence the location of environmentally intensive industries.

Copeland et al. (2022) demonstrate that globalization affects environmental quality through multiple mechanisms, including changes in economic scale, industrial composition, production technology, transportation, natural-resource exploitation, and regulatory responses. Consequently, the environmental consequences of trade depend considerably on domestic institutions and regulatory effectiveness.

A major concern is the possibility of a **race to the bottom**, in which governments weaken environmental regulation to attract investment or maintain export competitiveness. Although the empirical relationship between trade liberalization and regulatory weakening is not uniform, the possibility illustrates the vulnerability of environmental policy when governments perceive strong competition for mobile capital.

Conversely, globalization may also generate a **race to the top** when access to major international markets requires producers to comply with higher environmental standards. Environmental requirements imposed through supply chains, certification systems, carbon policies, and sustainability standards can encourage companies to adopt cleaner technologies and improved environmental practices.

However, the distributional consequences require careful attention. Developing countries may experience disproportionate adjustment costs when environmental trade requirements are introduced rapidly or without adequate technological and financial assistance. Banga (2022) therefore emphasizes the importance of technology transfer, financing, and sufficient policy space in constructing an equitable international trade and environment agenda.

Environmental globalization must consequently incorporate the principle of differentiated capacity. Countries should not be expected to achieve identical regulatory outcomes through identical institutional pathways when their financial resources, technological capacities, and development conditions differ substantially.

The Rise of Environmental Rights and Environmental Justice

Another important transformation is the increasingly rights-based character of environmental law. Environmental degradation is progressively understood not only as ecological harm but also as a threat to human health, life, dignity, culture, livelihood, and equality.

The recognition by the United Nations General Assembly in 2022 of a human right to a clean, healthy, and sustainable environment reinforces this transformation (UNGA, 2022). Although the resolution itself does not operate in the same manner as a binding treaty obligation, it represents an important normative development in global environmental governance and contributes to the broader international recognition of environmental rights.

The spread of environmental constitutionalism similarly illustrates the interaction between global and national environmental norms. Boyd (2018) observes that environmental rights and duties have increasingly been incorporated into constitutions across the world. This constitutionalization can strengthen environmental governance by providing legal standards against which governmental decisions can be reviewed.

Rights-based environmental governance also enhances the significance of procedural environmental rights. Access to information, participation in environmental decision-making, and access to justice are essential because environmental regulation frequently involves competing economic, social, and ecological interests.

Globalization can strengthen these rights by enabling information exchange, transnational advocacy, and comparative legal learning. Nevertheless, it can also intensify environmental injustice. Communities located near extractive projects, industrial zones, plantations, mines, or waste-processing facilities may bear environmental costs while economic benefits flow to distant consumers, investors, or corporations.

National environmental law therefore needs to ensure that globalization does not separate economic benefits from environmental accountability.

The Implementation Gap and Environmental Rule of Law

Perhaps the most significant challenge for national environmental governance is the gap between environmental law on paper and environmental law in practice. The global diffusion of environmental legislation has created increasingly sophisticated regulatory frameworks, but stronger formal law does not necessarily produce effective implementation.

UNEP (2023) emphasizes that environmental rule of law requires effective institutions, accountability, rights, civic engagement, enforcement, and access to justice. Its global assessment demonstrates that environmental governance continues to face implementation challenges even as recognition of environmental rights and specialized environmental institutions has expanded.

The implementation gap may be caused by insufficient administrative capacity, inadequate budgets, weak monitoring, fragmented institutional responsibilities, corruption, political interference, limited environmental information, weak judicial access, or insufficient sanctions. These factors are particularly important because

globalization can increase the speed and complexity of environmentally significant economic activity faster than regulatory institutions can respond.

For example, global supply chains may involve extraction, manufacturing, financing, transportation, and consumption across multiple jurisdictions. Identifying responsibility for environmental harm therefore becomes more difficult than in conventional regulatory models involving a single polluter operating within one territory.

Environmental enforcement must consequently evolve alongside global economic structures. National institutions require improved information systems, inter-agency coordination, international cooperation, scientific capacity, corporate disclosure mechanisms, and mechanisms capable of tracing environmental impacts through complex economic relationships.

Non-State Actors and the Transformation of Environmental Governance

Globalization has expanded environmental governance beyond government institutions. Multinational corporations can influence environmental conditions through investment and production decisions, while financial institutions increasingly incorporate environmental risks into lending and investment practices. Non-governmental organizations contribute through monitoring, litigation, advocacy, and community empowerment. Scientists and international expert networks influence environmental standards by producing the knowledge upon which regulatory decisions depend.

The increasing role of non-state actors provides important opportunities. Private standards may sometimes respond to environmental problems more quickly than formal legislation. Civil society can strengthen governmental accountability, and transnational scientific cooperation can improve the quality of regulatory decisions.

However, private environmental governance also creates accountability concerns. Corporations may voluntarily adopt sustainability commitments while simultaneously retaining significant discretion over the definition, measurement, and reporting of environmental performance. This creates risks of greenwashing when environmental claims are not supported by transparent and independently verifiable standards.

National environmental governance must therefore establish legal frameworks that distinguish voluntary environmental initiatives from enforceable obligations. Private governance should complement rather than replace public environmental regulation.

Strengthening National Environmental Governance in a Globalized World

The preceding analysis demonstrates that the appropriate national response to globalization is neither regulatory isolation nor automatic harmonization. States need adaptive environmental legal systems capable of interacting with global environmental norms while preserving democratic legitimacy and responding to national circumstances.

First, international environmental commitments need to be translated into clear and enforceable domestic legislation. Global commitments that remain confined to diplomatic documents or policy statements are unlikely to produce significant environmental outcomes.

Second, institutional coordination needs to be strengthened. Environmental problems frequently cross administrative sectors involving energy, transportation, agriculture, forestry, industry, mining, urban development, and finance. Fragmented governance can produce inconsistent policies in which one institution promotes environmental protection while another encourages activities that undermine it.

Third, national environmental governance should strengthen public participation. Communities affected by environmental decisions should have meaningful opportunities to access information, participate in decision-making, challenge unlawful administrative decisions, and obtain remedies for environmental harm.

Fourth, environmental law should address corporate accountability within global supply chains. Environmental responsibility should not disappear merely because production and investment structures cross national boundaries.

Fifth, globalization must be governed through principles of environmental justice and differentiated responsibility. Developing countries require access to finance, cleaner technologies, institutional capacity building, and fair transition arrangements if global environmental standards are to achieve both ecological effectiveness and social legitimacy.

Finally, environmental rule of law must become the central foundation of national environmental governance. Strong legislation is insufficient when institutions cannot enforce it. Legal certainty, transparent administration, independent oversight, effective sanctions, accessible courts, environmental information, and community participation are therefore essential components of environmental governance.

Globalization has increased the significance of national environmental law rather than diminished it. International environmental objectives ultimately depend heavily on implementation within domestic jurisdictions. The effectiveness of global environmental governance is therefore inseparable from the quality of national institutions.

CONCLUSION

Globalization has fundamentally transformed environmental law by changing its sources, actors, regulatory mechanisms, and institutional context. Environmental law can no longer be understood exclusively as a domestic regulatory field bounded by territorial sovereignty. Climate change, biodiversity loss, transboundary pollution, international trade, global investment, and complex supply chains increasingly connect national environmental decisions with international ecological consequences.

The transformation occurs through several interconnected processes. International environmental commitments increasingly influence domestic law and policy; environmental principles circulate across jurisdictions; non-state actors participate in environmental governance; trade and investment create new forms of regulatory interaction; and environmental protection is increasingly linked with human rights and environmental justice (Rambe&Sihombing,2024). The Paris Agreement and the Kunming-Montreal Global Biodiversity Framework demonstrate how global environmental objectives are increasingly translated through national legal, policy, planning, monitoring, and reporting mechanisms.

Nevertheless, globalization does not automatically strengthen environmental protection. It may produce regulatory fragmentation, unequal economic burdens, tensions between competitiveness and environmental standards, challenges to national policy autonomy, complex accountability problems, and persistent implementation deficits. Developing countries may face particularly significant difficulties where international environmental expectations exceed available financial, technological, and institutional capacities.

The central challenge for national environmental governance is therefore not whether environmental law should become globalized, because environmental interdependence has already made such interaction unavoidable. The more important question concerns how global environmental norms can be translated into legitimate and effective domestic governance.

National environmental law should consequently combine international cooperation with regulatory autonomy, environmental ambition with social justice, and economic development with ecological sustainability. International environmental standards should be adapted into enforceable domestic rules while preserving meaningful public participation, constitutional legitimacy, access to justice, and sensitivity to national development conditions.

Ultimately, the effectiveness of global environmental law depends substantially on environmental rule of law at the national level. International agreements may define common objectives, but domestic institutions determine whether those objectives become practical realities. Strengthening legal institutions, enforcement capacity, corporate accountability, transparency, public participation, and environmental justice is therefore essential. Globalization can support the transformation toward more effective environmental governance only when international interdependence is accompanied by strong, accountable, and enforceable national environmental legal systems.

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