

# REVISITING WETLAND GOVERNANCE UNDER CLIMATE STRESS: INTERNATIONAL OBLIGATIONS, INDIAN LEGAL FRAMEWORKS, AND JUDICIAL RESPONSES

Dr. Ashish Virk<sup>1</sup>, Anchita Bhardwaj<sup>2</sup>

Director & Professor of Law, Research Scholar, PhD

University Institute of Laws, Panjab University Regional Centre, Ludhiana

Panjab University, Chandigarh

**Abstract:** Wetlands are among the most ecologically significant yet increasingly threatened ecosystems in the context of climate change. They perform critical functions for climate mitigation and adaptation, including carbon sequestration, flood regulation, groundwater recharge, and coastal protection, while simultaneously remaining highly vulnerable to climate-induced hydrological change and anthropogenic pressures. This paper examines wetland governance under conditions of climate stress through a legal and institutional analysis of international obligations, domestic regulatory frameworks, and judicial responses, with a particular focus on India. At the international level, it analyses the normative evolution of wetland protection, emphasising the Ramsar Convention's principle of "wise use" and the growing recognition of wetlands as nature-based solutions within climate governance. The paper then highlights the structural gaps within India's wetland governance framework, characterised by fragmented legislation, institutional incoherence, and weak enforcement. It further examines the role of the judiciary in constitutionalising wetland protection through environmental rights jurisprudence and key doctrinal developments, while acknowledging the inherent limitations of adjudication as a governance mechanism. The paper argues that effective wetland conservation under climate stress requires integrated, enforceable, and ecosystem-based legal frameworks that align international commitments with coordinated domestic governance and adaptive management.

Keywords: Wetlands; Climate Change; Environmental Law; Ramsar Convention; Judicial Responses; Indian Environmental Governance

## INTRODUCTION

Climate change has emerged as one of the most formidable challenges confronting contemporary environmental governance. Rising global temperatures, erratic precipitation patterns, accelerated sea-level rise, and the increasing frequency of extreme weather events have collectively placed unprecedented stress on natural ecosystems<sup>3</sup>. Among the ecosystems most acutely affected and most critically important in responding to these challenges are wetlands.<sup>4</sup> Functioning at the intersection of land and water, wetlands represent complex ecological systems that perform indispensable regulatory, hydrological, and biological functions essential for climate resilience and sustainable development.<sup>5</sup>

Wetlands are uniquely positioned within the climate change discourse due to their dual role as both vulnerable ecosystems and natural climate regulators.<sup>6</sup> On one hand, alterations in hydrological regimes, prolonged droughts, intensified flooding, and saline intrusion threaten the ecological character of wetlands across the globe<sup>7</sup> and on the other, wetlands possess a remarkable capacity to mitigate and adapt to climate change by sequestering carbon, regulating floods, recharging groundwater, purifying water, and buffering coastal zones against storm surges<sup>8</sup>. This paradoxical position underscores the urgency of integrating wetland conservation into broader climate governance frameworks.<sup>9</sup>

Despite their ecological and socio-economic significance, wetlands continue to be among the most rapidly degraded ecosystems worldwide.<sup>10</sup> Global assessments reveal extensive wetland loss driven primarily by anthropogenic activities such as land conversion, unregulated urbanisation, industrial pollution, agricultural intensification, and infrastructural development<sup>11</sup>. Climate change has compounded these pressures, exacerbating existing vulnerabilities and accelerating ecological decline.<sup>12</sup> The continued degradation of wetlands not only threatens biodiversity but also undermines food security, water availability, public health, and the livelihoods of communities that depend directly on wetland ecosystems.<sup>13</sup>

Recognising the transboundary and global significance of wetlands, the international community sought to establish normative frameworks for their protection and sustainable use. The adoption of the Ramsar Convention on Wetlands marked a seminal moment in international environmental law, representing the first global treaty dedicated exclusively to a specific ecosystem.<sup>14</sup> The Convention introduced the principle of "wise use," emphasising the maintenance of the ecological character of wetlands through sustainable and integrated

management approaches. Over time, wetland conservation has also gained prominence within broader international commitments, including climate change mitigation and adaptation strategies.<sup>15</sup>

However, the effectiveness of international obligations depends largely on their domestic implementation.<sup>16</sup> In many jurisdictions, including India, the translation of international commitments into coherent and enforceable national legal frameworks remains uneven. India is home to a vast diversity of wetland ecosystems and has designated numerous sites of international importance. Despite this, the country lacks a comprehensive, standalone wetland legislation. Instead, wetland governance is characterised by a fragmented regulatory framework dispersed across environmental, wildlife, water, and land-use laws. This fragmentation has resulted in regulatory overlaps, institutional ambiguities, and significant enforcement gaps, often diluting conservation outcomes.

The Indian legal framework reflects a broader tension between protection-oriented conservation models and the principle of sustainable or “wise” use advocated at the international level. While constitutional provisions and umbrella environmental statutes provide a normative foundation for environmental protection, wetlands frequently fall through regulatory gaps, particularly when they lie outside formally protected areas. Moreover, sectoral development priorities and weak institutional coordination have further compromised wetland governance, allowing ecologically significant wetlands to degrade despite formal recognition.

In this regard, the judiciary has assumed an increasingly significant role in shaping wetland governance in India. Through judicial review, public interest litigation, and *Suo moto* interventions, courts have acted as critical governance actors, enforcing environmental norms, restraining ecologically destructive activities, and reaffirming the constitutional right to a clean and healthy environment. Judicial responses to wetland degradation reveal both the potential and the limitations of adjudicatory mechanisms in addressing structural governance failures. While courts have provided immediate corrective measures, judicial intervention alone cannot substitute for comprehensive legislative and institutional reform.

Against this backdrop, this paper undertakes a critical examination of wetland governance under conditions of climate stress. It analyses the interplay between international obligations, national legal frameworks, and judicial responses, with a particular focus on the Indian context. The study seeks to identify structural deficiencies in existing governance mechanisms and to assess whether current legal approaches are adequate to address the complex challenges posed by climate change. Therefore, by situating wetland conservation within the broader discourse of climate resilience and environmental justice, the paper argues for a more integrated, enforceable, and ecosystem-based legal framework capable of safeguarding wetlands for present and future generations.<sup>17</sup>

## **WETLANDS AND CLIMATE STRESS: ECOLOGICAL SIGNIFICANCE AND GOVERNANCE IMPLICATIONS**

The growing recognition of wetlands within climate governance discourse stems from their multifunctional ecological character and their capacity to respond dynamically to climate-induced stressors. Wetlands function as complex adaptive systems that regulate hydrological cycles, moderate microclimates, and sustain biodiversity. Their ecological integrity is therefore directly linked to climate stability and resilience at both local and regional scales.<sup>18</sup>

Under conditions of climate stress, wetlands perform two interrelated roles. First, they operate as natural buffers against climate variability by absorbing excess precipitation, mitigating flood peaks, and maintaining base flows during prolonged dry periods. Second, wetlands contribute significantly to climate mitigation through carbon sequestration and long-term carbon storage in waterlogged soils and vegetation.<sup>19</sup> Peatlands, mangroves, and floodplain wetlands, in particular, store disproportionately high amounts of carbon relative to their spatial extent, rendering their conservation critical for achieving climate mitigation targets.

However, climate stress simultaneously exposes wetlands to heightened vulnerability. Altered precipitation regimes disrupt hydrological connectivity, prolonged droughts reduce wetland inundation cycles, and rising sea levels accelerate saline intrusion in coastal wetlands.<sup>20</sup> These impacts often operate cumulatively with anthropogenic pressures such as land conversion, pollution, and infrastructural development, resulting in irreversible changes to wetland ecological character. Once degraded beyond certain thresholds, wetlands may shift from carbon sinks to carbon sources, thereby exacerbating climate change rather than mitigating it.<sup>21</sup>

From a governance perspective, these ecological realities demand legal and institutional frameworks capable of responding to complexity, uncertainty, and long-term environmental change. Traditional command-and-control conservation models, which prioritise rigid protection without accounting for ecological dynamics or community interactions, are increasingly inadequate under climate stress conditions. Instead, adaptive governance approaches that integrate scientific knowledge, stakeholder participation, and ecosystem-based management are required to ensure wetland resilience.

The governance challenge is further complicated by the cross-sectoral nature of wetlands. Wetlands intersect with water management, agriculture, urban development, biodiversity conservation, disaster risk reduction, and climate policy. Consequently, fragmented regulatory regimes where wetlands are addressed incidentally through sector-specific laws—fail to capture their ecological interconnectedness. Effective wetland governance under climate stress therefore necessitates legal coherence, institutional coordination, and policy integration across multiple domains.

## **INTERNATIONAL OBLIGATIONS FOR WETLAND CONSERVATION UNDER CLIMATE CHANGE**

The international legal response to wetland degradation has developed in tandem with the evolution of environmental and climate governance at the global level. Early international environmental law largely focused on species protection and pollution control; however, the growing recognition of ecosystem-level interdependence led to the emergence of wetlands as objects of distinct international concern<sup>22</sup>. This shift is most clearly reflected in the adoption of the Ramsar Convention on Wetlands, which represents the earliest and most comprehensive global instrument dedicated exclusively to the conservation of a specific ecosystem. The Ramsar Convention marked a conceptual departure from traditional preservationist approaches by introducing the principle of “wise use.”<sup>23</sup> Rather than advocating absolute exclusion of human activity, wise use emphasises the maintenance of the ecological character of wetlands through sustainable, ecosystem-based management<sup>24</sup>. This principle recognises that many wetlands have historically evolved alongside human use and that regulated interaction, when ecologically informed can coexist with conservation objectives<sup>25</sup>. In doing so, the Convention anticipated later developments in sustainable development discourse by several decades and laid the groundwork for integrated ecosystem governance.<sup>26</sup>

With the intensification of climate change impacts, the normative relevance of international wetland obligations has expanded significantly. Wetlands are increasingly recognised within global environmental and climate discourse as nature-based solutions capable of contributing simultaneously to climate mitigation and adaptation. Their role in carbon sequestration, flood regulation, groundwater recharge, and coastal protection has positioned wetlands as critical ecological infrastructures in climate resilience strategies. As a result, wetland conservation has gradually moved from the periphery of biodiversity protection into the core of climate governance narratives.

International climate-related instruments and policy frameworks have reinforced this shift by acknowledging the importance of ecosystem integrity in enhancing adaptive capacity. The integration of ecosystem-based approaches into climate adaptation planning has strengthened the normative case for wetland conservation, even where such obligations are not explicitly binding.<sup>27</sup> Wetlands are thus increasingly viewed not merely as conservation priorities but as functional components of climate response strategies, particularly in vulnerable regions.

Despite this growing recognition, international wetland governance remains predominantly characterised by soft-law mechanisms, cooperative commitments, and procedural obligations rather than enforceable legal mandates.<sup>28</sup> The Ramsar Convention, while normatively influential, does not prescribe sanctions for non-compliance nor does it establish a compulsory dispute resolution or compliance mechanism. Instead, it relies on reporting obligations, technical guidance, and diplomatic cooperation to encourage implementation<sup>29</sup>. This institutional design reflects a broader trend in international environmental law, where consensus-building and flexibility are often prioritised over coercive enforcement.

The absence of binding compliance mechanisms significantly limits the Convention's capacity to compel state action, particularly where domestic political or economic interests conflict with conservation objectives. As a result, the effectiveness of international wetland obligations is largely contingent upon domestic incorporation into national legal frameworks<sup>30</sup>, the presence of administrative capacity,<sup>31</sup> and sustained political commitment. Where these elements are lacking, international obligations risk remaining aspirational rather than transformative.

This structural limitation highlights a central tension within international environmental law: while global instruments provide shared normative frameworks and articulate common objectives, their real-world impact depends on the willingness and ability of states to translate these commitments into enforceable domestic law. International obligations, by themselves, cannot ensure conservation outcomes in the absence of coherent national legislation, institutional coordination, and effective enforcement mechanisms.

In jurisdictions where domestic wetland governance is fragmented or weakly enforced, international commitments often function as symbolic affirmations rather than operational tools.<sup>32</sup> This gap between international aspiration and domestic implementation is particularly evident in developing countries, where competing developmental priorities, institutional constraints, and regulatory fragmentation undermine conservation efforts.<sup>33</sup> Consequently, wetlands of international importance may continue to degrade despite formal recognition under international frameworks.

The international legal regime for wetland conservation under climate change therefore reveals both its normative strength and its structural fragility. While international obligations have succeeded in elevating wetlands within global environmental consciousness and policy discourse, their capacity to secure tangible conservation outcomes remains limited by their dependence on national legal systems. Bridging this implementation gap requires stronger domestic integration of international principles, the development of enforceable legal standards, and alignment between international climate commitments and national wetland governance frameworks.

## **INDIAN LEGAL FRAMEWORK FOR WETLAND GOVERNANCE: NORMATIVE FOUNDATIONS AND STRUCTURAL GAPS**

India's approach to wetland governance is grounded in a strong constitutional commitment to environmental protection and ecological sustainability. Article 48A of the Constitution<sup>34</sup>, introduced through the Forty-Second Amendment, directs the State to protect and improve the environment, including forests, lakes, rivers, and wildlife. Complementing this directive principle, Article 51A(g)<sup>35</sup> imposes a corresponding fundamental duty upon citizens to safeguard the natural environment. These provisions establish a normative framework that recognises environmental protection as a shared responsibility between the State and society<sup>36</sup>.

Judicial interpretation has significantly strengthened this constitutional foundation by expanding the scope of environmental protection under Article 21, which guarantees the fundamental right to life. The Supreme Court has consistently interpreted the right to life to include the right to a clean, healthy, and pollution-free environment. Through this jurisprudential expansion, environmental degradation, including the destruction of wetlands has been recognised as a violation of fundamental rights, thereby elevating wetland protection from a policy objective to a constitutional imperative.<sup>37</sup>

Despite this robust normative foundation, India lacks a dedicated and comprehensive legislative framework for wetland governance.<sup>38</sup> Unlike forests or wildlife, which are governed by specific statutory regimes, wetlands remain legally fragmented and are addressed only incidentally through a patchwork of environmental, wildlife, water, and land-use laws. This absence of a standalone wetland statute has resulted in regulatory ambiguity, institutional overlap, and weak enforcement.<sup>39</sup>

Wetlands in India are primarily governed through umbrella legislations such as the Environment (Protection) Act, 1986, the Wildlife (Protection) Act, 1972, and the Water (Prevention and Control of Pollution) Act, 1974. While these statutes provide indirect protection, they are sector-specific in orientation and were not designed to address wetlands as integrated socio-ecological systems.<sup>40</sup> Consequently, they fail to capture the hydrological, ecological, and livelihood dimensions that are intrinsic to wetland ecosystems.<sup>41</sup>

The Wildlife (Protection) Act, 1972 offers protection only when wetlands fall within designated protected areas such as national parks or wildlife sanctuaries. This approach prioritises strict preservation and often excludes human interaction altogether. While such protection may be effective in certain ecological contexts, it is ill-suited for wetlands that have historically coexisted with human use and management. In contrast, wetlands located outside protected areas are largely left vulnerable to encroachment, pollution, and conversion, reflecting a protection gap rooted in legal categorisation rather than ecological value.<sup>42</sup>

Recognising these deficiencies, the regulatory framework for wetlands has evolved incrementally through delegated legislation, especially with the introduction of the Wetlands (Conservation and Management) Rules 2010 & 2017. The 2010 Rules marked a significant step by formally recognising wetlands as distinct ecological entities and adopting a definition aligned with international norms. These Rules sought to introduce institutional mechanisms for wetland identification, notification, and management, thereby signalling a shift towards a more ecosystem-based approach.

However, this progress was substantially diluted by subsequent regulatory changes.<sup>43</sup> The Wetlands (Conservation and Management) Rules, 2017<sup>44</sup> significantly narrowed the scope of protection by limiting statutory safeguards primarily to wetlands formally notified by the government or recognised under international frameworks. As a result, numerous ecologically significant wetlands remain excluded from legal protection due to restrictive notification requirements, administrative inertia, and inadequate scientific mapping. The discretionary nature of notification has further undermined accountability, allowing wetlands to degrade in the absence of formal recognition.<sup>45</sup>

Institutional fragmentation has compounded these regulatory shortcomings. Wetland governance responsibilities are dispersed across multiple authorities at the central, state, and local levels, often with overlapping mandates and limited coordination. The absence of a single nodal authority with clear regulatory and enforcement powers has resulted in weak implementation, inconsistent monitoring, and delayed remedial action. In many cases, developmental priorities have overridden conservation concerns due to the lack of clear legal safeguards and enforcement mechanisms.

A further structural limitation lies in the conceptual orientation of existing laws, which tend to adopt a binary regulatory approach, either strict protection or unregulated exploitation<sup>46</sup>. This approach leaves little room for adaptive and sustainable use, despite the fact that many wetlands depend on regulated human interaction for their ecological maintenance. Such rigidity conflicts with ecological realities and stands in stark contrast to the international emphasis on “wise use,” which advocates sustainable, context-sensitive management rather than exclusionary conservation.<sup>47</sup>

In practice, this binary framework has resulted in wetlands outside protected areas being subjected to unchecked urbanisation, industrial discharge, agricultural runoff, and infrastructure development. These patterns of degradation reflect not isolated regulatory failures but systemic governance deficits rooted in legal fragmentation, institutional incoherence, and the absence of an integrated policy vision.

Taken together, these structural gaps reveal a fundamental disconnect between India’s constitutional commitment to environmental protection and the operational realities of wetland governance. While normative principles and judicial interpretations provide a strong foundation, their transformative potential remains unrealised in the absence of comprehensive legislation, coordinated institutions, and adaptive governance mechanisms. Addressing these deficiencies is essential if wetland governance in India is to respond effectively to the escalating challenges posed by climate change.

## JUDICIAL RESPONSES TO WETLAND DEGRADATION IN INDIA: DOCTRINAL FOUNDATIONS AND CASE LAW ANALYSIS

In the absence of a comprehensive statutory regime governing wetlands and in the face of persistent administrative inaction, the Indian judiciary has played a decisive role in shaping wetland governance.<sup>48</sup> Courts have intervened primarily through constitutional adjudication, public interest litigation, and the application of established environmental law doctrines.<sup>49</sup> Judicial responses to wetland degradation have thus emerged as an important though inherently limited mechanism for enforcing environmental accountability in India.

### Wetland Protection under Article 21

The jurisprudential foundation for judicial intervention in wetland conservation lies in the expansive interpretation of Article 21 of the Constitution. Beginning with *Subhash Kumar v. State of Bihar* (1991)<sup>50</sup>, the Supreme Court recognised that the right to life includes the right to enjoy pollution-free water and air. This interpretation was further consolidated in *M.C. Mehta v. Union of India*<sup>51</sup> (Ganga Pollution case series), where environmental protection was explicitly linked to fundamental rights.

Applying this reasoning, courts have consistently held that the degradation of water bodies, including wetlands, constitutes a violation of the right to life.<sup>52</sup> In *Hinch Lal Tiwari v. Kamala Devi* (2001)<sup>53</sup>, the Supreme Court unequivocally ruled that village ponds and water bodies cannot be allotted or encroached upon, as they serve essential ecological and community functions. The Court emphasised that such water bodies must be restored and protected in the larger public interest, thereby laying a firm constitutional basis for wetland conservation.

One of the most significant doctrinal tools employed by Indian courts in wetland cases is the public trust doctrine. In *M.C. Mehta v. Kamal Nath* (1997)<sup>54</sup>, the Supreme Court held that natural resources such as rivers, forests, and lakes are held by the State in trust for the public and cannot be converted into private ownership or subjected to unregulated exploitation. This doctrine has since been repeatedly invoked to restrain the diversion and commercialisation of wetlands.

The public trust doctrine was applied with particular force in *Jagpal Singh v. State of Punjab* (2011)<sup>55</sup>, where the Supreme Court issued sweeping directions for the removal of encroachments from village commons, ponds, and wetlands across the country. The Court categorically rejected regularisation of illegal occupation of water bodies, describing such actions as environmentally destructive and constitutionally impermissible. This judgment remains a cornerstone in wetland jurisprudence and has been frequently relied upon by High Courts and the National Green Tribunal.

Indian courts have also relied extensively on the doctrines of sustainable development and the precautionary principle while adjudicating wetland-related disputes. In *Vellore Citizens’ Welfare Forum v. Union of India* (1996)<sup>56</sup>, the Supreme Court formally incorporated these principles into Indian environmental law, holding them to be part of the law of the land.

These doctrines have been applied to wetlands in cases involving construction, industrial activity, and infrastructure development. In *Fomento Resorts and Hotels Ltd. v. Minguel Martins* (2009)<sup>57</sup>, the Supreme Court restrained construction activities on low-lying coastal land forming part of a wetland system in Goa. The Court emphasised that ecological considerations must prevail where environmental damage is irreversible and scientific uncertainty exists.

Similarly, in *Intellectuals Forum v. State of Andhra Pradesh* (2006)<sup>58</sup>, the Supreme Court struck down the conversion of water bodies for urban development, holding that lakes and wetlands play a crucial role in maintaining ecological balance and cannot be sacrificed for short-term developmental gains. The judgment explicitly recognised wetlands as essential for flood control, groundwater recharge, and climate moderation.

The establishment of the National Green Tribunal<sup>59</sup> has further strengthened judicial engagement with wetland governance. The Tribunal has adopted a proactive approach, particularly through suo motu proceedings, to address widespread non-compliance with wetland regulations.

In *Paryavaran Suraksha Samiti v. Union of India* (2017)<sup>60</sup>, although primarily concerned with water pollution, the Supreme Court's directions were later operationalised by the NGT to curb the discharge of untreated effluents into water bodies, including wetlands. The Tribunal has also directed states to identify and notify wetlands in compliance with the Wetlands (Conservation and Management) Rules, criticising delays and administrative apathy.<sup>61</sup>

In several cases concerning urban wetlands such as those involving lake encroachments in Bengaluru, Chennai, and Gurugram, the NGT has ordered demolition of illegal constructions, imposed environmental compensation, and mandated restoration plans.<sup>62</sup> These orders demonstrate the Tribunal's role as an enforcement-oriented forum addressing governance failures at the executive level.

Despite the depth and consistency of judicial intervention, courts have repeatedly acknowledged the limits of adjudication as a tool for environmental governance.<sup>63</sup> Judicial responses are inherently reactive, triggered after environmental harm has occurred. Courts lack the institutional capacity to undertake continuous ecological monitoring, scientific assessment, or long-term wetland management.

Moreover, enforcement of judicial directions remains dependent on executive agencies, which often exhibit weak compliance. In *State of Karnataka v. State of Andhra Pradesh*<sup>64</sup> (inter-state water disputes), the Supreme Court itself recognised that judicial directions cannot substitute sustained administrative action and institutional coordination.

Excessive reliance on judicial intervention also risks normalising legislative inertia. While courts have filled governance gaps through doctrinal innovation, they have repeatedly stressed that environmental protection cannot be achieved through adjudication alone.<sup>65</sup> Durable wetland conservation requires comprehensive legislation, institutional clarity, and proactive policy implementation.

Judicial engagement with wetland conservation in India thus reflects a paradox. On one hand, courts have been instrumental in constitutionalising wetland protection, operationalising international principles such as sustainable use, and restraining ecologically destructive activities. On the other hand, the persistence of wetland degradation despite extensive jurisprudence highlights the structural limitations of judicial governance.<sup>66</sup>

Judicial responses function best as corrective and norm-setting mechanisms, not as substitutes for legislative and administrative reform. The case law demonstrates that while courts can temporarily arrest ecological harm and enhance accountability, long-term wetland governance under climate stress must rest on integrated legal frameworks and effective institutional mechanisms.

Seen in this broader governance continuum, the prominence of judicial intervention in wetland conservation is best understood as a response to regulatory absence rather than as evidence of an effective governance model. Although courts have intervened precisely because wetlands occupy an uncertain position within India's legal and administrative architecture recognised normatively, yet insufficiently integrated into planning, land-use regulation, and climate policy. Judicial engagement has therefore functioned as a stabilising force, preventing further degradation in specific instances, but it has not altered the underlying conditions that give rise to recurring ecological harm.

This pattern underscores a fundamental governance imbalance. Wetlands are increasingly protected through constitutional reasoning and case law, while remaining marginal within statutory design and institutional practice. As a result, conservation efforts are activated primarily through litigation rather than embedded within routine regulatory processes. Such a model is inherently limited in its capacity to address ecological systems that are dynamic, cumulative, and spatially interconnected, particularly under conditions of accelerating climate stress.

The analysis thus points towards a critical insight: the effectiveness of wetland governance does not depend on the expansion of judicial authority, but on the realignment of governance responsibilities across legal institutions. Although judicial oversight retains an essential role in enforcing accountability and articulating environmental norms, yet it must operate alongside, rather than in place of, coherent legislative frameworks and coordinated administrative action. Without this institutional integration, wetlands will continue to be protected episodically through adjudication rather than systematically through governance.

In this sense, wetlands emerge as a revealing indicator of the broader challenges facing environmental law in the climate change era. Their continued degradation reflects not a lack of legal principle, but the difficulty of translating those principles into durable governance structures capable of anticipating ecological risk. Viewed through this lens, wetland conservation reflects the extent to which environmental law is able to translate normative commitments into stable governance practices capable of responding to ecological change, rather than merely reacting to its consequences.

## REFERENCES

<sup>1</sup>Director & Professor-in-Laws, M.A. (Pol. Sc), LL.M, Ph.D (Laws), University Institute of Laws, Panjab University Regional Centre, Ludhiana.

<sup>2</sup> Research Scholar, Department of Laws, Panjab University, Chandigarh, LL.M., M.A.(Aviation Laws and Air Transport Management), NCA(Canada).

<sup>3</sup>Intergovernmental Panel on Climate Change, *Climate Change 2022: Impacts, Adaptation and Vulnerability* (2022).

<sup>4</sup> Millennium Ecosystem Assessment, *Ecosystems and Human Well-Being: Wetlands and Water* 1–5 (2005).

- <sup>5</sup> U.N. Env't Programme, *Global Environment Outlook GEO-6* (2019).
- <sup>6</sup> Ramsar Convention Secretariat, *Wetlands and Climate Change* (Ramsar Briefing Note No. 5, 2018).
- <sup>7</sup> Intergovernmental Panel on Climate Change, *Special Report on Climate Change and Land* (2019).
- <sup>8</sup> Ramsar Convention Secretariat, *Global Wetland Outlook* (2018).
- <sup>9</sup> U.N. Env't Programme, *Ecosystem-Based Adaptation* (2019).
- <sup>10</sup> Ramsar Convention Secretariat, *Global Wetland Outlook* (2018).
- <sup>11</sup> World Bank, *Nature-Based Solutions for Climate Resilience* (2020).
- <sup>12</sup> Intergovernmental Panel on Climate Change, *Sixth Assessment Report* (2022).
- <sup>13</sup> Food & Agric. Org. of the U.N., *Wetlands and Food Security* (2016).
- <sup>14</sup> Convention on Wetlands of Int'l Importance Especially as Waterfowl Habitat pmbl., Feb. 2, 1971, 996 U.N.T.S. 245.
- <sup>15</sup> Convention on Biological Diversity art. 8, June 5, 1992, 1760 U.N.T.S. 79.
- <sup>16</sup> Philippe Sands et al., *Principles of International Environmental Law* 196–200 (4th ed. 2018).
- <sup>17</sup> Edith Brown Weiss, *Intergenerational Equity and Rights of Future Generations* (1992).
- <sup>18</sup> Supra note 1
- <sup>19</sup> Intergovernmental Panel on Climate Change, *Sixth Assessment Report* (2022).
- <sup>20</sup> World Bank, *Nature-Based Solutions for Climate Resilience* (2020).
- <sup>21</sup> Ramsar Convention Secretariat, *The Concept of Wise Use of Wetlands*, Res. IX.1 Annex A (2005).
- <sup>22</sup> Philippe Sands & Jacqueline Peel, *Principles of International Environmental Law* 487–90 (4th ed. 2018)
- <sup>23</sup> Convention on Wetlands of International Importance Especially as Waterfowl Habitat art. 1–3, Feb. 2, 1971, 996 U.N.T.S. 245
- <sup>24</sup> Christopher D. Stone, *Should Trees Have Standing?* 45–47 (rev. ed. 2010).
- <sup>25</sup> Ramsar Convention, supra note 21, Art. 3(1).
- <sup>26</sup> World Commission on Environment and Development, *Our Common Future* Pg 27 (1987)
- <sup>27</sup> Jonathan Verschuuren, Climate Change Adaptation and Nature Conservation, in *Research Handbook on Climate Change Adaptation Law* 128, 134–36
- <sup>28</sup> Geir Ulfstein, Compliance Mechanisms in International Environmental Agreements, 35 *Envtl. Pol'y & L.* 14, 17–19 (2005).
- <sup>29</sup> Patricia Birnie, Alan Boyle & Catherine Redgwell, *International Law and the Environment* 236–38 (3d ed. 2009).
- <sup>30</sup> Louis J. Kotzé & Duncan French, The Anthropocentric Ontology of International Environmental Law, 5 *Transnat'l Env'tl. L.* 1, 12–14 (2018).
- <sup>31</sup> Conference of the Parties to the United Nations Framework Convention on Climate Change, Paris Agreement art. 7(5), Dec. 12, 2015, T.I.A.S. No. 16-1104
- <sup>32</sup> Elisa Morgera, The Ecosystem Approach under International Biodiversity Law, 16 *Int'l J. Marine & Coastal L.* 87, 110–12 (2001).
- <sup>33</sup> Rosemary Rayfuse, International Law and the Protection of Wetlands, 18 *Env'tl. & Plan. L.J.* 201, 214–16 (2001).
- <sup>34</sup> **Article 48A in Constitution of India: Protection and improvement of environment and safeguarding of forests and wild life**[After article 48 of the Constitution, the following article shall be inserted Constitution (Forty-Second Amendment) Act, 1976]The State shall endeavour to protect and improve the environment and to safeguard the forests and wild life of the country.
- <sup>35</sup> **Article 51A(g) in Constitution of India** (g)to protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures;
- <sup>36</sup> Shyam Divan & Armin Rosencranz, *Environmental Law and Policy in India* 44–46 (2d ed. 2001).
- <sup>37</sup> M.I. Builders (P) Ltd. v. Radhey Shyam Sahu, (1999) 6 S.C.C. 464, 486–88 (India).
- <sup>38</sup> Lavanya Rajamani, Public Interest Environmental Litigation in India, 19 *J. Env'tl. L.* 293, 318–20 (2007).
- <sup>39</sup> Kalpavriksh, *National Wetland Conservation Programme: Critical Review* 12–15 (2015).
- <sup>40</sup> Gitanjali Nain Gill, Environmental Justice in India, 36 *Oxford J. Legal Stud.* 1, 14–16 (2016)
- <sup>41</sup> Ritesh Kumar et al., *Wetlands of India: A Review* 21–23 (WWF-India 2013).
- <sup>42</sup> S. Janakarajan et al., Urbanisation and Wetland Degradation in India, 47 *Econ. & Pol. Wkly.* 45, 48–50 (2012).
- <sup>43</sup> T. V. Ramachandra et al., Conservation of Wetlands in India, 43 *Curr. Sci.* 256, 259–60 (2018)
- <sup>44</sup> Wetlands (Conservation and Management) Rules, 2017, G.S.R. 1207(E), INDIA GAZETTE (Sept. 26, 2017).
- <sup>45</sup> Anjali Bharadwaj, India's Wetland Rules: A Retreat from Protection, 52 *Econ. & Pol. Wkly.* 12, 14–15 (2017).
- <sup>46</sup> Madhav Gadgil & Ramachandra Guha, *Ecology and Equity* 112–14 (1995).
- <sup>47</sup> Ramsar Convention on Wetlands art. 3(1), Feb. 2, 1971, 996 U.N.T.S. 245.
- <sup>48</sup> Shyam Divan & Armin Rosencranz, *Environmental Law and Policy in India* 79–83 (2d ed. 2001).
- <sup>49</sup> S.P. Sathe, *Judicial Activism in India* 216–19 (2d ed. 2002).
- <sup>50</sup> (1991) 1 S.C.C. 598.
- <sup>51</sup> (1988) 1 S.C.C. 471
- <sup>52</sup> A.P. Pollution Control Bd. v. Prof. M.V. Nayudu, (1999) 2 S.C.C. 718, 727–28 (India).
- <sup>53</sup> (2001) 6 S.C.C. 496.
- <sup>54</sup> (1997) 1 S.C.C. 388.
- <sup>55</sup> (2011) 11 S.C.C. 396, 401–05
- <sup>56</sup> (1996) 5 S.C.C. 647
- <sup>57</sup> (2009) 3 S.C.C. 571
- <sup>58</sup> (2006) 3 S.C.C. 549
- <sup>59</sup> The National Green Tribunal Act, No. 19 of 2010,
- <sup>60</sup> (2017) 5 S.C.C. 326 (India).
- <sup>61</sup> Original Application No. 325/2015, National Green Tribunal .
- <sup>62</sup> Manoj Misra v. Union of India, Original Application No. 6/2012, Nat'l Green Tribunal.
- <sup>63</sup> State of Tamil Nadu v. Hind Stone, (1981) 2 S.C.C. 205, 214
- <sup>64</sup> AIR 2000 SC 2552.
- <sup>65</sup> Upendra Baxi, The Avatars of Indian Judicial Activism, 2 *Sup. Ct. Cases (J)* 1, 15–17 (2001)
- <sup>66</sup> Lavanya Rajamani, Constitutional Environmental Rights in India, 37 *Harv. Env'tl. L. Rev.* 1, 29–31 (2013)