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EDITORIAL

Managing natural resources through law in the Anthropocene and developing new sustainability paradigms

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1 Introduction

Perhaps every century mankind has faced an existential challenge. The 21st century has exposed humanity to higher challenges. It has also been called as the 'Age of the Anthropocene.'[1] Human-centric activity has put intense pressure on natural resources, generated global pollution and challenges in the form of forest fires, submergence of low-lying island nations, conflict over resources, and other natural disasters. Whether it is the triple planetary crisis of rapid loss of biodiversity, pollution, climate change[2] and its consequences or pandemics such as COVID-19, the cumulative effects of such pressure on natural resources have given rise to an existential crisis.[3] This has been in the form of myriad of factors such as increasing poverty; disruption of life and livelihood; isolation of indigenous communities; lack of adequate social security schemes during the pandemic; destruction and disease due to climate related disasters; change in land use patterns for infrastructure development amongst others. The contemporary challenges that we face compel one to examine the reasons for dysfunction within ecosystems, within law and policy for governance of natural resources and for restricting harm to the environment. One can also critically

[1] See Paul J Crutzen and Will Steffen, '"How long have we been in the Anthropocene era?" An Editorial Comment' (2003) 61 *Climatic Change* 251; Jack Fishman et al., 'A Tribute to Paul Crutzen (1933–2021): The Pioneering Atmospheric Chemist Who Provided New Insight into the Concept of Climate Change' (2023) 104 *Bulletin of American Meteorological Society* E77.

[2] 'What is Triple Planetary Crisis?' (*UNFCC News*, 13 April 2022). https://unfccc.int/news/what-is-the-triple-planetary-crisis#:~:text=The%20triple%20planetary%20crisis%20refers,change%2C%20pollution%20and%20biodiversity%20loss . Accessed 5 June 2025.

[3] See António Guterres, UN Secretary-General's Remark on Climate Change' (*UNFCC News*, 10 September 2018). https://www.un.org/sg/en/content/sg/statement/2018-09-10/secretary-generals-remarks-climate-change-delivered. Accessed 5 June 2025.

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examine the current laws and prevalent policy for the effect it has on people and natural resources held by the State for the people under the 'public trust doctrine'.[4]

An examination of the management and governance of natural resources law and policy becomes significant given the existential crisis we face. In these circumstances, information, knowledge and capacity building and a commitment to the cause become paramount. Along with this, an action-oriented approach that mandates the governments, global leaders, and people's representatives to implement behaviour-changing rules, efficient laws, and holistic visionary policy for overcoming such challenges at both the national and international levels is need of the hour.

Natural resources (abiotic and biotic) are those parts of nature that provide goods and services critical to survival, well-being, and development.[5] These also go a long way in determining our culture and identity. In *M C Mehta v Kamal Nath* the Indian Supreme Court while considering the doctrine of public trust observed that 'The state is the trustee of all natural resources which are by nature meant for public use and enjoyment. Public at large is the beneficiary of the sea shore, running waters, airs, forests, and ecologically fragile lands. The state as a trustee is under a legal duty to protect the natural resources.'[6]

Hence, the availability and quality of natural resources are fundamental to our lives. One of humankind's most significant challenges in the Anthropocene is conserving and managing natural resources.[7] Natural resources law, along with environmental law and policy, has become a significant part of the legal academic curriculum.[8]

[4] See *MC Mehta v Kamal Nath* (1997) 1 SCC 388 (Span Resorts case); *In re Natural Resources Allocation, Special Reference No. 1 of 2012* (2012) 10 SCC 1, the Supreme Court accepted that as far as 'trusteeship' is concerned, there is no doubt that the State is the holder of all natural resources in a fiduciary relationship with the public. However, the Bench restrained itself on the question of liberalisation of the principle of public trust doctrine. See Ashish Jha, 'Borrowed Concepts, Undefined Boundaries: A Critical Examination of India's Public Trust Doctrine' (*SCC Online*, 27 May 2024). https://www.scconline.com/blog/post/2024/05/27/borrowed-concepts-undefined-boundaries-a-critical-examination-of-indias-public-trust-doctrine/. Accessed 5 June 2025.

[5] See *Centre for Public Interest Litigation v. Union of India* (2012) 3 SCC 1 (2G Scam case) [75]; *Jayant Etc. vs State of Madhya Pardesh* (2020) INSC 678 [37]; also see Ashish Jha, 'Borrowed Concepts, Undefined Boundaries: A Critical Examination of India's Public Trust Doctrine' (n 4).

[6] *M C Mehta v Kamal Nath* (1997) 1 SCC 388 [34]; Also see *Government of NCT Delhi v Sanjay* 2014 (9) SCC 772 [37]. See 'Call for Papers Special Issue on "Natural Resources Law Management and the Law in India: Confronting Emerging Challenges in the Anthropocene and Developing New Sustainability Paradigms"' (*Springer Nature Link*). https://link.springer.com/journal/41020/updates/26315288. Accessed 5 June 2025. See also *Hinch Lal Tiwari v Kamala Devi* (2001) 6 SCC 496 [14], where the court in context of natural resources definition observes that it was important 'to note that the material resources of the community like forests, tanks, ponds, hillock, mountain etc are nature's bounty.' Accordingly natural resources ought to be protected for a proper and healthy environment which enabled people to enjoy a quality of life which is the essence of the guaranteed right under Article 21 of the Constitution of India.

[7] See 'Call for Papers Special Issue on "Natural Resources Law Management and the Law in India: Confronting Emerging Challenges in the Anthropocene and Developing New Sustainability Paradigms"' (n 6).

[8] See for example, Philippe Cullet, Lovleen Bhullar and Sujith Koonan, 'Introduction' in Philippe Cullet, Lovleen Bhullar, and Sujith Koonan (eds), *The Oxford Handbook of Environmental and Natural Resources Law In India* (Oxford University Press 2024) where the authors reiterate that both natural resources law and environmental law 'form a distinct field of research and teaching.'

Natural resources law, management and governance intersect with environmental law,[9] its application and is critically important while raising complex and divergent questions when resolving use, allocation, protection, and developmental disputes within India and many parts of the world.[10]

Over-exploitation, wanton destruction, scarcity, pollution, commodification, inequitable distribution and finally, the challenges posed by climate change render natural resources management a problematic task. The effects of climate change are increasingly evident in the form of rising temperatures, forest fires, floods, droughts and cyclones, which have become regular events—as well as vector borne diseases and health pandemics such as H1N1 virus, COVID-19.[11] Growing population, puts an additional pressure on demand for natural resources and farmers' capacity to adapt to climate change in low-income countries.[12] It reduces the quality and quantity of natural resources through, inter alia, overexploitation, intensive farming, and land fragmentation.[13] While economies, populations and resource demands grow, the Earth's natural resource base remains unchanged. Presently, every year, we consume resources as much as what 1.75 Earths can provide us, pushing humanity deeper into ecological debt.[14]All these cumulative events force the debates underlying natural resource management to the forefront of public discourse. Further, there is no single or untied theme to manage natural resources within a country and because of divergent views, multitude of factors including state policy on conservation and development and varying stakeholder interests, there is conflict and dissonance. However, such conflicts and dissonance give rise to further discussions and debate that go towards filtering positive solutions in certain cases or adoption of pragmatic principles through court decisions in others.[15]

[9] ibid [4 and 5].

[10] See Josh Eagle, James Salzman, and B H Thompson Jr, *Natural Resources Law and Policy, Concepts, and Insight Series* (Foundation Press 2017) 2.

[11] See Stephanie Adeline and David Fogarty, 'Earth Overshoot Day: We are like We have 1.75 Earths' (*The Strait Times*, 28 Jul 2022). https://www.straitstimes.com/multimedia/graphics/2022/07/earth-overshoot-day-2022/index.html?shell. Accessed 5 June 2025. ('Humanity is living well beyond its means, like it needs 1.75 Earths. Rapid population growth, rising demand for food and materials, and consumer lifestyles are pushing nature to the brink.') See also Rashed Al Mahmud Titumir, 'Covid-19 and Double Jeopardy for Traditional Resource Users in the Sundarbans' (*IUCN Newsletter*, 12 Jan 2021). https://iucn.org/news/commission-environmental-economic-and-social-policy/202101/covid-19-and-climate-change-double-jeopardy-traditional-resource-users-sundarbans. Accessed 30 April 2025.

[12] See Maja, Mengistu M Maja and Samuel F Ayano, 'The Impact of Population Growth on Natural Resources and Farmers' Capacity to Adapt to Climate Change in Low-Income Countries' 5(2) *Earth Systems and Environment* 271.

[13] See UN Climate Action, 'Biodiversity: Our Strongest Natural Defense against Climate Change" (*United Nations Climate Action*). https://www.un.org/en/climatechange/science/climate-issues/biodiversity. Accessed 5 June 2025.

[14] See Adeline and Fogarty, 'Earth Overshoot Day' (n 11).

[15] For example, see *MC Mehta v Kamal Nath* (1997) 1 SCC 388 (adopting the public trust doctrine considering American case laws and jurisprudence); *Hanuman Laxman Aroskar v Union of India* 2020 INSC 49 (*Goa Airport I* case) in application of 'environmental rule of law' for all Environmental Impact assessment procedures for large scale infrastructure developments such as the Goa International Airport. *M K Ranjitsinh v Union of India* 2024 INSC 280, provides a pragmatic and balanced view on the issue of

2 Overview

Jindal Global Law Review's Special Issue on Natural Resources Law and Policy is an attempt to explore the challenges in the management, law and policy vis-a-vis natural resources governance within contemporary India and the Asia Pacific region. This issue delves into the nuanced queries within myriad of topics- and explores and highlights gaps within law and policy. This special issues explores the above themes and beyond in impressive depth and breadth.

An attempt is made to highlight these challenges and possible solutions, using a lens of multi-disciplinarity, global best practices and inter-connectedness. It brings forth not only the challenges that exist but also some possible solutions for better management and addresses normative theories to overcome the substantial challenges partially through an examination of the law and policy that exists and through a critique of judicial decisions, case studies, comparative analysis, and commentaries. Overall, the articles included in this issue portray a triangular analytical theme which is explained in the following section. This is followed by an overview of current developments both within the judiciary and the executive especially, within India and elsewhere that provides an interconnection between environmental law, and natural resources law and policy. This integration can be viewed in application of various environmental principles, especially sustainable development, within natural resources law disputes for land rights, forest rights for traditional forest dwelling communities under the Forest Rights Act 2006, mining decisions under Forest Conservation Act 1980 and its amendments in 2023, human-animal conflicts and declaration of protected forests under the Wild Life protection Act 1972 or the Forest Act 1927 as well as environmental conflicts or in Water Laws, and Coastal Zone Regulations that follow each other closely.[16] The resolution of such disputes by the Courts or tribunal or through institutions at the international fora, whether through arbitration or through transnational treaties, points towards a sustainability framework and thus provides another reason to explore, discuss and debate the sustainability paradigm through academic writing. Additionally, the government policy think tank, the

Footnote 15 (continued)

conservation versus development and India's commitment of transitioning from fossil fuel to non-fossil under Paris Agreement by 2030. The Court, considering the effects of climate change and development upon endangered species, interpreted the Constitutional right to a healthy environment to include the right to be free from the adverse effects of climate change. It also directed the State of Rajasthan to take specific conservation actions for protection of endangered species like the Great Indian Bustard and the lesser florican population that had been majorly affected due to expansion of infrastructure such as roads, mining and farming activities but allowed the construction of transmission lines across the protected area; This approach allowed for more nuanced decision-making tailored to the unique circumstances of this case (specific to location within the states of Rajasthan and Gujarat), ensuring that conservation objectives were met in a sustainable manner.

[16] Philippe Cullet, Lovleen Bhullar and Sujith Koonan, 'Introduction' (n 8) 6-7. For similar thoughts on integration of environmental and natural resources law where authors reiterate the interconnectedness of issues through sustainable development and Sustainable Development Goals 2030. See Transforming Our World: The 2030 Agenda for Sustainable Development (adopted 25 September 2015) A/RES/70/1/2015 (SDG 2030).

NITI Aayog has adopted for an integrated approach with a sustainability theme to provide policy directions for issues such as livelihood, pollution, and conservation.[17]

3 Analytical thematic approaches

Management of natural resources involves critical questions of choosing an approach that furthers the efficient use of available natural resources. It also involves an approach that not only protects but also conserves and preserves the resources- the need to be prudent and perhaps, frugal, in how already scarce and diminishing resources are allocated or used. At a policy level, a State may adopt a multifold or sectoral approach, however clarity and certainty in the legal framework enhances the seriousness of governance laws to implement the choices that need to be made to implement such laws. Natural resources management law thus comprises a body of legal norms, rules and regulations that determine and lay down the parameters for the stakeholders whether, state or the citizen on efficient use, conservation, and preservation. Essentially, a natural resources governance policy and legal framework specify which parts of nature ought to be preserved and where maximum sustainable utilization would not harm the resources and ascertain intergenerational equity. The policy for governance may accordingly provide the scope, nature of rights exercisable over the resource, what kind of resource-based transactions can occur for growth and provides institutional mechanisms to coordinate allocation and sustainable use and resolve conflicts and or disputes. For resolving natural resources governance disputes, law and policy are interpreted to provide a way to mediate and resolve the issue. When there are competing claims, priority might be given to protection, or conservation of the resource, compensation, and rehabilitation in terms of land and for the infringement of rights- however, no one course of action is perfect by itself. On a spectrum of reliefs that the court is empowered to provide within prescribed laws or constitutional remedies, one or the other stakeholder may feel inadequately compensated or not at all due to lack of evidence or insufficient information or lack of representation. In most of such decisions a lawmaker or the policy maker, whether the federal government or the state government or the courts implicitly use a variety of approaches and methods as is evident from the articles presented in this issue. These may include but are not necessarily limited to adopting a social welfare approach of remedying an environmental wrong, a strictly black letter law approach for violation of statutory duties, an economic approach for development and welfare examining the environmental costs and benefit for a large amount of people as was done in the *Narmada Bacaho Andolan* case.[18] The recent trend in the last decade has also been to consider an eco-centric approach as in *Centre for Environment Law,*

[17] Philippe Cullet, Lovleen Bhullar and Sujith Koonan, 'Introduction' (n 8) 6.

[18] *Narmada Bachao Andolan v Union of India* 2000 INSC 489 and *Narmada Bachao Andolan v State of Madhya Pradesh* AIR 2008 MP 142, (held displacement of tribals would not per se result in the violation of their fundamental or other rights if on their rehabilitation at new locations they are better off than what they were and enjoy more and better amenities than those they enjoyed in their tribal hamlets); see also *Hanuman Laxman Aroskar v Union of India* (2019) 15 SCC 401, applied in *M/S VK Rocks Pvt . Ltd vs The State of Kerala* 2020 KER 48673.

WWF-I v Union of India (relocation of the Asiatic lion case).[19] In cases concerning environmental governance, the Supreme Court has based its decision by following the due process under the sustainable development rational.[20] It has been held that 'it is a duty of courts to assess the case on its merits based on the materials present before it. Matters concerning environmental governance concern not just the living, but generations to come. The protection of the environment, as an essential facet of human development, ensures sustainable development for today and tomorrow.'[21] However, one can discern, three broad premises or general frameworks that might govern resolution of disputes- an ethical one, a utilitarian one or sustainable development premise.[22]

The ethical analytical premise focuses on environmental rights whether through a statutes (e.g., Indian Forest Rights Act 2006, Indian Land Acquisition and Resettlement and Rehabilitation Act 2013, Indian Forest Act 1927, Indian Wild Life Protection Act 1972, read with Forest (Conservation) Act 1980) or the Constitution of India (articles 21, 14, 19, 32, and Directive principles of State Policy, especially articles, 39(2), 48A and 51A(g).[23] In 2021, the United Nations Human Rights Council also adopted a resolution recognising the human right to a clean, healthy and sustainable environment as an important human right. Several countries recognise similar rights, which provides for a stronger international recognition and persuasive dicta for its effective integration and stronger implementation domestically. Some

[19] *Centre for Environment Law, WWF-I v Union of India* (2013) 6 SCR 757.; see also *TN Godavarman Thirumalpad v Union of India* 2012 (3) SCC 277 [14] where the court cited the federal integrated 'Wildlife National Action Plan and Policy of 2002-2012 to state that 'Ecocentrism is therefore life-centred, nature-centred where nature include both human and non- humans. (sic)' The National Wildlife Action Plan 2002-2012 that called for integration of and development of wildlife habitats was essentially based on the principle of ecocentrism. See *In Re TN Godavarman Thirumulpad vs Union Of India and In Re Gaurav Kumar Bansal* 2024 INSC 178 [68-70].

[20] See *Rajendra Singh & Ors v Govt of NCT Delhi & Ors* 2008 DHC 2961, provides an interesting example of application of the Court adopting a pragmatic and sustainable development approach. Here the petitioner challenged construction in the Yamuna riverbed that would have permanently destroyed the ecology of river Yamuna, its ground water recharge ability and was violative of public trust doctrine, precautionary principle which are part of Article 21 of the Constitution. On balance of facts and evidence the court dismissed the petition and directed the respondent State authority to constitute a committee that would examine and monitor the construction carried out by the state Authority on the site. It was also held that the respondent had duly complied with the 'precautionary principle' of environmental protection and had adopted all remedial/mitigating measures. The site where construction was being done covered an area to the extent of 18% where proper arrangements and measures were being adopted.

[21] *Baudhsen Rathour v Union of India* Appeal No. 06/2019 (CZ) [NGT (Bhopal), Order dt15 September 2022] [22] [25]; *Hanuman Laxman Aroskar v Union Of India* 2020 INSC 49 [148] followed in *HP Ranjana v Union of India*, Appeal No 54/2018 [NGT (New Delhi), Order dt 30 July 2021]. In *Himachal Pradesh Bus Stand Management v The Central Empowered Committee* (2021) 1 SCR 344 [47], where the court reiterated the value in environmental rule of law and held that 'environmental rule of law seeks to facilitate a multi– disciplinary analysis of the nature and consequences of carbon footprints and in doing so it brings a shared understanding between science, regulatory decisions and policy perspectives in the field of environmental protection.' Thus emphasizing integration of environmental law and natural resources laws.

[22] See Eagle, Salzman, and Thompson Jr, *Natural Resources Law and Policy, Concepts, and Insight Series* (n 10) 6, 7.

[23] See The Human Right to a Clean, Healthy and Sustainable Environment (adopted 8 October 2021) A/HRC/RES/48/13, surprisingly (China, India, Russia, the United States, and Japan abstained from voting).

nations have gone further to recognise not only the right to the environment but also the rights of nature.[24] The right to a *healthy* environment may also be interpreted arguably to the *protection of nature's health as an ecosystem*.[25] In the Philippines, a recent enactment declares nature to have intrinsic value not merely for economic purposes but as a vital part of sustaining life under the 2023 Philippine Ecosystem and Natural Capital Accounting System (PENCAS) Law.[26] Although the rights-based approach provides for an anthropocentric argument and deals with current and future generations to have a right to a healthy environment, some philosophers and scholars suggest that other living organisms, abiotic components or even biotic components of nature have an intrinsic value and independent rights. Thus, American ethicists like Aldo Leopold uphold the land ethic,[27] Christopher Stone[28] argued for the trees to be recognised independently. Others go further to make arguments for an eco-centric rights.[29]

[24] Other jurisdictions where environmental rights have been recognised under their respective Constitutions formally, include, inter alia, Bolivia, Ecuador, Colombia where the Supreme Court of Colombia recognised that the Colombian Amazon can be a subject of rights, see Supreme Court of Columbia decision in *Future Generations v. Ministry of the Environment* STC4360-2018, No. 11001-22-03-000-2018-00319-01(5 April 2018); similarly in New Zealand, sites of particular importance to the Māori people, such as the Whanganui River, the Te Urewera Forest, or Mount Taranaki in 2018, were also granted legal personhood in 2017 see the Te Awa Tupua (Whanganui River Claims Settlement) Act 2017; as were the rivers Ganga, Yamuna and the glaciers in India; see *Mohd Salim v State of Uttarakhand* Writ Petition (PIL) No 126 of 2014 [Uttarakhand HC, Order dt 20 March 2017] (this was later appealed to the Supreme Court where the decision is still pending as to whether rivers and natural resources can have a legal right to personhood right); in 2019, Uganda became the first nation in Africa to recognise the rights of Nature in national legislation under Section 4 of the National Environment Act 2019. See 'Uganda Recognises Rights of Nature, Customary Laws, Sacred Natural Sites' (*The Gaia Foundation*, 29 March 2021). https://gaiafoundation.org/uganda-recognises-rights-of-nature-customary-laws-sacred-natural-sites/. Accessed 5 June 2025. Additionally more recently legal personhood was granted to the Magpie River, through the adoption of two parallel resolutions by the Innu Council of Ekuanitshit and the Minganie Regional County Municipality (RCM) in 2021 in Canada; see 'For the First Time, a River is Granted Official Rights and Legal Personhood in Canada' (*Alliance Mute Shakekau-Shipu*, 23 February 2021). http://files.harmonywithnatureun.org/uploads/upload1070.pdf. Accessed 5 June 2025. See also Yann Aguila, 'The Right to a Healthy Environment' (*IUCN News Story*, 29 October 2021). https://iucn.org/news/world-commission-environmental-law/202110/right-a-healthy-environment. Accessed 5 June 2025.

[25] All italicised words are emphases added by the authors, unless otherwise specified.

[26] See Section 3 (a) of the Marinduque Environment Code of 2023. 'Marinduque Environment Code of 2023'. https://ecojurisprudence.org/wp-content/uploads/2025/03/Marinduque-Envi-Code-Final_Draft.pdf. Accessed 5 June 2025.

[27] Aldo Leopold, *A Sand County Almanac*, (Oxford University Press 1949); Curt Meine, 'Land Ethics, Justice, and Aldo Leopold' (2022) 4 *Socio-Ecological Practice Research* 167.

[28] Christopher Stone, 'Should Trees have standing? Towards Legal Rights for Natural Objects' (1972) 45 *South California Review* 450.

[29] See for example *Centre for Environment Law, WWF-I v Union of India* (2013) 6 SCR 757; see also Massimiliano Montini, 'The Transformation of Environmental Law into Ecological Law' in Kirsten Anker, et al., (eds), *From Environmental to Ecological Law* (Routledge 2021) 14; Lorna Muñoz, 'Bolivia's Mother Earth Laws: Is the Ecocentric Legislation Misleading?' (*Revista*, 26 February 2023). https://revista.drclas.harvard.edu/bolivias-mother-earth-laws-is-the-ecocentric-legislation-misleading/#:~:text=The%20rights%20of%20nature%2C%20Pachamama,to%20which%20Mother%20Earth%20is. Accessed 2 February 2024.

The *second premise* focuses on an approach that is empirical and balances the cost-benefit tradeoffs and maximum welfare for the maximum number of people, or the utilitarian premise. From an economist's perspective, the State considers the costs and benefits of development policies by weighing the burden on the environment and examining the benefits to the people and the community. It may use market prices, make surveys to determine the economic monetary value of the benefit that a certain regulation may achieve, such as maintenance of levels of groundwater and hence no boring allowed beyond 80 feet, saving of species versus importance of laying transmission lines, or aesthetics of preserving a wetland, ancient water body or coastal zone. The state then proceeds to compare the benefits against the cost of regulation-such as in reduced agricultural yield, land development for public welfare, or employment loss. Accordingly, decisions for introducing regulations are made only where the expected monetary value of benefits is more than the costs. In *Bombay Dyeing & Mfg. Co Ltd v Bombay Environmental Action Group*,[30] giving effect to the cost benefit analysis of the utility of redevelopment of lands which had closed cotton textile mills and harm to the environment the Supreme Court upheld the statutory regulations, i.e., Development Control Regulation 58, under Maharashtra Regional and Town Planning Act 1966. It was held that a balanced view has to be taken. While adopting the sustainable development approach it took account of the ecological impact, and a delicate balance between it and the necessity for development.

Similar conclusion is drawn from the case Doon Valley case where the Supreme Court applied not only cost and benefit analysis in closing several quarries but also protecting the Doon Valley where rampant mining had caused scarcity of water during the early 1980s.[31] A valuable example of such balancing can be seen in *T N Godavarman Thirumalpad v Union of India*[32] where the court held that within public sector undertakings, such as state forestry, the current method of valuing public sector projects, had become contentious as public sector undertakings had to agree for lower discount rate on account of long gestation period. The Court suggested that there were several methods to work out the Net Present Value (NPV) of the forest resources such as cost calculated for replacement, opportunity, travel, contingent value method (CVM) and social benefit cost analysis (SBCA). This SBCA could then be used to evaluate the environmental impacts of forestry projects. Accordingly, here one notes that the environmental outputs from forests appear as public goods for which there is no market; however, various benefits received from the forest could be classified into. This category, namely, 'Flood Control Benefits, Water Production, Soil Conservation, Outdoor Recreation, Biodiversity, Conservation of Habitat, and Air Purification- which are all intangible outputs and hence one cannot

[30] *Bombay Dyeing & Mfg. Co Ltd v Bombay Environmental Action Group* (2006) 3 SCC 434; for the most recent cases examining environmental cost and benefit ratio see also *Titiksha Social Organization v Ministry of Environment, Forests and Climate Change* Appeal No. 14/2022 (CZ) [NGT (Bhopal), Order dt 6 Jan 2023]; *Anupam Raghav vs Union of India NGT* Original Application No. 164/2018 [NGT (Delhi), Order dt 18 Jan 2022]; *Ashwani Kumar Dubey v UOI* Original Application No. 164/2018 [NGT (Delhi), Order dt 5 November 2019].

[31] See *Rural Litigation and Entitlement Kendra v State of UP* AIR 1989 SC 594.

[32] *T N Godavarman Thirumalpad v Union of India* AIR 2005 SC 4256 [15].

put a cost for the same when compared to cut timber which has a market value.'[33] However, as the Supreme Court surmised under SBCA, benefits from each of the above environmental outputs were identifiable.

While the *third premise* ensures that environmental protection, priorities for development and social justice ought to be balanced through application of sustainable development principle. Where the health of the environment is key to preserving the right to life as a constitutionally recognised value under Article 21 of the Constitution, 'proper structures for environmental decision making find expression in the guarantee against arbitrary action and the affirmative duty of fair treatment under Article 14 of the Constitution. Sustainable development is premised not merely on the redressal of the failure of democratic institutions in the protection of the environment, but ensuring that such failures do not take place.'[34] In the area of environmental governance, the 'means are as significant as the ends.[35] The processes of decision are as crucial as the ultimate decision'.[36] Furthermore, it is through sustainable development application in action that governance of natural resources law and allocation of the same becomes integrated with not only environmental or ecological justice but also takes account of social, political, and equitable concerns.[37] The principle of sustainable development has found consistent application in matters of environmental law within Indian subcontinent and within South Asia and other jurisdictions. Lawmakers, policy makers and the courts have adopted a multi-dimensional approach, with a focus on the development of the economy, protection of individual rights and environmental concerns, while ensuring both inter and intra-generational equity. This has allowed the principle of sustainable development to look beyond creating policy goals (which necessarily seek specific outcomes) towards creating policy approaches (which rather seek to provide better frameworks).[38] In *Indian Council for Enviro-legal Action v Union of India*,[39] a three- judge Bench of the Supreme Court described the principle of sustainable development in the following terms: 'The strict observance of sustainable development will put us on a path

[33] ibid [7.1-7.2].

[34] *Shreeranganathan KP v Union of India* (2014) SCC Online NGT 15 as applied in *HP Ranjanna v Union of India* Appeal No. 54/2018 [NGT (New Delhi) Date of Order 30 July 2021] [198].

[35] *Shashikant Vithal Kamble v. Union of India* 2022 SCC OnLine NGT 292, decided on 23 December 2022; see also *Society for Protection of Environment and Biodiversity v. Union of India,* 2017 SCC OnLine NGT 981.

[36] *Hanuman Laxman Aroskar vs Union Of India* 2019 SCC Online SC 441 [157].

[37] ibid. See also Jordi J Manzano, 'Environmental Justice, Social Change and Pluralism' (2012) 1 *IUCN Academy of Environmental Law* 18 (scholars argue and distinguish between environmental justice and ecological justice),]; and Justice Brian J Preston, 'What's Equity got to do with the Environment?' (2018) 92(4) *Australian Law Journal* 257, 259-60 (on ecological justice, who identifies the interplay of the three equity principles: Interspecies Equity, Intragenerational Equity, and Intergenerational Equity).

[38] See *Citizens for Green Doon v Union of India* (2021) 14 SCR 503.

[39] *Indian Council for Enviro-legal Action v Union of India* (2011) 9 SCR 146 approving and applying *Vellore Citizen Welfare Forum v. Union of India* (1996) 5 SCC 647 and *MC Mehta v. Union of India* (2002) 4 SCC 356.

that ensures development while protecting the environment, a path that works for all peoples and for all generations.'[40]

Justice Babu also noted that while the right to a clean environment is guaranteed as an intrinsic part of the fundamental right to life and personal liberty, the right to development can also be declared as a component of Article 21.[41]

4 Current developments

While writing this editorial, November 2024 saw COP29 conclusion in Baku, Azerbaijan. The discussions within COP29 further reiterate the desperate attempt of nation-states to negotiate and arrive at better management solutions towards the commitment to Paris Agreement goals. The arguments that overshadowed COP29 negotiations were largely, for commitment of over a trillion dollars annually for developing nation-states to be able to combat the impacts of fossil fuel reduction, carbon reduction, adaptive technologies and capacity building for adopting mitigation methods.[42] However, because of several ambiguities in the finance goals, many countries India, Bolivia (developing countries) and even China protested its lack of ambition, in particular the $300 billion figure, the invitation to developing countries to contribute finance, and the way it was adopted over opposition.[43] In respect of nature based solution and biodiversity protection an effort towards integrated natural resources management and audit system first introduced at the UNFCC in Rio remains an aspirational goal, at least within the Indian context and other developing economies and small island nations.[44] With the increasing shadow of environmental insecurity, the disappearing small island nations, and inter as well as intra-state displacement, strategies for the governance of natural resources through integrated law and policy become crucial.[45] Whilst access to environmental and ecological justice

[40] See *M/S Pahwa Plastics Pvt Ltd v Dastak NGO* and Ors (2023) 12 SCC 774 [58].

[41] *Citizens for Green Doon v Union of India* (2021) 14 SCR 503.

[42] The main substantive outcome of COP29, inter alia, was the Baku Climate Unity Pact, comprising new Global Finance goal for over $1.3 trillion, and on developed countries to lead the mobilisation of at least $300 billion, by 2035. The decision also referred to development finance reform, centrality of public sources, enhanced access, as well as reporting on finance. It launched a Baku-Belem Roadmap to 1.3T, a conversation to scale up finance in 2025; mitigation work program that identified technical options to reduce emissions in cities and encouraged collaboration between governance levels; Global goal on adaption that builds up UNFCCC adaptation work with a permanent agenda item on adaptation, a Baku Adaptation Roadmap, and a high-level dialogue see 'Summary of Global Climate Action at COP 29' (*UNFCC*). https://unfccc.int/sites/default/files/resource/Summary_Global_Climate_Action_at_COP_29.pdf. Accessed 5 June 2025.

[43] ibid.

[44] ibid.

[45] For example see Justin See, et al., 'From Absences to Emergences: Foregrounding Traditional and Indigenous Climate Change Adaptation Knowledges and Practices from Fiji, Vietnam and the Philippines' (2024) 176 *World Development* 106503 where authors discuss decolonization of climate change adaptation guided by the critical tenets of Decolonising Climate Adaptation Scholarship (DCAS). They presents empirical case studies from Fiji, Vietnam, and the Philippines and discuss the different ways that Indigenous and local knowledge (ILK) and strategies are devalued and suppressed by modernist and developmentalist approaches to climate adaptation.

is widely recognised as a fundamental right across most nations as discussed above, it remains fragmented and a challenging reality on the ground. This is a problem compounded by intersectionality of gender, regional biases, and traditional diversity within cultures which is away from the mainstream and hence marginalised.[46] Implementation and enforcement of laws on natural resources do not reflect congruently the efficiency of governing institutions concerning the unrecognized, ungoverned, and forgotten sections of society.

5 New initiatives and policy developments within India for environmental and ecosystem services under national climate action strategies

In a follow-up of the 2015 SDGs and the Earth Summit in 2002 (Rio+10), 2012 (Rio+20) a System of Environmental-Economic Accounting–Central Framework (SEEA-CF) was introduced by the United Nations in 2012 as the latest internationally accepted framework for Natural Resources Accounting (NRA) where India .[47] Within the Indian context, some progress can be seen in line with this, especially in terms of the management of mineral resources as well. In 2020, a concept paper was introduced by the Government Accounting Standards Advisory Board Secretariat under the Comptroller and Auditor General's office (CAG, 2020) for asset accounting and audit for natural resources, especially for mines and minerals, water, wildlife, and forests in a nationwide drive.[48] The SEEA's alignment with the System of National Accounts makes it helpful for understanding issues like the climate footprint of different economic activities, the vulnerabilities of different economic sectors to climate impacts, and the current levels of expenditure on climate mitigation and adaptation. Ministry of Mines (MOM), Government of India has taken numerous initiatives to deal with curbing illegal mining through the implementation of this system, including a system of red flags and enabling provisions for States/UTs

[46] See Kayonaaz Kalyanwala, 'Marginalised Women's Voices in the Indian Environmental Justice Movement: Stories from a Himalayan Community' (2025) 10 *Frontiers in Communication*; see also Monica Gratani, et al., 'Indigenous Environmental Values as Human Values", (2016) 2(1) *Cogent Social Sciences.*

[47] See 'SEAA Central Framework' (*System for Environmental Economic Accounting*). https://seea.un.org/content/seea-central-framework. Accessed 5 June 2025. See also 'Natural Capital Accounting and Valuation of Ecosystem Services India' (*System for Environmental Economic Accounting*). https://seea.un.org/content/natural-capital-accounting-and-valuation-ecosystem-services-india. Accessed 5 June 2025. The NCAVES project that was implemented in India, under the leadership of Minister of State, Independent Charge, with the collaboration of UNSD, UNEP and the Secretariat of the Convention of Biological Diversity (CBD), with funding of the European Union.

[48] India also introduced an Environmental Valuation Look Up Tool (EVL Tool) that was presented as the foundational tool for the future research on valuation of ecosystem services. The EVL tool is an Excel-based, searchable, comprehensive database of environmental values unique to India that provides a snapshot of the values of the ecosystem services. Based on the search criteria provided, EVL searches the database and presents the relevant value estimates. See Natural Capital Accounting and Valuation of Ecosystem Services India' (n 47).

to set up special Courts/task forces, streamlining the system of reporting grades of minerals.[49]

Mandatory rules and guidelines have been issued by the Ministry of Mines under the Mines and Mineral (Development and Regulation) Amendment Act 2023 and Rules made accordingly (Auction 2015, Conservation and Development 2017, MOM, and Ministry of Environment, Forests and Climate Change (MOEFCC)) that provide for Exploration Licenses authorizing reconnaissance or prospecting for vital minerals for achieving India's net-zero emission target.[50] Additionally, the NRA system has been notified for asset and revenue reporting scientifically. The Natural Resources Accounting 2021-2022 report highlights the progress made so far to better manage major and minor minerals in every state.[51] In the Wildlife management sector, the MOEFCC has authorized state Chief Wildlife Wardens to perform functions of the Management Authority under the Wildlife Protection Act 1972, to issue Registration Certificates of all Convention on International Trade in Endangered Species of Wild Fauna and Flora appendices I, II, and III listed species allowing owners to retain possession of such specimen and record any changes in possession of such specimen. Despite the above inroads into better management strategies, the above have not been mainstreamed within specific laws and the impact remains to be seen. Corporate governance and amendments and issuance of notifications for Environment Social Governance (ESG) under the Reserve Bank of India guidelines for listed corporations highlight the gaps in implementation.[52]

6 Judicial developments

The judiciary in India has played a pivotal role in integration of environmental law and natural resources law and governance. Be it in interpreting a right to a healthy environment and sustainable development and striking a balance between ecological systems and mining for development.[53] A plethora of cases provide a rich jurisprudence from the *Doon Valley* case[54] in the 1980s, the *MC Mehta* cases,[55] *Vellore*,[56]

[49] Ministry of Mines, Government of India, New Initiatives, 2024, see Ministry of Mines, Government of India *Annual Report 2024-2025*. https://mines.gov.in/admin/download/67b48dd05215b1739886032.pdf. Accessed 5 June 2025.

[50] See Mines and Minerals (Development and Regulation) Amendment Act 2023.

[51] See the Government Accounting Standards Advisory Board, *Concept Paper of Natural Resources Accounting in India* (July 2020). https://cag.gov.in/uploads/media/NR-Accounting-final-20210902122109.pdf. Accessed 5 June 2025.

[52] See 'Corporate Governance Policy Review 2025' (*Bank Of India*, 29 March 2025). https://bankofindia.co.in/documents/20121/25744421/Corporate-Governance-Policy-2025.pdf. Accessed 5 June 2025.

[53] For example see *MK Ranjitsinh vs Union Of India* 2024 INSC 280*; Municipal Corporation Of Gr. Mumbai vs Ankita Sinha* (2021) 10 SCR 1.

[54] *Rural Litigation and Entitlement Kendra v State of UP* AIR 1989 SC 594.

[55] See for example, *MC Mehta vs Union of India & Ors* 2004 INSC 371 (Haryana Mining case); *MC Mehta v UOI* 009 INSC 750 (Aravali Mining Case); *MC Mehta v UOI* 1986 INSC 19l (Oleum Gas Leak Case), among others.

[56] *Vellore Citizens' Welfare Forum v. Union of India* AIR 1996 SC 2715.

and the *AP Pollution Control Board* [57] through the 1990s, in the suitability of environmental principles in the management of natural resources by reiterating the public trust doctrine (PTD), and by defining developmental progress through environmental rule of law, in the *Goa Airport I* case.[58] And recently, the judiciary has provided an inroad by defining the close connection that exists in the protection of endangered species, biodiversity loss to climate change impacts.[59] Judicial innovation and directions in *T.N.Godavarman v Thirumalpad* (1995-2024 having a continuing mandamus), *Centre for Environment Law, WWF-I v Union of India,* [60] *Samir Mehta v Union of India* (NGT, New Delhi),[61] *Niyamgiri Hill* case [62] (in respect of mining allowances, and forest dwellers rights under the Forest Rights Act 2005), *Vedanta v State of Tamil Nadu,*[63] or the *Sterlite Industries case* 2013,[64] have shaped and carved a direction for better enforcement, governance and management of natural resources laws and policies within India. The courts have gone so far as to grant the status of a living entity to the rivers Ganga and Yamuna,[65] lakes and glaciers and certain birds and animals in 2017 in their quest to ebb the abuse of resources for the present and future generations, despite legal uncertainty and a stay by the top court in recognising a right to nature. However, this approach by the High Courts is widely seen as being in line with other countries. Judicial decision-making is however not a panacea to the critical juncture at which natural resources within Asia including India are at. For sustainable management of natural resources within India and Asia, the law and policy need to match the commitment reflected in the nationally determined commitments (NDCs) under the Paris Agreement within specific countries.[66] Despite these extraordinary interventions by the judiciary within India, the law and policy for governance have still fallen short of proper management of natural resources. Neither a balanced anthropocentric nor an ecocentric approach

[57] *A.P. Pollution Control Board vs Prof MV Nayudu (Retd)* 2001 (2) SCC 62.

[58] See *Hanuman Laxman Aroskar vs Union of India* 2020 INSC 49.

[59] For example, *M.K. Ranjitsinh vs Union of India* 2024 INSC 280.

[60] *Centre for Environment Law, WWF-I v Union of India* (2013) 6 SCR 757.

[61] *Samir Mehta v Union of India* 2014 SCC Online NGT 927.

[62] *Orissa Mining Corporation v. Ministry of Environment and Forests* (2013) 6 SCR 881 which declared that Gram Sabha has a role to play in safeguarding the customary and religious rights of the STs and other Traditional Forest Dwellers (TFDs) like Dangaria Kondha etc under the Forest Rights Act 2006. The Supreme Court maintained that the decision would lie with the locals.

[63] *Vedanta v State of Tamil Nadu* 2024 INSC 175 [SC, Order dt 29 February 2024] (closure of the Copper Smelter).

[64] *Tamil Nadu Pollution Control Board v Sterlite Industries (I) Ltd* 2013 (4) SCC 575 and *Tamil Nadu Pollution Control Board v Sterlite Industries (I) Ltd* AIR 2019 SC 1074.

[65] *Mohd. Salim v State of Uttarakhand* Writ Petition (PIL) No 126 of 2014 [Uttarakhand HC, Order dt 20 March 2017]., although the Supreme Court overturned the earlier ruling by the High Court in Uttarakhand and determined that the Ganges and Yamuna rivers cannot be viewed as living entities. However Punjab and Haryana High Court has held lakes of having legal personality. See *Court on its own Motion v Chandigarh Administration* Writ Petition (Civil) No18253 of 2009 [Punjab and Haryana HC, Order dt 2 March 2020].

[66] See UN Paris Agreement (adopted 2 December 2015, entered into force 4 November 2016) 3156 UNTS 79 art 3 that provides an obligation (non-binding) for state parties to submit a periodic National Determined Contribution (NDCs) report.

has been effectively realised. The dissonance in approval and implementation and the diversity of laws belie any integrated policy in natural resources management in India. The vacuum that exists is made worse by the continuing colonial mentality within the laws, the conflicting policy decisions at the federal level and the international commitments for climate change and sustainable development. Adaptation and mitigation are hard to integrate within local scenarios and remain illusory and commitment strategy evasive unless there are financial resources, a problem shared by all developing countries. The same dissonance and diversity are the harbinger of bringing the ecological and social justice struggles to the fore. Perhaps the answers lie elsewhere.

7 Organisation of articles

Placing every question so addressed in respect of natural resources in a hermeneutical context, the authors in this issue have explored, inter alia, whether the role of granting rights to nature, rivers and trees as such has any positive impact upon forest conservation; blue bonds and financial investing through twenty-first century investment might provide a remedial solution to budget starved government departments, and its critique, addressing dynamics at the international law or policy level, climate change impacts, sustainable development issues, interpretation of public trust doctrine and major environmental principles, state mining laws, judicial decisions in respect of conservation, deforestation for development, and schemes for social aid actions for environmental protection within the courts, and the National Green Tribunal as well as international developments. Accordingly, the articles within this special issue provide a glimpse of the problems in respect of civil society turning to courts to force governments and businesses to act, not only combatting the impacts of climate change but also recognising and integrating environmental human rights in climate action; meaningful participation of forest-dwelling communities and engagement with Scheduled Tribes (within India and special communities within Sri Lanka)--all stakeholders and local communities in decision making. An emphasis on inclusivity in policies and legal frameworks for natural resources management is needed. Whether it is mining, protectionist forest laws, river waters, land acquisition, investment in blue bonds or state investor treaties and dispute settlement mechanisms. Efficient implementation and alternative strategies other than resorting to courts have also been kept in mind when working on transnational natural resources management issues and transboundary resources, especially water, forest, wildlife and conflicts that raise substantive and procedural questions of sovereignty, ownership and security.

Extracting from an impressive repository of ancient texts and sources, Nirupama Singh and Aradhya Singh look at sustainable growth in the central Himalayan region, focusing on protecting and preserving natural resources in light of recent development. Ebbe Rogge, using the concept of Green Bonds, looks at the comparative concept of Blue Bonds and how the former can be used to replicate learnings and lessons in governance. Priyal Bansal and Chandra Kant Singh look at the sand mining and related laws, the interrelationship between development and

environmental preservation, and the role of law. Abhishek Trivedi examines the voluntary climate change mitigation mechanism called REDD+ to reduce deforestation and promote conservation and sustainable management of forests. Katrina Fischer Kuh critically examines aspects of private climate accountability by using a North-South climate justice lens to evaluate efforts to obtain court-ordered damages from private actors, particularly in the United States. Shantanu Saha emphatically argues for an ecocentric approach that places human beings in the interrelated and interdependent web of life and highlights how underlying approaches shape things in the continuum. Rhea Roy Mammen examines a significant regulatory framework governing wetland conservation and the Kerala Conservation of Paddy Land, and the Wetland Act of 2008. By employing qualitative methods, she uncovers the personal and economic pressures the landowners face in converting wetlands for alternative use.

Sairam Bhat and Vikas Gahlot examine the environmental rule of law within the academic judicial, international environmental law discourses. With respect to India, they conclude that though the legal framework is largely in alignment with EROL principles, there are issues which act as roadblocks for effective implementation. Ajay Pandey, Shivangi Priya and Gurbani Bhatia examine unscientific and illegal sand mining, arguing that citizen participation needs to be promoted. This includes the strengthening of Gram Sabhas, Panchayats, and other local bodies. Sujith Koonan and Nikita Pattajoshi provide a critique of the existing law on natural resources and argue for the need for a paradigm shift. Their article engages with the rights of nature and the channel towards a paradigm shift in the sustainable use of natural resources. Amritha Viswanath Shenoy and Rachit Murarka analyze the principles of permanent sovereignty over natural resources, their connections to third world approaches to international law (TWAIL), exploring the natural resources in Nepal and connecting them to TWAIL. Asanka Amitharansy Edirisinghe delves into a topic that has received scant attention within Sri Lanka or outside by examining legal personhood and rights of nature within Sinhalese Buddhist traditions in Sri Lanka. Suriaprakash looks at the encouraging increase in India's tree cover and forest cover and critically examines the law governing the additional forests that are added to the forest cover, in lieu of diversion of forests, as well as the compensatory afforestation regime in India. The paper looks at the regime from a perspective of the rights of forest dwellers, exploring the theme of ethical and sustainable development.

Sean Shun Ming Yau argues that certain structural arrangements in the WTO laws favour prioritising trade freedom while ignoring considerations for International environmental law, while debilitating a member's regulatory autonomy to respect the same. He points out that as a consequence, state behaviour has been largely unregulated by the homogeneity of trade rules, leading to surrendering natural resource management to the invisible hands of the market, which renders natural resource management vulnerable to unsustainable exploitation and inequitable distribution. Shambhavi Thakur points out that environmental crises in India are fundamentally crises of representation, perpetuated by hegemonic structures that marginalise tribal and local voices and interests. Her paper undertakes an interdisciplinary examination of the nexus between environmental crises, representation, community rights,

and natural resource management in India, specifically focusing on the marginalisation of forest dwellers. Pratik Purswani and Adithi Rajesh discuss the changing role of the Indian State in the management of natural resources considering the principle of Permanent Sovereignty over Natural Resources (PSNR). Their focus revolves around Adivasis (traditional communities) in India and forwards the argument that economic growth has mostly favoured only a certain section of society while having adverse consequences for the indigenous people. They call for the need for fair and equitable treatment, transparency, and non-discrimination in the management of natural resources to ensure the well-being and rights of all stakeholders. Preetisha Choudhury and Naveen Kumar explore the intricate relationship between coral reefs and the emerging concept of blue carbon. They point out the ecosystem services that these coral reefs provide while highlighting their importance in reducing the adverse effects of the warming planet. They emphasis on the global collaboration potential, conservation strategies and the ongoing efforts to protect these vital ecosystem keeping in mind their benefit for posterity and the planet. The reader would note that all articles have a theoretical base within the analytical framework as stated above and can be analyzed either within the ethical, normative rights framework, a utilitarian framework and lastly through a progressive and dynamic interpretation of sustainable development. Contributors also identify the gaps that exist within the governance of natural resources law and management in context of environmental , ecological justice; adverse effects of climate change; inclusion and participation of marginalized communities in decision making; or attempts at reinventing traditional indigenous practices/customs; environmental rule of law; or modern financial incentives within trade both at national and international level that work towards achieving SDGs 2030 goals and targets.

Given the divergent nature of resources, no single solution can apply to managing natural resources across the spectrum. Each resource and its attendant legal framework have its own set of challenges.[67] Several legal issues germane to the discussion in the particles presented in this issue include the federal role in defining policy and institutional context, the nature of property rights, how traditional versus alternative uses can be balanced, the nature of conservation and protection programs, and how resource consumption patterns can be supported to ensure that the resource is well available into the future. As a law review with a critical and inter-disciplinary orientation, articles, in this issue are from Sri Lanka, Nepal, Hong Kong, the United States of America, the United Kingdom, the European Union and Australia apart from India, that explore the themes with a comparative lens, engaging with the Global South, and at the international level as illustrated above.

This special issue on Natural Resource Management is the fruition of the hard work and perseverance of all of us at the Centre for Environmental Law and Climate Change (CELCC) at Jindal Global Law School and our deep commitment to the mission of moving towards natural resources governance integration, ecologically just laws and policies and governance mechanisms within India and South Asia. The

[67] See 'Call for Papers Special Issue on "Natural Resources Law Management and the Law in India: Confronting Emerging Challenges in the Anthropocene and Developing New Sustainability Paradigms"' (n 7).

wide-ranging and impressive scholarship attests to the movement towards further discussion and debate within the country and elsewhere. Our gratitude to the managing editors of the *Jindal Global Law Review*, all the reviewers, authors, and our publishers.