Article

AI in Climate Change Litigation: A Technological Shift in Indian Environmental Jurisprudence.

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Abstract

The application of artificial intelligence (AI) in climate litigation is becoming a game-changer as India fails to fulfil its climate obligations and battles emerging ecological concerns. This article speaks about the way artificial intelligence (AI) is starting to make itself felt in India's environmental law framework by assisting in analysing intricate scientific information, aiding legal defences, and enabling quicker and more knowledgeable court judgments. Artificial intelligence is helping with legal research and predictive trends of pollution, which will help deal with the fast-changing and wide area of climate cases. There are also important concerns regarding accessibility, justice, and transparency raised by this technological change. Care needs to be taken in matters like bias in data, digital inequality, and possible overreach by AI in judiciary processes. The essay asks for open legislation, responsible use of AI technologies, and improved education of legal and environmental professionals by drawing upon international norms and India's own changing jurisprudence. Ultimately, it pleads for an approach that is pro-innovation but mindful of the principles of sustainability, justice, and fairness

Introduction

Global warming has emerged as an existential challenge with far-reaching socio-economic, political, and legal implications in the context of increasing environmental disasters. The legal fraternity is being challenged to impose climate commitments and make governments and companies accountable for ecological decline as the international community attempts to meet carbon neutrality targets. Law and technology have become particularly significant in India, a country with a living constitutional paradigm and growing environmental jurisprudence. The application of artificial intelligence (AI) to climate change litigation is one of the most thrilling developments in the field. Ranging from sifting through reams of environmental impact information to foreseeing the outcome of court cases and discovering trends in the behaviour of judges, AI can transform the dispensation of environmental justice in India.[1] This article looks at how AI is being implemented in climate change litigation, how it can revamp Indian environmental jurisprudence, and the ethical, legal, and structural issues it presents. Environmental norms have been significantly shaped by the Indian judiciary, especially the superior courts. Courts have often transcended their traditional adjudicative roles to become policy enforcers following judicial embracement of principles such as **"polluter pays," "precautionary principle,"** and **"sustainable development."** Litigation in this field is,

[1] SCC Editorial Team, Judicial Developments in Environmental Law and Technology, SCC ONLINE (Jan. 2024), https://www.scconline.com.

however, exceptionally challenging owing to the complexity of climate science, the multidisciplinary essence of environmental law, and the sheer volume of data. In this context, artificial intelligence (AI) can assist researchers, policymakers, litigants, and courts in analysing scientific evidence, simulating climate change, and developing effective legal cases. The transformation is not simply technological; it represents a philosophical shift in the approach to seeking climate justice and environmental responsibility in the digital age.

The Landscape of Climate Change Litigation In India

India's litigation on climate change is yet in its infancy stage but is evolving rapidly. **Public Interest Litigation (PIL),** a judicial innovation of a special kind enabling individuals and civil society organizations to seek redress for collective wrongs, has traditionally been utilized to attain environmental conservation. Besides laying the foundation for environmental jurisprudence, landmark judgments such as ***M.C. Mehta v. Union of India***[2] have evidenced the proactive role of the judiciary in upholding ecological rights under **Article 21**[3] of the Constitution. Legal principles are being used more and more by litigants to challenge government inertia and corporate irresponsibility in the climate space as concerns over climate-related issues—ranging from air and water pollution to deforestation, sea-level rise, and extreme weather events—mount. Regulatory enforcement measures as well as rights-based lawsuits are common in India's climate litigation scene. There have been many lawsuits filed to challenge contraventions of emission regulations, unsustainable development of infrastructure, and the ineffective application of environmental clearance criteria. To safeguard the interests of vulnerable groups and future generations disproportionately affected by climate change, emerging legal theories such as intergenerational equity and climate justice are also being explored. Yet, one of the key hindrances to litigating such complex claims is the impossibility of securing reliable, comprehensive, and interpretable scientific data. This is where artificial intelligence comes in.

AI and its Application in Climate Science and Environmental Monitoring

The phrase artificial intelligence (AI) refers to the imitation of human intelligence in machines that can learn, understand, and solve problems. AI is capable of processing massive data, finding patterns not easily seen, and providing predictive analysis in environmental legislation that are much more sophisticated than conventional methods. It is able to model the long-term environmental impact of

[2] M.C. Mehta v. Union of India, AIR 1987 SC 1086 (India).
[3] INDIA CONST. ART.21.

policy choices, utilize **Internet of Things (IoT)** sensors to track air and water quality in real time, and analyse satellite images to detect illegal deforestation. Machine learning algorithms applied to the analysis of climate data, such as temperature increases, rainfall cycles, and greenhouse gas emissions, provide the data-driven foundation for claims. AI platforms are being utilized already for environmental monitoring in India by institutions such as the **Ministry of Environment, Forests, and Climate Change (MoEFCC)**[4]**, Indian Institute of Technology (IITs),** and **Indian Space Research Organization (ISRO). The Central Pollution Control Board (CPCB)**, for example, makes pollution surges predictions and generates **Air Quality Indices (AQI)** with the help of AI-based models. Litigations concerning government failures and air quality requirements could find this information essential.[5] Also, AI-prompted evidence can augment the evidentiary foundation of litigations by providing more objective and scientifically rigorous backing for accusations of environmental damage.

AI as a Tool for Legal Research and Predictive Analytics

More and more legal research and case prediction are being done with the help of AI in addition to its applications in climate science. Search features that use AI are being added to platforms such as Manupatra, SCC Online, and Indian Kanoon[6], which allow lawyers to find relevant precedents, identify patterns of court thinking, and forecast outcomes of cases. Even more advanced global platforms like LexisNexis and ROSS Intelligence possess natural language processing (NLP) ability to interpret legal questions and provide concise, accurate responses. By examining several hundred environmental cases in order to determine the strongest arguments, judges who ruled in Favor, and applicable provisions of law, artificial intelligence (AI) can aid lawyers in preparation of climate lawsuits. It can monitor how administrative agencies have enforced (or not enforced) environmental standards and detect inconsistencies in regulation enforcement. Additionally, from historical data, AI algorithms can ascertain the likelihood of success for specific legal methods so that lawyers can set their arguments accordingly. This enhances strategic precision while greatly reducing litigation time and cost.

[4] Ministry of Environment, Forest and Climate Change, National Action Plan on Climate Change, GOV'T OF INDIA (2008), https://moef.gov.in/wp-content/uploads/2017/08/NAP_E.pdf.
[5] Supreme Court of India Artificial Intelligence Committee, Annual Report 2021–2024 (Sup. Ct. of India 2024), https://main.sci.gov.in.
[6] Indian Kanoon, Environmental Litigation Case Search Database, INDIAN KANOON (accessed June 25, 2025), https://indiankanoon.org.

Judicial Use of AI and Future Potential

In a bid to enhance judicial efficiency and consistency, the Indian judiciary has begun to explore AI methods. The Supreme Court's Artificial Intelligence Committee was formed in **2019** to develop tools to assist justices in case administration, research, and translation. The **SUPACE**[7] (Supreme Court Portal for Assistance in Court Efficiency), which launched in **2021**, is an AI system that assists judges by emphasizing precedents and simplifying case briefs. They can potentially revolutionize the practice of climate litigation in the environmental arena. AI can fill the knowledge gap between judicial reasoning and climate science by making it easier for judges to grasp intricate scientific facts presented in environmental cases. By focusing on relevant precedents and facilitating comparative examination of circumstances comparable in jurisdictions, it can facilitate judicial consistency. Artificial intelligence (AI) tools that simulate the environmental impacts of judicial decisions can be built in the future, enabling judges to have a more holistic and forward-thinking approach to environmental justice.

Ethical and Legal Challenges

The use of AI in climate litigation raises serious ethical, legal, and procedural questions despite its promise. One is the question of responsibility and transparency. AI algorithms are often **"black boxes,"** i.e., it is hard for humans to understand their internal thought processes. Such secrecy can lead to trust issues and over-reliance on AI-produced evidence by judges. The litigants to a suit should be enabled to dispute and scrutinize in detail the basis for any information or prediction used against them. The algorithm can violate the principles of natural justice if it is proprietary or secretive.[8]

Second, concerns about digital inequality and data prejudice are brought up. AI system quality is based on the quality of the training data. Poorly formed, outdated, or prejudiced training data might lead the AI to reinforce existing social and environmental imbalances. For instance, rural or tribal populations might be misrepresented if pollution information is primarily collected in urban zones, potentially misleading policy and judicial results. In addition, affluent litigants and law firms are the only ones who can afford to buy sophisticated AI technologies because of India's digital divide, potentially rendering access to justice more unequal.

[7] Krishnadas Rajagopal, SUPACE: Supreme Court Launches AI System to Aid Judges, THE HINDU (Apr. 6, 2021), https://www.thehindu.com/news/national/supreme-court-launches-ai-system-supace/article34250722.ece.
[8] Ritu Mathur et al., Artificial Intelligence Applications in Environmental Governance 1–52 (Energy & Res. Inst. [TERI], 2022), https://www.teriin.org/sites/default/files/2022-09/AI-Applications-Environment-Governance.pdf.

Third, separation of powers and non-delegation of judicial tasks are constitutional problems that are raised by the use of AI in judicial decision-making. While AI is able to assist in research and analysis, human judges must retain the ability to make decisions. Help and automation have a fine line, and any encroachment on judicial powers by AI would be unconstitutional.

Comparative Jurisprudence and Global Trends

AI is under widespread research in environmental governance and climate change litigation globally. [9] AI is utilized in the US by environmental monitor groups to track industrial emissions and foretell violations. AI-based solutions aid environmental impact assessments and monitor compliance with climate guidelines in the European Union. As evident from the ***Urgenda Foundation v. State of Netherlands case[10],*** in which the court applied climate forecasts and scientific data models to make the government accountable for climate inaction, the Netherlands has been at the forefront of human rights-based climate litigation.[11]

By establishing robust legal frameworks to regulate the application of AI in environmental cases, India can learn from these jurisdictions. Admissibility of AI-generated evidence must be standardized, ensuring transparency of algorithmic processes, and formulating data governance guidelines that protect privacy and facilitate scientific research are all required. To ensure that the use of AI serves to promote environmental justice and not undermine it, Indian courts need to balance technical innovation with settled legal safeguards.

Indian Perspective on AI and Environmental Governance

India is at the crossroads of two **enormous revolutions:** the fast-emerging technology sector and the mounting environmental issue. The government and judiciary have started recognizing the potential of artificial intelligence (AI) for solving environmental issues in recent years. AI technology is being applied by organizations such as the **Ministry of Environment, Forests, and Climate Change (MoEFCC)** and **the Indian Space Research Organization (ISRO)** for monitoring the environment, including real-time air quality forecasting and satellite-based deforestation tracking. The courts have

[9] Navroz K. Dubash et al., Climate Litigation in India: Emerging Trends and Prospects, CENTRE FOR POLICY RESEARCH (May 2023), https://cprindia.org/research/reports/climate-litigation-in-india.
[10] Urgenda Found. v. State of the Netherlands, C/09/456689/HA ZA 13-1396 (R.B. Den Haag Dec. 20, 2019), English translation available at https://uitspraken.rechtspraak.nl.
[11] Gayathri Anand, How Artificial Intelligence Can Help Solve the Climate Crisis, WORLD ECON. F. (June 10, 2021), https://www.weforum.org/agenda/2021/06/how-ai-can-help-solve-climate-change.

always interpreted Article 21 of the Constitution as being inclusive of the right to a clean and healthy environment and have laid a sound basis for admissibility of evidence based on AI, even though India's judicial system has not adopted AI as such into environmental adjudication yet. The Supreme Court gave the foundation for technologically facilitated environmental claims in ***Subhash Kumar v. State of Bihar***[12] by affirming that the **"right to life" under Article 21** covers the right to have access to clean air and water. Again, upholding its willingness to receive inputs created by science and technology, the Court applied satellite imagery and technical reports to control deforestation in ***T.N. Godavarman Thirumulpad v. Union of India***[13]**.** India's legal system needs to evolve to keep pace with an increasingly data-based approach to environmental degradation and have AI as a valid and powerful regulatory and evidential tool.

Towards a Sustainable and Tech-Driven Environmental Jurisprudence

AI can have a powerful impact on Indian environmental law. AI has the potential to enhance the quality, speed, and reach of climate change litigation by means of real-time data gathering and analysis, predictive modelling, and legal research. Yet, it is possible only with a strong institutional setup, interdisciplinary collaboration, and commitment to ethical and constitutional values. Judges, lawyers, and environmental regulators must learn about and be able to use AI tools more rapidly. Environmental data analysis and legal technology must be added to law school curricula. AI-driven surveillance systems must be provided to environmental regulators, and protocols for sharing data among government agencies, universities, and the judiciary must be established. For underserved communities to benefit from technology-driven litigation, civil society associations and legal aid groups need to be supported as well in accessing AI instruments. In the long run, artificial intelligence (AI) promises to transform the quest for environmental justice, climate resilience, and sustainable development. AI adoption into environmental governance is not an option but an imperative as India ushers itself into its climate pledges under local strategies such as the **National Action Plan on Climate Change (NAPCC)** and global agreements such as the Paris Accord. To ensure that this technology shift advances the more general aims of equity, sustainability, and constitutionalism, courts, legislatures, and technologists need to come together.

Conclusion

[12] Subhash Kumar v. State of Bihar, (1991) 1 SCC 598 (India).
[13] T.N. Godavarman Thirumulpad v. Union of India, (1997) 2 SCC 267 (India).

Climate action is not only a scientific or political imperative, but a moral and legal one. Litigation will increasingly be used to enforce climate responsibility as India grapples with unprecedented environmental challenges. AI can support this task very effectively through powerful tools, enabling data-based policy interventions, effective litigation, and better decision-making. AI application must be strictly regulated to ensure equity, transparency, and inclusiveness. AI can herald a new age of environmentally focused jurisprudence in India that is technologically advanced yet firmly based in justice, as long as the necessary protections and institutional changes are instituted.

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