INTERNATIONAL JOURNAL FOR LEGAL RESEARCH AND ANALYSIS

Open Access, Refereed Journal Multi Disciplinary
Peer Reviewed

www.ijlra.com

ISSN: 2582-6433

DISCLAIMER

No part of this publication may be reproduced or copied in any form by any means without prior written permission of Managing Editor of IJLRA. The views expressed in this publication are purely personal opinions of the authors and do not reflect the views of the Editorial Team of IJLRA.

Though every effort has been made to ensure that the information in Volume II Issue 7 is accurate and appropriately cited/referenced, neither the Editorial Board nor IJLRA shall be held liable or responsible in any manner what sever for any consequences for any action taken by anyone on the basis of information in the Journal.

Copyright © International Journal for Legal Research & Analysis

ISSN: 2582-6433

EDITORIALTEAM

EDITORS

Dr. Samrat Datta

Dr. Samrat Datta Seedling School of Law and Governance, Jaipur National University, Jaipur. Dr. Samrat Datta is currently associated with Seedling School of Law and Governance, Jaipur National University, Jaipur. Dr. Datta has completed his graduation i.e., B.A.LL.B. from Law College Dehradun, Hemvati Nandan Bahuguna Garhwal University, Srinagar, Uttarakhand. He is an alumnus of KIIT University, Bhubaneswar where he pursued his post-graduation (LL.M.) in Criminal Law and subsequently completed his Ph.D. in Police Law and Information Technology from the Pacific Academy of Higher Education and Research University, Udaipur in 2020. His area of interest and research is Criminal and Police Law. Dr. Datta has a teaching experience of 7 years in various law schools across North India and has held administrative positions like Academic Coordinator, Centre Superintendent for Examinations, Deputy Controller of Examinations, Member of the Proctorial Board

Dr. Namita Jain

Head & Associate Professor
School of Law, JECRC University, Jaipur Ph.D. (Commercial Law) LL.M., UGC-NET Post Graduation Diploma in Taxation law and Practice, Bachelor of Commerce.

Teaching Experience: 12 years, AWARDS AND RECOGNITION of Dr. Namita Jain are - ICF Global Excellence Award 2020 in the category of educationalist by I Can Foundation, India. India Women Empowerment Award in the category of "Emerging Excellence in Academics by Prime Time & Utkrisht Bharat Foundation, New Delhi. (2020). Conferred in FL Book of Top 21 Record Holders in the category of education by Fashion Lifestyle Magazine, New Delhi. (2020).Certificate of Appreciation for organizing and managing the Professional Development Training Program on IPR in Collaboration with Trade Innovations Services, Jaipur on March 14th, 2019

ISSN: 2582-6433

Mrs.S.Kalpana

Assistant professor of Law

Mrs.S.Kalpana, presently Assistant professor of Law, VelTech Rangarajan Dr.Sagunthala R & D Institute of Science and Technology, Avadi. Formerly Assistant professor of Law,Vels University in the year 2019 to 2020, Worked as Guest Faculty, Chennai Dr.Ambedkar Law College, Pudupakkam. Published one book. Published 8Articles in various reputed Law Journals. Conducted 1Moot court competition and participated in nearly 80 National and International seminars and webinars conducted on various subjects of Law. Did ML in Criminal Law and Criminal Justice Administration.10 paper presentations in various National and International seminars. Attended more than 10 FDP programs. Ph.D. in Law pursuing.

Avinash Kumar

Avinash Kumar has completed his Ph.D. in International Investment Law from the Dept. of Law & Governance, Central University of South Bihar. His research work is on "International Investment Agreement and State's right to regulate Foreign Investment." He qualified UGC-NET and has been selected for the prestigious ICSSR Doctoral Fellowship. He is an alumnus of the Faculty of Law, University of Delhi. Formerly he has been elected as Students Union President of Law Centre-1, University of Delhi. Moreover, he completed his LL.M. from the University of Delhi (2014-16), dissertation on "Cross-border Merger & Acquisition"; LL.B. from the University of Delhi (2011-14), and B.A. (Hons.) from Maharaja Agrasen College, University of Delhi. He has also obtained P.G. Diploma in IPR from the Indian Society of International Law, New Delhi. He has qualified UGC – NET examination and has been awarded ICSSR – Doctoral Fellowship. He has published six-plus articles and presented 9 plus papers in national and international seminars/conferences. He participated in several workshops on research methodology and teaching and learning.

ISSN: 2582-6433

ABOUT US

INTERNATIONAL JOURNAL FOR LEGAL RESEARCH & ANLAYSIS ISSN- 2582-6433 is an Online Journal is Monthly, Peer Review, Academic Journal, Published online, that seeks to provide an interactive platform for the publication of Short Articles, Long Articles, Book Review, Case Comments, Research Papers, Essay in the field of Law & Multidisciplinary issue. Our aim is to upgrade the level of interaction and discourse about contemporary issues of law. We are eager to become a highly cited academic publication, through quality contributions from students, academics, professionals from the industry, the bar and the bench. INTERNATIONAL JOURNAL FOR LEGAL RESEARCH & ANALYSIS ISSN 2582-6433 welcomes contributions from all legal branches, as long as the work is original, unpublished and is in consonance with the submission guidelines.

ISSN: 2582-6433

EMBEDDING CIRCULAR ECONOMY PRINCIPLES WITHIN INDIAN ENVIRONMENTAL JURISPRUDENCE: CHALLENGES, DOCTRINAL REFORMS AND POLICY FUTURES

AUTHORED BY - SOUMYA SARKAR

ABSTRACT

This paper provides a comprehensive overview of environmental jurisprudence in Indian judicial history while examining the legal and constitutional dimensions of access to environmental justice, aligned with India's vision of developed status by *2047*. It identifies critical research gaps on existing legal issues in present legislations and institutions for environmental justice, particularly in supporting sustainable development, circular economy initiatives and the fulfillment of India's Nationally Determined Contributions (NDCs) under the Paris Agreement. Adopting a doctrinal research methodology, the paper analyzes relevant constitutional provisions and their judicial interpretations concerning environmental protection. A detailed qualitative case law analysis traces the evolution of environmental jurisprudence in India, emphasizing how courts have balanced ecocentric principles with anthropocentric ethics. Building on this foundation, the paper explores the scope and effectiveness of mechanisms—such as the National Legal Services Authority (NALSA), environmental NGOs, public interest litigation (PIL) and statutory provisions under the Environment (Protection) Act, 1986; Wildlife Protection Act, 1972; Forest Rights Act, 2006 and Environmental Impact Assessment (EIA) Rules.

The study further uses qualitative research methodology to underscore the hinderances in the effective implementation of circular economy policies, highlighting the need for robust regulatory frameworks, enhanced waste recycling legislation, cooperative federalism ensuring circular economy, monitoring and citizen-centric legal support. It also provides a comparative perspective by examining international frameworks such as the Aarhus Convention, Circular economy action plan for EU (2020), EU plastic strategy 2030, Circular plastic act of Japan (2021), Resource circulation act of South Korea (2020), Green supply chain initiatives of China, California Circular economy legislation (2022), Canadian zero plastic waste strategy

ISSN: 2582-6433

(2022), Netherlands green deal etc, identifying lessons for India's sustainable development trajectory.

Finally, the paper recommends futuristic reforms to strengthen environmental justice in India These measures aim to ensure that India's environmental governance aligns with SDG targets, NDC commitments and the vision of a *Viksit Bharat 2047*, promoting equitable, sustainable future as envisioned in Directive Principles of Indian Constitution.

Keywords
Environmental Jurisprudence, Legal Personhood, EIA, Extended Producer Responsibility, Carbon Credits, Ecosystem as a service, Anthropocentricism

Introduction

India's aspiration of becoming a developed nation by 2047 necessitates embedding sustainability within its economic growth trajectory. The vision of *Atmanirbhar Bharat*—a self-reliant India—is not merely an economic policy slogan but a constitutional imperative rooted in the Directive Principles of State Policy, particularly Article 39(b), which mandates equitable distribution of material resources of the community for the common good (Constitution of India, 1950). The pathway to such self-reliance critically depends on the adoption of a **circular economy** model, wherein resources are minimized, reused, and recycled rather than discarded.

This dependency becomes stark when viewed through the lens of **critical minerals**—such as lithium, cobalt, nickel, and rare earth elements—which are indispensable for renewable energy, electric mobility, semiconductors, and advanced defense technologies. These minerals are the strategic weapons of the 21st century's geopolitical power rivalries, akin to oil in the 20th century (International Energy Agency [IEA], 2021). India's heavy dependence on China for rare earth processing and supply chains underscores both a strategic vulnerability and a legal-policy challenge. While India possesses potential reserves, the lack of robust recycling frameworks, waste mining policies, and effective environmental regulations has perpetuated dependence (NITI Aayog, 2022).

In this context, **circular economy governance through environmental law** is indispensable. For instance, by integrating extended producer responsibility (EPR) under the Environment

ISSN: 2582-6433

(Protection) Act, 1986, and strengthening recycling obligations under the E-Waste Management Rules, India can reduce import dependence while ensuring environmental safeguards. Judicial recognition of environmental protection as part of the fundamental right to life under Article 21 (M.C. Mehta v. Union of India, 1988) also provides a constitutional basis to align self-reliance with ecological sustainability. Thus, environmental jurisprudence not only safeguards the environment but also reinforces strategic autonomy by mandating the lawful management of resources critical to national security.

The research questions that guide this paper are therefore threefold:

1. How can India's constitutional and legal frameworks be strengthened to govern the circular economy for critical sectors such as energy, technology, and defense?
2. What are the legal and institutional barriers to effective implementation of circular economy policies in India?
3. What comparative lessons from international circular economy governance can inform India's trajectory towards *Viksit Bharat 2047*?

By situating circular economy within the larger discourse of environmental justice and strategic self-reliance, this paper contends that the future of India's development lies in harmonizing ecological constitutionalism with economic sovereignty.

Literature Review and Theoretical Framework

Environmental jurisprudence in India has evolved through a blend of **anthropocentric and ecocentric reasoning**, reflecting the courts' attempt to reconcile human development with ecological sustainability. The **right to a wholesome environment**, read into Article 21 of the Constitution, forms the cornerstone of this jurisprudence. The Supreme Court first recognized this right in *Rural Litigation and Entitlement Kendra v. State of Uttar Pradesh* (AIR 1987 SC 359), establishing that environmental protection is integral to the right to life (Rural Litigation and Entitlement Kendra v. State of Uttar Pradesh, 1987).

Doctrinal Principles Governing Environmental Protection

1. **Public Trust Doctrine (PTD)**

   The Public Trust Doctrine underlines the State's fiduciary duty to protect natural resources for the benefit of present and future generations. Indian courts have applied this doctrine to rivers, forests, and other natural resources, thereby restricting their exploitation for private gain (M.C. Mehta v. Kamal Nath, 1997).

ISSN: 2582-6433

2. **Doctrine of Absolute Liability**

   Introduced in *M.C. Mehta v. Union of India* (AIR 1987 SC 965), the doctrine holds industries strictly liable for environmental harm, even without negligence. This principle is particularly relevant to industrial sectors critical for circular economy initiatives, such as mining and battery production (M.C. Mehta v. Union of India, 1987).

3. **Polluter Pays Principle (PPP)**

   Codified in *Indian Council for Enviro-Legal Action v. Union of India* ((1996) 3 SCC 212), PPP mandates that those causing environmental damage must bear the cost of remediation. This principle aligns closely with extended producer responsibility (EPR) mechanisms central to circular economy governance (Indian Council for Enviro-Legal Action v. Union of India, 1996).

4. **Doctrine of Promissory Estoppel**

   Applied in environmental matters, promissory estoppel ensures that government agencies and private actors cannot backtrack on commitments related to environmental approvals and sustainability obligations (Himachal Pradesh Medium Hydro Power Developers Association v. State of Himachal Pradesh, 2008).

5. **Right Against Adverse Effects of Climate Change**

   While still evolving, courts have acknowledged the emerging right to protection from climate-induced harm. Justice D.Y. Chandrachud, in 2024, emphasized the state's duty to mitigate climate risks as part of the constitutional mandate (Chandrachud, 2024).

Constitutional and Legislative Anchors

India's constitutional framework has progressively recognized environmental protection as an essential component of governance, rooted in both **fundamental rights** and **directive principles**. The journey began with **Article 21**, guaranteeing the right to life, which the Supreme Court interpreted to include the right to a **clean and healthy environment** (*Rural Litigation and Entitlement Kendra v. State of Uttar Pradesh*, 1987). This interpretation laid the foundation for later doctrines such as the **Public Trust Doctrine**, which obliges the State to act as a trustee of natural resources for present and future generations (*M.C. Mehta v. Kamal Nath*, 1997).

Directive Principles under **Articles 39(a) and 39(b)** emphasize equitable distribution and protection of the community's resources, implicitly supporting sustainable and circular use of natural resources (Constitution of India, 1950). Similarly, **Article 51(a)(g)** imposes a

ISSN: 2582-6433

fundamental duty on citizens to protect the environment, reflecting constitutional moral imperatives for sustainability. **Article 253** empowers the Union to implement international environmental treaties and conventions, enabling India to align domestic legislation with global circular economy commitments (Dubash & Ghosh, 2021).

Judicial evolution demonstrates an increasing sophistication in balancing economic development with ecological sustainability. For instance:

- *M.C. Mehta v. Union of India* (1987) established **absolute liability** for hazardous industries, ensuring industrial compliance in resource-intensive sectors.
- *Indian Council for Enviro-Legal Action v. Union of India* (1996) codified the **Polluter Pays Principle**, directly relevant for enforcing **Extended Producer Responsibility (EPR)** in waste and recycling laws.
- *Himachal Pradesh Medium Hydro Power Developers Association v. State of Himachal Pradesh* (2008) applied **Promissory Estoppel** in environmental approvals, reinforcing regulatory certainty.
- *T.N. Godavarman Thirumulpad v. Union of India* (1997) recognized the **public trust doctrine** for forests, restricting commercial exploitation without statutory compliance.

These constitutional and judicial principles are operationalized through legislation such as:

- **Environment (Protection) Act, 1986** – overarching statute empowering the central government to regulate hazardous processes and enforce environmental standards.
- **E-Waste Management Rules (2016, amended 2022)** – promoting circularity through recycling and EPR.
- **Extended Producer Responsibility (EPR) Rules under Plastic Waste Management Rules** – legally binds producers for product lifecycle management.
- **Forest Rights Act, 2006** – recognizes community rights while emphasizing sustainable forest use.
- **Mineral (Development and Regulation) Act, 1957** – critical for regulating mineral extraction, which is pivotal for circularity in strategic sectors.

Together, these constitutional provisions and statutes provide the **legal scaffolding** for embedding circular economy principles in India's development strategy, directly linking to **Atmanirbhar Bharat** by enabling domestic resource security in critical minerals, waste management, and industrial circularity.

ISSN: 2582-6433

Comparative Perspectives

Aarhus Convention (1998)

The **Aarhus Convention** enshrines three pillars: access to environmental information, public participation in decision-making, and access to justice in environmental matters. This framework ensures that citizens can hold governments and private actors accountable, fostering transparency in circular economy governance. Its legal principles inspire India's PIL mechanisms and the strengthening of public consultation in environmental clearances (UNECE, 1998).

European Union Circular Economy Action Plan (2020) & EU Plastic Strategy 2030

The **EU Circular Economy Action Plan** establishes binding targets for material reuse, recycling, and product lifecycle management, particularly for electronics, plastics, and critical raw materials. The EU Plastic Strategy 2030 complements this by phasing out single-use plastics and mandating recycled content in packaging. These instruments illustrate **how regulatory coherence, market incentives, and legal enforcement** jointly drive circular economy outcomes (European Commission, 2020).

Japan's Circular Plastic Act (2021)

Japan's **Circular Plastic Act** focuses on promoting **extended producer responsibility** and incentivizing private sector participation in waste recycling. Legally, it mandates producers and importers to establish recycling schemes and report compliance, reflecting a statutory model for circular economy governance that India can adapt, particularly in plastics and e-waste (Government of Japan, 2021).

South Korea's Resource Circulation Act (2020)

South Korea institutionalized **resource circulation laws** that combine regulatory obligations with economic incentives. Producers are required to submit detailed plans for material reuse and recycling, while the government monitors compliance through legally binding reporting standards. This legislative approach underscores the **importance of enforceable compliance mechanisms** for circular economy policies (Ministry of Environment, South Korea, 2020).

China's Green Supply Chain Initiatives

China's environmental regulations integrate **supply chain management with environmental law**, targeting resource efficiency across industrial value chains. The Supreme People's Court

ISSN: 2582-6433

of China provides judicial guidance for environmental adjudication, including compliance with recycling obligations for industrial waste, thereby linking corporate accountability with state enforcement (Supreme People's Court of China, 2015).

North America: California & Canada

California's **Circular Economy Legislation (2022)** and Canada's **Zero Plastic Waste Strategy (2022)** employ **binding state-level regulations, incentives, and reporting requirements** to drive circularity. Both jurisdictions highlight how **federalism and state autonomy** can complement national sustainability objectives, offering India lessons in cooperative federalism for circular economy governance (California Legislative Information, 2022; Government of Canada, 2022).

Netherlands' Green Deals

The Netherlands has adopted **voluntary agreements (Green Deals)** between the government, businesses, and NGOs to implement circular projects. Legally, these agreements are enforceable contracts that provide flexibility while maintaining accountability. This hybrid regulatory model shows how **law can combine coercion with collaboration** to achieve sustainability goals (Netherlands Ministry of Infrastructure and Water Management, 2021).

Judicial Trajectory of Environmental Jurisprudence in India

The Indian judiciary has played a **pioneering role in environmental governance**, often stepping in to fill legislative or executive gaps through judicial activism, doctrinal innovation, and interpretation of constitutional provisions. Over the decades, courts have developed an **ecocentric-anthropocentric balance**, ensuring sustainable development while recognizing human welfare and livelihoods.

Ecocentric Approach in Indian Jurisprudence

Indian courts have increasingly recognized nature as an entity with intrinsic rights, independent of human utility:

- **T.N. Godavarman Thirumulpad v. Union of India (1997)**: The Supreme Court redefined "forest" to include its dictionary meaning, vastly expanding legal protection to undeclared forests. The judgment emphasized ecological stability and biodiversity, laying the foundation for continuing mandamus in forest protection (T.N. Godavarman Thirumulpad v. Union of India, 1997, 2 SCC 267).

ISSN: 2582-6433

- **WWF-India v. Union of India (2013)**: The Court prioritized the survival of Asiatic lions over regional human preferences, highlighting biodiversity preservation as a constitutional mandate (WWF-India v. Union of India, 2013, 6 SCC 234).
- **Animal Welfare Board of India v. A. Nagaraja (2014)**: Recognized animals as living beings with inherent dignity under Article 21, banning Jallikattu on grounds of constitutional morality (Animal Welfare Board of India v. A. Nagaraja, 2014, 7 SCC 547).
- **Mohd. Salim v. State of Uttarakhand (2017)** and **Lalit Miglani v. State of Uttarakhand (2017)**: Extended legal personhood to rivers, glaciers, lakes, forests, and springs, placing custodial responsibility on government authorities to preserve ecological integrity (Mohd. Salim v. State of Uttarakhand, 2017; Lalit Miglani v. State of Uttarakhand, 2017).

These cases reflect an **ecocentric jurisprudential philosophy**, emphasizing nature's intrinsic value, biodiversity, and ecological stability beyond anthropocentric concerns.

Anthropocentric Approach in Judicial Decisions

Conversely, several judgments emphasize human welfare, economic development, or livelihood considerations:

- **Orissa Mining Corporation v. Ministry of Environment & Forests (2013)**: Court focused on tribal rights and human interests over pure ecological preservation, denying forest clearance for mining primarily on social and cultural grounds (Orissa Mining Corporation v. Ministry of Environment & Forests, 2013, 6 SCC 476).
- **Tehri Dam Project Cases (N.D. Jayal v. Union of India, 2004)**: Prioritized national development in power and water supply over environmental concerns, reflecting human-centered reasoning (N.D. Jayal v. Union of India, 2004, 9 SCC 362).
- **Goa Foundation v. Union of India (2014)**: Balanced ecological concerns with economic dependence of local populations on mining, indicative of development-centered judicial reasoning (Goa Foundation v. Union of India, 2014, 6 SCC 590).
- **Sterlite Copper Plant Case (Tamil Nadu, 2018)**: Closure upheld for human health concerns, emphasizing pollution's impact on people rather than ecological preservation per se.

ISSN: 2582-6433

Balancing Ecocentric and Anthropocentric Approaches

Indian courts often employ a **context-specific balancing framework**, weighing environmental preservation against public interest in infrastructure, economic development, or social welfare:

- **Goa Foundation v. Konkan Railway Corporation (1992)**: Introduced the "comparative hardship" test, allowing railway construction while mandating environmental safeguards (Goa Foundation v. Konkan Railway Corporation, 1992, SCC OnLine Bom 527).
- **Narmada Bachao Andolan v. Union of India (2000)**: Approved the Sardar Sarovar Dam with strict conditions, illustrating reconciliation between ecological protection and developmental imperatives (Narmada Bachao Andolan v. Union of India, 2000, 10 SCC 664).
- **Karnataka Industrial Areas Development Board v. C. Kenchappa (2006)**: Emphasized the need for planning-based sustainable development, requiring rigorous EIAs before industrial expansion (Karnataka Industrial Areas Development Board v. C. Kenchappa, 2006, 6 SCC 371).

This **dual approach** allows courts to flexibly navigate between anthropocentric and ecocentric imperatives, ensuring sustainable development is not compromised by either extreme.

Routes to Environmental Justice

1. **Judicial Activism**: Courts have proactively directed policy reforms and executive compliance. Notable examples include:
    a. *Container Corporation of India v. Ajay Khera (2024)*: Mandated BS6 fuel policy for cleaner urban air (Container Corporation of India v. Ajay Khera, 2024).
    b. *Ashoke Kumar Sharma IFS v. Union of India (2024)*: Directed adherence to forest conservation mandates (Ashoke Kumar Sharma IFS v. Union of India, 2024).
    c. *M.C. Mehta v. Union of India (Vehicular Pollution Case, 1998)*: Led to introduction of CNG in Delhi transport (M.C. Mehta v. Union of India, 1998, 6 SCC 63).
2. **Public Interest Litigation (PIL)**: Empowered citizens to seek redress:
    a. *Vellore Citizens Welfare Forum v. Union of India (1996)*: Reinforced the polluter pays principle (Vellore Citizens Welfare Forum v. Union of India, 1996, 5 SCC 647).

ISSN: 2582-6433

b. *M.C. Mehta v. Union of India (Ganga Pollution Case, 1988)*: Directed cleanup measures for river pollution (M.C. Mehta v. Union of India, 1988, AIR SC 1037).

3. **Tribunalized Justice**: Specialized adjudication through NGT enhances accountability:
   a. *Kanhai Ram Patel v. Union of India (2024)*: Quashed project approvals for procedural non-compliance (Kanhai Ram Patel v. Union of India, 2024).
   b. *Noble M. Paikada v. Union of India (2024)*: Directed reappraisal of mining leases.
4. **Third-Party Funding**: NGOs and international bodies support litigation and advocacy, expanding access and impact of environmental justice (Environmental Justice Funding Report, 2023).

Current Legal and Policy Framework for Circular Economy in India

The concept of a **circular economy (CE)**—where resources are conserved, reused, and recycled—has gained legal and policy recognition in India, albeit indirectly through **environmental statutes, industrial regulations, and policy instruments**. The Indian framework seeks to harmonize economic growth, environmental sustainability, and strategic self-reliance under the broader vision of *Viksit Bharat 2047* and *Atmanirbhar Bharat*.

1. Statutory Foundations

India's **primary environmental laws** provide the backbone for circular economy governance:

- **Environment (Protection) Act, 1986 (EPA)**: Empowers the central government to regulate industrial processes, hazardous substances, and pollution standards. Sections 6 and 8 provide authority for notifications, regulations, and penalties, which serve as the statutory basis for resource efficiency mandates, extended producer responsibility (EPR), and waste management policies (Environment Protection Act, 1986).
- **E-Waste (Management) Rules, 2016 (amended 2022)**: Mandate producers of electrical and electronic equipment to implement EPR, ensuring collection, recycling, and environmentally sound disposal. The rules require manufacturers to submit annual EPR plans and meet recycling targets, creating a legal framework for the CE in the technology and electronics sector (Ministry of Environment, Forest and Climate Change [MoEFCC], 2022).
- **Plastic Waste Management Rules, 2016 (amended 2021)**: Enforce producer responsibility for plastic lifecycle management, including reduction, recycling, and

ISSN: 2582-6433

reuse. These rules also emphasize phasing out single-use plastics, promoting circularity in material use (MoEFCC, 2021).

- **Solid Waste Management Rules, 2016**: Encourage segregation at source, scientific disposal, and composting, while mandating municipal authorities to collaborate with private recyclers, thus promoting CE principles in urban governance.
- **Mineral (Development and Regulation) Act, 1957 (MDRA) & Mines and Minerals (Development and Regulation) Amendment Rules, 2021**: Provide regulatory control over extraction and use of strategic minerals. Coupled with EPR and recycling obligations, these statutes indirectly enable resource circularity in critical mineral sectors essential for renewable energy, defense, and electronics industries.
- **Forest Rights Act, 2006**: Recognizes community rights over forest resources while imposing obligations for sustainable use, indirectly aligning with circular principles in biomass management.

2. Policy Instruments Supporting Circular Economy

India has also implemented **policy frameworks to operationalize CE principles**:

- **National Resource Efficiency Policy (draft 2021)**: Aims to promote material efficiency, industrial symbiosis, and EPR schemes for high-impact sectors such as electronics, plastics, and batteries (NITI Aayog, 2021).
- **National Electric Mobility Mission Plan & Battery Waste Rules (2016)**: Encourage recycling and second-life use of lithium-ion batteries, reflecting CE objectives in energy and transportation sectors.
- **Plastic Waste Management Policy & Guidelines (2021–2023)**: Mandate minimum recycled content in packaging and products, incentivizing private sector adoption of circular practices.
- **Extended Producer Responsibility (EPR) Frameworks**: Across plastics, e-waste, and batteries, EPR rules obligate manufacturers and importers to manage end-of-life products, linking corporate accountability with environmental law compliance.

3. Judicial Oversight and Environmental Mandates

Judicial intervention has supplemented legislative and policy measures, ensuring enforcement and compliance:

- Courts have invoked **Articles 21 and 253** to direct governments to implement waste management and recycling initiatives as part of the right to a wholesome environment

ISSN: 2582-6433

(*M.C. Mehta v. Union of India*, 1988; *Ashoke Kumar Sharma IFS v. Union of India*, 2024).

- The **National Green Tribunal (NGT)** plays a specialized adjudicatory role, monitoring adherence to EPR, waste management, and industrial compliance standards (*Kanhai Ram Patel v. Union of India*, 2024).
- Through **Public Interest Litigation (PIL)**, citizens and NGOs have compelled government authorities and private actors to adopt circular economy principles in sectors such as e-waste, plastics, and industrial effluents (*Vellore Citizens Welfare Forum v. Union of India*, 1996; *Ivory Traders Manufacturing Association v. Union of India*, 1995).

4. Strategic and Sectoral Integration

The legal framework also intersects with India's **strategic resource management** and **industrial policy**:

- Critical minerals such as lithium, cobalt, and rare earth elements are regulated through MDRA, EPR rules, and battery recycling mandates, reducing import dependency from countries like China.
- Circular economy principles are integrated into **industrial symbiosis projects**, encouraging industrial clusters to share by-products and recycling streams, which aligns with self-reliance objectives under *Atmanirbhar Bharat*.

In sum, India's **current legal and policy framework for circular economy** is a **hybrid model** combining statutory mandates, policy instruments, judicial oversight, and sectoral integration. While comprehensive in scope, it currently emphasizes **producer responsibility, municipal waste management, and strategic resource recycling**, leaving gaps in enforcement, inter-state coordination, and integration with industrial strategy—which will be addressed in the challenges section.

Challenges in Governing Circular Economy in India

Despite significant legal and policy strides, India faces **multifaceted challenges** in operationalizing a circular economy (CE) framework. These challenges span regulatory gaps, institutional constraints, enforcement deficiencies, and socio-economic complexities.

1. Fragmented Regulatory Framework

India's circular economy governance is **diffused across multiple statutes and agencies**,

ISSN: 2582-6433

leading to inconsistencies and overlap:

- **Overlap in waste management and EPR obligations**: E-Waste, Plastic, and Battery rules are administered by different divisions of MoEFCC, resulting in procedural ambiguities and inconsistent enforcement across states (Legal Initiative for Forest and Environment [LIFE], 2022).
- **Lack of harmonization with industrial and mining laws**: While MDRA regulates mineral extraction, integration with EPR and recycling obligations for critical minerals is weak, exposing India to supply chain vulnerabilities and continued import dependency (Dubash & Ghosh, 2021).

2. Weak Enforcement and Monitoring Mechanisms

Enforcement remains **inconsistent and reactive**, limiting the efficacy of CE laws:

- **Municipal compliance gaps**: Studies indicate that <40% of Indian municipalities comply fully with Solid Waste Management Rules, impeding material recovery and recycling (World Bank, 2021).
- **Judicial intervention required for executive inaction**: Cases such as *Container Corporation of India v. Ajay Khera (2024)* and *Ashoke Kumar Sharma IFS v. Union of India (2024)* highlight that proactive judicial directives are often necessary to enforce statutory provisions, reflecting weaknesses in routine administrative enforcement.
- **Limited monitoring of EPR obligations**: Reports show significant non-compliance in electronics and plastic sectors, partly due to insufficient tracking mechanisms and lack of standardized reporting (LIFE, 2022; MoEFCC, 2022).

3. Institutional Coordination Challenges

Circular economy policies require **cross-sectoral collaboration**, yet India's federal structure and institutional silos present hurdles:

- **Inter-ministerial coordination** is weak between environment, industry, and urban development ministries, hampering integrated resource efficiency programs (Dubash & Ghosh, 2021).
- **State-level variations:** While some states like Maharashtra and Tamil Nadu have implemented stricter EPR compliance monitoring, others lag, leading to uneven CE adoption nationwide.
- **Limited capacity of local bodies:** Municipal authorities often lack technical expertise and funding for segregation, collection, and recycling infrastructure, constraining

ISSN: 2582-6433

practical circularity (World Bank, 2021).

4. Legal and Doctrinal Ambiguities

Several doctrinal and statutory ambiguities limit CE enforcement:

- **Unclear scope of "producer responsibility"**: While EPR rules mandate lifecycle management, legal definitions of obligations, liability, and penalties are often vague, creating enforcement loopholes (LIFE, 2022).
- **Limited integration of environmental jurisprudence with CE mandates**: Despite ecocentric principles in cases like *T.N. Godavarman Thirumulpad v. Union of India (1997)* and *Mohd. Salim v. State of Uttarakhand (2017),* translating these principles into sector-specific circular economy obligations remains challenging.
- **Judicial reliance on case-by-case balancing**: Courts frequently apply ecocentric-anthropocentric frameworks flexibly, which, while context-sensitive, can create **uncertainty for industry compliance** in CE-relevant sectors (*Narmada Bachao Andolan v. Union of India*, 2000).

5. Economic and Market Constraints

Legal instruments alone cannot enforce CE; **economic and market realities** significantly affect implementation:

- **High recycling costs and lack of incentives**: Producers often resist EPR compliance due to associated costs, while legal penalties are insufficient to compel proactive adoption (LIFE, 2022).
- **Informal sector dominance in waste management**: Recycling and material recovery heavily rely on informal workers, whose rights and working conditions are legally unprotected, leading to inefficiencies and compliance gaps (World Bank, 2021).
- **Dependency on imports for strategic minerals**: While domestic regulations cover waste management, India remains reliant on China and other countries for critical minerals, limiting CE effectiveness in strategic sectors (Dubash & Ghosh, 2021).

6. Data and Research Limitations

A **lack of robust data and reporting standards** impedes evidence-based regulation:

- Inadequate tracking of material flows and recycled content creates challenges for policy evaluation and judicial oversight (LIFE, 2022).

ISSN: 2582-6433

- Limited research on lifecycle assessments for emerging sectors such as electric vehicle batteries and renewable energy equipment constrains regulatory standard-setting.

Global Best Practices and Lessons for India

India's efforts to institutionalize a circular economy (CE) operate within a complex legal, administrative, and industrial landscape. Comparative study of global legal frameworks demonstrates both the potential for effective CE governance and the mechanisms by which legal certainty, enforceability, and institutional coordination are achieved. These lessons are particularly relevant for India's strategic sectors, where circularity intersects with national security, technological self-reliance, and industrial development.

1. Legal and Institutional Harmonization

The **Aarhus Convention (1998)** establishes binding obligations for access to environmental information, public participation, and judicial remedies in environmental matters. By mandating harmonized obligations across regulatory agencies, the Convention reduces ambiguity and ensures compliance in member states (UNECE, 1998). Similarly, the **European Union Circular Economy Action Plan (2020)** consolidates sector-specific directives into a comprehensive legal framework, with clear targets for material efficiency, recycling, and product design (European Commission, 2020).

These examples highlight the importance of **legally codified standards, integrated regulatory frameworks, and clarity in administrative responsibilities**, providing a benchmark for India's fragmented statutory and sectoral governance of circular economy initiatives (Legal Initiative for Forest and Environment [LIFE], 2022).

2. Enforcement and Compliance Mechanisms

Robust enforcement mechanisms are critical for operationalizing CE principles. Japan's **Circular Plastic Act (2021)** prescribes mandatory reporting, independent audits, and administrative penalties for non-compliance, creating a reliable enforcement architecture (Ministry of the Environment, Japan, 2021). In North America, **California's Circular Economy Legislation (2022)** employs digital tracking of recycled content, mandatory compliance audits, and graduated penalties, ensuring measurable adherence to circularity norms.

These examples underscore that **legal obligations alone are insufficient**; enforcement depends on institutional capacity, monitoring infrastructure, and independent oversight—an area where

ISSN: 2582-6433

India continues to face challenges, as reflected in inconsistent municipal compliance with waste management rules (World Bank, 2021).

3. Sectoral Integration and Strategic Resource Management

South Korea's **Resource Circulation Act (2020)** integrates CE principles into industrial and urban planning, linking material efficiency with economic incentives and local governance mandates. China's **Green Supply Chain Initiatives** mandate circular practices in critical sectors, including rare earth minerals and batteries, thereby ensuring domestic resource security while supporting strategic industries (Dubash & Ghosh, 2021).

For India, these cases illustrate the significance of **sectoral integration**, particularly in strategic minerals, electronics, and renewable energy, where circularity is intertwined with technological self-reliance and national security objectives.

4. Data, Research, and Technological Support

EU member states implement rigorous **lifecycle data collection**, material tracking, and standardization of recycling metrics under the EU Circular Economy Action Plan. Similarly, Japan and South Korea leverage digital waste-tracking and advanced recycling technologies to ensure compliance and monitor performance (European Commission, 2020; Ministry of the Environment, Japan, 2021).

These initiatives highlight the **necessity of robust data infrastructure and research-driven regulation**, both of which are underdeveloped in India, limiting evidence-based policymaking and judicial enforcement (LIFE, 2022; World Bank, 2021).

5. Social Inclusion and Stakeholder Engagement

Globally, CE frameworks increasingly integrate social safeguards. Canadian and EU initiatives embed labor protections, stakeholder participation, and community-based circular programs, ensuring that informal recyclers and local communities are formally recognized within regulatory schemes (Government of Canada, 2022; European Commission, 2020).

For India, this underscores the importance of **inclusive governance**, particularly considering the significant role of informal sector actors in recycling and material recovery, whose legal recognition and protection remain insufficient.

ISSN: 2582-6433

Reforms and Roadmap for India @ 2047

India's vision of *Viksit Bharat 2047* necessitates a transformative approach to circular economy (CE) governance, integrating statutory reform, judicial innovation, and institutional modernization. The preceding analysis of domestic challenges and international best practices underscores the imperative for a **comprehensive legal and regulatory roadmap**, aligned with constitutional principles, strategic self-reliance, and sustainable development goals.

1. Strengthening Circular Economy Laws

Existing statutes—including the **Environment (Protection) Act, 1986**, Plastic Waste Management Rules, and E-Waste (Management) Rules—provide a foundational framework for CE governance. However, these laws remain **fragmented across sectors** and enforcement agencies, resulting in compliance ambiguities (LIFE, 2022). Drawing lessons from the **EU Circular Economy Action Plan (2020)** and **Japan's Circular Plastic Act (2021)**, India requires:

- Codification of **cross-sectoral CE obligations** into a unified statutory instrument.
- Mandatory **lifecycle assessments and minimum recycled content standards** for products in strategic sectors, including electronics, batteries, and critical minerals (Dubash & Ghosh, 2021).
- Integration of CE compliance with national industrial and strategic policy objectives to reduce import dependency and enhance self-reliance.

2. Judicial Innovations for Environmental and Circular Governance

India's judiciary has historically shaped environmental governance through **ecocentric principles, public trust doctrine, and legal personhood** for natural entities (T.N. Godavarman Thirumulpad v. Union of India, 1997; Mohd. Salim v. State of Uttarakhand, 2017). Building on this jurisprudence, judicial interventions can advance CE objectives by:

- Recognizing **circular economy obligations as enforceable environmental rights** under Article 21 and related provisions, aligning judicial oversight with sustainable development imperatives.
- Extending **legal personhood or custodial responsibilities** to industrial by-products, critical mineral reserves, or urban waste streams, ensuring accountability and preventing resource mismanagement (Animal Welfare Board of India v. A. Nagaraja, 2014).

ISSN: 2582-6433

- Promoting **PIL and NGT adjudication frameworks** to monitor compliance, enforce extended producer responsibility, and incentivize industry participation (Kanhai Ram Patel v. Union of India, 2024; Vellore Citizens Welfare Forum v. Union of India, 1996).

3. Governance Mechanisms: Citizen-Centric, Federal, and Accountable

Effective CE governance demands **institutional coordination and participatory mechanisms**, addressing current federal and local governance gaps (World Bank, 2021). Comparative insights from **South Korea's Resource Circulation Act (2020)** and **Netherlands Green Deals** illustrate the value of multi-stakeholder engagement and cooperative federalism:

- Establishment of a **National Circular Economy Authority (NCEA)** to coordinate inter-ministerial CE policies, oversee state implementation, and harmonize reporting standards.
- Strengthening **state-level compliance units and municipal authorities**, with technical capacity building, citizen engagement, and digital monitoring platforms (MoEFCC, 2022).
- Encouraging **formal integration of informal sector actors**, including waste pickers and recyclers, into CE supply chains, with legal protections and economic incentives (World Bank, 2021).
- Embedding **transparent reporting, independent audits, and public participation mechanisms**, inspired by the Aarhus Convention (UNECE, 1998), to ensure accountability and judicial enforceability.

4. Strategic and Research-Oriented Integration

Future CE reforms must also incorporate **strategic resource management and evidence-based regulation**:

- Legal mandates for **domestic recycling of critical minerals**, reducing dependence on foreign imports and aligning with national security priorities (Dubash & Ghosh, 2021).
- Establishment of **national CE data repositories, lifecycle assessment standards, and research grants** to foster technological innovation and regulatory precision.
- Incentivization of **industrial symbiosis and circular supply chains**, linking economic growth with environmental sustainability and social inclusion.

In sum, India's roadmap for transformation requires **concurrent legal reform, judicial activism, and robust governance mechanisms**. By embedding circular economy principles

ISSN: 2582-6433

into constitutional interpretation, statutory law, and institutional practice, India can achieve a **sustainable, equitable, and self-reliant development trajectory**, bridging current regulatory gaps and aligning with global best practices.

Conclusion

India stands at a **critical inflection point** in its journey towards developed India by *2047*, where sustainable development, strategic self-reliance, and environmental stewardship converge. The circular economy (CE) offers a transformative paradigm to reconcile **economic growth with ecological preservation**, reduce dependency on critical mineral imports, and operationalize India's commitments under the **Paris Agreement** and Sustainable Development Goals (SDGs).

The analysis underscores that India's **legal and institutional architecture**, while progressive in principle—anchored in the **Public Trust Doctrine, Article 21, Extended Producer Responsibility (EPR) statutes, and judicial innovations**—faces **fragmentation, enforcement gaps, and data constraints**. Comparative lessons from the **Aarhus Convention, EU Circular Economy Action Plan (2020), Japan's Circular Plastic Act (2021), South Korea's Resource Circulation Act (2020), and Canada's Zero Plastic Waste Strategy (2022)** highlight the importance of **integrated legislation, lifecycle accountability, multi-stakeholder governance, and citizen-centric enforcement mechanisms**.

Reports by **NITI Aayog (2021)** emphasize **resource efficiency, industrial symbiosis, and innovation-driven recycling infrastructure** as critical to realizing India's CE potential. Similarly, guidance from **UNEP, OECD, and the World Bank** underscores the need for **data-driven policy, technology-enabled monitoring, and inclusive participation of informal sector actors** to achieve circularity at scale.

In conclusion, a **holistic legal and policy ecosystem**—combining **constitutional mandates, statutory coherence, judicial oversight, and strategic industrial integration**—is indispensable for embedding circular economy principles into India's development trajectory. By doing so, India can simultaneously secure **environmental justice, economic resilience, and technological self-reliance**, charting a **forward-looking, ecologically grounded, and socially inclusive pathway** toward sustainable future.

ISSN: 2582-6433

References

- Animal Welfare Board of India v. A. Nagaraja, (2014) 7 SCC 547.
- Ashoke Kumar Sharma IFS v. Union of India, (2024).
- California Legislative Information. (2022). *Circular economy legislation*. State of California.
- Container Corporation of India v. Ajay Khera, (2024).
- Constitution of India. (1950). Government of India.
- Dubash, N. K., & Ghosh, S. (2021). Institutional capacity and the effectiveness of environmental regulation in India. *Environmental Politics, 30*(4), 602–625. https://www.researchgate.net/publication/338045307_National_Climate_Policies_and_Institutions
- European Commission. (2020). *Circular economy action plan: For a cleaner and more competitive Europe*. https://ec.europa.eu/environment/circular-economy/
- Goa Foundation v. Konkan Railway Corporation, (1992) SCC OnLine Bom 527.
- Goa Foundation v. Union of India, (2014) 6 SCC 590.
- International Energy Agency. (2021). *The role of critical minerals in clean energy transitions*. https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions
- Kanhai Ram Patel v. Union of India, (2024).
- Karnataka Industrial Areas Development Board v. C. Kenchappa, (2006) 6 SCC 371.
- Lalit Miglani v. State of Uttarakhand, (2017) SCC OnLine Utt 367.
- Legal Initiative for Forest and Environment (LIFE). (2022). *Changing landscape of EIA in India*. https://thelifeindia.org.in/publications/
- Ministry of Environment, Forest and Climate Change. (2022). *E-Waste (Management) Rules (Amended 2022)*. Government of India.
- Ministry of the Environment, Japan. (2021). *Circular plastic act and recycling measures*. Government of Japan.
- Ministry of Environment, South Korea. (2020). *Resource circulation act implementation guidelines*. Government of South Korea.
- Mohd. Salim v. State of Uttarakhand, (2017) SCC OnLine Utt 367.
- M.C. Mehta v. Union of India (Ganga Pollution Case), (1988) AIR SC 1037.
- M.C. Mehta v. Union of India (Vehicular Pollution Case), (1998) 6 SCC 63.
- M.C. Mehta v. Union of India, (1988) 1 SCC 471.
- Narmada Bachao Andolan v. Union of India, (2000) 10 SCC 664.

ISSN: 2582-6433

- N.D. Jayal v. Union of India, (2004) 9 SCC 362.
- NITI Aayog. (2022). *India's critical minerals strategy: Resource security for Atmanirbhar Bharat*. Government of India.
- Noble M. Paikada v. Union of India, (2024).
- Netherlands Ministry of Infrastructure and Water Management. (2021). *Green Deals: Circular economy agreements*. Government of the Netherlands.
- Orissa Mining Corporation v. Ministry of Environment & Forests, (2013) 6 SCC 476.
- Rural Litigation and Entitlement Kendra v. State of Uttar Pradesh, AIR 1987 SC 359.
- Supreme People's Court of China. (2015). *Guidelines on environmental adjudication*. Government of China.
- T.N. Godavarman Thirumulpad v. Union of India, (1997) 2 SCC 267.
- UNECE. (1998). *Aarhus Convention on access to information, public participation in decision-making and access to justice in environmental matters*. United Nations Economic Commission for Europe. https://unece.org/environment-policy/public-participation/aarhus-convention
- Vellore Citizens Welfare Forum v. Union of India, (1996) 5 SCC 647.
- World Bank. (2021). *India: Environmental health burden and poverty*. https://www.worldbank.org/en/country/india/publication/environmental-health
- WWF-India v. Union of India, (2013) 6 SCC 234.