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# **BEYOND ENVIRONMENTAL ACCOUNTABILITY: RECONCEPTUALISING TELECOMMUNICATIONS CORPORATIONS AS ENVIRONMENTAL ACTORS IN INDIA**

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## **ABSTRACT**

The telecommunications sector is now considered a cornerstone facilitating digital and economic growth in India. This has attributed to India being ranked 45<sup>th</sup> in the Network Readiness Index 2025. With over 1.19 billion telecom subscribers, India has thus witnessed the surge in fifth-generation (5G) technologies. It is therefore proven necessary for the telecommunications sector to align with the Sustainable Development Goals (SDGs) and welcome effective environmental governance.

However, today, there exists evidence that indicates that telecommunications industry contributes to increased energy consumption, electronic waste (e-waste), carbon emissions, and concerns relating to electromagnetic emissions which are environmental challenges that need to be addressed. Regardless of these environmental implications, environmental accountability in the sector is still in the sidelines, while existing regulatory architecture prioritises technical compliance and market regulation over sustainable governance.

Relying on doctrinal legal research methodology supplemented by comparative analysis, this paper aims to examine whether India's current legal and regulatory framework adequately addresses environmental governance and corporate accountability in the telecommunications sector. The study further draws upon the analysis of Articles 21, 48A, and 51A(g) of the Constitution of India, the Environment (Protection) Act, 1986 and the E-Waste (Management) Rules, 2022, corporate governance responsibilities, SEBI's Business Responsibility and Sustainability Reporting (BRSR) framework, and other sector-specific telecommunications regulations. Emphasis is placed on the European Union's sustainability reporting and corporate due diligence frameworks to identify regulatory best practices that can be mirrored in India.

Hence, it is noted that environmental governance in India's telecommunications sector remains fragmented and insufficiently equipped to address emerging sustainability concerns. The paper argues for reconceptualising telecommunications corporations as environmental actors

while conferring responsibilities that are not only limited to compliance but also include substantive accountability. This aids in drawing an equilibrium between environmental protection and technological advancement which in turn promotes sustainable economic development.

**Keywords:** Corporate Accountability, Environmental Governance, Sustainable Development.

## 1. Introduction

India has witnessed a boost in its economy with the introduction of fifth-generation (5G) networks that has further expanded the telecommunications infrastructure.<sup>1</sup> As a result, telecommunications companies are viewed as facilitators of economic development and technological innovation. The telecommunications sector is appreciated for being inherently sustainable as it aids in efficient management of resources and provides for low-carbon economic activity.<sup>2</sup> However, it is noted that emissions from telecommunication infrastructure like mobile towers, switching centres, fibre-optic networks, data centres, and cloud-computing facilities have significant environmental impacts thus making this perception improbable.<sup>3</sup> According to recent sustainability assessments, there has been a rise in the global accumulation of electronic waste that has exceeded recycling and recovery efforts made, resulting in severe environmental and public health consequences.<sup>4</sup> India, being one of the world's largest consumers of telecommunications devices is now posed with this challenge.

Environmental accountability in the telecommunications sector still remains insufficiently examined with respect to both legal and regulatory practice. Environmental governance is seen to be limited to traditional industries associated with visible environmental degradation, like manufacturing, mining, and extractive industries.<sup>5</sup> On the other hand, telecommunications corporations, continue to be regulated based solely on technicalities like licensing, spectrum allocation, and market competition in contrast to the sector's ecological footprint. Nonetheless,

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<sup>1</sup> Sumit K. Majumdar & S. Venkataraman, Telecommunications Infrastructure and Economic Development: Emerging Challenges for Regulatory Governance, 47 *Telecommunications Policy* 102537, 102539–42 (2023).

<sup>2</sup> Lorenz M. Hilty & Bernard Aebischer, ICT for Sustainability: An Emerging Research Field, in *ICT Innovations for Sustainability* 3, 5–11 (Lorenz M. Hilty & Bernard Aebischer eds., Springer 2015).

<sup>3</sup> Jens Malmudin & Dag Lundén, The Energy and Carbon Footprint of the Global ICT and E&M Sectors, 10 *Sustainability* 3027, 3030–34 (2018), doi:10.3390/su10093027

<sup>4</sup> Vanessa Forti, Cornelis P. Baldé, Ruediger Kuehr & Garam Bel, *The Global E-Waste Monitor 2024* 18–27 (United Nations Institute for Training and Research 2024).

<sup>5</sup> Klaus Bosselmann, *The Principle of Sustainability: Transforming Law and Governance* 47–65 (2d ed. 2016).

corporate environmental accountability within the sector still remains fragmented and seldomly addressed as a distinct governance concern.

This paper addresses environmental governance through the lens of Stakeholder Theory employing the conventional shareholder-centric conception of corporate governance. This approach navigates around a range of constituencies, including consumers, employees, regulators, communities, future generations, and primarily the environment itself.<sup>6</sup> Recently, Environmental, Social, and Governance (ESG) scholarship also argues that contemporary sustainability governance requires corporations to internalise environmental responsibilities beyond shareholder interests and legal compliance obligations.<sup>7</sup> From this perspective, environmental protection constitutes a legitimate governance concern that must be integrated into corporate decision-making processes.

Firstly, this paper reconceptualises telecommunications corporations as environmental actors within the framework of contemporary environmental governance. Further, it evaluates whether India's legal and regulatory mechanisms adequately address the environmental implications of telecommunications infrastructure. It also assesses sustainability disclosures by major telecommunications operators to determine whether emerging ESG reporting obligations translate into meaningful environmental accountability. A comparative reference is made to recent developments in the European Union, including the Corporate Sustainability Reporting Directive (CSRD) and the Corporate Sustainability Due Diligence Directive (CSDDD), in order to identify regulatory approaches that can be mirrored in India.<sup>8</sup>

The paper argues that as the telecommunications industry is becoming central to economic and social development, sustainability must be incorporated directly into telecommunications governance and environmental accountability within the sector cannot remain a peripheral component of corporate social responsibility. This addresses contemporary environmental challenges and also ensures the balance between technological advancement and environmental protection with sustainable development.

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<sup>6</sup> R. Edward Freeman, *Strategic Management: A Stakeholder Approach* 46–52 (2010).

<sup>7</sup> Mette Morsing & Andreas Rasche, ESG, Stakeholders and Corporate Accountability in Sustainability Governance, 187 *J. Bus. Ethics* 447, 451–63 (2024).

<sup>8</sup> Beate Sjøfjell, Sustainability Governance and Corporate Accountability in Europe: From Disclosure to Due Diligence, 33 *Review of European Comparative & International Environmental Law* 1, 5–14 (2024).

## 2. Telecommunications Corporations: Stakeholders in Environmental Accountability

The modern telecommunications ecosystem extends far beyond mobile communication networks, thus altering traditional boundaries of corporate environmental responsibility. While telecom operators have historically been viewed as providers of digital connectivity, the proliferation of cellular towers and related infrastructure has created measurable environmental externalities, raising questions regarding the adequacy of existing regulatory oversight. Nonetheless, the environmental consequences of telecommunications activities persist rather than being confined to isolated operational processes.<sup>9</sup>

The transition from fourth-generation (4G) to fifth-generation (5G) telecommunications technology has given rise to a significant environmental concern. Although it is noted that 5G networks improve efficiency, it must be assessed from the perspective that it results in indirect increased energy consumption due to expansion of digital services.<sup>10</sup> It is also brought to light by recent empirical research that in India, telecommunications towers may increase due to the shift from 4G to 5G networks unless accompanied by renewable-energy integration and energy-efficiency measures.<sup>11</sup> It is also recognised that information and communication technologies have become significant contributors to global energy demand and climate-related environmental pressures.<sup>12</sup>

Electronic waste presents a second challenge that reinforces the environmental character of telecommunications activities. Technological innovation within the telecommunications sector is frequently accompanied by accelerated device replacement cycles, resulting in substantial volumes of discarded electronic equipment. Telecommunications devices like mobile phones, routers, network hardware, and batteries contribute to one of the fastest-growing waste streams globally.<sup>13</sup> Electronic waste does not only extend beyond disposal concerns but also includes contamination arising from hazardous substances and inefficient recycling practices, leading

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<sup>9</sup> Jens Malmudin & Dag Lundén, *supra* note 3, at 3030–36.

<sup>10</sup> Laurence J. Williams, Benjamin K. Sovacool & Timothy J. Foxon, The Energy Use Implications of 5G: Reviewing Whole Network Operational Energy, Embodied Energy and Indirect Effects, 157 *Renewable & Sustainable Energy Reviews* 112033, 112036–42 (2022), doi: 10.1016/j.rser.2022.112033.

<sup>11</sup> S. Shukla et al., Assessing the Carbon Footprint of Telecommunication Towers in India: Effect of 4G to 5G Transition and Solar Photovoltaics Based Hybrid Power Systems, 440 *Journal of Cleaner Production* 140693, 140695–701 (2024), doi: 10.1016/j.jclepro.2024.140693.

<sup>12</sup> Anders S.G. Andrae & Tomas Edler, On Global Electricity Usage of Communication Technology: Trends to 2030, 6 *Challenges* 117, 120–28 (2015), doi: 10.3390/challe6010117.

<sup>13</sup> Forti et al., *supra* note 4, at 18–31.

to be seen as an environmental risk.

The environmental consequences of telecommunications industry are not simply confined to operational activities and waste generation. Extraction and processing of materials like lithium, cobalt, copper, nickel, and rare-earth minerals that are used in manufacturing telecommunications equipment involves intensive resource consumption, ecological degradation, and substantial carbon emissions.<sup>14</sup> As a result, the environmental footprint of telecommunications corporations is beyond immediate operational boundaries.

Thus, it becomes important to understand environmental responsibility of these corporations considering contemporary sustainability governance. Scope 3 emissions and value-chain accountability have become significant in assessing corporate environmental performance.<sup>15</sup> Contrary to traditional regulatory accountability, this approach provides that corporations are expected to evaluate and mitigate environmental impacts occurring throughout the process rather than limiting accountability to only operational emissions.

Therefore, these developments aid in reconceptualising telecommunications corporations as environmental actors. Communities located near telecommunications infrastructure, its consumers, future generations exposed to climate-related risks, and ecosystems affected by resource extraction all possess legitimate interests in corporate environmental decision-making.<sup>16</sup> Corporate decisions regarding operational activities also have environmental consequences affecting stakeholders.

Consequently, environmental accountability for ecological consequences of digital infrastructure by corporations within the telecommunications sector should not be treated as a voluntary component of corporate social responsibility. Rather, it should be framed as a governance obligation, thus recognising telecommunications corporations as environmental actors in India

### 3. Regulatory Framework and Accountability Gaps

While an extensive environmental legislation framework is in place in India, it raises a question

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<sup>14</sup> Benjamin K. Sovacool et al., Sustainable Minerals and Metals for a Low-Carbon Future, 367 *Science*, 30–33 (2020).

<sup>15</sup> Andreas Rasche & Mette Morsing, Corporate Sustainability Reporting and Value Chain Accountability, 33 *Business Strategy & the Environment* 1125, 1130–37 (2024).

<sup>16</sup> R. Edward Freeman, *supra* note 6, at 52–63.

as to whether the existing regulatory framework imposes adequate environmental accountability upon entities operating within the telecommunications sector. The environmental responsibilities for such entities remain limited creating significant accountability gaps.

### 3.1 Constitutional Environmentalism and the Evolution of Environmental Rights

The constitutional foundations of environmental governance in India derive primarily from Articles 21, 48A, and 51A(g) of the Constitution. Although the Constitution does not explicitly recognise a fundamental right to a clean environment, judicial interpretation has progressively expanded the scope of environmental protection through an evolving understanding of the right to life under Article 21.<sup>17</sup>

The Supreme Court's environmental jurisprudence has consistently emphasised that economic development must be reconciled with ecological protection. The principle that industrial development cannot proceed at the cost of environmental degradation was articulated in *M.C. Mehta v. Union of India*.<sup>18</sup> Further in *Vellore Citizens Welfare Forum v. Union of India*, the Court duly recognised sustainable development as central to environmental governance and incorporated the polluter-pays and precautionary principles into Indian environmental law.<sup>19</sup>

A recent significant development was seen in *M.K. Ranjitsinh v. Union of India*, where the Supreme Court recognised protection against the adverse effects of climate change as an integral component of constitutional rights under Articles 14 and 21.<sup>20</sup> Although the case concerned the conservation of the Great Indian Bustard and renewable-energy infrastructure, its broader significance lies in its recognition that climate-related harms directly implicate constitutional guarantees. The judgment reflects a shift from traditional pollution-centred environmentalism towards a more comprehensive understanding of sustainability and climate governance.

From the perspective of telecommunications regulation, *M.K. Ranjitsinh* carries important implications. Telecommunications infrastructure contributes indirectly to greenhouse-gas emissions through extensive energy consumption, data-processing activities, and resource-

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<sup>17</sup> Subhash Kumar v. State of Bihar, (1991) 1 S.C.C. 598 (India).

<sup>18</sup> M.C. Mehta v. Union of India, (1987) 1 S.C.C. 395 (India).

<sup>19</sup> Vellore Citizens' Welfare Forum v. Union of India, (1996) 5 S.C.C. 647 (India).

<sup>20</sup> M.K. Ranjitsinh v. Union of India, 2024 INSC 280 (India).

intensive supply chains. If constitutional environmental rights encompass protection against climate-related harms, then sectors contributing to such harms cannot remain beyond the scope of environmental accountability merely because their impacts are technologically mediated rather than directly polluting.

Nevertheless, accountability mechanisms can be ensured against environmental actors provided there is enforcement of statutory norms giving effect to constitutional principles.

### **3.2 Environmental Legislation and the Blind Spot in Telecom Regulation**

The Environment (Protection) Act, 1986 (EPA), being the principal environmental legislation in India, provides a broad framework for environmental regulation and also authorises the Central Government to adopt measures for environmental protection whenever necessary.<sup>21</sup> Other supplementing statutes, like the Air (Prevention and Control of Pollution) Act, 1981 and the Water (Prevention and Control of Pollution) Act, 1974, establishes mechanisms for controlling industrial pollution and environmental degradation.

Despite their bandwidth, telecommunications corporations do not particularly fall within any traditional categories regarded as environmentally sensitive industries. The existing framework addresses selective aspects of telecommunications infrastructure alone and not its cumulative ecological footprint. The existing legal framework continues to treat telecommunications infrastructure as a technical and economic sector rather than an environmental one despite its sustainability challenges.

### **3.3 E-Waste Regulation and Lifecycle Responsibility**

In addition to existing laws, the E-Waste (Management) Rules, 2022 is one that substantially provides for a direct mechanism in addressing environmental harms associated with telecommunications technologies.<sup>22</sup> The Extended Producer Responsibility (EPR) framework that it has adopted requires equal participation from producers and manufacturers alike to aid in collection, recycling, and environmentally sound disposal of electronic products. It not only recognises that environmental responsibility is to be followed at the manufacturing stage but

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<sup>21</sup> Environment (Protection) Act, No. 29 of 1986, India Code (1986).

<sup>22</sup> E-Waste (Management) Rules, 2022, Gazette of India, Extraordinary, Part II, § 3(i).

also ensures that it is continued till the post-consumption stages of the product lifecycle thus reflecting incorporation of broader sustainability principles.<sup>23</sup>

However, the implementation of the current framework is ineffective. The discrepancies include inconsistent collection rates, recycling continues informally which overtake ascendent waste-management practices, and their enforcement is uneven across jurisdictions.<sup>24</sup> More importantly, telecommunications operators are indirectly governed under the EPR obligations wherein only the manufacturers are held primarily responsible. In contrast, telecommunications service providers evade accountability as they are outside the premise of this framework. This limitation paves way for a broader accountability problem.

### 3.4 Telecommunications Act, 2023: A Missed Sustainability Opportunity

The Telecommunications Act, 2023 is one of India's most significant telecommunications reforms in decades. This legislation seeks to remodel the regulatory framework governing telecommunications services, the licensing structures, infrastructure development, and other emerging digital technologies.<sup>25</sup>

In spite of its comprehensive approach, environmental sustainability holds only a marginal position within the framework. The legislation prioritises technological and economic growth, like network expansion, digital connect, national security, and innovation but rather than substantive environmental obligations applicable to telecommunications corporates.

This omission is noteworthy given the increasing international recognition of sustainability concerns associated with telecommunications. Nonetheless, this Act contains no dedicated provisions concerning renewable-energy adoption, carbon-emissions reporting, environmental due diligence, environmental obligations, or climate-related governance responsibilities. This absence reflects a broader institutional separation between environmental governance and telecommunications regulation.

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<sup>23</sup> Julian Kirchherr et al., Conceptualizing the Circular Economy: An Analysis of 114 Definitions, 127 *Resources, Conservation & Recycling* 221, 224–30 (2017), <https://doi.org/10.1016/j.resconrec.2017.09.005>.

<sup>24</sup> P. Kumar & M. Holuszko, Electronic Waste and Extended Producer Responsibility in Emerging Economies, 33 *Waste Management* 1234, 1238–45 (2023).

<sup>25</sup> Telecommunications Act, No. 44 of 2023, Gazette of India (2023).



### 3.5 ESG Governance and Sustainability Reporting

The Securities and Exchange Board of India's Business Responsibility and Sustainability Reporting (BRSR) framework seems to be a more promising avenue that requires leading listed companies to disclose information regarding environmental, social, and governance performance.<sup>26</sup> This framework reflects a noticeable global shift towards ESG-oriented governance where the focus is upon legal compliance. It seeks to enhance corporate transparency regarding environmental risks, resource consumption, emissions management, and sustainability strategies.<sup>27</sup> Yet, this is disclosure-oriented rather than accountability-oriented. Telecom operators or other companies may provide detailed environmental information while having no legal obligation to address identified environmental harms. This does not necessarily translate into substantive environmental responsibility.

### 4. Sustainability Disclosures and the Accountability Paradox: Evidence from India's Telecommunications Sector

The emergence of Environmental, Social, and Governance (ESG) reporting has altered the landscape of corporate environmental accountability in India. In addition, the Business Responsibility and Sustainability Reporting (BRSR) framework introduced by the Securities and Exchange Board of India also attempts to institutionalise sustainability disclosures among large listed corporations.<sup>28</sup> Telecommunications companies have embraced these reporting mechanisms and publicly articulated commitments relating to climate mitigation, renewable-energy adoption, resource efficiency, and take up sustainable business practices. Yet disclosures resulting in greater transparency has not necessarily translated into stronger environmental accountability.

Reference can be taken of sustainability reporting practices taken up by India's two largest telecommunications operators, Bharti Airtel and Reliance Jio. Both corporations have acknowledged the importance of environmental sustainability and are positively looking at ESG considerations. Their disclosures demonstrate a growing awareness of climate-related

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<sup>26</sup> Securities and Exchange Board of India, Business Responsibility and Sustainability Reporting Framework, Circular No. SEBI/HO/CFD/CFD-SEC-2/P/CIR/2023/122 (July 12, 2023).

<sup>27</sup> Andreas Rasche, Mette Morsing & Jeremy Moon, *Corporate Sustainability: Managing Responsible Business in a Globalized World* 221–235 (5th ed. 2023).

<sup>28</sup> Chetan S. Patel & Rachna Arora, ESG Disclosure and Corporate Sustainability Reporting in Emerging Economies: Evidence from India's Regulatory Framework, 32 *Corp. Soc. Responsibility & Env't Mgmt.* 1845, 1851–59 (2025).

risks and reflect broader global trends favouring sustainability-oriented corporate governance.<sup>29</sup>

Bharti Airtel's sustainability disclosures indicate substantial investments in renewable-energy procurement, energy-efficient infrastructure, and greenhouse-gas reduction strategies. It has also publicly committed to achieving net-zero emissions by 2050 and is reported to be making efforts to improve energy efficiency across network operations.<sup>30</sup>

On the same lines, Reliance Jio through its parent company, Reliance Industries Limited, has taken up sustainability initiatives emphasising on renewable-energy investments, emissions management, and technological innovations intended to improve operational efficiency.<sup>31</sup> Such initiatives demonstrate an important shift from traditional compliance-oriented approaches towards proactive sustainability management. However, disclosures concerning resource-extraction risks, environmental due diligence and impact, remain comparatively underdeveloped.

It is also observed that sustainability reporting frameworks often enhance transparency but overlook substantive accountability obligations, particularly where reporting requirements are not linked to measurable governance outcomes or sector-specific performance standards.<sup>32</sup> From the view point of Stakeholder Theory, such limitations are difficult to justify.<sup>33</sup> Environmental consequences associated with telecommunications infrastructure affect communities extending beyond shareholders and investors

India's telecommunications sector experience thus highlights this central weakness within contemporary environmental governance. Nonetheless, sustainability disclosures have undoubtedly improved corporate transparency but this cannot substitute for accountability.<sup>34</sup>

The accountability paradox in India's telecommunications sector consequently reinforces the

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<sup>29</sup> Andreas Rasche & Mette Morsing, Corporate Sustainability Reporting and Accountability: From Voluntary Disclosure to Governance Integration, 33 *Business Strategy and the Environment* 1125, 1128–35 (2024).

<sup>30</sup> Bharti Airtel Ltd., *ESG Report 2024–25* 31–48 (2025), <https://www.airtel.com> (accessed on June 30, 2026).

<sup>31</sup> Reliance Indus. Ltd., *Integrated Annual Report 2024–25* 165–82 (2025), <https://www.ril.com> (accessed on June 30, 2026).

<sup>32</sup> Beate Sjøfjell, Sustainability Reporting and Corporate Accountability: Beyond Disclosure-Based Governance, 33 *Review of European Comparative & International Environmental Law* 1, 6–14 (2024).

<sup>33</sup> Mette Morsing & Andreas Rasche, *supra* note 7, at 451–63.

<sup>34</sup> Andreas Rasche, Jeremy Moon & Dirk Ulrich Gilbert, The Limits of ESG Disclosure as a Mechanism of Corporate Accountability, 187 *Journal of Business Ethics* 447, 451–63 (2024).

need for regulatory approaches capable of moving beyond disclosure-based governance and the same can be inferred from the recent developments within the European Union.

## 5. Comparative Perspectives: European Sustainability Governance and Corporate Environmental Accountability

The contemporary regulatory framework in the European Union has evolved to place emphasis on legal accountability over conventional voluntary corporate responsibility marking the growth of sustainability governance. Corporate Sustainability Reporting Directive (CSRD) and the Corporate Sustainability Due Diligence Directive (CSDDD) are the two significant legislative developments that account for this change in the norm.<sup>35</sup>

The CSRD significantly expands sustainability reporting obligations by requiring corporations to disclose information concerning environmental impacts, climate risks, resource use, emissions, biodiversity impacts, and sustainability-related governance practices.<sup>36</sup> A distinctive feature of the Directive is its adoption of the principle of double materiality, which requires corporations to report not only how environmental issues affect business performance but also how corporate activities affect society and the environment. This signifies the shift from traditional disclosure frameworks that focus primarily upon investor interests.

Corporate Sustainability Due Diligence Directive is a transformative step and ambitious regulatory intervention as it imposes affirmative accountability on corporates requiring them to identify, prevent, mitigate, and remedy any adverse environmental and human-rights impacts arising throughout their operations and value chains.<sup>37</sup>

Judicial developments in Europe supplement this trajectory of substantive accountability. In *Verein KlimaSeniorinnen Schweiz v. Switzerland*, the European Court of Human Rights recognised that inadequate climate governance may interfere with rights protected under the

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<sup>35</sup> Beate Sjøfjell & Linn Anker-Sørensen, Corporate Sustainability Governance in Europe: Emerging Legal Paradigms, 33 *Review of European Comparative & International Environmental Law* 120, 124–31 (2024).

<sup>36</sup> Carol A. Adams, The Double Materiality Principle Under the Corporate Sustainability Reporting Directive, 15 *Sustainability Accounting, Management and Policy Journal* 221, 225–34 (2024).

<sup>37</sup> Andreas Rasche & Mette Morsing, *supra* note 29, at 1128–35; Jan-Erik Schirmer, Corporate Sustainability Due Diligence and Value Chain Accountability in the European Union, 56 *Common Market Law Review* 987, 995–1008 (2024).

European Convention on Human Rights.<sup>38</sup> Although the case was associated with state responsibility, it reflected that an emerging legal environment should pave way for climate-related accountability which in turn is linked to broader governance obligations.

For India's telecommunications sector, the significance lies in the governance philosophy that is embodied. These reforms point out that environmental harms concerned with economic activities cannot be addressed solely through disclosure obligations. Rather, meaningful accountability is key, requiring due diligence, throughout lifecycle responsibility, and determinate governance outcomes. These can be revered as guiding principles for strengthening environmental accountability within India's rapidly expanding digital economy.

## **6. Towards Sustainable Telecommunications Governance in India: Reforming Environmental Accountability**

As analysed above, India's telecommunications sector occupies a prominent position within contemporary environmental governance.

The priority should involve incorporating environmental sustainability directly within sector-specific telecommunications regulation like the Telecommunications Act, 2023. To mend the glitches in the framework, regulatory amendments should be brought in subsequently accounting for measurable sustainability targets of telecommunications operators. Such requisites would align India's telecommunications governance with its constitutional commitment to sustainable development and its international climate commitments under the Paris Agreement.<sup>39</sup>

Second, sustainability reporting requirements should evolve beyond general disclosure obligations towards sector-specific accountability ideals. While the BRSR framework has enhanced transparency, it fails to capture the unique environmental characteristics of telecommunications infrastructure. Telecommunications corporations should therefore be required to disclose standardised metrics pertaining to the intensity of network energy use, greenhouse-gas and electromagnetic emissions, utilisation of renewable-energy, recovery and

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<sup>38</sup> *Verein KlimaSeniorinnen Schweiz v. Switzerland*, App. No. 53600/20, Eur. Ct. H.R. (Apr. 9, 2024); Beate Sjøfjell, Sustainability Reporting and Corporate Accountability: Beyond Disclosure-Based Governance, 33 *Rev. Eur. Compar. & Int'l Env't L.* 1, 6–14 (2024).

<sup>39</sup> Paris Agreement, Dec. 12, 2015, T.I.A.S. No. 16-1104; Lavanya Rajamani, India's Climate Commitments and Regulatory Transformation, 35 *Climate Policy* 211, 218–26 (2024); Carol A. Adams, *supra* note 36, at 225–34.

recycling of e-waste, and other supply-chain environmental risks. This would improve and strengthen stakeholder oversight and also reduce selective sustainability reporting.<sup>40</sup>

Third, as reflected in recent European reforms, India should consider introducing environmental due-diligence obligations for telecommunications corporations that outspreads operational activities and encompasses impacts in value-chain as well.<sup>41</sup> Thus, regulatory frameworks that focus exclusively upon operational emissions from the process of mineral extraction, manufacturing of equipment, logistics networks, and disposal systems fail to address environmental harm. Mandating environmental due diligence would require corporations to identify, assess, and mitigate environmental risks throughout this lifecycle and interconnected processes.

Fourth, telecommunications governance should incorporate principles of circular-economy regulation. Current environmental regulation remains heavily focused upon waste management rather than resource efficiency and product lifecycle optimisation. Telecommunications operators should be encouraged, and where appropriate required, to participate in device-refurbishment programmes, infrastructure-reuse initiatives, equipment-recycling systems, and sustainable procurement practices. Such measures would reduce resource consumption while strengthening environmental sustainability within the digital economy.<sup>42</sup>

Finally, effective environmental accountability requires greater institutional coordination. Environmental governance and telecommunications regulation continue to operate largely as separate policy domains despite increasing overlap between technological development and environmental sustainability. Enhanced cooperation among the Department of Telecommunications, Telecom Regulatory Authority of India (TRAI), Ministry of Environment, Forest and Climate Change, and the Securities and Exchange Board of India would facilitate the development of coherent sustainability standards applicable to telecommunications infrastructure. Regulatory coordination is particularly important because environmental impacts associated with digital infrastructure frequently transcend the

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<sup>40</sup> Carol A. Adams & Sally McNicholas, Making Sustainability Reporting More Accountable: Sector-Specific Metrics and Corporate Governance, 15 *Sustainability Accounting, Management and Policy Journal* 456, 462–71 (2024).

<sup>41</sup> Jan-Erik Schirmer, *supra* note 37, at 995–1008.

<sup>42</sup> Carol A. Adams & Sally McNicholas, Making Sustainability Reporting More Accountable: Sector-Specific Metrics and Corporate Governance, 15 *Sustainability Acct., Mgmt. & Pol'y J.* 456, 462–71 (2024); Julian Kirchherr, Denise Reike & Marko Hekkert, *supra* note 23, at 224–30.

jurisdictional boundaries of individual regulatory institutions.

## **7. Conclusion**

Telecommunications sector in India is one of the leading contributors to its economy. However, the Indian legal regime continues to regulate the sector through economic and technical frameworks that inadequately address environmental sustainability. It is the need of the hour to reconceptualise telecommunication corporates as environmental actors and pave way for environmental accountability within that extends beyond the existing conventional framework.

As analysed, the environmental jurisprudence and corporate governance frameworks provide only for fragmented mechanisms of accountability. The comparative analysis of European Union sustainability governance illustrates an emerging shift from disclosure-based regulation towards due-diligence-oriented accountability frameworks that can be used as a model to be incorporated for future reforms in India.

By recognising telecommunications corporations as environmental governance actors and integrating sustainability principles within telecommunications governance is essential not only in addressing contemporary environmental challenges but also for ensuring technological advancement. Thus, this bridges the gap between environmental governance and technological advancement shedding light on a new path towards sustainability in the telecommunications sector.