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# An Eco-Centric Critique of India's DeFacto Carbon Tax Regime

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# An Eco-Centric Critique of India's DeFacto Carbon Tax Regime

## ABSTRACT

*Climate change has become a major global challenge for which effective legal, fiscal and regulatory frameworks are needed to mitigate greenhouse gas emissions and promote sustainable development. Carbon taxation is one of the market-based environmental instruments that has received international recognition as an effective instrument to internalise the environmental costs and promote the transition to a low-carbon economy. Countries like Sweden and Finland have shown that a well-designed carbon tax regime can drastically reduce carbon emissions without sacrificing economic growth and industrial competitiveness. India, in contrast, currently lacks a comprehensive carbon tax regime, instead adopting a piecemeal approach through measures such as coal cess, energy taxation policies, the Perform, Achieve and Trade (PAT) scheme, and the Carbon Credit Trading Scheme (CCTS). The study critically evaluates the regulatory effectiveness of the existing carbon-related fiscal and environmental framework in India and whether these fragmented mechanisms operate as a de facto regime of carbon taxation. The paper examines the legal, economic and institutional challenges to India's carbon governance, including enforcement, corporate accountability, policy fragmentation and socio-economic inequality. Additionally, the study performs a comparative analysis of the carbon taxation models of Sweden and Finland to identify best practices and regulatory approaches for the Indian context. The study contends that genuine regulatory effectiveness requires a carbon tax architecture that is not only well-structured, transparent, and institutionally robust, but explicitly anchored in ecological carrying-capacity thresholds and the intrinsic worth of natural systems alongside India's developmental and climate commitments.*

## KEYWORDS

*Carbon Taxation, Climate Change Law, Environmental Governance, Carbon Pricing, Corporate Environmental Accountability.*

## INTRODUCTION

The relationship between law, development, and the natural environment has never been more contested than it is today. As climate

change accelerates and ecological systems approach irreversible tipping points, the question of how legal frameworks ought to govern humanity's relationship with nature has moved from philosophical debate into urgent policy necessity. At the centre of this debate lies a fundamental tension one that environmental jurisprudence has grappled with for decades between the eco-centric and anthropocentric approaches to development and environmental regulation.

The anthropocentric approach, which has historically shaped the architecture of most environmental legal systems, places human welfare at the centre of regulatory concern. Nature, under this framework, is valuable because it serves human needs economic, social, and cultural. Environmental protection is justified not because ecosystems possess inherent rights, but because their degradation imposes costs on human societies. The eco-centric approach, by contrast, insists that nature possesses intrinsic value independent of its utility to human beings. Rivers, forests, biodiversity, and atmospheric stability are not merely resources to be managed but are entities deserving of legal recognition and protection in their own right.

This philosophical divide finds its most vivid contemporary expression in the domain of climate governance, and particularly in the instrument of carbon taxation. Carbon taxation has emerged globally as one of the most significant market-based mechanisms for addressing greenhouse gas emissions and promoting sustainable development.<sup>1</sup> It operates on the logic of the "polluter pays" principle compelling industries and consumers to internalise the environmental costs of their carbon-intensive activities. Yet, as this paper argues, carbon taxation as it is currently conceived and practiced remains a fundamentally anthropocentric instrument. It prices pollution for the sake of human economic efficiency, not ecological justice.

India presents a particularly compelling context for examining this tension. As one of the world's largest and fastest-growing economies, India simultaneously carries the burden of significant greenhouse gas emissions and the aspiration of lifting hundreds of millions of people out of poverty.<sup>2</sup> Its constitutional framework, through Articles 48A and 51A(g), imposes duties on the State and citizens to protect the environment duties that the Supreme Court has progressively expanded through landmark environmental jurisprudence.<sup>3</sup> Yet India's actual carbon governance architecture comprising fragmented instruments such as the coal cess, the Perform Achieve and Trade (PAT) Scheme, and

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<sup>1</sup> Govinda R. Timilsina, *Carbon Taxes*, 60 J. Econ. Literature 1456, 1457 (2022).

<sup>2</sup> Patnaik & Subhashree, *Climate Change Imperatives for Sustainable Development and Human Security in India*, ch. 1 (Utkal Univ. 2014).

<sup>3</sup> M.C. Mehta v. Union of India, AIR 1987 SC 1086; India Const. arts. 48A, 51A(g).

the nascent Carbon Credit Trading Scheme 2023 reflects an overwhelmingly anthropocentric regulatory philosophy, driven by economic imperatives and international diplomatic commitments rather than ecological values.<sup>4</sup>

This paper critically examines India's existing carbon taxation framework through the lens of eco-centric and anthropocentric development theories in environmental law. It argues that India's current approach, while representing meaningful steps toward climate governance, is structurally inadequate both in its regulatory coherence and in its philosophical foundations. Drawing on comparative analysis of Sweden and Finland's more developed carbon tax regimes, and anchoring the discussion in the scholarly contributions of Timilsina, Andersson, Stern, Khastar et al., and Rathore and Bansal, the paper evaluates whether a more comprehensive and ecologically grounded carbon tax framework can better serve India's twin imperatives of environmental sustainability and developmental justice.

### RESEARCH GAPS

Despite growing scholarly attention to carbon governance in India, four critical gaps persist.

1. no study has empirically quantified how much India's existing instruments such as the coal cess and the PAT Scheme have actually reduced emissions, as opposed to merely existing on the statute book.
2. the post-GST diversion of clean energy cess revenues away from renewable energy financing remains analytically unexamined in the literature.
3. no study has attempted to translate India's constitutional environmental duties under Articles 48A and 51A(g) into the operative language of a carbon pricing statute.
4. and most significantly for this paper, the distributional burden that a future carbon tax would place on tribal and nature-dependent communities is largely unexamined, as is the deeper question of whether India's carbon governance instruments are designed to value ecosystems for their own sake or merely as inputs to economic calculation.

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<sup>4</sup> Shakti Sustainable Energy Found. & Ernst & Young LLP, *Discussion Paper on Carbon Tax Structure for India* 8 (2018).

## LITERATURE REVIEW

- The author, Govinda R. Timilsina (2022), in “Carbon Taxes, 60 J. Econ. Literature 1456” offers one of the most thorough accounts of how carbon taxation operates as a regulatory tool, yet a close reading exposes its underlying premise the entire framework is built around human economic logic: nature is protected not because it possesses inherent value, but because its degradation imposes costs on human welfare. For a paper exploring the eco-centric versus anthropocentric divide, Timilsina's work is instructive precisely because it is representative it is a faithful mirror of where mainstream climate economics actually stands, and the gap it reveals between economic efficiency and ecological justice frames the central problem this paper investigates.
- The author Julius J. Andersson (2019), in “Carbon Taxes and CO2 Emissions: Sweden as a Case Study, 11 Am. Econ. J. Econ. Pol'y” Sweden is widely cited as proof that carbon taxes work, and Andersson's empirical findings substantiate that claim. What drove Sweden's success, however, was not an ecological commitment but sound economic policy design, public trust, and institutional consistency; environmental gains followed as a consequence of effective administration rather than as the regime's animating purpose. This raises a pertinent question for India: whether institutional and administrative competence alone, absent a comparable foundation of public trust and regulatory consistency, can be expected to replicate Sweden's results.
- The author Mojtaba Khastar, Alireza Aslani & Mehdi Nejati (2020), in “How Does Carbon Tax Affect Social Welfare and Emission Reduction in Finland? ” critically discuss Finland's carbon taxation and the authors spend equal energy discussing how to protect low-income households from rising energy costs. The environment shares the stage with human welfare, and at times feels like the supporting act. For a seminar on eco-centric versus anthropocentric approaches, this is a perfect illustration of how even well-intentioned environmental policy quietly keeps humans at the centre.
- The author Nicholas Stern (2007), “The Economics of Climate Change: The Stern Review” in this Stern Review changed the global conversation on climate change by making a simple but powerful argument: ignoring climate change will cost us far more than acting on it. It is a brilliant piece of work, but it is also unmistakably anthropocentric nature's destruction matters because of what it does to GDP, food security, and human survival, not because forests or species have any right to exist. As a foundational text, it helps explain

why India's entire climate governance architecture is built on economic reasoning rather than ecological ethics.

- The author Pooja Rathore & Sangeeta Bansal (2014), "Distributional Effects of Adopting Carbon Tax in India" demonstrates that the Indian carbon tax debate is framed almost entirely in human terms: which communities will bear the cost, how subsidies should be designed, and who merits protection. These are legitimate and urgent distributional concerns, but ecological considerations are largely absent from the analysis. Rathore and Bansal's findings suggest that, absent a deliberate effort to integrate eco-centric principles into policy design, India's environmental governance will continue to treat nature as *a residual consideration rather than a central regulatory concern*.

### RESEARCH OBJECTIVE

- 1) To critically examine the extent to which India's existing legal and fiscal framework operates as an implicit or de facto carbon taxation regime, particularly through sector-specific levies, indirect taxes, and environmental policy instruments.
- 2) To evaluate the regulatory effectiveness of India's current carbon-related fiscal and environmental mechanisms in reducing greenhouse gas emissions and promoting sustainable development.
- 3) To analyse the legal, institutional, and administrative framework governing carbon-related taxation and environmental compliance in India.
- 4) To identify the major regulatory gaps, inconsistencies, and enforcement challenges within India's existing carbon governance structure and assess their impact on corporate accountability and environmental regulation.
- 5) To undertake a comparative study of carbon taxation regimes in Sweden and Finland in order to identify best practices and regulatory models relevant to the Indian context.
- 6) To examine the economic and social implications of introducing a comprehensive carbon tax regime in India, including issues relating to industrial competitiveness, revenue redistribution, and social equity.

### RESEARCH METHODOLOGY

This study uses a doctrinal and analytical approach, examining existing legal texts, statutes, international agreements, and scholarly literature

rather than fieldwork or data collection. Key sources include India's constitutional provisions, the Environment Protection Act 1986, the Paris Agreement, and academic works by Timilsina, Stern, and Andersson. A comparative analysis of Sweden and Finland's carbon tax regimes provides practical reference points. Throughout, every regulatory mechanism is evaluated through the eco-centric versus anthropocentric lens, asking not just whether policies work, but what values they reflect about humanity's relationship with nature.

### **CARBON TAXATION THROUGH A PHILOSOPHICAL LENS: THE ECO-CENTRIC AND ANTHROPOCENTRIC DIVIDE**

At the heart of any serious discussion on environmental law lies a foundational question – does nature exist for humanity, or does humanity exist within nature? This question, deceptively simple, carries profound implications for how regulatory frameworks are designed, implemented, and evaluated. The debate between eco-centric and anthropocentric approaches to development is not merely academic; it shapes the very architecture of environmental governance, including fiscal instruments like carbon taxation.

The anthropocentric approach, which has historically dominated environmental law and policy, treats nature as a resource – valuable insofar as it serves human interests. Carbon taxation, as it is understood and practiced globally, is a quintessentially anthropocentric instrument. It internalises environmental externalities not because ecosystems have inherent rights, but because pollution imposes economic costs on human society.<sup>5</sup> The "polluter pays" principle, which underpins carbon taxation, is itself a human-centred construct – it seeks to correct market failures rather than recognise ecological justice. Govinda Timilsina's comprehensive analysis of carbon taxes confirms this orientation, framing their primary purpose as economic efficiency and behavioural transformation in human industries.

The eco-centric approach, by contrast, insists that nature possesses intrinsic value independent of human utility. Under this framework, forests, rivers, and atmospheric stability are not merely assets to be priced and traded but are entities deserving of legal protection in their own right. India's own Supreme Court has, in landmark judgments such as *M.C. Mehta v. Union of India*<sup>6</sup> gestured toward this approach by expanding the right to a healthy environment as a fundamental right under Article 21 of the Constitution. Yet, when one examines India's actual regulatory framework for carbon governance, the gap between this judicial philosophy and legislative practice becomes strikingly

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<sup>5</sup> Govinda R. Timilsina, Carbon Taxes, 60 J. Econ. Literature 1456, 1457 (2022).

<sup>6</sup> *M.C. Mehta v. Union of India*, AIR 1987 SC 1086; India Const. arts. 48A, 51A(g).

apparent.

## INDIA'S EXISTING CARBON GOVERNANCE FRAMEWORK: AN ANTHROPOCENTRIC ARCHITECTURE

### *The Environment (Protection) Act, 1986: The Foundational Yet Incomplete Pillar*

Any honest assessment of India's carbon governance architecture must begin with the Environment (Protection) Act, 1986 ("EPA 1986"), India's principal umbrella environmental statute.<sup>7</sup> Enacted in the wake of the Bhopal gas disaster and India's obligations following the Stockholm Conference, the EPA 1986 conferred upon the Central Government sweeping powers to protect and improve environmental quality. Section 3 of the Act empowers the government to lay down standards for emissions and discharges, to plan and execute nationwide pollution control programmes, and to coordinate the actions of state governments and regulatory agencies. Section 5 provides a particularly potent "command" tool: the power to issue binding directions to any person, officer, or authority.

However, the EPA 1986's enforcement machinery reveals a deep structural weakness that has critically undermined India's carbon governance. Section 15 prescribes a maximum penalty of imprisonment up to five years or a fine of up to ₹1 lakh for environmental violations.<sup>8</sup> This penalty regime unchanged in its essential structure for nearly four decades is manifestly inadequate as a deterrent for large industrial emitters whose carbon-intensive operations generate revenues of thousands of crores. The Act also lacks any provision specifically directed at greenhouse gas (GHG) emissions, carbon pricing, or climate-specific corporate accountability. Its general pollution control architecture, designed for a pre-climate-change era, has never been amended to incorporate carbon regulation as a distinct legal category. Critically, the EPA 1986 makes no reference to ecological thresholds, carrying capacities, or the intrinsic rights of ecosystems it remains a thoroughly anthropocentric instrument, protecting nature insofar as its degradation harms human health and well-being.

The Central Pollution Control Board (CPCB), established under the Water (Prevention and Control of Pollution) Act, 1974 and given functions under the EPA 1986, serves as the primary national

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<sup>7</sup> The Environment (Protection) Act, 1986, No. 29, Acts of Parliament, 1986 (India) [hereinafter EPA 1986].

<sup>8</sup> EPA 1986, § 15 (prescribing imprisonment up to five years or a fine up to ₹1 lakh, or both, for contraventions; an additional fine of up to ₹5,000 per day for continuing violations).

environmental regulator. Yet its mandate does not extend specifically to carbon emissions regulation, and its enforcement capacity across India's vast and diverse industrial landscape remains severely constrained. The result is a foundational statute that is both philosophically and institutionally ill-equipped to serve as the backbone of a modern carbon governance regime.

### *The Fragmented Fiscal Instruments*

India does not currently possess a comprehensive, unified carbon tax regime. What exists instead is a constellation of fragmented fiscal and regulatory instruments the coal cess, energy taxation under the Finance Acts, the Perform Achieve and Trade (PAT) Scheme under the Energy Conservation Act 2001, and more recently, the Carbon Credit Trading Scheme (CCTS) 2023 each designed with economic and developmental imperatives firmly at the centre.<sup>9</sup>

The coal cess, introduced in 2010 under the Finance Act as a Clean Energy Cess on coal produced in and imported into India,<sup>10</sup> represents India's most tangible experiment in carbon-adjacent fiscal policy. The PAT Scheme, administered by the Bureau of Energy Efficiency under the Energy Conservation Act 2001,<sup>11</sup> operates as a market-based mechanism for improving energy efficiency in designated industrial sectors. Its regulatory scope, however, is narrow: it covers only large energy intensive industries and does not directly price carbon emissions. Its enforcement machinery is weak, its coverage incomplete, and the trading of energy saving certificates has been characterised by thin market participation and limited price discovery. The CCTS 2023,<sup>12</sup> while representing a significant legislative step forward, remains at an embryonic stage and does not yet constitute a coherent carbon pricing framework capable of driving systemic emission reductions at the scale that India's climate commitments demand.

What unites all these instruments is their fundamentally anthropocentric logic. They are designed to manage the economic costs of carbon emissions, protect industrial competitiveness, and meet India's international climate commitments under the Paris Agreement<sup>13</sup> not to

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<sup>9</sup> Shakti Sustainable Energy Found. & Ernst & Young LLP, Discussion Paper on Carbon Tax Structure for India 8 (2018).

<sup>10</sup> The Finance Act, 2010, No. 14, Acts of Parliament, 2010 (India); Clean Energy Cess on Coal, Notification No. S.O. 1412(E) (June 22, 2010) (India).

<sup>11</sup> The Energy Conservation Act, 2001, No. 52, Acts of Parliament, 2001 (India); Perform Achieve and Trade (PAT) Scheme, Bureau of Energy Efficiency, Ministry of Power, Government of India (2012).

<sup>12</sup> Carbon Credit Trading Scheme, 2023, Ministry of Power, Gazette of India, June 28, 2023.

<sup>13</sup> Paris Agreement to the United Nations Framework Convention on Climate Change art. 4, Dec. 12, 2015, T.I.A.S. No. 16-1104.

recognise the intrinsic rights of ecosystems or build regulatory structures grounded in ecological ethics. Articles 48A and 51A(g) of the Indian Constitution, which impose duties on the State and citizens respectively to protect the environment, have not been meaningfully translated into a carbon governance framework that reflects eco-centric values.

### EMPIRICAL ASSESSMENT: INDIA'S EMISSIONS TRAJECTORY AND THE FAILURE OF FRAGMENTATION

#### *India's CO<sub>2</sub> Emissions Trend (2010–2023)*

The most compelling indictment of India's fragmented carbon governance framework is not doctrinal but empirical. Despite the existence of a coal cess since 2010, the PAT Scheme since 2012, and numerous energy taxation provisions, India's CO<sub>2</sub> emissions have risen sharply and without interruption except for a brief pandemic-induced dip in 2020. As Table 1 below illustrates, total CO<sub>2</sub> emissions grew from approximately 1,590 MtCO<sub>2</sub> in 2010 to an estimated 2,955 MtCO<sub>2</sub> in 2023, representing an increase of roughly 86 percent over thirteen years.<sup>14</sup>

*Table 1: India's CO<sub>2</sub> Emissions Trend (2010–2023)*

Year	Total CO <sub>2</sub> (MtCO <sub>2</sub> )	Coal Combustion (MtCO <sub>2</sub> )	Per Capita (t/person)
2010	~1,590	1,016	1.42
2013	~1,884	1,276	1.63
2015	~2,113	1,450	1.73
2018	~2,451	1,668	1.90
2019	~2,466	1,662	1.86
2020	~2,296	1,562	1.68
2021	~2,523	1,767	1.82

<sup>14</sup> IEA, CO<sub>2</sub> Emissions in 2023, at 12 (2024) (reporting that India's total CO<sub>2</sub> emissions rose approximately 7% in 2023, reaching 2.8 Gt, with coal combustion alone accounting for over 2 Gt).

Year	Total CO2 (MtCO2)	Coal Combustion (MtCO2)	Per Capita (t/person)
2022	~2,741*	1,856	1.94
2023	~2,955*	2,032	2.07

The IEA's 2023 report confirms that India's emissions grew faster than GDP that year at slightly more than 7% driven by surging demand in steel, cement, and electricity.<sup>15</sup> Coal combustion, which accounted for over 2 billion MtCO<sub>2</sub> in 2023 alone, remains the dominant source, making India the world's second-largest coal emitter after China. The per capita figure of 2.07 tonnes, while below the global average of 4.6 tonnes, masks a steep upward trajectory: India's per capita emissions have more than doubled since 2000. This empirical trajectory is irreconcilable with the claim that India's existing fiscal instruments function as an effective de facto carbon tax regime.

### *Revenue Generated Through the Coal Cess: A Study in Policy Diversion*

The coal cess is frequently cited as evidence of India's commitment to carbon pricing. A closer examination of the data, however, reveals not a success story but a cautionary tale of revenue diversion and institutional failure. As Table 2 below documents, the cess collected approximately ₹86,440 crore (nearly USD 12 billion) between 2010 and 2018 a substantial fiscal resource by any measure.<sup>16</sup>

*Table 2: Coal Cess – Collection and Utilisation (2010–2018)*

Period	Cess Rate (₹/tonne)	Total Collected (₹ Cr)	Transferred to NCEF	Utilised for Clean Energy
2010–11	50	—	—	—
2014–15	100	—	—	—

<sup>15</sup> Global Carbon Project, Carbon Dioxide Emissions from Fossil Fuel Combustion in India from 1960 to 2023, by Type, Statista (Nov. 13, 2024).

<sup>16</sup> The Evolution of the Clean Energy Cess on Coal Production in India 3 (2018) [hereinafter IISD Clean Energy Cess Report] (noting that from FY 2010–2018, India collected INR 86,440 crore (approximately USD 12 billion) from the coal cess, yet only a fraction was directed toward clean energy projects).

Period	Cess Rate (₹/tonne)	Total Collected (₹ Cr)	Transferred to NCEF	Utilised for Clean Energy
	(revised)			
2016-17	400 (revised)	—	—	—
2010-2018 (cumulative)	50-400	86,440	~29,654 Cr (~34%)	~15,911 Cr (~18% of collected)
2017 onwards	400 (GST Comp. Cess)	Merged into GST Compensation pool	Fund purpose diverted	Clean energy nexus lost

The data exposes a systematic failure of revenue earmarking. Of the ₹86,440 crore collected from 2010 to 2018, only approximately ₹29,654 crore (34 percent) was transferred to the NCEF, and of that amount, only ₹15,911 crore (approximately 18 percent of total collections) was actually utilised for clean energy projects. The remainder was either held in the fund or, after the GST rollout in 2017, diverted entirely to the GST Compensation Fund to compensate states for revenue losses a purpose wholly unrelated to ecological restoration or clean energy transition. This diversion effectively converted a nominally environmental fiscal instrument into a general revenue mechanism, stripping it of any claim to eco-centric purpose.

The regulatory gaps that flow from this institutional failure are stark. Research examining BRICS-T economies, including India, has found that taxation policies in developing nations consistently underperform due to weak institutional capacity, energy dependence, and the subordination of environmental goals to economic priorities.<sup>17</sup> Three critical gaps stand out: first, the absence of comprehensive sectoral coverage, leaving agriculture, informal manufacturing, and road transport outside any meaningful carbon pricing framework;<sup>18</sup> second, structurally

<sup>17</sup> Ahmet Kaya et al., Evaluating Carbon and Energy Taxation Performance in BRICS-T Countries, 10 J. Res. Econ., Pol. & Fin. (Special Issue) 235, 240 (2025).

<sup>18</sup> Minakshi Patel et al., Carbon Pricing Impact Evaluation on Transport Sector: A

underdeveloped enforcement mechanisms characterised by inconsistency, regulatory arbitrage, and limited deterrence;<sup>19</sup> and third most significant from an eco-centric perspective the complete absence of a philosophical commitment to ecological integrity, with no revenue systematically directed toward ecosystem restoration or biodiversity protection.

### COMPARATIVE LESSONS: SWEDEN, FINLAND, AND THE LIMITS OF ANTHROPOCENTRIC SUCCESS

Sweden and Finland offer the most instructive comparative reference points for India's carbon governance debate. Sweden introduced its carbon tax in 1991 at a rate equivalent to approximately SEK 250 per tonne of CO<sub>2</sub>, a figure that has escalated dramatically to €115.34 per tonne by 2024 making it among the highest carbon tax rates globally.<sup>20</sup> Andersson's empirical analysis demonstrates that Sweden's carbon tax significantly reduced transport-sector emissions while maintaining robust economic growth.<sup>21</sup> Between 1990 and 2018, Sweden reduced its GHG emissions by approximately 27 to 29 percent while real GDP per capita grew by more than 50 percent a decoupling of economic growth from emissions that has made Sweden the standard-bearer for carbon tax advocacy globally.

Finland's experience is similarly instructive. As the world's first country to implement a carbon tax in 1990, Finland offers longitudinal evidence of efficacy. Elbaum's study using the synthetic control approach confirms that Finland's emissions were approximately 30 percent lower by 2004 than in a counterfactual scenario without the tax a substantial abatement effect. Analysis further reveals that Finland's revenue recycling approach using carbon tax proceeds to reduce income taxes was integral to managing the policy's distributional effects, though the study also finds negative welfare impacts on lower-income households that were not fully offset by these measures.<sup>22</sup>

Both countries succeeded not merely because they imposed taxes, but because they built coherent, institutionally supported, and politically legitimate regulatory ecosystems around those taxes. Revenue recycling

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Comparative Analysis for India, 103 *Chem. Eng'g Transactions* 811, 814 (2023).

<sup>19</sup> Zinat Alam et al., *The Unintended Consequences of Climate Policy: Carbon Taxes, Regulatory Arbitrage, and Competition in Lending* 12 (Dec. 30, 2025)

<sup>20</sup> Tax Found., *Carbon Taxes in Europe 2024* (2024),

<https://taxfoundation.org/data/all/eu/carbon-taxes-europe-2024/> (recording Sweden's carbon tax at €115.34 per tonne of CO<sub>2</sub> as of 2024).

<sup>21</sup> Julius J. Andersson, *Carbon Taxes and CO<sub>2</sub> Emissions: Sweden as a Case Study*, 11 *Am. Econ. J. Econ. Pol'y* 1, 4 (2019).

<sup>22</sup> Jean-David Elbaum, *The Effect of a Carbon Tax on Per Capita Carbon Dioxide Emissions: Evidence from Finland*, IRENE Working Paper No. 21-05, at 18 (2021).

through welfare programs, transparent governance, and long-term policy consistency were the structural pillars of their success.<sup>23</sup>

*Table 3: Comparative Analysis – Carbon Taxation: India, Sweden and Finland*

Parameter	Sweden	Finland	India
Year of Introduction	1991	1990 (world's first)	No unified carbon tax (Coal Cess: 2010; CCTS: 2023)
Current Tax Rate (per tonne CO <sub>2</sub> )	€115.34 (~₹10,400) as of 2024	€83.7 (~₹7,500) as of 2023	No explicit rate; Coal Cess subsumed into GST Comp. Cess @ ₹400/tonne coal
Sectoral Coverage	~40% of national GHG (heating + motor fuels; excludes industry ETS)	Broad – fuels for heating, transport; exemptions for energy-intensive industry	Narrow – select fuels & industries only; agriculture, informal manufacturing, road transport largely excluded
Emission Reduction Achieved	27–29% reduction in GHG 1990–2018; GDP grew >50% in same period	~30% lower emissions by 2004 vs. counterfactual; per capita reduction sustained	Total CO <sub>2</sub> rose from ~1,590 MtCO <sub>2</sub> (2010) to ~2,955 MtCO <sub>2</sub> (2023); ~86% increase despite existing instruments

<sup>23</sup> Patrick Criqui, Mark Jaccard & Thomas Sterner, Carbon Taxation: A Tale of Three Countries, 11 Sustainability 6280, 6285 (2019).

Parameter	Sweden	Finland	India
Revenue Use	Recycled to lower other taxes; welfare programs; energy efficiency subsidies	Income tax reductions; limited welfare transfers; some social protection measures	NCEF: only 34% of collections transferred; post-2017: funds diverted to GST compensation pool
Eco-Centric Orientation	Absent – success measured purely in economic & emission terms	Absent – social welfare framing; nature's value not recognised	Absent – entirely anthropocentric; no ecological carrying capacity threshold
Enforcement Mechanism	Strong – Swedish EPA; independent regulation; high compliance culture	Robust institutional structure; tax authority administered; limited exemption-related gaps	Fragmented – multiple bodies (MoEF, CPCB, BEE) with overlapping mandates; weak deterrence under EPA 1986 (max fine ₹1 lakh)
Key Strength	Long policy consistency (30+ years); high public legitimacy; revenue recycling	World's first carbon tax; per capita emissions reduced; gradual rate increases	Large coal cess corpus; CCTS 2023 signals ambition; constitutional environmental duties

Parameter	Sweden	Finland	India
Key Weakness	Exemptions for major industrial polluters limit potential; no eco-centric jurisprudence	Regressive effects on low-income households; social welfare negative despite emission gains	Fragmented & incoherent; revenue diversion; non-comprehensive; philosophically silent on ecological integrity

Their success is measured almost entirely in economic and emission-reduction terms. The intrinsic value of nature the eco-centric imperative does not feature prominently in the regulatory rationale of either country's carbon tax regime. Their frameworks are sophisticated anthropocentrism, not ecological jurisprudence. For India, which hosts extraordinary biodiversity, vast forest ecosystems, and climate-vulnerable coastal and agrarian communities, copying the Nordic model without infusing it with eco-centric principles would be a missed opportunity of historic proportions.

### **TOWARD A BALANCED FRAMEWORK: RECONCILING ECO-CENTRIC VALUES WITH DEVELOPMENTAL REALITIES**

The central challenge for India is not simply whether to introduce a comprehensive carbon tax, but what kind of carbon tax to introduce and within what philosophical framework. The study's alternative hypothesis that India's fragmented framework is significantly less effective than a comprehensive carbon tax regime is well-supported by the comparative, empirical, and doctrinal analysis presented above.<sup>24</sup> However, effectiveness must be defined not only in terms of emission reduction and economic efficiency, but also in terms of ecological integrity and distributive justice.

A genuinely effective carbon tax regime for India would need to incorporate several dimensions. Ecologically, it must be designed with reference to carrying capacities and ecosystem thresholds, not merely economic price signals. Revenue generated must be constitutionally earmarked for ecological restoration, green infrastructure, and climate adaptation particularly for communities whose livelihoods are most dependent on natural systems. Economically, the regime must be phased

<sup>24</sup> A. Sodhi & S.M. Biswas, Carbon Taxation in India: A Policy Feasibility Study, 4 *Env't Sci. Archives* 720, 724 (2025).

and graduated to protect India's developmental priorities, with targeted relief for energy-dependent industries and low-income households.<sup>25</sup> Legally, it must be grounded in a statutory framework that clearly defines carbon pricing obligations, enforcement mechanisms, corporate accountability standards, and judicial review pathways a framework that strengthens and supplements the EPA 1986 with specific GHG-targeting provisions and calibrated, credible penalties.<sup>26</sup>

The Carbon Border Adjustment Mechanism (CBAM) introduced by the European Union adds urgency to this agenda. Indian export industries in carbon-intensive sectors now face the real prospect of competitive disadvantage in global markets unless domestic carbon pricing is strengthened and harmonised with international standards. This external pressure, while anthropocentric in its origins, may paradoxically create the political and economic momentum needed to push India toward a more comprehensive and potentially more ecologically grounded carbon governance framework.

### FINDINGS AND RECOMMENDATIONS

The principal findings of this study are as follows -

- 1) India's existing carbon-related fiscal instruments function as an implicit but structurally inadequate de facto carbon pricing regime, lacking coherence, comprehensive sectoral coverage, and effective enforcement mechanisms.
- 2) The regulatory framework is overwhelmingly anthropocentric in its philosophical orientation, driven by economic efficiency imperatives and international commitments rather than ecological values.
- 3) Comparative analysis of Sweden and Finland confirms that comprehensive, institutionally supported carbon taxation can deliver significant environmental outcomes, but that even these models offer an incomplete template for a country of India's ecological significance and developmental complexity.
- 4) The emergence of global instruments such as the EU's Carbon Border Adjustment Mechanism creates both external pressure and strategic opportunity for India to strengthen and systematise its carbon governance framework.

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<sup>25</sup> Bishwanath Goldar & Meera Bhalla, *Assessing the Likely Impact of Carbon Taxes on India's Exports, Domestic Production and Employment* 14 (Ctr. for WTO Stud., Working Paper, 2012).

<sup>26</sup> Donald B. Marron & Eric J. Toder, *Tax Policy Issues in Designing a Carbon Tax*, 104 *Am. Econ. Rev.* 563, 567 (2014).

- 5) Any genuinely effective carbon tax regime for India must integrate eco-centric principles including ecological carrying capacity thresholds, mandatory revenue earmarking for environmental restoration, and statutory recognition of nature's intrinsic value alongside its economic and developmental objectives.

Based on these findings, the following recommendations are offered -

India should enact a comprehensive Carbon Taxation Act that establishes a uniform, graduated carbon tax applicable across all major emitting sectors, with phased implementation to protect developmental priorities.<sup>27</sup> A dedicated Environmental Restoration Fund, constitutionally earmarked from carbon tax revenues, should be established to finance ecosystem restoration, biodiversity conservation, and climate adaptation for nature-dependent communities.<sup>28</sup> The legal framework should incorporate eco-centric principles drawn from existing constitutional jurisprudence, recognising ecological thresholds and the rights of future generations as binding regulatory considerations. Robust enforcement machinery, including an independent Carbon Regulatory Authority with adjudicatory powers, should be established to ensure corporate accountability and regulatory consistency.<sup>29</sup> Finally, progressive revenue recycling mechanisms including targeted subsidies and welfare transfers should be built into the framework from inception to address the regressive distributional effects that carbon taxation can impose on lower-income households.<sup>30</sup>

India stands at a regulatory crossroads. The path of least resistance leads toward incremental refinement of existing anthropocentric instruments better-enforced coal cesses, broader PAT coverage, a more developed carbon credit market. That path is better than inaction, but it is not enough. The more demanding and more honest path requires India to ask not just how much pollution its economy can afford to price, but how much its ecosystems can sustain, and to build its carbon governance framework around the answer to that deeper question. In doing so, India has the opportunity to contribute not merely a national climate policy, but a genuinely new model of environmental jurisprudence one that takes both development and nature seriously, and refuses to sacrifice either at the altar of the other.

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<sup>27</sup> A. Sodhi & S. M. Biswas, *Carbon Taxation in India: A Policy Feasibility Study*, 4 *Env't Sci. Archives* 720, 726 (2025).

<sup>28</sup> Pooja Rathore & Sangeeta Bansal, *Distributional Effects of Adopting Carbon Tax in India*, 5 *Int'l J. Soc. Econ. Res.* 1, 9 (2014).

<sup>29</sup> Donald B. Marron & Eric J. Toder, *Tax Policy Issues in Designing a Carbon Tax*, 104 *Am. Econ. Rev.* 563, 570 (2014).

<sup>30</sup> Thomas Sterner (ed.), *Fuel Taxes and the Poor* 45 (RFF Press 2012).

## CONCLUSION

The debate between eco-centric and anthropocentric approaches to environmental law is not an abstract philosophical exercise. It has concrete, urgent, and far-reaching implications for how nations design their climate governance frameworks and what values those frameworks ultimately serve. This paper has examined India's carbon taxation landscape through this theoretical lens and arrived at conclusions that are both sobering and constructive.

India's existing carbon governance framework built on the coal cess, the PAT Scheme, energy taxation provisions, and the CCTS 2023 reflects a coherent anthropocentric logic. It seeks to manage the economic costs of carbon emissions, meet international climate obligations under the Paris Agreement, and protect India's developmental trajectory. These are legitimate and important objectives. But they are insufficient. The framework is fragmented, weakly enforced, sectorally incomplete, and philosophically silent on the intrinsic value of the natural world it purports to protect.<sup>31</sup>

The comparative experience of Sweden and Finland demonstrates that well-designed carbon taxation can achieve significant emission reductions without sacrificing economic growth.<sup>32</sup> Their models offer India valuable lessons in policy design, institutional coherence, revenue recycling, and public legitimacy. However, even these celebrated models operate within an anthropocentric paradigm measuring success in economic and emission reduction terms, with little explicit recognition of ecological rights or nature's intrinsic value. For India, which hosts some of the world's most significant biodiversity and whose most vulnerable communities are most directly dependent on healthy ecosystems, adopting the Nordic model wholesale would be an inadequate response to a deeper regulatory challenge.<sup>33</sup>

The alternative hypothesis advanced in this study that India's fragmented framework is significantly less effective than a comprehensive carbon tax regime is supported by the weight of evidence examined. But this paper goes further than a conventional policy argument for carbon tax reform. It contends that the measure of

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<sup>31</sup> T. Likhitha N. Rao & Parul Tandan, *Effectiveness of Carbon Taxes on Emission Reduction and Economic Growth*, 2 Int'l J. Sci., Architecture, Tech. & Env't 1204, 1208 (2025).

<sup>32</sup> Julius J. Andersson, *Carbon Taxes and CO<sub>2</sub> Emissions: Sweden as a Case Study*, 11 Am. Econ. J. Econ. Pol'y 1, 22 (2019); Jean-David Elbaum, *The Effect of a Carbon Tax on Per Capita Carbon Dioxide Emissions: Evidence from Finland*, IRENE Working Paper No. 21-05, at 20 (2021).

<sup>33</sup> Yati Nurhayati et al., *Carbon Pricing Policy to Support Net Zero Emission: A Comparative Study of Indonesia, Finland and Sweden*, 54 Env't Pol'y & L. 53, 61 (2024).

effectiveness itself must be broadened. A truly effective carbon governance framework for India must reduce emissions, yes but it must also protect ecological integrity, ensure distributive justice for vulnerable populations, and embed within its regulatory logic a recognition that nature is not merely a resource to be priced but a system of life whose stability is a precondition for all human flourishing.<sup>34</sup>

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<sup>34</sup> Nicholas Stern, *The Economics of Climate Change: The Stern Review* 31 (Cambridge Univ. Press 2007).