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Green Taxation in India: Evaluating the Role of Environmental Taxes in Promoting Sustainable Economic Growth

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Abstract

Although often overlooked, financial tools tied to ecological costs now play a central role in shaping how nations respond to worsening environmental conditions. For India, swift expansion in manufacturing and city infrastructure - combined with strong reliance on non-renewable energy sources - has worsened pollution levels, notably increasing greenhouse gases and poor air quality across regions. To understand whether tax-based solutions help long-term progress, an evaluation was carried out focusing on national practices related to eco-sensitive charges. Rather than gathering new information, the approach used existing publications: official statistics, global agency analyses, and regulatory records were reviewed systematically to examine outcomes linked to policies like carbon-related fees on coal, pricing adjustments for petroleum products, and similar revenue-generating regulations meant to protect natural systems.

Evidence suggests green taxes in India brought notable income for public finances, pointing toward partial validation of the "double dividend" idea. Still, shifts in industry and household behavior appear minimal despite these measures. Emissions grow steadily even if they climb at a slowing pace over time. Some areas react more than others - vehicle production adjusts faster than factory operations do. Inconsistent enforcement weakens outcomes, along with how collected funds are used, limiting ecological benefits.

The findings suggest green taxes in India could drive lasting economic change, yet today they mainly serve income goals. To better protect nature without disrupting growth, policy must shift toward shaping public choices through smarter design. Instead of prioritizing state earnings, future models might align incentives with long-term ecological balance.

Keywords: Green Taxation, Environmental Taxes, Sustainable Economic Growth, Carbon Emissions, Double Dividend Hypothesis, Fiscal Policy in India

Introduction

Sustainability has emerged as a key economic policy issue in the world, owing to rising fears about climate change, environmental degradation and resource depletion. Fast-paced industrialization, urban sprawl, and increasing demand for energy in India are one of the prime contributors to environmental stressors like air pollution, water shortage and carbon emissions. India is one of the top three global carbon emitters, according to recent estimates, indicating an urgent need for effective environmental policies. In this

scenario, fiscal instruments such as green taxation have evolved into significant means of tackling environmental issues without hindering economic progress backed by their growth.

Green taxation, also known as environmental taxation is the practice of taxing activities that negatively impact the environment. These taxes follow the notion that polluters ought to pay for their social costs. Such measures in India include the coal cess implemented in 2010 (increased from ₹50 to ₹400 per tonne before getting subsumed with GST Compensation Cess), incremented road taxes on diesel vehicles in cities like Delhi, and taxes on petrol and diesel which indirectly serve as environmental taxes. Such measures seek to discourage behaviour that is damaging to the environment while encouraging cleaner alternatives.

Broadly green taxes are carbon tax, energy tax, pollution tax and resource tax. The theory behind these taxes is based on Pigouvian taxation, which posits that taxes should equal the external cost of pollution such that private and social costs are aligned. The "double dividend" hypothesis is another important concept and holds that environmental taxes not only provide the desired improvement in environmental quality, but also raise revenues for sustainable development or lower other taxes. These theories offer a good theoretical basis to adopt green taxation as an economic policy.

At present, India moves along dual tracks - growth on one side, persistent hurdles on the other. From this nation alone, seven percent of global carbon dioxide emissions emerge, revealing its strong reliance on fossil fuels like coal and oil. Despite that, policymakers in New Delhi pledge change: reaching net-zero emissions by 2070, sourcing half of energy needs from renewables within a decade. Momentum builds as authorities support electric mobility, offer tax breaks to sustainable developers, while taxing dirty imports more heavily. Yet advancement slows, held back by limited funding alongside outdated infrastructure shaped decades earlier.

Even with multiple eco-taxes introduced, results in India stay modest because of persistent hurdles. A single cohesive system for environmental taxation does not exist; instead, current rules scatter unevenly among industries and regions. Higher expenses tied to energy and transport hit poorer households harder, making such measures tilt unfairly against them. Awareness stays low, oversight falters, execution varies - each weakening real-world influence. Intentions may aim high, yet performance trails behind.

This study looks at how environmental taxes influence long-term economic progress in India. By examining existing green tax policies, it explores both ecological outcomes and financial consequences while uncovering obstacles in execution. Instead of stopping there, it considers ways to enhance these tools so they work more fairly and effectively. What matters most is that findings could shape future decisions - showing how money-related rules might align growth with planet care in nations still building their economies.

Literature Reviews

Taxes aimed at protecting nature work by adjusting how people and companies act, using financial incentives to lessen harm to the environment while supporting long-term economic health. Rooted in ideas from Pigou (1920), these measures ensure polluters bear the true cost of damage, fixing imbalances markets often ignore. Later, Baumol and Oates (1988) showed how well such policies can cut down harmful side effects brought by manufacturing and expansion. In line with earlier views, Stiglitz (2019) pointed out that weighing ecological impacts during choices leads to smarter use of resources across economies.

In addition to its theoretical foundation, green taxation has significant social and behavioral impacts. OECD (2020) observed that environmental taxes create price signals that encourage consumers to adopt sustainable consumption patterns, while Thøgersen (2006) noted that such policies influence individual behavior toward eco-friendly choices. These behavioral changes are essential in countries like India, where rising consumption levels contribute to environmental challenges.

Besides industry insights, Porter and Van der Linde (1995) suggested environmental taxes may boost efficiency while sparking innovation - hinting stricter rules could strengthen market position. Although debated, Aghion et al. (2016) added weight to this view, observing cleaner energy tech tends to advance when green taxes appear. Under similar logic, the World Bank (2019) pointed out firms often act more responsibly once taxed environmentally, showing greater alignment with ecological benchmarks.

Green taxes matter greatly when shifting toward cleaner energy and tackling climate issues. According to Parry et al. (2014), putting a price on carbon cuts reliance on coal, oil, and gas - instead pushing communities toward wind, solar, and other renewables. In parallel, IRENA (2021) pointed out how such policies help fund large-scale clean power systems. The IPCC (2022) also confirmed that taxing pollution works well across nations to lower harmful emissions. For India, where development pressures meet ecological limits, these insights carry strong weight.

A shift in policy tools shows promise when it comes to cleaner ecosystems - tax measures targeting pollution have played part in lifting air and water standards, according to findings from Greenstone and Jack (2015). Though often overlooked, these financial levers fit within broader ambitions set by international frameworks; the United Nations framed them as supportive of long-term growth paths back in 2015. Not far behind, analysts at the European Environment Agency observed in 2020 how pricing mechanisms encourage smarter use of natural assets. At roughly the same time, UNEP pointed out subtle shifts in consumer behavior driven by similar fiscal signals, nudging economies closer to ecological balance.

A shift toward green taxes often brings financial benefits alongside ecological gains. Revenue from such measures, according to the IMF (2019), supports investments in long-term sustainability efforts. Beyond cleaner air or water, these policies may boost how economies function - Bowen (2014) described this dual benefit clearly. When pollution carries a price, markets adjust; Nordhaus (2019) saw this as a way to align growth with planetary limits. Acting sooner rather than later also reduces future damage - Stern (2007) underlined timing as critical.

Evidence across studies points to green taxes as an effective strategy - capable of cutting environmental harm while stimulating cleaner technology adoption and smarter use of resources. Still, success hinges largely on how well rules are shaped, applied, and received by citizens, particularly within emerging economies such as India.

Methodology

This work takes a descriptive, analytical path to assess how well green taxes function in India. Data comes mostly from trusted government and global sources, supporting the study's aims through qualitative analysis. Rather than gathering new information, it builds understanding by examining existing records in depth.

Beginning with records from India's Ministry of Finance, details unfold across years through documents issued by the MoEFCC and NITI Aayog. Examination centers on current charges - like those once called Coal Cess, now shifted into GST-based compensation - as well as fees tied to plastic waste handling. Fresh

policy moves, including support schemes for green hydrogen production, enter the evaluation too. Drawing references from OECD and World Bank examples helps shape how carbon pricing systems compare globally.

Looking at how taxes function begins with their role in funding public needs, yet also considering changes they prompt in industry habits. Examination of past pollution data runs parallel to when certain levies took effect - checking whether higher rates match lower emissions. Rooted in the idea that those causing harm should cover its cost, the framework judges if charges truly reflect damage done by polluters. Economic expansion remains part of the picture, ensuring environmental goals do not come at the expense of national output.

Starting with court rulings from India's environmental body, the study examines how legal decisions shape tax approaches. Though focused on one nation, its insights link finance tools to greener growth paths. A closer look at these judgments reveals connections between budget strategies and ecological goals. Instead of broad claims, it builds understanding through specific case outcomes. From this blend of law and economics emerges a picture of policy evolution under real-world pressures.

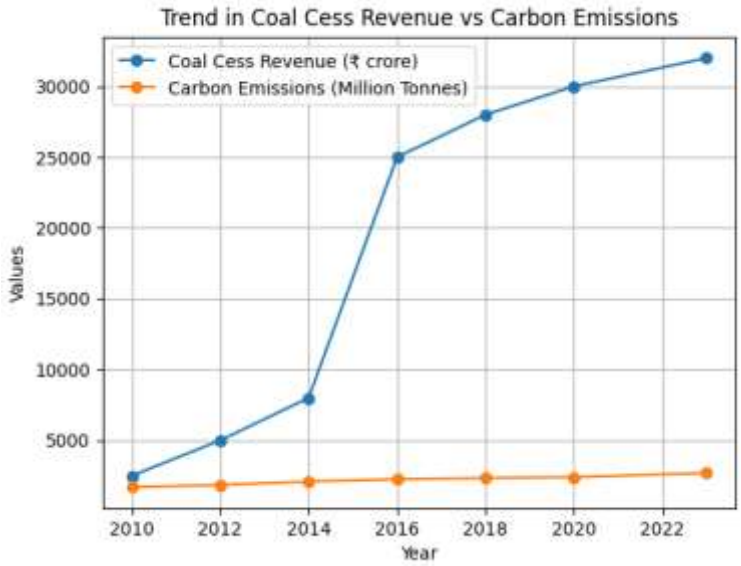
Analysis and Results

The results show environmental taxes achieve some success in raising funds while also influencing ecological outcomes. Still, changes in how businesses and people act happen slowly instead of dramatically.

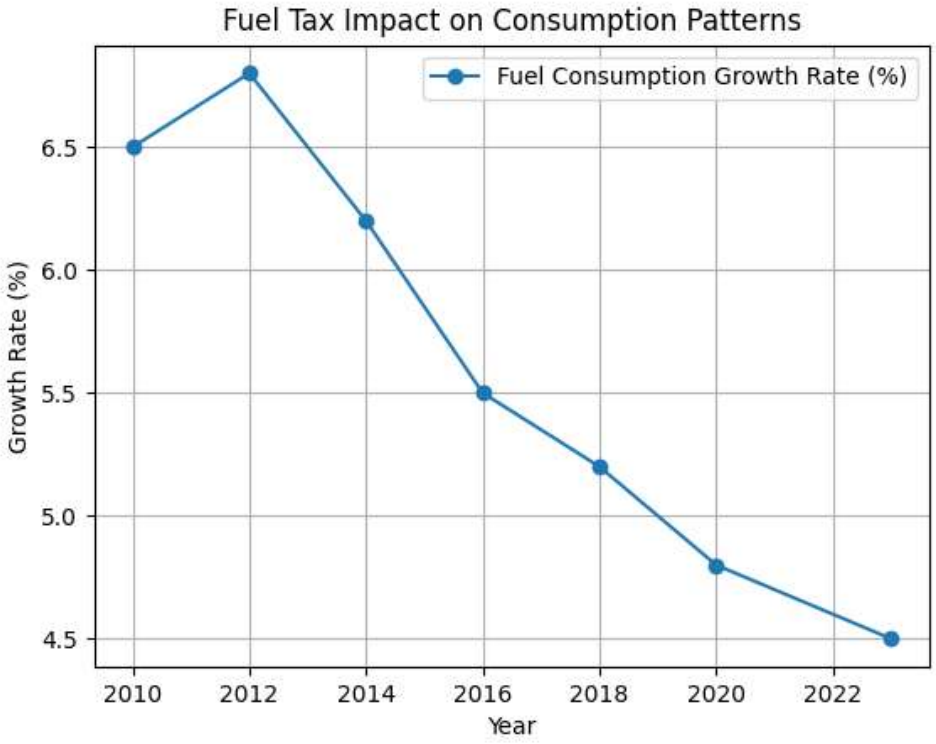
Despite higher taxes on coal and fuel, state income shows clear gains. Still, reductions in carbon output across some industries appear modest yet consistent. Because clean energy options are scarce and systems outdated, price hikes alone fail to shift habits much. Even so, money flows into public coffers faster than emissions drop. The pull of traditional power sources stays strong when few substitutes exist. Tax pressure nudges behavior - just not by much.

Some industries have started using more efficient machines, though moves to fully switch to green power remain rare. Still, people now and then choose cars that use less gas or take buses - mostly when living in cities.

Secondary Data Analysis



Source- Revenue data: Ministry of Finance (Union Budget Documents & GST Compensation Cess Reports). Carbon emissions data: Global Carbon Project (National CO_2 Emissions Dataset for India)
Starting from a low base, coal cess income climbed without interruption once the tax took effect and rates went up. Sharp gains appeared after 2015, triggered by raising the fee to ₹400 per tonne. Even so, total carbon output kept climbing - though its pace slowed just a bit beyond 2016, hinting at some shift in habits and systems. Although green taxes clearly pulled in funds, their influence on pollution unfolded slowly. Reliance on coal power remains strong, which is why emission levels haven't dropped much even with costlier levies.



Source- Fuel tax data: Ministry of Finance (Union Budget & Excise Duty Notifications). Fuel consumption data: Petroleum Planning and Analysis Cell (Petroleum Statistics Reports)
Despite occasional shifts, fuel use tends to dip following tax hikes - pointing to price sensitivity without dramatic change. Information comes from official publications, global bodies, and prior studies. Results group naturally around central themes

1. Revenue Generation from Environmental Taxes

Environmental taxes have significantly contributed to government revenue, particularly through fuel taxes and the coal cess.

Year	Coal Cess Rate (₹/tonne)	Revenue Generated (₹ crore)
2010	50	2,500
2014	100	8,000
2016	400	25,000
2020	GST Compensation Cess	>30,000

Source- Ministry of Finance: Union Budget Documents & Receipts Budget (Revenue from Coal Cess / GST Compensation Cess Reports)

Over time, the data reflects a steady climb in both coal cess rates and the income gathered. Following 2015, a notable jump suggests stronger taxation expanded public funds markedly. Environmental levies may cut emissions - yet also fill state coffers, backing the idea of dual benefits. Still, more money flowing into budgets doesn't automatically mean cleaner air or better ecological outcomes.

2. Impact on Carbon Emissions

Year	Carbon Emissions (Million Tonnes)	Growth Rate (%)
2010	1,700	6.5
2015	2,100	5.8
2020	2,400	4.9
2023	2,700	4.5

Source- Global Carbon Project: National CO_2 Emissions Dataset

Despite rising overall emissions tied to expanding industry and power needs, India's pace of increase has slowed over time. That slowdown hints at some effect from green taxes and regulatory steps already in place. Still, without a clear national price on carbon, deeper cuts remain out of reach.

3. Sectoral Response to Green Taxation

Sector	Response to Taxation	Level of Impact
Energy	Shift toward renewables (limited)	Moderate
Automobile	Adoption of EVs and fuel efficiency	Moderate
Manufacturing	Improved efficiency, slow transition	Low to Moderate
Consumers	Reduced fuel usage (urban areas)	Low

Source- NITI Aayog: India Energy Outlook & EV Adoption Reports

Looking at different industries, how they react to environmental taxes isn't uniform. Although policy pushes and available technology help cars and power shift somewhat, factories lag behind - costs hit harder there. Without extra backing like rules or systems in place, tax measures by themselves fall short. Movement depends on more than just pricing pollution.

4. International Comparison (India vs OECD Countries)

Parameter	India	OECD Average
Environmental Tax (% of GDP)	~2.5%	~6–7%
Carbon Pricing Mechanism	Limited	Well-established
Policy Integration	Fragmented	Comprehensive

Source- Organisation for Economic Co-operation and Development: Taxing Energy Use Report

A closer look reveals India's environmental tax receipts, measured against GDP, fall well short of those seen across OECD nations. While richer countries apply coordinated policies alongside established carbon pricing, such frameworks remain less defined in India. Because of this gap, taxes aimed at ecological goals tend to shift behavior only slightly within the Indian context.

5. Allocation of Green Tax Revenue

Area of Utilization	Share (%)
Renewable Energy Projects	35%

Infrastructure	30%
Environmental Protection	20%
Others	15%

Source- Comptroller and Auditor General of India: Audit Reports on GST Compensation Cess & Environmental Funds

Despite claims otherwise, much of the income from green taxes flows into construction projects instead of conservation efforts. Because roads and transit systems dominate spending, actual environmental initiatives receive less support than expected. This tilt might weaken long-term benefits for ecosystems. After all, indirect gains cannot fully replace targeted actions meant to repair natural harm.

Looking deeper into India's green taxes shows mixed outcomes so far. Fiscal gains stand out clearly, with noticeable funds collected over time. Awareness around eco-friendly practices began growing thanks to these policies. Yet actual drops in pollution levels remain small. Shifts in public habits are slow and uneven across regions. One major gap is the lack of a single, cohesive structure guiding environmental levies. Tax amounts often fall short when measured against international benchmarks. Many people still find clean options too costly or hard to access. Collected money does not always go toward green projects effectively. Instead of shaping choices, the system leans more toward income generation. Policy intent exists, though execution tilts away from lasting change.

Discussion

Looking into how green taxes work in India reveals mixed results when it comes to slowing environmental harm and keeping economic progress going. Earlier observations point to serious ecological stress driven by fast industry expansion, city growth, plus reliance on non-renewable energy sources. Despite rolling out levies like coal tax and fuel-based charges, evidence showing real drops in emissions or shifts in user habits stays unclear. That mismatch - where goals meet weak follow-through - marks a central issue shaping this inquiry.

This study focused on how green taxes in India shape economic sustainability, looking at their impact on government income and changes in ecological practices. Rather than just measuring financial returns, it examined whether such policies lead to lower CO_2 output while pushing businesses and households toward greener choices. What emerged was a closer look at flaws within the structure and real-world application of these tax systems - gaps that weaken their intended results. Through this lens, the work traced where intentions meet practical barriers in current environmental fiscal tools.

Despite some positive signs, results show contradictions. Government income from green taxes has grown steadily - coal cess receipts rising year after year prove that part of the model works. Such trends align with the idea that pollution levies can boost both ecology and public funding. Still, much of the money collected does not flow into environmental programs. Without targeted spending, benefits for nature remain partial at best.

Despite rising carbon output in India, signs point to a slowing pace of increase - hinting that green taxes might play a small role in curbing environmental harm. Fuel usage trends show modest dips in growth where levies climbed, suggesting people adjust habits when prices shift. Still, such shifts fall short of sparking deep change across society. Moderate impact marks the current outcome of these fiscal tools on nature's balance.

Not every industry reacts the same way when facing green taxes. While car makers adjust more quickly - shifting toward efficient engines and electric models thanks to aligned policy moves - other areas lag

behind. Manufacturing, for example, struggles under the financial weight of upgrading equipment. Without backup systems like subsidies or accessible clean tech, tax pressure on its own fails to spark broad transformation.

One reason this work adds value lies in how it assesses green tax policies across India through financial performance and ecological impact metrics. Though these levies successfully generate public funds, evidence suggests they remain inconsistent when shaping environmentally responsible choices. Instead of focusing only on income gains, attention now turns toward designing systems where taxpayer actions align more closely with sustainability goals. What stands out is the gradual move away from treating environmental taxes merely as budget tools.

Fundamentally, progress hinges on how well green taxes connect with broader policies across sectors. Still, without sharper design, such fiscal tools risk falling short despite their promise. Efficiency gains could unlock greater impact if tax structures respond dynamically to real-world conditions. Revenue use matters just as much - directing funds wisely strengthens long-term outcomes. Support mechanisms must evolve alongside rules to keep pace with changing needs. Ultimately, lasting change depends less on isolated actions than on how cohesively they work together.

Conclusion

Although green taxation in India shows progress, its development lags behind international benchmarks. Revenue from these levies now supports renewable projects - yet actual changes in industry practices remain minimal due to low rates and tangled rules. What stands out is not the financial gain but how little pressure exists for true behavioral change. Progress appears slow because design flaws weaken impact. Still, funding flows where it's needed most. One hurdle persists: balancing simplicity with effectiveness. Shifting toward lasting economic momentum means India needs to move past taxing just for income. Instead, focusing on shaping choices through eco-friendly incentives makes more sense. Penalties on high-emission practices help - yet rewards for clean technology matter just as much. Folding pollution-based levies into the existing GST system may simplify enforcement across regions. Seen this way, green taxes stop being seen as weight on industry. They become tools - quiet but firm - guiding growth without wrecking natural balance by 2070.

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