REACT
Research Action for Tobacco Control

ANALYSIS OF ENVIRONMENT, SOCIAL AND GOVERNANCE (ESG) REPORTS AND PERFORMANCE OF CIGARETTE MANUFACTURING COMPANIES IN INDIA

January 2025

A Detailed Report

Acknowledgements

We benefitted from the knowledge and expertise of 23 ESG experts who we interviewed between November 2024 and February 2025. We thank them for sharing their insights and expertise. We thank the Indian Institute of Forest Management (IIFM), Bhopal for providing human resource and technical expertise in conducting this research. The team at REACT, for their extreme support and guidance throughout the research work. Special thanks to the team at Vital Strategies for their valuable technical inputs. In particular Dr Rana J. Singh; Emma Green; Ashish Kumar Pandey; Dr Amit Yadav; and Dr Shivam Kapoor. The report was written by Amit Satankar and Akanksha Singh of the Indian Institute of Forest Management.

Analysis of Environment, Social and Governance (ESG) Reports and performance of cigarette manufacturing companies in India

January 2025

Executive summary for the Full Report

India produces over 100 billion cigarettes annually, consumed by 33 million people—a figure that underscores not only a public health crisis but an escalating environmental one. While the health risks of smoking are widely recognized, the industry's ecological toll remains largely overlooked. Tobacco cultivation depletes fragile tropical ecosystems, causes deforestation, and pollutes water sources with agrochemicals. The curing process relies heavily on firewood, further accelerating forest loss and carbon emissions. Despite this, India's major cigarette producers—ITC Ltd., Godfrey Phillips India Ltd. (GPIL), and VST Industries—offer little transparency on their environmental footprint.

The tobacco industry's environmental harm stretches across the supply chain. From land degradation and water depletion to the carbon emissions of manufacturing and distribution, cigarettes leave a sizeable ecological footprint. Though companies report reductions in emissions and water use, they omit crucial data on Scope 3 emissions (these include all other indirect emissions that occur in the upstream and downstream activities of an organisation) and lack comprehensive life cycle assessments (LCAs). The absence of full carbon accounting and inadequate disclosure of fuel sources used in curing tobacco highlight significant blind spots in sustainability reporting.

Cigarette waste is another critical concern. Cigarette butts, made of non-biodegradable cellulose acetate, are the most littered item worldwide. In India, the waste management framework barely addresses this issue, with companies' Extended Producer Responsibility (EPR) programs focused mainly on packaging. This leaves the industry's most hazardous waste stream unregulated. Moreover, discarded cigarettes contribute to fire hazards and chemical leaching that degrade land and water quality.

In contrast to global peers adopting renewable energy and carbon credit mechanisms, Indian cigarette manufacturers lag behind. While ITC has a partial carbon mitigation strategy, its peers have made minimal commitments. Sustainability claims often reference global frameworks like the Global Reporting Initiative or Task Force on Climate-Related Financial Disclosures (TCFD) but lack segment-specific clarity or third-party verification.

This underscores an urgent need in India for regulatory reforms, enforceable EPR mandates, transparent emissions tracking, and verifiable sustainability standards to mitigate the industry's substantial environmental impact.

In 2022, India's Central Pollution Control Board (CPCB) issued guidelines to address the environmental damage caused by cigarette and bidi butts, which generate nearly 17 million kg of waste annually. Recognizing butts as harmful single-use plastics, the guidelines mandate cigarette manufacturers to raise public awareness, report risks, and explore disposal solutions. Local authorities must enforce anti-littering laws and mandate segregation of cigarette butts as dry waste. Companies are urged to consider banning single-use filters or managing them under EPR. Levies on manufacturers will support clean-up and public education, encouraging a phased shift away from single-use filters.

Company-level analysis shows widespread efforts at greenwashing, limited progress in key areas, and little transparency.

ITC Limited presents an image of sustainability with claims of 50% renewable energy use and plastic neutrality since FY 2021–22. However, its sustainability data is aggregated across its FMCG portfolio, obscuring cigarette-specific impacts. While ITC promotes efforts like plastic waste recycling and afforestation, it lacks transparency on Scope 3 emissions, groundwater use, and post-consumer waste from cigarettes. Its claim of being carbon-positive for 19 years omits crucial emission categories, including those from tobacco curing. Despite holding a dominant market share and a stake in VST Industries, ITC has not made tangible progress toward biodegradable filters or alternatives to plastic-based packaging like cellophane.

Godfrey Phillips India Ltd. (GPIL) reports modest emissions and water reductions but trails behind peers in renewable energy adoption—currently at 17%. Though it targets 50% by 2030, no concrete investment strategy is disclosed. GPIL lacks Scope 3 emissions reporting and provides limited detail on waste management or material intensity reductions. Plans for biodegradable packaging and reforestation initiatives exist, but without measurable progress or transparency on water-intensive tobacco farming, these remain largely aspirational.

VST Industries claims achievements like 100% biodegradable overwrap and rainwater harvesting capacity exceeding consumption. Yet, the absence of third-party validation and missing details on recycling, emissions, and tobacco-related environmental damage weaken these claims. VST also lacks a roadmap for transitioning to net-zero and fails to disclose downstream groundwater impacts, chemical use, or deforestation from cultivation. While it aims for 50% renewable energy by 2030 and holds AWS Gold certification, its overall reporting remains opaque.

Key Gaps Across Companies include lack of cigarette-specific impact disclosures, weak Scope 3 emissions tracking, limited life cycle assessments, and minimal post-consumer waste responsibility. Without clearer strategies, timelines, and third-party verifications, sustainability claims remain broad and difficult to substantiate.

Recommendations

To enhance the environmental performance of India's cigarette industry, urgent policy interventions are required. First, **mandatory sustainability reporting** must be enforced through comprehensive life cycle assessments (LCAs), covering tobacco cultivation to post-consumption waste. These reports should include supply chain impacts and undergo independent third-party audits to ensure transparency and accountability.

Second, **Extended Producer Responsibility (EPR)** mandates must be made enforceable, requiring companies to manage cigarette butt and packaging waste, adopt biodegradable filters, and implement take-back programs. Non-compliance should incur penalties.

Third, **carbon emission regulations** need strengthening, with compulsory reporting and reduction of Scope 1, 2, and 3 emissions. Companies should adopt carbon accounting standards and invest in mitigation strategies, including voluntary carbon markets and Clean Development Mechanism (CDM) projects.

Fourth, promote **sustainable tobacco farming** by regulating water use, encouraging agroforestry, and incentivising crop diversification to reduce environmental degradation.

Fifth, **public awareness campaigns** should highlight cigarette-related environmental harm and promote waste segregation, with disposal stations in urban areas.

Sixth, companies must shift to **biodegradable and recyclable packaging**, including urgent strategies for cigarette butt management.

Finally, a **Toxic Use and Release Inventory (TUI/TRI)** should be mandated under hazardous waste rules, with public reporting on cigarette waste disposal as per CPCB's 2022 guidelines.

GLOSSARY

Biodiversity Conservation	The protection and sustainable management of ecosystems and species to maintain ecological balance.
BRSR	Business Responsibility and Sustainability Report is a framework mandated by SEBI in India for listed companies to disclose their ESG performance and sustainability initiatives.
Carbon Neutrality	The state of achieving net-zero carbon emissions by balancing emitted greenhouse gases with removal efforts, such as carbon offsetting.
Cellophane	A thin, transparent film made from regenerated cellulose, used primarily as a packaging material due to its low permeability to air, oils, and bacteria. It›s biodegradable and was historically popular before the advent of plastic films.
Cellulose Acetate	A biodegradable and biocompatible thermoplastic derived from cellulose, commonly used in producing films, textiles, and plastics. It›s known for its clarity and strength.
Circular Economy	An economic system focused on minimizing waste and making the most of resources through recycling, reuse, and sustainable product design.
COTPA	COTPA (Cigarettes and Other Tobacco Products Act, 2003) Indian legislation that regulates tobacco production, sale, advertising, and packaging to reduce tobacco consumption and its health effects.
CPCB	Central Pollution Control Board is India's national regulatory body responsible for monitoring and controlling environmental pollution.
EIA	Environmental Impact Assessment is a process used to evaluate the potential environmental consequences of a proposed industrial or developmental project before its approval.
EPR	Extended Producer Responsibility a policy approach that holds producers responsible for the post-consumer stage of their products, including waste management and recycling.
EPR Benchmarking	The comparative evaluation of companies based on their compliance with Extended Producer Responsibility regulations.
ETP	Effluent Treatment Plant is a facility designed to treat industrial wastewater before its safe discharge or reuse.
FMCG	Fast-Moving Consumer Goods is a consumer product that sell quickly at relatively low cost, including packaged foods, beverages, and household items.
FSC	Forest Stewardship Council is an international certification ensuring sustainable forest management and responsible sourcing of wood and paper products.
GHG	Greenhouse Gases (GHGs) are those that trap heat in the atmosphere, contributing to climate change. Examples include carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O).
Green Washing	A deceptive practice where companies exaggerate or falsely claim their environmental efforts to appear more sustainable than they are.
HSD	High-Speed Diesel is a type of diesel fuel used in industries and heavy transportation that has environmental implications due to emissions.
HVAC	Heating, Ventilation, and Air Conditioning are systems used in buildings to regulate temperature and air quality while improving energy efficiency.
IIRC	IIRC (International Integrated Reporting Council) is a global coalition promoting communication about value creation, preservation, and erosion as part of the integrated reporting framework.
ISAE 3000	The International Standard on Assurance Engagements (ISAE) 3000 (Revised) is issued by the International Auditing and Assurance Standards Board (IAASB). It provides guidelines for assurance engagements other than audits or reviews of historical financial information. This standard is applicable to various subjects, including sustainability reporting and internal controls.

LCA	Life Cycle Assessment a method for assessing the environmental impact of a product throughout its entire life cycle, from raw material extraction to disposal.
LEED	Leadership in Energy and Environmental Design is a certification program recognizing best-in-class building strategies and practices for energy efficiency and environmental sustainability.
MSCI	MSCI is a leading provider of critical decision support tools and services for the global investment community, offering products and services that include indexes, analytical models, data, and real estate benchmarks.
Net Zero	A target for balancing greenhouse gas emissions with removal measures to eliminate a company's or country's carbon footprint.
NOx	Nitrogen Oxides is a group of air pollutants produced from burning fossil fuels, contributing to smog, acid rain, and respiratory issues.
ODS	Ozone Depleting Substances are chemicals, such as CFCs and halons, that contribute to the depletion of the Earth›s ozone layer, increasing exposure to harmful UV radiation.
Plastic Neutrality	A commitment by companies to recover and recycle the same amount of plastic they produce, minimizing plastic waste in the environment.
PM	Particulate Matter is a mixture of solid particles and liquid droplets in the air that can cause severe health issues and environmental damage.
PNG	Piped Natural Gas is a cleaner alternative to conventional fossil fuels, widely used for industrial and domestic energy needs.
Reasonable Assurance	This is a high level of assurance provided by auditors, indicating that the subject matter is free from material misstatement. It involves comprehensive procedures to obtain sufficient appropriate evidence.
Renewable Energy	Energy generated from naturally replenishing sources like solar, wind, and hydropower, reducing dependence on fossil fuels.
SBTi	SBTi (Science Based Targets initiative) is a collaboration between several organizations, providing companies with a framework to set greenhouse gas emission reduction targets in line with the latest climate science.
Scope 1, 2, & 3 Emissions	Categories used to classify an organization's greenhouse gas emissions: direct emissions (Scope 1), indirect emissions from purchased energy (Scope 2), and all other indirect emissions in the value chain (Scope 3).
SOx	Sulfur Oxides is a group of harmful gases produced by burning fossil fuels, which contribute to acid rain and environmental degradation.
Stakeholder Engagement	The process of actively involving employees, customers, communities, and investors in decision-making to improve corporate social responsibility.
Stakeholder Engagement	The process of actively involving employees, customers, communities, and investors in decision-making to improve corporate social responsibility.
STP	Sewage Treatment Plant is a facility that processes household and industrial sewage to remove contaminants before releasing treated water back into the environment.
Sustainable Supply Chain	A supply chain managed with environmental, social, and governance (ESG) considerations in mind to reduce carbon footprint and waste.
Waste Management	The process of treating and disposing of waste materials in an environmentally responsible manner to minimize pollution.
Water Positivity	A sustainability initiative where companies aim to replenish more water than they consume through conservation efforts.
ZLD	Zero Liquid Discharge is a water treatment process that ensures all wastewater is treated and reused, with no liquid waste released into the environment.

Abbreviations

AWS	Alliance for Water Stewardship
BRSR	Business Responsibility and Sustainability Report
CDP	Carbon Disclosure Project
COP	Conference of the Parties
COTPA	Cigarettes and Other Tobacco Products Act
CPCB	Central Pollution Control Board
EIA	Environmental Impact Assessment
ESG	Environmental, Social, and Governance
ETP	Effluent Treatment Plant
FMCG	Fast Moving Consumer Goods
FSC	Forest Stewardship Council
GHG	Greenhouse Gas
GRI	Global Reporting Initiative
HSD	High Speed Diesel
HVAC	Heating, Ventilation, and Air Conditioning
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
LEED	Leadership in Energy and Environmental Design
NOx	Nitrogen Oxides
ODS	Ozone Depleting Substances
PM	Particulate Matter
PNG	Piped Natural Gas
SBTi	Science Based Targets Initiative
SOx	Sulfur Oxides
STP	Sewage Treatment Plant
TCFD	Task Force on Climate related Financial Disclosures
ZLD	Zero Liquid Discharge

Table of Contents

The landscape of cigarette manufacturing and consumption in India

Every year more than 100 billion cigarettes are produced and consumed by 33 million cigarette smokers in India (1). Although smoking prevalence has decreased in high-income countries, global cigarette consumption is growing in India largely as a result of the increasing uptake of smoking by young people. While the health effects of smoking are now well established, the impacts of tobacco on the environment are less appreciated. These range from the use of scarce arable land and water for tobacco cultivation, use of harmful chemicals on tobacco farms, deforestation, use of chemicals and machines and their attendant toxic and carbon emissions from manufacturing and distribution processes, to the production of toxic waste and non-biodegradable litter. Furthermore, incorrect disposal of cigarette butts has been linked to numerous domestic and wildland fires with devastating results. Over and above its direct impact on human health, the scale of the damage caused by tobacco to the natural world and natural resources is largely unknown. Although all major cigarette manufacturing companies produce sustainability reports and share their life cycle assessments (LCA), the assumptions and the methodologies used in these studies are not always transparent and often partially reported. Most of these assessments are limited to manufacturing processes and producers' immediate supply chains. They omit tobacco growing, curing, distribution, and product disposal. This substantially underestimates the true environmental costs of cigarette manufacture. The figures reported are therefore underestimated and misreported (2-4). This analysis examines the environmental impacts of India's three leading cigarette manufacturers, ITC Ltd., Godfrey Phillips India Limited, and VST Industries Ltd., which collectively dominate the market with 79%, 11%, and 7.7% of total sales by volume, respectively. Additionally, international companies like Philip Morris International (PMI) and Japan Tobacco contribute 3.5% and 2%, respectively.

Overview of cigarette manufacturers in India

ITC Limited

ITC Ltd evolved from the Imperial Tobacco Company (1910) into a diversified conglomerate by 2025, expanding beyond tobacco into FMCG, hospitality, agribusiness, paper, and IT, embracing sustainability and innovation. It has become India's largest diversified comprising a broad portfolio spanning FMCG, hotels, paperboards, agri-business, and information technology. As of March 31, 2024, the company recorded gross revenue of ₹69,446 crores and a net profit of ₹20,422 crores. Following its landmark demerger (effective record date January 6, 2025) of the Hotels Business into a new entity ITC Hotels. Under the Club ITC culinaire, so far there are 140 "participating hotels" in India, Colombo and Nepal, under 06 distinct brands.ITC commands a leading position in the Indian cigarette market with over 10 brands with a significant numbers exported chiefly to West Asia and the Middle East. The 2010 launch of its premium cigar brand (Armenteros), crafted from exported tobaccos, underscores its commitment to quality and market differentiation.

ITC has positioned itself as a sustainability pioneer among Indian corporations. It aligns its reporting with GRI Standards 2021, the Integrated Reporting Framework, and TCFD recommendations. The company claims to have achieved 50% renewable energy usage, exceeded its plastic neutrality commitment, and secured AWS Platinum certification for nine units. Recognized for robust ESG performance, ITC boasts an 'A' rating in CDP water security and accolades from MSCI and DJSI.

In its role as South Asia's largest paperboard packaging converter, ITC produces over 1,00,000 tons annually, serving industries such as food, beverages, personal care, and consumer goods. The InnovPack campaign demonstrates its leadership in sustainable packaging by leveraging renewable energy and sustainably sourced raw materials. Advanced packaging capabilities—including UV offset printing, foil stamping, embossing, and precision designs for cigarette packs—further consolidate ITC's position as a market leader, delivering both high quality and strategic value across its business segments. ITC is fully integrated cigarette manufacturer which gives it several strategic advantages over its rivals.

In 2006, ITC acquired a controlling stake in VST Industries, solidifying its presence in the Indian tobacco market and enhancing its portfolio with VST›s established brands and manufacturing capabilities. ITC completed a strategic takeover of VST Industries, acquiring a substantial shareholding. This move consolidates ITC's tobacco market dominance while enabling operational synergies and enhanced value creation for both entities.

Godfrey Phillips India Limited (GPIL)

Godfrey Phillips India Limited (GPIL), the flagship company of Modi Enterprises – KK Modi Group, stands as one of India's largest FMCG firms, headquartered in New Delhi. GPIL manufactures and distributes a diverse portfolio of cigarette brands including Four Square, Red & White, Cavenders, Stellar, Focus, Originals International, and Marlboro (under license from Philip Morris). The company has three manufacturing facilities (Guldhar, Rabale, and Ongole) and exports to over 30 countries since 2003.

Founded in London in 1844, it began its India operations in 1936. GPIL launched its Leaf Division in Andhra Pradesh in 1990 and began production of Marlboro in 2009. As of 2022, the company produced over a billion cigarette sticks monthly and has since expanded operations to Jaipur and Jammu in 2024. GPIL's sustainability initiatives presented its inaugural Sustainability & Integrated Report, aligned with the International Integrated Reporting Framework, GRI standards, and UN SDGs. The report outlines significant reductions in emissions, energy, water consumption, and particulate matter, alongside CSR initiatives benefiting over 70,000 individuals. The company has invested in biodiversity projects and promotes sustainable agricultural practices through innovative technologies to enhance tobacco quality.

VST Industries Limited

VST Industries Limited, established on November 10, 1930, is one of India's oldest cigarette companies, boasting over 90 years of operational expertise. A publicly traded associate of British American Tobacco Plc., VST commands 80% of the Indian cigarette market through an extensive distribution network comprising distributors, wholesalers, and retailers. Headquartered in a gold-rated building certified by the Indian Green Building Council, the company operates manufacturing facilities in Toopran and Azamabad and employs over 750 professionals.

Originally founded as Vazir Sultan Tobacco Company Limited, the firm rebranded to VST Industries Limited in 1983. VST is actively involved with industry bodies including the All India Management Association, Tobacco Institute of India, and the Confederation of Indian Industry. Sustainability remains a core focus. The company claims to adhere to GRI guidelines and sources FSC/PEFC-certified materials to ensure deforestation-free procurement. Tobacco leaves are directly sourced from Indian contract farmers and supplemented by imports from Zimbabwe, processed using sustainable mechanical techniques. Environmental initiatives include maintaining green cover, plantation drives, and wildlife conservation, with the Toopran facility earning the "Alliance for Water Stewardship Certification Gold Rating."

1. Protocols and Compliances Framework

ITC	• ITC's sustainability framework adheres to globally recognized standards and certifications, ensuring both credibility and transparency. • Its sustainability reports claim to comply with GRI Standards, TCFD recommendations, and ISAE 3000. ITC›s environmental management complies with ISO 14001 certification and active engagement in the Science Based Targets Network (SBTN). • ITC's climate action protocols focus on renewable energy deployment, energy reduction initiatives, and the development of LEED Platinum certified green buildings. • Water stewardship is another critical pillar, with several sites achieving AWS Platinum certifications. • ITC claims to commit to diversity and inclusion. Over the past three decades, ITC has positioned itself as an environmental champion. Its efforts have garnered the company substantial recognition. It is included in the 'A' League for CDP Water and maintains an 'A-' rating for CDP Climate over three consecutive years. Its performance has been validated by an 'AA' rating from MSCI-ESG. The company's strategic integration of sustainability across its operations and supply chains aim to set a benchmark in environmental, social, and governance (ESG) performance.
GPIL	• Reporting Framework: Sustainability & Integrated Report follows the International Integrated Reporting Framework (IIRC). Key ESG indicators and material topics are disclosed in accordance with the Global Reporting Initiative (GRI) standards and align with the United Nations Sustainable Development Goals. • ISO Certifications: GPIL holds ISO 27001 certification for information security. • Environmental Management Systems: GPIL's environmental management practices lack depth compared to peers like VST and ITC. Public disclosure is limited, suggesting a less transparent approach.
VST	• Reporting Alignment: VST aligns its reporting with GRI Standards, ensuring content is determined by principles like materiality, stakeholder engagement, and sustainability context. This ensures the report's quality through balance, clarity, accuracy, and reliability. • External Assurance: The ESG report undergoes external assurance by TUV SUD South Asia, verifying non-financial information against ISAE 3000 standards. • VST achieved AWS Gold certification for its Toopran unit, emphasizing responsible water management practices like rainwater harvesting and achieving Zero Liquid Discharge (ZLD).

Key Differences

- VST and ITC use different external assurance providers, which may affect the credibility of their reported data.
- VST focuses on water management and ZLD, while ITC has a more comprehensive AWS aligned with climate action plan.
- GPIL's governance approach is more focused on basic compliance with regulatory requirements, lacking proactive transparency and strategic risk management compared to peers.

Aspect	ITC Limited	GPIL	VST Industries Limited
Assurance Engagement	Independent verification by KPMG at ‹Reasonable Assurance› level of International Standard for Assurance Engagements (ISAE) 3000.	Seeks external assurance for its sustainability reports.	External assurance by TUV SUD South Asia using ISAE 3000.
Environmental Initiatives	Comprehensive climate action plan with renewable energy initiatives and water stewardship programs.	Implements sustainable operations with efficient resource management practices.	Focus on water management with AWS Gold certification; aims for ZLD.
Social Responsibility	Extensive community engagement programs focusing on health, education, and sustainable agriculture.	Active involvement in local community development initiatives.	Engages in community development through healthcare and education initiatives.

Table 1: *Comparison of Protocols and Compliance of the three leading cigarette manufacturing companies in India*

Environmental Impact claims

The three cigarette companies position themselves as being committed to advancing sustainable development (as an external mandate) and sustainability in business operations through energy, emissions, water, and waste management.

ITC, GPIL, and VST have distinct, evolving climate strategies. ITC's comprehensive plan aims for net zero and improved energy efficiency, targeting a 30% reduction in absolute emissions by 2030 relative to FY18-19 and engaging suppliers on emission reductions. GPIL applies energy-efficient practices and seeks a 30% reduction in GHG emissions per unit of production at cigarette and reconstituted tobacco plants. GPIL lacks specific renewable energy targets. VST has expanded onsite solar capacity to 25.6% of electricity consumption, reducing total energy use by 3%, while assessing Scope 3 emissions and collaborating with suppliers to mitigate climate risks.

ITC champions water stewardship through initiatives such as rainwater harvesting and efficient water use in agriculture. It targets a 40% reduction in absolute water consumption by 2030. GPIL has committed to responsible water management, aiming to reduce water consumption by 26% by 2030 relative to 2018-19. VST achieved AWS Gold certification for sustainable water management and reduced water consumption by 12.52% (compared to 2018-19). ITC pursues a zero waste-to-landfill goal by 2030, leveraging circular economy principles for plastic. GPIL employs biodegradable packaging (which is unvalidated) and collaborates with third parties for waste collection and disposal. VST emphasizes recycling and reuse, exceeding legal requirements, though specific waste reduction targets remain unspecified.

2. Intra comparison in the company

ITC

Energy analysis (2018-24)	• **Renewable energy:** Consumption increased from 2021 onwards, reflecting a commitment to renewable goals. Biomass remained steady from 2018-2023 but decreased in 2024, possibly due to shifts or structural changes. Wind peaked in 2020 and declined, reducing reliance by 2024. Solar energy use showed marginal increase, with a boost in 2022 and further growth in 2024.
Fossil Fuels	• **Solid (Coal):** Consumed steadily until 2023, then sharply declined in 2024 due to efforts to reduce fossil fuel dependency. • **Liquid (FO+HSD/?? And High Speed Diesel):** Gradually increased until 2021, then sharply declined, with liquid fuels phased out by 2024. • **Gaseous:** Consistently grew until 2022, then dipped in 2023, but increased substantially in 2024. • ITC has integrated emission control measures through energy efficiency improvements, renewable energy adoption, and green manufacturing practices. It explores Carbon Capture and Storage (CCS) in limited capacities while focusing on Carbon Offset through Voluntary Carbon Markets (VCM) by investing in reforestation, agroforestry, and regenerative agriculture initiatives to balance emissions.

Targets	• **2020:** ITC aimed to source 50% of its energy from renewables, achieved by 2022 and maintained. • **2030:** ITC set a goal for a 30% reduction in specific energy consumption by 2030, with 50% of total consumption from renewables. ITC made significant progress in reducing reliance on fossil fuels from 2018 to 2024. It increased renewable energy usage, especially solar, wind, and biomass, leading to a reduction in total energy consumption in 2024. This aligns with its sustainability goals, including eliminating fossil fuel dependence and achieving 50% renewable energy by 2030. The company however needs to present a full emission and offsets balance sheet in order to comply with GRI, SBTN, and TCFD Standards.
GHG Emissions Fluctuated	• Scope 1 emissions dropped in 2024 after a peak in 2023 due to enhanced emissions control. (As reasoned by ITC??) • Scope 2 emissions rose from 2022 to 2023 but fell in 2024. (Any reasoning here and below?) • Scope 3 emissions increased from 2021 to 2022 and then decreased.
Significant emissions included	• **Particulate Matter (PM):** Increased in 2023 compared to previous years but fell in 2024 due to improved pollution abatement technologies. • **Nitrogen Oxides (NOx):** Increased from 2021 to 2023 but improved marginally in 2024. • **Sulphur Dioxide (SO_2):** Peaked in 2023 but improved in 2024. Sequestration efforts increased from 2019 to 2022 but have decreased in 2023. ODS consumption rose until 2021 and then fell substantially, with 2024 being the lowest level. ITC has made significant progress in reducing overall GHG emissions, particularly in 2024, despite increases in certain emissions in the early 2020s due to effective emissions control measures. Sequestration efforts have declined but require attention. ODS consumption reduction aligns with environmental objectives.

Waste Management	• Total waste generation decreased from 2019 to 2021 but increased in 2022, with no change between 2022 and 2023. • Recycled waste decreased from 2019-2020 to 2020-2021, then increased before decreasing again in 2023. • Incineration and landfill waste saw a significant increase from 2019 to 2022, with slight improvement in 2023. Emission data from this has not been presented in 2024 report. • Onsite storage increased significantly in 2020 and 2021, then decreased substantially in 2022 but doubled in 2023. • Un-recycled waste doubled in 2020, decreased significantly in 2021 by 16.6% and from 2022 does not shown the data on un-recycled waste. • External waste used as raw material decreased from 2019-2020 to 2021- 2022, with a significant drop in 2022. Overall, on documents, ITC's waste recycling footprint has consistently exceeded 110%, demonstrating robust performance. Waste generation decreased from 2019 to 2021, aligning with targets, but increased in 2022 and stagnated in 2023. Regular monitoring of KPIs assesses progress. ITC aims for 100% recycling, achieving it in 2021 (711 tonnes generated, 709 tonnes recycled). However, slight decrease in recycling in 2023 necessitates intensified efforts. Waste recycling footprint remains robust, but onsite storage and unrecovered waste trends indicate areas for improvement.

GPIL

YEAR-WISE COMPARISON(2018-24)	• **Energy:** Total energy consumption and sources are detailed. The company exceeded its 17% renewable energy target in 2024. • **GHG Emissions:** Manufacturing operations saw a 30% reduction in emissions per unit by 2023. However, total emissions increased in 2024, potentially reversing the intended trend. • **Water Management:** Freshwater and recycled water usage increased, especially in 2024 by10 times. • **Waste Management:** Progress towards Zero Waste to Landfill is evident. • Landfilling decreased between 2023 and 2024 by 93% because not showing the exact amount of landfilling data, only construction landfilling data was shown due to increased recycling and reusing. Hazardous waste reduction and optimized recycling operations are key to achieving sustainability targets.
OVERALL REVIEW	The company exceeded its renewable energy target but faces a potential reversal in reducing GHG emissions. Progress toward Zero Waste to Landfill has been limited. Comprehensive data on enhanced recycling and reuse is unverified, and appears repetitive from previous report. This undermines the reliability of its claims.

VST LIMITED

Energy	• Energy consumption fluctuates from 2022 to 2024, with a decrease in 2023 by 4% and a significant increase in 2024 by 25%. • Direct energy consumption, has increased from 2022 to 2023 by 11% • Renewable energy usage, especially solar, increased significantly by three times from 2022 to 2024, reducing electricity consumption by 11%.
Targets	• 50% Renewable Energy in the Overall Energy Mix (subject to regulatory environment) by 2030. • 100% Electric Vehicle Fleet (owned and third-party passenger vehicles) by 2030.
Water Management	• Freshwater use decreased in 2023 due to better conservation methods and adoption of technology but increased in 2024 as the company shifted to groundwater extraction. It is not clear if the company has conducted groundwater assessments and downstream effects. State government and regulator reports are unavailable to see if these comply. Efficiency and offset of groundwater by rainwater harvesting has also not been assessed. • Municipal water usage increased in 2023 but phased out entirely in 2024. • Rainwater harvesting capacity remained at 1,37,606 cubic meters from 2022 to 2024. Although this has significantly reduced reliance on external water sources and contributes to water positivity, the overall question of groundwater extraction and recycled water reuse remains unanswered. • The company aims to achieve three times water positivity by 2030. In 2022-2024, the target was to exceed three times the water consumed in operations through rainwater harvesting. The company aims to harness rainwater (3X) the net water consumption. This will depend of monsoons. • In 2023, the company set a target to enhance soil organic matter by 20% through green manuring crops to improve water retention in agricultural practices by 2030. The company's offset of water and fertilizer has not be mentioned. • Overall, between 2022 and 2024, VST has demonstrated progress in water management by reducing freshwater usage, enhancing rainwater harvesting potential, and supporting sustainable agricultural practices.

Waste Management	• Total waste decreased by 9.12% in 2023 and 20.02% in 2024, with significant non-hazardous waste reductions through improved waste management and resource efficiency. • Hazardous waste decreased from 1.00 tonnes in 2023 to 0.50 tonnes in 2024. • Non-hazardous waste decreased from 40.45 tonnes in 2022 to 35.80 tonnes in 2023 and further to 203 MT in 2024. • Post-consumer plastic waste collection increased from 173.33 MT in 2022 to • 184.94 MT in 2023 and 203 MT in 2024. • By 2030, the company aims to ensure 100% of its packaging is reusable, recyclable, or biodegradable from the baseline 2019-2020. • Although the company claims that consistently seeks plastic neutrality through post- consumer plastic waste collection and processing under Extended Producer Responsibility (EPR), it is unclear how it does this. By collecting and processing an equivalent amount of plastic waste through EPR programs, it claims to offset its plastic packaging footprint. The data and data sources however have not been presented. The steady increase in post-consumer plastic waste collection reflects progress toward this target.

3. Environmental Impact claims

ITC LIMITED

Energy	ITC does not disclose the full, segment-wise energy and environmental impact of its portfolio. As a result, the assessment of its cigarette and tobacco business is masked by its other products. • **Renewable Energy Goal Achieved:** ITC achieved its 2030 goal of meeting 50% of its energy requirement from renewable sources. • **Renewable Energy Sources:** ITC uses renewable energy across 20 factories, 9 hotels, and 6 office buildings in 13 states. • **Energy Consumption Breakdown (2024):** 50% renewable energy and 50% non-renewable energy. • **Renewable Energy Sources:** Biomass, solar, and wind energy are used to replace fossil fuels. • **Renewable Energy Initiatives:** ITC has implemented solar projects, installed rooftop solar units, and invested in wind energy. • **Renewable Energy Target:** ITC aims to achieve 50% renewable energy consumption and 100% renewable grid electricity by 2030. • **Energy Consumption Reduction:** Achieved a 30% reduction in specific energy consumption compared to the FY2018-19 baseline. • **Renewable Energy Target:** Revised the target of achieving 50% renewable energy sources by 2020 to 2030 and achieved it in 2024. • **Sustainability Report Data:** Since 2017, ITC's sustainability reports no longer disloses specific data on the energy consumption of Leaf Tobacco and Cigarettes.

Emissions	• **Carbon Positive Status:** ITC has been carbon positive for 19 years. • **GHG Emission Reduction:** GHG emissions of select crops reduced by 13% to 66% through Climate Smart Agriculture practices. • **Emissions Breakdown:** Scope 1,2 emissions (10%) from fuel and electricity, Scope 3 emissions (55%) from agriculture, and Scope 3 emissions (20%) from logistics. • **Greening Logistics:** Optimizing distance to premises in upstream and distance to market in downstream. • **Scope 3 Emissions Reduction:** Addressing packaging, third-party manufacturing, and other emissions through sustainable practices. • **Value Chain Emission Management:** Implementing measures like VAM installation, HVAC automation, and energy-efficient equipment to reduce emissions. • **Transportation Optimization:** Optimizing routes, deploying higher capacity vehicles, and shifting to lower emission modes to reduce transportation-related GHG emissions. • **Carbon Sequestration:** Promoting sustainable forest management practices to secure pulpwood supply and sequester carbon. • **Fuel Emission Reduction:** Reducing diesel consumption in fields and wood consumption in curing barns for the tobacco value chain. • **Direct Seeded Rice (DSR):** Reduces crop duration, cost, and water consumption, thereby reducing GHG emissions. • **Crop Residue Management:** Addresses stubble burning and associated GHG emissions. • **Target for 2030:** Reduce specific GHG emissions by 50% compared to the 2018-19 baseline for the entire company.

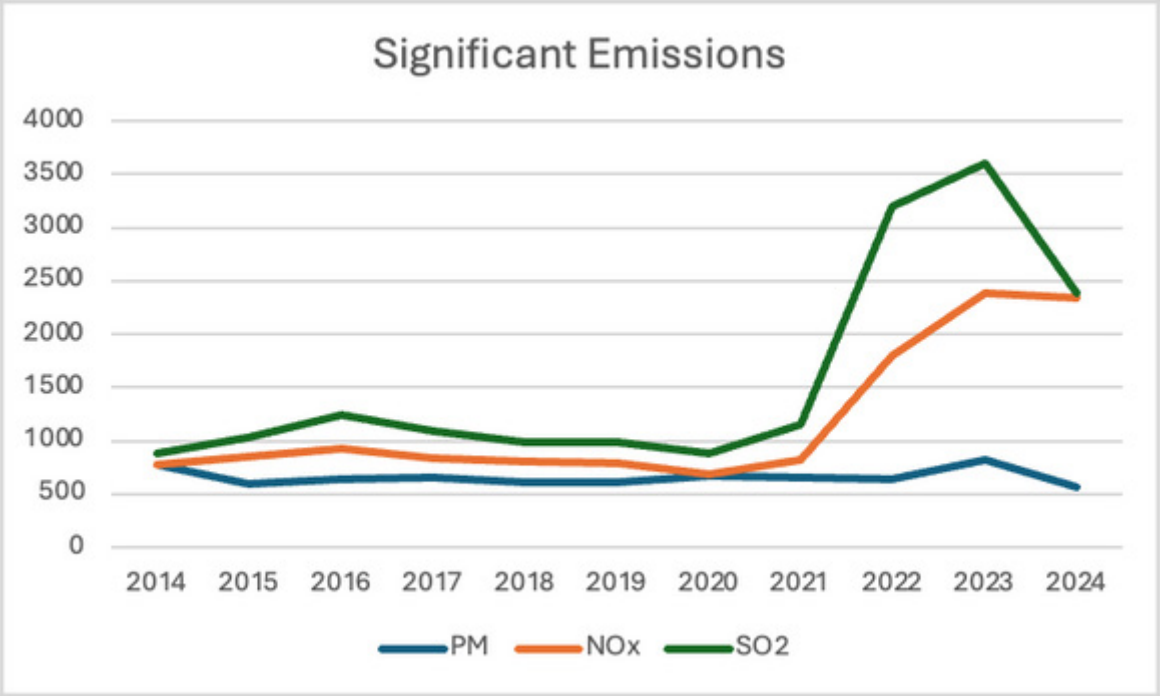

Figure no. 1: Managing Value Chain GHG Emissions

Water Management	• **Water Conservation Achievements:** ITC is water positive for 22 years, with AWS certification for factories in Bengaluru, Ranjangaon, and Saharanpur. • **Water Management Initiatives:** ITC has created over 55 million KL of potential water storage capacity and implemented Integrated Watershed Development Projects across 1.63 million acres. • **Future Targets:** ITC aims to create rainwater harvesting potential equivalent to over 5 times the net water consumption from operations by 2030. • **Water Usage Reduction:** ITC implemented various measures to reduce water usage, including HVAC optimization, treated water reuse, and rainwater harvesting. • **Water Sourcing:** 79% of ITC's water withdrawal in FY 2023-24 came from surface water and rainwater, with the remaining 21% from groundwater and third-party sources. • **Rainwater Harvesting:** ITC's total rainwater harvesting potential is over four times its net water consumption in FY 2023-24.

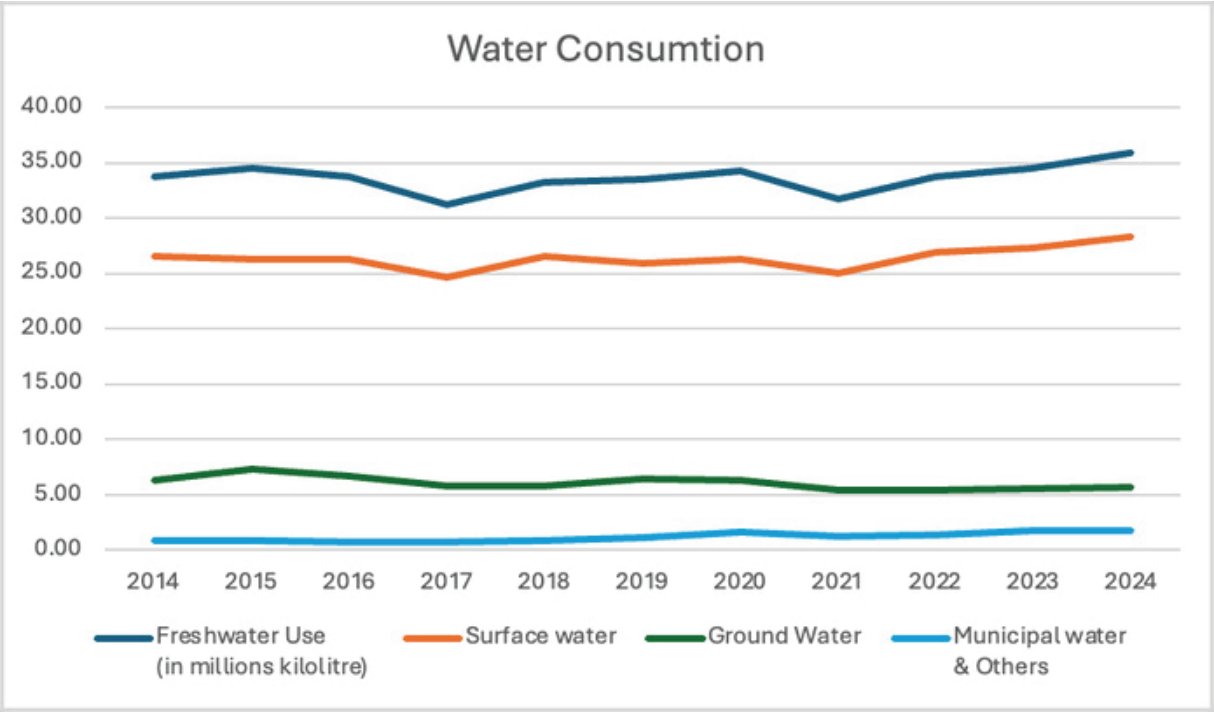

Figure no. 2: Water Consumption (2014-2024)

Waste Management	• **Domestic Waste Management Coverage:** ITC's program covers over 1 million households. • **Waste Reduction and Recycling:** ITC recycles or reuses over 99% of its solid waste, has been plastic neutral since FY 2021-22, and aims to phase out non-recyclable packaging • **Waste Management Initiatives:** ITC promotes resource efficiency, segregates waste at source, and implements initiatives like recycling paper fiber through its circular economy model, reusing post-consumer wastepaper to reduce deforestation and emissions from virgin pulp production and starch recovery from the potato chips effluent which is then sold as raw material for other industries. ITC does not publicly quantify the exact CO_2 savings from these initiatives. • **Waste Management Goals:** Aiming for 99% recycling rate across factories, increased wastepaper utilization, and 100% solid waste recycling in manufacturing units. • **Waste Management Initiatives:** Implementing waste management models under 'Well-Being Out of Waste' and Mission Sunehra Kal programs, focusing on partnering with local bodies, supporting waste workers, and finding suitable waste disposal solutions like Assessing the efficiency of segregation-at-source and evaluating composting, energy recovery, and circular economy models to ensure responsible waste disposal. • **Sustainability Targets:** Targeting 100% recyclable, reusable, or compostable packaging by 2028 and achieving plastic neutrality by managing waste exceeding

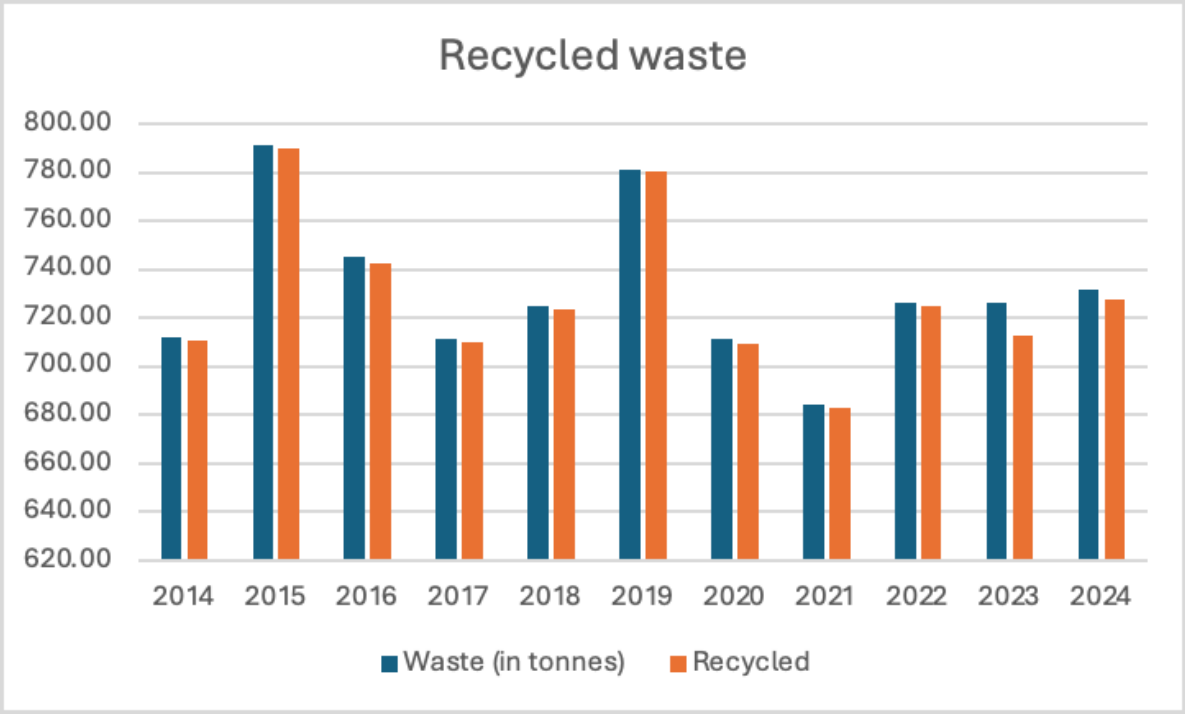

Figure no. 3: Recycled Waste (2014-2024)

GPIL

Energy	• **Renewable Energy Usage:** The company uses renewable energy to generate 17% of its total energy consumption and aims to increase renewable energy usage to 50% by 2030. • **Energy Efficiency Measures:** The company implements energy efficiency measures such as process improvements, investments in new technologies, and the use of energy-efficient equipment. • **Energy Intensity Reduction:** The company faces criticism for insufficient guidance and data on reducing energy intensity to achieve its objectives.

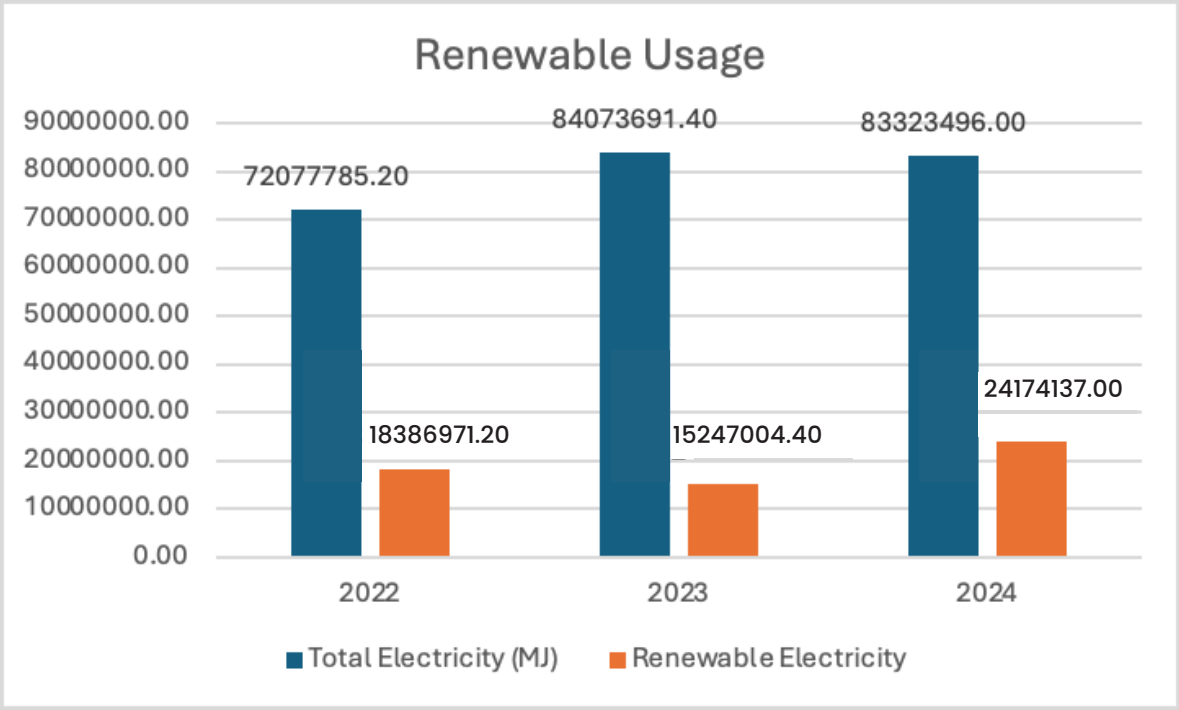

Figure no. 4: Renewable Usage

Emissions	• **Emissions Reduction Target:** 30% reduction in GHG emissions per unit of production in manufacturing operations by 2030. • **Carbon Neutrality Goal:** Become Carbon neutral by 2030 • **Reforestation Efforts:** Large-scale plantation drives in Andhra Pradesh to reduce emisions.

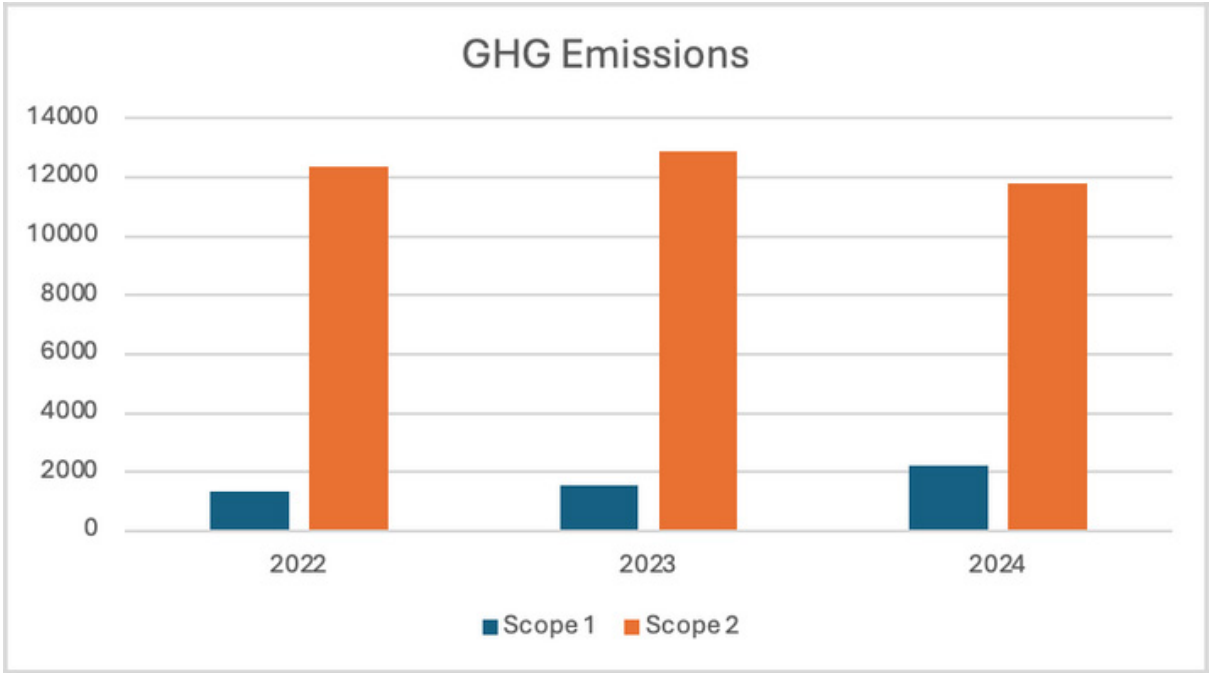

Figure no. 5: GHG Emissions

Water Management	• **Water Conservation Efforts:** Implemented rainwater harvesting, effluent treatment, and water shed initiatives. • **Water Consumption Reduction Target:** Aiming for a 5% reduction in water consumption per unit of cigarette production by 2030. • **Water Replenishment Goal:** Targeting to replenish 30% of water consumed by 2030.

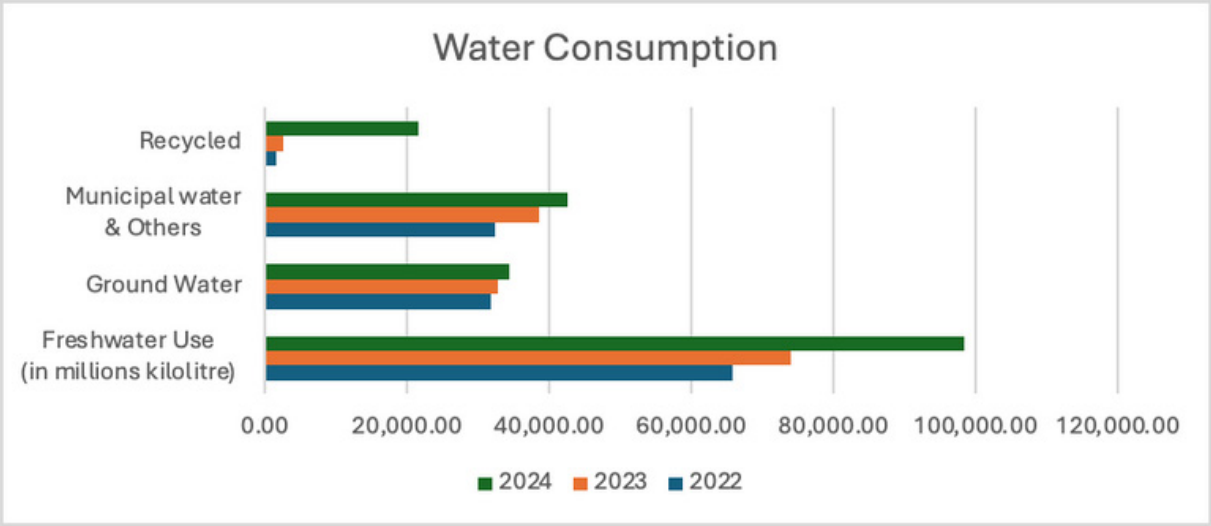

Figure no. 6: Water Consumptions

Waste Management	• **Waste Reduction Strategy:** Focuses on reducing waste generation, promoting reuse and recycling, and ensuring safe waste management. • **Waste Management Practices:** Implements waste segregation, utilizes authorized recyclers for construction and e-waste, and engages with external entities for recycling wastepaper and filters. • **Environmental Compliance:** Adheres to EPR norms, Plastic Waste Management Rules (2016), and regulations from the Central Pollution Control Board (CPCB).

Figure no. 7: Waste Management

VST LIMITED

Energy	• **Energy Consumption Trend:** The company has experienced a steady increase in energy consumption over the past three years. • **Renewable Energy Target:** Aiming for 50% renewable energy in the overall energy mix by 2030, subject to regulatory environment. • **Renewable Energy Initiatives:** Expanded renewable energy capacity with a 200 KW solar power plant, totaling 1.2 MW, and promoted eco- friendly practices through initiatives like sponsoring electric vehicles and installing solar panels in public institutions.

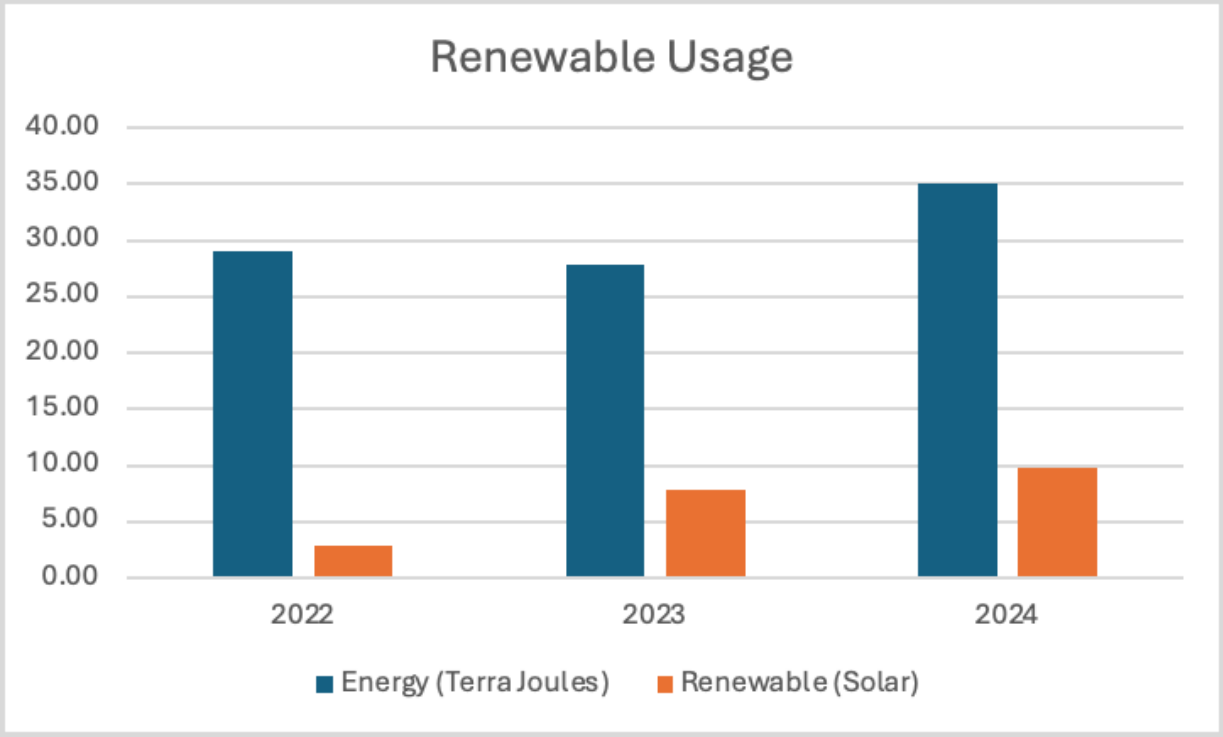

Figure no. 8: Renewable Usage

Emissions	• **Emissions Reduction Measures:** Implemented measures include monitoring stack emissions, using electric vehicles, and transitioning to cleaner fuels like PNG. • **Environmental Targets:** Aims for 100% electric fleet by 2030 and carbon neutrality for own operations by 2030. • **Sustainability Initiatives:** Promotes eco-friendly curing methods, discourages deforestation, and utilizes agricultural waste for curing.

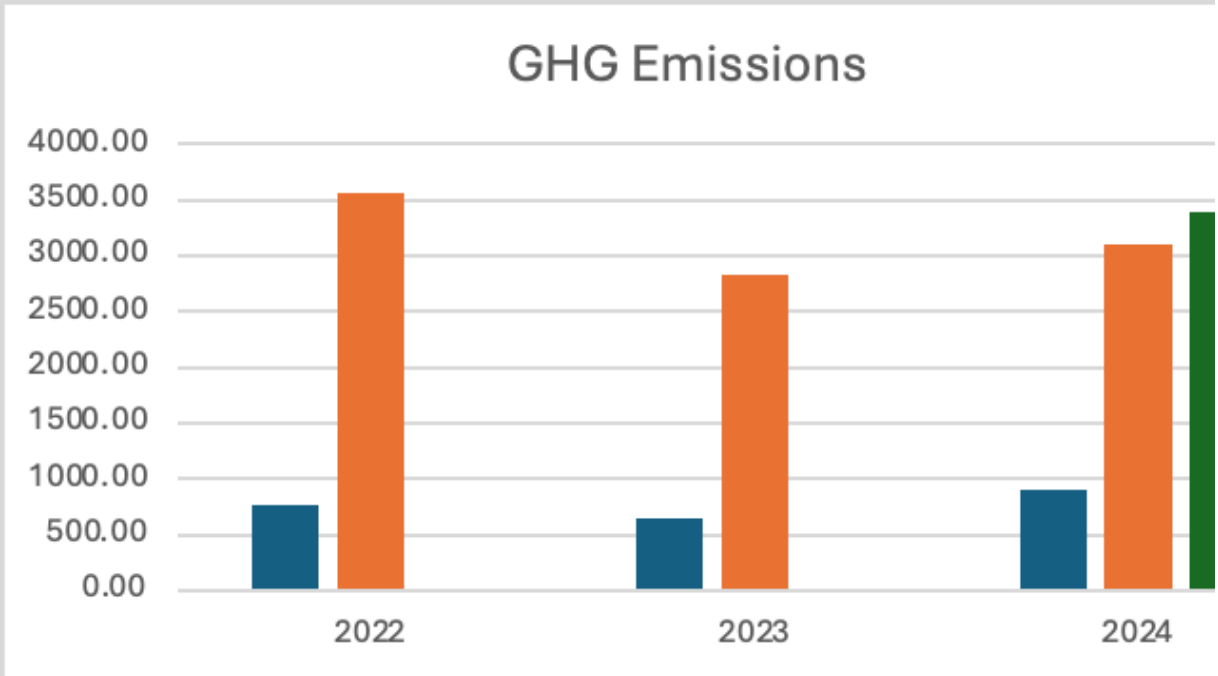

Figure no. 9: GHG Emissions

Water Management	• **Water Management Approach:** VST Industries Limited prioritizes water stewardship and operates as a zero liquid discharge facility. • **Water Conservation Efforts:** The company aims to harvest rainwater equivalent to over three times its net water consumption and has installed rainwater harvesting pits. • **Areas for Improvement:** The facility lacks an ETP/STP, has not improved its rainwater harvesting system, and relies on 100% groundwater for manufacturing.

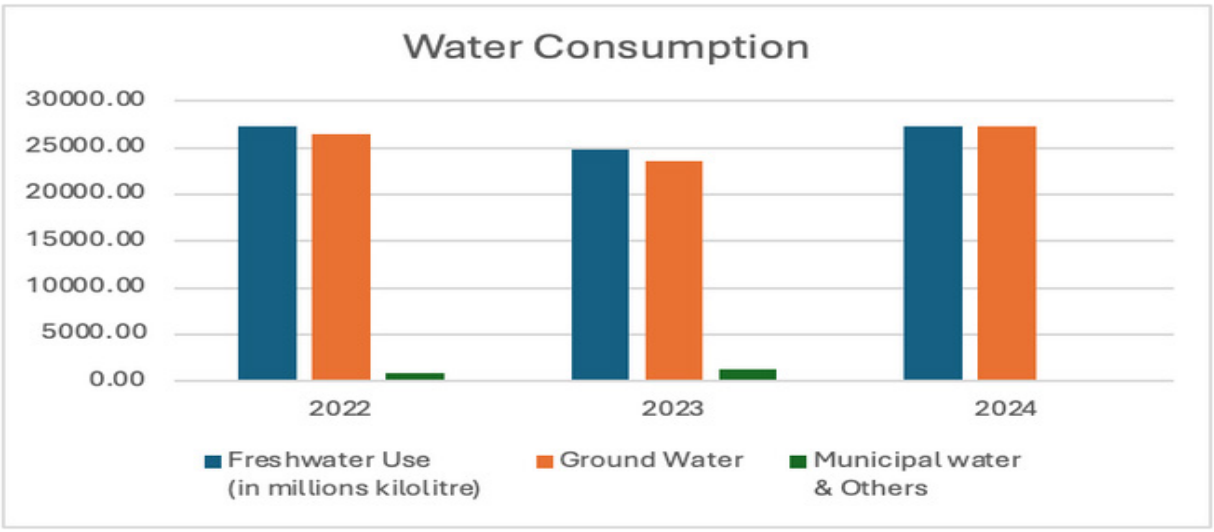

Figure no. 10: Water Consumptions

Waste Management	• **Waste Reduction:** The company has consistently reduced waste generated from its operations over the past three years. • **Sustainable Packaging Goal:** By 2030, the company aims to have 100% reusable, recyclable, or biodegradable packaging. • **Plastic Neutrality:** The company aims to offset all plastic packaging through post-consumer plastic waste collection and processing.

Figure no. 11: Waste Management

4. Benchmark for ITC, GPIL and VST

Factors	ITC Limited	GPI Limited	VST Limited
Energy	Achieved 50% energy from renewable sources; uses 45% biomass; lacks transparency on cigarette-specific energy consumption.	17% energy from renewable sources; focuses on solar and LED transitions; lacks detailed consumption breakdown.	Renewable energy integration with 1.2 MW solar; lacks a comprehensive energy intensity reduction strategy.
Emissions	Carbon positive for 19 years; promotes Climate Smart Agriculture; no concrete plans for NOx/SOx reduction.	Uses PNG for cigarette operations; biodiversity parks established; Scope 1 emissions rising.	Transitioned to PNG; uses electric vehicles for logistics; lacks robust GHG reduction plan.
Water Management	Water positive for 22 years; replaced ~61,000 KL freshwater with rainwater; AWS-certified factories.	Implements rainwater harvesting and watershed initiatives; lacks granular water usage data.	Achieved rainwater harvesting capacity of 3x net consumption; heavy reliance on groundwater persists.
Waste Management	99% waste recycled; plastic neutrality since FY22; no initiative for cigarette butt disposal.	Biodegradable packaging; EPR- compliant; no strategy for cigarette butt disposal.	Transitioned to 100% biodegradable packaging; lacks internal recycling; no plans for cigarette butt management.

Comparative Analysis of Strengths and Deficiencies

Strengths

ITC	• Renewable energy adoption has significantly surpassed expectations, with a 50% share claim achieved well ahead of the 2030 target. • The organization has consistently claimed to maintain water positivity and implemented extensive watershed development programmes. • Recycling rates have consistently exceeded 99%, and the company has claimed to achieve plastic neutrality in manufacturing. Yet there is no EPR programme for consumer waste (plastic, cellophane, butt, packaging).
GPIL	• Proactive adoption of PNG and solar energy initiatives. • Claim to Focus on biodiversity with large-scale plantations and watershed initiatives. Progress in biodegradable packaging to reduce environmental impact.
VST	• Claim to Consistent investment in solar power generation with a capacity of 1.2 MW. • Claim to Dedicate to the development and adoption of biodegradable packaging materials. • Commitment to achieving water neutrality through the implementation of rainwater harvesting systems.

Deficiencies

ITC	• Insufficient transparency regarding the energy and water consumption associated with cigarette manufacturing. • Absence of a comprehensive strategy to mitigate nitrogen oxide (NOx) and sulfur dioxide (SOx) emissions. • Neglect of initiatives aimed at collecting and disposing of cigarette butts.
GPIL	• The absence of comprehensive energy and water consumption data hinders the ability to effectively assess and mitigate emissions. • The lack of a specific plan for cigarette butt management poses a significant challenge to environmental sustainability.

VST	• Over-reliance on groundwater and lack of water recycling facilities. • Consistent increase in Scope 1 and 2 emissions. • Absence of internal recycling processes and cigarette butt management initiatives.

Strengths and Deficiencies of Cigarette Manufacturing Companies

Shared Strengths	• Commitment to adopt and integrate renewable energy sources. • Efforts to adopt biodegradable and recyclable packaging materials. • Focus on water stewardship through rainwater harvesting and upstream watershed initiatives.
Common Deficiencies	• Absence of commitment to EPR strategies for cigarette butt collection and disposal, a major environmental concern. • Limited transparency and reporting on energy, emissions, and waste specific to cigarette manufacturing. • Disclosure on hazardous waste management not made clearly. • Over-reliance on third-party agencies for waste recycling instead of building in-house capabilities. • Limited validation by regulators and independent agencies. • No clear policy on climate mitigation and carbon capture.

5. EPR Benchmarking of Indian Companies

Company	Key EPR Practices	Observation
ITC	Focused only on plastic waste management under EPR guidelines.	Narrow scope; lacks broader coverage for non-plastic waste (e.g., cigarette butts or general waste).
GPI	Fully complies with EPR rules and reclaims plastic waste through CPCB-authorized agencies. Uses biodegradable packaging.	Good compliance but does not address cigarette filter waste.
VST	Achieved plastic neutrality through collection and recycling under EPR.	Limited focus on plastic waste; lacks initiatives for broader waste streams like cellophane, foil and cigarette butts.

6. Benchmarking for Stakeholder Engagement Claims

Stakeholders	PMI	GPI	ITC	VST
Civil Society	- Partnering with civic organizations for sustainability. - Sharing data for academic analysis. - Promoting open dialogue through media. - Disclosing sustainability performance transparently.	- Strong focus on human rights policies. - Compliance with national laws. - Various policies to uphold human rights and a grievance redressal system.	- Deploying technologies to reduce environmental impact. - Providing community infrastructure and medical facilities. - Organizing health awareness camps.	- Annual general meetings and corporate disclosures.
Consumers	- Investing in R&D for smokefree products. - Transitioning to a consumer-centric model. - Enhancing product availability and affordability. - Eco-design principles in product development.	- Engaging customers through various channels (emails, townhalls). - Prioritizing customer satisfaction with diverse product offerings. - Ensuring high-quality products aligned with market demands.	- Adopting quality management standards (ISO 9001, Six Sigma). - Innovating through R&D. - Improving supply chain management via ITC.	- Focus on equal opportunity employment and inclusiveness training.
Employees	- Promoting living wages and flexible work options. - Supporting mental health initiatives. - Fostering an inclusive environment and lifelong learning opportunities.	- Engaging senior management for talent retention and morale boosting. - Addressing employee concerns through feedback mechanisms and HR systems.	- Addressing personal development through training and career growth opportunities. - Ensuring excellent workplace conditions and medical facilities for employees and families.	- Regular town hall meetings and health & safety committee meetings.

Stakeholders	PMI	GPI	ITC	VST
Finance Community	- Partnering with civic organizations for sustainability. - Sharing data for academic analysis. - Promoting open dialogue through media. - Disclosing sustainability performance transparently.	- Strong focus on human rights policies. - Compliance with national laws. - Various policies to uphold human rights and a grievance redressal system.	- Deploying technologies to reduce environmental impact. - Providing community infrastructure and medical facilities. - Organizing health awareness camps.	- Annual general meetings and corporate disclosures.
Public Health Community	- Developing less harmful alternatives to smoking. - Investing in smoke-free product innovation R&D. - Publishing scientific finding	- CSR programs supporting marginalized farmers through climate change awareness and education on sustainable agriculture practices.	- Creating sustainable livelihoods through skill development initiatives for women and marginalized groups.	- Training programs focused on community health initiatives.
Regulators	- Publishing scientific findings transparently. -Implementing youth access prevention safeguards. - Monitoring compliance with internal codes of conduct.	- Proactive participation in regulatory forums and monitoring relevant parameters for compliance.	- Engaging with government bodies to address regulatory frameworks effectively.	- Official notifications and press releases as needed for regulatory compliance updates.
Supply Chain & Partners	- Grounding supply chain strategy in Responsible Sourcing Principles. - Promoting fair working conditions throughout the supply chain. - Collaborating with suppliers on environmental challenges.	- Regular assessments of supplier sustainability practices to ensure high standards of quality. - Supporting small industries with buyback arrangements and sharing best practices for quality improvement.	- Enhancing supplier effectiveness through value engineering and capacity building initiatives.	- Vendor meetings to ensure alignment with best practices in supply chain management.

Table 4: Benchmarking for Stakeholders Claims

7. SBTi Benchmarking of Companies

Company	Key SBTi Practices	Observations
GPI	• 28% reduction in emissions (FY 2022-23) with a target of 30% by 2030 for manufacturing plants. • Several technology investments for energy-efficient equipment (e.g., chillers, AHUs).	• Focused efforts on energy efficiency and dual-fuel kits for emission reduction. • Relatively less focus on scope 3 and upstream/downstream emissions compared to PMI.
ITC	• Sectoral analysis using SBTN tools (e.g., ENCORE and Materiality Screening).	• Strong methodological approach but limited reporting on progress toward emission reductions or net-zero goals.
VST	• 100% carbon offset for scope 1+2 emissions by 2030. • Focus on scope 3 emissions in three categories: fuel/energy, downstream transportation, and business travel.	• Strong commitment to carbon neutrality but lacks detailed alignment with SBTi criteria for scope 3 emissions. • Needs more ambitious reduction targets and methodologies aligned with SBTi.

Table 7: SBTi Benchmarking of Companies

8. LCA (Life Cycle Assessment)

- **LCA Methodology:** The LCA process involves defining the scope, conducting inventory analysis, evaluating environmental impacts, and interpreting the results.
- **System Boundaries:** The study adopted a cradle-to-grave approach to define the system boundaries for each company.
- **Material Flow Analysis:** Material flow analysis was used to quantify resource flows and material inputs and outputs throughout the cigarette production and consumption process.

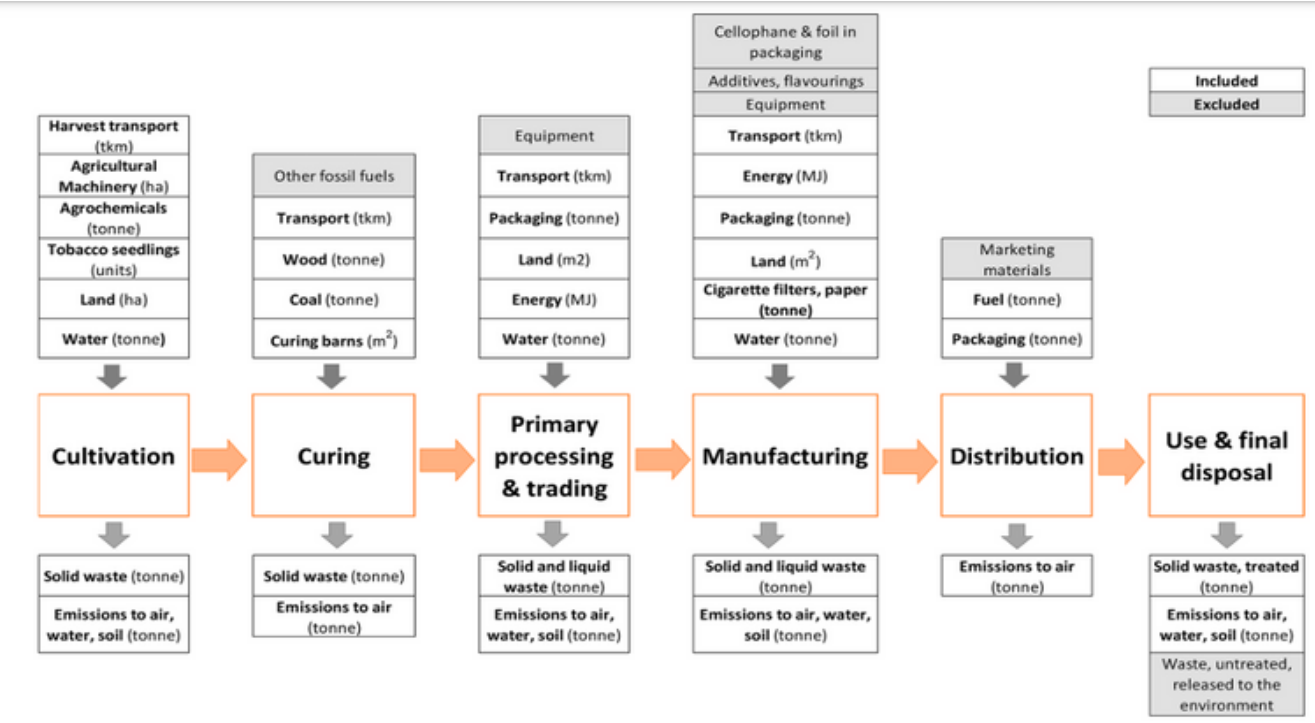

Figure no. 12: Conceptual framework and system boundaries of global cigarette production and consumption

METHODOLOGY

Data Collection:	• We collected the data for 6 years starting from 2018 to 2023 from their sustainability report for each of the companies • Interviewed sustainability expert for insight of environment impact related to cigarette manufacturing. • All the publicly available document from there website

Study features	Description
Processes included	Tobacco cultivation, curing, primary processing, cigarette manufacturing, distribution, use and disposal, plus transportation and waste management activities at every process stage
Functional unit	A tonne of produced and consumed tobacco, equivalent to 1 million cigarette stick
Scope	Cigarette production and consumption in one year by companies
Types of resource flows included in the analysis	Key direct and indirect inputs and outputs
Impact categories considered	Climate change, terrestrial acidification, freshwater eutrophication, marine eutrophication, human toxicity (excluding the health impacts of direct and second-hand smoking, as well as occupational exposure), terrestrial ecotoxicity, freshwater ecotoxicity, marine ecotoxicity, agricultural land occupation, urban land occupation, natural land transformation, water depletion, metal depletion, and fossil fuel depletion.

Results:

The LCA for the three cigarette producers (ITC, VST, GPIL) is analysed based on five years data (2018-19 to 2023-24). The data presentation, disclosure and metrics are deficients and there is insufficient data disclosure to undertake a complete LCA. The table below gives a comparative data gap for five years for ITC, VST, GPIL based on parameters mentioned in the figure above.

- **Tobacco cultivation considers 8 parameters** – Harvest transport, Agricultural Machinery, Agrochemicals, Tobacco seedlings, land, water, solid waste, emission to air, water, soil.
- **Tobacco Curing includes 7 parameters** – solid waste, curing barns, emission to air, coal, wood, transport, other fossil fuels.
- **Primary processing & trading includes 8 parameters** – equipment, transport, packaging, land, energy, water, solid and liquid waste, emission.
- **Manufacturing includes 11 parameters** – cellophane & foil in packaging, additives, equipment's, transport, energy, packaging, land, cigarette filters, papers, water, solid & liquid waste, emissions.
- **Distribution includes 4 parameters**- fuel, packaging, emission to air, marketing materials.
- **Use & Final Disposal includes 3 parameters**- Soil waste, treated, Emissions to air -water - soil, waste.

ITC

Parameters	2018	2019	2020	2021	2022	2023
Tobacco Cultivation (8)	0	0	2	1	1	2
Tobacco Curing (7)	2	1	0	0	0	0
Primary Processing & Trading (8)	1	0	0	0	0	0
Manufacturing (11)	1	1	0	0	0	1
Distribution (4)	0	0	0	0	0	0
Use & Final Disposal (3)	0	0	0	0	0	0

Table 7: Parameters of evaluating environment performance of cigarette product of ITC[1]

[1] https://archive.org/details/cigarette-companies_20250214

Comment on ITC's Sustainability Reporting Related to Cigarette Manufacturing

ITC's sustainability reporting on cigarette manufacturing exhibits a lack of clarity and specificity, hindering comprehensive evaluation. While the company reports on energy, water, and emissions, it aggregates data across all FMCG products, including cigarettes, often presenting percentages without specifying base years or providing exact figures. For instance, ITC mentions soil conservation methods, yet fails to offer concrete data on tobacco leaf farming. Similarly, claims of a 30% reduction in energy consumption during the curing process lack a defined timeframe and specific numerical context. In 2019, ITC reported a 25% energy reduction for FMCG products, including cigarettes, but did not delineate the extent attributable to cigarette manufacturing.

Waste reporting is similarly ambiguous, with 1,169 tonnes of recycled cigarette waste disclosed without a process-specific breakdown, limiting insights into resource usage and environmental impact. The absence of detailed data on materials used in cigarette production further impedes an accurate Life Cycle Assessment (LCA). Additionally, ITC's sustainability claims regarding tobacco leaf sourcing remain unverified due to insufficient data.

While ITC has made concerted efforts in sustainability reporting, the lack of unit-based, process-specific data—especially in cigarette manufacturing—reduces transparency and complicates the assessment of the true environmental impact of their operations.

GPIL

Parameters	2018	2019	2020	2021	2022	2023
Tobacco Cultivation (8)	0	0	0	0	0	0
Tobacco Curing (7)	0	0	0	0	0	0
Primary Processing & Trading (8)	0	0	0	0	2	2
Manufacturing (11)	0	0	0	0	1	1
Distribution (4)	0	0	0	0	0	0
Use & Final Disposal (3)	0	0	0	0	0	0

Table 8: Parameters of evaluating environment performance of cigarette product of GPIL[2]

[2] https://archive.org/details/cigarette-companies_20250214

Comment on GPIL's Sustainability Reporting Related to Cigarette Manufacturing

GPI's sustainability reports outline a series of initiatives aimed at reducing waste and enhancing environmental performance, yet they lack the detailed numerical data necessary for robust impact assessment. For instance, while GPI states it reuses rejected cigarettes, plastic bobbins, wooden pallets, and filter trays, the absence of specific waste reduction or resource savings figures impedes a comprehensive life cycle analysis. Furthermore, identical sustainability statements over consecutive years without additional data points make tracking progress challenging.

Since 2020, GPI has reported water conservation measures, including a daily reduction of 1.5 KL through treated water reuse and system improvements, and a 1% reduction in laminate usage. However, overall water or laminate consumption figures remain unreported. In 2021, GPI further reduced daily water consumption by 0.5 KL, yet overall water figures were not disclosed. In 2022, as GPI expanded into the food and beverage sector, the company began reporting numerical data on raw materials and manufacturing processes, though tobacco product data remains lacking.

Additionally, the reporting on energy consumption, land use, and water utilization in tobacco farming lacks clarity, despite acknowledgments of sustainable farming practices and labor law compliance. GPI does provide some waste data, such as 3,016 tonnes of non-hazardous waste during tobacco processing and filter disposal, and has recovered 100.7 metric tons of plastic waste under EPR regulations. Overall, while initiatives are detailed, the absence of specific, measurable data on cigarette manufacturing and its environmental impacts hinders thorough verification and evaluation, necessitating more granular reporting.

VST

Parameters	2018	2019	2020	2021	2022	2023
Tobacco Cultivation (8)	-	-	-	1	1	1
Tobacco Curing (7)	-	-	-	0	0	0
Primary Processing & Trading (8)	-	-	-	2	2	2
Manufacturing (11)	-	-	1	11	11	11
Distribution (4)	-	-	-	1	1	1
Use & Final Disposal (3)	-	-	-	2	2	2

Table 9: Parameters of evaluating environment performance of cigarette product of VST[3]

[3] https://archive.org/details/cigarette-companies_20250214

Comment on VST's Sustainability Reporting Related to Cigarette Manufacturing

VST's various report address a few essential LCA parameters but fall short on critical data related to tobacco cultivation, curing, manufacture and disposal. Specific details—such as the quantity of peat moss used, types of machinery and fuel, and baseline data for tobacco curing—are notably absent. While water consumption figures are provided, they are not disaggregated by process, and an annual increase in groundwater usage is observed. Information on sewage treatment plants (STPs) and effluent treatment plants (ETPs) is missing, further limiting insights. Energy consumption data covers manufacturing facilities and the corporate office but does not extend to the broader supply chain. Although Scope 1 and 2 GHG emissions are reported, process-specific emissions data is lacking. Additionally, while initiatives to reclaim packaging materials are mentioned, detailed data on waste disposal and associated emissions is insufficient. Despite progress, more granular and quantifiable data on tobacco cultivation, curing, process-specific water and energy use, and waste disposal is required for a comprehensive LCA.

Broad observations and conclusions

- The companies have made progress in adopting renewable energy sources, promoting water positivity, and implementing waste management practices. However, there is a notable gap in addressing the larger environmental impact of cigarette manufacturing, from farming, curing, manufacturing to post-consumer waste recovery. Also, companies need to present energy and material use based on each sector and segment instead of aggregating these metrics.
- Rising emissions and insufficient data transparency hinder effective evaluation and monitoring of sustainability goals.
- Critical areas that require attention include cigarette butt disposal, resource usage data, and Scope 3 emissions.
- The sector's growing reliance on groundwater and rainwater harvesting, and gaps in effluent treatment highlight water sustainability challenges.

Recommendations for improvement

Through a systematic review of publicly available data, this paper underscores the pressing need to address the environmental externalities of the tobacco industry and calls for more robust reporting frameworks and regulatory interventions to mitigate its pervasive impact. The following are the areas where improvement is needed in the cigarette manufacturing sector.

1: Transparency:

- Provide detailed and segment-specific reports on energy, emissions, resource consumption and their respective lifecycle, and waste-related concerns to cigarette manufacturing.
- Include clear KPIs and timelines for achieving overall sustainability goals.

2: Cross-Industry Collaboration:

- Work with industry peers to establish collective strategies for cigarette butt collection and disposal which complies with CPCB's directives
- Develop a shared framework for sustainable supply chains and logistics improvements.

3: Sustainable Reduction of Tobacco Farming:

- Promote regenerative agricultural practices to reduce soil degradation in tobacco-growing regions. Reduce water and chemical input intensity.
- Promote inter-cropping and reduce vulnerability of farmers to climate and

economic shocks. Intensive consumption of biomass (wood, wood pulp, cellulose etc..) must be mitigated.

4: Data disclosure and reporting:

- Publish standalone reports on the environmental footprint of tobacco operations, covering Scope 3 emissions, water usage, and waste management through multistakeholder, third-party assessors.
- Ensure third-party verification for enhanced credibility and stakeholder trust.

5: Stakeholder Engagement:

- Actively involve communities, regulators, and NGOs in co-developing sustainable initiatives.
- Establish regular dialogue with employees, suppliers, and consumers to align on shared sustainability goals.

6: Cigarette Waste Management:

- Initiate a pilot program for collecting and recycling cigarette wastes especially butts in collaboration with municipal authorities.
- Explore innovative technologies to repurpose collected cigarette packaging for recyling and butt for recovery and reuse.

7. Efficient Resource Use:

- Reduce reliance on groundwater by implementing efficient water recycling systems and rainwater harvesting.
- Upgrade energy systems with cost-effective solutions focussing on renewables and adopting energy conservation measures for the entire supply chain like LED lighting and optimized HVAC systems.
- Disclose strategies of energy use, especially for wood and biomass procured and used for curing tobacco in barns.

References

1. Lal, P. G., Wilson, N. C., & Gupta, P. C. (2012). Attributable deaths from smoking in the last 100 years in India. Current Science, 1085-1090.

2. Novotny, T. E., Bialous, S. A., Burt, L., Curtis, C., Costa, V. L. D., Iqtidar, S. U., ... & Tursan d›Espaignet, E. (2015). The environmental and health impacts of tobacco agriculture, cigarette manufacture and consumption. Bulletin of the World Health Organization, 93, 877-880.

3. Novotny, T. E., & Slaughter, E. (2014). Tobacco product waste: an environmental approach to reduce tobacco consumption. Current environmental health reports, 1, 208-216.

4. Singh, S., Tiwari, R. R., & Diwan, V. (2023). Should tobacco products' waste be considered as hazardous in India?. Environmental Quality Management, 32(4), 367-370.

5. ITC. (2024). Sustainability and integrated report 2024. Retrieved from https://archive.org/details/itc-sustainability-integrated-report-2024

6. Godfrey Phillips India. (2023–2024). Sustainability report 2023–2024. Retrieved from https://archive.org/details/gpi-sr-23-24/GPI%20SR%2023-24/page/n1/mode/2up

7. VST Industries. (2023–2024). ESG report 2023–2024. Retrieved from https://archive.org/details/annual_report_2024/VST%20esg_report_2023-24.pdf

8. Philip Morris International. (2023). Integrated report 2023. Retrieved from https://archive.org/details/pmi-integrated- report-2023_202501

9. Philip Morris International. (n.d.). Environmental commitment. Retrieved from https://archive.org/details/pmis-environmental-commitment

10. ITC. (2025). About ITC. Retrieved from https://web.archive.org/web/20250106111317/https%3A%2F%2Fwww.itcportal.com%2Fabout-itc%2Findex.aspx

11. ITC. (2025). History and evolution. Retrieved from https://web.archive.org/web/20250106112339/https://www.itcportal.com/about-itc/profile/historyand-evolution.aspx

12. ITC. (2025). Sustainability. Retrieved from https://web.archive.org/web/20250106114846/https://www.itcportal.com/sustainability/default.aspx

13. ITC. (2024). Cigarettes business. Retrieved from https://web.archive.org/web/20241113010042/https://www.itcportal.com/businesses/fmcg/cigarettes.aspx

14. ITC. (2025). Cigars business. Retrieved from https://web.archive.org/web/20250106115421/https://www.itcportal.com/businesses/fmcg/cigars.aspx

15. ITC. (2025). Packaging business. Retrieved from https://web.archive.org/web/20250106111621/https://www.itcportal.com/businesses/packaging.aspx

16. ITC. (2025). Paperboards and specialty papers business. Retrieved from https://web.archive.org/web/20250106111501/https://www.itcportal.com/businesses/paperboards-and-specialty- papers.aspx

17. ITC. (2025). Renewable energy initiatives. Retrieved from https://web.archive.org/web/20250106111402/https://www.itcportal.com/sustainability/renewableenergy.aspx

18. ITC. (2025). Climate smart agriculture initiatives. Retrieved from https://web.archive.org/web/20250106114936/https://www.itcportal.com/sustainability/climatesmartagriculture.aspx

19. ITC. (2025). Water stewardship initiatives. Retrieved from https://web.archive.org/web/20250106112440/https://www.itcportal.com/sustainability/water-stewardship.aspx

20. ITC. (2025). ESG factbook. Retrieved from https://web.archive.org/web/20250106114921/https://www.itcportal.com/itc-esg-factbook.pdf

21. ITC. (2025). Circularity initiatives. Retrieved from https://web.archive.org/web/20250106112410/https://www.itcportal.com/sustainability/circularity.aspx

22. Godfrey Phillips India. (n.d.). International business. Retrieved from https://web.archive.org/web/20250106120916/https://www.godfreyphillips.co.in/company/international-business

23. Godfrey Phillips India. (2023–2024). BRSR 2023–2024. Retrieved from https://archive.org/details/gpi-sr-23- 24/GPI%20BRSR_2023_24/

24. Godfrey Phillips India. (n.d.). Know us better. Retrieved from https://web.archive.org/web/20250106120955/https://www.godfreyphillips.co.in/company/know-us-better

25. Godfrey Phillips India. (n.d.). Leaf and cut rag. Retrieved from https://web.archive.org/web/20250106120959/https://www.godfreyphillips.co.in/company/leaf-and-cut-rag

26. Godfrey Phillips India. (n.d.). Seed to smoke. Retrieved from https://web.archive.org/web/20240802235434/https://www.godfreyphillips.co.in/company/seed-to-smoke

27. VST Industries. (n.d.). About us. Retrieved from https://web.archive.org/web/20231202122740/https://www.vsthyd.com/mainsite/about-us.html

28. JTI. (2023). Integrated report 2023 (English). Retrieved from https://archive.org/details/jti-integrated-report-2023-eng/JTI%20Integrated%20Report2023_ENG.pdf

29. BAT. (2023). Annual report form 20-F 2023. Retrieved from https://archive.org/details/jti-integrated-report-2023-eng/BAT_Annual_Report_Form_20-F_2023.pdf

30. Philip Morris International. (n.d.). Sustainability stakeholder engagement. Retrieved from https://www.pmi.com/sustainability/stakeholder-engagement

Disclaimer:

This report has been produced with the help of a grant from Vital Strategies on behalf of Bloomberg Philanthropies. The contents of this report are the sole responsibility of the authors and can under no circumstances be regarded as reflecting the positions of the donors.