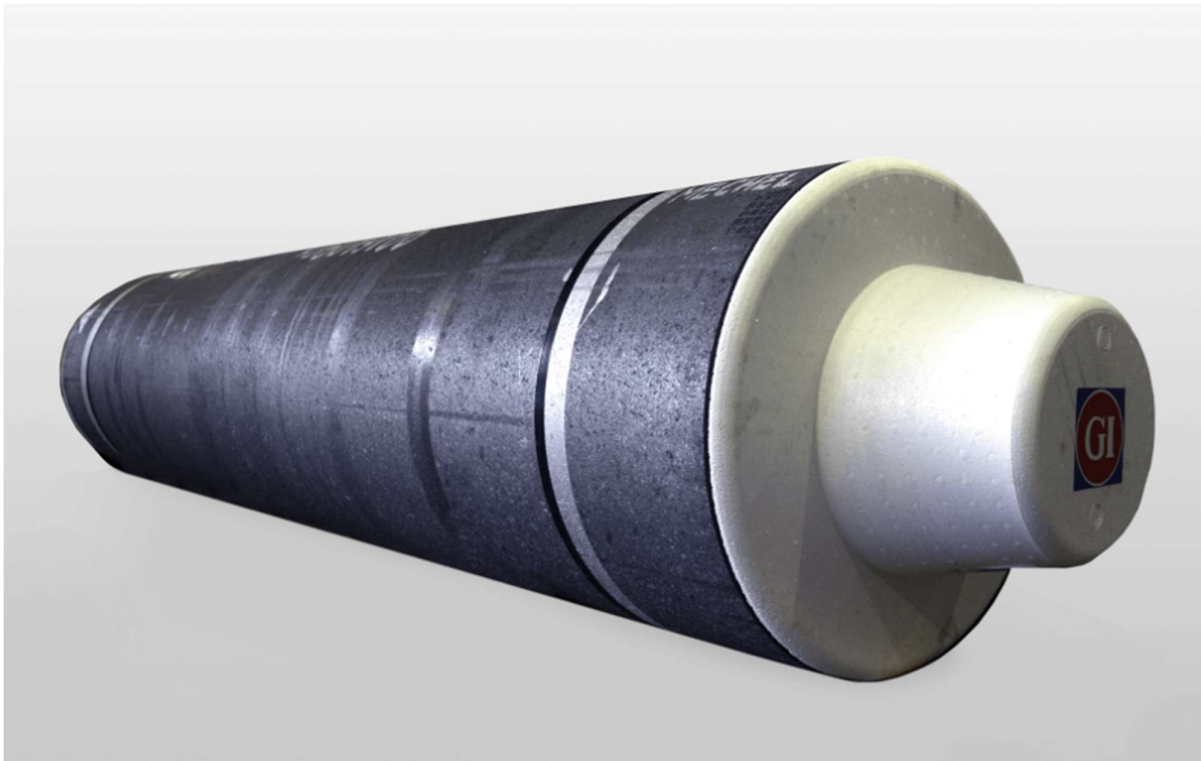




Graphite India Limited

CLIMATE RISK & OPPORTUNITY REPORT

August 2025



About the Report

Reporting Period and Standard

This report represents a complete set of sustainability-related financial disclosures for Graphite India Limited (GIL) for reporting period 1st April 2024 to 31st March 2025, aligned with the financial reporting period.

GIL has been reporting on the climate-related risks and opportunities since FY22-23 in accordance with the Taskforce on Climate-related Financial Disclosures (TCFD) framework. This year, the sustainability-related disclosures have been prepared in accordance with IFRS Sustainability Disclosure Standards as issued by the International Sustainability Standards Board (ISSB).

As this is the first year in which the GIL has applied IFRS Sustainability Disclosure Standards, the GIL has elected:

- To apply transitional ‘climate-first’ relief that permits GIL to disclose in this first-year information on only climate-related risks and opportunities
- Not to disclose comparative information in this report

Reporting Boundary

This report has been prepared for the same standalone reporting entity and reporting period as GIL’s Standalone Financial Statements (please refer Annual Report FY24-25) and has incorporated climate-related information of the company and all of its operation in India on which the company has operational control.

In addition to the reporting entity, two ports have been considered in the value chain. These ports are used for import and export of the raw materials and products respectively and have material significance on GIL’s business. Hence their physical risk impacts have been considered in the financial planning.

Entity Type	Country of Operation	Operating State	Location
Direct Operation			
Plant	India	West Bengal	Durgapur
Plant	India	Bihar	Coke Division, Barauni
Plant	India	Karnataka	Chunchanakatte Hydel Power Plant, Mysore
Plant	India	Maharashtra	GE Division, Satpur, Nasik
Plant	India	Maharashtra	IGE Division, Ambad, Nasik
Plant	India	Odisha	Powmex Steel Division, Titilagarh
Plant	India	Maharashtra	GRP Division, Nasik
Value Chain			
Port	India	Maharashtra	Port of Mumbai (Nhava Sheva)
Port	India	West Bengal	Port of Kolkata

Reporting Principles

GIL has prepared this sustainability-related financial disclosure report in alignment with the principles set out in IFRS Sustainability Disclosure Standards (IFRS S1 and S2). In doing so, we have adhered to the following core principles to ensure the accuracy, relevance, and usefulness of our disclosures for primary users of our general-purpose financial reports:



Materiality

The disclosures in this report are based on the concept of materiality as defined in IFRS S1, focusing on sustainability-related risks and opportunities that could reasonably be expected to influence users' decisions. We have applied entity-specific materiality assessments to identify information most relevant to GIL's prospects, strategy, and performance, without applying predetermined thresholds.

Judgements, Uncertainties, and Errors

GIL has disclosed key judgements and assumptions made in preparing these sustainability-related financial disclosures, particularly where measurement uncertainty is significant. We have also identified the sources of estimation uncertainty and outlined the methodologies and assumptions used. No prior-period errors requiring correction have been identified in this reporting cycle.

Proportionality

In line with IFRS S1 proportionality mechanisms, we have utilised all reasonable and supportable information available at the reporting date, without incurring undue cost or effort. Disclosures have been prepared with consideration of GIL's existing skills, capabilities, and resources.

Comparative Information

Where applicable, GIL has provided comparative information to allow for performance analysis over time. As permitted under IFRS S2 transition provisions, certain comparative disclosures are not presented for the first year of reporting but will be included in subsequent cycles.

Connected Information

This report has been structured to highlight connections between governance, strategy, risk management, and metrics & targets, and to ensure alignment between sustainability-related disclosures and GIL's financial statements. Consistency in data, assumptions, and methodologies has been maintained across all disclosures.

Structure and Presentation

In accordance with IFRS S1 flexibility, GIL has presented disclosures in an order that enhances clarity and understandability for our stakeholders, while ensuring that all required content is addressed. Where necessary, disclosure requirements have been met through integrated content across multiple sections of this report.

By applying these principles, GIL reaffirms its commitment to transparent, reliable, and decision-useful climate-related and sustainability reporting, ensuring alignment with global best practices.

About Graphite India Ltd

Business overview

GIL is the pioneer in Carbon and Graphite products in India. It came into existence way back in 1960s. Starting with Graphite Electrodes, the core product of the company, it has entered into the coveted field of Speciality application of carbon and graphite. By further leveraging our core competence and economies of scale we intend to advance our production capacity cost efficiently.

The corporate philosophy of the company lays emphasis on consistent quality of products and services across all its divisions which have culminated to an enviable track record in the industry arena. Today, GIL has a strong international presence and is among the top few electrode manufacturing companies with respect to capacity, customer bondage and an impeccable quality & service. The company is ISO 9001 accredited and adopts eco-friendly processes.

Our Vision

To be a preferred supplier, delivering customized graphite products for application in ferrous, non-ferrous and process industries, forging partnerships, researching customer needs and concerns, thereby generating enhanced shareholder value.

Products

GIL operates through three segments: Graphite and Carbon, Steel and Others. Its products include graphite electrodes, impervious graphite equipment, specialty products, carbon products, glass reinforced plastic pipes and high speed and alloy tool steel. Today, GIL has a manufacturing capacity of over 120,000 tonnes of various products per annum from the India operations. It also continues to benefit from economies of scale and its competitive cost structure on a global scale. Particularly its Durgapur facility, are among the low-cost graphite electrode manufacturing lines, globally.

Value Chain

The company's value chain encompasses a wide range of activities: it sources raw materials from a global network of 38 suppliers across 11 countries, including significant procurement from the United Kingdom and Japan, ensuring a resilient and diversified supply chain. Its core manufacturing activities are conducted across seven plants in India and a wholly owned subsidiary in Germany, producing products that serve key markets such as steel manufacturing, cutting tools, chemicals, fertilizers, polymers, pharmaceuticals, metal pressing, effluent treatment, and irrigation. Downstream, Graphite India delivers its products to over 50 countries, with customers in industries including automotive, aerospace, chemical, pharmaceutical, metallurgical, and machine tools, as well as emerging sectors like battery chemicals and energy storage systems.

Other relevant business relationships include strategic investments, such as a 31% stake in GODI India, a company focused on advanced battery and supercapacitor technologies, and a majority stake in General Graphene Corporation (USA), which is pioneering large-scale graphene sheet production. These partnerships and investments reinforce Graphite India's commitment to technological innovation, sustainability, and diversification across its global value chain.

Governance

The Board of Directors has ultimate responsibility for setting and overseeing the GIL's strategy, business plans and annual budgets, and the risk management approach. Climate-related risks and opportunities are considered by the Board in relation to performing each of these responsibilities.

The Board's oversight of climate-related risks and opportunities will be supported by several established functions throughout the organisation. The committees prepare a report for the Board each quarter on the key issues discussed, including specifics on climate-related risks and opportunities. The Board discusses the report as a recurring Board meeting agenda item each quarter. Each committee has its own terms of reference which describe the scope of decision-making related to the matter.

Board Oversight

GIL operates under a robust governance framework led by its Board of Directors and supported by various specialized committees. The Board comprises executive and non-executive members who bring independent oversight and strategic direction to the organization. Our current (as of June 2025) Board of Directors consists of nine Directors – including six independent Directors. The Independent directors are initially appointed for a five-year term by the Board of Directors. Thereafter, if performance of the said directors is good, then the said directors are appointed for a second consecutive term of 5 years. Details about the Board composition and member biographies is available in Annexure A.

The Board receives quarterly updates through comprehensive business and operational risk reporting on all climate-related issues, including areas of progress, emerging trends, and updates on climate-related risks and opportunities that could reasonably be expected to affect GIL's prospects in terms of its impact on cash flows, access to finance or cost of capital over the short, medium or long term. This structured information flow arranges that the Board is well-informed about climate-related risks and opportunities to monitor and assess implications for the Company's strategy and business model and to re-consider its climate-related targets. Climate is a recurring agenda item discussed at each Board meeting. During FY24-25, the Board met on a quarterly basis to discuss climate-related issues on the agenda, including progress towards the GIL's targets, the incorporation of climate-related risks and opportunities into the strategy, and approving investment requests as they pertain to infrastructure developments for the mitigation of climate-related physical risks.

Board Committees

We have seven Board Committees – to assist the Board in discharging its duties. These include:

1) Audit Committee - The Audit Committee plays a critical role in ensuring the integrity of financial reporting, compliance with legal and regulatory requirements, and the effectiveness of internal controls and risk management systems. It reviews quarterly and annual financial statements, oversees the work of internal and statutory auditors, and monitors whistleblower complaints.

2) Nomination and Remuneration Committee - This committee is responsible for establishing a framework for the nomination, evaluation, and remuneration of Directors and Key Managerial

Personnel. It ensures that the company attracts and retains the right talent while aligning remuneration with performance, long-term shareholder value, and compliance with statutory requirements. The terms of reference include matters included in Section 178 (2) to (4) of Companies Act, 2013. The duties of the committee is to ensure integrity of financial statements and internal control, ensuring risk management that comprises ESG-risks.

3) Stakeholders Relationship Committee - Stakeholders Relationship Committee is in place to look after the shareholders relations & interests. The main purpose of this committee is to oversee the redressal of investors' complaints, including:

- Transfers/ transmission of shares
- Issue of duplicate share certificates
- Non-receipt of dividend / interest, dematerialization (Demat) of shares and
- All other related matters concerning investors

To support the “Green Initiative” undertaken by the Ministry of Corporate Affairs (MCA), to contribute towards a greener environment, we ensure delivery of notices, documents, annual reports etc. to the shareholders via electronic mode (to those Members whose email addresses are registered with the Company/ Registrars /Depositories).

4) Corporate Social Responsibility (CSR) Committee - The Board appointed the CSR Committee for overseeing the execution of the company's CSR policy. The Chairperson along with other board members oversees the execution of the CSR policy including climate action-related projects. The Committee meets periodically to track progress of our CSR activities and budget allocations.

5) Risk Management Committee - The committee is responsible for identifying major business risks and monitor and review the risk management plan including policies and process. The climate-related risks and opportunities and their transmission into the financial system is overseen by the committee. They are responsible for meeting periodically and assessing the adequacy of risk management systems in place. The Board is informed periodically about the nature of risks, the content of discussion at meetings, recommendations and actions taken.

6) Committee for Borrowings - The Committee for Borrowings oversees critical financial decisions including borrowings, investments, capital expenditure, and treasury operations. It provides timely strategic inputs on financial planning and ensures the availability and efficient use of financial resources.

7) Investment Committee - The Investment Committee is responsible for evaluating and overseeing the company's major capital allocation decisions, including strategic investments, acquisitions, joint ventures, and divestitures. Its primary function is to ensure that investment proposals align with GIL's long-term business strategy, risk appetite, and value creation goals.

Management Responsibilities

The Board delegates day-to-day responsibility of executing strategy, including climate-related matters, to the appointed management roles through role descriptions specifying mandates. The Board has oversight over the relevant roles through the above-mentioned board committees. The Executive Director (ED), Mr. A. Dixit, is supported by a team of management executives, which is listed below in the key roles in executive management of climate-related matters that are delegated to support Board oversight.

Key management roles and responsibilities

Executive Director: responsible for climate-related matters at the highest level and is responsible for ensuring that climate-related matters are embedded into the GIL's core values and long-term strategy.

Sr. Vice President - Finance: responsible for incorporating climate-related matters into financial practices, financial reporting (including climate-related financial disclosures) and disclosure activities for alignment to financial reporting.

Executive Vice President – Operations & Works: responsible for identifying, assessing and managing risk across the GIL, including those related to climate, and for integration of climate risk into overall risk management framework to reduce the potential magnitude and consequence.

Vice President - Operations & Works: responsible for developing and implementing the GIL's climate-related strategy including development of policies and frameworks, overseeing ESG reporting and disclosures, and coordinating stakeholders. Prepares a Climate Progress Report to be tabled to the Risk Committee quarterly. The Report details progress against the emissions reduction targets, detail on the strategy and an overview of the specific climate-related risks and opportunities in the period, including any relevant metrics and its progress.

Training for executive management and staff

All executive management including the Executive Director have received formal climate training, including on topics related to Environmental, Social, Governance (ESG) such as Greenhouse Gas Emissions, Waste, Water, Human Rights, Human Capital Management, Health & Safety, Discrimination, amongst others. Climate training is mandatory for all executive management, with specific training required for certain roles and teams, such as the Environmental Management team which is required to attend an annual workshop on GHG emissions reporting. This team is in charge of overseeing all aspects related to environmental sustainability across our business, including performance measurement and monitoring, target achievement, and ESG score improvements.

Controls and procedures used by management to support oversight of climate matters

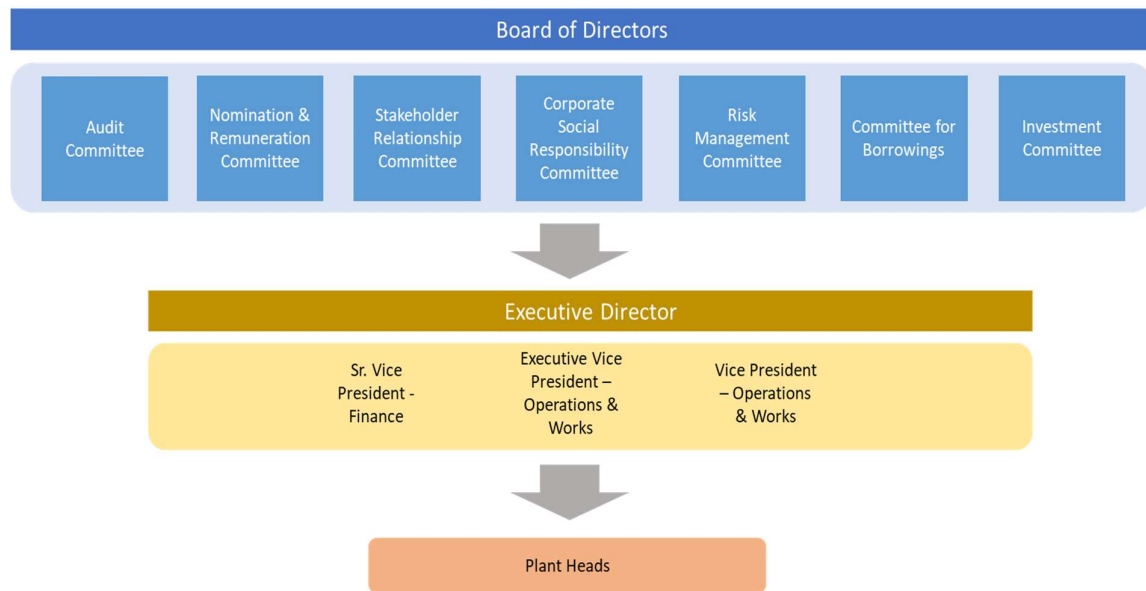
Management's oversight of the GIL's climate-related risks and opportunities is supported by the use of controls and procedures relating to the identification and assessment of climate-related risks and opportunities and the monitoring of performance in managing those risks, including controls and procedures for the measurement of GHG emissions and for monitoring progress towards achieving the short- and long-term targets. These controls form part of GIL's risk management processes and are integrated throughout business functions.

Executive management plays a key role in implementing and monitoring the effectiveness of governance processes, controls and procedures including oversight of all key activities conducted in the business including setting climate-related targets and strategies, short-term target aligned operations, financing, and tracking progress against set strategies. Management is responsible for daily implementation of governance frameworks and controls to support compliance and stakeholder communications.

GIL's Climate Governance Structure

The diagram below presents GIL's climate-related governance framework, showing the linkages

between its Board, executive committees, and supporting governance bodies. This diagram is specific to climate-related governance and does not represent the Company’s full corporate governance structure.



Governance of Climate Strategy and Targets

The Board is responsible for overall climate-related leadership including setting and overseeing strategies designed to respond to climate-related risks and opportunities, approving targets and ongoing risk management. Targets set by the Company are monitored by the Board in quarterly meetings to track progress. Updates to targets are made at least annually with the Board being the ultimate approver.

The Board has mandated climate risk and opportunity assessment to be performed and documented before an investment. The climate risk and opportunity assessment is required to identify and consider the implication of any trade-offs between climate-related risks and opportunities and future financial performance. At the end of each year, the Risk Management Committee review all of the climate risk assessments to assess the effectiveness of the mandate and suggest improvements, if necessary.

Climate-related skills and experience

Frequent and deliberate consideration is given to experience, qualifications, background and skills. Each year, Directors on the Board assess their individual skills and experience through as interactive quiz, circulated internally by the Information Technology (IT) team. The self-assessment ratings inform the Board’s Skills and Experience matrix, which might soon be considered as one of the parameters of Board’s effectiveness. The Skills and Experience matrix identifies the skills and experience that Board either has or aims to acquire from new appointments or to develop through continued education and training.

The Board has significant experience in oversight of strategy in response to risks and opportunities and more recent experience in understanding climate-related risks and opportunities. The Board combines stakeholders from varied industry and functional expertise to form diverse and forward-looking decision making. Many of the skills outlined in the matrix are critical for the oversight of strategies to respond to climate-related risks and opportunities. In FY24-25, the Board concluded that further skills were required to better understand the underlying factors for climate-related risks and opportunities and the effect they may have on GIL and its value chain, which resulted in further training and development activities being undertaken during the reporting period.

Strategy

Graphite India Limited's (GIL) business strategy focuses on sustainably managing a diversified and resilient portfolio of graphite electrode and related carbon-based product manufacturing assets, while exploring strategic investments in advanced materials such as graphene and renewable energy solutions. The Company aims to enhance operational efficiency, support the decarbonization of steelmaking (primarily via Electric Arc Furnaces), and build capabilities aligned with global net-zero transitions. These investments are capital-intensive and characterized by long asset life cycles, typically spanning 10 to 50 years, enabling the Company to secure long-term commercial returns and industrial relevance.

Timeframe

GIL evaluates the potential impacts of climate change across three time horizons: short-term, medium-term, and long-term. These timeframes are aligned with its strategic planning cycles, evolving regulatory and customer expectations, and the typical operational lifespan of its manufacturing assets and innovation programs.

Timeframe	Risk Type	Span	Base Year	Target Year
Short term	Physical & Transition Risks	0-5 years	2025	2030
Medium term		6-15 years	2031	2040
Long term		15-45 years	2041	2070

Our forward-looking view of the World

There is a high degree of uncertainty in the level of action and time horizons for such action the world will take to reduce GHG emissions. This affects predictions of warming levels, timing, and climate events. There is also an almost infinite number of pathways for reducing GHG emissions as geographies around the world are unlikely to act to the same extent and in similar timeframes whilst industry sectors will also take different trajectories to net zero.

To manage these compounding complexities, GIL's strategy and business planning has been undertaken based on a particular expectation for a global GHG emissions pathway. This forecast pathway has been used for the purposes of assessing the climate risks and opportunities as well as the potential financial implications. Scenario analysis has then been undertaken to stress test the risks, opportunities and financial implications.

The Company's forecast pathway has been established based on the assumption that global GHG emissions and the physical impacts of climate change will be consistent with the Intergovernmental Panel on Climate Change (IPCC)'s RCP 2.6 scenario. The scenario analysis will subsequently stress test the GIL's strategy, business plan and risks utilising the IPCC's SSP1-1.9 (high transition) and the SSP5-8.5 (high physical) scenarios.

Climate risks and opportunities and GIL’s management plan

The impacts of climate change and the transition towards a net-zero emissions economy are likely to impact areas of our business and parts of the value chain to varying degrees. Climate change presents both discrete risks and opportunities as well as acting as a threat multiplier as it impacts other strategic and operational business risks such as regulatory risk, access to capital, cost of inputs, health and safety. It is recognised that the Company also has an impact on the climate, and GIL seeks to minimise its environmental footprint to manage climate-related risks and capture the opportunities that the transition to a lower-carbon economy represents.

GIL has conducted an assessment to identify and subsequently determine the current and anticipated effects of climate-related risks and opportunities on its business model and value chain. In this assessment, the Company identified specific areas within its business model and value chain where the identified climate-related risks and opportunities are concentrated, such as physical risks to infrastructure from extreme weather events and opportunities such as expanding renewable energy offerings. In performing this assessment, the Company referred to and considered the applicability of the industry-based disclosure topics defined in the ISSB’s Industry-based Guidance on Implementing IFRS S2.

The Company’s assessment identified the climate-related risks and opportunities that could reasonably be expected to affect GIL’s prospects, specifically its cash flows, access to finance or cost of capital over the short, medium or long term. For each of the identified risks and opportunities, GIL has determined the potential effects on its strategy and business model. By integrating these insights into strategic planning, GIL aims to manage the financial, operational and reputational implications of climate change.

The table below sets out the identified risks and opportunities and their impact on the business model as well as mitigation activities in place to manage those risks.

Physical Risks

Physical risks stem from the direct impacts of climate change on the natural and built environment. These include both acute events and long-term shifts in climate patterns that can disrupt operations, damage assets, reduce resource availability, and affect workforce productivity. Such risks may impair business continuity, increase operational costs, and strain infrastructure resilience.

Risk Category		Timeframe of impact	Impact Pathway	Risk Management Plan in place
Type	Risk			
Direct Operation				

	Extreme Rainfall and Flood	Short, Medium	Flooding of roads, logistic hubs and manufacturing facilities	<p>GIL is considering investing in high-quality meteorological forecasting, flood alarms, and community alert mechanisms to ensure timely warnings for heavy rainfall and flash floods. Regular municipal and industrial drills, robust evacuation plans, and clear lines of communication for rapid response during intense rainfall/flooding, with buy-in from local communities. We are evaluating construction embankments, levees, and floodwalls in high-risk areas.</p> <p>GIL has industrial all risk policy covering all the plants from STFI risks (Storm, Tempest, Flood, Inundation) that covers for entire loss of profit due to such events.</p>
Acute	Storm and Cyclone	Short, Medium	Storm surge and cyclones affecting infrastructure assets	<p>Yearly, all the physical assets undergo structure stability inspection by external civil engineering experts including the foundations with special reference to the Machine, Plant etc., that have been installed.</p> <p>GIL undertakes mangrove plantation drive in coastal region of Sunderbans, surrounding the Bay of Bengal. Mangroves minimize the impact of coastal storms and tsunamis and help build adaptive resilience.</p> <p>GIL has industrial all risk policy covering all the plants from STFI risks (Storm, Tempest, Flood, Inundation) that covers for entire loss of profit due to such events.</p>
	Extreme Heat Events	Short, Medium	Heatwaves disrupting properties and labour	<p>We are undertaking engineering controls to improve workplace ventilation, air-conditioned rest zones, tree plantation for shading. Workplace controls are also in place such as schedule heavy work at cooler times of the day, access to cool drinking water and electrolytes, light-coloured and breathable uniforms, helmets with sunshades, periodic medical checks on workforce health.</p>
Chronic	Water Stress & Drought	Medium, Long	Water stress affecting electrode cooling process	<p>GIL has developed a water management plan to reduce the water consumption by 78% in FY 29-30 from baseline FY 18-19. At Durgapur and Satpur rainwater harvesting opportunities are being explored. All plants have zero liquid discharge and thus do not affect the water bodies through effluents. All our workforce have health insurance and accident coverage to cover for any personal loss.</p>

	Temperature Rise	Long	Rising energy demand for cooling due to temperature rise	GIL has ambitious GHG emission reduction plan for the near term to reduce Scope 1 and 2 emissions by 28% and 9% respectively. As we progress on our journey, we will follow up with a long-term net zero target and roadmap, aligned with the science-based targets.
	Sea-level Rise	Long	Sea-level rise impacting infrastructure	GIL is undertaking inspection at the exposed facilities to identify the critical equipment vulnerable to sea level rise. Such assets will be either elevated or relocated to mitigate risk from inundation. New projects will be avoided at such areas prone to sea level rise.
Value Chain - Upstream				
Acute	Extreme Rainfall and Flood	Short, Medium	Flooding of ports	The management is outside of GIL's control. However, GIL has enrolled in marine cargo policy that covers against damage during transit to goods.
Chronic	Sea-level Rise	Long	Sea-level rise impacting ports	The management is outside of GIL's control. However, GIL has enrolled in marine cargo policy that covers against damage during transit to goods.
Value Chain Downstream				
Acute	Extreme Rainfall and Flood	Short, Medium	Flooding of ports	The management is outside of GIL's control. However, GIL has enrolled in marine cargo policy that covers against damage during transit to goods.
Chronic	Sea-level Rise	Long	Sea-level rise impacting ports	The management is outside of GIL's control. However, GIL has enrolled in marine cargo policy that covers against damage during transit to goods.

Transition Risks

Transition risks arise from the systemic shift toward a low-carbon and climate-resilient economy. These risks are associated with evolving regulations, shifting market dynamics, technological advancements, and changing stakeholder expectations. They can affect asset valuations, operating costs, and access to capital, especially for companies unprepared for regulatory compliance or shifts in demand.

Risk Category		Timeframe of impact	Impact Pathway	Risk Management Plan
Type	Risk			

Policy & Regulatory	Introduction of carbon intensity targets under the Carbon Credit & Trading Scheme (CCTS)	Medium, Long	Increase in compliance burden	At present, GIL is not required by the Government to adhere to a specified GHG emission reduction target. However, since FY21-22, the company has been actively engaging to reduce their environmental footprint of operation and products. In FY23-24, the company formed a dedicated ESG committee to monitor and adapt to any regulatory change.
	GHG reporting requirements under SEBI's BRSR regulations	Short, Medium, Long	Compliance burden, and increased complexity of data management	GIL is successfully reporting for the BRSR disclosures, with reasonable assurance on the core BRSR indicators. Several of the BRSR's leadership indicators are also disclosed. From FY25-26 the management is taking a step further to disclose on the value chain parameters taking the maturity to the next level.
	Introduction of Carbon Border Adjustment Mechanism (CBAM) regulation	Short, Medium, Long	Increase reporting requirements for products, customer loss due to unsatisfactory GHG footprint	GIL has conducted the first Lifecycle assessment (LCA) of the graphite electrodes in FY23-24 to assess the environmental impact of the product. Based on the study certain improvement areas were acted upon. In FY25-26, GIL is planning to undertake the second LCA assessment of the major EU export products and obtain CBAM certification.
	India's commitment to Net Zero by 2070	Long	Greener product and operations, and value chain GHG mitigation	GIL has developed a short term GHG management plan to reduce scope 1 and scope 2 emissions.
Technology	Emergence of alternative electrode materials (composites, ceramics, metals)	Medium, Long	Erosion of market share due to greener alternatives	GIL has a dedicated business strategy team who are looking into emerging threats in the market. Such insights are incorporated into the business planning. Investments are made into R&D to maintain a leading position in the market.

Market	Consumer/investor preference shifts to green products	Medium, Long	Demand for low carbon electrodes for production of steel, lower GHG footprint of high-speed steel	GIL is progressing on the GHG emission reduction roadmap for operational and product emissions. A dedicated environmental management team monitors performance over the year.
	Access to capital reduced due to ESG risks	Short, Medium, Long	Reduced credit ratings due to ESG risks in direct and indirect operation	GIL's management and ESG committee are closely monitoring the ESG ratings, namely NSE ratings (based on the BRSR disclosure), CDP score, EcoVadis score. Over the last 2 years, the company has seen remarkable improvement in all the scores. Improvement areas have been identified for yearly improvement in score so that there is no challenge in accessing capital.
	Price volatility of raw materials due to climate change	Short, Medium	Fluctuations in coal tar, needle coke, and pitch supplies	GIL is closely monitoring the price volatility of all procured raw materials and have a long-term fixed price contract with most critical suppliers. This helps in business planning and risk management from climate-induced price volatility of raw materials.

Opportunities

Opportunities reflect the potential for value creation as economies transition to sustainability. They encompass efficiency improvements, innovation in products and services, access to new markets and financing, and enhanced reputation. Organizations that proactively adapt their strategies and operations can strengthen long-term competitiveness and resilience to climate-related disruptions.

Opportunity	Timeframe of impact	Impact Pathway	Opportunity Management Plan
Energy Efficiency Programs	Short, medium	lever to reduce the GHG emission of operations and products	GIL has developed a decarbonization roadmap with energy efficiency as a key lever. Energy efficiency initiatives are underway to meet the short term 2030 goals
Increased Electrode Demand (Electric Arc Furnace growth)	Short, medium	increased demand for graphite electrode as demand for EAF steel grows	The management has a dedicated business strategy team who monitor the market dynamics and GIL's position.
Selling carbon credits under offset	Short, medium	generation of surplus emission credits through decarbonization	GIL has been undertaking GHG accounting for their operational and product emissions since FY22-23. The environmental management team is

mechanism of CCTS			working towards the short term GHG targets and regulatory tailwinds arising from the CCTS.
Access to new markets due to low-carbon electrode production	Short, medium	increased customer demand due to low embodied carbon	GIL's management is monitoring the market dynamics due to the changing priorities on green products, especially in the steel making customers. Through sustained excellence in product quality and target-oriented decarbonization roadmap, GIL should be well positioned to capitalize on such emerging opportunities.

Overview of current and anticipated financial impact of the climate risks and opportunities

The current and anticipated financial effects of climate risks and opportunities are becoming increasingly material for businesses across sectors. Physical risks may lead to higher operational and maintenance costs, asset impairment, supply chain disruptions, and increased insurance premiums. Transition risks can result in regulatory compliance costs, shifts in demand, carbon pricing exposure, and potential write-downs of carbon-intensive assets. Conversely, climate-related opportunities can drive cost savings through resource efficiency, open up new revenue streams from sustainable products and services, and enhance access to green financing. Over time, the integration of climate considerations into strategic and financial planning is expected to play a critical role in preserving enterprise value and ensuring long-term financial resilience.

Physical Risks

Acute Risks – Direct Operation

Risk	Extreme Rainfall and Flood
Financial Transmission Channel	Cost to prevent asset damage, increased insurance premiums, downtime costs (revenue loss)
Potential Financial Impact	<p>For preventive actions, GIL has allocated an approximate budget of Rs. 2 Crores till 2030. The measures include periodic audits and structural upgradations for resilience.</p> <p>For insurance premiums, at present in 2025 GIL's insurance covers against all STFI risks as part of the policy coverage. Going forward, with increasing events and depending on GIL's performance, additional premium might be applicable.</p> <p>A critical damage to the facility will lead to business disruption for 1 month on average. GIL generated a turnover of INR 2,420 Crores in entire FY24-25. Of that 80% is exposed i.e. Rs. 1936 Crores. Assuming even distribution of turnover for each month, 1 month of non-operation would cost Rs. 161 Crores in turnover loss. Though the insurance policy covers such damage costs, the downtime can hurt business. For the medium term, considering GIL's physical assets will undergo more wear and tear, an inflation rate of 6%, increased severity of flood events, and business volume growth, greater preventive measures will be required to an approximate tune of Rs. 5 Crores.</p>

	<p>Revenue loss due to facility damage will remain roughly at the same rate. Assuming a 10% growth in business (conservative estimate), the turnover loss would be about Rs. 180 Crores.</p> <p>For the medium term, considering GIL's physical assets will undergo more wear and tear, an inflation rate of 6%, increased severity of flood events, and business volume growth, greater preventive measures will be required to an approximate tune of Rs. 5 Crores.</p> <p>Revenue loss due to facility damage will remain roughly at the same rate. Assuming a 10% growth in business (conservative estimate), the turnover loss would be about Rs. 180 Crores.</p>
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Risk	Storm and Cyclone
Financial Transmission Channel	Cost to prevent asset damage, increased insurance premiums, downtime costs (revenue loss)
Potential Financial Impact	<p>For preventive actions, GIL has allocated an approximate budget of Rs. 1Crore till 2030. The measures include periodic audits and structural upgradations for resilience.</p> <p>For insurance premiums, at present in 2025 GIL's insurance covers against all STFI risks as part of the policy coverage. Going forward, with increasing events and depending on GIL's performance, additional premium might be applicable.</p> <p>A critical damage to the facility will lead to business disruption for 1 month on average. GIL generated a turnover of INR 2,420 Crores in entire FY24-25. Of that 76% is exposed i.e. Rs. 1839 Crores. Assuming even distribution of turnover for each month, 1 month of non-operation would cost Rs. 153Crores in turnover loss.</p> <p>For the medium term, considering GIL's physical assets will undergo more wear and tear, an inflation rate of 6%, and business volume growth, greater preventive measures will be required to an approximate tune of Rs. 5 Crores.</p> <p>Revenue loss due to facility damage will remain roughly at the same rate. Assuming a 10% growth in business (conservative estimate), the turnover loss would be about Rs. 175 Crores.</p>

Risk	Extreme Heat Events
Financial Transmission Channel	Labor productivity drops, damage to assets
Potential Financial Impact	<p>Due to heat, worker productivity will be severely affected. Accounting for the adaptation measures already in place, we expect the loss in man-hours to be approximately 5-8%. Assuming a direct causality of man-hours to output, this would lead to a turnover loss of Rs. 121 Crores to Rs. 194 Crores.</p> <p>GIL's assets such as chillers, HVACs, pumps, furnace, building envelope such as insulation, roofing, steel products can undergo damage due to excessive heat. An approximate loss of 15% in turnover is a fair estimation due leading to a loss of Rs. 363 Crores</p> <p>In the medium term, with countries acting to reduce the GHG emissions aggressively, the occurrence of heatwaves would diminish. Moreover, advanced technologies and personal protective equipment will be available to combat heat-induced events. So an</p>

	<p>approximate medium term loss would be 2% turnover i.e. INR 53 Crores (assuming a 10% turnover growth).</p> <p>Asset damage would also reduce to approx. 5% due to the adaptation measures undertaken. So an approximate loss would be Rs. 133 Crores (assuming a 10% turnover growth).</p>
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Chronic Risks – Direct Operation

Risk	Water Stress & Drought
Financial Transmission Channel	Operational bottlenecks and production losses due to water scarcity
Potential Financial Impact	<p>Though, at present, none of the manufacturing units are facing water stress, we understand such issues might become prominent with unpredictable weather and increased evaporation due to rising temperature.</p> <p>Water stress will hugely affect the cooling process and impact production output. However, water conservation within the fence and rainwater harvesting in colonies can offset the scarcity by a reasonable margin. However, assuming business volume growth of 10% in the medium term (and turnover), the water requirement will increase. An educated estimate would be 10-20% of exposed turnover loss in case of drought/water stress i.e. Rs. 266-532 Crores</p>

Risk	Temperature Rise
Financial Transmission Channel	Increased energy bills and cooling infrastructure needs
Potential Financial Impact	<p>GIL has ambitious plans to reduce the GHG emissions in our business. However, there might be an impact of temperature rise depending on the state of the world, outside our control. Our outlook depicts a world with above 2 degree Celsius rise by 2050.</p> <p>As per WEF's Cost of Inaction report (https://reports.weforum.org/docs/WEF_The_Cost_of_Inaction_2024.pdf), an estimated loss for our industry would be less than 5% of EBIDTA. Assuming an EBIDTA growth of 15% in the long term from FY24-25 levels, an absolute value at risk would be Rs. 150-250 Crores</p>

Risk	Sea-level Rise
Financial Transmission Channel	Long-term asset devaluation and higher maintenance costs
Potential Financial Impact	According to satellite data from NASA, average sea level rise would be approximately 0.3m on a global scale. Though our facilities are at a comfortable distance from the coast, we might still face challenges at certain regions. However we believe our management plan adequately takes care of such a risk. Hence we do not quantify the effect of sea level rise.

Value Chain – Upstream

Risk	Extreme Rainfall and Flood (acute)
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Financial Transmission Channel	downtime costs (revenue loss)
Potential Financial Impact	<p>As of FY24-25, 100% of the imported raw materials are shipped through these two ports. The share of procurement from foreign imports amounts to 19% of the procurement spent (Rs 1368 Crores) in FY24-25 amounting to Rs. 260 Crores. Due to a damage in the port, GIL's production will be severely affected. Due to the critical nature of the imported products, an estimate loss of revenue could be 50% in the medium term. This would amount to a loss of Rs. 1210 Crores each year in the near term.</p> <p>In the medium term, GIL will continue to have high dependency on the two ports due to lack of alternatives. Hence, assuming that 50% of the products are affected due to downtime of the ports, the potential revenue loss would be Rs. 1331 each year in the medium term, assuming a 10% increase in revenue.</p> <p>In the long term, the government might implement measures strong adaptation measures for the ports to prevent climate risks as well as to reduce downtime when affected. Hence, we do not quantify the long term impact.</p>

Risk	Sea-level Rise (chronic)
Financial Transmission Channel	downtime costs (revenue loss)
Potential Financial Impact	<p>In the medium term, according to satellite data from NASA, the global average sea level rise could be 0.2m above the sea level in the RCP 2.6 scenario. (https://cstep.in/drupal/sites/default/files/2024-07/Sea%20level%20rise%20scenarios%20and%20inundation%20maps%20for%20selected%20Indian%20coastal%20cities.pdf). Assuming a 2month downtime due to closure of port, our revenue can be impacted potentially by Rs. 443 Crores.</p> <p>For a sea-level rise of 0.3m in the long term, there would be significant disruption to the ports. However, the port authorities are undertaking adaptation measures such as building sea walls and structural resilience. Hence, we assume the downtime in case of such hazard would be 3 months. This can lead to a potential revenue impact of 750-800 Crores assuming a 20% growth in revenue in the long term based on FY24-25 levels.</p>

Value Chain – Downstream

Risk	Extreme Rainfall and Flood (acute)
Financial Transmission Channel	downtime costs (revenue loss)
Potential Financial Impact	<p>As of FY24-25, 33% of our revenue comes from export through these two ports. Hence, a value of Rs. 800 Crores is at risk from such acute events.</p> <p>In the medium term, GIL will continue to have high dependency on the two ports due to lack of alternatives. The company is also looking to capitalize on additional foreign market for business growth. Hence, in the medium term, assuming 40% of the revenue comes from exports, an revenue each year grows by 10% from present level, the potential impact would be Rs. 1064 Crores revenue loss from extreme rainfall and flood.</p>

	In the long term, the government might implement measures strong adaptation measures for the ports to prevent climate risks as well as to reduce downtime when affected. Hence, we do not quantify the long term impact.
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Risk	Sea level rise (chronic)
Financial Transmission Channel	downtime costs (revenue loss)
Potential Financial Impact	<p>In the medium term, according to satellite data from NASA, the global average sea level rise could be 0.2m above the sea level in the RCP 2.6 scenario. (https://cstep.in/drupal/sites/default/files/2024-07/Sea%20level%20rise%20scenarios%20and%20inundation%20maps%20for%20selected%20Indian%20coastal%20cities.pdf). Assuming a 10% loss in revenue due to closure of port, the potential financial impact is Rs. 266 Crores in medium term.</p> <p>For a sea-level rise of 0.3m in the long term, there would be significant disruption to the ports. However, the port authorities are undertaking adaptation measures such as building sea walls and structural resilience. However, due to a possible damage, the financial impact could be 50% of the long term revenue, which is over Rs. 1450 Crores each year.</p>

Transition Risks

Policy & Regulatory

Risk	Introduction of carbon intensity targets under the Carbon Credit & Trading Scheme (CCTS)
Financial Transmission Channel	Penalty for not meeting GHG intensity reduction target
Potential Financial Impact	<p>Assuming that the Government sets a GHG reduction target for GIL's sector, as per the present CCTS regulation 2023, GIL might be forced to buy carbon credits at market price to balance the additional emissions. Based on our benchmark study of peers, GIL is well positioned to meet such intensity targets. By 2030, GIL is set to reduce the GHG absolute emissions ambitiously and hence we do not foresee any challenge from penalties.</p> <p>The financial cost to decarbonize the operation in the medium term is based on our short-term target performance and will be devised accordingly in the coming years.</p>
Risk	GHG reporting requirements under SEBI's BRSR regulations
Financial Transmission Channel	Resource for developing internal capabilities, external third party data assurance, loss in revenue due to poor NSE ratings
Potential Financial Impact	<p>GIL is developing internal capabilities to improve on the yearly performance metrics. For this the company has allocated a cumulative budget of Rs. 30 lakhs till 2030. For third party advisory and assurance services, the company has estimated a cumulative budget of Rs. 1.5 Crores till 2030. GIL does not anticipate any revenue loss due to NSE ratings since the disclosures are at par with industry benchmarks.</p> <p>In the medium term, we expect the internal capabilities would be largely developed to follow through on our decarbonization plans. Financial spendings will be allocated on a need basis.</p> <p>The advisory and assurance services would be required on a yearly basis for the BRSR disclosures. For a 10 year window, and assuming a 10% increased cost, we anticipate a financial spending of Rs. 3-3.5 Crores.</p>

	In the long term, it is hard to predict the disclosure requirements and the associated effort. We foresee a huge growth in technological enablers through which the data management would be largely automated and centralized.
Risk	Introduction of Carbon Border Adjustment Mechanism (CBAM) regulation
Financial Transmission Channel	Resource for developing product lifecycle assessment, verification cost by third party, loss of market share due exceeding emission threshold
Potential Financial Impact	<p>GIL has allocated a rough budget of Rs. 1 Crore in the short term for conducting the product LCAs through experts and obtain assurance on the emission data. The present version of the CBAM regulation, effective from January 2026, does not include graphite electrodes and hence we do not foresee a financial impact in the short term.</p> <p>The importer, based in the EU, needs to pay for obtaining CBAM certificates to account for the embedded carbon footprint of the importing products. Hence, though the CBAM cost does not affect us directly, there might be a trickledown effect in the supply chain leading to reduced profitability as the CBAM expands scope to cover GIL's products. According to FICCI's report, Indian exporters may face about 25% export tax burden (https://ficci.in/press_release_details/5081). As of FY24-25, 33% of our turnover comes from exports accounting for Rs. 800 Crores. Of this, 18% comes from exports to Europe. In the medium term, the tax burden has the potential to amount to Rs 144 Crores on a yearly basis based on current scenario.</p>
Risk	India's commitment to Net Zero by 2070
Financial Transmission Channel	Additional cost for decarbonizing operational and product emissions, procurement of carbon removals/offsets to mitigate residue emissions
Potential Financial Impact	<p>By 2030, GIL is set to reduce the GHG absolute emissions ambitiously - scope 1 emissions by 28% and scope 2 emissions by 9%. For scope 1 reduction, based on the initiatives in the GHG reduction roadmap, the approximate cost is Rs. 200 Crores. This includes the capex required for setting up Solar power plant, wind power plant, dust collection system, silo revamping, RHRB Pitch coke handling system, and upgradation of STP plant at our Satpur facility.</p> <p>For scope 2 emissions, for increasing the share of renewables, the additional procurement cost is Rs. 4.02 Crores on a yearly basis at present energy mix of 33%. By 2030, the cumulative additional cost, at the same rate, would be over Rs. 25 Crores.</p> <p>The financial cost to decarbonize the operation in the medium term is based on our short-term target performance and will be devised accordingly in the coming years.</p> <p>In the long term, aligned to India's Net Zero 2070 target, GIL will have to continue on the decarbonization journey - not just in direct operations, but also our value chain partners, and even beyond the value chain. The estimation of our financial expenditure behind decarbonization in the long term is dependent on several factors, many of which are out of our control. Hence it is not possible to provide an accurate estimation of the long term financial impact.</p>

Technology

Risk	Emergence of alternative electrode materials (composites, ceramics, metals)
Financial Transmission Channel	Loss of revenue, cost of R&D and diversification
Potential Financial Impact	The demand for Electric Arc Furnace (EAF) used in steel production is growing rapidly prompting new entrants in the market. We assume a 10% market displacement by 2030 due to such entrants which can lead to a loss of Rs. 240 Crores till 2030.

	<p>The budget spent behind R&D in FY24-25 is Rs 1.8Crores. Assuming an increase of 10% on yearly basis, the approximate spending on R&D in the short term would be Rs. 2.9-3 Crores.</p> <p>In the medium term, we expect greater competition in the business. However, as GIL is monitoring the market closely and adapting to the market trends, we expect to retain a strong market share.</p> <p>However, assuming increasing competition in global markets and growing green technologies, a realistic estimate would be a loss of 15% market share in the medium term leading to a potential loss of Rs. 360 Crores.</p>
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Market

Risk	Consumer/investor preference shifts to green products
Financial Transmission Channel	Loss of revenue due to customer base erosion
Potential Financial Impact	Our customers prefer procurement of greener products, given other procurement considerations such as cost and quality are comparable. According to reports (https://www.reptrak.com/case-studies/ultimate-reputation-guide/esg/), customer willingness to pay is significantly higher (40% higher) for greener products. However, our customer base loyalty is strong given our brand reputation and superior product quality. If greener alternatives are available, we predict a 20% loss in revenue amounting to Rs. 484 Crores over the medium term, based on current revenue levels.
Risk	Access to capital reduced due to ESG risks
Financial Transmission Channel	Higher interest premium on capital
Potential Financial Impact	We do not foresee a significant impact on our access to capital due to climate risks as our low-carbon planning is aligned to all regulatory requirements.
Risk	Price volatility of raw materials due to climate change
Financial Transmission Channel	Cost inflation, production interruptions, squeezing of profit margins
Potential Financial Impact	<p>The significant majority of our raw materials is needle coke required in the production of graphite electrodes. Due to price volatility of needle coke, the profit margins might get affected by 5% of the PAT. This has the potential to amount to Rs. 22.6 Crores in the short term.</p> <p>Assuming a similar price volatility of needle coke, the financial impact could be 5% of PAT in the medium term. Assuming the business growth of 10% by 2030, that would amount to Rs. 133 Crores in the medium term.</p>

Opportunities

Opportunity	Energy Efficiency Programs
Financial Transmission Channel	reduced cost of energy purchase

Potential Financial Impact	<p>As per GIL's short term 2030 target, the scope 1 GHG emissions from fuel consumption is targeted to reduce by 28%. Assuming this directly correlates to the procurement cost, GIL is expected to reduce procurement spent by 28% by 2030 from FY24-25. This amounts to an opportunity of Rs.383 Crores in the short term.</p> <p>For the medium term, the detailed roadmap and energy efficiency initiatives are not finalized yet. However, since major focus of GIL is the scope 1 emission, a significant opportunity is expected to arise from energy savings in the medium term.</p>
Opportunity	Increased Electrode Demand (Electric Arc Furnace growth)
Financial Transmission Channel	Improved revenue from product sale
Potential Financial Impact	<p>The electrode market for EAF is expected to grow at 3.5% in the short term (https://www.mordorintelligence.com/industry-reports/graphite-electrode-market). Assuming GIL can maintain the current market share, the revenue is expected to grow by 3.5% on a yearly basis. This would amount to an additional Rs. 85-90 Crores annually in the short term.</p> <p>In the medium term, assuming the same growth rate of 3.5% each year and a stable market share, the potential opportunity from revenue would increase to Rs. 93 Crores annually. This is assuming the revenue in 2031 would be a 10% increase on the revenue in FY24-25.</p>
Opportunity	Selling carbon credits under offset mechanism of CCTS
Financial Transmission Channel	New source of revenue from selling carbon credits
Potential Financial Impact	<p>At present, GIL is not required to undertake a decarbonization target under the Compliance Mechanism pathway of the Carbon Credit Trading Scheme (CCTS). However, under the Offset Mechanism pathway, GIL can sell the surplus carbon credits to those who need them to meet their CCTS targets. Assuming a credit price of Rs 300/tCO_{2e}, and GIL selling 30,000 tonne emissions each year, that would generate additional revenue of Rs. 4.5 Crores in the short term. (https://costmos.in/how-much-carbon-credit-worth-in-india/)</p> <p>In the medium term, the price for each carbon credit is expected to go up. This is because the decarbonization cost would also increase as stricter actions are required. Assuming the carbon price at Rs 500-800/tCO_{2e}, and GIL selling 20,000 tonne credits each year, the revenue could be Rs 10 Crores to 16 Crores in the medium term.</p> <p>In the long term, as India progresses towards the country-level net zero goal, it is certain that all listed companies would have stringent targets for emission reduction. Then again, the international carbon markets can come under one unified trading system allowing price in higher currencies. Under such situations, it is not possible to estimate the potential revenue from carbon credits, if at all feasible.</p>
Opportunity	Access to new markets due to low-carbon electrode production
Financial Transmission Channel	access to green premiums, access to new markets
Potential Financial Impact	<p>According to a survey carried out by BCG (https://www.bcg.com/publications/2023/consumers-are-willing-to-pay-for-net-zero-production) on industries such as transport and infrastructure, some of the primary users of steel, customers are willing to pay a premium on green products. The willingness varies by region, and an average estimation across key markets is 3% premium on the price. Given our existing market share, this can result in an additional</p>

	<p>revenue of Rs. 54 Crores per year, resulting in a cumulative potential impact of Rs 324 Crores by 2030.</p> <p>For new market expansions, other EU countries, South Korea, China might open up potential opportunities as they scale steel production through EAF. As per estimates, this can lead to a potential revenue growth of 10% revenue in the short-term leading to an impact of Rs. 242 Crores by 2030.</p> <p>In the medium term, as countries become more stringent on limiting their emissions and reaching net zero targets, the premium might go up. However, with growth in competition, we expect that to be balanced out. Assuming a revenue growth on 10% by 2030 (i.e. Rs 2662 Crores), and a premium of 2% on average, the potential impact could be Rs. 53 Crores per year, resulting to Rs. 530 Crores in the medium term.</p> <p>For new market share might drop due to additional competition from regional players and complexity in regulations through supply chain. Considering an additional revenue of 6% throughout the medium term, the potential opportunity impact could be Rs. 1,590 Crores.</p>
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Our decarbonisation targets and Climate Transition Plan

Based on the assessment of current and anticipated climate-related risks and opportunities, and their potential financial implications, GIL has begun aligning its business strategy with global climate ambitions. The Company aims to maintain a resilient long-term portfolio by enhancing energy efficiency, exploring low-emission technologies, and developing greener product lines that support the broader transition to a low-carbon economy. GIL's strategic direction is informed by global GHG emissions pathways such as IPCC scenario SSP1-2.6, relevant national climate commitments (NDCs), and evolving demand trends for low-carbon materials and technologies.

Recognising the sector-specific challenges of decarbonisation, especially in energy- and process-intensive operations, GIL is prioritising initiatives to reduce Scope 1 and Scope 2 GHG emissions. These include increasing renewable energy sourcing, investing in energy-efficient processes, and evaluating the potential role of mechanisms such as carbon credits. In the longer term, GIL seeks to unlock emerging opportunities by strengthening its portfolio of low-carbon and circular economy products, improving supply chain sustainability, and aligning capital allocation with climate resilience and green innovation. These efforts reflect the Company's commitment to sustainable growth while navigating the evolving regulatory, technological, and market landscape.

GHG Reduction Roadmap

We have continued in our journey towards our net zero ambition during the year. Several identified projects for GHG emission reduction have been implemented, some under implementation and some to be initiated. We focus on energy efficiency as a continual endeavour. We have started getting benefits of these initiatives and the results mentioned above justify our efforts.

- a) **Scope 1 emissions** - In FY 2024–25, GIL's total Scope 1 emissions amounted to 89,350 tCO₂e, with the Durgapur plant alone contributing 83.89% of these emissions (74,955 tCO₂e), making it the primary focus for emission reduction initiatives. Within Durgapur, the top three emission sources are CBM (Coal Bed Methane) as fuel (31.15%), calcined petroleum coke (CPC) carbon use (22.39%), and LAMC combustion (16.25%), together accounting for nearly 70% of the plant's emissions. A targeted year-on-year reduction in the consumption of CBM, CPC, and LAMC—while keeping other sources constant—is projected to significantly reduce Scope 1 emissions over time. Smaller contributors include diesel usage across various operations, binder and impregnation pitch losses, and extrusion oils, but their cumulative impact remains relatively low. The company's decarbonization strategy, therefore, hinges on curbing fossil fuel and carbon-based material use at its Durgapur facility. We have a target for reduction of 28.2% of our scope 1 GHG emissions by FY 30-31 w.r.t baseline FY 21-22.
- b) **Scope 2 emissions** - We have replaced our electricity consumption from grid with renewable electrical energy significantly during the year, both at Durgapur (28.1% electricity from renewable sources during the year) and at Satpur (52.7% electricity from renewable sources during the year). While the renewable percentage in these two plants will go up gradually, we are exploring this possibility for our other plants also. We have a target for reduction of 9.3% of Scope 2 GHG emissions by FY 30-31 w.r.t baseline FY 21-22.
- c) **Scope 3 emissions** - Our scope 3 emissions are also quite reasonable and show a reduction trend over the last few years. Going forward, we plan to undertake supplier engagement programs with some of the critical suppliers to reduce their GHG emissions through knowledge sharing. In FY25-26, we have decided to assess the supply chain hotspots in greater detail through customized assessments, and devise emission reduction roadmap for scope 3 emissions. Additionally, our participation in mangrove plantation drives contributes to carbon sequestration beyond our value chain.
- d) **Scope 4 emissions** - Our principal product, graphite electrodes, plays a crucial role in enabling the electric arc furnace (EAF) route of steelmaking, which uses scrap as a raw material. This significantly reduces the need for virgin raw materials and avoids emissions associated with the conventional blast furnace process. As a result, our Scope 4 emissions—representing avoided emissions—are considerable and align with our broader climate impact objectives.

Key Dependencies and Uncertainties

To meet its long-term ambition of achieving low-carbon operation, GIL has developed a decarbonization strategy focused on energy efficiency, renewable energy adoption, and reduction of carbon-intensive inputs. Key dependencies include:

- Availability and cost-competitiveness of renewable electricity
- Supplier responsiveness in reducing upstream carbon intensity (particularly for CPC and LAMC)
- Policy support for green energy infrastructure and incentives
- Technological advancements in material substitution and process efficiency

Uncertainties relate to the pace of transition in India's industrial energy landscape, renewable power reliability and pricing, and regulatory clarity around carbon pricing or offset mechanisms.

Integration of climate risks & opportunities into business strategy

Climate Risks and Enterprise Risk Management Framework

At GIL, climate-related risks are categorized into physical risks (e.g., extreme weather, heatwaves, flooding) and transition risks (e.g., carbon pricing, regulatory shifts, market changes). Both risk types could directly or indirectly impact GIL's operations and supply chain.

To address these, GIL integrates climate risks within its Enterprise Risk Management Framework (RMF). This includes the Risk Appetite Statement and Risk Matrix, which help assess materiality of risks and opportunities from climate change in terms of business strategy alignment and potential financial impact.

During FY 2025, GIL used insights from climate risk assessments to inform its capital allocation process, ensuring that planned investments incorporate climate resilience and low-carbon transition considerations.

To further support this assessment:

- GIL evaluated its exposure across facilities, particularly in locations like Durgapur and Satpur, which are vulnerable to energy price volatility, water stress, and extreme temperatures.
- The vulnerability of climate events was determined based on likelihood, frequency, potential intensity and site-level adaptability.

Integration of Climate-Related Risks and Opportunities into Capital Allocation

GIL's decarbonization journey—aimed at achieving 28.2% Scope 1 and 9.3% Scope 2 emissions reduction by FY 2030–31 (from FY 2021–22 baseline)—requires a strategic capital allocation plan. This involves both reinvestment in core decarbonization initiatives and external capital mobilization to accelerate transition and build resilience.

To this end, capital is allocated across four priority areas:

- **Renewable Energy Procurement & Infrastructure**
Continued investment in renewable electricity across plants (notably Durgapur and Satpur) through on-site installations and green Power Purchase Agreements (PPAs). This reduces Scope 2 emissions and enhances energy security. Capital deployment will support:
 - Increasing renewable energy percentage plant-wise
 - Feasibility studies for captive solar/wind at other sites
- **Process Efficiency & Material Substitution**
Investment in energy efficiency improvements, including equipment upgrades, thermal recovery, and process optimization to reduce energy consumption and emissions from

fuels like CBM, CPC, and LAMC. This is supported by an internal carbon price, embedded in investment appraisal processes.

- **Climate Resilience and Adaptation**

GIL is allocating funds to improve resilience of infrastructure to physical climate risks—such as flood-proofing, heat stress mitigation, and strengthening business continuity planning—particularly for the Durgapur plant, which is the most emission-intensive and strategically important.

- **Low-Carbon Innovation & Nature-Based Solutions**

Although GIL is not currently investing in capital-heavy new technologies (like hydrogen or CCS), it is supporting ecosystem-based mitigation such as mangrove plantation drives, which offer co-benefits of carbon sequestration, community engagement, and biodiversity enhancement.

Building Resilience through Scenario Analysis

In 2025, GIL undertook a climate-related scenario analysis to stress test its business strategy and assess the implications of climate-related risks and opportunities under different global warming pathways. The goal was to evaluate the robustness of GIL's operations and investment decisions in the face of both transition and physical risks that could manifest over the short, medium, and long term. An external climate risk expert was engaged to support the scenario analysis, applying IPCC datasets, IPCC pathways, and GHG emissions modelling tailored to GIL's operational geographies and value chain.

Approach and Scenarios Considered

To ensure a balanced and comprehensive assessment, GIL selected two climate scenarios that reflect the extremes of potential climate trajectories:

- **High Transition / Low Physical Risk Scenario – SSP1-1.9**

- Based on the IPCC's Sustainability pathway, this scenario assumes the world limits warming to 1.5°C through stringent global climate policy, accelerated decarbonization, and rapid energy transition.
- It aligns with the Net Zero by 2050 pathway.
- In this scenario, transition risks are elevated, particularly in the short to medium term, due to:
 - Sudden introduction of carbon pricing and climate-related regulations
 - Rising pressure to phase out fossil-based raw materials such as CBM and CPC
 - Disruptions in upstream supply chains due to regulatory changes and green sourcing requirements
- However, physical climate impacts such as extreme weather events remain relatively moderate and manageable.

- **High Physical / Low Transition Risk Scenario – SSP5-8.5**
 - This "business-as-usual" pathway assumes limited global action on emissions reduction, leading to a warming trajectory exceeding 4°C by 2100.
 - Under this scenario, transition risks are minimal due to weak or delayed policy action, but physical risks become increasingly dominant.
 - Risks for GIL include:
 - Increased frequency and intensity of heatwaves affecting plant operations (notably at Durgapur)
 - Water stress and flooding risks impacting production continuity
 - Supply chain disruptions and damage to infrastructure due to extreme weather events

Key Insights and Strategic Implications

- In the SSP1-1.9 scenario, GIL could face rising input and compliance costs but may benefit from first-mover advantages in adopting renewable energy and green manufacturing practices. Early investments in PPAs, energy efficiency, and Scope 1 reduction programs position the company favourably.
- In the SSP5-8.5 scenario, failure to mitigate global warming would significantly increase climate-related disruptions. Key vulnerabilities include:
 - The high-emitting Durgapur facility, which may be exposed to physical damage and operational downtime
 - Challenges in maintaining consistent raw material supply and plant cooling systems during extreme temperatures or rainfall events
- Scenario analysis results have been integrated into the capital allocation process. For example:
 - Prioritizing renewable energy procurement
 - Reinforcing climate resilience measures at critical sites
 - Enhancing due diligence for any potential plant expansion or relocation
- The scenario outcomes are reviewed by GIL's executive leadership and Board Committees to inform strategic revisions, investment planning, and risk mitigation frameworks.

Significant Areas of Uncertainty Considered in Climate Resilience Assessment

As part of its climate resilience assessment, the GIL conducted scenario analysis to evaluate key uncertainties that could affect its ability to adapt and respond to climate-related risks and opportunities. These uncertainties relate to the pace and extent of global decarbonisation, the evolution of carbon pricing mechanisms, technological breakthroughs, policy developments,

and the severity of physical climate impacts. Understanding these variables is critical to stress-testing the GIL's business model and strategic direction under divergent climate futures.

Capacity to Adjust GIL's Strategy and Business Model

GIL's resilience to climate change is underpinned by its financial flexibility, enabling capital reallocation to priority areas based on emerging climate pathways. The Company's ability to pivot its strategy depends on how transition and physical risks evolve across different scenarios:

In a Low-Warming World Scenario (1.5–2°C):

- Increased capital deployment into the Renewable Energy Investment Fund.
- Aggressive pursuit of ventures in low-carbon product development.
- Increased capital allocation for R&D.

In a High-Warming World Scenario (>3°C):

- Greater investment in physical adaptation of assets vulnerable to extreme weather.
- Moderation of capital flows into mitigation technologies due to weakened economic incentives from lower carbon prices.
- Refocused renewable investment in jurisdictions with mature policy and infrastructure ecosystems.

Asset Flexibility and Climate Resilience Planning

Under a Low-Warming Scenario:

- Accelerate electrification of operations, especially in carbon-regulated jurisdictions.
- Expand nature-based solutions and carbon offset facilities.

Under a High-Warming Scenario:

- Realign production to geographies with lower physical climate exposure.
- Implement climate resilience plans for vulnerable assets.
- Relocate assets where physical risks undermine profitability and safety.

Impact of Current and Planned Investments on Climate Resilience

A. Mitigation Efforts:

- Targeting 50% renewable capacity by 2030 through solar, wind, and emerging technologies.
- In a low-warming scenario, renewables could account for 70% of energy mix by 2030, requiring increased investments and innovation.

- In a high-warming world, mitigation slows, and costs rise due to delayed action and growing exposure.

B. Adaptation Investments:

- Current adaptation actions include physical risk protection (flood and heat defences), supply chain diversification, and digital early warning systems.
- These investments remain relevant under both scenarios but intensify in a high-warming scenario, where physical risk spending may increase, potentially crowding out capital for transition.

C. Opportunities for Climate Resilience:

- Low-warming world: Focus on expanding the renewables portfolio, green products, and low-carbon technologies—aligned with strategic growth.
- High-warming world: Emphasis shifts to short-term transitional fuel demand and operational resilience. While this may bring interim revenue stability, it elevates long-term exposure to stranded asset and transition risks.

GIL uses scenario analysis to evaluate the potential impacts of climate-related risks and opportunities on its operations, strategic planning, and financial outlook. This analysis informs GIL's strategy and business model by identifying areas of vulnerability and resilience under a range of plausible climate futures. As a result, GIL is better equipped to implement targeted measures that mitigate transition and physical risks while capitalising on emerging low-carbon opportunities.

One such opportunity is the expansion of solar and wind power projects, building upon existing renewable deployments to reduce reliance on petroleum-based energy solutions within operations. These investments directly support GIL's transition strategy and reinforce long-term energy security.

In anticipation of technological advances, GIL plans to revisit and potentially strengthen its emissions reduction targets by 2027. This review will also explore the integration of nature-based solutions and other emerging mitigation approaches to accelerate progress toward net zero.

Risk Management

Risk Management Framework

Climate-related risks and opportunities are identified and assessed as part of GIL's integrated risk management process, ensuring alignment with other principal business risks and providing a holistic view of GIL's risk landscape. This process is led by cross-functional teams, including senior leadership, and combines internal insights with external market and regulatory developments. Each strategic planning cycle includes a structured review of climate-related risks, with interim assessments conducted annually or when significant events occur—such as changes in regulations, market dynamics, or operational circumstances. Potential risks are identified through analysis of business case assumptions, contractual terms with customers and suppliers, and emerging trends in the broader industry. The Company maintains a risk register that captures material climate-related risks, including their potential impact on operations, earnings, capital, and long-term resilience. Regular reviews by governing bodies ensure that identified risks inform decision-making, resource allocation, and the pursuit of strategic objectives.

Risk Governance

GIL's Risk Management Framework (RMF) integrates risk governance, strategy, and processes into business decision-making, ensuring that climate-related risks are considered alongside other principal risks. The Company follows a structured governance flow to maintain accountability and oversight:

- **Plant Heads (First Line of Defence)** – Responsible for day-to-day operational decisions in line with GIL's strategy, including identifying and managing risks at the site level. This includes monitoring operational and environmental conditions, implementing mitigation measures, and escalating material climate-related risks. Emerging risks are presented bi-annually to the Risk Management Committee for evaluation and mitigation.
- **Risk Management Committee (Second Line of Defence)** – Provides expert oversight on organisation-wide risks, including climate-related risks. Reviews and approves risk appetite, strategy, and controls in line with the RMF, and ensures integration of climate risk considerations into business planning.
- **Board of Directors (Third Line of Defence)** – Receives regular reporting from the Risk Management Committee and Internal Audit, providing final oversight on risk management effectiveness, including the adequacy of climate-related risk governance and controls.

This governance structure enables clear accountability, effective risk escalation, and informed decision-making at all levels, strengthening GIL's ability to anticipate and respond to emerging climate-related risks.

Risk Management Process

GIL applies an integrated approach to identifying, assessing, prioritising, and monitoring climate-related risks and opportunities, guided by its Risk Management Framework (RMF) and embedded throughout the organisation. Policies underpinning this process promote transparency, stakeholder engagement, and continuous improvement.



Identification

Climate-related risks and opportunities are identified through inputs from operational sites, functional teams, and cross-departmental reviews, supported by external insights from industry trends, peer disclosures, regulatory updates, and climate science sources such as the IPCC and local meteorological agencies. Scenario analysis—covering low- and high-warming trajectories—is used to evaluate potential physical and transition impacts across short-, medium-, and long-term horizons, and to highlight opportunities in efficiency gains, low-carbon material use, renewable energy integration, sustainable finance, and emerging technologies.

Assessment

Functional teams evaluate identified risks against likelihood and potential financial, operational, and reputational impacts, using both qualitative and quantitative criteria. This includes modelling potential cost increases, revenue impacts, asset impairments, funding implications, and brand considerations. Opportunities are assessed through cost-benefit analysis, environmental and social impact reviews, and regulatory and technological feasibility.

Prioritisation

Risks are prioritised using a risk matrix that combines probability and severity, assessed against Board-approved risk appetite. Those exceeding tolerance thresholds are escalated for formal consideration. Opportunities are prioritised by strategic fit, return on investment, scalability, and stakeholder interest—favouring initiatives aligned with net-zero goals and renewable capacity expansion.

Governance and Monitoring

Twice a year, functional teams present the latest climate-related risk and opportunity assessments to the Risk Management Committee. The Committee reviews the findings,

determines priority actions, and integrates agreed measures into business plans, capital allocation, and operational processes. Outcomes and progress are reported to the Board. In addition, quarterly internal monitoring tracks mitigation progress through defined KPIs—such as emission reduction and resource efficiency metrics—supported by real-time climate analytics and ongoing stakeholder engagement. Implemented opportunities are reviewed for sustained performance and impact.

Continuous Improvement

The process is regularly refined to integrate enhanced quantitative analysis, more sophisticated scenarios, and best practice alignment. Ongoing training equips employees to identify and respond to climate risks and opportunities effectively, fostering a sustainability-oriented culture. Reassessments occur in response to significant events, regulatory changes, or market shifts, ensuring that GIL's climate risk processes remain robust, relevant, and forward-looking.

Metrics & Targets

Operational Greenhouse Gas (GHG) Emissions

In FY 2024–25, Graphite India Limited’s (GIL) total absolute operational greenhouse gas (GHG) emissions—comprising Scope 1 and Scope 2—amounted to 270,940 metric tonnes of CO₂ equivalent (tCO₂e). This includes 89,350 tCO₂e of Scope 1 emissions from direct fuel combustion and 181,590 tCO₂e of Scope 2 emissions from purchased electricity.

Scope 1 greenhouse gas (GHG) emissions refer to direct emissions from sources that are owned or controlled by GIL. These primarily arise from the combustion of fuels in manufacturing processes and company-operated transportation activities across GIL’s operational sites.

Scope 2 GHG emissions refer to indirect emissions associated with the purchase and consumption of electricity. GIL reports Scope 2 emissions using the **location-based method**, which captures the average emissions intensity of the Indian electricity grid from which electricity is drawn.

Parameter	Unit	FY 2024-25	FY 2023-24	FY 2022-23
Total Scope 1 emissions	Metric tonnes of CO ₂ equivalent	89,350	96,999	1,10,968
Total Scope 2 emissions	Metric tonnes of CO ₂ equivalent	1,81,590	2,56,024	3,09,494
GHG emission intensity				
Total Scope 1 and Scope 2 emission intensity	tCO ₂ e/ Cr Rs of turnover	111.96	121.97	144.3
Total Scope 1 and Scope 2 emission intensity in terms of physical output	tCO ₂ e/MT	2.58	2.87	2.96

There was a 6.4% year-on-year reduction in Scope 1 emissions and a 29% reduction in Scope 2 emissions from FY 2023–24 to FY 2024–25. This decrease is primarily attributable to targeted energy efficiency measures, increased sourcing of renewable electricity, and process optimization across key manufacturing facilities.

GHG emissions intensity, a measure of emissions efficiency relative to business activity, also improved significantly. In FY 2024–25:

- Emissions intensity per ₹ Crores of turnover decreased to 111.96 tCO₂e, down from 121.97 in FY 2023–24.
- Emissions intensity per metric tonne (MT) of graphite electrode production fell to 2.58 tCO₂e/MT, compared to 2.87 in the previous year.

These improvements reflect GIL's ongoing decarbonization efforts and its commitment to reducing the climate impact of its operations while supporting industrial growth.

For GIL, the manufacturing operations are occurring in India with sales offices and assembly units abroad. Hence, according to the principle of relevance of the GHG Protocol, the GHG emissions occurring outside India are considered insignificant. Hence the emissions of the subsidiaries outside India are not used in the GHG emission calculations.

Value Chain GHG Emissions

GIL's Scope 3 greenhouse gas (GHG) emissions inventory for FY 2024–25 is aligned with the 15 categories outlined by the GHG Protocol Corporate Value Chain (Scope 3) Standard. The inventory is reviewed periodically, especially following significant operational or value chain changes. For FY 2024–25, GIL's total Scope 3 emissions amounted to 781,381 metric tonnes of CO₂ equivalent (tCO₂e).

Parameter	Unit	FY 2024-25	FY 2023-24	FY 2022-23
Total Scope 3 emissions	Metric tonnes of CO ₂ equivalent	7,81,381	8,11,089	Not calculated

A category-wise breakdown is as follows:

- Upstream emissions, which include purchased goods and services, fuel- and energy-related activities, and upstream transportation and distribution, accounted for approximately 50.7% of total Scope 3 emissions (396,295 tCO₂e).
- Downstream emissions, primarily from the use of sold products and downstream transportation and distribution, represented 48.9% (381,885 tCO₂e).
- Other minor categories, such as business travel and employee commuting, contributed less than 1% of Scope 3 emissions.

The most significant contributor was Category 11: Use of sold products, amounting to 330,323 tCO₂e, followed by Category 1: Purchased goods and services at 252,520 tCO₂e.

Category Description	Category No.	GHG tCO ₂ e (FY 24-25)
Purchased goods and services	1	252520
Fuel- and energy-related activities	3	57197
Upstream transportation and distribution	4	86578
Business travel	6	2702
Employee commuting	7	500
Downstream transportation and distribution	9	51562
Use of sold products	11	330323
Total Scope 3 GHG emission		781381

GIL continues to engage proactively with key suppliers and logistics partners to improve upstream emissions data accuracy and identify decarbonization opportunities. Simultaneously, it is exploring ways to influence downstream impacts through product design improvements and customer education. The overall Scope 3 emissions show a declining trend, supported by supplier engagement programs, value chain transparency initiatives, and increased use of renewable inputs.

Methodology for calculation of GHG emissions

All emissions are calculated in accordance with the GHG Protocol developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD). GIL adopts the equity share approach to define its organizational boundary for GHG accounting. This methodology aligns with the company's internal governance structure, where GIL has the authority to introduce and implement operating policies. It ensures consistency across assets—particularly given the company's operational control over all manufacturing units—while allowing for comparable year-on-year emissions tracking.

In line with the GHG Protocol, GIL uses emission factors that reflect the most recent scientific data and standards. Specifically, Global Warming Potential (GWP) values used in the inventory are sourced from the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report (AR6). Scope 1 and Scope 2 emissions are derived from both internal and third-party data sources, with due consideration given to data quality, uncertainty, and materiality. Specifically, for the location-based Scope 2 emissions, GIL used the grid emission factor laid down by the Central Electricity Authority, Ministry of Power, Government of India.

Scope 3 emissions are calculated using a combination of direct measurements where available, and estimates based on industry benchmarks or proxy data where primary data is not accessible. GIL follows the GHG Protocol: Corporate Value Chain (Scope 3) Accounting and Reporting Standard (2011), which outlines 15 categories of Scope 3 emissions across both upstream and downstream activities. Upstream emissions cover all indirect emissions related to purchased goods and services (eight categories), while downstream emissions relate to the use and disposal of GIL's products and services (seven categories).

The Scope 3 estimation methodology also aligns with the IFRS S2 requirements under the ISSB standards, which prioritize transparency in assumptions and data sources. At present, certain Scope 3 categories rely on industry-average emission factors or modelled data rather than supplier- or customer-specific inputs.

There were no changes in the calculation methodology or reporting boundaries during the reporting period. A detailed description of the emission calculation sources used by GIL is provided in the Annexure C.

Challenges for measurement of emissions

The measurement of Scope 1 and Scope 2 GHG emissions across GIL's operations employs a hybrid approach that combines both top-down and bottom-up methodologies. Emissions are calculated at the business unit and equipment level where feasible, using a mix of mass

balance techniques and activity-specific emission factors applicable to each country of operation.

Data inputs—such as fuel consumption logs, electricity invoices, and documentation related to process inputs (e.g., explosives and raw materials)—are collected and analysed monthly to ensure accuracy and completeness. This monthly cadence also supports calculation of relevant Scope 3 emissions, particularly Category 1 (Purchased Goods and Services) and Category 3 (Fuel- and Energy-Related Activities Not Included in Scope 1 or 2).

For FY2025, no new Scope 1 or Scope 2 emission sources were identified or included in the emissions inventory. Certain emission sources, including direct and indirect emissions from waste and effluent treatment processes (e.g., sanitary landfills, biological treatment, composting, incineration), and fugitive emissions from fire suppression systems (e.g., fire extinguishers), are currently excluded from GHG accounting. These sources have been deemed immaterial based on the Group’s internal materiality assessment and their marginal contribution to the overall emissions footprint.

Other cross-industry metrics

Climate Transition Risk

A preliminary assessment of our business portfolio indicates that approximately 90% of our operational assets may be moderately to highly vulnerable to climate-related transition risks, particularly due to emerging carbon regulations, shifts in customer preference for low-carbon materials, and potential carbon pricing mechanisms. These constitute the revenue composition from graphite electrodes, calcinated petroleum coke, and high-speed steel.

Product Category	% of Revenue	Climate Transition Risk	Key Risk Drivers
Graphite Electrodes & Misc. Graphite Products	75.03	Very High	Steel sector decarbonization, CBAM, product standards
Calcined Petroleum Coke	5.73	Very High	Fossil origin, GHG emissions, potential phase-out
Impervious Graphite Equipment & Spares	7.09	Medium	Client industry transitions, value chain expectations
High Speed Steel	9.21	High	Carbon-intensive manufacturing, sustainable procurement trends

Climate Physical Risk

We have conducted a high-level screening of our manufacturing facilities against acute and chronic physical hazards (e.g., extreme heat, flooding, water stress). Several of our assets are located in regions exposed to physical climate risks under RCP 4.5 and RCP 8.5 scenarios. A detailed breakdown of the physical risk vulnerability at a unit-level is available in Annexure B. The following table highlights the exposure to physical risks in our direct operation.

Risk Category		% of Revenue at Risk
Acute	Extreme Rainfall and Flood	80%
	Storm and Cyclone	76%
	Extreme Heat Events	100%
Chronic	Water Stress & Drought	87%
	Temperature Rise	100%
	Sea-level Rise	92%

Climate-Related Opportunities

As demand grows for greener products such as graphite electrodes used in Electric Arc Furnaces (EAFs), we estimate that **90%** of our product portfolio is currently aligned with climate-related opportunities. This includes product categories supporting low-carbon steelmaking and energy efficiency. We are actively investing in R&D to increase the share of low-emission product lines and tap into the growing global EAF market.

Capital Deployment

In FY2024-25, we allocated approximately **₹115 Crores**, towards initiatives supporting our climate strategy. These include renewable energy installations, energy efficiency upgrades, green electricity procurement additional cost, and process optimization to reduce GHG emissions. Going forward, we are developing a capital allocation framework aligned with our short-term climate targets and adaptation planning, considering the different climate scenarios and their impacts on capital allocation, as disclosed in the Strategy section of this report.

Chemicals industry-specific metrics (in addition to GHG emissions)

In addition to tracking greenhouse gas (GHG) emissions, the chemicals industry is subject to a range of other significant operational impacts from energy, water, product design, and such topics. As per the IFRS S2 sector-guidance document for the Chemicals sectors (petrochemicals), we have disclosed the following.

Energy Management

Source	Unit	FY 2024-25	% total
Non-renewable Fuel consumed	GJ	6,44,132	33%
Grid Electricity (non-renewable)	GJ	8,79,415	45%
Renewable Electricity	GJ	4,25,306	22%
Self-generated Energy	GJ	0	0
Total Energy consumed	GJ	19,48,854	100%

Water Management

Total water withdrawal	Unit	FY 2024-25
Surface Water	Thousand cu. m.	150
Groundwater (Borewells)	Thousand cu. m.	37
Total Water Withdrawal	Thousand cu. m.	187
Total Water Consumed	Thousand cu. m.	187

Operation in regions with water stress

GIL operates in several regions identified as experiencing high or extremely high-water stress, making responsible water management a material issue. Majority of the water withdrawal is happening at our Durgapur plant. GIL has adopted a proactive approach to minimize freshwater withdrawal and improve water-use efficiency across its manufacturing facilities. As per the water stress map, provided by the World Resource Institute (WRI) Aqueduct, the following highlights the entity-wise location and water consumption.

Entity	Operating State	Location	Water Stress	% total water consumption
GE manufacturing	West Bengal	Durgapur	High	46.70%
Coke Division	Bihar	Barauni	Very High	8.70%
Chunchanakatte Hydel Power Plant	Karnataka	Mysore	High	NA
GE division	Maharashtra	Satpur, Nasik	Very High	21.32%
IGE Division	Maharashtra	Ambad, Nasik	Very High	9.81%
Powmex Steel Division	Odisha	Titilagarh	High	11.08%
GRP Division	Maharashtra	Gonde, Nasik	Very High	2.39

The company has implemented measures such as water recycling and reuse systems, evaluating rainwater harvesting structures, zero liquid discharge (ZLD) technologies across all the units, and regular water audits to monitor usage patterns and identify conservation opportunities. GIL also engages with local stakeholders to ensure that its operations do not adversely impact community water availability. Through these efforts, GIL remains committed to aligning with sustainable water management practices, reducing its water footprint, and contributing positively to the resilience of water-scarce regions. In FY24-25, there has been zero incidents of non-compliance with water quality permits, standards, and regulations.

Water conservation roadmap

GIL has outlined a multi-year water conservation strategy aimed at reducing total water withdrawal and consumption through a combination of technological upgrades, operational improvements, and behavioural interventions. Key initiatives include the phased installation of flowmeters, upgradation of the Sewage Treatment Plant (STP) with 100% reuse of treated water for gardening, and above-ground fire hydrant line installation to minimize underground leaks.

Additional actions involve improving cooling tower efficiency, conducting preventive maintenance, section-wise installation of digital water meters, setting consumption baselines, and promoting employee awareness on water conservation. Across all years, a consistent focus is maintained on identifying and arresting leakages, replacing high-flow taps with push-button variants, and reviewing consumption data for ongoing optimization. These integrated efforts reflect a structured approach to enhance water efficiency, minimize losses, and foster a culture of sustainable water use.

Moving forward, we are evaluating measures so that we can decrease our total water consumption and thus withdrawal. One such initiative that we have identified is rainwater harvesting at Durgapur and Satpur. Our facilities are not suitable for on-site rainwater harvesting due to the possibility of contamination from chemical reactions occurring in the operation. Thus, we are in the process of conducting feasibility studies on off-site rainwater harvesting in the employee housing colonies for all facilities across different states.

Product Design Efficiency

GIL places strong emphasis on product design that enhances efficiency during the use phase, thereby supporting customer sustainability goals and contributing to broader environmental performance. The company continuously invests in R&D to engineer products—such as graphite electrodes and specialty graphite components—that offer superior thermal and electrical conductivity, longer operational life, and reduced energy consumption in end-use applications like electric arc furnaces, metallurgy, and high-temperature industrial processes. By optimizing material properties and tailoring solutions to specific industrial needs, GIL enables customers to achieve higher productivity, lower downtime, and reduced greenhouse gas emissions during product usage. This focus on efficient product design reflects GIL’s commitment to circularity and lifecycle thinking, while aligning with global trends toward low-carbon manufacturing.

Our product labels and technical documents provide clear, complete, and truthful information regarding product composition, usage guidelines, and safety precautions. We ensure that any promotional content adheres to ethical standards and avoids misleading claims. 100% of our products bear information on safe and responsible usage, recycling and/or safe disposal. 100% of our products are designed for use-phase resource efficiency. Cumulatively, the products account for 97% of the total revenue of the company in FY 24-25.

Product Category	% of Revenue	Production (metric tonne) in FY 24-25
Graphite Electrodes & Misc. Graphite Products	75.03	76,400
Calcined Petroleum Coke	5.73	24,283
Impervious Graphite Equipment & Spares	7.09	1,219
High Speed Steel	9.21	2,998

Climate-related targets

In FY24-25, GIL undertook formal targets around reduction of GHG emissions in the direct operations, covering the same reporting entities covered in this report boundary. The Company has set short-term targets to reduce its Scope 1 and Scope 2 greenhouse gas (GHG) emissions as part of its broader commitment to climate action and sustainable operations. Recognizing the importance of decarbonizing its manufacturing processes, GIL aims to achieve measurable emission reductions over the next 3 to 5 years by improving energy efficiency across its facilities, optimizing furnace operations, and transitioning to cleaner energy sources, including increased procurement of renewable electricity.

Topic	Goal	Key Performance Indicators (KPIs)	Targets
GHG Emission	<i>Reduce our emissions aggressively with a clear pathway to near term target achievement.</i>	Gross scope 1 GHG emissions	Reduction of 28.2% by FY 30-31 w.r.t baseline FY 21-22
		Gross Scope 2 GHG emissions	Reduction of 9.3% by FY 30-31 w.r.t baseline FY 21-22

Target Setting Process and Review Approach

The Company follows a structured, quarterly review process led by its Environmental Management Team, which comprises internal specialists and external advisors. These reviews assess the relevance and achievability of existing climate targets and evaluate performance against a set of key performance indicators (KPIs). If any target is deemed misaligned with evolving business conditions or scientific benchmarks, the Management Team suggests revisions, which are then formally approved by the Board along with a transparent explanation. No changes have been made to the previously set targets in the current reporting period.

Performance Against Climate-Related Targets

GIL has made steady progress toward reducing its carbon footprint. Over the past year, the company achieved a **23.2%** reduction in GHG emissions across Scope 1 and 2. This progress reflects a deliberate shift toward cleaner energy sources and energy-efficient technologies implemented across key manufacturing sites. GIL's continuous focus on operational efficiency and responsible resource management has played a critical role in improving climate performance without reliance on external offset mechanisms.

Planned Use of Carbon Credits

GIL is committed to achieving its GHG emissions reduction targets through direct operational improvements and structural abatement measures. The company has taken a clear stance to not rely on carbon credits, whether voluntary or compliance-based, to meet its targets. This approach underscores GIL's focus on tangible, internally driven climate action and reinforces its long-term goal of aligning with decarbonization pathways rooted in real emissions reductions.

Annexures

Annexure A: Board member biographies

Name	Skill Experience/ Competence
K. K. Bangur	<ul style="list-style-type: none"> • Over 39 years of experience in managing the affairs of companies and its business activities • Has been a Director of Graphite India since July 1988 and Chairman since July 1993 • Chairman of Stakeholders Relationship Committee, CSR committee and member of Nomination & Remuneration Committee, Committee for Borrowings and Investment Committee of the Company. • Past President of Indian Chamber of Commerce, Kolkata, Executive Committee member of FICCI, New Delhi and the past President of All India Employers Organization, New Delhi
Ashutosh Dixit	<ul style="list-style-type: none"> • Mechanical Engineer with an MBA and PG Certificate in Metallurgy and has over 25 years of experience in the industry • Joined the Company as President in November 2017 and was appointed as a Whole-time director (designated as 'Executive Director' w.e.f. 1.4.2020).
A. V. Lodha	<ul style="list-style-type: none"> • Mr. Lodha is a Chartered Accountant and was Country Managing partner of Lodha and Company, Chartered Accountants, one of India's leading accountancy and consulting firms.
Gaurav Swarup	<ul style="list-style-type: none"> • Mr Gaurav Swarup is a qualified engineer and holds an MBA degree from Harvard University. He is an industrialist of repute and is presently Managing Director of Paharpur Cooling Towers Ltd, Kolkata and Chairman of KSB Pumps Ltd, Pune
Sudha Krishnan	<ul style="list-style-type: none"> • Mrs Sudha Krishnan has close to four decades of experience in public policy and finance. She has worked in various capacities with the Government of Karnataka, the Office of the Comptroller and Auditor General of India, the Ministry of Finance - Government of India, Joint Secretary and Financial Adviser to the Ministry of Urban Development- Government of India, Secretary to Government of India and Member (Finance) -Space Commission and Atomic Energy Commission from where she retired.
Sridhar Srinivasan	<ul style="list-style-type: none"> • Mr. Sridhar Srinivasan is a Chartered accountant with over 34 years of work experience and specialised knowledge in Banking, Economics, Finance, Risk Management, Business Management. He was with Citi GIL for over 28 years and was head of Central, Eastern Europe, Middle East, Africa and was GIL head of India Corporate Banking. He was Partner and India head of Oliver Wyman, a global management consultancy firm and presently is their Senior Advisor.
Harsh Pati Singhania	<ul style="list-style-type: none"> • Mr. Harsh Pati Singhania, is an MBA from the University of Massachusetts, USA and an alumnus of the Harvard Business School, USA. He has rich and wide experience of over 36 years in managing the company affairs ranging from operations, strategy, governance, corporate affairs and business performance and he has been actively involved with various business restructuring activities. He is presently Chairman and Managing Director of JK Papers Ltd.

Rahul Kumar N Baldota	<ul style="list-style-type: none"> • Mr. Rahul Kumar N Baldota, holds a Bachelor's degree in Production Engineering and has completed Masters in Business Administration from the University of Illinois, Chicago, USA. He has over 30 years experience in managing company affairs and business and is presently the Joint Managing Director of MSPL Limited, one of India's leading mining organization and the flagship company of the Baldota GIL. He joined MSPL Limited in 1993.
Debanjan Mandal	<ul style="list-style-type: none"> • Mr. Debanjan Mandal is a St. Xavier's Alumnus and is the Managing Partner of Fox & Mandal, Eastern-India's Largest law firm. He has over 21 years of post-qualification experience in the field of corporate and commercial laws, real estate, infrastructure, dispute resolution and mergers and acquisitions. He has successfully conducted many high-stake litigations. He is a Member of the Incorporated Law Society, High Court at Calcutta, Supreme Court Bar Association and International Bar Association, U.K. He is also a Member of the Executive Committee of Indian Chamber of Commerce and Chairman of ICC National Expert Committee on Corporate & Legal affairs.

Annexure B: Exposure and Vulnerability of Physical Assets

Risk Category		Timeframe of impact	Impact Pathway	Exposure (unit-level)	Vulnerability (unit-level)
Type	Risk				
Direct Operation					
Acute	Extreme Rainfall and Flood	Short, Medium	Flooding of roads, logistic hubs and manufacturing facilities	Durgapur, Barauni, Titlagarh have high exposure. Together, these three units account for roughly 80% of total turnover.	All operating locations have stability inspection each year, have insurance covering climate hazards, emergency response plan. In addition, Durgapur and Odisha plant have flood defence systems in place.
	Storm and Cyclone	Short, Medium	Storm surge and cyclones affecting infrastructure assets	Durgapur, Mysore and Titlagarh have moderate exposure. Together, these three units account for roughly 76% of total turnover.	All operating locations have stability inspection each year, have insurance covering climate hazards, emergency response plan.
	Extreme Heat Events	Short, Medium	Heatwaves disrupting properties and labour	All locations are moderately to severely affected. Hence exposure is 100% to heatwaves and such heat events.	All units have undergone structural upgradations to insulate the effects of heatwaves and extreme heat events. The units are supported with appropriate HVAC systems and occupational health and safety measures including trainings.

Chronic	Water Stress & Drought	Medium, Long	Water stress affecting electrode cooling process	Durgapur, Barauni, Satpur, Ambad and Nasik have high water stress. Together, these units account for roughly 87% of turnover.	Operations at water stress regions are analyzed for water use optimization, usage trends, and projected demand. Durgapur and Satpur are considering rainwater harvesting initiatives in colonies. All units have zero liquid discharge.
	Temperature Rise	Long	Rising energy demand for cooling due to temperature rise	Low to moderate exposure to temperate rise. 100% of the turnover is exposed since temperature rise/global warming occurs at a macro level.	Units are analyzed for energy efficiency through process and product optimizations.
	Sea-level Rise	Long	Sea-level rise impacting infrastructure	Low to medium exposure to sea level rise at Durgapur, Odisha and Maharashtra. These units are located close to the coast and collectively account for 92% of the turnover.	Certain measures such as construction of seawalls, and site elevations are in place.
Value Chain - Upstream					
Acute	Extreme Rainfall and Flood	Short, Medium	Flooding of ports	Kolkata Port and Mumbai Port are at high exposure.	
Chronic	Sea-level Rise	Long	Sea-level rise impacting ports	Kolkata Port and Mumbai Port are at high exposure.	
Value Chain - Downstream					
Acute	Extreme Rainfall and Flood	Short, Medium	Flooding of ports	Kolkata Port and Mumbai Port are at high exposure.	

Chronic	Sea-level Rise	Long	Sea-level rise impacting ports	Kolkata Port and Mumbai Port are at high exposure.
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Data Sources:

Flood	https://www.nrsc.gov.in/sites/default/files/pdf/DMSP/FloodAffectedAreaAtlas_Digital.pdf
CEEW	https://www.ceew.in/sites/default/files/ceew-study-on-climate-change-vulnerability-index-and-district-level-risk-assessment.pdf
Heatwave	https://www.ceew.in/sites/default/files/mapping-climate-risks-and-impacts-of-extreme-heatwave-disaster-in-indian-districts.pdf
Water Stress	https://www.wri.org/applications/aqueduct/water-risk-atlas/#/?advanced=false&basemap=hydro&geoStore=c6f55e423ddf4a40409dcd5c9d61394a&indicator=bws_cat&lat=20.85470496748256&lng=82.045895755291&mapMode=analysis&month=1&opacity=0.5&ponderation=DEF&predefined=false&projection=absolute&scenario=optimistic&scope=baseline&threshold&timeScale=annual&year=baseline&zoom=6
Cyclone	https://rsmcnewdelhi.imd.gov.in/uploads/climatology/hazard.pdf
Temp rise	https://climate.nasa.gov/vital-signs/global-temperature/?intent=121
Sea level rise	https://sealevel.nasa.gov/ipcc-ar6-sea-level-projection-tool?type=global

Annexure C: GHG Emission Calculation Methodology and Data Sources

Scope 1 GHG Emissions

Category	Activity Data Source	EF/GWP Source	Methodology & Uncertainty
Stationary Combustion	Fuel invoices for industrial use	Calculation Tools & Guidance (GHG Protocol), CDM paper on Coal Bed Methane emission (UNFCCC), DEFRA database, GHG Protocol Cross-sector tool	high primary data quality, low uncertainty
Transport Combustion	Fuel purchase records	Calculation Tools & Guidance (GHG Protocol), DEFRA database, GHG Protocol Cross-sector tool	Based on actual fuel use; high data quality
Process Emissions	Production data	Calculation Tools & Guidance (GHG Protocol), DEFRA database, GHG Protocol Cross-sector tool	Calculated using input volumes and EF; direct measurement
Fugitive Emissions	Telemetry data, leak estimation	IPCC data, secondary research	Direct measurement + estimates

Scope 2 GHG Emissions

Category	Activity Data Source	EF/GWP Source	Methodology & Uncertainty
Purchased Electricity	Utility Bills	Central Electricity Authority, Ministry of Power, Government of India	Location-based method; high data quality

Scope 3 GHG Emissions

Category	Description	Activity Data	EF/GWP Source	Methodology & Notes
1 – Purchased Goods & Services	Emissions from goods, services, and capital purchases	General ledger, procurement data	DEFRA (2023), Ecoinvent 3.9.1, secondary research	Spend-based and input-specific where feasible

3 – Fuel & Energy-Related Activities	Upstream emissions from energy purchases	Fuel transaction history	DEFRA (2024), GHG Protocol	Fuel- and distance-based methods
4 – Upstream Transportation & Distribution	Freight and logistics under supplier control	Estimated distance, fuel, cargo	DEFRA (2024), GHG Protocol	Fuel-based and distance-based estimates
6 – Business Travel	Employee travel (non-owned vehicles)	Invoices, travel booking data	DEFRA (2024)	Air: distance-based; land: spend-based
7 – Employee Commuting	Travel from home to work	Estimated fuel data	DEFRA (2024)	Fuel- and distance-based modelling
9 – Downstream Transportation & Distribution	Freight and logistics under customer contracts	Distance, vehicle efficiency	DEFRA (2024), GHG Protocol	Fuel- and distance-based; one-way cargo consideration
11- Use of Sold Products	Purchase Orders	Product sold quantity	Secondary research	Use-phase emission of each product type, medium uncertainty