Graphite India Ltd

FY22-23

Climate-related Financial Disclosures

ABOUT Graphite India Limited

Graphite India Ltd (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.

With efficient global partners and proximity of our manufacturing facilities to inland customers and seaports, GIL is able to ensure timely deliveries to its customers. Over the years GIL has emerged to become an established and reputed brand in the Global Market. 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.

Having started in 1967 in collaboration with erstwhile Great Lakes Carbon Corporation (GLCC) of USA, GIL has been continually improving its product quality and services thereby scaling newer heights of excellence and customer recognition. This journey has been fuelled by our reliance on cutting-edge technology, a natural penchant for innovation and creativity, eco-friendly approach in production process, consistency of product quality and services as well as productivity and cost optimization.

25+	**50+**
Awards And Recognitions	**Years Of Excellence**

ABOUT THIS REPORT

Reporting content

This Report sums up our governance, strategy, risk management and performance - an effective confluence of aspects that drives our sustainability agenda. To better serve our investors, customers, communities, people and other stakeholders and to help them make informed decisions, we have developed this report aligned with the Taskforce on Climate-related Financial Disclosures (TCFD) framework released in 2017.

We realise that the biggest threat to our business could be from effects of climate change. Climate risks are an integrated into the financial risk management to prepare our business for sustained growth. We have discussed about these risks across our business value chain and how managing this risk is an integral part of our business risk management process. Reconfiguring business to operate viably within planetary boundaries is the next global frontier that we must scale. It is a humongous transformation and presents equally large opportunities. We at Graphite India have been leading from the front and are in hot pursuit of the ambitious goal to become a Net Zero Carbon company in line with national targets. This report is an effort to build further on our ESG Report in FY 22-23 and showcase the integration of climate risk into the financial planning and organizational strategy.

Reporting boundary

Our reporting entities include those in operation in India, as listed below. This is true for all the environmental parameters disclosed such as energy, greenhouse gas (GHG) emissions, water, and waste. For GHG emissions, the "Operational Control" approach of Greenhouse Gas Protocol's Corporate Accounting and Reporting Standard (Revised Edition) has been used. In line with the principles of Relevance and Completeness, emission source mapping has been done ignoring commercial aspects of contracts with stakeholders like customers and suppliers.

Entity Type	Country of Operation	Operating State/District	Location
Plant	India	West Bengal	Durgapur
Plant	India	Bihar	Coke Division, Barauni
Plant	India	Mysore	Chunchanakatte Hydel Power Plant
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
Office	India	West Bengal	Kolkata
Office	India	Maharashtra	Mumbai
Office	India	Delhi	Delhi

GOVERNANCE

Board and Management oversight on ESG

Our governance structure follows the best practices by integrating the Environmental, Social and Governance considerations in business decisions. The Board ensures that ESG performance monitoring and decision making permeates through different levels in the organization. From the Executive Director level the overall direction to our sustainability efforts is provided. Post the global crisis of 2020, the company has increased focus on Corporate Resilience. The financial disclosures involving climate-related risks and opportunities are an integral part of the sustainability transition.

The ESG aspects and Risk Management are further incorporated within the organization by establishing a corporate Risk Management program. This system has been implemented across the Company to enable all the employees and business associates to raise any kind of risk identified by them up to the next level. The risk management framework has the provision to evaluate, prioritize and escalate the risk till the highest governing body within the organization. Plans for managing and mitigating material risks, including climate related and other environmental topics as appropriate and external risks, are regularly reported to the leadership.

The Board examines and approves the ESG priorities, action plan, risks and its mitigation plans. Its business plan incorporates the guidelines to promote a sustainable business model and lay down the basis for long term value creation. The Board is supported in the ESG oversight through dedicated committees, the details of which are available at https://graphiteindia.com/investors/. The climate-related risks and opportunities are overseen by GIL through the following committees.

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. The Committee meets periodically to track progress of our CSR activities and budget allocations.

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 including external risks, the content of discussions at RMC meetings, recommendations and actions taken.

Enterprise Risk Management Program

GIL's Enterprise Risk Management (ERM) program is the company's framework for identifying, assessing, monitoring, and mitigating the company's most significant risks. The Management is responsible for overseeing implementation of the program. The ERM process requires a broad understanding of internal and external factors that can impact the company's objectives, and the ability to adapt to an evolving risk landscape.

A wide range of risks faced by GIL are included in this ERM process, including ESG-related issues that could present enterprise-wide financial risks such as credit risk, liquidity risk, market risk, etc. This includes the evaluation of a wide array of issues associated with climate change through their transmission into the financial system. Some risks include customer requirements/issues (e.g., need for energy efficient products to address climate change regulations, consumer demands, profitability, etc.); operational issues (including new climate-related regulations, or issues resulting from natural disasters); and supply chain challenges (including weather-related disruptions influenced by climate change).

Risks identified are then prioritized according to significance on business. The risks are reviewed annually with GIL's senior leadership and the Board of Directors. Identified risk owners are responsible for overseeing the development and execution of detailed mitigation plans and reporting to, and updating, the Risk Management Committee.

GIL's approach to governance for climate-related risks and opportunities aims to provide a comprehensive framework that can identify, manage, and respond to risks and opportunities in a timely and effective manner. In many instances, GIL leverages the existing Board and enterprise processes to manage these risks and opportunities.

STRATEGY

Climate-related Risks and Opportunities

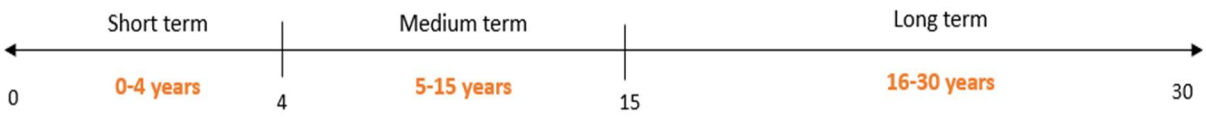
By climate change, we refer to the atmospheric changes directly or indirectly attributed to human activity that alters the composition of the global atmosphere. It is one of the most complex issues facing us today and involves many different dimensions – science, economics, society, politics and moral and ethical questions. Their impact on business around the world is a cause of concern, especially given their unpredictability.

In order to ensure business continuity, adapting to actual or future climate events is essential. It is important to analyse the extent to which environmental and climate-related impacts could affect our value chain – supply chain, operation and assets, logistics and market – which would have an impact on financial performance. Climate change adaptation and resilience measures require location-specific assessment of climate risks and suitable approaches to address them. Climate related risks and opportunities are being studied in detail at our several plant locations and are highlighted in the following sections. The objective of our study is to understand which climate-risks are a cause of concern for GIL, and how they influence the financial aspects of the business.

Understanding environmental factors that may pose risks to our products and operation and how such risks may evolve over time.

Translating environmental risk factors into quantitative measures of financial risk that can, in turn, inform our risk management and investment decisions.

Through this structured process, GIL identified a range of climate-related risks and opportunities over different time horizons. Those time horizons are defined as follows:



Following the recommendations of the TCFD framework, climate risk is divided into two broad categories: **physical risk** and **transition risk.** Physical risks arise from the physical climate (and weather) impacts that result from the changing climate, whereas transition risks arise from the economic transformation and any dislocation needed to drastically reduce, and eventually eliminate, net greenhouse gas emissions to reach net-zero emissions—a goal that India has committed to attain by 2070.

Physical risks result from **hazards** that are usually subdivided into acute and chronic hazards. The former includes weather-related or weather-exacerbated events, whose incidence are increasing with climate change, such as floods, heat waves, and wildfires. The latter includes gradual, long-term trends such as rising average temperatures and sea levels. The equivalent drivers of transition risk include factors such as tighter government policies to reduce emissions (e.g., through direct or indirect carbon related taxes), technological changes (e.g., cheaper renewables making fossil fuel–based power generation less economical by comparison), and bottom-up consumer pressures for sustainable products.

But for both kinds of risk to become manifest, hazards (or driving factors) are not enough alone. In the face of these hazards and factors, different kinds of assets and companies will have differing levels of **exposure** and **vulnerability**. Exposure, here, is used in the classic financial sense of assets or firms that are in a vulnerable place or setting.

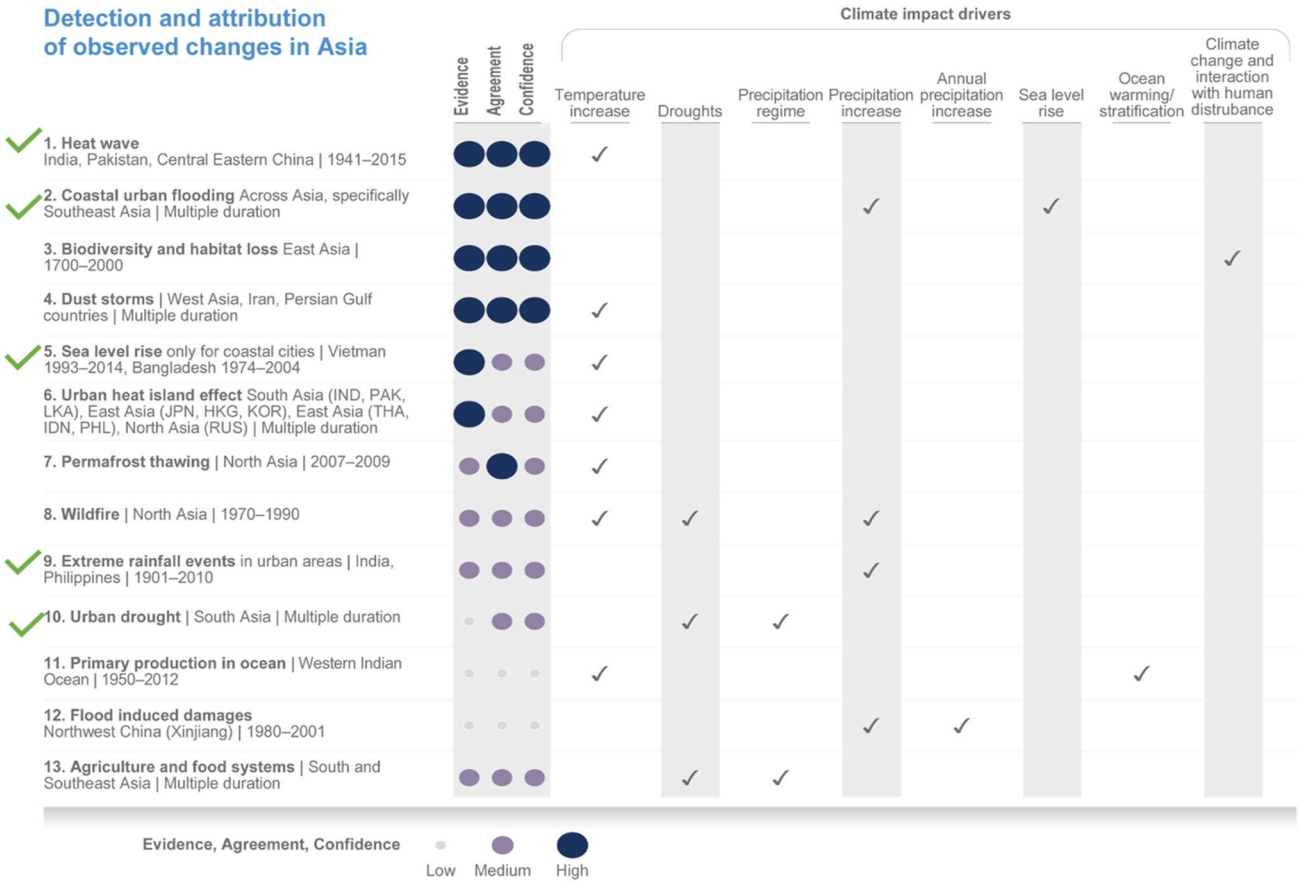
Vulnerability—a concept linked to notions of resilience, flexibility, and adaptation—is less of a focus in traditional financial risk, but it is integral to considerations of climate risk, especially physical climate risk. It refers to the propensity or predisposition of the asset (or firm) to suffer adversely from its exposure to hazards. At the facility level, vulnerability to physical climate risk typically depends on physical infrastructure.

We understand the importance of building capabilities, processes, and governance to integrate climate risk into decision making and thus into the overall business strategy. At the same time, it is imperative that our climate risk strategy is consistent with the overall culture and goals of the organization. The integration into business strategy involves the following aspects:

Climate-related Physical Risks

GIL examines how physical climate risks could affect our operations using our business continuity frameworks. Through this process we integrate a number of risks such as flood, high heat, increasingly unpredictable weather patterns, and such physical risks which can affect our business. As a result of this exercise, GIL plans to integrate additional risks into its future planning through effective monitoring. The Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report (AR6) has been used for identifying and assessing the physical climate risks associated with a business like ours. For more information on the data sources, please visit: https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter10.pdf.

The IPCC's AR6 shows the following physical hazards being relevant for businesses operating in Asia, and specifically for South Asia comprising India. Of these hazards, some are very significant in the states where our facilities are located in Maharashtra, West Bengal, Odisha and Bihar. Referring to the report, we have decided to consider cyclone, high heat and drought, unpredictable weather patterns and water stress, and coastal flooding and sea-level rise as the potential hazards capable of affecting our business.

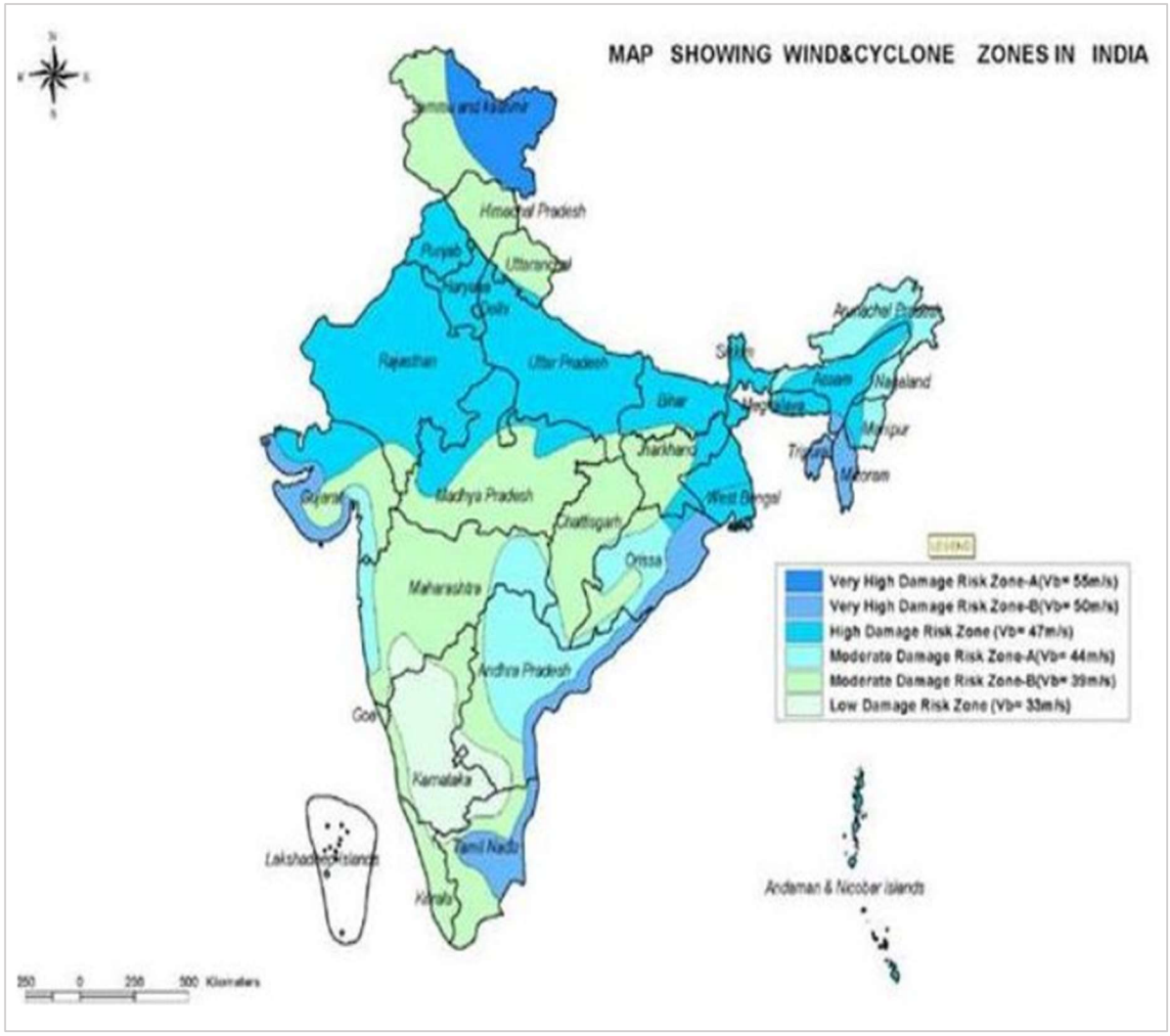


Source: https://www.ipcc.ch/report/ar6/wg2/figures/chapter-10/

Cyclone

Cyclones are caused by atmospheric disturbances around a low-pressure area distinguished by swift and often destructive air circulation. Over the last few years, the number of cyclones and hurricanes have gone up in India. Some of the notable ones were cyclones 'Amphan' and 'Yaas' which heavily

affected the states of West Bengal and Maharashtra. According to data released by the National Disaster Management Authority, the Indian subcontinent is one of the worst affected regions in the world. The subcontinent with a long coastline of 8041 kilometres is exposed to nearly 10 per cent of the world's tropical cyclones. Of these, the majority of them have their initial genesis over the Bay of Bengal and strike the East coast of India. On an average, five to six tropical cyclones form every year, of which two or three could be severe. The impact of such cyclones is expected to worsen with increased weather fluctuations due to anthropogenic global warming. Our plants in West Bengal and Bihar are in High Damage Risk Zones, while the ones in Maharashtra and Odisha in Moderate Damage Risk Zones. GIL's plants and suppliers are at risk of amplified cyclone activity in the medium to long term.



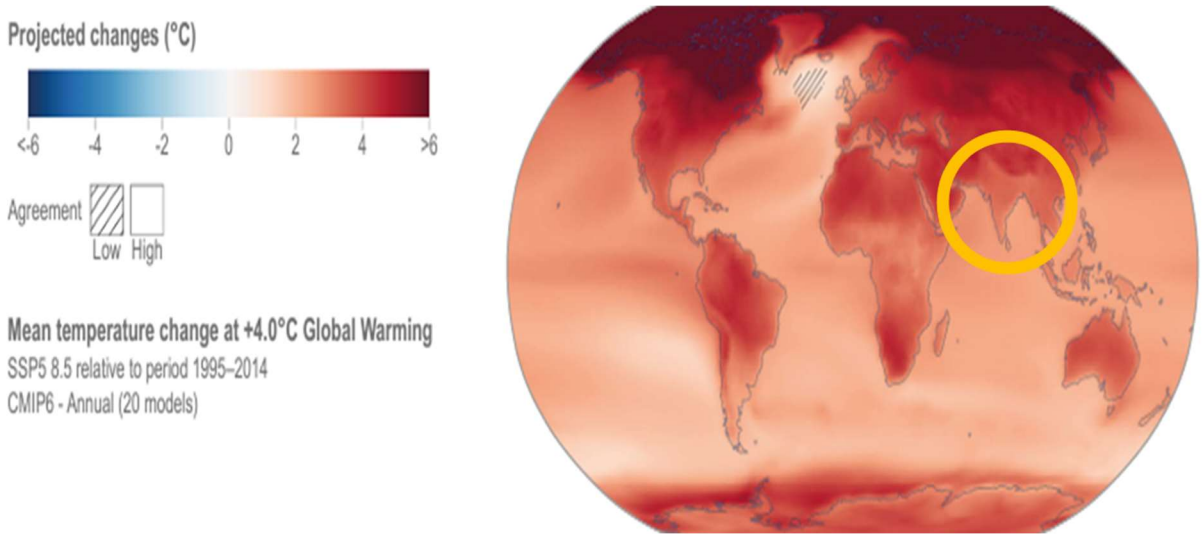
Source: https://ndma.gov.in/Natural-Hazards/Cyclone

In terms of operations, cyclones pose potential risks to employee safety and on-time deliveries and of loss of power, communications system disruptions, customer disruptions, and damage to property. In the supply chain, the potential risks can cause logistics and utility network disruption, affect material supply and strain import/export logistics networks.

High Heat and Drought

The IPCC AR6 claims, with high confidence, that observed surface air temperature has been increasing since the 20th century all over Asia. Higher daily peak temperatures and longer, more intense heat waves are becomingly increasingly frequent globally due to climate change. India too is feeling the impact of climate change in terms of increased instances of heat waves which are more intense in nature with each passing year and have a devastating impact on human health thereby increasing the number of heat wave casualties. Every additional 0.5°C of global warming causes clearly discernible increases in the intensity and frequency of hot extremes, including heat waves. Climate scientists project that under the current level of greenhouse gas emissions and regulatory and policy landscape, the Earth is on track for a 3-4°C of warming. The predictions have been made based on the projected radiative forcing of the Earth under increasing emissions.

Data released by the IPCC shows the mean temperature change of the Earth in a 4°C global warming scenario. The baseline temperature has been taken from the period 1995-2014 i.e post industrial time. The predicted temperature rise in the Indian geography is upwards of 2°C which is significant.



Source: IPCC_AR6_WGII_Annex-1

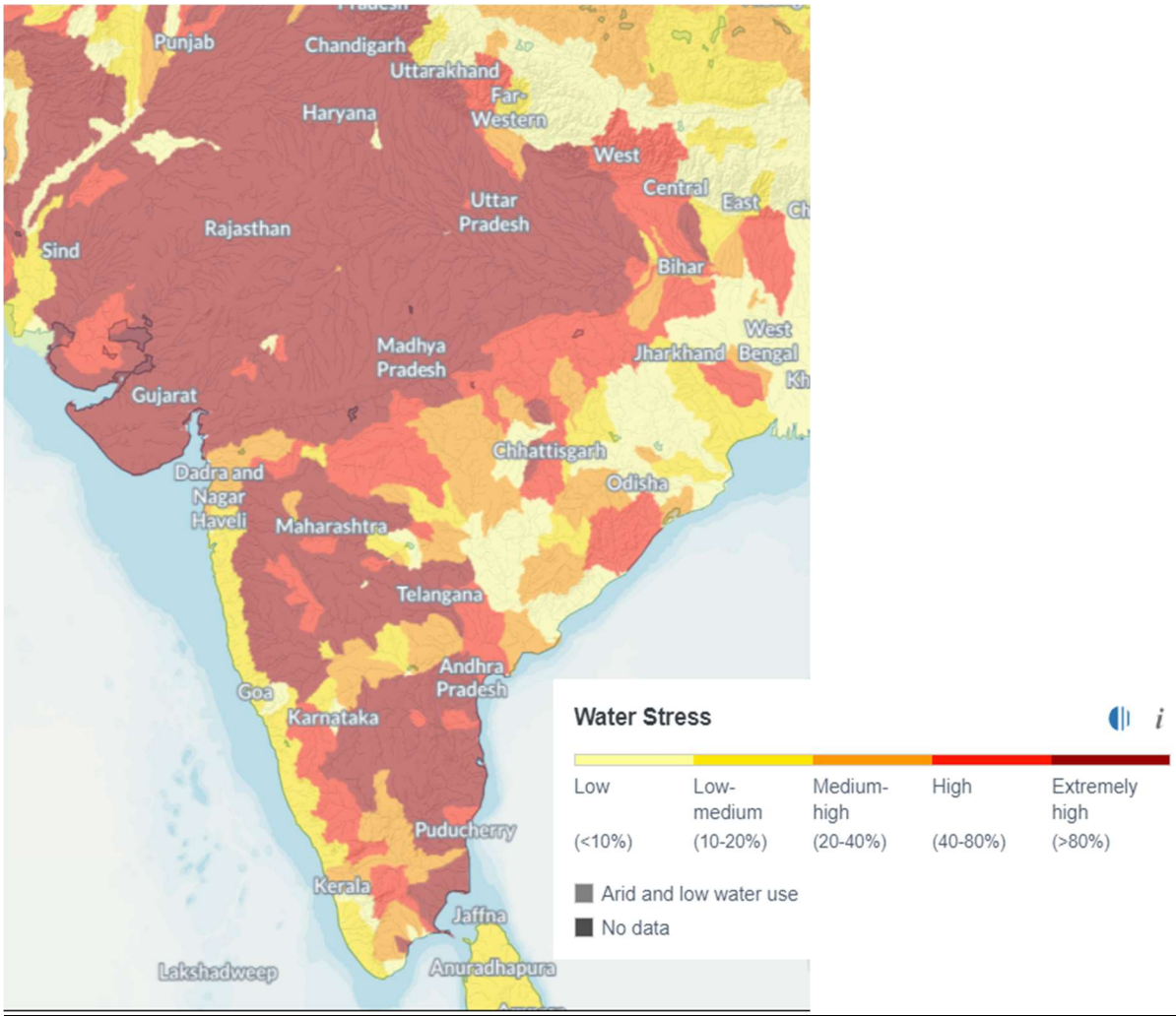
In terms of business operations, increased frequency of high heat days caused by climate change can create safety and productivity challenges for manufacturing and field service work. Longer term, population migration and related social issues could impact workforce availability. High heat temperature allowances for hourly staff in related working areas can lead to increased costs, higher employee turnover and worker shortages. Potential government mandates to stop working on high heat days could impact production and on-time deliveries. An increased spread of high temperature related diseases and illnesses can impact workforce availability. High temperatures may damage sensitive components and materials in operations and also cause energy shortages, increased cooling costs and brownouts that may disrupt operations.

In the supply chain, water-intensive upstream materials can be impacted by droughts caused by excessive and persistent high heat.

Unpredictable Weather Patterns & Water Stress

Climate change results in changes in precipitation and temperature patterns. In the medium and long term, regions around the world can expect changes in the number of high heat days in the summer, winter weather and precipitation patterns, and water scarcity (groundwater depletion). This impact is region-specific. Operational disruptions from energy grid, spikes in demand due to extreme high or low temperatures, high energy prices, flooding and infrastructure damage from more intense storms and water quality issues due to heat can result from unpredictable and more extreme weather patterns, including water stress. According to the IPCC AR6, both climatic and non-climatic drivers such as socio-economic changes have created water stress conditions in both water supply and demand in all sub-regions of Asia.

The following figure shows the water stress across India. The states of Bihar, Odisha, Maharashtra, and Mysore are under high or extremely high water stress levels. Hence this hazard is a significant climate risk for us at GIL, given that majority of our sites lie in states with high water stress levels.



Source: [Aqueduct Water Risk Atlas (wri.org)]

Unpredictable weather fluctuations can affect our business infrastructure. Extreme heat, cold, precipitation or drought can impact energy, water and transportation infrastructure. Hence,

operations can potentially be disrupted due to government mandates to stop work or low employee attendance rate.

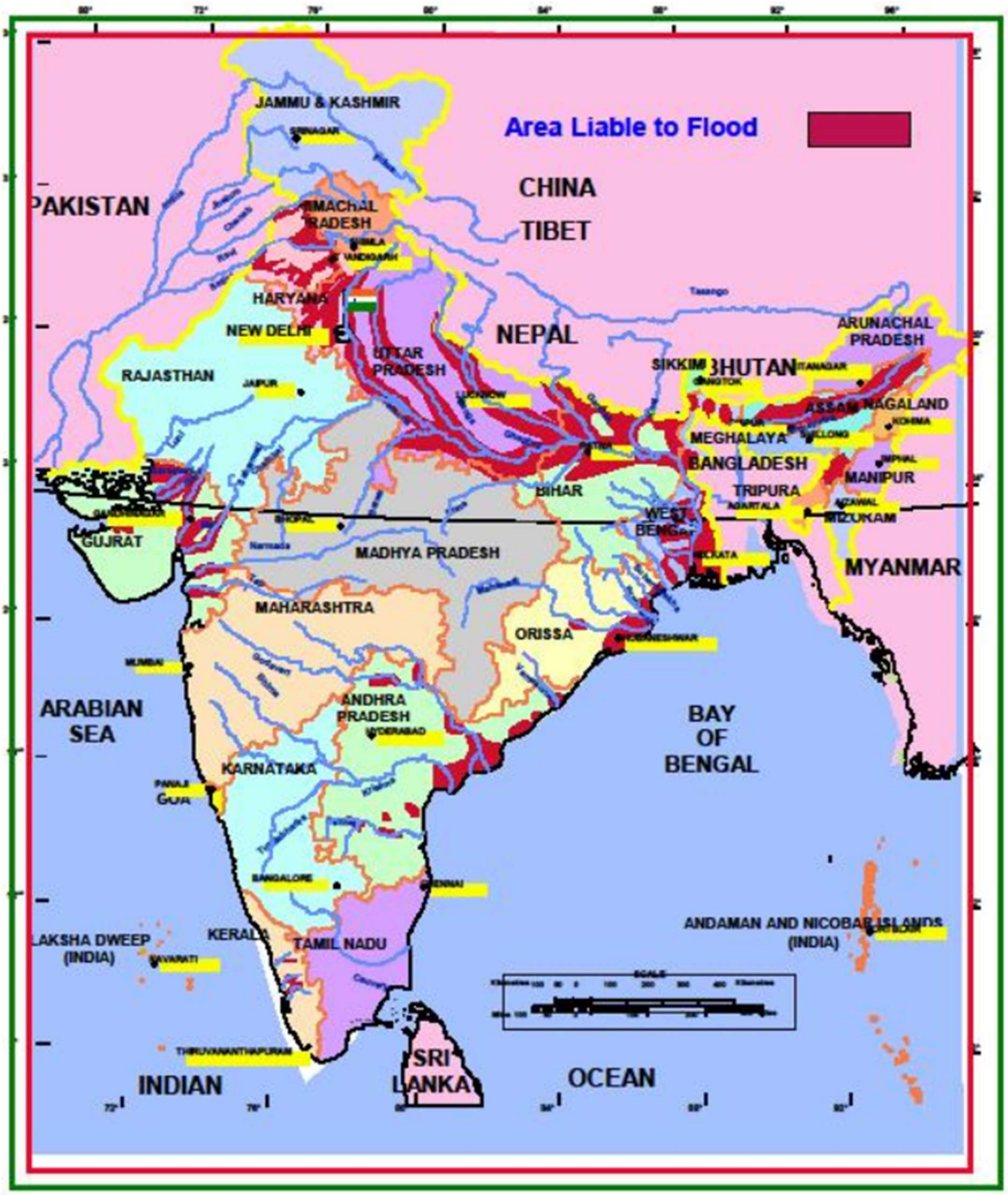
In the supply chain, event-based, short-term disruptions can impact production capacity. Long-term changes may cause suppliers and operations to relocate to more favourable conditions thus threatening our business continuity.

Coastal Flooding & Sea-level Rise

Coastal flooding at manufacturing operations, port disruptions, and cyclone event become more severe, with storm surges pushing impacts inland and lengthening events impacts. According to the IPCC AR6, by 2050, 64% of Asia's population will be urban. Coastal cities, especially in South Asia, are expected to see significant increases in average annual economic losses between 2005 and 2050 due to flooding (high confidence). Climate change will amplify the urban heat-island effect across Asian cities at 1.5°C and 2°C temperature rise, both substantially larger than under the present climate (medium evidence, high agreement).

What is even more challenging is floods have also occurred in areas, which were earlier not considered flood prone. Eighty per cent of the precipitation takes place in the monsoon months from June to September. The rivers a bring heavy sediment load from catchments. These, coupled with inadequate carrying capacity of rivers are responsible for causing floods, drainage congestion and erosion of river-banks. Cyclones, cyclonic circulations and cloud bursts cause flash floods and lead to huge losses. It is a fact that some of the rivers causing damage in India originate in neighbouring countries; adding another complex dimension to the problem. The following figure, released by the Indian Government, shows that supplies to and from our plant located in Durgapur, West Bengal is likely to get affected due to high risk of flooding at Haldia port due to climate change.

Coastal flooding is seen as a likely event in the medium term with a potential to affect operations in the Durgapur plant. At present, the plant accounts for 56% of the revenue generation. Hence, such an operation disruption can affect the business significantly.



Source: https://ndma.gov.in/Natural-Hazards/Floods

Floods can lead to disruption of operations for GIL Durgapur if not adequately prepared for. The customers and supplier base is also vulnerable to floods. In the supply chain, power supply, ports, supplier's property, manufacturing equipment, and logistics network may be impacted due to flooding.

Case Study – Physical Climate Risk Assessment by Third Party

We are aware that climate-related risks do not affect all locations uniformly – some are more vulnerable and exposed to such risks than other. For example, some of our units that are in low-lying areas, very close to sea levels, are more exposed to floods due to weather change. Some units receive direct sunlight throughout the year and have higher average temperature than others.

Hence, over last few years, we have undertaken inspection by external third parties to identify and assess the units-specific risks. The insights from the inspections have helped frame our climate risk management strategy.

Exposed Perils	Severity	Exposure
Ambad, Gonde & Satpur (Maharashtra)		
Flood	Moderate	Moderate
Wind/Cyclone	Moderate	Moderate
Durgapur (West Bengal)		
Windstorm	Moderate	Low
Hailstorm	Moderate	Low
Tornado	Moderate	Low
Wildfire	High	High
Powmex (Odisha)		
River Flood	Moderate	Moderate
Cyclone	Moderate	High

Mitigating climate-related physical risks

Both acute (cyclone, drought) and chronic (unpredictable weather patterns, sea level rise) physical risks are included in our risk assessments. GIL develops risk mitigation plans for extreme weather events exacerbated by climate change through its Business Continuity Management (BCM) process. BCM requires each business sector to identify risks and establish mitigation and recovery plans for key buildings and infrastructure; equipment; manufacturing personnel; tooling; suppliers; customers; and IT to provide effective mitigation and recovery for GIL's key assets and revenue, while maintaining competitive advantage and value system integrity. Climate-related risks have been integral in BCM planning since 2021 as an aftermath of the Covid-19 pandemic.

A. Site-level business continuity plans

We identify key buildings, infrastructure, customers, suppliers, manufacturing equipment, products information or documentation, and tooling as part of site specific BCM plans. Business sectors ensure that their facility-level plans are current and complete.

B. Supply chain resilience

We are starting to assess the climate-related risk resilience of our suppliers. This would ensure that indirect risks in our supply chain do not affect GIL's business operations. The future plan is to include a digital solution to simulate climate risks to quantify potential impacts.

C. Energy efficiency and renewable energy

Although our manufacturing operations are currently dependent on fossil fuel-based grid electricity as well as fuel oils, we have started replacing them with renewable energy and soon our overall energy mix will be much greener. We have entered into solar/wind hybrid energy procurement process in our Satpur plant, and this is expected to replace grid power significantly at Satpur. These solar installations add structural resilience to the facility against cyclones. We will extend this to our other factories gradually. We have started reducing fuel consumption in all factories and replacing them with less carbon intensive fuels.

Climate-related Transition Risk

Energy transition risks emerge from a world where the amount of greenhouse gas emissions from economic activity must be limited. In this carbon-constrained setting, energy transition risk emerges from the preference for new sources of cleaner energy and more energy-efficient equipment and solutions. Carbon intensive assets and businesses will face demands to adjust their processes or products or face the possibility that their businesses will underperform and even possibly become nonperforming over time thus becoming stranded assets. We at GIL realize that to reach international and national goals of keeping global warming to below 2°C, emissions would need to start dropping quickly and in a sustained manner at an unprecedented pace. Thus, we are preparing ourselves well within time to avoid a disorderly low-carbon transformation, which leads to greater transition risks.

Legal

GIL is conscious of the fact that our operations which are large scale may impact resource availability to the communities around us. All our existing units in India are situated on government-approved land (industrial zones). As per legal requirements depending on applicability, we also conduct environmental-impact assessment studies for new projects, covering the impacts related to air, water, waste, etc. This helps ascertain the prevailing conditions on all these aspects in the surroundings and enables the implementation of processes to ensure we do not further aggravate situations for the community due to our operations.

We have taken measures to ensure optimization/conservation of water (groundwater and surface water) to ensure we do not negatively impact the surroundings. We have invested in renewable energy also to decrease the dependence on the grid and have implemented rainwater harvesting practices wherever possible. In terms of waste and effluents, our sites are assessed to ensure minimum generation of waste, and environmentally safe disposals. Circular Economy and Extended Producer Responsibility (EPR) are taken into consideration in this regard.

All the applicable legislative requirements in the regions we operate are identified, complied with and tracked for adherence. These include environmental and health and safety regulations. We have had no instances of monetary or non-monetary sanctions for non-compliance or environmental grievances

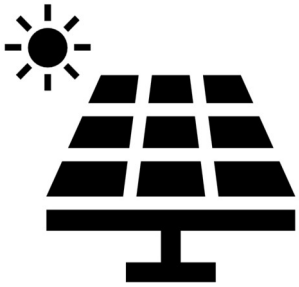
reported to us in fiscal 2022. In any case, GIL continues to proactively review any current or emerging regulations, thereby minimizing the legal risks, if any at all.

Regulatory

Following the Paris Agreement, member countries have offered emission reduction commitments in the form of Intended Nationally Determined Contributions (INDCs). India has set out to reduce its emission intensity by 33-35% by 2030 and achieve 40% cumulative electric power installed capacity from non-fossil fuel-based energy sources. During COP26, India has taken a commitment to become carbon neutral by 2070. To understand the opportunities for reducing carbon emissions, we have carried out detailed assessment over the last couple of years. GIL has undertaken a target to reduce emission intensity of our operation by 12% as a start to the low-transition journey. Several initiatives for reducing the carbon footprint are underway, as listed in our ESG Reports

The Securities Exchange Board of India (SEBI) has mandated the top 1000 Indian listed companies (by market capitalization) to report on Environmental, Social, and Governance (ESG) parameters as part of their Annual Financial Reporting since fiscal 2019. In addition, the new Business Responsibility and Sustainability Report (BRSR) will be applicable to the top 1000 listed entities (by market capitalization), for reporting on a voluntary basis for fiscal 2022 and on a mandatory basis from fiscal 2023. We recognize that non-compliance with such laws and regulations can adversely impact the brand and reputation of the Company. Therefore, GIL's management is taking the necessary steps to track and monitor the regulatory landscape. Our first TCFD-aligned financial disclosure report is a conscious business decision to build resilience against emerging regulations, nationally and internationally.

Technology



As much as changing technology is seen as a benefit, it can also serve as an important driver of transition risk for older assets reliant on outdated technology or on fossil-fuel based energy sources. In the manufacturing sector operation, as in GIL, the fossil-fuel based production facilities are at a risk of extinction as countries transition to a low-carbon future. We foresee renewable energy, process digitalization, and clean-grid electricity to increase in the coming decades. The cost of renewable energy is also expected to reduce further through Government incentives. GIL has adopted renewable electricity to power 50% of operations in our Satpur plant, one of the maximum revenue-contributing assets. We have reduced dependence on fossil fuel at Durgapur by shifting to Coal Bed Methane (CBM) as our principal fuel

We rely on having the best technology to combat climate change for our customers, end consumers, and our own operations. There is a risk of falling behind on technologies necessary to combat climate change for our suppliers, customers, consumers, and our own operations. The climate transition risks propagate through the supply chain in the form of low-carbon energy storage technologies. This poses a potential risk of excessive demand for materials related to energy storage and electrification such as cobalt, lithium, copper, rare earths, gases such as helium, argon, and semiconductors and electronic

chips required for energy transition solutions. Such a demand shock can strain the stock of natural resources.

Some of the technology absorption initiatives at GIL include:

- Development of new scrubbing system to reduce emissions in graphitization furnaces.
- Development of length wise graphitisation furnaces to reduce specific power consumption and development of packed media suction system to reduce fugitive emission.
- Procurement of new multitasking machine in IGE division.
- Development of machine for drilling multiple holes in GRP pipes for specific application.
- Procurement of hot air blower for curing graphite products.

Market

The most straightforward kind of market transition risks relate to the shifting demands from high-emissions products to low-carbon products and commodities. Customers increasingly request for our emission performance or Carbon Disclosure Project (CDP) score during the pre-engagement phase. Many are enquiring if we have a Net Zero commitment, commitment to Science Based Targets, and supply chain emission reduction program. These concerns could translate into a filtering criterion or a strongly weighted parameter in the customers' decision-making process. If GIL performance is not managed in these areas, it may adversely impact our ability to sell our products. Since 2022, we initiated disclosure on climate change through the well-recognized Carbon Disclosure Project (CDP) to give a transparent picture of our carbon-emissions and gain consumer trust. We also published our first ever ESG Report in FY 21-22 as a start to our ESG communications journey, following up with the present TCFD-aligned Climate-Related Financial Disclosures Report. Our ESG Report FY 22-23 is also getting published

Another kind of market transition risk that is already manifesting itself is through shareholder perceptions or pressures in public markets. In several stock exchanges around the world, including in India, investors are avoiding 'dirty' industries or companies with unsustainable practices. These are leading many manufacturing companies, reliant on fossil-fuel energy, to write off assets or face devaluation. GIL is building resilience to such demand and pricing shocks by adapting to cleaner sources of energy in the plants.

Reputational

Reputational risks and bottom-up or lateral pressures from consumers, clients, suppliers, or employees can be an important source of transition risk. Much of the impetus comes from our business partners and clients, who themselves have embarked on responsible business practices. Stakeholder activism in such issues poses an indirect expectation on us to reflect similar practices. As ESG investing becomes mainstream in the financial sector, such activities gain momentum and appear as a transition risk to business.

Societal understanding of and public perception about GIL's role in addressing climate change, the growing impact of ESG investing, and climate-related competition for customers and talent are all

relevant risks for GIL to address. In this regard, GIL recognizes the increasing importance of delivering efficiency products and committing to a wide range of environmentally responsible practices as well as the increased importance of voluntary reporting, disclosure and target setting. In our own operation and in our products & services, potential risk could arise if innovation and supply cannot keep pace with demand for efficient products. Uneven technology development resulting in continued manufacture of carbon-intensive products or work in carbon-intensive industries can create misperceptions and reputational risk. To shield ourselves from such threats, GIL is investing heavily in product and process innovation, as highlighted in our ESG Report.

In the supply chain, supplier availability and cost of capital may increase, reducing ability to invest. Lack of transparency, upstream supply chain data availability and willingness of suppliers to share information that stakeholders demand can also create risks. Hence, we are already undertaking engagement activities with our suppliers and business partners to make them aware of our climate-risk related initiatives. We are also assessing the environmental and social practices while onboarding new suppliers through ESG-related terms and clauses in agreements.

Reputational risk can lead to adverse impact on market capitalization due to inability to meet the ESG-related commitments. They are likely to affect GIL in the long term with the potential of causing a medium-high impact. Assuming only a 1% change in market capitalization, due to a bad reputation, can lead to a potential impact of Rs. 52 Crores (1% of market cap as on 31st March, 2023). In order to avoid such a situation, GIL is undertaking several ESG-related initiatives such as energy efficiency in operations, shift to renewable energy, GHG emission reduction initiatives, CSR initiatives, R&D investment and others. The total spending behind such initiatives amounts to above Rs. 500 Crores in FY22-23.

Mitigating climate-related transition risks

The energy transition represents one of the most significant global efforts to respond to the challenge of climate change. In considering the global energy future, GIL has systematically considered how technological advancement, changing consumer preferences, and energy costs and reliability must be integrated into our business. A key risk mitigation approach is our continued investment in research and development and partnership opportunities around lower carbon solutions. The Company's R&D efforts are primarily focussed towards developing import substitutes for metal and other industrial applications. Continual process development activities are ongoing for producing superior version of carbon brake pads for aircrafts and helicopters. Space application components processed at state-of-art facilities were successfully tested by Space Research agencies.

GIL's transition risk management involves:

- Lowering commercial risks related to carbon regulations by maintaining a verified greenhouse gas inventory and making progress toward our greenhouse gas reduction targets.
- Addressing changes in water availability by certifying sites as zero-water discharge and annually working to reduce total water consumption in manufacturing operations.
- Continuous review of the impact of and planning for current and emerging greenhouse gas regulations.
- Identifying more efficient, lower-cost, lower carbon energy sources and products.
- Identifying materials with high embedded carbon and enhancing supplier engagement and requirements related to climate risks, including data requirements and solicitation process improvements.

The risk management approach focusses on creating a positive impact in the following aspects on sustainability:

Carbon Footprint	Human and Ecological Safety	Efficiency in Use-phase
Reliability and Brand Image	Socio-economic Benefits	Cost of Ownership

Climate-related Opportunities

GIL is well positioned to take advantage of some of the most important secular growth trends that we will experience in our lifetime, of primary concern being the following aspects:

- Energy transition to renewables
- ESG integration in the supply chain
- Investment in technology

In both areas, GIL has undertaken several initiatives to leverage these opportunities. We are responding to these trends by innovating solutions that focus on renewable electrification and employing digital technologies for power management. These strategic focus areas are our response to climate-related opportunities, and position us well to thrive as the world responds to limit the catastrophic impacts of climate change. GIL's strategy is influenced by climate change-related impacts including:

1. An evolving regulatory regime focusing on carbon reduction;
2. Customers demanding new carbon reduction technologies to respond to the potential impact of climate change;
3. The continuing efforts of governments to jump-start robust, green energy industries through credits, grants, and other incentives. Opportunities are increasing for companies to grow by providing innovative products and services that help mitigate the impact of climate change.

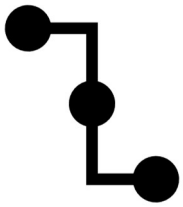
Energy Transition to Renewables

The transition of energy source in particular poses a 'significant' opportunity for GIL. We have seen a steady increase in the cost of electricity and diesel over the years in India and most of the countries where we operate. We anticipate the same trend to continue which could range from 2-5% in India in the coming years. GIL realizes this as an opportunity to save the indirect cost of energy due to the uncertainty in future energy prices which remains a potential risk to us. Having invested in our own solar PV power plant and working with the various state governments, technology providers and 3rd party renewable energy producers, GIL has been able to swiftly transition to 50% clean renewable energy in the Satpur plant. Not only have we reached a

higher RE contribution, but this has also helped reduce our operational expenses by reducing grid power dependency.

The energy transition is something that has a high likelihood of occurring in the long-term. During fiscal 2022, the average cost of power for GIL was about Rs. 7.25 to 7.45 per KWh which has increased by over 30% from the previous year. Based on the current and past trends of the cost of grid power, we expect electricity costs to increase, going forward. For our long-term risk estimation, we have considered an escalation in energy cost by 2-5% YOY (the most conservative approach). If no investments are made on RE installations which are now relatively cheaper than the grid power, GIL will have to bear an additional cost of grid power for its energy usage. The energy costs for GIL, without any RE interventions, could have gone up.

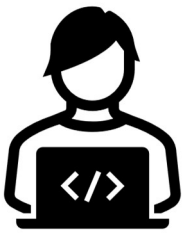
ESG Integration in the Supply chain



Environmental considerations are critical in our interactions with suppliers, including their greenhouse gas emissions. Our supplier site assessment process includes a review of supplier EHS performance and product stewardship practices. Select strategic suppliers are evaluated in our supplier risk management program, which includes a questionnaire with key sustainability metrics that generally cover a broad range of environmental and community impacts.

We require suppliers to affirm commitments to responsible business conduct to secure and maintain our business through our Supplier Code of Conduct. The code is embedded in our standard terms and conditions and outlines GIL's expectations for supplier workplace standards and business practices, including human rights issues, such as modern slavery, human trafficking and conflict minerals. 100% of our supplier spend have affirmed our Supplier Code of Conduct. In the future, we plan to undertake risk management assessments with the deployment of digital tools that enable geospatial mapping and resilience assessment of critical suppliers, ports and logistics routes, further strengthening our ability to adapt to changing preferences and uncertainties.

Investment in Technology



GIL invests significant resources in R&D each year and through 2030 we are focusing on developing efficient and low-carbon products and solutions. Digitalization is allowing GIL to grow and expand margins by improving processes. It has enabled us to enhance internal productivity and improve customer-facing processes. The technological advancement is seen as highly likely, which will manifest in the medium term if not acted upon. The increased production due to technology absorption would result in increased revenue

Climate Scenario Analysis

Scenarios and climate models are critical tools for climate risk management. Scenario analysis is flexible enough to draw together nearly all the relevant issues, risks, and their interrelationships in one approach, and it can yield results applicable for many purposes, ranging from reporting to shareholders or stakeholders and setting internal company strategy to making investment decisions. Climate scenario analysis is used to bolster corporate preparedness in the face of physical and transition-related climate impacts to communicate GIL's preparedness to investors and other stakeholders and to guide our strategy and investment decisions.

Scenario analysis for climate change varies quite significantly between the two main types of climate risk, namely transition and physical risk. For transition risk, we typically examine whether our facilities

and business strategies align with one of the global projected emissions trajectories, such as the International Energy Agency (IEA) 2020 Sustainable Development Scenario (SDS). For physical risk, emissions trajectories, when "plugged in" to a physical climate model, allow for producing estimates of temperature rise, precipitation, weather extremes, and other phenomena. But, due to the lag in the global climate system, the physical outcomes of climate change are practically the same for the next few decades (until about 2050) regardless of emissions. Therefore, to improve GIL's preparedness and resilience, for physical risk specifically, scenario analysis is more about using the sorts of physical climate impacts that are already occurring and expected to continue.

IEA Reference Scenarios for 1.5°C to 2°C temperate rise

GIL's climate scenario analysis process was informed by a range of third-party climate scenarios and quantitative inputs based primarily on the International Energy Agency's (IEA) 2020 Sustainable Development Scenario (SDS). The SDS represents a possible pathway for the world to limit the rise in global temperatures to 1.8°C by 2100, while also achieving the UN Sustainable Development Goals of universal energy access and cleaner air. The SDS is achieved primarily through comprehensive transition in energy systems by 2040, a price on carbon, and strong government action to spur business action. Under this scenario, the world continues to experience adverse physical impacts from climate change, but these impacts are mitigated below catastrophic levels. Using the SDS and other third-party models that limit warming to between 1.5 and 2°C, GIL assessed its significant medium- and long-term climate physical risks and transition risks, and our management approach to manage those risks. While GIL started on the climate-risk management and their integration into enterprise risk management very recently, we are staying apprised of the key differences between our primary scenario (IEA SDS) and the new IEA Net Zero Scenario, which is aligned with IPCC AR6 and SBTi's new Net Zero Standard. We aspire to become a Net Zero company in the future and this awareness indicates our seriousness to meet this target and assess the present gaps.

The IEA SDS assumes:

- 38% reduction in global carbon emissions 2018-2030
- Carbon prices, renewables and phasing out of coal are the primary carbon reduction levers.
- Growing global energy demand is tempered by energy efficiency gains and carbon capture and storage.

The key differences with the Net Zero scenario include use of coal only with carbon capture and storage, use of natural gas, and hydrogen use.

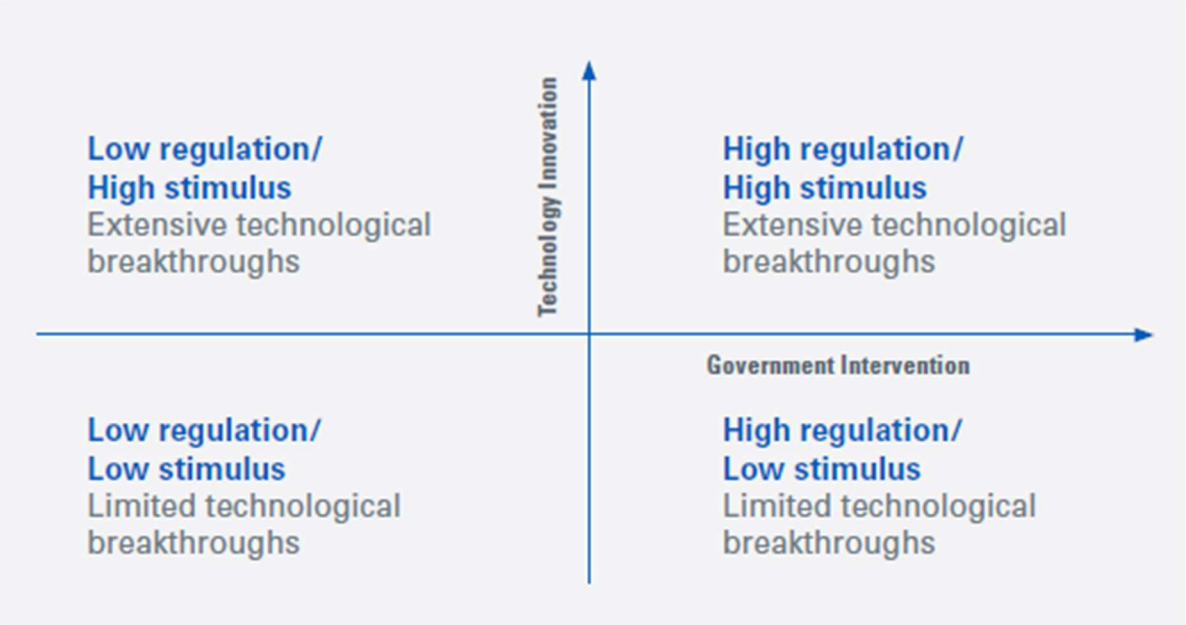
Multiple Pathways for 1.5°C to 2°C temperate rise

There are forecasted alternative pathways to achieving a global 1.5-2°C target. As part of our analysis of medium and long- term climate risks and opportunities, GIL engaged in a scenario planning exercise to gain a better understanding of the range of potential outcomes that could result from achieving this target. We recognize that shifting efforts by countries to address climate change and rapid technological innovation introduce new uncertainties into the range of outcomes for government regulations and consumer behaviour. These external drivers will shape the products our customers will need in the future. While these scenarios are not precise forecasts of the future and do not represent predictions, they do help us think through the resilience of our operations, strategy, and product lines to a set of different futures.

Complex global risks such as climate change and the COVID-19 pandemic have introduced a wide range of new uncertainties that businesses must now consider. Past relationships between social, political, technical, and economic factors may be so disrupted that traditional forecasting methods will not be sufficient to capture the wide range of outcomes that are now more difficult to predict. Scenario analysis is a method that we use to assess these kinds of discontinuous changes. GIL

determined that the disruptive nature of technological breakthroughs that might come about from differing levels of new green economic stimulus and variations in the degree of government regulation will be key influencers of our future trajectory in different markets. Considering these two fundamental factors, members from our various key businesses then deliberated together to develop alternative, plausible outcomes in the 2035 and 2050 timeframes that could be consistent with a global temperature increase limited to 1.5-2°C. These outcomes were considered within the context of differing forces related to external technology trends and regulatory policy. In considering these alternative pathways – high regulation, low regulation, extensive technological change or low technological change – we investigated how decisive shifts could influence GIL's operating environment in decidedly different ways. In each of these scenario pathways, we identified indicators that can help GIL predict if one of them is emerging as a more likely path to 1.5-2°C than the others. These indicators/parameters can then be tracked to help GIL determine if adjustments to the IEA SDS model-based assumptions or use of a new model, are appropriate for future analyses.

The following illustration presents an overview of the climate scenarios used by GIL which calibrate the level of technological and regulatory transition. Based on these two parameters, four possible scenarios were analysed which helped GIL gain an understanding of the climate-related impact on businesses under each scenario.



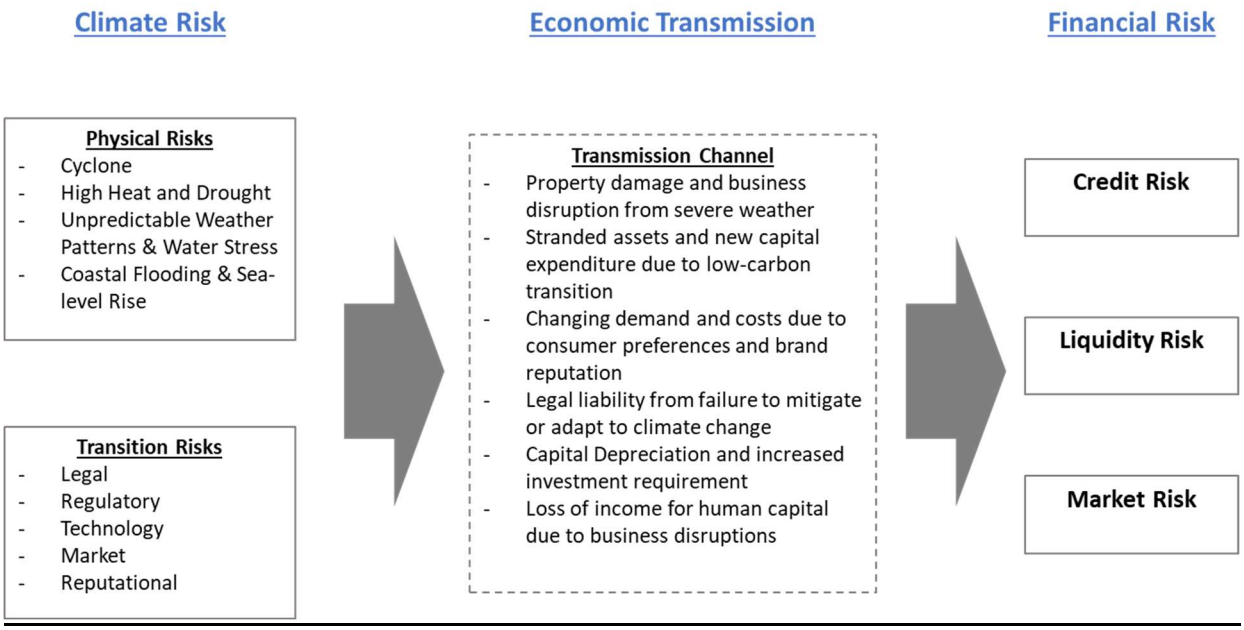
For each scenario, several parameters or indicators were used, as highlighted below. All these scenarios can lead to limiting the temperature rise to 1.5°C based on the stringency of climate regulations, policies and technological innovation. Several socio-economic parameters were also included as parameters to give a holistic understanding of each pathway. The chosen parameters or indicators are:


Regulations/Policies
Technology Trends
Social and Political Context
Economy
Energy Prices
Business Environment

RISK MANAGEMENT

Climate Risks and Transmission to Financial System

Risk management is a structured approach to monitoring, measuring, and managing exposures to reduce the potential impacts of uncertain occurrences, and it has long been practiced by non-financial corporations and financial institutions alike. Climate risk affects corporations in various ways. As with other kinds of risks, climate risk management, when practiced proactively, can help mitigate the impacts of climate change, both from physical impacts and transition impacts, on GIL's operations. To understand and manage climate risk, it is helpful examine how climate risk affects various types of financial risk. This is not only because risk managers are more familiar with the traditional categories of risk, but rather it is because climate change transmits through these various types of risk, so understanding these transmissions channels is helpful.



Financial Risk Management

The Company's activities expose it to credit risk, liquidity risk and market risk. In order to safeguard against any adverse effects on the financial performance of the Company, derivative financial instruments, such as foreign exchange forward contracts are entered as per Company's policy to hedge certain foreign currency risk exposures. The Company's senior management oversees the management of above risks. The senior executives working to manage the financial risks are accountable to the Audit Committee and the Board of Directors. This process provides assurance to the Company's senior management that the Company's financial risks-taking activities are governed by appropriate policies and procedures and that financial risks are identified, measured and managed in accordance with the Company's policies and the Company's risk appetite. Risk management policy has been developed and implemented. The Board is kept informed of the risk mitigation measures being taken through half yearly risk mitigation reports / Operations Report. There are no current risks which threaten the existence of the Company.

The following table highlights the financial risks that are affected by climate change and the associated risks.

Risk Type	How climate risks might lead to financial risks
Credit risk	**Physical risk** causing property damage and business interruption can lead to loss of revenues and lower profits, worsening GIL's financial position and increasing the probability of default. **Transition risk** causing asset stranding can worsen a firm's financial position, increasing its probability of default, and increasing the loss given default for a lender given the lower asset valuations.
Liquidity risk	Abrupt **physical and transition risk**-related events such as natural disasters or abrupt policy changes can prompt sharp repricing and sudden market re-evaluation of GIL' viability, leading to liquidity shocks. This can lead to widening of bid-ask spreads. Abrupt climate events can prompt large demand for deposit withdrawals at banks, raising their loan-to-deposit ratios.
Market risk	**Physical and transition risk** can become more widely incorporated in asset prices, both through abrupt repricing as well as more gradually. Large-scale shifts in input and product markets affect non-financial corporations such as GIL.

Risk & Opportunity (R&O) identification

The process of identifying, assessing, and managing climate-related risk is integrated into the Enterprise Risk Management framework. Time horizons considered for Risks & Opportunities(R&O) are short, medium, and long-term. R&O is identified by mapping our operations, upstream & downstream, for the potential impact of business on climate and the potential impact of climate change on our business. We look at these climate-business cross-sections through the lens of current and evolving concepts, trends, policies, & regulations to identify R&O. We also rely on various international standards and guidelines/frameworks like TCFD, CDP for risk/opportunity R&O drivers. The R&O identification process is a cross-functional & organisation-wide exercise. The R&O identification process begins at a location, function, and business account level eventually leads to the corporate level. We look at climate change risks as transition risks or physical risks, as highlighted in the previous sections.

R&O assessment

At GIL, the process of climate-related risks assessment is integrated into multi-disciplinary company-wide risk identification, assessment, and management processes. Climate change is an integral part of the business strategy and therefore finds a place in the enterprise risk management exercise. GIL's Enterprise Risk Management (ERM) function enables the achievement of strategic objectives by identifying, analysing, assessing, mitigating, monitoring, and governing any risk or potential threat to these objectives. While this is the key driver, our values, culture and commitment to stakeholders – employees, customers, investors, regulatory bodies, partners and the community around us – are the foundation for our ERM framework. The framework defines various categories of risks and the appropriate governance bodies or councils that will have oversight on these risks. Climate change risks have an impact of the financial risks through the abovementioned transmission channels and are managed accordingly as part of the integrated risk management function. GIL has a dedicated risk management committee to evaluate and appraise its management of critical risks to its business.

Managing R&O

As a part of its materiality assessment and business strategy development, GIL considers all aspects with a dual lens, ones that have an impact on GIL' sustainable business performance as well as those that can have an influence/impact on its stakeholders. Therefore, all aspects, including climate change, make it to GIL' material topics. We also refer to international guidelines, standards, and climate change trends reported in popular and academic journals and reports. This feeds into its materiality process which helps it to prioritize the risks and opportunities.

A multi-pronged approach is used to prioritize climate change risks and opportunities. These include transition risks (like legal, regulatory, market, technology, etc.) and physical risks (like cyclones, water stress, sea level rise, etc.). The risk registry prepared by the BUs is then discussed in the periodic risk meetings, including proposals for remediation measures. Based on our risk appetite, the ERM team enables effective resource allocation for the top risks. Issues like additional funds needed for mitigation measures, residual risks, or the secondary risks that remain, are discussed. Strategic decisions are taken after careful consideration of each risk type. While assessing & prioritizing each risk, GIL uses principles of risk management i.e.: avoid risks if possible, reduce/control them through mitigation measures, & finally accept/transfer risks to the extent possible. Risks faced by our key stakeholders & their cumulative impact on our overall risk response are considered as well.

Capital Management

GIL's objectives when managing capital are to safeguard our ability to continue as a going concern, so that we can continue to provide returns for shareholders and benefits for other stakeholders and maintain an optimal capital structure to reduce the cost of capital.

In order to maintain or adjust the capital structure, the Company may adjust the amount of dividends paid to shareholders, return capital to shareholders, issue new shares or sell assets to reduce debt. The Company monitors capital on the basis of the net debt to equity ratio. Net debt are long-term and short-term debts as reduced by cash and cash equivalents. The Company is not subject to any externally imposed capital requirements. The risk management policy of the company includes risk identification of raw material availability and cost, the markets for its products, foreign exchange, climate risks, etc. The Company has identified Calcined Petroleum Needle coke (key input) and graphite electrode (key output) as commodities and the risk in respect there of as "commodity risk" and import and export respectively of both as regards "foreign exchange risk".

The functional heads / location heads are responsible for managing risks on various parameters and ensure implementation of appropriate and timely risk mitigation measures. Risks affecting the entire company are discussed at Head Office. Risk perception and mitigation plan is presented to the Board on half yearly basis after it is discussed by the Risk Management Committee. There is no hedging mechanism for Needle coke and electrodes in terms of price. The suppliers of Calcined Petroleum Needle coke usually resort to annual quantity contract which is subject to the pricing to be discussed and mutually agreed on quarterly / half yearly basis. The pricing of electrodes is usually fixed at the time of procuring order and do not vary in normal circumstances. Normally, the prices of needle coke moves in tandem with electrode prices with some time lag, hence the risk is not material It is not practically possible to provide data as per SEBI's format in this regard. Company usually has foreign exchange exposure in the form of receivables for export mainly of electrodes and payables for import mainly for needle coke, foreign currency loans and certain expenditure. The foreign currency exposures usually get balanced, and the resultant net asset / liability is not material.

METRICS AND TARGETS

Metrics

GIL tracks several environmental, social and governance metrics. Below are the metrics related to climate change and the performance over the last two years. The data for the environmental parameters covers our 6 plants across India and has been presented in line with the BRSR disclosures.

A. Financial Allocation to Innovative Technologies:

	FinancialYear (2022-23)	**FinancialYear (2021-22)**
R&D	1.28%	1.76 %
Capex	31.57%	69.34%

B. Energy

Parameter	**FY 2022-23**	**FY 2021-22**
Total electricity consumption (A)	3705968498 MJ	3969459397 MJ
Total fuel consumption (B)	3431821298 MJ	3704587320 MJ
Energy consumption through other sources (C)	3157489 MJ	7713966 MJ
Total energy consumption (A+B+C)	7140947285 MJ	7681760683 MJ
Energy intensity per rupee of turnover (Total energy consumption/ turnover in rupees)	2451002 MJ/ Cr Rs of turnover	2744534 MJ/ Cr Rs of turnover
Energy intensity	52320 MJ/MT of Production	50216 MJ/MT of Production

C. Water

Parameter	**FY 2022-23**	**FY2021-22**
Water withdrawal by source		
(i) Surface water	271544 KL	294692 KL
(ii) Groundwater	73364 KL	73349 KL
(iii) Third party water	0 KL	0 KL
(iv) Seawater / desalinated water	0 KL	0 KL
(v) Others	0 KL	0 KL
Total volume of water withdrawal (in kilolitres) (i + ii + iii + iv + v)	344908 KL	368041 KL
Total volume of water consumption (in kilolitres)	335795 KL	359297 KL
Water intensity per rupee of turnover (Water consumed / turnover)	115.3 KL/ Cr Rs of turnover	128.4 KL/ Cr Rs of turnover

D. Air Emissions

Parameter	**Unit**	**FY 2022 - 23**	**FY 2021-22**
NOx	Kg/year	254940	369690
SOx	Kg/year	223090	229062
Particulate matter (PM)	Kg/year	445678	669611
Hazardous air pollutants (HAP)	Kg/year	41.3	36.5

Others	Kg/year	536.84 Hydrocarbon in Steel Division	533.6 Hydrocarbon in Steel Division

E. Greenhouse gas (GHG) emissions

Parameter	Unit	FY 2022-23	FY 2021-22
Total Scope 1 emissions	Metric tonnes of CO2 equivalent	110968	131105
Total Scope 2 emissions	Metric tonnes of CO2 equivalent	309494	345451
Total Scope 1 and Scope 2 emissions per rupee of turnover	tCO2/ Cr Rs of turnover	144.3	170.27
Total Scope 1 and Scope 2 emission intensity	tCO2/MT of Production	2.96	3.25

F. Waste

Parameter	***FY 2022-23***	***FY 2021-22***
Total Waste generated (in metric tonnes)		
Plastic waste ***(A)***	340.6 MT	338.9 MT
E-waste (B)	3.03 MT	3.1 MT
Bio-medical waste ***(C)***	0.05004 MT	0.00991 MT
Construction and demolition waste ***(D)***	3.7 MT	8.2 MT
Battery waste (E)	131 Nos	288 Nos
Radioactive waste ***(F)***	Nil	Nil
Other Hazardous waste. ***(G)***	723.6 MT (Used or waste oil, ESP tar, ETP sludge, Paint sludge, broken asbestos etc)	748.2 MT (Used or waste oil, ESP tar, ETP sludge, Paint sludge, broken asbestos etc)
Other Non-hazardous waste generated ***(H).***	45853 Mainly Carbonaceous material, Graphite powder & broken pcs, Scrap Wood, Steel scrap etc)	51617 MT (Mainly Carbonaceous material, Graphite powder & broken pcs, Scrap Wood, Steel scrap etc)
Total (A+B + C + D + E + F + G + H)	46924.8 MT	52715.9 MT
For each category of waste generated, total waste recovered through recycling, re-using or other recovery operations		
Category of waste		
(i) Recycled	4645.4 MT	4309 MT
(ii) Re-used	7.9 MT	4.3 MT
(iii) Other recovery operations	-	-
Total	4653.3	4313.3 MT
For each category of waste generated, total waste disposed by nature of disposal method		
Category of waste		
(i) Incineration	4.17 MT	43.6 MT
(ii) Landfilling	34.63 MT	39.01 MT
(iii) Other disposal operations	46273MT	51844 MT
Total	46311 MT	51927 MT

Targets

GIL has set clear and intentional targets consistent with the challenge presented by the United Nations' Framework Convention on Climate Change (UNFCCC) and the Paris Agreement to limit warming to below 2°C by substantially cutting greenhouse gas emissions over the next decade. We have set a two-year target for ourselves with the base year being FY 2021-22. By the year FY 2023-24, we plan to reduce our carbon intensity by 12%. We have set up our internal two-year target on energy intensity. Depending on how we perform with respect to our target, we may set up longer term targets in future. With respect to other environmental parameters such as water and waste, we are evaluating realistic targets for the future years as we progress on our sustainability journey.

Over the last few years, GIL has undertaken assessment of the carbon footprint across processes. Several GHG emission reduction opportunities have been identified across the plants. Based on the viability of the projects, a roadmap has been created for upcoming years with absolute reduction targets, as highlighted below.

GHG Reduction Projects and Targets

	Sl	Objective	Description	Target GHG Reduction. (tCO2e) p.a.
IGE Div Ambad	1	Reduction leakage in refrigerant gas	To identify and rectify all gas leakages from AC	45
	2	Energy Efficiency	Heating of thermic fluid heater by electricity\CNG instead of diesel	183
	3	Energy Efficiency	Reduction of power consumption in dust collector (Make-APC)	42
	4	Energy Efficiency	Reduction of power consumption in dust collector (Make-Fabritech)	50
	5	Energy Efficiency	Modification in dust collector pipelines	30
Coke Div Barauni	1	Reduce indirect GHG emission.	Reuse of packaging sacks.	50
	2	Reduce GHG emission in environment.	Installing exhaust gas scrubbing system in functional unit.	2500
	3	Reduction in HSD consumption.	Replace existing HSD fire burner by more efficient one.	4
	4	Reduce line loss of electrical energy	Replacing improper/connected electric cables & motor starters by accurate specification.	10
	5	Reduce GHG emission in calcinations process	Fabricate proper sealing of fire-hood and making dust collecting system.	90

GE Div Durgapur	1	Reduction in energy in Graphitisation	Graphatisation of nipples in LWG	4960
	2	Reduce burning of LAMC in Graphatisation	Graphatisation of nipples in LWG	1032
	3	Reduction of breeze coke in Graphatisation	Graphatisation of nipples in LWG	943
	4	Reduction in saw dust & wood	Graphatisation of nipples in LWG	281
	5	Reduction of energy in Graphitisation	Modification of LWG#3 furnaces	
	6		Refractory covering on top of CPC to be improved	570
	7	Reduction in CBM consumption	Replacement of section covers of RH14 with improved covers.	201
	8	Reduction in CBM consumption	By closing down of RC furnace and starting of new RH	1577
	9	Reduction in energy	Replacement of convectional lamps by energy saving LED lamps.	295
			Energy saving by installing VFD for Fan	47
			Installation of 50 HP pump by replacing 100 HP pump in LWG 4 and 5	63
			LWG 5 Hot water pump (55KW) VFD installation	32
	10	Reduction in lubrication	Recycling of hydraulic oil after filtration to improve NAS value and separating moisture.	4
	11	Reduction of CBM in TK	By operation of A22 door	510
	12	Reduction of energy	By reducing green scrap in extrusion (450&500mm), 130 kwh/ton	33
	13	Reduction in energy consumption	Reduction of input energy in Acheson unit#2 0.2kwh/kg	432

GRP Div Gonde	1	GHG Reduction	Replace thermic fluid heating from LDO fired energy to electricity	63
	2	Energy Saving	Replace all existing lights with LED in phased manner	58

	3	Energy Saving	Reduction of operating time of hydraulic motor of hydro testing machine while introducing accumulator. So that holding time motor operation can be reduced	15.41

Steel Div Powmex	1	Reduction in CO2	Plantation of 1000 trees in plant	25
	2	Reduction in Energy	Insulation of Holding furnace	17
	3	Reduction in Energy	Insulation of Rotary hearth furnace	48
	4	Reduction in Energy	Insulation of Roller hearth furnace	27
	5	Reduction in Energy	Insulation of Reheating furnace	33
	6	Reduction in Energy	Installation of 5 MW Solar Plant	4560
	7	Reduction in Energy	Arresting air leakages in compressed air line	7584
	8	Optimisation of Air pressure	Supply air pressure to be dropped from 7 bar to 6.5 bar	19

GE Div Satpur	1	Reduction of supply side carbon intensity	Replace grid power with hybrid (solar & wind)	46718
	2	Replacing LSHS with PNG	Complete LSHS requirement for factory activities will be replaced by PNG	3744
	3	Energy efficiency	Replacement of RC by RH-24 -II	6803
	4	Energy efficiency	Shifting of transmission line from existing to nearby sub-station, to reduce power failure and shut down energy losses	121
	5	Energy Efficiency	Existing compressor to be replace with screw type compressor	370
	6	Energy efficiency	Variable Frequency Drive used for transfer bend blower speed control	8
	7	Energy efficiency	Conversion of conventional lamps to LED	77