

Climate Risk Context



Climate Risk Context

The Company recognizes climate change as a critical global challenge and a key driver of business risks and opportunities. This section outlines the climate risk context based on internationally recognized scientific assessments from the Intergovernmental Panel on Climate Change (IPCC), which operates under the United Nations (UN) and provides global guidance on climate-related impacts and pathways.

1. Global warming

Global warming refers to the long-term rise in the Earth's average temperature, primarily driven by human activities, particularly the emission of greenhouse gases (GHGs).

Human activities have already contributed to an increase of approximately 1°C above pre-industrial levels (1850–1900). Without significant and sustained reductions in GHG emissions, global temperatures are projected to reach 1.5°C between 2030 and 2052, which could significantly intensify climate-related risks across environmental, economic, and social systems.

2. Impacts of 1.5°C vs 2°C Scenarios

According to IPCC assessments, a global temperature increase of 2°C would result in significantly more severe impacts compared to 1.5°C, including:

- Increased frequency and severity of extreme weather events such as heatwaves and flooding
- Greater damage to ecosystems and biodiversity
- Declining food and water security

Limiting warming to 1.5°C could substantially reduce these risks, including minimizing impacts on ecosystems, the economy, and society.

3. Physical Climate Risks

Physical climate risks can be categorized into two main types:

- (1) Acute physical risks, which arise from extreme weather events such as floods, storms, and heatwaves, potentially causing operational disruptions and damage to assets.
- (2) Chronic physical risks, which stem from long-term climate shifts, including rising average temperatures, prolonged droughts, and increasing water stress.

These risks may adversely affect business continuity, operational efficiency, and the resilience of the company's value chain.

4. Transition Requirements

Under the global climate change trend and international frameworks such as TCFD / IFRS S2, the Company recognizes the need to transition toward a low-carbon economy, which emphasizes reducing greenhouse gas emissions and driving long-term structural changes in the economy. This transition is particularly significant for the Company, as it operates in the lime industry, which is energy-intensive and involves carbon dioxide emissions from its production processes, requiring actions such as:

- Improving energy efficiency
- Developing alternative energy sources (e.g., solar, biomass)
- Enhancing production processes to reduce carbon emissions

The transition is also expected to drive structural changes across key sectors, including:

- Energy sector: increasing the adoption of clean energy
- Industrial sector: expanding the use of low-carbon technologies
- Transport sector: reducing reliance on fossil fuels

5. Economic and Business Impacts

- Operating costs increase due to higher energy, water usage, and maintenance expenses under extreme weather conditions
- Production efficiency declines and downtime risks increase, affecting operational continuity
- Asset and infrastructure risks rise, leading to potential damage and higher repair costs
- Supply chain disruptions occur due to volatility in logistics and raw material availability
- Revenue becomes more volatile amid uncertainty in customer demand and market conditions

6. Scenario Analysis Concept

The Company applies climate scenario analysis based on greenhouse gas emission pathways aligned with the Paris Agreement, to assess potential future impacts and support strategic decision-making.

The key scenarios adopted by the Company include:

Net Zero 2050 Scenario (1.5°C Scenario):

Represents an accelerated transition toward a low-carbon economy, driven by stringent climate policies and rapid greenhouse gas emissions reduction, to inform the Company's target setting.

Delayed Transition Scenario (~2–3°C Scenario):

Reflects a slower transition due to policy, technological, and economic constraints.

This scenario highlights increased exposure to transition risks in the medium to long term.

High Emissions Scenario (>3°C Scenario):

Represents limited climate action, leading to significantly higher greenhouse gas emissions.

This scenario is associated with elevated physical climate risks, including extreme weather events and long-term environmental impacts.

The scenario analysis enables the Company to:

- Assess climate-related impacts on operations, financial performance, and strategy across short, medium, and long-term horizons
- Evaluate both physical and transition risks
- Support decarbonization strategies and energy management planning
- Enhance overall organizational resilience to climate change

7. Climate-related Disclosure (TCFD/ IFRS S2 Alignment)

The Company discloses its governance, strategy, and risk management related to climate change, outlines the financial and operational impacts of climate-related risks and opportunities across the short, medium, and long term, and reports key metrics and targets, including greenhouse gas emissions (Scopes 1, 2, and 3) and its carbon reduction plans.

Policy and Governance

Governance & Policy

Golden Lime Public Company Limited and its group of companies (“SUTHA”) are committed to conducting business in a sustainable manner. The Company recognizes that climate change is a critical factor that may impact its operations, business continuity, and long-term economic value.

This policy is established to provide a framework for governance, risk management, strategic planning, and the identification of opportunities related to climate change, in alignment with international standards such as the Task Force on Climate-related Financial Disclosures (TCFD), IFRS Sustainability Disclosure Standards (IFRS S2).

Objective

The Company aims to strengthen organizational readiness to address climate change impacts by promoting greenhouse gas emission reduction and enhancing adaptive capacity, ensuring long-term business stability and resilience.



Scope

This policy applies to:

- The Board of Directors, executives, employees, and all subsidiaries within the Company.
- All business activities, operations, products, services, and investment decisions under the Company's operational control.
- Climate-related risks and opportunities across the entire value chain, including upstream and downstream activities.
- Greenhouse gas emissions arising from Scope 1, Scope 2, and relevant Scope 3 categories.
- Suppliers, contractors, business partners, customers, and other relevant stakeholders where collaboration is necessary to support the Company's climate objectives.
- Climate-related governance, risk management, strategy development, target setting, performance monitoring, and disclosure activities.

Policy implementation

1. Governance, Transparency & Stakeholder Engagement

- Establish a robust governance structure and ensure transparency in operations, while promoting stakeholder engagement
- Appoint dedicated committees or responsible units to oversee and drive environmental initiatives
- Disclose climate-related information transparently in alignment with international standards (e.g., IFRS Sustainability Disclosure Standards)
- Encourage active participation of employees and stakeholders across the value chain

2. Data, Measurement & Carbon Management

- Develop data systems to support effective management and reduction of greenhouse gas emissions
- Collect and manage GHG emissions data in accordance with relevant standards and regulatory requirements
- Utilize data as a foundation for decision-making and tracking emission reduction performance

3. Technology & Process Innovation

- Enhance the use of technology and innovation to minimize environmental impacts

- Promote the development and application of technologies in machinery design and production processes to reduce pollution and GHG emissions
- Continuously innovate to reduce emissions from production processes

4. Energy Efficiency & Resource Optimization

- Improve efficiency in energy and resource utilization
- Enhance energy performance and reduce fuel consumption
- Promote the adoption of alternative and cleaner energy sources
- Maximize resource efficiency across operations

5. Circular Economy & Waste Reduction

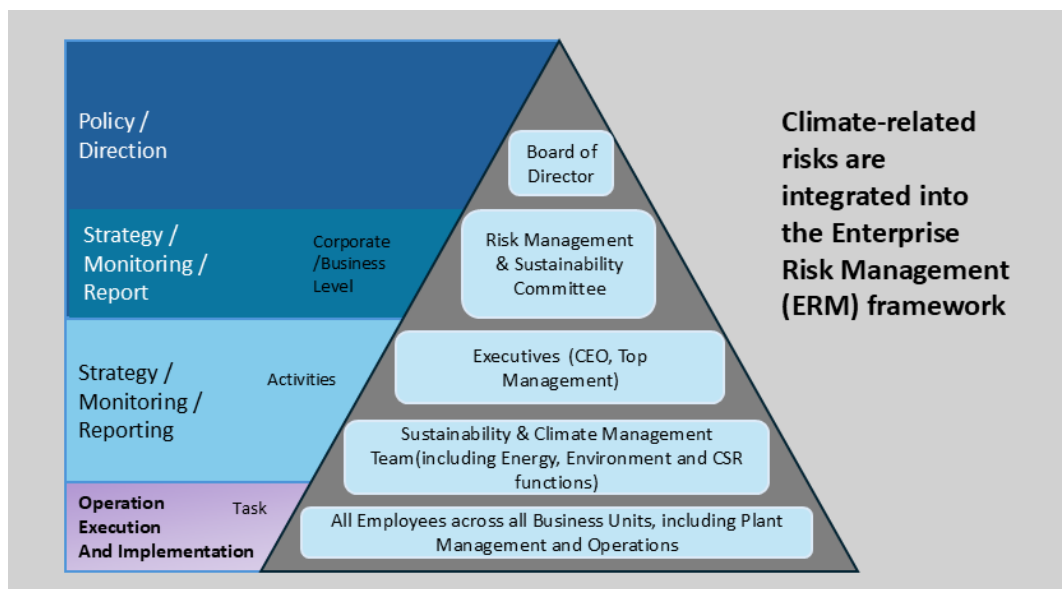
- Reduce waste and promote the use of circular resources
- Minimize waste generation and strengthen circular resource utilization
- Implement environmental measures such as waste segregation and proper waste management
- Encourage the use of environmentally friendly materials and products

6. Green Products & Market Impact

- Develop products that contribute to environmental impact reduction at scale
- Innovate lime-based products that support environmental sustainability
- Expand adoption among customers contributing to environmental impact reduction

Governance Structure

The Climate Change Policy has been approved by the Board of Directors, ensuring proper oversight, accountability, and alignment with the Company's sustainability commitments.



The Board of Directors has ultimate responsibility for overseeing climate-related risks and opportunities and ensuring that climate considerations are integrated into the Company's strategic planning, risk management, and sustainability agenda. The Chief Executive Officer (CEO), who serves as a Board member and Chair of the Risk Management and Sustainability Development Committee, is responsible for overseeing and driving the Company's climate-related governance and initiatives.

The Risk Management and Sustainability Development Committee supports the Board by regularly reviewing and monitoring climate-related risks and opportunities, risk mitigation measures, greenhouse gas reduction performance, relevant regulatory developments, and progress against climate-related targets. The Committee's oversight covers both physical risks and transition risks associated with climate change.

Material climate-related issues, performance outcomes, and strategic recommendations are regularly reported to the Board of Directors. Climate-related risks and opportunities are integrated into the Company's Enterprise Risk Management (ERM) framework and strategic planning processes to support decision-making, resource allocation, business resilience, and sustainable long-term growth.

Strategy

Climate Strategic Approach

The Company has established a climate strategy aimed at managing climate-related risks and capturing long-term business opportunities, aligned with global frameworks and the transition toward a low-carbon economy.

Climate & Sustainability Strategic Pillars



1. Energy Efficiency Excellence

Enhance operational efficiency to minimize energy consumption and cost.

- Optimize production processes and kiln operations
- Upgrade equipment to improve energy performance
- Implement energy monitoring and continuous improvement systems



2. Energy Transition & Low-Carbon Fuel Shift

Accelerate the transition toward cleaner and renewable energy sources.

- Expand the use of renewable energy (e.g., solar power)
- Increase adoption of alternative fuels such as biomass
- Reduce reliance on fossil fuels across operations



3. Comprehensive Emission Reduction

Reduce greenhouse gas emissions across the value chain.

- Establish clear targets for Scope 1, 2, and 3 emissions
- Drive continuous decarbonization initiatives
- Improve emissions intensity in line with long-term targets



4. Climate Resilience & Risk Management

Strengthen the company's ability to manage climate-related risks.

- Integrate climate risk into enterprise risk management (ERM)
- Enhance supply chain resilience and business continuity
- Prepare for regulatory and physical climate disruptions



5. Technology, Innovation & Strategic Investment

Leverage technology and investment to enable sustainable growth.

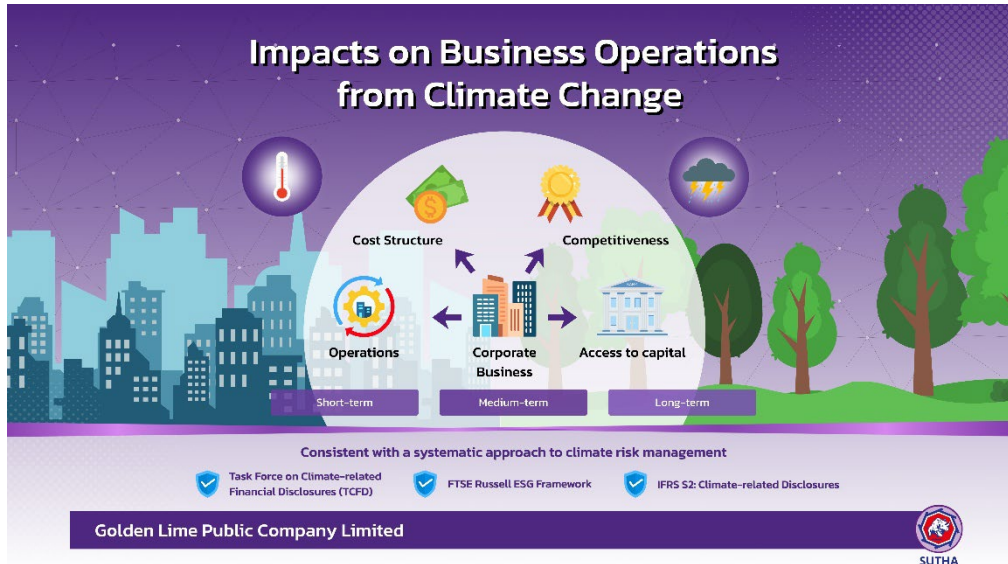
- Invest in clean technologies (e.g., EV, energy systems)
- Explore carbon reduction technologies and innovation
- Support R&D for environmentally friendly products and processes



Long-Term Commitment (Net Zero Pathway)

- Progress toward carbon neutrality
- Support the achievement of Net Zero emissions by 2050
- Continuously reduce GHG emission intensity while growing the business

Climate Risk Management



Climate Risk Management

1. Overview

The Company recognizes that climate change is a significant risk that may impact business operations in the short, medium, and long term. These impacts may affect operations, cost structure, competitiveness, and access to capital.

Accordingly, the Company has established a systematic approach to climate risk management in alignment with internationally recognized frameworks, including:

- Task Force on Climate-related Financial Disclosures (TCFD)
- IFRS S2: Climate-related Disclosures
- FTSE Russell ESG Framework

2. Governance

The Company has established a clear governance structure for managing climate-related risks:

- **Board of Directors**

Oversees overall climate-related risks and sets strategic direction

- **Risk Management and Sustainability Development Committee**

Reviews and monitors climate risks and approves mitigation plans

- **Management and Relevant Functions**

Responsible for identifying, assessing, and managing risks at the operational level

Climate-related risks are regularly reviewed and reported, and are integrated into the Company's Enterprise Risk Management (ERM) framework.

3. Risk and Opportunity Identification

The Company identifies climate-related risks and opportunities across two key dimensions:

3.1 Physical Risks

The Company categorizes physical risks into two types:

(1) Acute Physical Risks

Risks arising from extreme weather events such as:

- Flooding
- Severe storms
- Heatwaves

Potential impacts on the business:

- Damage to assets, plants, and infrastructure
- Disruption to production operations
- Supply chain and logistics interruptions
- Health and safety risks to employees and surrounding communities

(2) Chronic Physical Risks

Risks related to long-term climate changes, including:

- Rising average temperatures
- Changing precipitation patterns
- Water scarcity and water stress
- Long-term drought

3.2 Transition Risks

Risks arising from regulatory, market, and economic transitions, including:

- Environmental regulations and carbon pricing mechanisms
- Disclosure requirements under IFRS S2
- Stricter financing conditions for carbon-intensive businesses
- Shifting customer preferences toward low-carbon products

3.3 Business Opportunities

The Company also recognizes opportunities arising from climate change, such as:

- Development of low-carbon products
- Investment in renewable energy
- Access to green financing
- Innovation and environmentally friendly product development

4. Risk Assessment

The Company conducts risk assessments based on its enterprise risk framework, considering:

- **Likelihood of occurrence**
- **Impact severity**

Risk levels are calculated as:

Risk Level = Likelihood × Impact

Impact assessment covers:

- Financial impacts
- Operational impacts
- Reputational impacts
- Environmental and stakeholder impacts

Risk classification:

- **High / Very High** → Immediate mitigation required
- **Medium** → Monitoring and control required
- **Low** → Ongoing monitoring

5. Integration with Enterprise Risk Management (ERM)

Climate-related risks are integrated into the Company's ERM framework through:

- Regular risk assessments (at least annually or upon significant events)
- Assignment of risk owners
- Monitoring through risk registers
- Reporting to relevant governance bodies

6. Business Impacts

Climate-related risks may affect the Company across multiple dimensions:

6.1 Operations

- Increased energy consumption due to rising temperatures
- Reduced efficiency of machinery
- Risk of production disruptions due to weather variability and power interruptions

6.2 Financial

- Increased energy and carbon-related costs
- Capital expenditure for adaptation and mitigation
- Constraints and opportunities in accessing finance
- Impacts on cash flow, operating costs, and profitability

6.3 Supply Chain

- Disruptions in transportation
- Uncertainty in raw material supply

7. Risk Management and Mitigation Measures

7.1 Managing Physical Risks

- Water and resource management
- Enhancing operational and infrastructure resilience
- Business continuity planning

7.2 Managing Transition Risks

- Adoption of renewable energy
- Reduction of greenhouse gas (GHG) emissions
- Regulatory preparedness

7.3 Climate Strategy and Targets

- The Company has established climate-related targets aligned with its sustainability vision:

Short-term (1–3 years)

Focus on foundation building and operational efficiency:

- Monitor and control Scope 1 and Scope 2 emissions
- Develop Scope 3 data collection across key categories in the supply chain
- Improve energy efficiency
- Promote circular economy practices

Expected outcomes:

- Reduced energy costs
- Improved operational efficiency

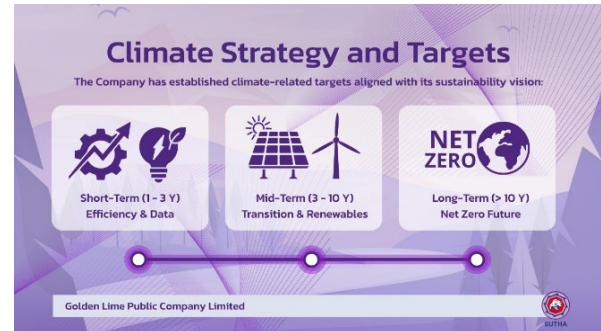
Medium-term (3–10 years)

Focus on business transformation and competitiveness:

- Reduce GHG intensity
- Expand renewable and alternative energy use
- Manage Scope 1, 2, and key Scope 3 key categories across operations
- Develop low-carbon products (e.g. Green Lime)
- Explore the use of carbon credits

Expected outcomes:

- Enhanced competitiveness
- Alignment with low-carbon market demand



- Improved access to green financing

Long-term (>10 years)

Focus on structural transformation:

- Progress toward Net Zero emissions
- Significant reduction of Scope 1, 2, and 3 emissions
- Investment in clean technologies and innovation
- Development of sustainable value chains

Expected outcomes:

- Long-term business resilience
- Alignment with the Paris Agreement
- Reduced stranded asset risk

7.4 Integration with Risk Management

Climate risk assessments are used to support:

- Strategic target setting
- Investment decision-making
- Development of risk mitigation and opportunity enhancement plans

7.5 Financial Impacts

These strategies contribute to:

- Lower energy costs
- Carbon costs for future carbon tax impacts
- Improved operational efficiency
- Enhanced access to financing
- Increased competitiveness

8. Scenario Analysis

The Company assesses climate-related scenarios based on recognized frameworks such as the Paris Agreement, including:

- Net Zero (1.5°C) scenario
- Delayed transition scenario
- High warming scenario

These scenarios consider both transition risks and long-term physical risks to support strategic planning and resilience.

9. Monitoring and Reporting

The Company monitors climate-related risks using key indicators, including:

- GHG intensity
- Energy intensity
- Percentage of renewable energy use
- Overall risk score

Performance is reported through:

- Annual Report (One Report)
- Sustainability Report
- Company website

10. Readiness for International Standards

The Company continues to enhance its capabilities to comply with international standards such as IFRS S1 and IFRS S2 by:

- Improving data systems
- Expanding Scope 3 data coverage for material key categories in value chain
- Strengthening internal controls

Enhancing long-term reporting frameworks

Metrics and Targets

Operational Overview

The Company manages climate-related risks and opportunities alongside improving energy efficiency by adopting an evidence-based approach to monitor performance, set targets, and continuously enhance operations. This approach aims to reduce greenhouse gas emissions, mitigate energy cost and regulatory risks, and strengthen long-term competitiveness.

Metrics and Targets

The Company discloses quantitative historical data benchmarked against the 2022 (B.E. 2565) baseline. This includes Scope 1 and Scope 2 greenhouse gas emissions, total energy consumption, electricity usage, solar energy, diesel, and coal. The disclosure also presents changes compared to the baseline and the status of target achievement, supporting transparency and comparability of performance.

Indicator Evidence	Disclosure Position
GHG Emissions	Total GHG emissions decreased by approximately 22% from the 2022 baseline, with Scope 1 and Scope 2 disclosed separately.
Energy Efficiency	Total energy consumption decreased by approximately 31% from the 2022 baseline.
Renewable Energy	Solar energy is disclosed as part of the company's Scope 2 reduction and energy transition plan.
Data Credibility	Scope 1 and Scope 2 emissions are prepared with reference to GHG Protocol principles and externally verified by an authorized verifier.

Key indicators to be disclosed annually include:

- Greenhouse Gas Emissions (GHG) Scope 1/2/3
 - Disclosure of GHG emissions Scope 1/2/3
 - Disclosure of GHG emission data Scope 1, Scope 2, and Scope 3
- (Data must be disclosed for at least 3 years retrospectively where data is available. Scope 3 Priority categories include Purchased Goods & Services, Transportation & Distribution, Capital Goods, Business Travel and Employee Commuting.
- Energy Use
 - Energy Efficiency

The baseline year is defined as 2019 (B.E. 2562).

The climate disclosure The Company discloses investments in EV systems, EV chargers, EV front loaders, EV forklifts, EV truck, executive EV car, and biomass development initiatives.

The Company commits to aligning its capital expenditure plans, investment decisions, and resource allocation with its long-term greenhouse gas reduction targets and climate transition plan, which is designed to support the goals of the Paris Agreement, including limiting global warming to 1.5°C.

Climate-related considerations are embedded into the Company's capital investment governance process. Major capital projects are screened against climate-related criteria and assessed for their contribution to emissions reduction, energy efficiency improvement, renewable energy adoption, and long-term climate resilience. This approach helps ensure that future capital investments are consistent with the Company's decarbonization pathway and support its net-zero ambition.

Key Climate commitment & Energy KPIs

SUTHA is a network organization operating under the management policies of the Carmeuse Group, Europe, Middle East & Asia. It has adopted and applied strategies to reduce greenhouse gas emissions through the knowledge and management approaches set by Carmeuse shareholders. The group has established medium- and long-term strategies to reduce greenhouse gas intensity by 25% within Scope 1-3 by 2030, based on the 2019 baseline for its European companies, and by 20% for its North American companies. Although no specific targets have been set for the Asian network, SUTHA is committed to contributing to global improvement. SUTHA will develop and apply medium- and long-term targets to reduce greenhouse gas emissions, initially aligning with the group's management policies to achieve carbon neutrality. The targets will be applied starting in 2021, the year when GHG data collection for Scope 1 and 2 began, using year 2022 as the baseline year and the cumulative reduction target from 2022 to 2030 is 25% of the baseline, equivalent to a total reduction of 108,500 tons of greenhouse gases by 2030.

carbon neutrality targets			
Based on the major shareholder, the Carmeuse goal: carbon neutrality by 2050			
> 5 core strategies			
1) Energy efficiency	2) Renewable fuels		
3) Production excellence	4) Circular economy		
5) CO2 emission reduction activities			
SUTHA aims to act on climate change and collaborate with commercial stakeholders through Application engineering and support to design environmental product to combat climate change and reduce carbon emissions			
Details of setting carbon neutrality targets			
Greenhouse gas emission	Base year(s)	Target year(s)	Certification
Scope 1-3	2022 : Greenhouse gas Emissions 434,678 tCO ₂ e	2030 : Reduced by 25% or 108,670	None

Performance – 3 Years + Baseline (B.E. 2565 / 2022)

GHG Emissions

Year	Scope 1	Scope 2	Scope 3	Other	Total (tCO ₂ e)	tCO ₂ e Per Kgs Product	% Change
2022 (Baseline)	422,930	11,169	N/A	81	434,099	0.00122	to compare baseline
2023	340,369	10,221	N/A	59	350,590	0.00118	-19%
2024	352,718	9,757	N/A	81	362,475	0.00120	-16%
2025	329,123	8,849	N/A	193	337,972	0.00117	-22%

Disclosure interpretation:

GHG emissions decreased by approximately 22% from the baseline, reflecting continuous improvement driven by enhanced operational efficiency and optimized fuel management, including the adoption of lower-carbon fuels.

Total Energy Consumption

Year	Total Energy Consumption (MWh)	%
2022 (Baseline)	460,746	Change to compare baseline
2023	342,936	-26%
2024	341,866	-26%
2025	316,052	-31%

Insight: Total energy consumption has declined significantly compared to the baseline, demonstrating ongoing improvements in operational efficiency and energy management practices.

Electricity Consumption

Year	Total Energy Consumption (MWh)	%
2022 (Baseline)	23,512	Change to compare baseline
2023	20,445	-13%
2024	19,516	-17%
2025	18,629	-21%

Result: Electricity consumption decreased by approximately 21% from the baseline, exceeding the Company's reduction targets and reflecting effective energy optimization measures.

Renewable Energy – Solar

Year	Total Energy Consumption (KWh)	%
2022 (Baseline)	3,384,229	Change to compare baseline
2023	3,343,079	-1%
2024	3,395,754	0%
2025	3,176,918	-6%

Insight: Renewable energy generation remains a key contributor to reducing Scope 2 emissions and supports the Company's ongoing energy transition strategy.

Fuel Consumption

- Diesel**

Year	Diesel (litres)	%
2022 (Baseline)	1,154,674	Change to compare baseline
2023	1,096,672	-5%
2024	1,013,534	-12%
2025	871,637	-25%

Trend: Diesel consumption has steadily declined, driven by efficiency improvements and fleet optimization initiatives.

- Coal**

Year	Fuels (Tons)	%
2022 (Baseline)	55,755	Change to compare baseline
2023	47,496	-15%
2024	39,554	-29%
2025	32,466	-42%

Trend: Coal consumption has decreased significantly, reflecting the Company's fuel optimization strategy and transition toward higher-efficiency and lower-carbon alternatives.

Target vs Performance

Target Area	Baseline Year	Target	Latest Performance	Status
Electricity reduction	2022	≥7%	-21%	Achieved
Fuel reduction	2022	≥5%	-33%	Achieved
Renewable energy	2022	To compare baseline	~3.17M kWh	Ongoing

Energy intensity	2022	Continuous improvement	Improved	Achieved
GHG emissions	2022	>25%	-22%	Achieved

Time Horizon Targets

Timeframe	Strategic Focus
Short-term (1–3 years)	Improve energy efficiency and manage Scope 1–2 emissions
Medium-term (3–10 years)	Reduce emission intensity and expand Scope 3 coverage in key categories in value chain
Long-term (>10 years)	Achieve Net Zero emissions

Financial Impact and Strategic Relevance

- Reduced exposure to electricity cost risks, with electricity consumption decreasing by approximately 21% from the baseline year
- Decreased reliance on high-carbon fuels and reduced risks associated with fuel price volatility
- Improved operational efficiency and enhanced competitiveness in energy-intensive industries
- Strengthened readiness for ESG assessments by investors and increased opportunities to access green financing in the future

Data Credibility

- Greenhouse gas emissions data is prepared in accordance with the principles of the GHG Protocol
- Disclosure of key metrics, targets, baseline year, and progress to support transparency in line with ESG evaluation frameworks
- Scope 1 and Scope 2 emissions data are externally verified by an authorized verifier, with ongoing development to expand Scope 3 coverage

Development Plan

- Expand Scope 3 disclosures to cover categories that are material to the value chain
- Establish medium- and long-term quantitative targets for GHG emissions reduction and energy intensity improvement
- Enhance disclosure of the share of renewable energy in total electricity consumption and develop plans to increase clean energy adoption in the future