

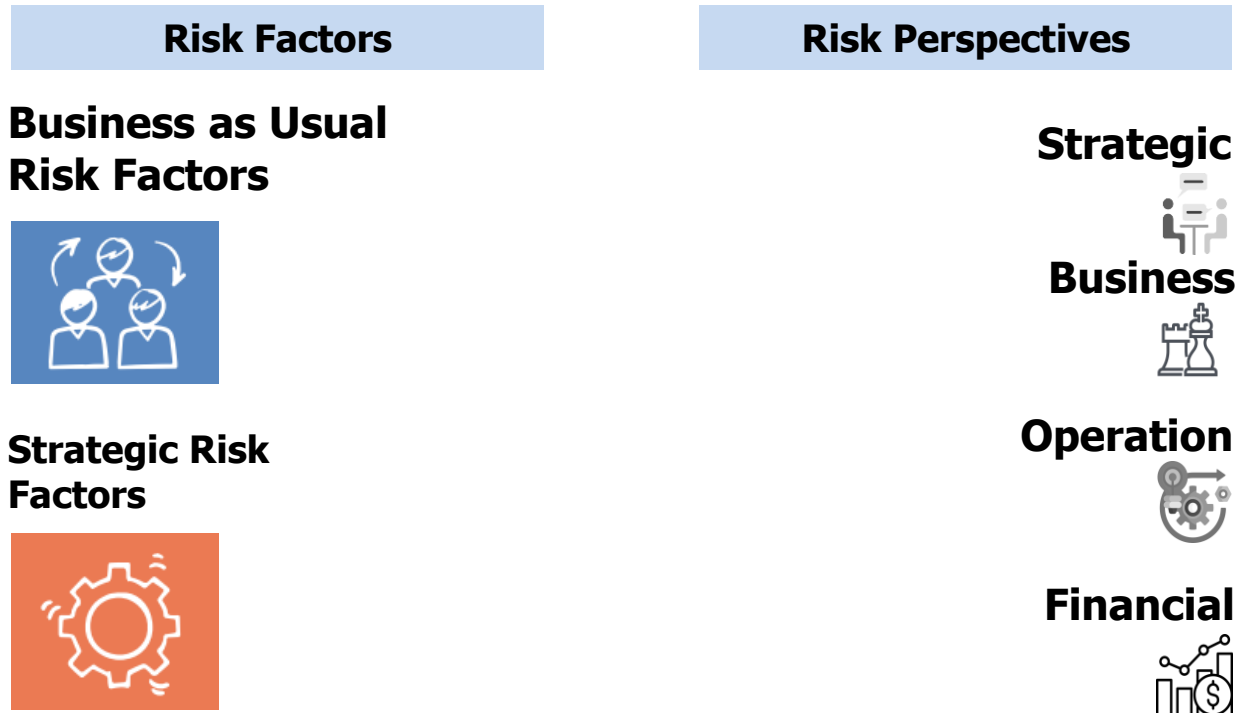
# Risk Management Process



# Risk Management Process

GC analyzes the business environment based on both internal and external factors, including trends relating to the economy, society, politics, technology, industry, and competitive landscape, among other relevant factors to determine business-as-usual risks, future risks, and emerging risks.

Additionally, GC has considered and integrated the company's strategic planning and targets into the risk assessment process to ensure that all identified risks will be effectively managed. GC has classified the risks into different perspectives in which it will be clear to be operationally cascaded and enhance an envision of risk tolerance. The different perspectives of classified risks include Strategic, Business, Operation, and Financial.



# Risk Assessment Criteria – Impact & Likelihoods

GC has established risk criteria, encompassing both likelihood and impact, that are vital in assessing and prioritizing potential risks. Impact determines the magnitude of consequences of a risk, while likelihood indicates the probability of a risk that could be occurring. GC also considers and performs stress testing, scenario analysis and sensitivity analysis, as the powerful tools used to assess the magnitude of impact of the risks. GC has a solid and comprehensive risk criteria matrix that both of likelihood and impact have been constructively defined with different levels in which GC could allocate resources efficiently and make informed decisions.

Impacts – GC has divided and prioritized the severity of risk impact into 5 levels e.g., Severe (5), Major (4), Moderate (3), Minor (2), and Insignificant (1). The risk aspects related to business operations have been categorized as follows: Financial amount, Safety, Health & Environment, Supplier/Customers/Partners, Law and Regulation, Reputation/Image and Objective/Target Achievement.

Likelihoods - GC has also divided the severity of likelihood impact into 5 levels as well e.g., Most Likely (5), Likely (4), Occasional (3), Unlikely (2), and Rarely (1). The risk aspects related to business operations have been categorized as follows: Probability of Future Events, Frequency of Past Events, and Experience/Capability to Control.

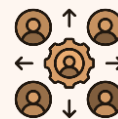
## Impacts:



Financial amount



Safety, Health & Environment



Supplier/Customers/ Partners



Law and Regulation



Reputation/ Image



Objective/Target Achievement

## Likelihoods:



Probability of Future Events



Frequency of Past Events



Experience /Capability to Control

## Risk Criteria

# Risk Criteria & Prioritization

Prioritization of identified risks, including mitigation actions

## Risk Matrices

Impact	Severe (5)					
	Major (4)					
	Moderate (3)					
	Minor (2)					
	Insignificant (1)					
		Rarely (1)	Unlikely (2)	Occasional (3)	Likely (4)	Most likely (5)
		Likelihood				

### Legends:

Very Low

Low

Significant

Critical

## Risk Prioritization

According to Risk Matrices, it enables GC to effectively prioritize the identified risks, and develop suitable mitigation actions as per the severity and likelihood of the risks.

The examples of "high **risks**" (the risks assessed as either critical or significant level on the risk matrix, in which the impact level is "Severe (5)" and the likelihood level is "Most likely (5)") are listed below:

### Business as Usual Risk Factor

- Operational and Safety Risk
- Market Volatility Risk
- Cyber Threat



### Strategic Risk Factors

- Sustainable Feedstock Supply Risk
- Financial and Investment Risk
- Business Restructuring and Impairment Risk
- Decarbonization Implementation Risk
- People and Organization Risk



More details of the risk exposures and mitigation measures:  
[GC One Report 2024](#), document page 97-103.

# Risk Prioritization – High Risks

Descriptions of risk exposure and mitigation actions of the high risks

Operational and Safety Risk	
Risk exposure	As GC's core business is in large-scale chemical plants and refineries, occupational health and safety, operational regulations and standards, a plant's production stability, as well as energy efficiency and production costs per unit are all key factors in its business operation that impact its competitiveness. GC is committed to fostering operational excellence, with the goal of placing itself in the 1st quartile in terms of the safety and production stability of its plants to ensure reliability and continuity and prevent unplanned shutdowns.
Mitigation	<ul style="list-style-type: none"><li>• Improve Process Safety Management (PSM) to meet international standards by requiring safety risk assessment using bow-tie assessment and bow-tie barrier validation; by monitoring PSM leading indicators on a regular basis to verify the readiness of major accident prevention and control systems in all plants; as well as by undertaking production safety management assessments by internal and external assessors.</li><li>• Establish standards and encourage personnel to utilize Field Risk Assessment (FRA) tools to indicate dangers as well as assess and manage risks in work processes in accordance with the risk identification and risk treatment procedures; and monitor, examine, and oversee compliance with standards.</li><li>• Utilize digital technology to enhance the management and monitoring of machine reliability and integrity.</li><li>• Monitor the production stability of the plants, conduct benchmarking analysis, and implement production efficiency optimization projects, while ensuring regular monitoring of project progress.</li></ul>
Relevant Risk Appetite	<ul style="list-style-type: none"><li>• Conduct business with awareness of quality, security, safety, and health of employee, society, community, and environment.</li></ul>



# Risk Prioritization – High Risks

Descriptions of risk exposure and mitigation actions of the high risks

Market Volatility Risk	
Risk exposure	GC is facing pressures from various external factors, such as geopolitical conflicts across multiple regions and risks of economic recession, which have caused demand for end products to be lower than anticipated. This is further compounded by increased production capacity and ensuing oversupply, particularly attributable to the self-sufficiency policies of low-cost producer countries in Asia, expansion into performance/specialty chemicals, and increased backward integration. Simultaneously, the direction of certain national-level policies continues to pose risk as it may affect product pricing and demand and GC's profitability, such as free trade and petrochemical trade flows from China, the United States, and the Middle East, which are expected to intensify competition in the Southeast Asian market in the future.
Mitigation	<p>Mitigation measures for impacts on markets:</p> <ul style="list-style-type: none"> <li>• Implement portfolio management to categorize businesses, thus making it possible to establish operational strategies and allocate resources properly and ultimately strengthen competitiveness and mitigate business volatility.</li> <li>• Enhance integrated competitiveness through holistic optimization, expanding operational scope to cover:               <ol style="list-style-type: none"> <li>1) Enhancing competitiveness by sourcing low-cost feedstock from overseas and through group collaboration enhancement and strategic investment.</li> <li>2) Elevating market-focused business transformation initiatives to create added value and maintain domestic and target market bases, while also developing strategic market intelligence by fully utilizing market data within GC Group to formulate strategies for market leadership.</li> </ol> </li> <li>• Enhance the product portfolio towards High-Value Products (HVP) with lower price volatility, enhance the innovation portfolio, and develop product solutions that better cater to end markets. Closely monitor changes in market demand, supply, and price fluctuations, and evaluate the returns of each market on a weekly basis to adjust sales plans accordingly.</li> </ul>
Relevant Risk Appetite	<ul style="list-style-type: none"> <li>• Overall ROIC must not be lower than the WACC in the long term. Strategic and innovation-driven investments should yield an appropriate level of return to ensure the company's sustainable growth.</li> </ul>



# Risk Prioritization – High Risks

Descriptions of risk exposure and mitigation actions of the high risks

Cyber Threat	
Risk exposure	Cybercrime comes in the form of a variety of attacks and threats, and new methods or technologies are increasingly being used to launch attacks through various channels. Given the rapidly changing nature of the business and competition, it has become necessary for GC to adopt digital technology to enhance operational efficiency and competitiveness, which can pose a risk and increase GC's vulnerability to cyberattacks without awareness and understanding within the organization.
Mitigation	<p>GC implements cyber risk management in adherence to the framework of the National Institute of Standards and Technology (NIST Framework), which consists of five components as follows</p> <ol style="list-style-type: none"><li>1. Identify: Monitor new threats, assess risks in both office and factory systems, test IT security measures, and perform system assessments and internal audits to ensure strict compliance with the relevant safety standards.</li><li>2. Protect: Enforce requirements, policies, and guidelines on the security of Information Technology (IT) and Operational Technology (OT) and data governance for use as guidance in GC Group.</li><li>3. Detect: Utilize a cyberattack detection and monitoring system using deception technology and endpoint security protection.</li><li>4. Respond: Conduct cyberattack response drills and IT and plant systems recovery drills on a regular basis and improve response plans to ensure suitability and mitigate any potential damage.</li><li>5. Recover: Establish policies and follow data backup and emergency preparedness protocols to ensure the continuous availability and functionality of GC's data and information systems.</li></ol>
Relevant Risk Appetite	<ul style="list-style-type: none"><li>• Maintain IT security to be in accordance with relevant standards to prevent impacts that influence business's reputation and operation.</li></ul>



# Risk Prioritization – High Risks

Descriptions of risk exposure and mitigation actions of the high risks

Sustainable Feedstock Supply Risk	
Risk exposure	The volume of gas in the Gulf of Thailand is expected to decline, exerting pressure on both supply and pricing due to government policy directions, resulting in a decrease in the company's cost competitiveness. In addition to projects aimed at enhancing feedstock flexibility for olefins production, GC must also prepare guidelines or alternatives for guaranteeing its long-term feedstock security so as to ensure feedstock availability, which will enable it to generate added value throughout the production chain through quality and cost competitiveness.
Mitigation	<p>Mitigation measures for impacts on current business operations:</p> <ul style="list-style-type: none"><li>• Closely monitor the quantity and quality of natural gases and policies related to natural gases.</li><li>• Perform analysis and optimization to assess the cost-effectiveness of each feedstock.</li></ul> <p>Measures for increasing alternatives and flexibility:</p> <ul style="list-style-type: none"><li>• Source low-cost feedstock from overseas in the long term to enhance feedstock security.</li><li>• Establish olefins feedstock flexibility strategies by looking into the import of low-cost ethane from the U.S. to strengthen competitiveness and feedstock security.</li></ul>
Relevant Risk Appetite	<ul style="list-style-type: none"><li>• Overall ROIC must not be lower than the WACC in the long term. Strategic and innovation-driven investments should yield an appropriate level of return to ensure the company's sustainable growth.</li></ul>





# Risk Prioritization – High Risks

Descriptions of risk exposure and mitigation actions of the high risks

Financial and Investment Management Risk	
Risk exposure	In addition to the management of financial risks across various dimensions, risk factors that GC must monitor and manage closely include profitability and liquidity as well as its ability to finance investments while also maintaining its investment-grade credit rating. GC must also consider efficient management and allocation of investments budget to achieve future growth and increase returns in parallel with achieving balance with respect to sustainability.
Mitigation	<ul style="list-style-type: none"><li>• Prudently conduct project analysis, review, and prioritization with a focus on critical aspects, such as reliability and safety and on growth and sustainability projects that require low investments and yield good returns; and seek investment approval according to the Corporate Investment Management (CIM) process by the Investment Committee.</li><li>• For significant investment projects involving high capital budgets or encumbered securities which may significantly affect GC's reputation or stakeholders, the Risk Management Committee examines and comments on the risk assessment performed and the adequacy of the risk management measures to be implemented. This information is then submitted as part of the investment proposal for approval by the Board of Directors.</li></ul>
Relevant Risk Appetite	<ul style="list-style-type: none"><li>• Conduct business under a financial policy that emphasizes fiscal discipline and considers returns to stakeholders, while appropriately managing financial risks to ensure a strong financial position and maintain the company's credit rating.</li></ul>



# Risk Prioritization – High Risks

Descriptions of risk exposure and mitigation actions of the high risks

Business Restructuring and Impairment Risk	
Risk exposure	Following the strategic shift to “3 Steps Evolution,” comprising 5 Pillars and 1 Foundation, to address the volatility in the petrochemical industry, GC is optimizing its portfolio by evaluating the long-term competitive capabilities of each business group and recognizes the necessity of restructuring the operations within GC Group to achieve alignment with its future strategic direction.
Mitigation	<ul style="list-style-type: none"><li>• Closely monitor the performance of GC Group and target business units by establishing a procedure and a dedicated task force to regularly track and report performance at both strategic and operational levels, so as to plan appropriate responses aligned with rapidly changing situations.</li></ul>
Relevant Risk Appetite	<ul style="list-style-type: none"><li>• Conduct business under a financial policy that emphasizes fiscal discipline and considers returns to stakeholders, while appropriately managing financial risks to ensure a strong financial position and maintain the company’s credit rating.</li></ul>



# Risk Prioritization – High Risks

Descriptions of risk exposure and mitigation actions of the high risks

Decarbonization Implementation Risk	
Risk exposure	To advance global leadership in sustainability, GC has announced its net zero goal, with the medium-term target of reducing 20% emissions by 2030 and achieving net-zero emissions by 2050. As such, the risks that must be managed in order to achieve these targets include the challenges of carrying out projects under GC's three decarbonization pathways: efficiency-driven, portfolio-driven, and compensation-driven; as well as the government's regulatory policies and efforts to align business operations to international climate regulations on matters such as alternative energy, renewable energy, third-party access, and economic tools.
Mitigation	<p>In general, GC monitors and analyzes climate scenarios and incorporates them into the formulation of strategies and business plans.</p> <p><b>Efficiency-Driven:</b></p> <ul style="list-style-type: none"> <li>• Establish performance indicators on greenhouse gas emissions and energy efficiency and incorporate them into the corporate KPIs, as well as monitor and track progress on a monthly basis.</li> <li>• Engage internal and external experts to analyze and report the energy consumption of various plants in depth, promote energy efficiency improvement in plants through the ISO 50001 CPI process and operational excellence frameworks, and organize workshops to develop additional quick-win initiatives for GHG reduction.</li> </ul> <p><b>Portfolio-Driven:</b></p> <ul style="list-style-type: none"> <li>• Forge business partnerships to carry out investment portfolio adjustment strategies, develop project execution plans, and conduct a thorough analysis of policies and trends in low-carbon business development to seek investment opportunities.</li> <li>• Study the feasibility of reducing the proportion of businesses with high carbon emissions.</li> </ul> <p><b>Compensation-Driven:</b></p> <ul style="list-style-type: none"> <li>• Study and expedite the readiness of carbon capture business development, monitor the development of a supportive ecosystem, clearly define roles in collaborating with associations/networks to advocate for policies, laws, and supporting guidelines, and formulate a roadmap in alignment with GC Group's action plans so as to ensure the successful development of projects within appropriate timeframes and costs.</li> </ul>
Relevant Risk Appetite	<ul style="list-style-type: none"> <li>• Overall ROIC must not be lower than the WACC in the long term. Strategic and innovation-driven investments should yield an appropriate level of return to ensure the company's sustainable growth.</li> </ul>



# Risk Prioritization – High Risks

Descriptions of risk exposure and mitigation actions of the high risks

People and Organization Risk	
Risk exposure	GC must cope with challenges in ensuring preparedness with regard to its people, organization, and culture to support new business models in accordance with a shift in corporate strategies and develop employee competencies in key areas to ensure a suitable and sufficiently efficient working arrangement.
Mitigation	<p><b>People:</b></p> <ul style="list-style-type: none"> <li>• Provide support and care to personnel across every process, from recruitment and development to retention.</li> <li>• Develop five key capabilities essential for future business operations: digital, innovation, global acumen, sales &amp; marketing, and sustainability, which will effectively drive the achievement of GC's strategies.</li> <li>• Optimize resource allocation and mobility management to enhance organizational efficiency and promote employee mobility and learning across GC Group both in the country and overseas.</li> </ul> <p><b>Organization:</b></p> <ul style="list-style-type: none"> <li>• Enhance the flexibility, speed, and efficiency of the operations to keep up with the evolving business and situation, such as by encouraging cross function collaboration.</li> <li>• Implement Strategic Workforce Planning (SWP) to optimize workforce capacity and personnel costs across units within appropriate timeframes in alignment with business directions and objectives and strengthen organizational competitiveness.</li> </ul> <p><b>Culture:</b></p> <ul style="list-style-type: none"> <li>• Organize activities that foster the corporate culture by promoting awareness, understanding, and implementation of GC SPIRIT values among employees at all levels, so that they consistently exhibit 4 Core Behaviors.</li> </ul>
Relevant Risk Appetite	<ul style="list-style-type: none"> <li>• Continuously maintain sustainability at international standards within the chemical industry and operate the business in alignment with policies and action plans aimed at achieving net-zero carbon emissions by 2050.</li> </ul>

