

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 Factors

Business as Usual Risk Factors



Strategic Risk Factors



Risk Perspectives

Strategic



Business



Operation



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 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, Safety, Supplier/Customers/Partners, Law and Regulation, and Reputation.

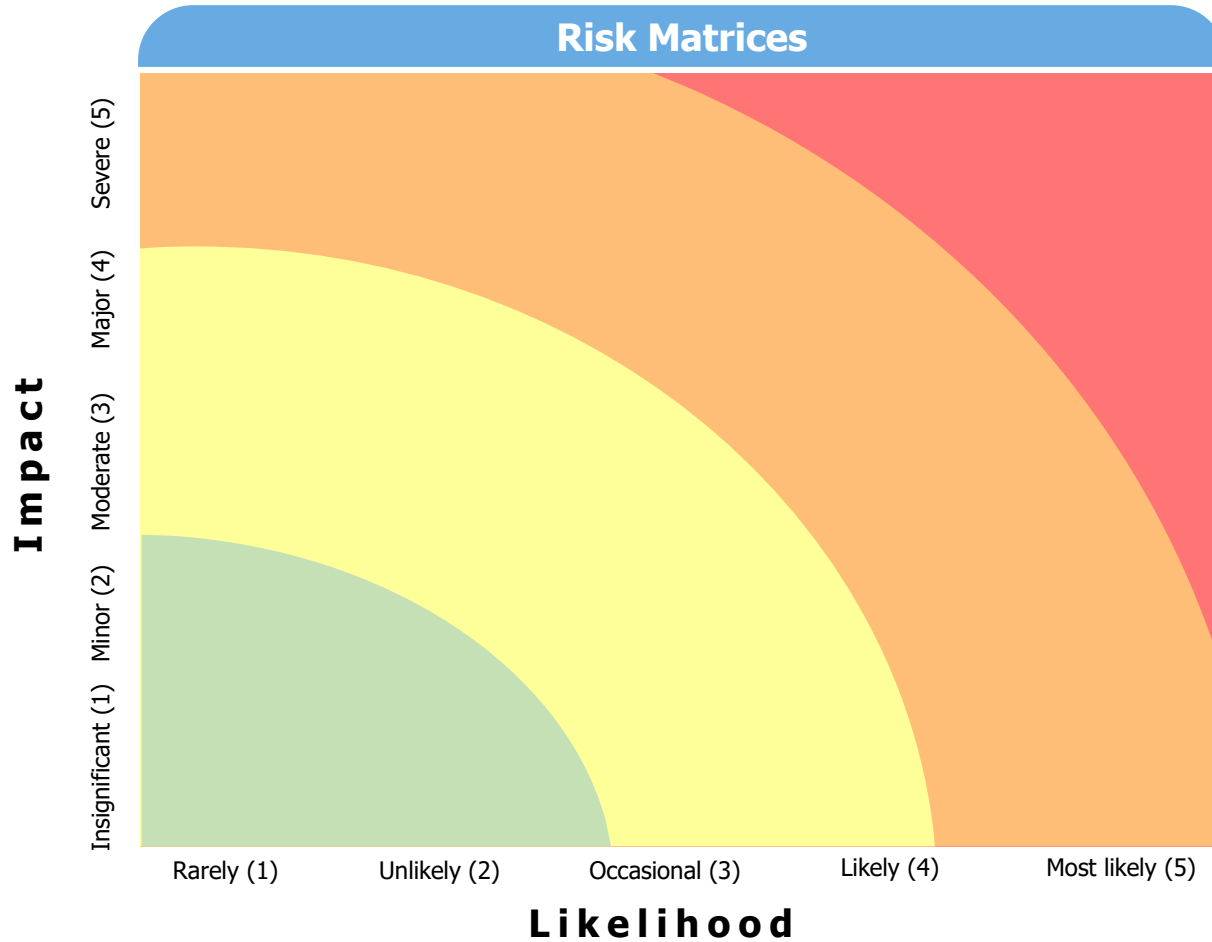
Likelihoods - GC has also divided the severity of likelihood impact into 5 levels as well e.g., Most Likely (5), Likely (4), Occasional (3), Unlikely (2), and Rarely (1). The risk aspects related to business operations have been categorized as follows: Probability of Future Events, Frequency of Past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

Risk Criteria



Risk Criteria & Prioritization

Prioritization of identified risks, including mitigation actions



Legends:



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 example of **"high risks"** (the risks assessed as either critical or significant level on the risk matrices) are listed below:

Business as Usual Risk Factor

- Operational and Safety Risk
- Price and Spread Volatility Risk
- Pandemic COVID-19 Risk
- Cyber Threat
- Financial Risk



Strategic Risk Factors

- Sustainable Feedstock Supply Risk
- Sustainable Water Management
- Investment Risk
- Climate Action Towards Net Zero Risk
- People and Organization Risk



More information of other high risks:
[GC Annual Report 2022](#), document page 94-103.

Risk Prioritization – High Risks

Descriptions of business impact and mitigation actions of the high risks

Operational and Safety Risk	
Business impact	Inappropriate management may interrupt the production process, affect the safety of lives and properties, and cause damage to the environment. It may also potentially affect stakeholders’ operations throughout the supply chain
Mitigation	<ul style="list-style-type: none"> • Upgrade Process Safety Management (PSM) to meet international standards by using Bow Tie Assessment and Bow Tie Barrier Validation to evaluate safety risks as well as regularly monitoring PSM Leading Indicators to ensure the effectiveness of the major accident prevention and control systems in all factories. Furthermore, a mechanism to continuously promote PSM has also been established. • Schedule process safety management audits performed by internal and external auditors. • Employ technology and digital technology to enhance efficiency in managing and monitoring machinery reliability and integrity.
Price and Spread Volatility Risk	
Business impact	Price volatility of feedstock and petroleum/petrochemical products can be caused by highly complex external factors. Thus, this has imposed a challenge on price and spread volatility risk management. Without a doubt, such circumstances have a direct impact on GC’s revenues.
Mitigation	<ul style="list-style-type: none"> • Upgrade Customer Relationship Management (CRM) processes to maintain existing customer base and expand the number of new customers through efficient product and market development processes. • Explore opportunity to increase sales to other export markets beyond China and India, where risks and competition are high, in order to create a footprint and study new markets in an effort to expand the customer base and achieve greater sales agility. • Develop the GC Recession Playbook as an operational framework and guideline to reduce impact on overall revenue



More information of other high risks:

[GC Integrated Sustainability Report 2022](#), document page 94-103.

Risk Prioritization – High Risks

Descriptions of business impact and mitigation actions

Pandemic COVID-19 Risk	
Business impact	Worsening spread of COVID-19 will affect business continuity across the supply chain and could lead to disruption of business and key activities, such as production, project construction, financial transactions, and sales, etc.
Mitigation	<ul style="list-style-type: none"> • Monitor the outbreak situation continuously to define preventive guidelines and measures as well as report progress through the COVID-19 Prevention and Control Committee. • Employ the digital system to report and monitor employee health risks for the purpose of screening, monitoring and formulating preventive measures in order to enable rapid and timely actions. • Establish the Work from Home measure by assigning and rotating no more than 30 percent of all employees to work onsite. Employees are instructed to always take ATK tests before coming to the office and to strictly follow measures, wear masks, keep distance, eat separately and wash hands frequently.
Cyber Threat	
Business impact	Cyberattacks may affect business continuity in the forms of production or operating system disruption and leakage of vital operational data or personal data of contract parties, suppliers, and business partners, which will impact the company’s credibility, image, and reputation as well as lead to potential litigation for damages.
Mitigation	<ul style="list-style-type: none"> • Enforce policies on Information Technology (IT) security, Operational Technology (OT) security, and Data Governance as guidelines for GC and subsidiaries. • Regularly monitor emerging cyber threats, assess potential risks both in offices and factory systems, test IT security measures, perform internal audits to ensure strict compliance with relevant safety measures. • Study and develop cyber-attack detection and prevention system using Deception Technology.



Risk Prioritization – High Risks

Descriptions of business impact and mitigation actions

Financial Risk	
Business impact	Volatility from various external factors have depressed the profitability of the company and subsidiaries, impacting our liquidity and capital management as well as the ability to acquire funding and investor trust.
Mitigation	<ul style="list-style-type: none"> • Closely monitor operating performance and financial ratios of the company and subsidiaries on a quarterly basis by performing stress testing to consider potential risks on performance and define supporting measures. Report the results to executives and Board of Directors for acknowledgement. • Manage risks from exchange rate volatility using enhanced natural hedging to reduce impact on business performance. • Manage interest rate risks using Interest Rate Swap to mitigate impact from rising interest rates.
Sustainable Feedstock Supply Risk	
Business impact	By lacking an integrated sustainable feedstock management plan, the company may be faced with higher production costs and process disruption from feedstock shortage which will ultimately impact revenues and operational credibility.
Mitigation	<ul style="list-style-type: none"> • Closely and regularly monitor the natural gas situation both in terms of quantity and quality in collaboration with PTT Group companies. • Implement feedstock optimization based on market situation and cost effectiveness. • Evaluate condensate quality by measuring arsenic level in collected samples. If the level exceeds the control value, corrective actions must be taken before feeding the condensate into the production process.



Risk Prioritization – High Risks

Descriptions of business impact and mitigation actions

Sustainable Water Management	
Business impact	Water shortage may disrupt the production process, affecting the company’s operational credibility and revenues. Higher water sourcing costs may lead to higher production costs which may eventually affect investment projects for future growth
Mitigation	<ul style="list-style-type: none"> • Assess risks, monitor drought situation, define mitigation measures, and implement Business Continuity Plan in case of drought. • Enhance water efficiency in the production process according to 3Rs principle (Reduce, Reuse, and Recycle), support technological investment, streamline production process, and explore reserve water supply sources. • Report water situation, drought risks and progress of relevant projects through the Sustainable Water Management Working Group, the Safety, Health and Environment Governance Committee, and the Sustainability Development Committee (SDC)
Investment Risk	
Business impact	Without appropriate and efficient investment management, GC can lose opportunities for growth. It can also affect our competitiveness and reputation as well as stakeholders' and investors' trust.
Mitigation	<ul style="list-style-type: none"> • Employ the Stage Gate system which covers from the process of opportunity seeking through to request for investment approval in accordance with GC’s Corporate Investment Management (CIM) process implemented by the Investment Supervisory Committee. • For major investment projects with high accumulated budgets or obligations that have significant impact on the company’s reputation and/or stakeholders, the Risk Management Committee will carefully consider and provide opinions on the project's risk assessment, and risk management measures to support the Board of Directors in deciding on investment approval. • Use project prioritization framework to carefully analyze, review, and prioritize investment projects in accordance with trends and volatile economic conditions.



Risk Prioritization – High Risks

Descriptions of business impact and mitigation actions

Climate Action Towards Net Zero Risk	
Business impact	Failure to execute decarbonization projects according to established plans may affect GC’s Net Zero Goal and will send ripple effects on our competitiveness, reputation, stakeholder confidence, and investor interest. At the same time, the implementation of measures to achieve the Net Zero Goal is regarded as an opportunity for GC to step up as a leader in conducting business in accordance with sustainability principles.
Mitigation	<ul style="list-style-type: none"> • Follow up on the private sector’s sustainability movements, monitor government measures, laws and regulations pertaining to greenhouse gas control/promotion management through meetings of the Sustainability Development Committee (SDC). • Drive decarbonization efforts through specialized task forces in five areas, namely (1) Asset & Efficiency Improvement, (2) Low Carbon Power & Heat, (3) Portfolio Evolution, (4) New Technology & CVC Implementation, and (5) Offsetting. • Enhance efficiency in all processes to reduce resource and energy consumption, employ new innovations and seek new low-carbon technology to overcome current technological constraints.
People and Organization Risk	
Business impact	The inability to manage people and organization risks may result in failure to meet corporate goals and execute strategies for future growth. Corporate culture and work environment are key factors in recruiting and retaining talent. Therefore, improper management may result in failure in attracting and retaining talents
Mitigation	<ul style="list-style-type: none"> • People: Define new skill sets that correspond to modified working processes and styles. Evaluate the knowledge and abilities of current employees in order to design learning programs to enhance their knowledge and skills while performing regular follow-ups on their progress. • Organization: Reinforce flexibility and speed, increase the organization’s operational efficiency in accordance with changing business contexts and situations, for example, encourage cross-functional collaborations, etc. • Culture: Strengthen corporate culture with the GC SPIRIT to enable employees’ understanding, awareness, and implementation in order to continuously drive the creation of corporate culture and encourage all levels of employees to consistently exhibit GC’s 4 Core Behaviors.



More information of other high risks:

[GC Integrated Sustainability Report 2022](#), document page 94-103.

