



The Taskforce on Nature-related Financial Disclosures (TNFD) Report 2024

EXECUTIVE SUMMARY

December 2024



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ACRONYMS AND ABBREVIATIONS

ACRONYM	DESCRIPTION
CGS	Corporate governance and sustainability committee
EIA	Environmental Impact Assessment
ENCORE	Exploring natural capital opportunities, risks and exposure
GBF	Kunming-Montreal Global Biodiversity Framework
GHG	Greenhouse gas
GICS	Global industry classification standard
HRDD	Human rights due diligence
I&D	Nature-related impact and dependency
IPLCS	Indigenous peoples (IPs) and local communities (LCs) lands
JV	Joint venture
LEAP	Locate phase, evaluate phase, assess phase and prepare phase
QSHEB	Quality, security, safety, health, environment and business continuity
R&O	Nature-related risk and opportunity
SDC	Sustainable development committee
SME	Subject matter expert
TCFD	Taskforce on climate-related financial disclosures
TNFD	Taskforce on nature-related financial disclosures
WWF BRF	World Wildlife Fund Biodiversity Risk Filter

1. INTRODUCTION

Nature-related challenges such as habitat degradation, species extinction, and climate change underscore the imperative for collaborative efforts to conserve biodiversity and protect our planet's natural heritage. As humanity exceeds safe planetary boundaries, including those for biodiversity, the urgency for a nature-positive transition is clear.

As a prominent global market leader in integrated petrochemical and refining operations, PTT Global Chemical Public Company Limited (GC) recognizes the urgency and significance of achieving the objectives outlined in the Kunming-Montreal Global Biodiversity Framework (GBF) aiming to halt and reverse nature loss by 2030. Thus, GC is committed to conduct a comprehensive review and analysis of the financial implications associated with exposure to and management of nature-related impacts¹ and dependencies² (I&D), and risks and opportunities (R&O). The assessment and reporting processes are conducted in alignment with the Taskforce on Nature-related Financial Disclosures (TNFD) recommendations, and additionally TNFD LEAP approach and TNFD chemical sector additional guidance where applicable. With this, GC is enhancing its understanding of nature-related risks and opportunities to facilitate informed decision-making and transform business activities.

GC is the biggest petrochemical and refining corporation within the ASEAN region, with 43 operation sites covering Thailand and internationally, including Europe and Asia. GC's business structure can be divided into 5 Business Groups and Service, and other Business Groups. This business structure supports GC's business direction, emphasizing the selection of suppliers, customers, and business partners throughout the value chain with the highest operational standards.

Figure 1 describes GC's business value chain. The assessments conducted as part of this report covers the entirety of GC's value chain with site selection criteria for own operations and joint ventures (JVs) are based on operational control, relevance to the main production processes, and significant direct revenue contributions. Similarly, suppliers and customers are selected based on their contributions to GC's procurement spending and revenue. GC develop TNFD report across the value chain to cover 41 sites in Own Operations & JVs, 6 Suppliers, and 2 Customers, summary of the selected sites across the value chain is shown in **Table 1** and

Figure 2.

¹ Changes in the state of nature (quality or quantity), which may result in changes to the capacity of nature to provide social and economic functions. Impacts can be positive or negative. They can be the result of an organization's or another party's actions and can be direct, indirect or cumulative. A single impact driver may be associated with multiple impacts.

² Dependencies are aspects of environmental assets and ecosystem services that a person or an organization relies on to function. A company's business model, for example, may be dependent on the ecosystem services of water flow, water quality regulation and the regulation of hazards like fires and floods; provision of suitable habitat for pollinators, who in turn provide a service directly to economies; and carbon sequestration.

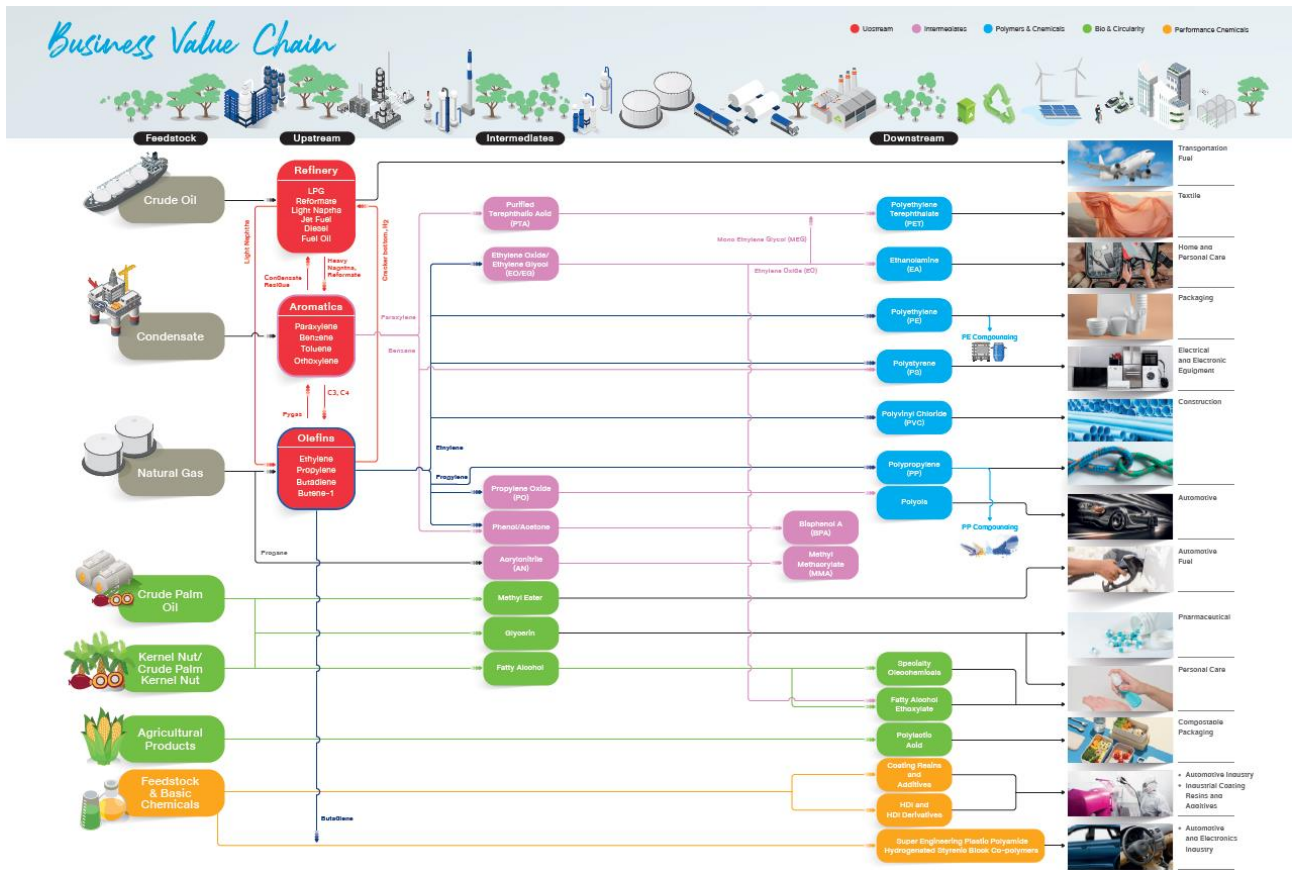


FIGURE 1 GC'S BUSINESS VALUE CHAIN

TABLE 1 SUMMARY OF SITES BEING ASSESSED

Value Chain	Entities	Number of Sites
Own Operations	<ul style="list-style-type: none"> Own Operations Subsidiaries JVs 	<ul style="list-style-type: none"> 41 sites, or 100% of the operations in Thailand Coverage: 90.2% of total revenue in 2023
Upstream Activities	<ul style="list-style-type: none"> Suppliers 	6 sites
Downstream Activities	<ul style="list-style-type: none"> Customers 	2 sites
Total		49 sites



FIGURE 2 GC'S SELECTED SITES ACROSS THE VALUE CHAIN

2. GOVERNANCE

Board and Senior Management Oversight and Roles: GC has established a governance structure that includes Board- and senior management-level bodies to integrate sustainability- and nature-related issues into business strategy and management process at the highest level, as illustrated in **Figure 3**. The Board-level Corporate Governance and Sustainability Committee (CGS) oversees and reviews the GC’s sustainable development policies and strategies, covering nature-related topics, in compliance with national best practices and international standards. The Sustainable Development Committee (SDC), comprising senior executives, governs strategic directions for sustainability encompassing nature-related mitigation actions, including setting relevant targets and refining project investment plans. Chaired by the highest-level sustainability executive officer, the SDC also determines plans, applications, and measurement systems to be operationalized across the organization. Detailed descriptions of the roles and responsibilities of Board- and senior management-level governance bodies are summarized in **Table 2**.



FIGURE 3 GC'S NATURE-RELATED GOVERNANCE STRUCTURE

TABLE 2 SUMMARY OF NATURE-RELATED GOVERNANCE

Governance Body	Roles and Responsibilities	Meeting Frequency
Board-level Committee		
Board Chairman	The Board Chairman holds the highest authority on the BoD and is responsible for ensuring that the business has a clear picture of its exposure to sustainability-related risks and opportunities, including nature-related issues. The Board Chairman is also responsible for reviewing the performance of senior management. The Board Chairman oversees the CGS and the RMC and governs decision-makings on nature-related issues.	As needed
Corporate Governance and Sustainability Committee (CGS)	The CGS reports directly to the BoD on oversight of sustainability including nature-related issues. The CGS reviews and approves key sustainability issues, including materiality assessment, goals and strategies, and information disclosures. The CGS also evaluates and reviews GHG mitigation, and nature-related targets against corporate goals. The CGS reports to the BoD at least quarterly.	Quarterly
Risk Management Committee (RMC)	The RMC is responsible for overseeing and defining the direction of risk management guided by risk appetite, risk management policies, frameworks and processes, which also cover nature-related R&Os. It is also tasked with monitoring and providing recommendations on the risk management. The RMC reports to the BoD at least quarterly.	Quarterly
Senior Management		
Management Committee (MC)	The MC is the highest management-level body responsible for reviewing sustainability-related risks and opportunities, including those related to nature. The MC is chaired by the Chief Executive Officer (CEO) and comprises top senior management. The MC oversees the establishment and revision of sustainability strategies including nature, goals and targets, policies, and operating guidelines as performed by the Sustainable Development Committee (SDC).	Bi-monthly
Sustainability Development Committee (SDC)	The SDC was established to govern the strategic directions for the mitigation of sustainability and nature-related issues. The SDC is responsible for monitoring sustainability performance and management to ensure alignment with risk management guidelines, incorporating, identifying, and being informed about I&Ds and R&Os.	Quarterly
Enterprise Risk Management Committee (ERMC)	The ERMC reports to the MC and is assigned to closely monitor risk management performance monthly. The ERMC was established to ensure that risk management measures are aligned with management under the risk appetite and the RMC's guidance. The ERMC members comprise of senior management from each business function relevant to risk governance, enforcement, and company-wide risk management.	Quarterly

3. THE LEAP APPROACH: METHODOLOGY AND RESULTS

Companies can have certain activities that are dependent on nature, which expose them to various risks, such as disruptions to resource availability and increased costs related to resource extraction. Other activities can cause impacts on nature, contributing to biodiversity loss and ecosystem derogation, which can exacerbate the risks to the companies. Such risks can create financial implications on the companies. By addressing I&Ds, businesses can address reduce nature-related risks as well as leverage nature-related opportunities to create positive financial impacts. This interconnections between I&Ds, risks and financial effects is summarized in **Figure 4**.

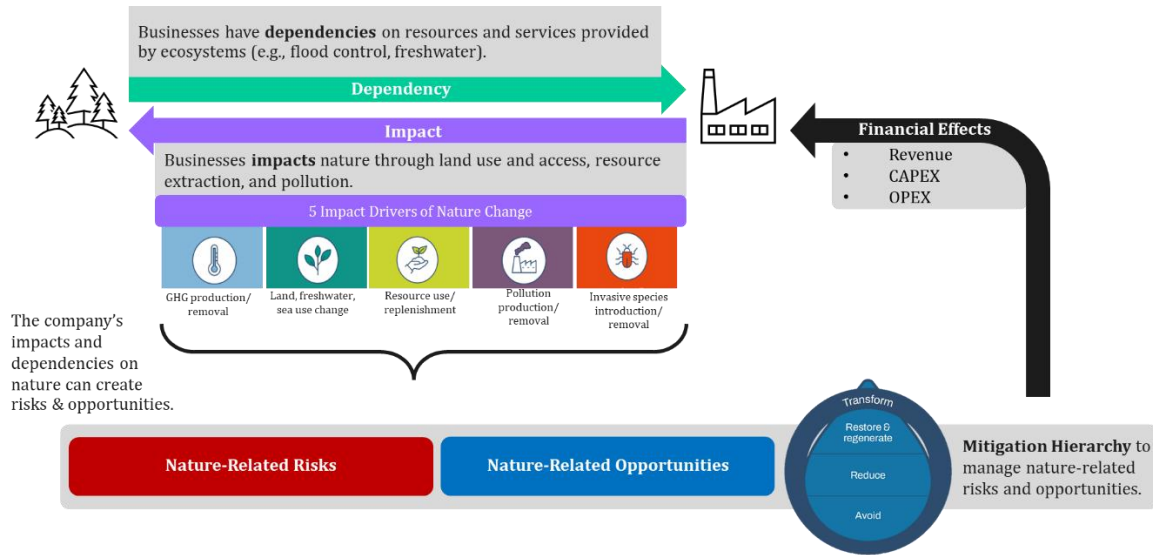


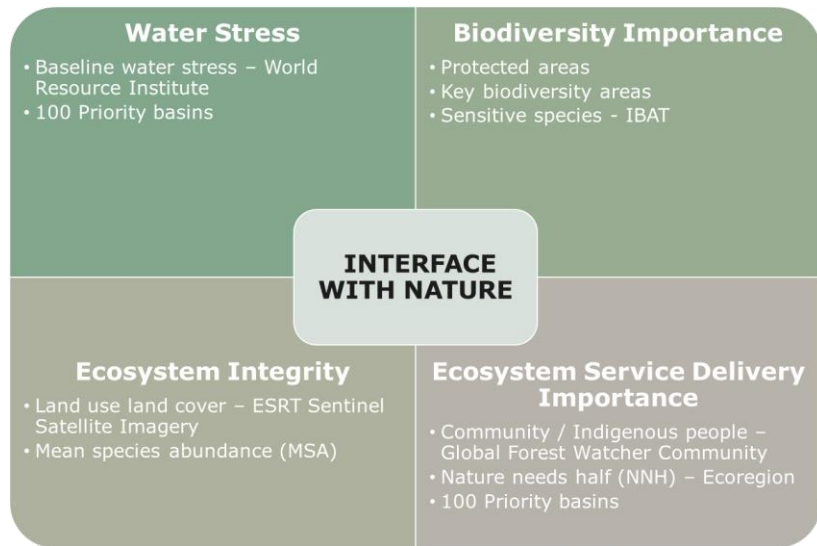
FIGURE 4 SUMMARY OF NATURE-RELATED IMPACTS AND DEPENDENCIES, RISKS AND OPPORTUNITIES, AND FINANCIAL IMPLICATIONS

GC has applied **TNFD’s LEAP approach** to identify, assess and prioritize I&Ds and risks covering own operations, and upstream and downstream value chain. LEAP approach consists of four main phases: 1) Locate phase, 2) Evaluate phase, 3) Assess phase and 4) Prepare phase. In addition, GC has utilized various web-based open-source tools as recommended by the LEAP approach such as ENCORE (Exploring Natural Capital Opportunities, risks and Exposure) and World Wildlife Fund Biodiversity Risk Filter (WWF BRF).

3.1 LOCATE PHASE

The objective of the Locate phase is to identify nature-sensitive sites within GC’s value chain. I&Ds are location-specific. For example, chemical run-off from factories can cause an impact to bodies of water confined to a particular location, while certain business activities may be dependent on a water source located in a particular location. Therefore, identifying nature-sensitive sites will help GC better understand the locations within its value chain that interface with nature and have material I&Ds that can become potential sources of GC’s risks and financial impacts.

All of GC’s 49 selected sites throughout the value chain (i.e. own operations, JVs, suppliers and customers) as shown in **Table 1** are assessed for their sensitivity to nature by using third-party global open-source data sets to determine the current state of nature and identify asset red flags. These assessments are conducted across four dimensions.



Sites that have medium to high sensitivity are prioritized as shown in **Table 3**³, 19 locations from a total of 41 locations in own operation selected sites.

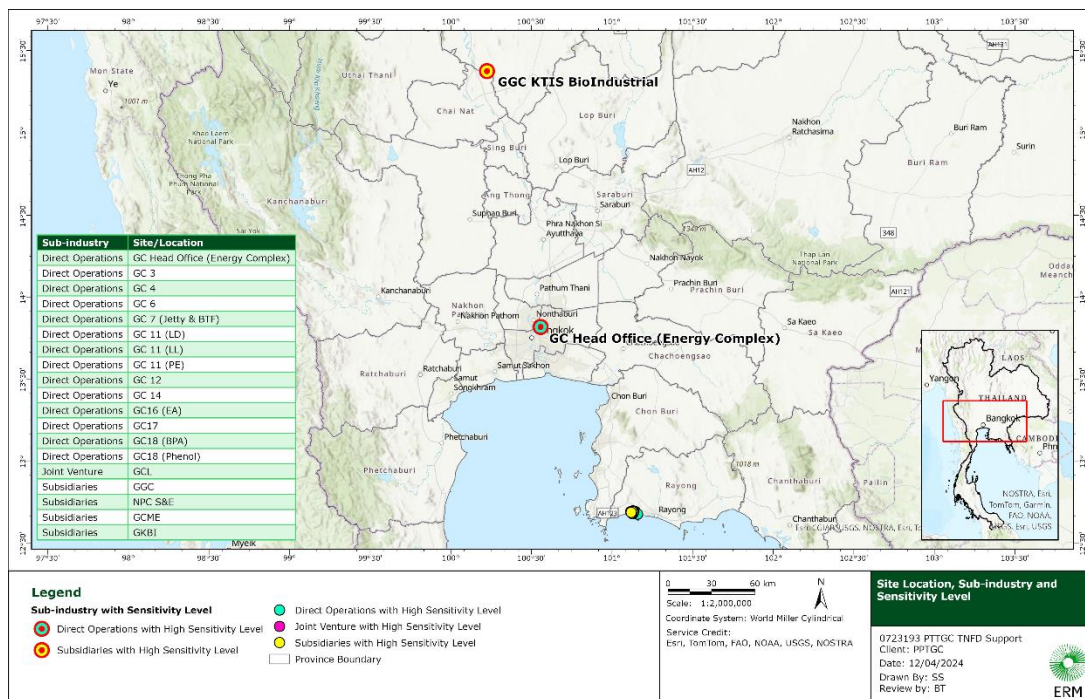


FIGURE 5 GC’S OWN OPERATIONS LOCATIONS SHOW MEDIUM- TO HIGH- SENSITIVITY

³ Results of the Locate phase will be used in combination with the results of the Evaluate phase, and are shown section 3.2 Evaluate phase.

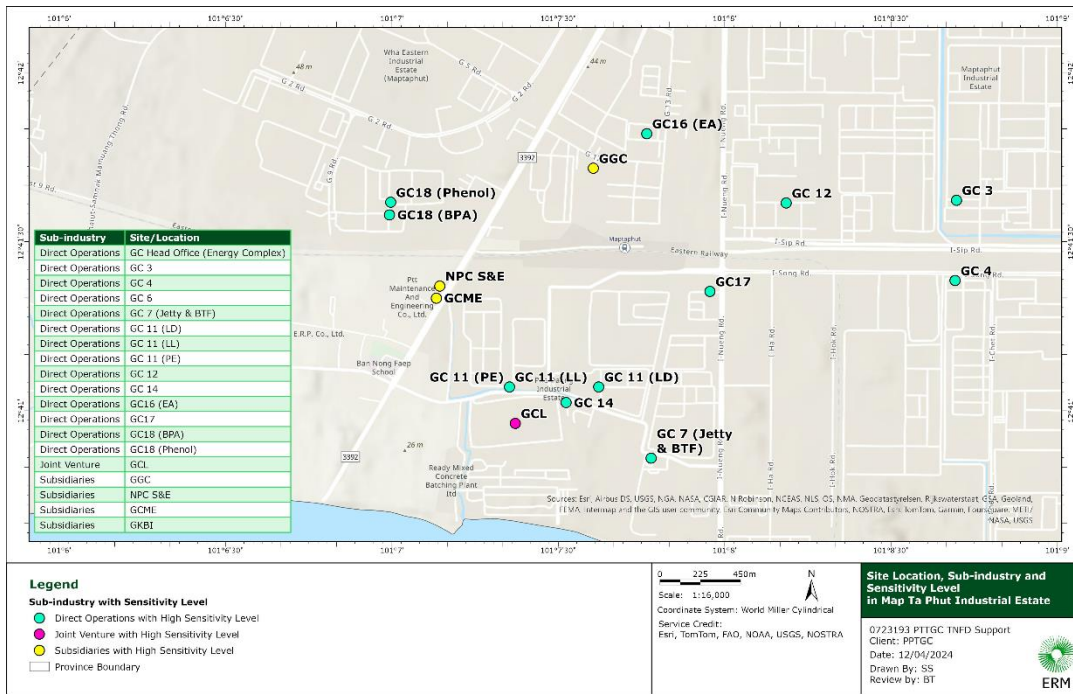
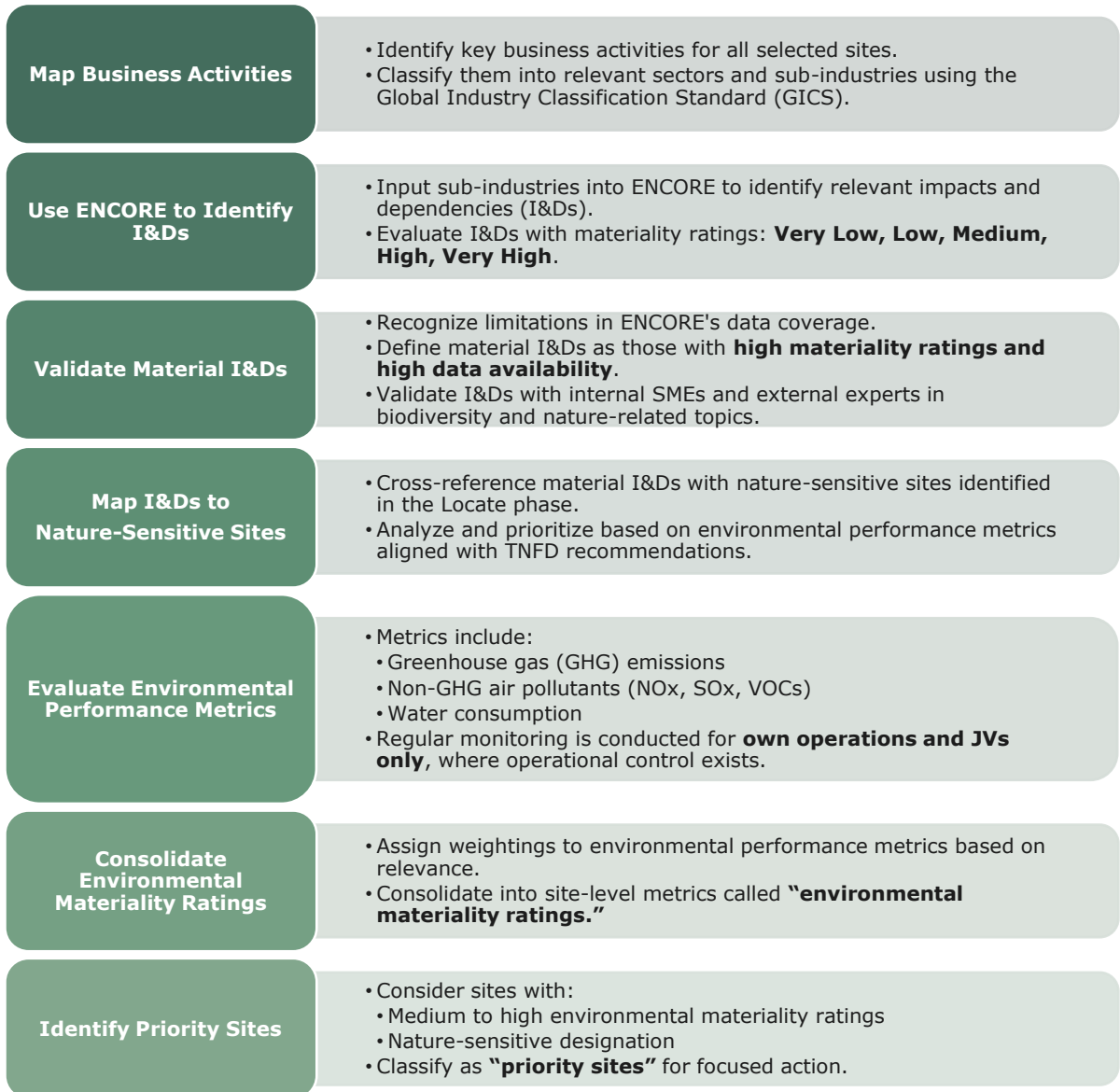


FIGURE 6 ALL GC'S OWN OPERATIONS LOCATIONS IN RAYONG PROVINCE SHOW MEDIUM-SENSITIVITY

3.2 EVALUATE PHASE

The objective of the Evaluate phase is to identify and evaluate material impacts and dependencies (I&Ds) to GC. This can be done with the aid of ENCORE as recommended by the LEAP approach, which is a tool that has been developed and continuously maintained by a partnership between Global Canopy, the UN Environmental Programme Finance Initiative, and the UN Environment Programme World Conservation Monitoring Centre.



As GC does not have operational control over suppliers and customers, it does not have access to environmental performance indicators from suppliers and customers. Hence, GC cannot determine environmental materiality ratings for sites under suppliers and customers and can only refer to nature-sensitive sites to be included as priority sites. Summary of results from the Locate and Evaluate phases and how they are combined to identify GC’s priority sites are shown in **Table 3**.

TABLE 3 RESULTS OF LOCATE PHASE AND EVALUATE PHASE, AND PRIORITY SITES

Value Chain	Locate Phase		Evaluate Phase			Priority Sites			
	Site Name	Nature-Sensitivity	Sub-Industry	Material I&Ds	Envi. Materiality				
Own Operations and JVs	GC 2 & GC 3 ⁴	Medium	Commodity Chemicals	Impacts <ul style="list-style-type: none"> GHG emissions Non-GHG air pollutants Water use Dependencies <ul style="list-style-type: none"> Surface water 	High	✓			
	GC 4				High				
	GC 6				Medium				
	GC 11	Medium	Specialty Chemicals		High				
	GC18	Medium			Medium				
	GGC KTIS ⁵	High			Low				
	GC 7	Medium	Commodity Chemicals	-	Low	-			
	GC 11		Specialty Chemicals						
	GC 12								
	GC 11								
	GC 16								
	GC 17								
	GC18								
	GGC								
	GCL								
NPC									
GC ME			Office Services & Supplies						
GC Head Office	High								
Suppliers	Glow GHECO-One	High	Electric Utilities				Impacts <ul style="list-style-type: none"> GHG emissions Non-GHG air pollutants Water use Terrestrial ecosystem use Marine ecosystem use Dependencies <ul style="list-style-type: none"> Surface water Flood and storm protection Climate regulation Water flow maintenance 		✓
	Glow SPP 2/ Glow SPP 3								
	Glow Energy Phase 1	Medium							
	PTT GSP ⁶	Low	Energy (Oil & Gas Refining & Marketing)						
Customers	Customer 1	High	Specialty Chemicals	Impacts <ul style="list-style-type: none"> GHG emissions Non-GHG air pollutants Water use Solid waste Dependencies <ul style="list-style-type: none"> Surface water Groundwater Flood and storm protection 		✓			
	Customer 2								

⁴ The level of the sensitive location of GC 2 is low. However, GC decided to include GC2 in the scope of assessment because it has a similar capacity to GC 3, is highly important to GC's operations and associated risks, and significantly contributes to revenue generation (material location) with high environmental performance (high usage).

⁵ GC includes GGC KTIS as first priority site as a special case due to it being a highly nature-sensitive site and having sub-industries similar to GC 3, 4, 6, 11, and 18(phenol).

⁶ the site of PTT GSP has been also considered as priority location because it provides key raw materials used as GC's product, which is significant to GC's business operation..

3.3 ASSESS PHASE

3.3.1 ASSESSING NATURE-RELATED RISKS

The main objective of the Assess phase is to identify material risks across GC’s value chain to assess the financial implications for the company subsequently. GC conducts the risk assessment in the Assess phase by focusing on the priority sites that have been previously identified. As I&Ds are location-specific and cause risks, priority sites can be considered as locations that are nature-sensitive and have material I&Ds. Hence, risks that are material to GC are caused by the material I&Ds related to priority sites.



<p>Focus on Priority Sites</p>	<ul style="list-style-type: none"> • Use priority sites identified in the Evaluate phase as a basis. • Define priority sites as locations that are nature-sensitive and have material I&Ds. • Recognize that material risks stem from material I&Ds related to priority sites.
<p>Utilize WWF BRF Tool</p>	<ul style="list-style-type: none"> • Leverage the World Wildlife Fund Biodiversity Risk Filter (WWF BRF) tool. • Perform location- and industry-specific assessments of nature-related risks. • Assign risk scores: Very Low, Low, Medium, High, Very High.
<p>Aggregate Risk Scores</p>	<ul style="list-style-type: none"> • Consolidate risk scores from all priority sites into aggregated company-level scores. • Break down scores by: Own Operations and JVs/ Suppliers/ Customers
<p>Adjust Risk Scores for Accuracy</p>	<ul style="list-style-type: none"> • Incorporate data from: <ul style="list-style-type: none"> • Materiality ratings from EVALUATE • Results from GC’s climate-related risk assessments (TCFD) • Key human rights issues (HRDD) • Adjust aggregated risk scores based on these factors.
<p>Validate Material Risks</p>	<ul style="list-style-type: none"> • Identify risks with adjusted scores of Medium to Very High as material risks. • Validate risks through consultations with internal SMEs and external experts. • Determine appropriate timeframes for addressing these risks.
<p>Enhance Relevance and Reliability</p>	<ul style="list-style-type: none"> • Employ a multi-tiered adjustment and validation process. • Ensure that risk assessment results are relevant, reliable, and applicable to GC’s operations.

Results of the nature-risk assessment and implications to GC's business operations are summarized in **Table 4**.



TABLE 4 SUMMARY OF NATURE-RELATED RISK ASSESSMENT RESULTS

Timeframes	Physical Risks	Transition Risks
Short term (2024-2025)	GC expects immediate disruptions to supply chains, operational challenges in affected regions, and potential increases in resource costs.	GC expects immediate adjustments to its operations and potentially value chain to comply with new regulations.
Medium term (2026-2028)	GC may bring intensifying land use changes that can affect resource availability, accelerating ecosystem degradation, and adaptation costs for climate-resilient infrastructure	GC expects to see a shift in consumer preferences towards sustainable products, necessitating substantial investments in eco-friendly innovations and green technologies to maintain market share.
Long term (2029 and beyond)	GC recognizes the possibility of ecosystem tipping points necessitating major strategy shifts, a comprehensive reevaluation of business models for long-term sustainability, and stringent compliance requirements with evolving environmental standards.	GC recognizes that failing to meet increasingly stringent regulatory requirements could lead to serious reputational damage and significant financial penalties. This period may also see major shifts in market dynamics favoring companies with well-established sustainable practices.

3.3.2 ASSESSING NATURE-RELATED FINANCIAL RISKS

Incorporating financial analysis of risks is crucial to understanding the financial implications for GC as risks can influence operational costs, revenue streams, and overall financial stability. After accounting for historical data and existing mitigation and response measures, GC assesses the financial implications of residual nature-related risks by incorporating the Enterprise Risk Management (ERM) process, and severity and likelihood criteria. The financial risks are mapped against GC's enterprise risk matrix to yield risk scores (i.e. insufficient, minor, moderate, major and severe), with moderate to severe financial risks considered by GC as significant. **Table 5** shows nature-related risk assessment and financial risk assessment results for own operations and JVs.⁷

GC's significant nature-related risks, mapped in the impact and likelihood matrix, highlight key areas with the most financial implications:

- 1. Land, Freshwater, and Sea Use Change (Physical Risk):** Positioned in the severe impact and high likelihood quadrant, indicating substantial financial risks related to resource availability and sustainability.


⁷ Please refer to the full TNFD report for risk assessment results for suppliers and customers.

- 2. Political Situation/Regulatory (Reputational Risk):** With a severe impact and moderate likelihood, this risk involves potential financial consequences from regulatory changes and political instability.
- 3. Risk Preparation (Nature-related Risk):** Reflects the need for proactive measures to manage natural events and ecosystem shifts, with significant financial risks if not addressed.


These risks are tracked and managed through GC's ERM process, helping prioritize actions and resource allocation for mitigation.


GC's Significant nature-related risk

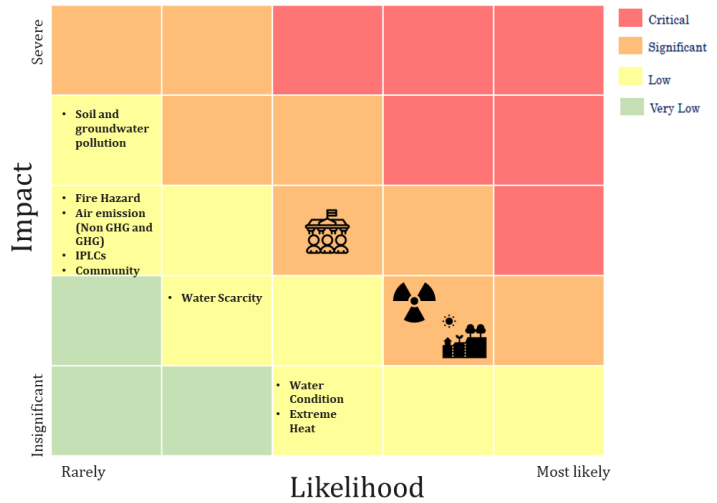
Physical risk

 **Land, Freshwater and Sea Use Change**

Reputational risk

 **Political Situation/Regulatory**

 **Risk Preparation (Nature related risk)**



It can be seen from **Table 5** that there are several nature-related risks that have medium to high-risk scores. However, GC has implemented mitigation and response measures that effectively address these material risks, resulting in most of them having very low to low financial risks. **Land, Freshwater and Sea Use Change, Political Situation/Regulatory, and Risk Preparation** are the only three nature-related risks that have significant financial risks on GC.

TABLE 5 NATURE-RELATED RISKS AND FINANCIAL RISKS

Risk Categories	Nature-related Risks	Potential Impacts/ Risks on GC	Existing Mitigation and Response Measures	Nature Risk Scores	Financial Risk Scores	Time frames
Physical Risk						
Provisioning Services	Water Scarcity ⁸	<ul style="list-style-type: none"> Increased capital costs from investing in water conservation technologies and alternative water sources. Supply chain disruptions and delays leading to revenue losses. Constraints on business growth due to uncertain water availability for increased production capacity. 	<ul style="list-style-type: none"> GC monitors both internal and external water situations while continuously assessing risks and potential impacts. GC works closely with relevant stakeholders to promote sustainable management practices across the value chain and communicates performance. 			●●●
Regulating Services - Mitigating	Extreme Heat ⁹	<ul style="list-style-type: none"> Increased operational costs for cooling systems and preventive measures. Infrastructure vulnerabilities and potential damage, requiring repairs and maintenance. 	<ul style="list-style-type: none"> GC ensures that employees can stop working if they are exposed to high-risk level of extreme heat. GC has also supported the employee in case the ambient temperature is high by installing an additional ventilation system, installing the cooler at the operating area, etc. 			●●●
	Tropical Cyclones ¹⁰	<ul style="list-style-type: none"> Potential damage to infrastructure and facilities, leading to costly repairs and downtime. 	<ul style="list-style-type: none"> GC has a monitoring system working with government entities and the Meteorological Department, as well as industrial estate. 			●●●
	Fire Hazard ¹¹	<ul style="list-style-type: none"> Increased operational or investment cost for prevention and mitigation measures. 	<ul style="list-style-type: none"> Business Continuity Plan rehearsals were conducted to address emerging risks consistent with enterprise risk assessment, ensuring that relevant personnel know their roles, duties and expected actions in face of such incidents. 			●
	Landslides		<ul style="list-style-type: none"> Not applicable as the assets are located in areas that are not prone to landslides. 			●●

⁸ Linked to water stress (climate risk).

⁹ Linked to extreme heat (climate risk).

¹⁰ Linked to riverine and coastal flooding, extreme wind speed and cyclone (climate risks).

¹¹ Linked to fire hazard (climate risk).

Risk Categories	Nature-related Risks	Potential Impacts/ Risks on GC	Existing Mitigation and Response Measures	Nature Risk Scores	Financial Risk Scores	Time frames
Regulating & Supporting Services - Enabling	Water Condition	<ul style="list-style-type: none"> Supply chain disruptions if water pollution affects availability or quality of water used in production. Increased operational costs for water treatment. Impurities can disrupt refining processes, damage equipment, violate environmental regulations, compromise product integrity, and pose safety risks. 	<ul style="list-style-type: none"> GC has monitored and regulated both quantity and quality of the water used for the operations. GC has collaborated with its supplier (PTT group) and the industrial estates to manage and assess water uses in the surrounding area. GC implements a sustainable water management strategy to reduce reliance on current water sources by more than 50%. 			●●●
	Air Condition	<ul style="list-style-type: none"> There is rarely any incident with only 1 case in 2024 within the past 10 years. Increased operational costs due to investments in control technologies. Potential penalties for exceeding regulatory limits, reputational damage, and legal risks. 	<ul style="list-style-type: none"> GC has an air monitoring and warning system to regularly track and inform of bad air quality and communicate/notify employees. 			●●●
	Ecosystem Condition	<ul style="list-style-type: none"> Operating in or around sensitive areas can risk a negative reputation, and loss of confidence and trust of stakeholders. Higher risk of legal actions and lawsuits, resulting in increased expenses. 	<ul style="list-style-type: none"> GC has conducted their operations completely aligned with EIA, including the related regulations as well. 			●●●
Pressures on Biodiversity	Land, Freshwater and Sea Use Change	<ul style="list-style-type: none"> GC has encountered an issue where an oil film took 7 days to clean up after the incident. Potential regulatory constraints affecting expansion or development plans. Increased spending and investment in regulating and reducing pollution. Reputation risks and potential litigation 	<ul style="list-style-type: none"> Immediate Solution: GC cleans up the oil film within seven days after the incident. As well as also assisted 11,500 affected persons totaling 514 million baht. Despite these efforts, GC is continuously helping the affected communities in compliance with legal requirements. Long-term Solution: GC has implemented several long-term projects to remediate and restore the lives of affected surrounding communities and the environment. 			●●●
	Soil and groundwater pollution	<ul style="list-style-type: none"> In the event of groundwater contamination, the impact can be long-term and potentially severe, requiring immediate attention and action. 	<ul style="list-style-type: none"> Inspections are conducted every three years in compliance with the law. The severity of potential impacts is assessed based on changes in legislation that may be relevant. 			●●●
	Air emissions (Non GHG and GHG)	<ul style="list-style-type: none"> Increased spending and investment in regulating and reducing pollution. 	<ul style="list-style-type: none"> GC has established air quality management plan to control air quality in compliance with relevant standards and constantly improve the control system. 			●●●
	Freshwater Pollution		<ul style="list-style-type: none"> GC monitors the situation every year. 			●●●
	Marine Pollution		<ul style="list-style-type: none"> GC has strictly complied with the requirements of the International Marine Organization. GC has an emergency plan that was developed with IEAT, including local people to protect shorelines. 			●●●

Risk Categories	Nature-related Risks	Potential Impacts/ Risks on GC	Existing Mitigation and Response Measures	Nature Risk Scores	Financial Risk Scores	Time frames
	Solid Waste		<ul style="list-style-type: none"> GC has zero waste to landfill commitment and the waste management service providers are certified GC has improved the vendor selection criteria (e.g. compliance, eco-factory certification, etc.) 			●●
Transition Risk						
Environmental Factors	Range Rarity	<ul style="list-style-type: none"> Operating in or around sensitive areas can risk a negative reputation, and loss of confidence and trust of stakeholders. Higher risk of legal actions and lawsuits, resulting in increased expenses. 	<ul style="list-style-type: none"> GC has conducted their operations completely aligned with Environmental Impact Assessment, including the related regulations as well. 			●●●
Socio-economic Factors	Indigenous People; Local Communities Land and Territories	<ul style="list-style-type: none"> Cleaning up an oil spill can incur substantial expenses in remediation efforts, and legal liabilities. Violations of environmental standards due to oil spill can result in fines/penalties. Negative publicity from an oil spill can damage reputation, erode stakeholder trust, and impact investor confidence. 	<ul style="list-style-type: none"> Environmental management system Comply with sustainable water management and policy Join the water war room with PTT Group for managing and monitoring of water situation in Rayong province. Whistleblower Channel Community engagement survey Enhance community engagement with community leaders Conduct an Environmental Impact Assessment, including community satisfaction survey and visit. 			●●●
	Resource Scarcity: Water	<ul style="list-style-type: none"> Shareholders may divest from companies perceived as unsustainable, leading to lower stock prices and difficulty in raising capital. Negative perceptions can lead to consumer backlash, boycotts. 	<ul style="list-style-type: none"> GC monitors both internal and external water situations while continuously assessing risks and potential impacts. GC works closely with relevant stakeholders to promote sustainable management practices across the value chain and communicates performance. 			●●●
	Labor/ Human Rights	<ul style="list-style-type: none"> Increased operational costs due to investments in ensuring compliance with labour and human rights standards. Potential legal liabilities and fines for violations of labour rights. Can lead to consumer boycotts, affecting market share and brand value. 	<ul style="list-style-type: none"> Promote OHS through QSE Direction and Plan, GC Management System (GCMS), and other standards (e.g. PSM, OEMS, BCMS, IMS, ISO 45001, OHSAS 18001) and provide health examination for employees. Develop a supply chain management system and assessment and communicate with suppliers to increase understanding. 		N/A	●●●
	Human Rights – Community	N/A	<ul style="list-style-type: none"> Public hearing with local community, and other stakeholders. According to the general case, together with the management approach, the case is rarely to occur. 		N/A	●

Risk Categories	Nature-related Risks	Potential Impacts/ Risks on GC	Existing Mitigation and Response Measures	Nature Risk Scores	Financial Risk Scores	Time frames
Additional Reputational Factors	Media Scrutiny	<ul style="list-style-type: none"> Media scrutiny can lead to increased volatility in stock prices as investors react to negative news coverage. Negative media coverage can spark boycotts from consumers. 	<ul style="list-style-type: none"> Communicating the responsibility and mitigation measures to all impacted stakeholders Deliberating the prevention measure through the official letter of announcement 			●●
	Political Situation	<ul style="list-style-type: none"> Changes in environmental regulations, particularly those related to emissions standards and pollution controls, can create significant uncertainty. If regulations shift unexpectedly or more stringent requirements are introduced, GC may face increased costs and operational disruptions as it adapts its machinery and technologies to comply with new standards. As regulations evolve, there may be rising costs associated with ensuring that all operations comply with new laws, such as investing in cleaner production technologies, implementing new monitoring systems, or conducting additional environmental assessments. These increased operational costs could have a negative impact on GC's profitability and financial outlook. 	<ul style="list-style-type: none"> GC regularly monitor the Act related to political situations or regulations. 			●●
	Risk Preparation for Nature-related Risk	<ul style="list-style-type: none"> Indirect benefits may include enhanced operational resilience and reduced costs from lower environmental risks. Potential reputational benefits from enhanced stakeholder trust and investor confidence. 	<ul style="list-style-type: none"> GC continuously monitors external factors and trends using the principles of an Early Warning System with a strong emphasis on emerging risks. The insights gained are used to develop proactive risk control and opportunities enabling measures. For more details please visit: (https://sustainability.pttggroup.com/th/economy/risk-and-crisis-management/emerging-risk-monitoring) 			●

Legends

Risk Scores		Financial Implications	
	High to Very High		Critical
	Medium		Significant
	Very Low to Low		Insufficient to Minor

Timeframes	
●●●	Long-term
●●	Medium-term
●	Short-term

3.4 PREPARE PHASE

3.4.1 GC'S MITIGATION HIERARCHY

The main objective of the Prepare phase is for companies to internally discuss and disclose how they respond and manage material I&Ds and risks as identified in the Locate, Evaluate and Assess phases. In managing I&Ds and risks, GC has implemented a comprehensive approach following the mitigation hierarchy (**Figure 7**). This approach prioritizes GC to first avoid, but if not possible, minimize impacts on nature, and next, hold itself accountable and actively engage in restoring biodiversity and ecosystems adversely impacted by business operations.

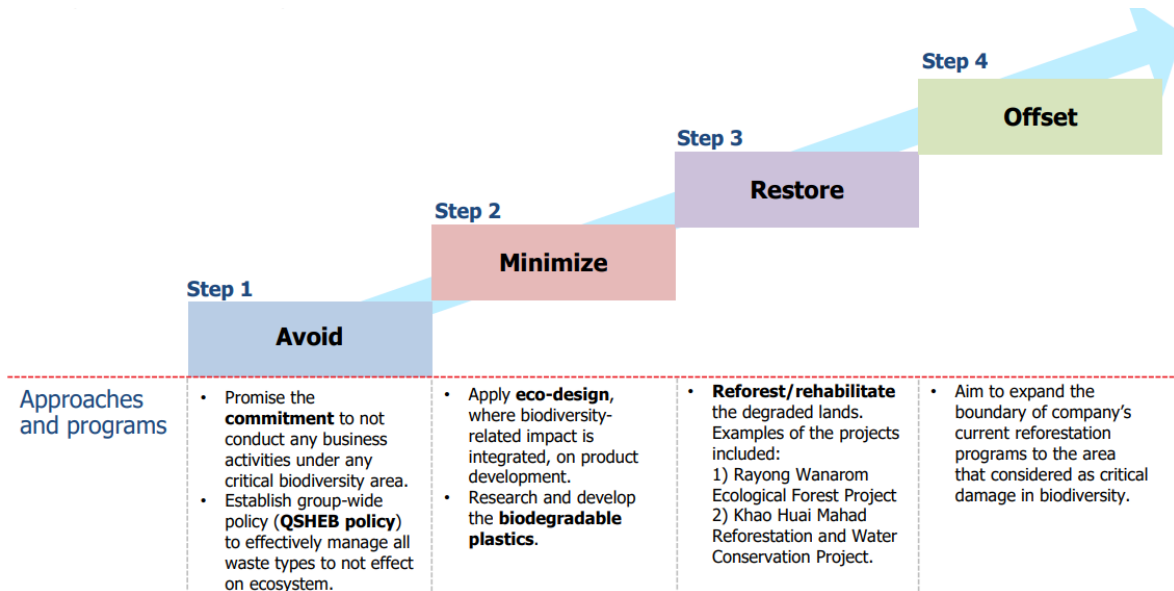


FIGURE 7 GC'S MITIGATION HIERARCHY

3.4.1.1 AVOID

GC is committed to not operating or conducting business activities in critical biodiversity areas. Moreover, GC's responsibility and leadership in avoiding impact on nature starts at the governance and policy framework. GC's Quality, Security, Safety, Health, Environment and Business Continuity (QSHEB) Policy strictly governs business operations and contributes to managing I&Ds and risks as follows:

1. **The identification and location screening** will be conducted during the preparation of the Environmental Impact Assessments (EIA).
2. **Biodiversity protection**: Integrates biodiversity assessment and management into business operations.
3. **Risk management**: Prioritizes environmental issues, developing action plans to address potential risks to nature.
4. **Sustainable innovation**: Focuses on research and development of eco-friendly products and phasing out hazardous substances.
5. **Supply chain influence**: Extends environmental risk mitigation efforts to suppliers and business partners.

Not only that, GC is committed to nature-related targets being No Net Loss (NNL), Net Positive Impact (NPI), No Gross Deforestation, and Net Zero Target. These targets provide GC with directions and guidance for implementing measures and initiatives related to nature. More details on GC's commitment to nature can be found in **Section 4 Strategy**.

3.4.1.2 MINIMIZE

In minimizing impacts and dependencies on nature, GC implements rigorous environmental management systems that are verified by third parties to own operations and JVs under its operational control, especially focusing on the priority sites identified in the Evaluate phase. GC also regularly communicates with government agencies and industrial estates to ensure that any changes in policies and regulations can be considered in the environmental management system. GC tracks the effectiveness of the environmental management systems via key performance indicators (KPIs) on water consumption, GHG emissions, air emissions and waste generation (i.e. environmental performance metrics associated with the material I&Ds identified in the Evaluate phase), as well as setting quantitative short- and long-term targets for these KPIs.

Risks are caused by I&Ds, and are integrated into GC’s Enterprise Risk Management (ERM)¹² process to minimize the impacts on the company itself. As outlined in summarized in **Figure 8**, material nature-related risks are integrated into GC’s ERM process through financial risk assessment using severity and likelihood criteria under ERM process. After considering for existing mitigation and response measures, nature-related risks that are assessed to still have significant financial risks (i.e. moderate to severe risk scores) will require additional mitigation measures to reduce the financial impacts to an acceptable level. Function owners are assigned to periodically monitor, report and re-assess residual risks annually.

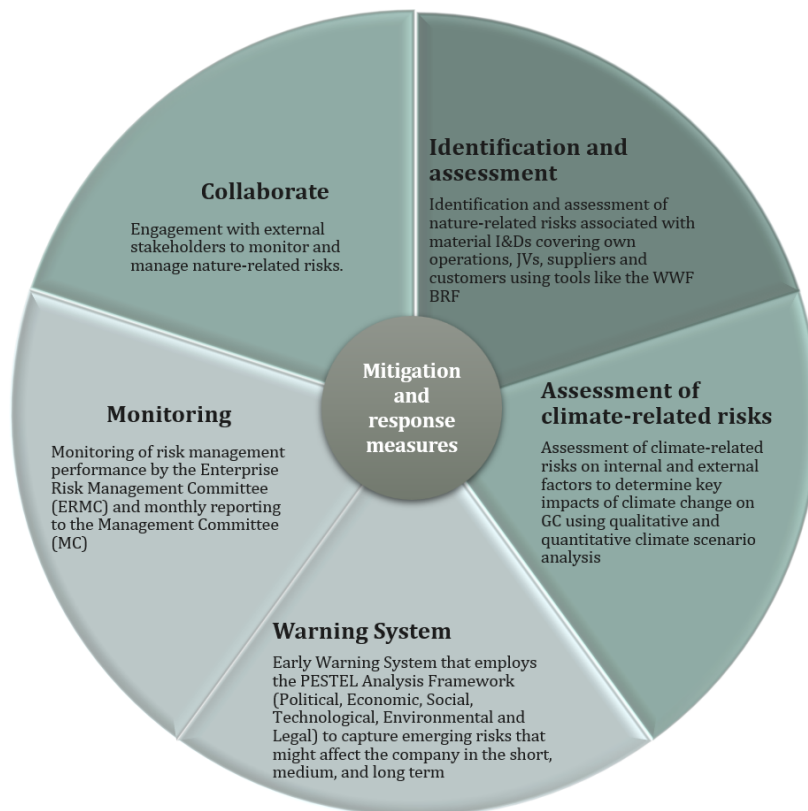


FIGURE 8 INTEGRATION OF NATURE-RELATED RISKS AND OPPORTUNITIES INTO ENTERPRISE RISK MANAGEMENT PROCESS

¹² For more details about GC’s ERM processes, <https://sustainability.pttgccgroup.com/en/economy/risk-and-crisis-management/risk-management>. GC’s ERM process is developed in alignment with international practices being the Committee of Sponsoring Organizations (COSO) ERM and International Organization for Standardization (ISO) 31000 standards.

Going beyond integration into ERM process, GC also integrates risks into its business strategies and financial planning, especially to capitalize on the nature-related opportunities (**Figure 9**). GC prioritizes investment in material nature-related risks that cause significant financial risks, and in two main areas being:



Net Zero by 2050¹³

GC plans to invest approximately 5 billion USD or **175 billion THB** in low-carbon technologies (e.g. energy efficiency, renewable energy, etc.), as well as nature-based solutions and carbon capture and storage to enhance efficiency of the production process.



Water Stewardship¹⁴

Under the One Water Strategy, GC emphasizes integrated water management, efficiency in production processes, renewable water uses and technology investment. GC invests **300 million THB** to address risk from drought, and **20 million THB** to address risks from floodings.

Additionally, GC is exploring the potential divestment of underperforming assets that do not align with its long-term sustainability goals, particularly in sectors heavily impacted by environmental regulations.

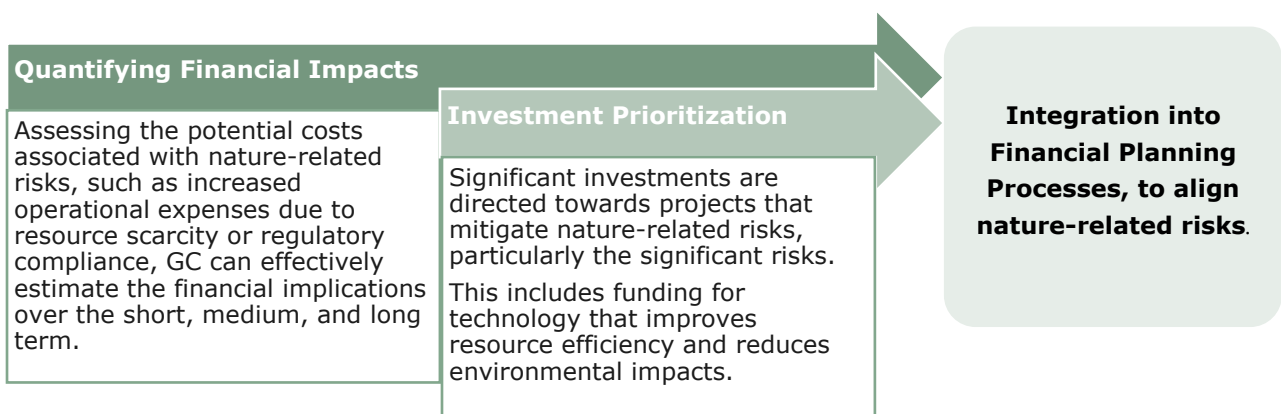


FIGURE 9 INTEGRATION OF NATURE-RELATED RISKS IN FINANCIAL PLANNING

¹³ For more details about GC’s Net Zero, <https://sustainability.pttggroup.com/en/net-zero/decarbonization-pathways/efficiency-driven>

¹⁴ For more details about GC’s Sustainable Water Strategy, Target and Performance, <https://sustainability.pttggroup.com/en/environment/sustainable-water/sustainable-water-strategy-target-and-performance>

Besides own operations and JVs, GC utilizes the results from I&Ds and RISKS assessment to minimize risks for the value chain. GC regularly communicates its Biodiversity Statement, No Deforestation Commitment, and Supplier Code of Conduct to the suppliers as well as conducting supplier assessments. These communications ensure that suppliers understand their critical role in helping GC achieve nature-related commitments. GC promotes awareness nature-related issues for suppliers through capacity building programs that seek to share best practices, align conservation efforts and implement joint initiatives.

For customers, GC applies eco-design principles to product design and production, and research into developing biodegradable plastics to enable sustainable lifestyle. For example:

- **Partnership with PTT OR PLC (OR)** to utilize GC's YOUturn's comprehensive waste management platform, and OR's physical retail platforms to drive the production of eco-friendly products and bioplastics to become ASEAN's largest and one of the world's top producers of recycled plastics.
- **Partnership with Sansiri PLC** to co-develop high-quality products that can enhance lifestyle choices (e.g. water tanks made from high-grade plastic resin, eco-friendly paints made from natural ingredients that are free from volatile organic compounds (VOCs) and suitable for interior and exterior applications, etc.).



3.4.1.3 RESTORE

GC's restoration efforts focus on conservation projects that can also provide water management benefits. GC has continuously worked to nourish and preserve ecosystem through various reforestation programs in collaboration with other.¹⁵ GC reports water-related risk assessment to corporate risk management team and marketing team and evaluates water footprint throughout the life cycle of products. In addition, GC continuously surveys customer's demands on water and analyzes critical areas around main customers for potential exposure to flooding. For instance, GC supports initiatives aimed at reducing ecosystem disruptions and restoring the biodiversity of terrestrial and marine ecosystems (**Figure 10**). Notable projects include the Marine Resource Conservation along the Rayong Coastline project, which is part of a long-term development initiative aimed at rehabilitating ecosystems over a 10-year timeframe. Additionally, GC contributes to efforts aimed at reducing and mitigating the impacts of climate change and pollution on biodiversity loss. Collaborative projects such as the Rayong Wanarom Ecological Forest project, Huai Mahat Forest Restoration project, etc.

^{15/} For more information, please see <https://sustainability.GCgroup.com/en/environment/biodiversity> and <https://sustainability.pttgcgroup.com/en/environment/sustainable-water/sustainable-water-strategy-target-and-performance>.



Huai Mahat Forest Restoration Project



The More You Plant, the Better (Eco- Forests Project)



Eco-Forest Rayong Wanarom



Marine Resource Conservation along the Rayong Coastline Project



Building marine habitats using Fish Aggregating Devices



Reforestation mangrove forests

FIGURE 10 NATURE RESTORATION PROJECTS

3.4.1.4 OFFSET

GC aims to expand the boundaries of current reforestation and ecosystem restoration programs to other areas that suffer from critical damage to biodiversity. This aligns with the compensation-driven operations under GC’s Low Carbon Transition framework to drive nature-based solution (NbS) and technology-based solutions. For example, GC has implemented several ongoing NbS projects since 2023, which involve planting, restoring, and conserving over 8,600 acres of forests in areas owned by GC and in other areas with collaboration with government agencies, private-sector organizations, and local communities. GC has also partnered with various external stakeholders to research and develop carbon capture and storage technology (CCS), carbon capture utilization and storage technology (CCUS), and make investments via corporate venture capital (CVC).

3.4.2 NATURE-RELATED STRATEGY

3.4.2.1 TRANSITION PLANS

Table 6 show GC’s transition plans outline a strategic approach to achieving nature-related targets and commitments, addressing both immediate and long-term biodiversity challenges. The plan encompasses several key initiatives aimed at fostering resilience within the organization while aligning with the goals of GBF.

TABLE 6 SUMMARY OF TRANSITION PLANS RELATED TO NATURE

Initiatives	Objectives	Actions	Timeline
Biodiversity Action Plans	<ul style="list-style-type: none"> Develop and implement tailored biodiversity action plans for each operational site to identify specific ecological needs and strategies for enhancement. 	<ul style="list-style-type: none"> Conduct biodiversity assessments at operational sites to identify critical habitats and species at risk. Establish site-specific biodiversity management goals that align with GC's overarching targets. Implement habitat restoration projects, including reforestation and rehabilitation, aimed at improving local ecosystems. 	<ul style="list-style-type: none"> Initial assessments and action plans by 2025, with ongoing monitoring and adaptation. Currently considering criteria and areas for support for Other Effective Area-Based Conservation Measures (OECMs) in alignment to GBF.
Carbon Offset Strategy	<ul style="list-style-type: none"> Offset 1 million tons CO₂e_q through NbS by 2050. 	<ul style="list-style-type: none"> Identify and partner with local stakeholders for carbon offset projects, such as afforestation, reforestation, and conservation Develop a framework to measure and verify carbon credits Promote community involvement to ensure local benefit-sharing Research CCUS by assessing availability and feasibility Use CVC channels to gain access to innovations, and potential to scale-up 	<ul style="list-style-type: none"> Initial partnerships and project identification by 2025. Implementation of carbon offset projects up to 2050.
Water Stewardship Initiatives	<ul style="list-style-type: none"> Enhance water resource management to ensure sustainable use and conservation of water bodies. 	<ul style="list-style-type: none"> Implement the One Water Strategy, focusing on integrated water management practices across operations. Invest in water recycling and treatment technology to minimize withdrawal from local sources. Engage with local communities to address water scarcity issues, collaborating on conservation projects and education programs. Control cost of water to minimize impact on water crisis 	<ul style="list-style-type: none"> Establish the framework by 2024 with full implementation of initiatives by 2026.
Circular Economy Practices	<ul style="list-style-type: none"> Minimize waste generation and promote sustainable consumption throughout the value chain. Build cooperation with partners, and external agencies to monitor product life cycle 	<ul style="list-style-type: none"> Expand the use of the YOUturn Platform to enhance waste management and recycling practices among suppliers and customers. Introduce eco-design principles to reduce packaging waste and promote biodegradable materials. Collaborate with stakeholders across the value chain to build and strengthen recycling infrastructure within local communities Implement energy conservation projects such as the Gas Turbine Generator and the Heat Recovery Steam Generator project to enhance efficiency in electricity generation, and lower fuel consumption and energy loss in production processes 	<ul style="list-style-type: none"> Rollout of new practices and collaborations by 2025, with ongoing evaluation and improvement.
Engagement with Stakeholders	<ul style="list-style-type: none"> Foster collaboration and transparency among stakeholders to enhance biodiversity outcomes. 	<ul style="list-style-type: none"> Conduct regular stakeholder engagement, including workshops and community consultations, to share progress and gather feedback on initiatives. Establish a multi-stakeholder advisory committee to guide GC's biodiversity strategy and ensure community needs are considered Provide training and resources to suppliers and partners to improve biodiversity management practices across the supply chain 	<ul style="list-style-type: none"> Begin stakeholder engagement by 2024, with ongoing activities and annual reviews. Promote GBF by providing feedback for Thailand's 5th National Biodiversity Strategies and Action Plans (NBSAPs) via GBF

Initiatives	Objectives	Actions	Timeline
		<ul style="list-style-type: none"> Provide transparent information in accordance with national and international standards Review and improve business operation to readily respond to unexpected events 	Early Action Support (GBF-EAS) ¹⁶
Monitoring and Reporting Framework	<ul style="list-style-type: none"> Develop a robust system for tracking progress against nature-related targets and commitments. 	<ul style="list-style-type: none"> Establish KPIs to measure the effectiveness of biodiversity initiatives against targets Implement regular reporting mechanisms to communicate progress Utilize third-party verification to demonstrate transparency and credibility for reporting 	<ul style="list-style-type: none"> KPI establishment by 2024, with annual reporting starting in 2025.

GC ensures the resilience of these strategies by conducting a comprehensive assessment of I&Ds and RISKS over short, medium and long-term timeframes, integration results into ERM processes, and implementation response measures to address material issues. GC continuously monitors external factors and trends through an Early Warning System, which incorporates Political, Economic, Social, Technological, Environmental (nature-related risks), and Legal perspectives. GC also performs cost-benefit analyses to guide investments and put in place financial reserves to prepare for unforeseen expenses.

¹⁶ Jointly organized by the Office of Natural Resources and Environmental Policy and Planning (ONEP), United Nations Development Programme (UNDP), and International Union for Conservation of Nature (IUCN).

3.4.2.2 ADAPTATION STRATEGIES

To address identified trends and uncertainties, GC will continuously evaluate and adapt its strategies, including investing in sustainable technologies, enhancing supply chain resilience, and implementing nature-based solutions.

4 main nature-related areas were identified as material issues for GC.



Land/Water use change

GC faces significant risks from land and water use changes. In response to incidents, GC cleans up oil spills within seven days, assists affected individuals, and collaborates with local communities and government agencies for long-term solutions. To prevent future risks, GC will map sensitive marine habitats, set clear environmental targets, engage external experts, create artificial reefs, and expand reforestation. Additionally, GC will improve production efficiency, implement biodiversity management plans, and invest in green infrastructure and nature-based solutions (NbS).



Water use

GC currently monitors both internal and external water conditions, continually evaluates risks and potential impacts, and collaborates closely with stakeholders. GC is also considering investment in rainwater reuse systems, watershed restoration and water treatment technologies, and integrated water systems. Importantly, GC aims to set basin-level science-based targets and create a Sustainability Partnership Guide for upstream partners.



GHG emissions

GC has implemented a comprehensive strategy to reduce GHG and build climate resilience that include energy efficiency enhancements, and investments in high-value products, bio- and circular-businesses, and carbon capture technology, and energy storage and batteries solutions. GC will also implement climate and nature policies for supply chain partners.



Non-GHG emissions

GC has implemented an air quality management plan to address internal and external air quality concerns, ensuring compliance with applicable standards. The company aims to enhance air quality in its facilities and surrounding communities, fostering stakeholder trust through transparent reporting. This includes compliance assurance, investment in air quality control technologies, leak detection and repair (LDAR), clear target setting, and robust monitoring. GC will also engage suppliers to incorporate non-GHG emission standards into their codes of conduct and develop a Sustainability Partnership Guide to share best practices and encourage collaboration.

4. METRICS AND TARGETS

4.1 NATURE-RELATED COMMITMENTS

GC is committed to advancing its sustainability goals by establishing nature-related commitments covering the value chain in line with the GBF, which help GC contributes to the global efforts aimed at halting biodiversity loss and promoting ecosystem restoration. These group-wide targets and performance in 2023 are summarized in **Table 7**.




TABLE 7 NATURE-RELATED COMMITMENTS AND PERFORMANCE

Commitments	Performance (2023)
<ul style="list-style-type: none"> • No Net Loss (NNL) of biodiversity within manageable boundaries • Net Positive Impact (NPI) in current and future operational sites where applicable • Net Zero target (Compensation-driven) aiming to offset around 1 million metric tons of carbon emissions using nature-based solutions by 2050 	<ul style="list-style-type: none"> • Conducting responsible business in GC’s operations, aligned with biodiversity conservation goals. • Identifying actions to avoid and minimize biodiversity impacts. • Applying the "mitigation hierarchy" step-by-step. • Seeking proactive ways to contribute to biodiversity conservation. • Integrating biodiversity identification, evaluation, and monitoring into EIAs and risk management processes. • Engaging communities and stakeholders to enhance biodiversity outcomes through consultation and partnerships. • Promoting biodiversity activities to raise awareness and ensure transparency. • Collaborating with external partners and experts to support biodiversity preservation and rehabilitation.
<ul style="list-style-type: none"> • No Net Deforestation throughout the value chain, encompassing Tier-1 suppliers and business partners • No Gross Deforestation for GC’s operational activities in Thailand by 2025 	<ul style="list-style-type: none"> • Policy and Commitment Alignment: Formalization of the “No Gross Deforestation” policy, ensuring alignment with the Net Zero goal. • Assessment of Current Land Use: Conduct an assessment to identify and map all areas impacted by deforestation, both within GC's direct operations and supply chain. • Identification of Critical Deforestation Areas: Identify areas at risk of gross deforestation in business operations and supply chains. • Develop a Baseline for Deforestation: Set a baseline year for deforestation, considering historical and current deforestation rates across operations and supply chain.

4.2 METRICS AND TARGETS FOR NATURE-RELATED IMPACTS AND DEPENDENCIES

Other targets set in response to material I&Ds (i.e. water use, non-GHG air pollutants and GHG emissions) are shown in **Table 8**.

TABLE 8 TARGETS FOR MATERIAL NATURE-RELATED IMPACTS AND DEPENDENCIES





Material I&Ds	Target	Baseline	Performance (2023)
 <p>Water use (Impact & Dependency)</p>	Reduce company-wide water consumption by 2% compared to baseline	2022	Reduce company-wide water consumption by 2.27% <i>Note: The benefit from all initiatives to reduce water consumption is 4.86m THB/year.</i>
 <p>Non-GHG air pollutants (Impact)</p>	Air quality in all operating sites is better than the standard levels <ul style="list-style-type: none"> • Nitrogen oxides emissions (NOx): 3,267 tons by 2023 • Sulfur oxides emissions (SOx): 354 tons by 2023 • VOCs: 764 tons by 2023 	N/A	<ul style="list-style-type: none"> • NOx: 3,174 tons • SOx: 311 tons • VOCs: 720 tons
 <p>GHG emissions (Impact)</p>	<ul style="list-style-type: none"> • Net Zero target for GHG scope 1 and 2 by 2050 • Reduce GHG scope 3 by 50% by 2055 	2021	<ul style="list-style-type: none"> • GHG scope 1: 6,129,439 tons CO₂e • GHG scope 2: 1,827,679 tons CO₂e • GHG scope 3: 41,485,517 tons CO₂e

Remark: Please refer to the full TNFD report for other nature-related metrics.

In line with the Net Zero target, GC has implemented several biodiversity conservation and restoration projects as long-term strategies to offset approximately 1 million tons of CO₂e by 2050. Important to this goal is the collection of project-level metrics as shown in

Table 9. These projects align with GC’s sustainability goals, specifically focusing on biodiversity conservation, carbon sequestration, and community engagement. Each project contributes to enhancing ecosystems, improving local economies, and addressing critical environmental issues such as climate change and biodiversity loss.

TABLE 9 NATURE-RELATED PROJECT-LEVEL METRICS

Nature-related Projects	Objectives	Estimated GHG Sequestration (Tons CO ₂ eq/year)	Other environmental and social outcomes
 <p>The More You Plant, the Better</p>	<p>To plant forests and eco-forests in various provinces across Thailand to enable the natural absorption of CO₂.</p>	<p>165¹⁷, or equivalent to planting 45,000 trees</p>	<ul style="list-style-type: none"> • Release an average of 120 tons of oxygen into the atmosphere per year
 <p>Huai Mahat Forest Restoration Project</p>	<p>To restore Khao Huai Mahat’s ecosystem with a 10-year timeframe from 2013-2023, enhance the economic and social well-being of nearby communities, and raise awareness about environmental protection and forest conservation.</p>	<p>32,807 (2013-2018), or equivalent to planting 364,513 trees</p>	<ul style="list-style-type: none"> • 552 rai have already been restored (49,313 trees planted), with a target of 693 rai • 1,000 units of weir constructed targeted, 430 units completed • 146 plant species found • 463 animal species found • Total revenue of 5,628,066 THB has been generated for five surrounding communities
 <p>Eco-Forest Rayong Wanarom</p>	<p>To increase carbon sequestration at the Asia Industrial Estate, Ban Chang district, Rayong province</p>	<p>640, or equivalent to planting 141,100 trees</p>	<ul style="list-style-type: none"> • The 80-rai forest areas can store 1,270 tons of CO₂eq
 <p>Marine Resource Conservation along the Rayong Coastline Project</p>	<p>To build a balanced and fertile ecosystem that supports marine sustainability in Rayong’s seas.</p>	<p>N/A</p>	<ul style="list-style-type: none"> • 29 groups, 350 Fish Aggregating Devices were built for coastal habitats for marine animals, providing fishery conservation area • More than 50m marine animals including were released in suitable sea conditions • + 1,000 Mangrove trees were planted

¹⁷ Based on carbon dioxide calculation methodology of the Thailand Greenhouse Gas Management Organization (Public Organization) or TGO

5. STAKEHOLDERS & INITIATIVES

5.1 RESPONSIBLE BUSINESS PRACTICES AND HUMAN RIGHTS¹⁸

GC is committed to responsible business practices as respect for human rights of stakeholders in line with international standards/frameworks and internal policies (**Table 10**).

TABLE 10 HUMAN RIGHTS STANDARDS, FRAMEWORKS AND POLICIES

Standards/ Frameworks/ Policies	Objectives
<ul style="list-style-type: none"> UN Guiding Principles on Business and Human Rights OECD Guidelines for Multinational Enterprises on Responsible Business Conduct. 	<ul style="list-style-type: none"> Responsible business practices are upheld throughout all aspects of GC’s business operations and throughout the value chain. Maintain vigilant monitoring, and fully cooperate to solve matters under responsible business conduct principles for cases brought to the National Contact Points.
<ul style="list-style-type: none"> UN Declaration on the Rights of Indigenous Peoples ILO Convention 169 Convention on Biological Diversity 	<ul style="list-style-type: none"> Respect for the rights of social, community and indigenous peoples based on free, prior, and informed consent (FPIC) principles and meaningful consultations
<ul style="list-style-type: none"> UN General Assembly Resolution 76/300 	<ul style="list-style-type: none"> Recognizing the fundamental rights to a healthy and sustainable environment by minimizing environmental impacts and promoting ecological stewardship.
<ul style="list-style-type: none"> GC’s Human Rights Policy GC’s Sustainable Water Management Policies Environmental Management System Environmental Impact Assessments 	<ul style="list-style-type: none"> Uphold human rights standards through managing environmental negative impacts that can affect right holders and ecosystems, and ensure that business operations are conducted sustainably
<ul style="list-style-type: none"> Environmental Impact Assessments 	Ensure that 100% of operations in Thailand
<ul style="list-style-type: none"> ISO 39001 (Road Traffic Safety Management) 	Maintains high levels of safety and risk management to protect communities and individuals potentially impacted by operations

GC determines the mitigation measures to minimize impacts on human rights, community health, and safety as follows:

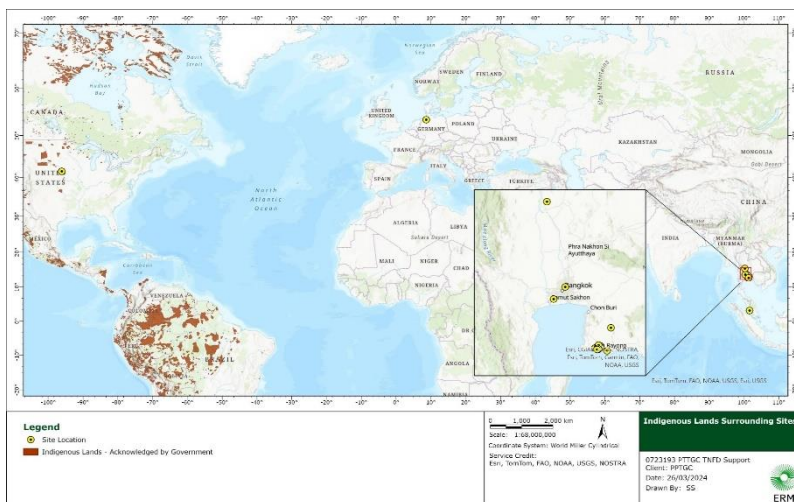
Conducting	Conducting HRDD and human rights impact assessment (HRIA) to address and monitor human rights risks and adverse impacts throughout the value chain with third party verifications of the process and performance
Establishing	<ul style="list-style-type: none"> - Establishing a database for vulnerable groups and sensitive right holders to develop emergency plans - Establishing KPIs related to human rights performance to track performance
Setting	Setting feedback/grievance mechanisms for employees and external stakeholders
Providing	Providing compensation to individuals negatively affected by business operations
Imposing	Imposing self-assessment on human rights and ESG audits for suppliers and partners

¹⁸ For more information, visit GC’s website, <https://sustainability.pttgcgroup.com/en/society/human-rights/human-rights-impact-assessment>

5.2 COMMUNITY ENGAGEMENT AND CORPORATE SOCIAL RESPONSIBILITIES

Demonstrating sustainability leadership, GC's senior management is committed to implementing CSR programs. For example, executives' involvement in mangrove reforestation projects underscores their commitments and encourages participation from all employees. In addition, GC's senior management presents operational performance updates alongside its social and community initiatives to representatives from indigenous/local communities, government bodies, and concerned stakeholders on a quarterly basis. These sessions cultivate an open environment for stakeholders to voice their expectations, and collectively strategize solutions.

5.2.1 COMMUNITY RELATIONS



GC meticulously conducts community relations in addition to the public participation required by EIA. First, GC identifies Indigenous peoples, local communities, and affected stakeholders around areas of operation, and other relevant issues such as land rights/tenure, cultural affiliations, environmental impacts, and socioeconomic factors.

This mapping process ensures all groups with legitimate interests and stakes are included. However, based on GC's current mapping, there are no indigenous groups located near direct operation sites.¹⁹ For operations in Rayong province, Thailand, GC is its engagement to encompass municipal areas, neighboring communities, and small-scale fishing communities, and is collaborating on CSR programs with NGOs, social enterprises, media, and governmental agencies. Multilateral participation encourages transparent dialogue and inclusivity in environmental management.

5.2.2 COMMUNITY SATISFACTION SURVEYS

GC conducts regular community satisfaction surveys to receive feedback and insights on the needs and concerns of local communities, address them, and track the effectiveness and impact of its CSR programs. In 2023, GC achieved noteworthy success in this regard with 92.38% community satisfaction rate, surpassing the 86% target. This result affirms the trust and confidence of the communities, and positive social impact.

¹⁹ The nearest indigenous community is the "Omaha Reservation" located approximately 66 kilometers away from NatureWorks' facility in Nebraska, United States.

5.2.3 NATURE-RELATED CSR PROGRAMS²⁰

GC implements CSR programs in line with the Step-Up CSR Strategy, which includes three priority areas being Better Living, Better Sharing, and Better Ecology. Synergizing with the Net Zero target and circular economy, GC can also deliver positive contributions to climate change and nature, and benefits to local communities. Furthermore, GC's commitment to social enterprise transformation promotes long-term economic empowerment inclusive of local communities through creating local incomes and environmental/social benefits.

GC's initiative has contributed to local economic development by creating positive impact such as Forest Restoration, Sustainable Community Learning Center (Khao Huai Mahat), Hom Mahat Organic Farming Community Enterprise, and Sampran Model.

Forest Restoration, Sustainable Community Learning Center (Khao Huai Mahat) is project implemented through the collaboration between GC, the Khao Huai Mahat Conservation Club, the Air and Coastal Defense Command, and Kasetsart University's Faculty of Forestry. Planned as a 10-year undertaking from 2013-2023, the project aims to restore the 2,500 rai of Khao Huai Mahat Forest ecosystem while simultaneously improving the quality of life, economy, and society for local communities. This project led to the establishment of the Hom Mahat Organic Farming Community Enterprise that encourages the cultivation of native medicinal plants to be converted into local organic products, like Wan Sao Long tea and green oil. The community enterprise generated 229,884 THB for the communities in 2023. Notably, the Khao Huai Mahat reforestation program has been certified by the Thailand Greenhouse Gas Management Organization (TGO) as a low emission support scheme (LESS) in the forestry and green areas category. Assessments indicated that the program has the potential to sequester up to 32,807.199 tons CO₂eq of carbon



FIGURE 11 KHAO HUAI MAHAT REFORESTATION PROGRAM

²⁰ For more information, visit GC's website:
<https://sustainability.pttgcgroup.com/en/society/corporate-social-responsibility/csr-strategy>