Biodiversity Risks Assessment

Global Green Chemical Public Company Limited

Biodiversity Risks Assessments

GGC utilizes the **WWF Biodiversity Risk Filter (WWF BRF)** to determine and assess **location specific risks** with the boundary includes upstream, own operation, adjacent area and downstream. The WWF Biodiversity Suite has followed the Taskforce on Nature-related Financial Disclosures (TNFD) methodology for risks classification and the assessment of **impacts on Biodiversity** and **dependencies on Biodiversity.**

- **Impacts on Biodiversity:** Changes in the state of nature 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 (TNFD, 2022a).

- **Dependencies on Biodiversity:** Aspects of ecosystem services that an organization or other actor relies on to function. An organization might be dependent upon an ecosystem's regulation of water flow and quality, the resilience it provides against hazards like fires and floods, the pollination of crops it enables by providing a suitable habitat for pollinators, or its provision of timber or fibres.

The tool would evaluate the risks of biodiversity's in the realm of **physical risks and reputational risks**

- **Physical Risks:** are driven by the ways in which a business and its supply chains depend on and can be affected by both natural and human-induced conditions of land- and seascapes, and how pressures might deteriorate ecosystem services in the future. The global decline of ecosystem services, for example, could lead to reduced productivity (e.g., lack of fertile soils and pollination) or increased costs of inputs (e.g., scarcity of natural fibers or harvest losses).

- **Reputation Risks:** Reputational risk represents stakeholders' and local communities' perceptions of whether companies conduct business sustainably or responsibly with respect to biodiversity and can ultimately affect brand value and market share, among other factors. Adverse effects on business could emerge from, for example, damages to the corporate brand and thus declining sales, or greater investor scrutiny and thus declining share price.

Source: https://cdn.kettufy.io/prod-fra-1.kettufy.io/documents/riskfilter.org/BiodiversityRiskFilter_Methodology.pdf

Biodiversity Risks Assessment

According to the **WWF Biodiversity Risk Filter**, the risks assessments steps in which GGC has followed include

1. Scoping the Assessment

- Identify the Supply Chain's relevant business and industries
- Identifying the company operational sites to be assessed throughout the supply chain

2. Collecting Location-Specific Company and Supply Chain Data

- **Upstream**: Select the representative of the suppliers in each industries based on their importance to GGC business and/or procurement spend
- **Own Operation**: Select the sites with Operational Control and adjacent areas of the operation
- **Downstream:** Select representative of customers based on their importance to the GGC's business and/or revenue generations

3. Assessing Biodiversity-Related Risks

- Calculating scape risk (risk score per indicator)
- Calculating site-level risk (overall risk score)
- Interpreting and evaluating biodiversity risks from the WWF BRF calculation

4. Aggregating Biodiversity Risk to the Company and Portfolio Level

- Integrated the identified biodiversity risks into multi-disciplinary company-wide risk management processes

Source: https://cdn.kettufy.io/prod-fra-1.kettufy.io/documents/riskfilter.org/BiodiversityRiskFilter_Methodology.pdf

Biodiversity Risks Assessments

1. Scoping the Assessment &
2. Collection Location-Specific Company and Supply Chain Data

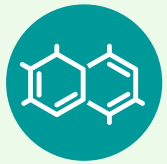
1. Scoping the Assessment

- This step is to identify and map out the scope of the assessment that represent the supply chain of GGC including upstream and downstream activities (referencing the Business Value Chain from Integrated Sustainability Report 2022)
- Identify the associated industries from those activities
- The boundary will be in Thailand, as GGC's main activities as well as its suppliers and customers are located in Thailand

As a result, the associated industries include

Agricultural

Chemical



Office & Professional Services

2. Collecting Location-Specific Company and Supply Chain Data

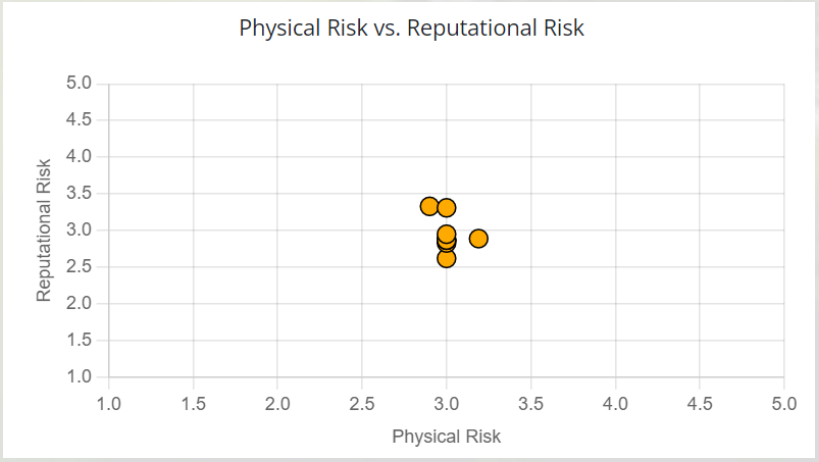
- Identify the major suppliers with the highest procurement spends and/or suppliers with importance and acquire their operation locations. This research includes 4 major suppliers
- Map out the own operations by selecting sites with operational control and adjacent areas. This research includes 2 sites and 1 site respectively.
- Identify the major customers with highest revenue generations and/or with importance to the GGC's business and acquire their operation locations. This research includes 2 major customers.
- Identify the business importance criteria into 3 levels (High, Medium, Low) by looking at
  - Procurement Spends from the suppliers
  - Revenue Generations from customers
  - The dependency of GGC's business on the selected stakeholders
  - The importance of the stakeholders to GGC's revenue generations and business operations

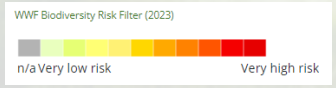
Biodiversity Risks Assessments

3. Assessing Biodiversity-Related Risks

Physical Risks

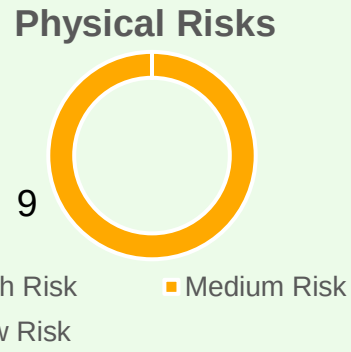
Reputational Risks

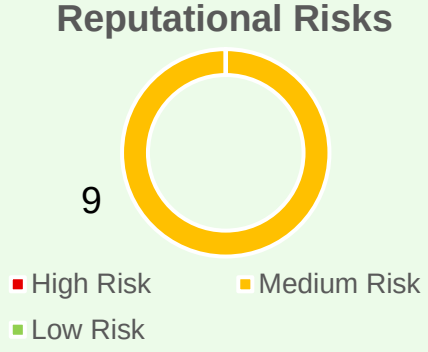




3. Assessing Biodiversity-Related Risks

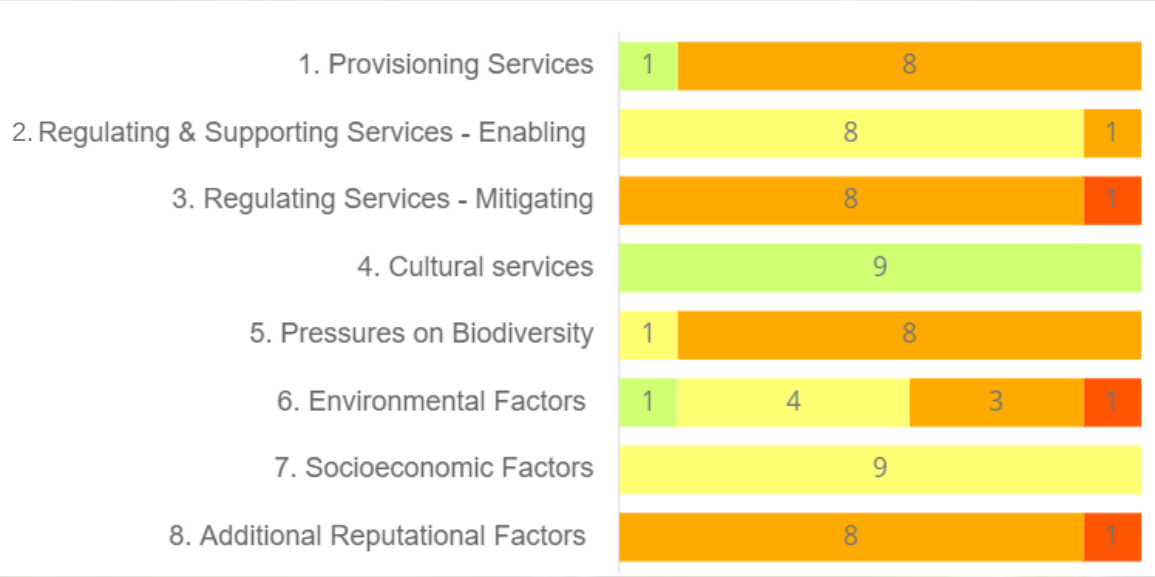
- The total sites that are assessed consisted of
  - Own-operation: 2 sites of operational control
  - Adjacent to own operation: 1 site
  - Upstream: 4 sites
  - Downstream: 2 sites
- The result of the physical risks and reputational risks are ranging from medium to high risks
- The operational sites receive score of medium risks in both Physical Risks and Reputational Risks
- However, there are 1 site from supplier that has a high risks in both physical and reputational risks





Biodiversity Risks Assessments

3. Assessing Biodiversity-Related Risks



Findings

- The summary shows the number of sites that are associated with each risks type. The risk will be distinguished into low, medium to low, medium and high risk
- The supplier sites under agricultural industries with palm oil commodities, which according to the result has high risks in many risks categories
- The main biodiversity risks for GGC derives from the suppliers rather than own operation, as GGC's main raw materials are associated with palm oil plantation, production and refinery. While, the customers don't impose a high biodiversity risks, as they are within chemical industry and located in the industrial areas

3. Assessing Biodiversity-Related Risks

Physical Risks

Item 1: Provision Services (Dependency)

- Many industries or companies rely directly on the provisioning of natural inputs for their operations or production. As such, declines in the quantity or quality of direct inputs for feed, raw materials, genetic materials, etc., can result in an increased cost or disruption of production
- Risks included: freshwater, timber, wild flora, and fauna species as well as marine fish

Item 2: Regulating & Supporting Services – Enabling (Dependency)

- Many businesses rely on regulating & supporting ecosystem services that enable production processes, including the cultivation of crops or breeding of animals. Declines in enabling ecosystem services can result in increased costs of production or inability to operate.
- Risk included: This risk category includes five of the main enabling ecosystem services needed for various types of industries: soil condition, water condition, air condition, ecosystem condition, and pollination.

Item 3: Regulation Services – Mitigating (Dependency)

- The occurrence of natural hazards can disturb or disrupt projects, operations, or entire value chains, and can in some cases result in severe damage to or loss of assets. Intact ecosystems can help to mitigate the impact of some natural hazards
- Risks Included: landslides, wildfire hazard, plant/forest/aquatic pests and diseases, herbicide resistance, and extreme heat

Item 5: Pressures on Biodiversity (Impact)

- Direct drivers or pressures can unequivocally influence biodiversity and ecosystem processes. Areas with high pressures on biodiversity are likely to decline in the future, independent of whether the current status of biodiversity is intact or already compromised.
- Risks Included: land, freshwater, and sea use change; tree cover loss; invasives and pollution

Reputational Risks

Item 6: Environmental Factors (Impact)

- Reputational risk can be driven by negative impacts on local environmental assets and the local prevalence of biodiversity-related issues.
- Risks Included: 1) Protected and Conserved Areas, 2) Key Biodiversity Areas, 3) Other Important Delineated Areas 4) Ecosystem Condition, 5) Range Rarity

Item 8: Additional Reputational Factors (Dependency)

- Background: Reputational risk can be driven by the actual or perceived importance or value of ecological assets and socioeconomic conditions and can be aggravated further by the level of public scrutiny on businesses operating in a given geography
- Risks Included: 1) Media Scrutiny, 2) Political Situation, 3) Sites of International Interest 4) Risk Preparation.

Ref: https://cdn.kettufy.io/prod-fra-1.kettufy.io/documents/riskfilter.org/WWFBRF_InterpretationGuidance.pdf

Biodiversity Risks Assessments

4. Aggregating Biodiversity Risk to the Company and Portfolio Level

4. Aggregating Biodiversity Risk to the Company and Portfolio Level

Once GGC has identified the biodiversity related risks, it is crucial to incorporate the finding to the risk assessment of the company. As a result, the biodiversity risks will be included in the company-wide risks management processes partly through the sustainability risks criteria. This integration was developed to ensure that GGC considers all the possible risks and is capable of effectively managing and controlling the business operations in a way that the risks have been minimized, which favors financial performance and satisfies the sustainability strategy.