



# Biodiversity Management

# Standard and Guideline

The company collects data, assesses biodiversity risks, and develops measures using **GRI standard-304** biodiversity which is a standard for reporting requirements on the topic of biodiversity. Topic-specific disclosures including ;

**Disclosure 304-1** Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas

**Disclosure 304-2** Significant impacts of activities, products, and services on biodiversity

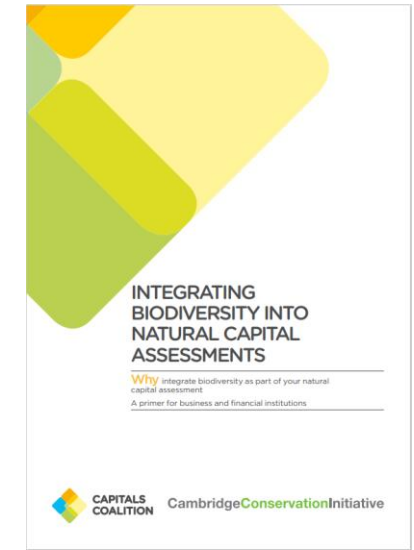
**Disclosure 304-3** Habitats protected or restored

**Disclosure 304-4** IUCN Red List species and national conservation list species with habitats in areas affected by operations

Furthermore, the company is employing the "**Integrating Biodiversity into Natural Capital Assessments**" framework, which was developed as a guideline for the private sector by the Cambridge Conservation Initiative and the Capitals Coalition. This framework helps companies develop biodiversity strategies, aiming to minimize impacts and effectively manage dependencies on nature.



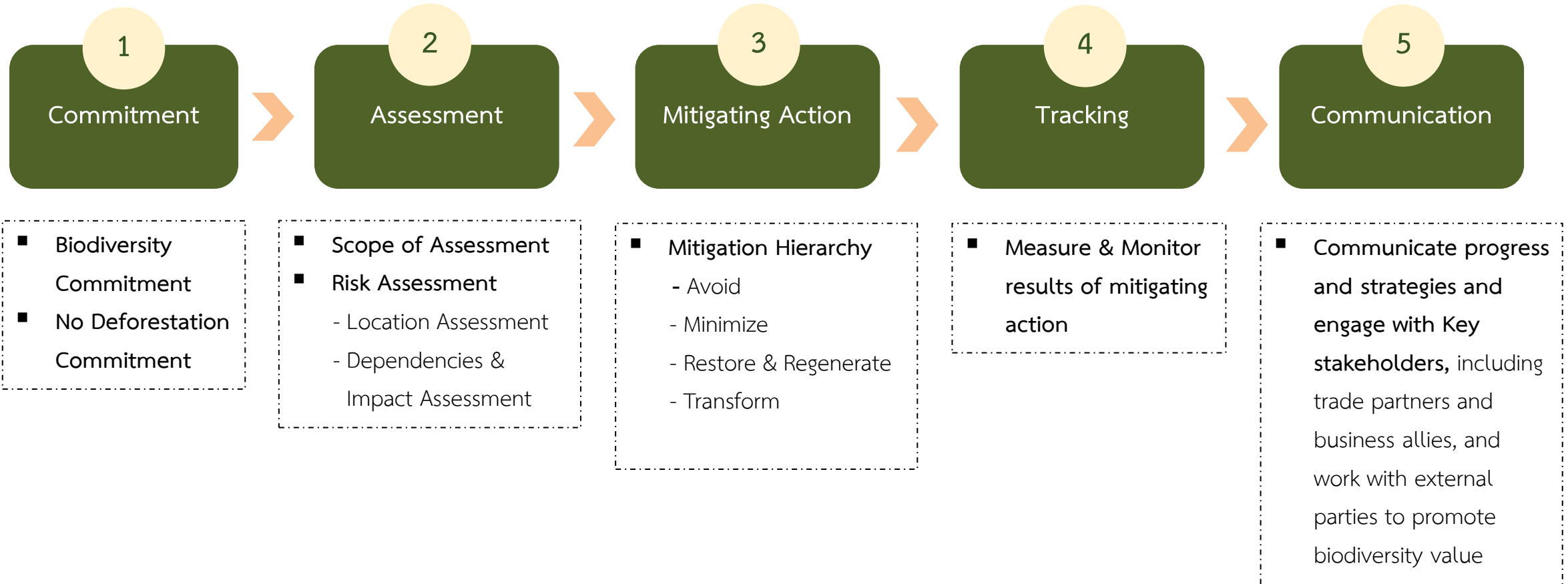
<https://www.globalreporting.org/standards/media/1011/gri-304-biodiversity-2016.pdf>



[https://capitalscoalition.org/wp-content/uploads/2020/10/Biodiversity-Guidance\\_COMBINED\\_single-page.pdf](https://capitalscoalition.org/wp-content/uploads/2020/10/Biodiversity-Guidance_COMBINED_single-page.pdf)

# Biodiversity Management Process

## 5 Steps for biodiversity management



# 1. Biodiversity Management and Anti-Deforestation Policy and Commitment

## Biodiversity Management and Anti-Deforestation Objectives;

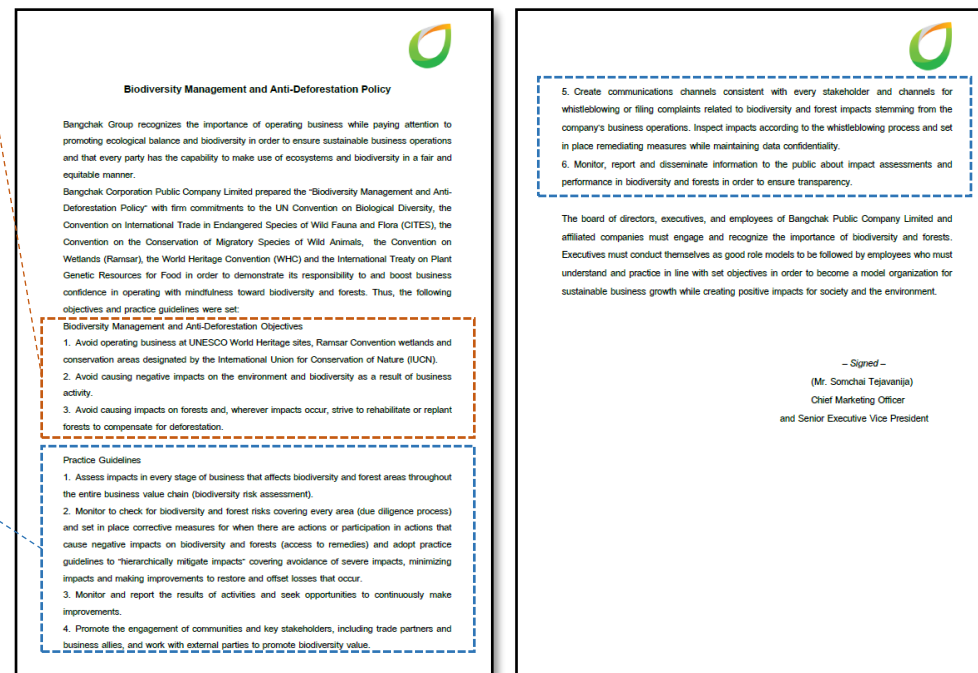
1. Avoid operating business at UNESCO World Heritage sites, Ramsar Convention wetlands and conservation areas designated by the International Union for Conservation of Nature (IUCN).
2. Avoid causing negative impacts on the environment and biodiversity as a result of business activity.
3. Avoid causing impacts on forests and, wherever impacts occur, strive to rehabilitate or replant forests to compensate for deforestation.

## Practice Guidelines

1. **Assess impacts** in every stage of business that affects biodiversity and forest areas throughout the entire business value chain (biodiversity risk assessment).
2. **Monitor** to check for biodiversity and forest risks covering every area (due diligence process) and set in place corrective measures for when there are actions or participation in actions that cause negative impacts on biodiversity and forests (access to remedies) and adopt practice guidelines to “**hierarchically mitigate impacts**” covering avoidance of severe impacts, minimizing impacts and making improvements to restore and offset losses that occur.
3. **Monitor and report** the results of activities and seek opportunities to continuously make improvements.
4. **Promote** the engagement of communities and key stakeholders, including trade partners and business allies, and work with external parties to promote biodiversity value.
5. **Create communications channels** consistent with every stakeholder and channels for whistleblowing or filing complaints related to biodiversity and forest impacts stemming from the company’s business operations. Inspect impacts according to the whistleblowing process and set in place remediating measures while maintaining data confidentiality.
6. **Monitor, report and disseminate information** to the public about impact assessments and performance in biodiversity and forests in order to ensure transparency.

**Anti-Deforestation Commitment;** Avoid causing impacts on forests and maintain zero deforestation and no conversion of forested areas into operational areas.

## Biodiversity Management and Anti-Deforestation Policy



**Biodiversity Management and Anti-Deforestation Policy**

Bangchak Group recognizes the importance of operating business while paying attention to promoting ecological balance and biodiversity in order to ensure sustainable business operations and that every party has the capability to make use of ecosystems and biodiversity in a fair and equitable manner.

Bangchak Corporation Public Company Limited prepared the “Biodiversity Management and Anti-Deforestation Policy” with firm commitments to the UN Convention on Biological Diversity, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on the Conservation of Migratory Species of Wild Animals, the Convention on Wetlands (Ramsar), the World Heritage Convention (WHC) and the International Treaty on Plant Genetic Resources for Food in order to demonstrate its responsibility to and boost business confidence in operating with mindfulness toward biodiversity and forests. Thus, the following objectives and practice guidelines were set:

**Biodiversity Management and Anti-Deforestation Objectives**

1. Avoid operating business at UNESCO World Heritage sites, Ramsar Convention wetlands and conservation areas designated by the International Union for Conservation of Nature (IUCN).
2. Avoid causing negative impacts on the environment and biodiversity as a result of business activity.
3. Avoid causing impacts on forests and, wherever impacts occur, strive to rehabilitate or replant forests to compensate for deforestation.

**Practice Guidelines**

1. Assess impacts in every stage of business that affects biodiversity and forest areas throughout the entire business value chain (biodiversity risk assessment).
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3. Monitor and report the results of activities and seek opportunities to continuously make improvements.
4. Promote the engagement of communities and key stakeholders, including trade partners and business allies, and work with external parties to promote biodiversity value.

The board of directors, executives, and employees of Bangchak Public Company Limited and affiliated companies must engage and recognize the importance of biodiversity and forests. Executives must conduct themselves as good role models to be followed by employees who must understand and practice in line with set objectives in order to become a model organization for sustainable business growth while creating positive impacts for society and the environment.

– Signed –  
 (Mr. Somchai Tejavonja)  
 Chief Marketing Officer  
 and Senior Executive Vice President

Link to Biodiversity Policy :

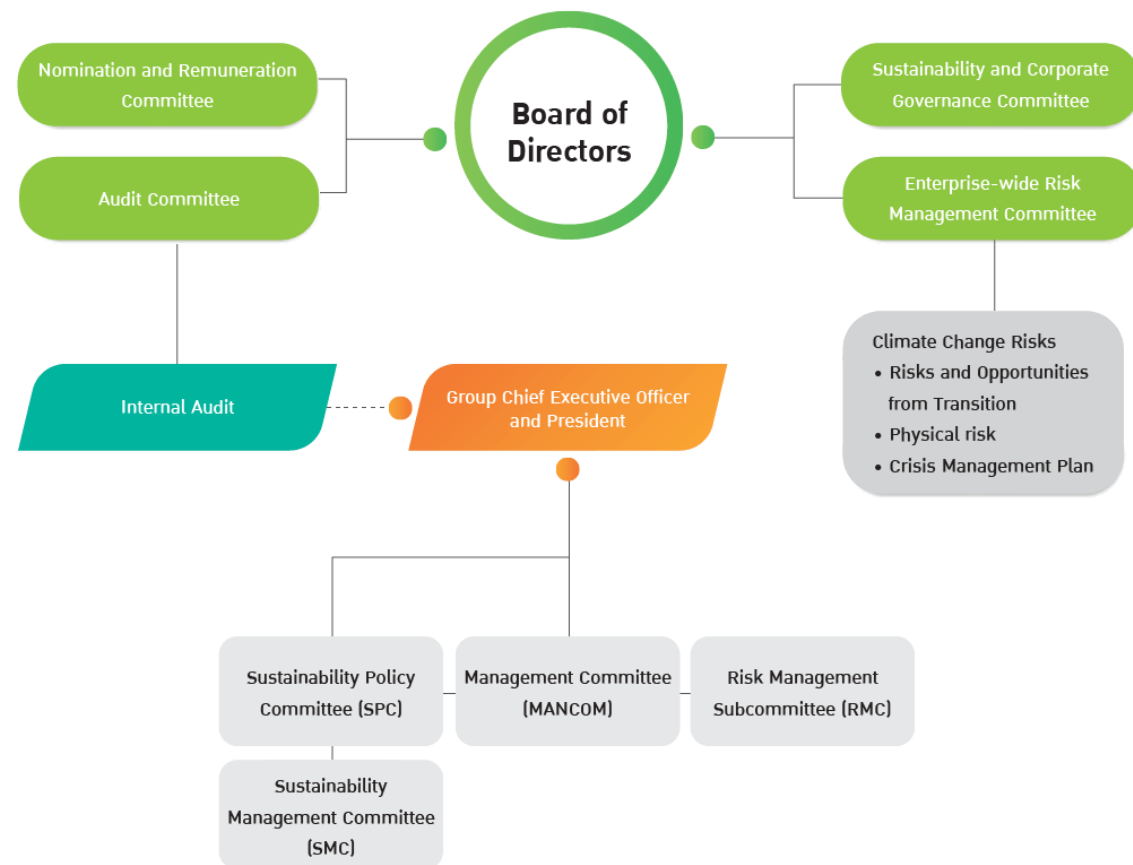
<https://www.bangchak.co.th/storage/document/biodiversity/2023/biodiversity-management-policy-en.pdf>

# 1. Biodiversity Management and Anti-Deforestation Commitment

The Biodiversity Management and Anti-Deforestation Policy has received endorsement from the Board of Directors.

It undergoes preliminary approval by the **Sustainability Management Committee (SMC)** acts as a main coordinator to monitor, collect, evaluate and report on progress and performance outcomes to the Sustainability Policy and subsequently by the **Sustainability Policy Committee (SPC)**. The SPC is chaired by Bangchak Group's Chief Executive Officer and President, with executives of business groups and functions working as committee members. The Sustainability Policy Committee is responsible for establishing goals, directions, policies, and strategies for sustainability development within Bangchak Group. The final approval is granted by the **Board of Directors** through the **Sustainability and Corporate Governance Committee (SCGC)** as illustrate in the management structure.

## Management Structure



## 2. Assessment > Scope of Assessment

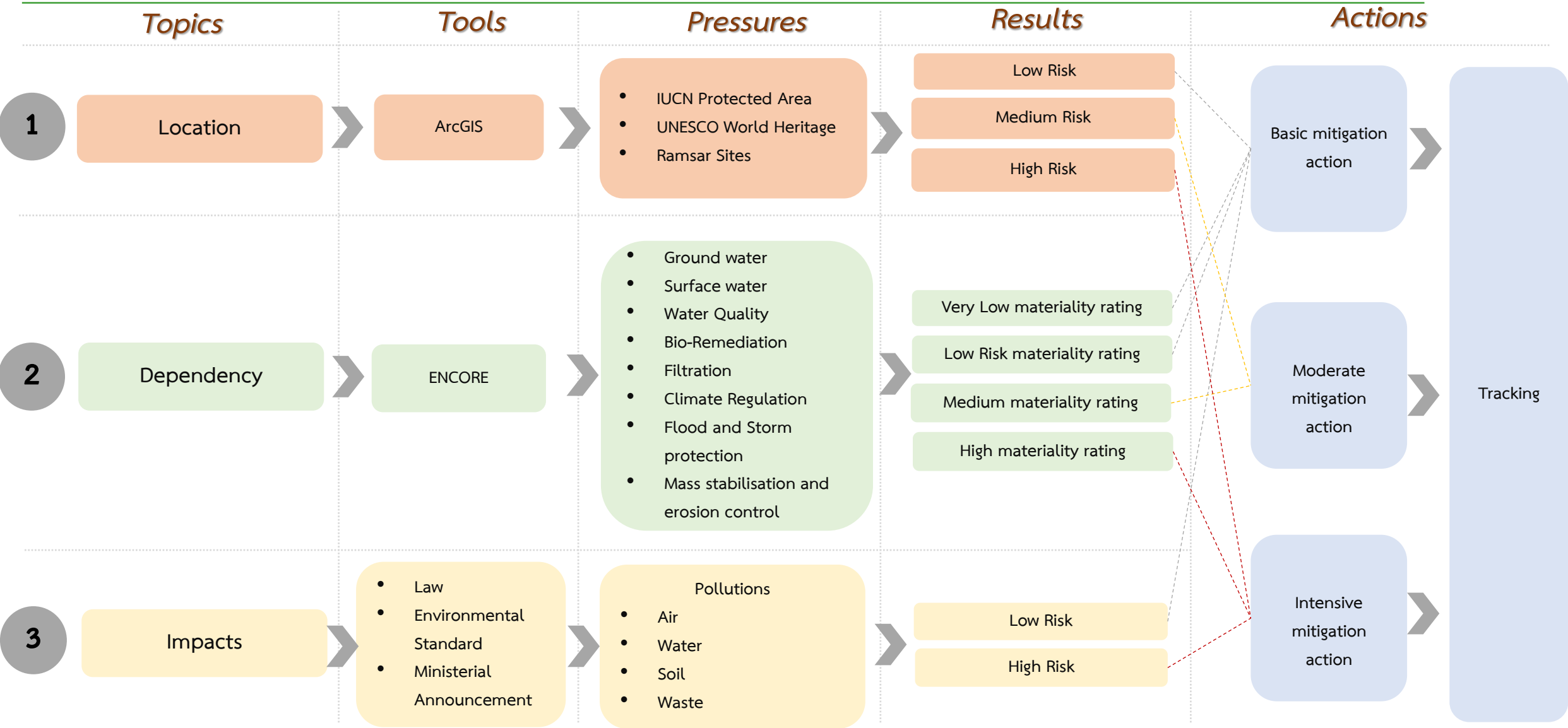
The company has evaluated biodiversity impacts across its entire value chain at **279 sites**, covering a total area of **318.49 hectares** where the company conducts its primary operations. These operations encompass **1 site of Bangchak oil refineries & oil depot**, **2 sites of Bang Pa-in oil depots**, and **276 sites of service stations**, consist of **60 sites** of Company Owned Dealer Operation (CODO) service stations. Additionally, the risk assessment has been integrated into the risk management process for **216 sites** of Company Owned Company Operated (COCO) service stations, which are managed by Bangchak Green Net Co., Ltd. (BGN), a stakeholder of the company. The below table is summary of the operation areas that would be included in the assessment.

### Value Chain



Type of Business	Number of Sites	Site's Name	Location	Total Areas (Hectares)
Own Operation, Oil Refinery & Oil Depot	1	Bangchak Oil Refinery & Oil Depot	Bangkok, Thailand	76.80
Own Operation, Oil Depot	2	Bang Pa-in Depot, Terminal 1 and 2	Ayutthaya, Thailand	24.96
Downstream Activities Service Station <small>Consider only COCO and CODO service stations. *Data as of 17.07.2023</small>	276*	See List of Service Stations in Appendix (1)	scattered in 6 regions of Thailand (Central, Northern, Southern, North-East, Western and Eastern)	216.73
<b>Total</b>	<b>279</b>			<b>318.49</b>

## 2. Assessment > Risk Assessment Process

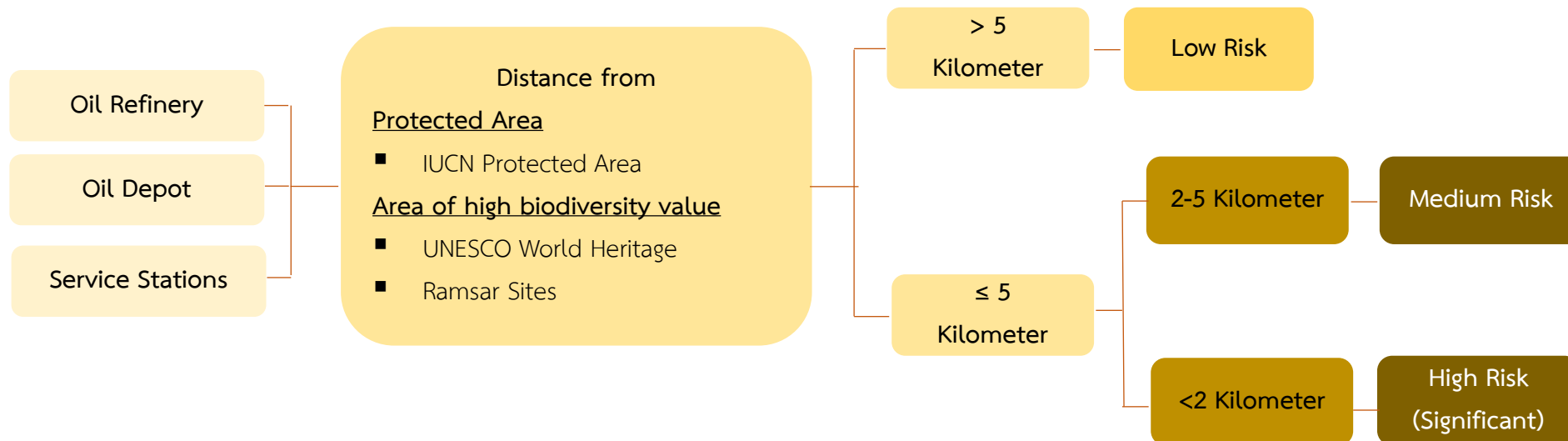


## 2. Assessment ➤ Risk Assessment ➤ Location Assessment

### 1. Location Assessment

The company use location-specific approach, to identify the impact of operational sites owned and managed in located in or near the International Union for Conservation of Nature (IUCN), UNESCO World Heritage sites and Ramsar Convention wetlands within 5-kilometer radius. Sites situated beyond a 5-kilometer radius from the mentioned areas show a low risk to biodiversity. Meanwhile, sites located within a 5-kilometer radius undergo further assessment. If a site falls within the range of 2 to 5 kilometers from these areas, it is deemed to pose a moderate risk to biodiversity. Conversely, if a site is located within a 2-kilometer radius from these areas, it is identified as having a high risk with significant impact on biodiversity. In sites with low risk, the company has preventive measures in place to mitigate potential issues. However, for sites classified as medium and high risk, there is a heightened approach to implementing measures that aim to address and mitigate these potential impacts to biodiversity.

#### Location Assessment Diagram





## 2. Assessment ➤ Risk Assessment ➤ Location Assessment

### Area to Consider

1. The International Union for Conservation of Nature (IUCN). The definition of six management categories are summarized below.

Ia Strict nature reserve	Strictly protected for biodiversity and also possibly geological/ geomorphological features, where human visitation, use and impacts are controlled and limited to ensure protection of the conservation values
Ib Wilderness area	Usually large unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, protected and managed to preserve their natural condition
II National park	Large natural or near-natural areas protecting large-scale ecological processes with characteristic species and ecosystems, which also have environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities
III Natural monument or feature	Areas set aside to protect a specific natural monument, which can be a landform, sea mount, marine cavern, geological feature such as a cave, or a living feature such as an ancient grove
IV Habitat/species management area	Areas to protect particular species or habitats, where management reflects this priority. Many will need regular, active interventions to meet the needs of particular species or habitats, but this is not a requirement of the category
V Protected landscape or seascape	Where the interaction of people and nature over time has produced a distinct character with significant ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values
VI Protected areas with sustainable use of natural resources	Areas which conserve ecosystems, together with associated cultural values and traditional natural resource management systems. Generally large, mainly in a natural condition, with a proportion under sustainable natural resource management and where low-level non-industrial natural resource use compatible with nature conservation is seen as one of the main aims

## 2. Assessment ➤ Risk Assessment ➤ Location Assessment

### Area to Consider

2. UNESCO World Heritage sites is a natural or cultural site that demonstrates influence or significance in a global context and has been inscribed on the World Heritage List by the United Nations Educational, Scientific, and Cultural Organization's (UNESCO) World Heritage Committee. Today, there are 6 sites in Thailand.



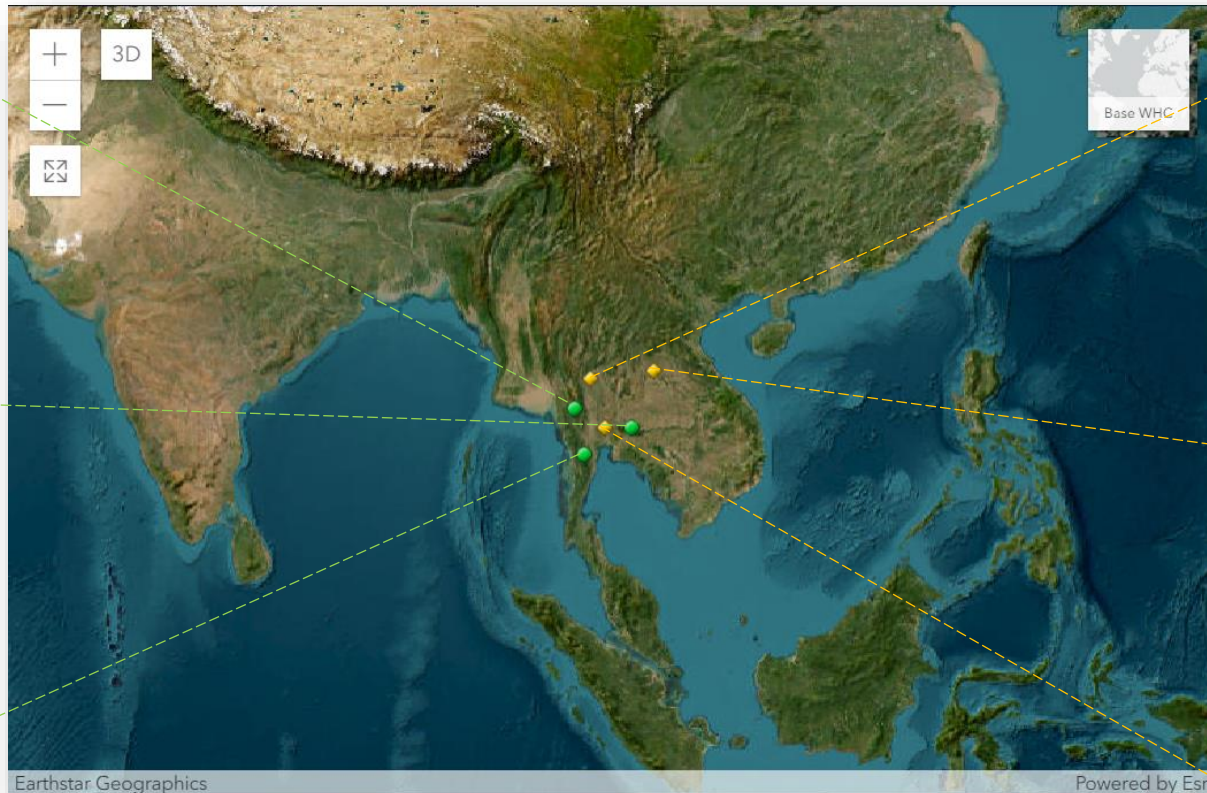
1. Thungyai-Huai Kha Khaeng Wildlife Sanctuaries (1991)



2. Dong Phrayayen-Khao Yai Forest Complex (2005)



3. Kaeng Krachan Forest Complex (2021)



4. Historic Town of Sukhothai and Associated Historic Towns (1991)



5. Ban Chiang Archaeological Site (1992)



6. Historic City of Ayutthaya (1991)



## 2. Assessment ➤ Risk Assessment ➤ Location Assessment

### Area to Consider

3. Ramsar Convention wetlands. The government of Thailand signed the Ramsar Convention in 1998, promising to work toward wetland conservation. Today, there are 15 Ramsar Sites.

1. Kuan Ki Sian of the Thale Noi Non-Hunting Area



2. Bueng Khong Long Non-hunting Area



3. Don Hoi Lot



4. Krabi River Estuary



5. Nong Bong Kai Non-hunting Area



6. Princess Sirindhorn Wildlife Sanctuary (Pru To Daeng Wildlife Sanctuary)



7. Hat Chao Mai Marine National Park -Ko Libong Non-Hunting Area -Trang River Estuaries



8. Kaper Estuary - Laem Son National Park - Kraburi Estuary



9. Mu Ko Ang Thong Marine National Park



10. Ao Phang Nga National Park



11. Khao Sam Roi Yot National Park



12. Kut Ting Marshland



13. Ko Kra Archipelago



14. Ko Ra-Ko Phra Thong Archipelago

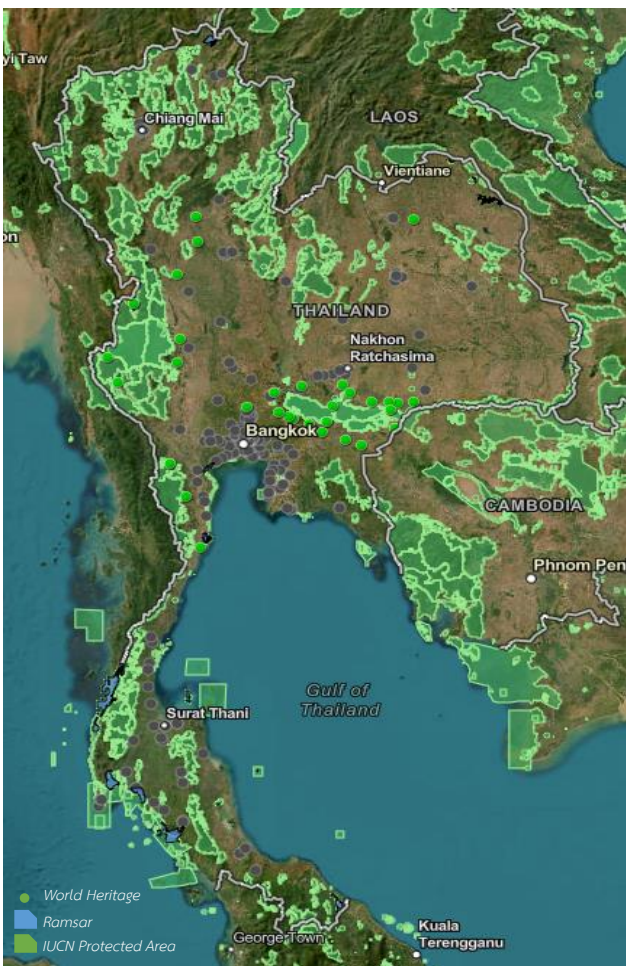


15. Lower Songkhram River



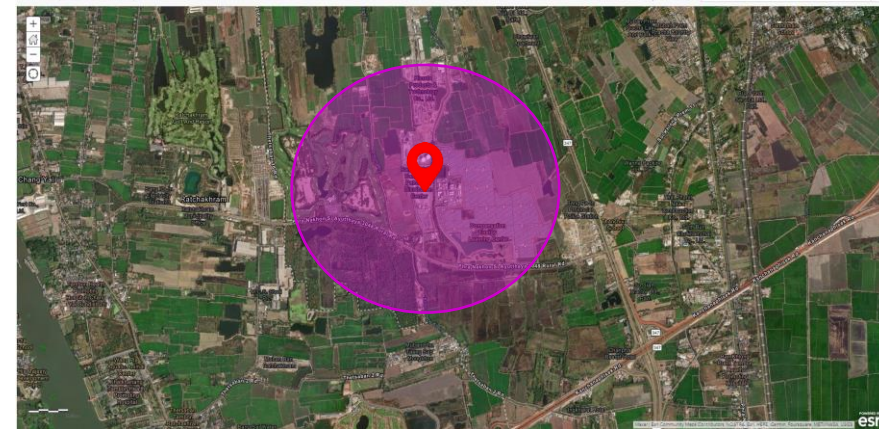
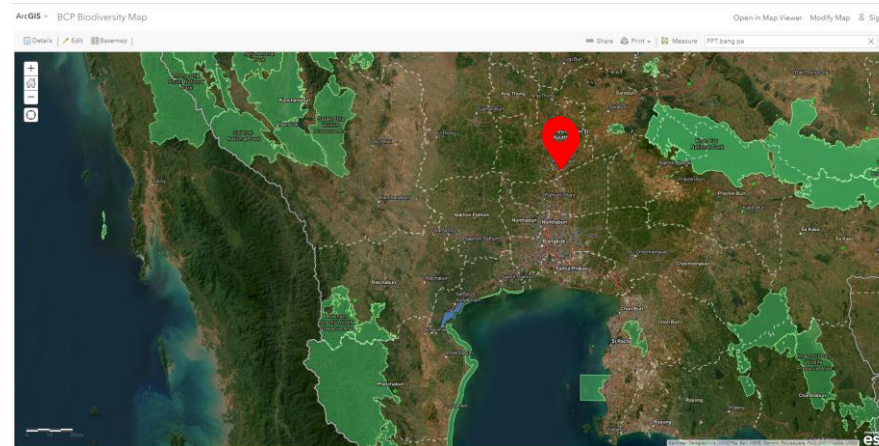
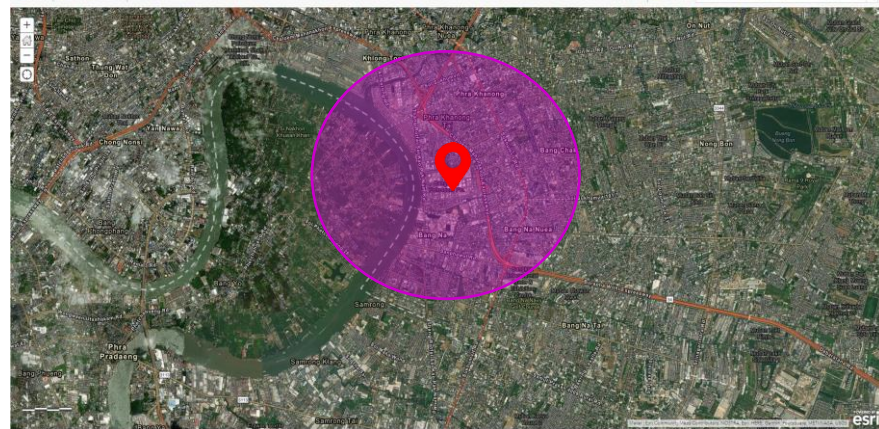
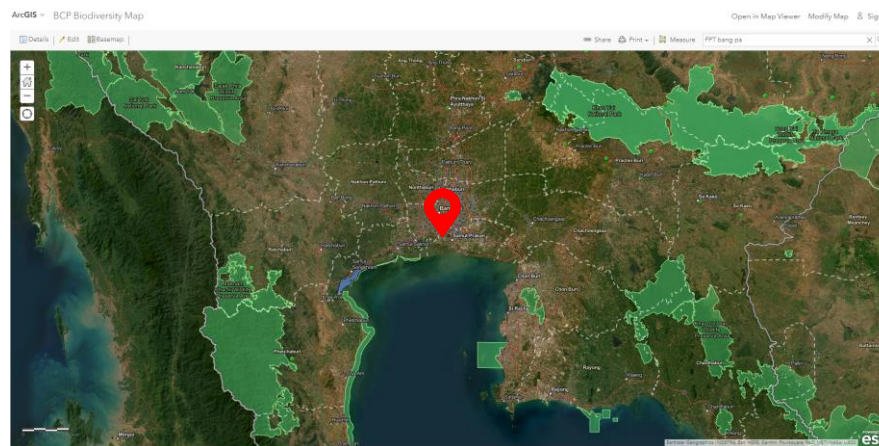


## 2. Assessment ➤ Risk Assessment ➤ Location Assessment Results



The map illustrated the location of IUCN protected area, UNESCO World Heritage sites and Ramsar Convention wetlands in Thailand.

The company checked the distance of the oil refinery area, oil depot and service station from the International Union for Conservation of Nature (IUCN), UNESCO World Heritage sites and Ramsar Convention wetlands from satellite maps (ArcGIS) and found that **none of the aforementioned areas are located within a 5-kilometer radius of the Bangchak oil refineries & oil depot, and 2 sites of Bang Pa-in oil depot areas.**



The Oil Refinery Area at Bangkok

The Oil Depot Area at Ayutthaya, Terminal 1 and 2

## 2. Assessment > Risk Assessment > Location Assessment Results

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The company also check the distance of **276 service stations** from the International Union for Conservation of Nature (IUCN), UNESCO World Heritage sites and Ramsar Convention wetlands from satellite maps (ArcGIS) and found that **22 service stations are located near the aforementioned areas within a 5-kilometer radius.**



## 2. Assessment ➤ Risk Assessment ➤ Location Assessment Results

*Table 1 : Service stations located near the protected area and high biodiversity value area within a 2-kilometer radius (High Risk).*

No.	Location	No. of sites
1	Central Region	2
2	Eastern Region	6
3	Northern Region	1
4	Southern Region	3
5	Western Region	1
Total		13

The company conducted the further assessment of **22 service stations** located within 5-kilometer radius of the International Union for Conservation of Nature (IUCN), UNESCO World Heritage sites, and Ramsar Convention wetlands to find the service stations located near the aforementioned areas within a 2-kilometer radius, it is identified as having a high risk with significant impact on biodiversity. The results found that **13 service stations** (area 7.33 hectares) **are located near the aforementioned areas less than a 2-kilometer radius** as shown in *Table 1*.

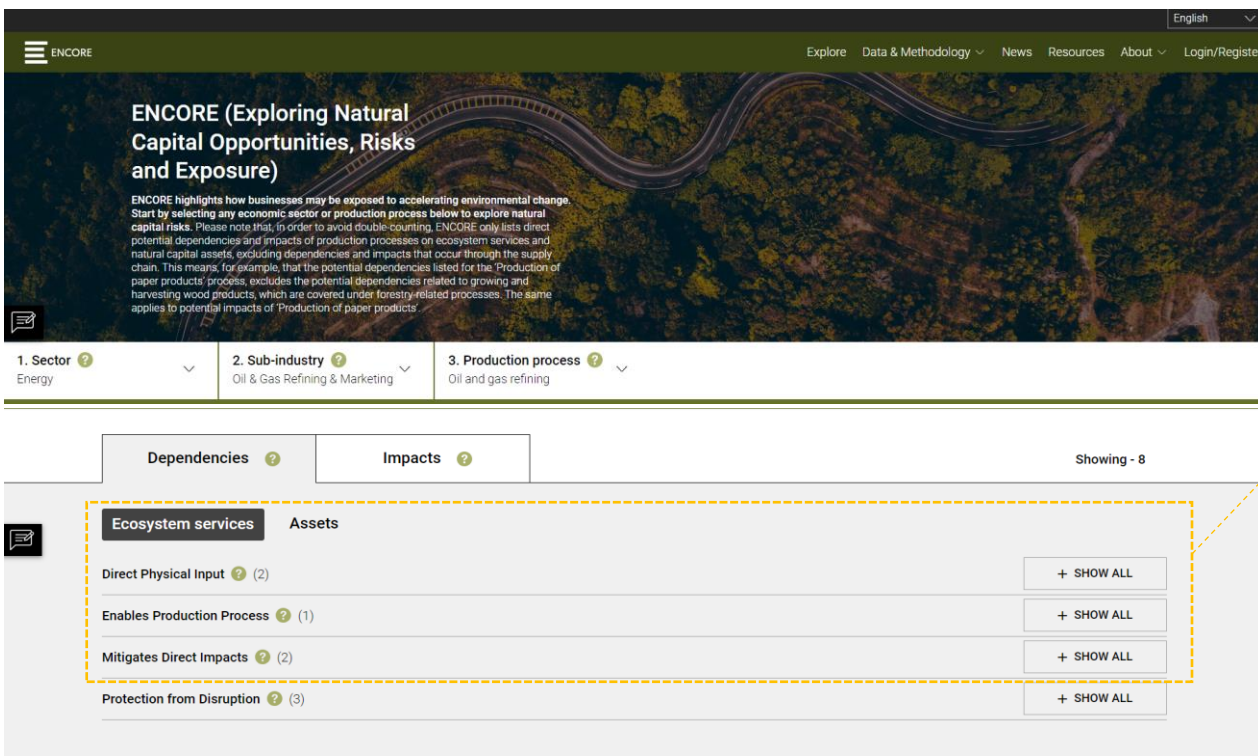
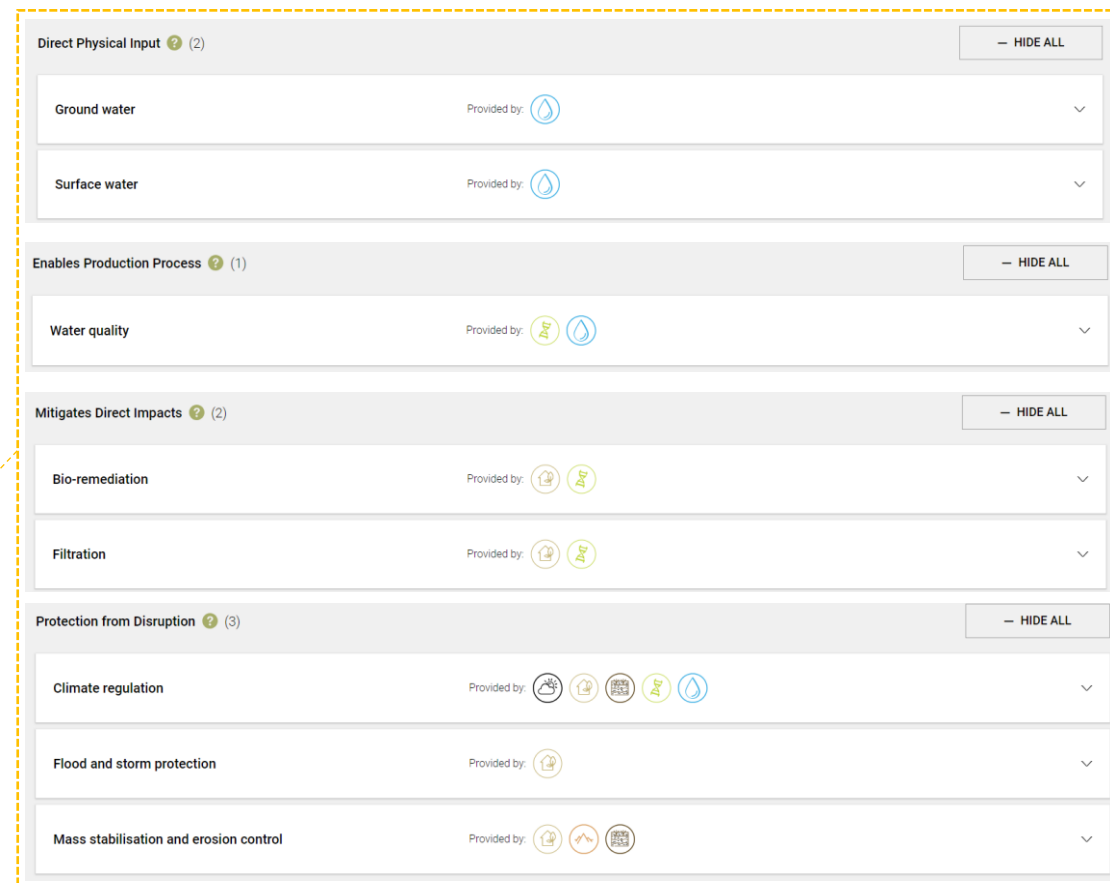
In summary, **279 sites are conducted the location assessment**. The results found that **257 sites are a low-risk** due to locate more than 5-kilometer from the protected area and area of high biodiversity value, **9 sites are a medium-risk** (see the lists in Appendix (2)) due to locate between 2-5 kilometer from the protected area and area of high biodiversity value and **13 sites are a high-risk** significant biodiversity impact due to locate less than 2 kilometer from the protected area and area of high biodiversity value

## 2. Assessment ➤ Risk Assessment ➤ Dependency Assessment

### 2. Dependency Related Biodiversity Assessment

The company evaluates the significance of its business's dependency on biodiversity by utilizing data sourced from the ENCORE tool. The assessment process begins with the selection of the sector, sub-industry, and production processes directly relevant to the company's operations. In this regard, the focus of assessment is limited to the scopes of oil refinery, oil storage, and marketing.

#### *Business Dependencies exploring by Encore*

See the definition of each parameter by click link ; <https://encore.naturalcapital.finance/en/explore>

## 2. Assessment ➤ Risk Assessment ➤ Dependency Assessment Results

*Table 2 : Materiality Rating of Dependencies of Oil Refining & Marketing*

No.	Ecosystem services	Rating
1.	Direct Physical Input	
	Groundwater	Low materiality rating
	Surface water	Low materiality rating
2.	Enables Production Process	
	Water Quality	Low materiality rating
3.	Mitigates Direct Impacts	
	Bio-remediation	Very low materiality rating
	Filtration	Very low materiality rating
4.	Protection from Disruption	
	Climate Regulation	Very low materiality rating
	Flood and Storm protection	Medium materiality rating
	Mass stabilization and erosion control	Low materiality rating

In the refining and marketing sub-industry within the energy sector, ENCORE identifies bioremediation, filtration, and climate regulation as having a very low materiality rating. Groundwater, surface water, water quality, and mass stabilization and erosion control are assigned a low materiality rating, while flood and storm protection receive a medium materiality rating. Within the oil depot context, using data from the oil and gas storage and transportation sub-industry, ENCORE rates climate regulation and mass stabilization and erosion as having very low and low materiality ratings, respectively. However, flood and storm protection are assigned a medium materiality rating. Hence, **1 site of Bangchak oil refineries & oil depot, 2 sites of Bang Pa-in oil depots, and 276 sites of service stations have a medium materiality rating of flood and storm protection.**

*Table 3 : Materiality Rating of Dependencies of Oil Storage*

No.	Ecosystem services	Rating
1.	Protection from Disruption	
	Climate Regulation	Very low materiality rating
	Flood and Storm protection	Medium materiality rating
	Mass stabilization and erosion control	Low materiality rating

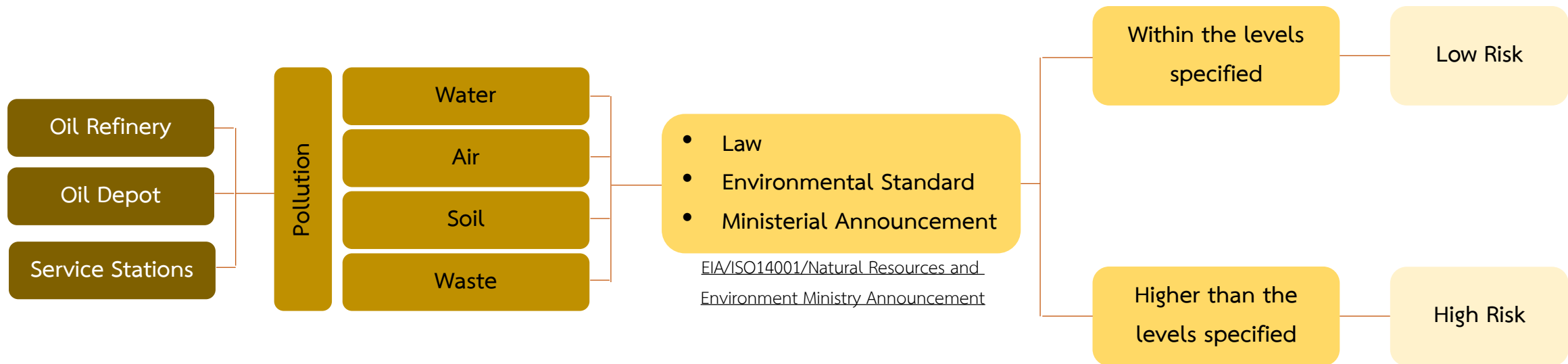


## 2. Assessment ➤ Risk Assessment ➤ Impact Assessment

### 3. Impacts Related Biodiversity Assessment

The company assesses business impacts base on the impacts of pollution. Accordingly, the pollution is controlled at refinery, depot and service stations to remain below the levels specified by the law, environmental standard and/or ministerial announcement so the company has indicated that a low level of risk for causing severe impacts on biodiversity. Therefore, the company continuously focuses on monitoring biodiversity impacts such as in controlling the release of wastes, e.g., wastewater, trash and air pollution from activities in order to prevent them from spilling into the environment and to comply with the law.

#### Impacts Assessment Diagram



## 2. Assessment ➤ Risk Assessment ➤ Impact Assessment Results

The company has evaluated the impact of pollution on biodiversity. The results found biodiversity risk associated with 1 site of Bangchak oil refineries & oil depot, 2 sites of Bang Pa-in oil depots, and 276 sites of service stations are categorized as low (see Table 4). This is attributed to the effective pollution control measures implemented in refineries and depots to maintain pollutant levels within legally specified limits. Similarly, service stations manage their wastewater in accordance with regulations outlined in the Environment Ministry Announcement. Consequently, the company remains dedicated to ongoing monitoring of biodiversity impacts in term of pollution release control, i.e., wastes, trash, air pollution from actions to prevent spills in the environment and to comply with the law.

**Table 4 :** *The results of impact assessment*

Sites	Pollutions	Results	Risk Level
Bangchak Oil Refinery & Oil Depot	<ul style="list-style-type: none"> <li>Water</li> <li>Air</li> <li>Soil</li> <li>Waste</li> </ul>	Within the levels specified in <ul style="list-style-type: none"> <li>Law</li> <li>Environmental Standard</li> <li>Ministerial Announcement</li> </ul>	Low Risk
Bang Pa-In Oil Depot	<ul style="list-style-type: none"> <li>Water</li> <li>Air</li> <li>Waste</li> </ul>		
Service Stations	<ul style="list-style-type: none"> <li>Water</li> <li>Air</li> </ul>		

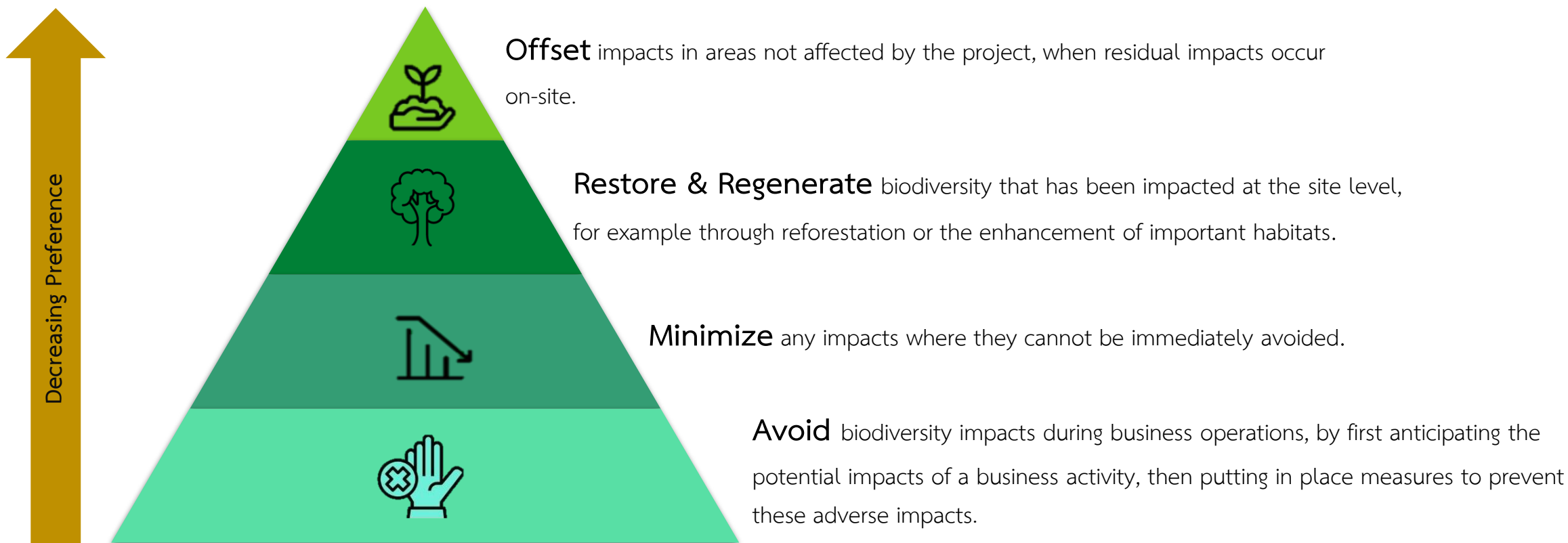
The summary results of exposure and assessment the risk from location-specific, dependencies and impacts assessment of all sites are illustrated in the table 5 and. There are 279 sites of oil refinery, oil depot and service stations are conducted the risk assessment. **279 sites are a low-risk of impact assessment**, and **257 sites are a low-risk, 9 sites are a medium-risk, 13 sites are a high-risk of location assessment**. The company has the management plan to mitigate the impact to biodiversity especially in medium and high-risk sites.

# Table 5 : The Summary Assessment Results of All Sites

Assessment Topic	Risk Level	Bangchak Refinery & Oil Depots (1 site)	Bang Pa in Depots (2 sites)	Service Stations (COCO&CODO) (276 stations)
1. Location (IUCN, Ramsar, UNESCO Areas)	Low	/ (1 site)	/ (2 sites)	/ (254 stations)
	Medium	-	-	/ (9 stations)
	High	-	-	/ (13 stations)
2. Dependencies	Very Low materiality rating	/ (1 site) <ul style="list-style-type: none"> <li>Climate Regulation</li> <li>Bio-remediation</li> <li>Filtration</li> </ul>	/ (2 sites) <ul style="list-style-type: none"> <li>Climate Regulation</li> </ul>	/ (276 stations) <ul style="list-style-type: none"> <li>Climate Regulation</li> <li>Bio-remediation</li> <li>Filtration</li> </ul>
	Low materiality rating	/ (1 site) <ul style="list-style-type: none"> <li>Groundwater</li> <li>Surface water</li> <li>Water Quality</li> <li>Mass stabilization and erosion control</li> </ul>	/ (2 sites) <ul style="list-style-type: none"> <li>Mass stabilization and erosion control</li> </ul>	/ (276 stations) <ul style="list-style-type: none"> <li>Groundwater</li> <li>Surface water</li> <li>Water Quality</li> <li>Mass stabilization and erosion control</li> </ul>
	Medium materiality rating	/ (1 site) Flood and Storm protection	/ (2 sites) Flood and Storm protection	/ (276 stations) Flood and Storm protection
	High materiality rating	-	-	-
	High	-	-	-
3. Impacts (Pollutions>Air, Water, Soil, Waste)	Low	/ (1 site)	/ (2 sites)	/ (276 stations)
	High	-	-	-

### 3. Mitigation Hierarchy

The management plan are relied on the mitigation hierarchy that mention in the Integrating Biodiversity into Natural Capital Assessments framework. The mitigation hierarchy consist of 4 stages compromising a sequence of actions, in order of priority, to anticipate and mitigate impacts on biodiversity



## 4. Mitigating Actions and Tracking



Based on the risk assessment results, specific location-related risks have been identified at 22 service stations (9 stations are medium risk, and 13 stations (7.33 hectares) are high risk with significant). The company has an intensive mitigation action to minimize this risk by reducing pollution release from medium and high-risk service stations (see Table 7). Additionally, there are medium risk related to dependency of flood and storm protection at the Bangchak refinery & oil depot, Bang Pa-In oil depot, and all service stations and the company also has the mitigation action as shown in Table 6. For the impact assessment, the results shown all sites are a low-risk. However, the company has a mitigation plan to manage these risks at all sites (see Table 7). This plan applies even to sites that are considered low risk. For medium-risk service stations, and especially for high-risk service stations, the intensity of mitigation actions will be escalated.

**Table 6 : Mitigation Action to Minimize the Dependency of Flood and Storm protection**

Risk	Mitigating Action		Results Tracking	
Dependency/ Flood and Storm protection	Minimize	Bangchak Refinery & Oil Depots	<ul style="list-style-type: none"> <li>• Monitor flood situation and the sea water level at pier front. Bangkok metropolitan flood</li> <li>• Protection could support equivalent to 2.23 m water level above the sea.</li> <li>• Empty the rainwater drainage.</li> <li>• Installed flood prevention equipment</li> <li>• Basic design of the dam for flood refinery area</li> <li>• Business Continuity Management Plan (BCM)</li> <li>• Crisis Management Plan (CMP)</li> </ul>	<ul style="list-style-type: none"> <li>• Based on data collected over the past 5 years, the oil refinery area has never had to halt operations due to flooding.</li> </ul>
		Bang Pa-In Oil Depots	<ul style="list-style-type: none"> <li>• Closely monitor the flood situation and cooperate with the transportation team to prepare the adjusted transportation plan.</li> <li>• Regularly inspecting the readiness of protection equipment and the barrier dike (5.5 m high) around the depot.</li> <li>• Business Continuity Management Plan (BCM)</li> <li>• Crisis Management Plan (CMP)/ BPT 507</li> </ul>	<ul style="list-style-type: none"> <li>• Based on data collected over the past 5 years, the oil depot area has never had to halt operations due to flooding.</li> </ul>
		Service Stations	<ul style="list-style-type: none"> <li>• Selected and designed service stations for flood prevention.</li> <li>• Monitor flood situation in high potential hazard area</li> <li>• Prepare the protection equipment</li> <li>• In case of flooding, protect the important equipment according to the measure and do the oil quality check before returning to normal operation.</li> </ul>	<ul style="list-style-type: none"> <li>• Based on data collected over the past 5 years, the service station area has never had to halt operations due to flooding.</li> </ul>

## 4. Mitigating Actions and Tracking

Table 7 : Mitigation Action to Avoid and Minimize the Impact from Pollutions

Risk	Mitigating Action		Results Tracking						
Pollutions	Avoid	<table border="1"> <tr> <td data-bbox="435 369 749 515">Bangchak Refinery &amp; Oil Depots</td> <td data-bbox="749 369 1979 515"> <ul style="list-style-type: none"> <li>The Safety, Security, Occupational Health, Environment, and Energy Policy, SHEE Policy</li> <li>Environmental Impact Assessment</li> <li>ISO14001, ISO45001, ISO50001</li> </ul> </td> </tr> <tr> <td data-bbox="435 515 749 626">Bang Pa-In Oil Depots</td> <td data-bbox="749 515 1979 626"> <ul style="list-style-type: none"> <li>The Safety, Security, Occupational Health, Environment, and Energy Policy, SHEE Policy</li> <li>ISO14001, ISO45001, ISO50001</li> </ul> </td> </tr> <tr> <td data-bbox="435 626 749 815">Service Stations</td> <td data-bbox="749 626 1979 815"> <ul style="list-style-type: none"> <li>Safety, Security, Occupational Health, Environment, and Energy Policy of Marketing Business Group, SHEE-MK policy</li> <li>The Announcement of the Ministry of Natural Resources and Environment on the Standard for Controlling the Discharge of Wastewater controlled by the Pollution Control Department</li> </ul> </td> </tr> </table>	Bangchak Refinery & Oil Depots	<ul style="list-style-type: none"> <li>The Safety, Security, Occupational Health, Environment, and Energy Policy, SHEE Policy</li> <li>Environmental Impact Assessment</li> <li>ISO14001, ISO45001, ISO50001</li> </ul>	Bang Pa-In Oil Depots	<ul style="list-style-type: none"> <li>The Safety, Security, Occupational Health, Environment, and Energy Policy, SHEE Policy</li> <li>ISO14001, ISO45001, ISO50001</li> </ul>	Service Stations	<ul style="list-style-type: none"> <li>Safety, Security, Occupational Health, Environment, and Energy Policy of Marketing Business Group, SHEE-MK policy</li> <li>The Announcement of the Ministry of Natural Resources and Environment on the Standard for Controlling the Discharge of Wastewater controlled by the Pollution Control Department</li> </ul>	<ul style="list-style-type: none"> <li>Complying with the law or exceeding legal specifications</li> </ul> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>SHEE Policy</p> </div> <div style="text-align: center;">  <p>SHEE-MK Policy</p> </div> </div>
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Minimize	<table border="1"> <tr> <td data-bbox="435 826 749 1363">Bangchak Refinery &amp; Oil Depots</td> <td data-bbox="749 826 1979 1363"> <p><b>Water</b> – Install Wastewater Treatment Unit and Water Recycle Unit to treat the wastewater from refinery systems, production process, laboratory and rest room</p> <ul style="list-style-type: none"> <li>– Establish COD Online for real-time monitoring and sending results to Department of Industrial Works and communities around the refinery</li> </ul> <p><b>Air</b> – Use clean fuel in all production process</p> <ul style="list-style-type: none"> <li>– The Vapor recovery unit (VRU) technology with up to 99% effectiveness has been installed to reduce VOCs</li> <li>– Monitors air quality through 7 Continuous Emission Monitoring System (CEMs) units. This system sends real-time data to Department of Industrial Works</li> </ul> <p><b>Waste</b> – Manage waste according to the 5Rs principle to minimize the quantity of waste sent for disposal</p> <ul style="list-style-type: none"> <li>– Operate business according to circular economy to focus on making worthwhile use of resources, raw materials and products, and green economy</li> </ul> </td> </tr> </table>	Bangchak Refinery & Oil Depots	<p><b>Water</b> – Install Wastewater Treatment Unit and Water Recycle Unit to treat the wastewater from refinery systems, production process, laboratory and rest room</p> <ul style="list-style-type: none"> <li>– Establish COD Online for real-time monitoring and sending results to Department of Industrial Works and communities around the refinery</li> </ul> <p><b>Air</b> – Use clean fuel in all production process</p> <ul style="list-style-type: none"> <li>– The Vapor recovery unit (VRU) technology with up to 99% effectiveness has been installed to reduce VOCs</li> <li>– Monitors air quality through 7 Continuous Emission Monitoring System (CEMs) units. This system sends real-time data to Department of Industrial Works</li> </ul> <p><b>Waste</b> – Manage waste according to the 5Rs principle to minimize the quantity of waste sent for disposal</p> <ul style="list-style-type: none"> <li>– Operate business according to circular economy to focus on making worthwhile use of resources, raw materials and products, and green economy</li> </ul>	<ul style="list-style-type: none"> <li>Zero complaint about pollution from community</li> <li>The results in EIA monitoring report are within acceptable standards</li> </ul>					
Bangchak Refinery & Oil Depots	<p><b>Water</b> – Install Wastewater Treatment Unit and Water Recycle Unit to treat the wastewater from refinery systems, production process, laboratory and rest room</p> <ul style="list-style-type: none"> <li>– Establish COD Online for real-time monitoring and sending results to Department of Industrial Works and communities around the refinery</li> </ul> <p><b>Air</b> – Use clean fuel in all production process</p> <ul style="list-style-type: none"> <li>– The Vapor recovery unit (VRU) technology with up to 99% effectiveness has been installed to reduce VOCs</li> <li>– Monitors air quality through 7 Continuous Emission Monitoring System (CEMs) units. This system sends real-time data to Department of Industrial Works</li> </ul> <p><b>Waste</b> – Manage waste according to the 5Rs principle to minimize the quantity of waste sent for disposal</p> <ul style="list-style-type: none"> <li>– Operate business according to circular economy to focus on making worthwhile use of resources, raw materials and products, and green economy</li> </ul>								

## 4. Mitigating Actions and Tracking

Table 7 : Mitigation Action to Avoid and Minimize the Impact from Pollutions (Cont.)

Risk	Mitigating Action		Results Tracking	
Pollutions	Minimize	Bang Pa-In Oil Depots	<p><b>Water</b> –Analyze and monitor the wastewater quality within legal specification</p> <p><b>Air</b> – Install Vapor Recovery Unit to reduce air pollution</p> <p><b>Waste</b> – Manage hazardous waste in accordance with legal regulations</p>	<ul style="list-style-type: none"> <li>Zero complaint about pollution from community</li> </ul>
		Service Stations	<p><b>Water</b> – Analyze and monitor the wastewater quality in accordance with the Announcement of the Ministry of Natural Resources and Environment on the Standard for Controlling the Discharge of Wastewater from Service Stations controlled by the Pollution Control Department</p> <p><b>Air</b> – The installation of the Vapor Recovery System in service stations will be divided into 2 phases.</p> <ul style="list-style-type: none"> <li><b>Phase 1</b> : Installation of the vapor recovery system, stage 1 in service stations located in 7 provinces; (1) Chonburi (2) Ayutthaya (3) Rayong (4) Songkhla (5) Samut Sakhon (6) Saraburi (7) Surat Thani <b>Status of Phase 1</b> : Completed</li> <li><b>Phase 2</b> : Installation of the vapor recovery system, stage 1 in service stations located in areas outside the 7 provinces mentioned above. <b>Status of Phase 2</b> : On progress</li> </ul> <p><b>Others</b> – The company has adopted the <b>INNO Green criteria</b>, which are ESG principles implemented at service stations to enhance sustainability. These criteria encompass operations across 9 dimensions, for more detail, see Appendix (3). This criteria has been applied to 6 prototype service stations. All 6 of these service stations have undergone evaluation and have achieved platinum-level certification, which is the highest level. The company intends to extent the implementation of the INNO Green criteria to all service stations, prioritizing at higher risk service stations.</p>	<ul style="list-style-type: none"> <li>Zero complaint about pollution from community</li> </ul>

## 4. Mitigating Actions and Tracking

The company support the projects to restore and regenerate of biodiversity and ecosystem in own operation area, adjacent area and external company boundary as following:

### *Green Areas and Birdwatching Activities at Bangchak refinery*

The green areas within the refinery serves the purpose of absorbing and preventing pollution. The company has a plan for the conservation of the green space and tree planting measures, with a focus on ensuring that dead trees are consistently restored to maintain optimal conditions. The variety of areas within the refinery, including large gardens, marshes, trees, flowers, fields, as well as an abundance of water and food. The air quality is continuously monitored and reported transparently and meets the acceptable standards. As a result, Bangchak Oil Refinery has become another safe area for birds. The Bangchak refinery area is not only used for business operations, but also serves as a small ecosystem that still embraces the people involved as well as small living organisms. Like the birds that take shelter, so the refinery is known as a place for great birdwatching in the heart of the city. The birdwatching activity involves exploring bird species within the refinery premises while also raising awareness about environmental conservation among both employees and the surrounding community.

#### Results Tracking :

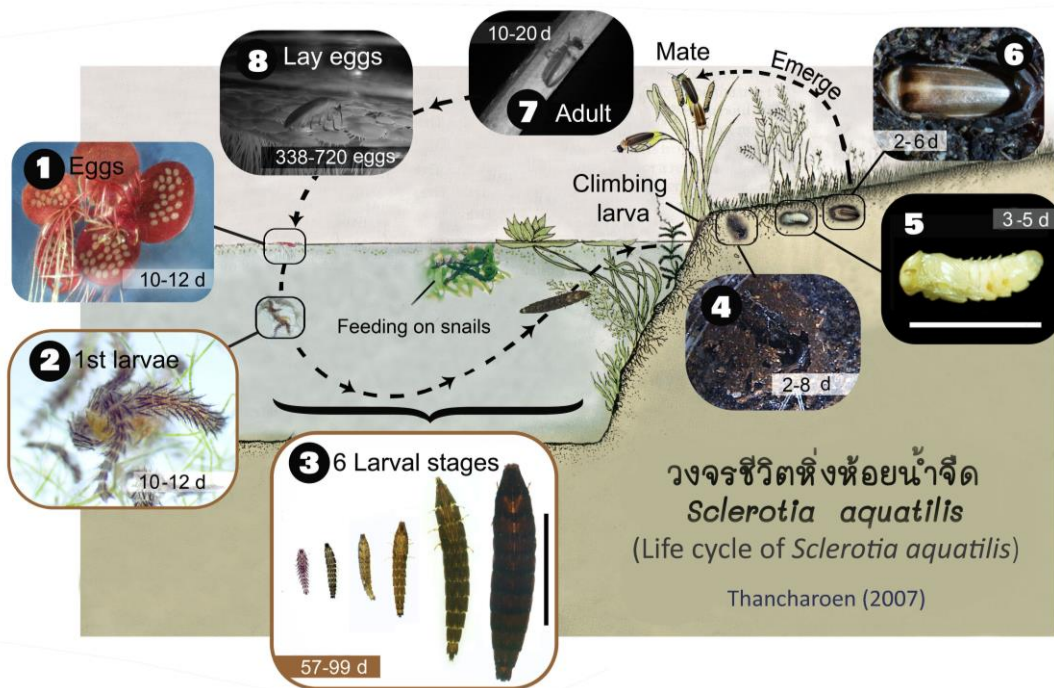
- Perennial vegetation, Spans approximately 72.21 rai or 15.63% of the total project area. This area is roughly equivalent to 462 rai
- Encountered birds in the refinery area, totaling 78 species, including both resident and migratory birds."



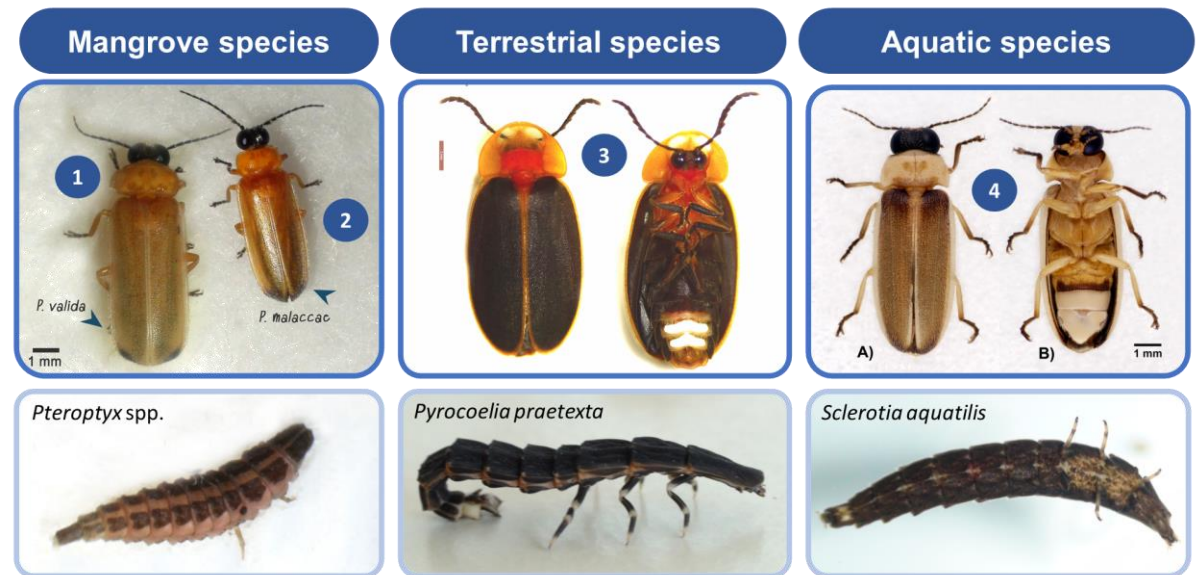


# The Path of Fireflies Conservation Project at Kung Bang Ka Chaa

The company works to support, promote, develop and care for biodiversity in collaboration with communities and neighbors around refinery areas in 6 sub-districts in the Khung Bang Ka Chao area, namely, Bang Nam Phueng Sub-district, Bang Ka Chao Sub-district, Bang Krasop Sub-district, Bang Yo Sub-district and Song Khanong Sub-district, Phra Pra Daeng District, Samut Prakan Province, and has been doing so from 2014 up to the present. The life cycle of firefly, their species, the factors affecting the firefly population and explore the firefly population are studied in this project. This area is an abundant area with a high level of biodiversity, and the company prioritizes taking care of the firefly population in the area, which currently is unstable and increases and decreases according to the environment.



## Firefly species in Bang Kachao area



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# The Path of Fireflies Conservation Project at Kung Bang Ka Chaa (Cont.)

## Results Tracking :

- Four different types of fireflies were discovered in the area as follows:
  - 1) *Sclerotia quatilis* (Thancharoen)
  - 2) *Pyrocoelia* sp.
  - 3) *Pteroptyx malacca* (Gorham)
  - 4) *Pteroptyx valida* (Olivier).
- The average firefly population was 50,526 fireflies/year
- Firefly survey/counting teams numbering 36 people along with 78 youths participating in activities from 6 sub-districts.
- The main threats to firefly population ; land conversion, aquatic plant removal, anti mosquito spray, embankment construction, water gate construction and light and water pollution.
- Related projects and activities such as lectures to provide knowledge about conservation, mangrove forest planting activities and construction of paths and bridges; public announcements, World Firefly Day event, the “Ruam Phon Khon Rak Hing Hoi” academic discussion and training of young guides.

## The main threats to firefly populations



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## Project to Support Farmers with Large Plots and Stingless Bee Farmers at Bang Nam Phueng Sub-district

The company supported, promoted, developed and supervised the raising of stingless bees on the basis of environmental conservation and biodiversity in conjunction with promoting the community economy in a participatory manner. Accordingly, the company operated the project in collaboration with large-plot farmers raising stingless bees and farmer groups involved in the raising of stingless bees at Bang Nam Phueng Sub-district, Phra Pra Daeng District, Samut Sakhon Province. The project has been ongoing since 2019 and continues to be operated today. Stingless bees are indicators of environmental abundance and biodiversity in the local area and also benefit the community economy.

### Results Tracking :

- The natural population of stingless bees in the area (estimated) is >1,000 bees, while the and farmed stingless bees numbering >350,000 bees.
- The number of hives being raised is 500 hives.
- Products from stingless bee including 8 other categories include: 1. Honey 2. Soap (bar) 3. Premium soap (bar) 4. Bath cream 5. Shampoo 6. Lotion 7. Balm 8. Insect repellent spray



# Project of Cooperation to Restore the Lam Pra Thao Water Source Forests

The company worked to restore and support the conservation of water source forests to remain abundant and to serve as food sources for animals and natural learning by the local population through collaboration with Phra Paisal Visalo who is the lead of project, villager, teachers, instructors, students and local agency representatives through the Lam Pra Thao water source restoration collaboration project and sapling cultivation project for reforestation at Phu Long and Thot Pha Pa and tree-planting to conserve the Lam Pra Thao water source forest in Phu Long, Chaiya Phum Province. The projects were meant to promote learning and conscience in employees and neighbors around Bangchak's oil refineries in Bangkok along with their families and schools through helping each other to grow saplings and to make trips to actually plant trees at water source forests.

## Results Tracking :

Saplings were cultivated and actually planted by the number of 83,600 trees/261 rai. The trees planted were native trees mixed with other suitable trees for planting in the area.





# Our Khung Bang Ka Chao Project

The company became a member in support of the Our Khung Bang Ka Chao Project of the Chaipattana Foundation in collaboration with other public and private agencies numbering over 34 organizations to jointly drive development in the Khung Bang Ka Chao area to build upon the speech and royal wish of His Late Majesty the King Bhumibol Adulyadej and Her Royal Highness Princess Maha Chakri Sirindhorn and the operating guidelines of the Chaipattana Foundation to conserve and develop Khung Bang Ka Chao into an abundant green space and to improve the way of life and well-being and economic growth of the local people. Under 7 shared objectives, the company participated as a work committee to support work in 3 areas/shared objectives, namely, development/expansion of green spaces, sustainable tourism and development of youths, education and culture.

## Results Tracking :

- Develop areas 19.71 rai ( 11 plots): 100
- Plantation activities 3 times by Executives and employees ( 385 persons)



# Phuet Phan Pan Suk Project

The company launched the Phuet Phan Pan Suk Project to increase green spaces, which is important for promoting biodiversity, by distributing tree saplings to customers and the public through Bangchak gas service stations, 9 Inthanin coffee shops and Phra Khanong District Office. The saplings were also given to employees to plant in green spaces near them, and the company also organized a tree-planting activity in areas near Bangchak's oil refineries in Phra Khanong District on the occasion of the 90th Birthday Anniversary of the Queen Mother Sirikit and on National Mother's Day on 12 August 2022 in collaboration with the Bangkok Metropolitan Administration, the Expressway Authority of Thailand, communities, condominiums, and neighbors around the refineries, including Phun Sin (Phet Suk Upatham) School and in the area of Bang Ka Chao, Bang Nam Phueng Sub-district, Phra Pra Daeng District, Samut Prakan Province, in collaboration with the community leaders of Bang Nam Phueng Sub-district, the Royal Forest Department, Nakhon Khuean Khan Ecological Green Space Management Center, in addition to working through the Our Khung Bang Ka Chao Project.



## Results Tracking :

- Up to 3,290 trees were planted in areas near the place of operation of Bangchak oil refineries in Phra Khanong District.
- Up to 400 trees were planted in Khung Bang Ka Chao, Bang Nam Phueng Sub-district, Phra Pra Daeng District, Samut Prakan Province, with plans to plant an additional 500 trees in the future.

# Appendix

# (1) List of 34 Service Stations: Northern & North-Eastern Region (COCO&CODO)

No.	Location	No. of sites
1	Northern Region	12
2	North-Eastern Region	22



# (1) List of 204 Service Stations: Central & Eastern Region (COCO&CODO)

No.	Location	No. of sites
3	Central Region	178
4	Eastern Region	26

# (1) List of 38 Service Stations: Western & Southern Region (COCO&CODO)

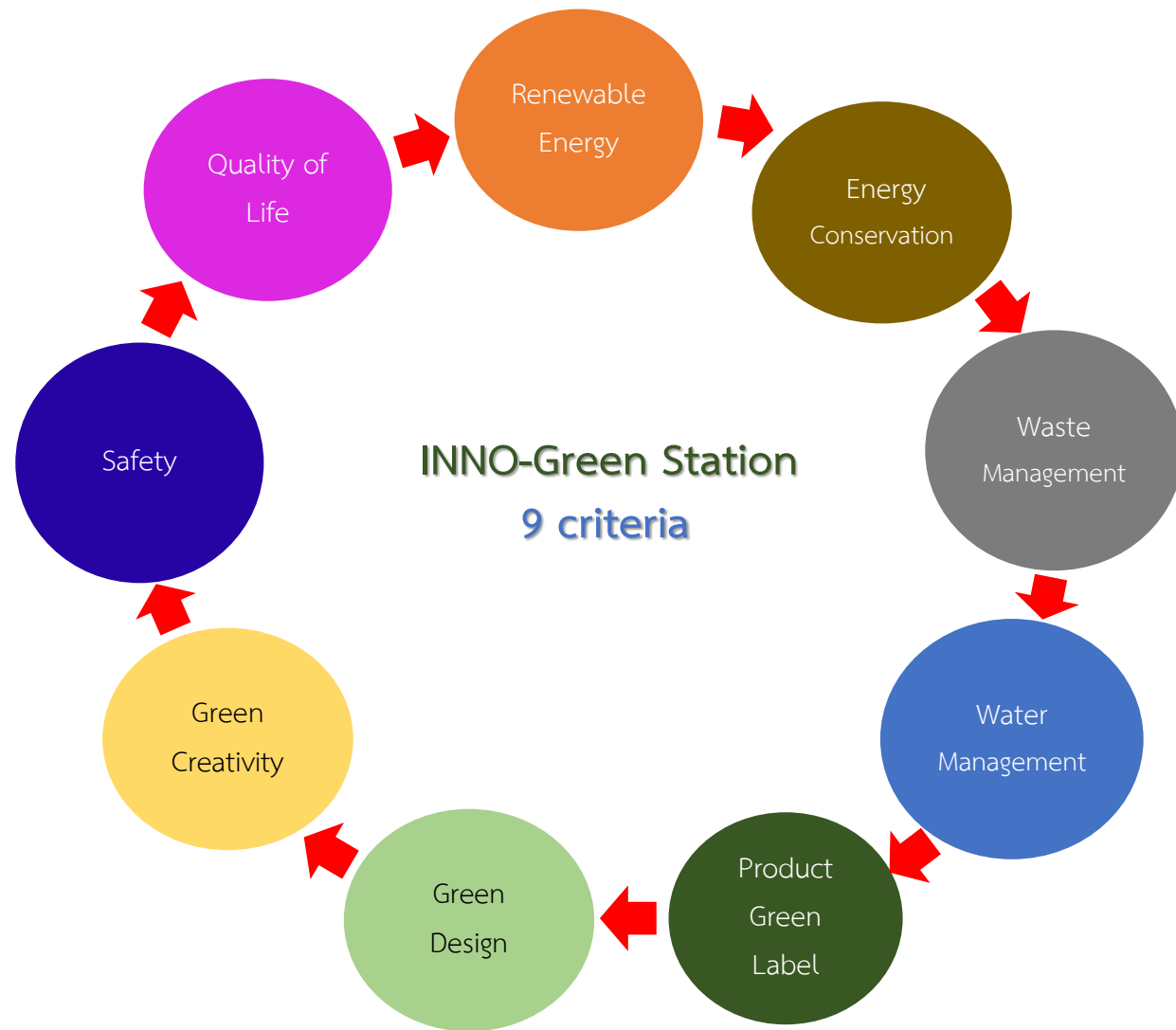
No.	Location	No. of sites
5	Western Region	7
6	Southern Region	31

(2) List of 9 service stations located near the protected area and high biodiversity value area between 2–5-kilometer radius (Medium Risk).

No.	Location	No. of sites
1	Central Region	1
2	Eastern Region	2
3	Northern Region	3
4	Southern Region	3
5	Western Region	-
Total		9

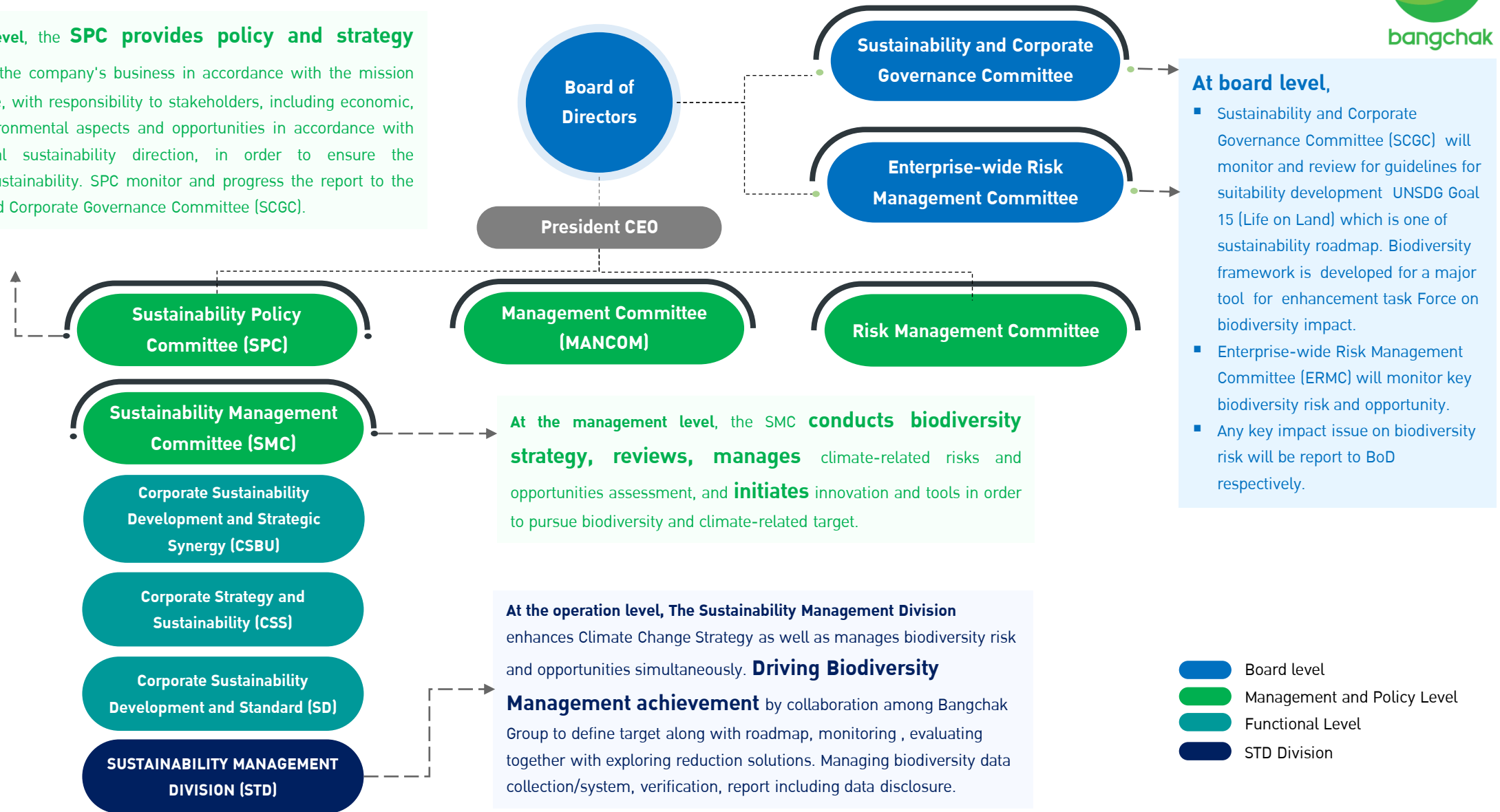
### (3) INNO-Green Station project

the **INNO-Green Station project** in collaboration between Bangchak and the Thailand Environmental Institute (TEI), aimed at developing the criteria for a Greenovative Station to support service stations in becoming environmental prototypes. The assessment consists of 6 criteria based on legal regulations and an additional 9 criteria related to Renewable Energy, Energy Conservation, Waste Management, Water Management, Product Green Label, Green Design, Green Creativity, Safety, and Quality of Life. In the first phase, 6 service stations have successfully obtained certification, and the company has plans to extend the implementation of this project to the remaining service stations.



# Governance

At the policy level, the **SPC** provides **policy and strategy direction** for the company's business in accordance with the mission corporate culture, with responsibility to stakeholders, including economic, social, and environmental aspects and opportunities in accordance with the international sustainability direction, in order to ensure the organization's sustainability. SPC monitor and progress the report to the Sustainability and Corporate Governance Committee (SCGC).



# Governance

## Board's Oversight of Biodiversity & Climate-related Risk and Opportunities

Body	Roles and Responsibilities	Meeting Frequency
Sustainability and Corporate Governance Committee (SCGC)	<ol style="list-style-type: none"> <li>1. <b>Propose</b> corporate governance and sustainability development practices, including <b>biodiversity and climate change related issues</b> to the Board of Directors.</li> <li>2. Supervise the performance of the Board of Directors and the management in accordance with good corporate governance and sustainability development principles.</li> <li>3. Review good corporate governance and sustainability development practices. By comparing with international standards and making recommendations to the Board of Directors for continuous improvement and response to stakeholders' needs and expectation.</li> <li>4. <b>Assign</b> good corporate governance and sustainability development policy, including <b>biodiversity and climate change guideline</b>.</li> <li>5. Perform duties as assigned by the Board of Directors.</li> </ol>	<b>Twice per year at minimum</b>
Enterprise-wide Risk Management Committee (ERMC)	<ol style="list-style-type: none"> <li>1. <b>Propose</b> policy, strategy and goals for <b>risk management including biodiversity and climate-related risk</b>.</li> <li>2. Develop an organization-wide risk management system for continuous efficiency.</li> <li>3. Promote cooperation in risk management at all levels of the organization.</li> <li>4. Supervise the company to have appropriate and effective risk management.</li> <li>5. The Chairman of the Enterprise-wide Risk Management Committee reports the results of the next meeting to the Board of Directors.</li> <li>6. Perform duties as assigned by the Board of Directors.</li> </ol>	<b>Quarterly</b>

# Governance

## Management's role in assessing and managing biodiversity & climate-related risks and opportunities



Body	Roles and Responsibilities	Meeting Frequency
Sustainability Policy Committee (SPC)	<ol style="list-style-type: none"> <li><b>Provide policy and strategy direction</b> for the company's business in accordance with the mission corporate culture, with responsibility to stakeholders, including economic, social, and environmental aspects <b>especially biodiversity, climate change and climate-related risks and opportunities</b> in accordance with the international sustainability direction, in order to ensure the organization's sustainability. <b>The target of Carbon Neutrality by 2030 and Net Zero GHG emission by 2050 has been defined.</b></li> <li>Progress the report to the Sustainability and Corporate Governance Committee (SCGC)</li> </ol>	<b>Minimum half year</b>
Sustainability Management Committee (SMC)	<ol style="list-style-type: none"> <li><b>Conduct the work plans and manage work</b> according to the responsibilities towards various groups of stakeholders according to the direction and framework specified by the Corporate Sustainability Policy Committee to bring innovation and GHG management tools to use within the Bangchak Corporation in order <b>to achieve Carbon Neutrality in 2030 and Net Zero in 2050</b></li> <li><b>Prepare biodiversity, climate strategy and manage opportunities and risks arising from biodiversity and climate change.</b></li> <li>Encourage work processes and development plans or events to <b>increase awareness, knowledge, and understanding of sustainability including biodiversity, climate change.</b> Participating in operations with Bangchak Corporation stakeholders by submitting a report to the working committee or reviewing in order to promote collaboration among affiliated companies in Strategic Corporate Governance Planning (CPG Task Force)</li> <li>Progress the report to the Sustainability and Corporate Governance Committee (SCGC)</li> </ol>	<b>Minimum half year</b>

# Risk Management: Process

## Business Environment

:: MANCOM Meeting ::

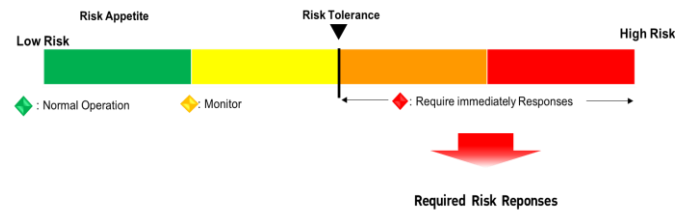


## Strategy: Assumption, Scenario and Budgeting

:: SSS / MANCOM and BoD Meeting ::

## KRI Monitoring

:: ERMC Meeting (Quarterly) ::



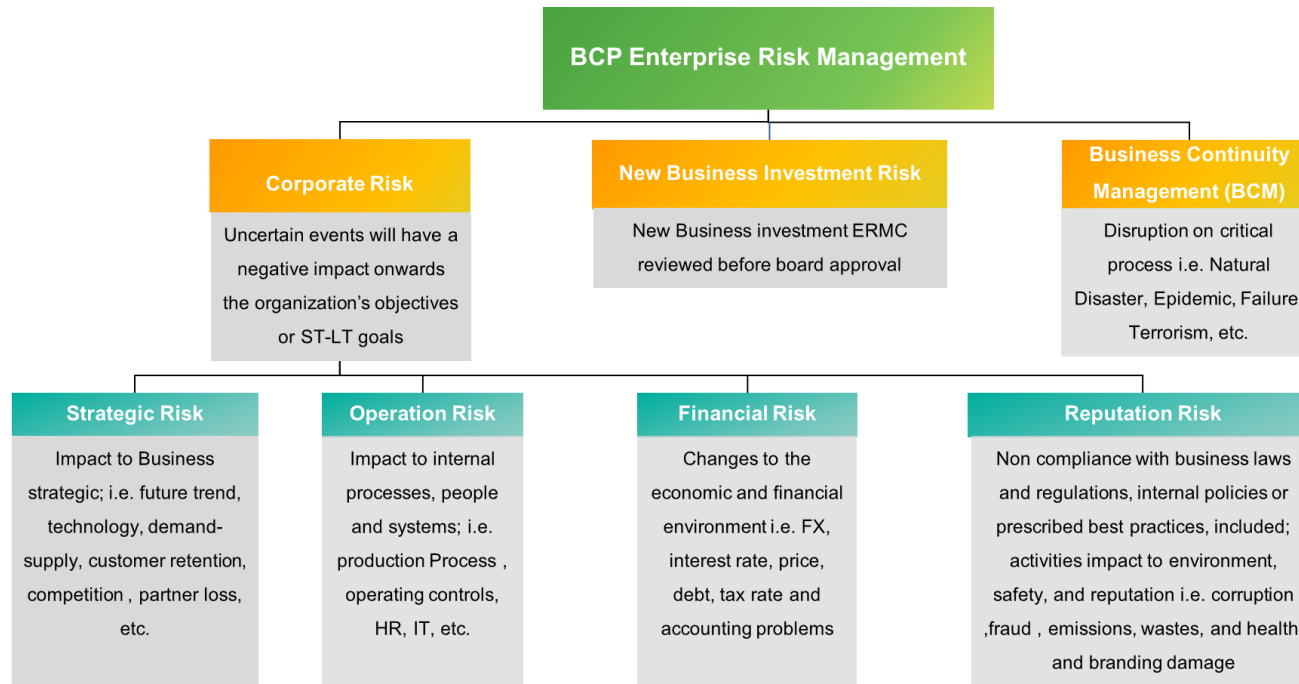
- Used to track the direction of the risk whether the trend has increase or decrease
- Be a warning sign that leads to improvements maintain track of situation
- To follow up on risk management results, whether they are on target or not to have further efficiency improvement

## Corporate Risk & KPIs

:: RMC / MANCOM / ERMC and BoD Meeting ::



# Risk Management: Enterprise Risk Management Policy



- Executives and all employees of the Company are required to manage risk matters by taking an active role and participating in the development of corporate risk management, as well as fully developing an understanding of their responsibilities.
- An effective risk management process must be established at all business stages with regard to the good corporate governance policy and be integrated with the IT management for superior management, with the goals to lower the probability of risk occurrence and their downside impact, mitigate the uncertainties of overall performance, and enhance the chance of success.
- The Company supports the implementation of risk management to achieve success in all parts, utilizing the limited resources to identify, assess and appropriately manage risks.
- The Company encourages and drives risk management to be a part of our corporate culture and be valued by all employees.
- Executives and employees of all levels, including affiliated companies, adhere to the standard risk management system in order to achieve corporate goals and comply with the Environmental, Social and Governance Policy.

Bangchak Corporation's Enterprise Risk Management system based on Committee of Sponsoring Organizations of the Treadway Commission Enterprise Risk Management (COSO ERM) is intended to help the company identify, evaluate, and manage risks in order to lessen potential impact and assist the accomplishment of our long-term goals and business plan.

The Framework and the principles for risk management that Bangchak Corporation has been utilized to systematize the management of risks linked with climate change throughout the company. The purpose of this is to incorporate climate-related risk management into Bangchak Corporation's internal management to ensure that the company can preserve and generate long-term value.