



# 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

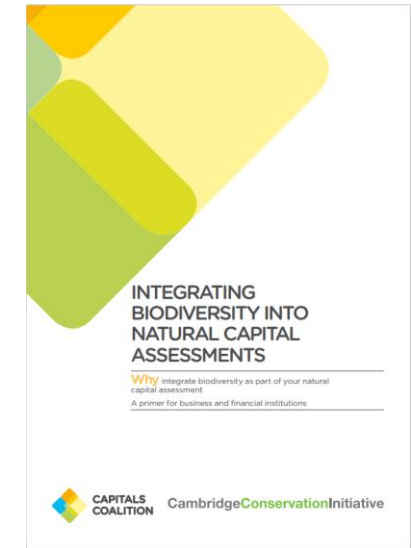
**Disclosure 304-3** Habitats protected or restored

**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

Bangchak Group recognizes the importance of balancing the ecosystem and biodiversity to ensure sustainable business operations and all stakeholders can utilize ecosystems and biodiversity fairly and equitably.

Encourage executives and employees at all levels to be aware of the risks and impact arising from business operations on biodiversity.



Refinery



Oil Terminal



Service stations

**business operations**

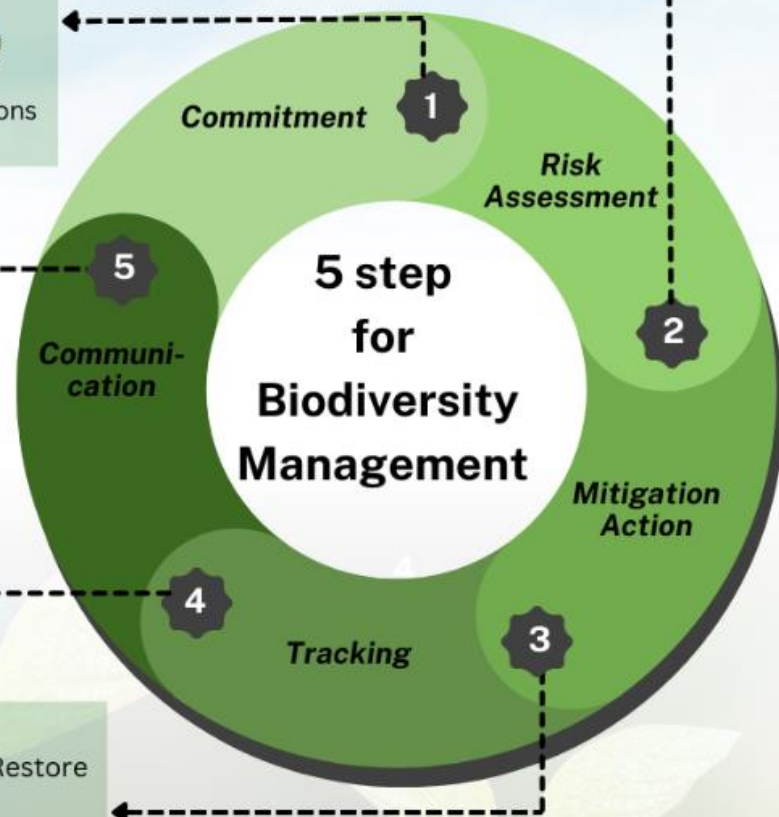
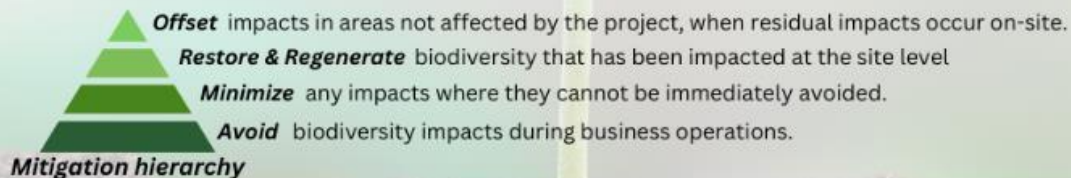


Bangchak Biodiversity Management and Anti-Deforestation Policy

Communicate progress and strategies and engage with Key stakeholders.

Measure & Monitor results of mitigating action.

Minimize any impacts in accordance to Mitigation Hierarchy "Avoid, Minimize, Restore & Regenerate and Offset.



Assess impacts at all stage of business operations throughout the business value chain via below methodology :

## Location:

To identify the impact of operational sites owned and managed in located in or near the Protected Area by "satellite maps (ArcGIS)."



International Union for the Conservation of Nature: IUCN

6 management categories of protected area



UNESCO World Heritage Sites  
cultural and/or natural sites considered to be of 'Outstanding Universal Value'



Ramsar Site  
Sites containing rare or unique wetland types

## Dependency:

To evaluate the significance of its business's dependency on biodiversity by utilizing data sourced from the "ENCORE tool."



## Impact Pollutions:

To assess business impacts base on the impact of pollution at the business operations.



Air



Water



Soil



Waste

# 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 (No Net Deforestation).
4. Operate in accordance with the framework of achieving the goal of zero greenhouse gas emissions in 2050 (Net Zero GHG Emission in 2050) of the Company.

## 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.
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**Practice Guidelines**

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6. Monitor, report and disseminate information to the public about impact assessments and performance in biodiversity and forests in order to ensure transparency.

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 Tejavanjia)  
 Chief Marketing Officer  
 and Senior Executive Vice President

Link to Biodiversity Policy :

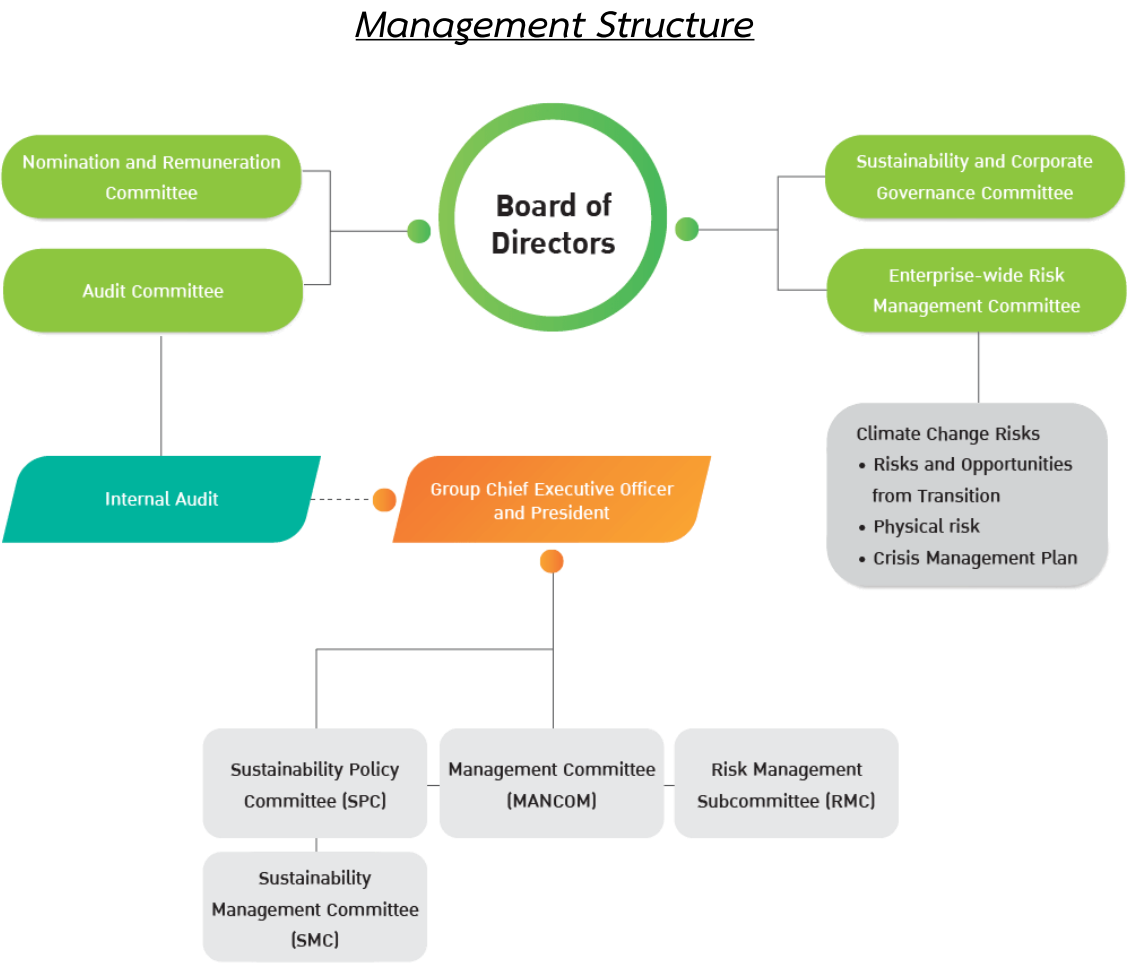
<https://www.bangchak.co.th/storage/document/biodiversity/2023/biodiversity-management-policy-en.pdf>



# 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.



The company has evaluated biodiversity impacts across its entire value chain at **278 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**, **1 site 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



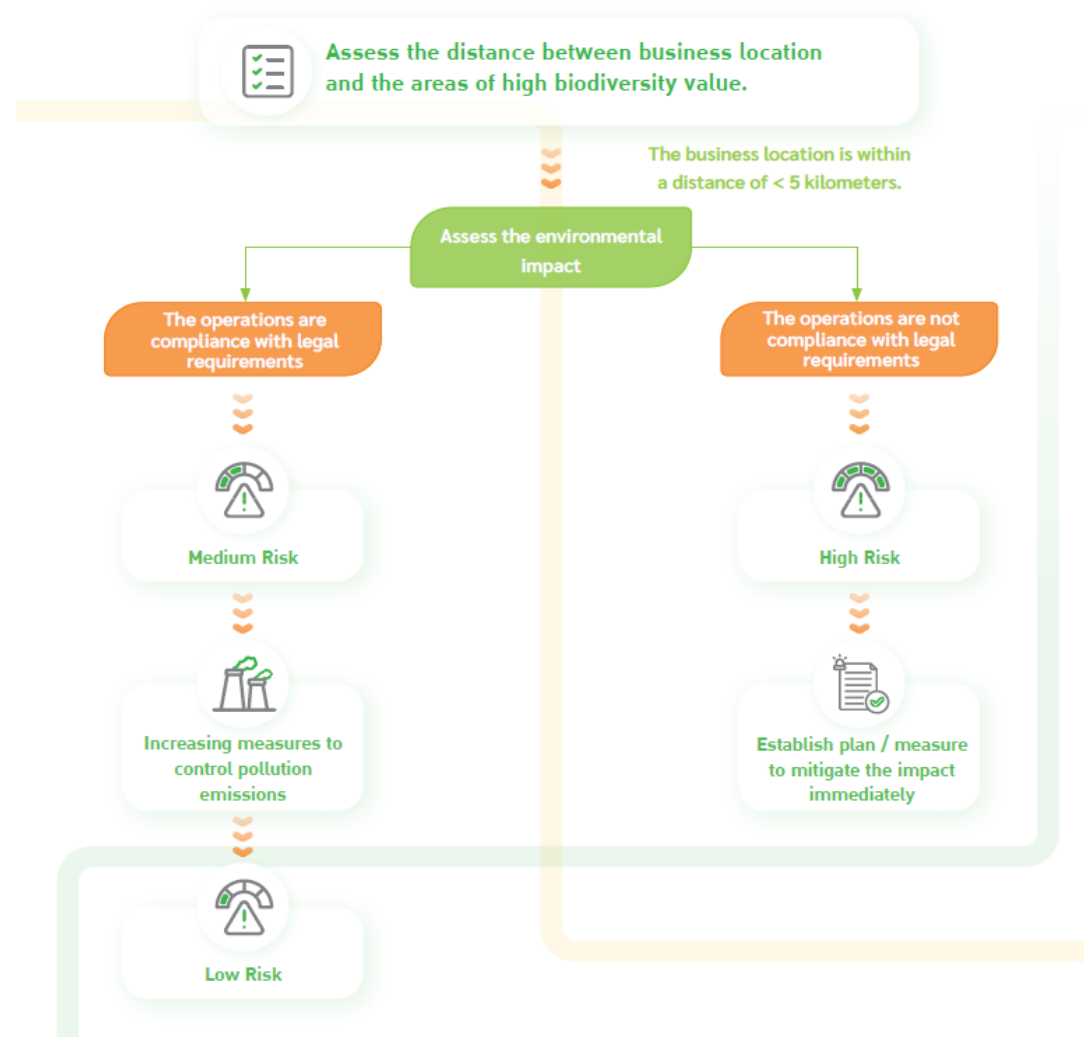
Type of Business	Number of Sites	Site's Name	Location	Total Areas (Hectares)
Own Operation, Oil Refinery & Oil Depot	1	Bangchak Phra Khanong Oil Refinery & Oil Depot	Bangkok, Thailand	76.80
Own Operation, Oil Depot	1	Bang Pa-in Depot	Ayutthaya, Thailand	24.96
Downstream Activities Service Station	276*	See List of Service Stations in Appendix (1)	scattered in 6 regions of Thailand (Central, Northern, Southern, North-East, Western and Eastern)	216.73
Total				318.49

Consider only COCO and CODO service stations.  
\*Data as of 17.07.2023

## 2. Assessment ➤ Risk Assessment

### 2.1 Assessment of the impact on biodiversity from business operations

The Company assesses the biodiversity impact in the dimension of the location of business operation area together with the environmental dimension by considering the distance of the business operation area from areas of high biodiversity value namely UNESCO World Heritage sites, Ramsar Convention wetlands, and conservation areas designated by the International Union for Conservation of Nature (IUCN) within a radius of 5 kilometers, using the geographic information system (GIS) program to screen for business operation areas located within a radius of less than 5 kilometers from areas of high biodiversity value. Then, the environmental impact on air, water, soil, and waste will be assessed, with consideration given to compliance with legal requirements in operations. Subsequently, measures are devised to mitigate these impacts in line with the identified risk levels. The company mandates the installation of Vapor Recovery Systems at all service stations located within a radius of less than 5 kilometers from areas of high biodiversity value



## 2. Assessment ➤ Risk Assessment ➤ The Areas of High Biodiversity Value

### 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 ➤ The Areas of High Biodiversity Value

### 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.



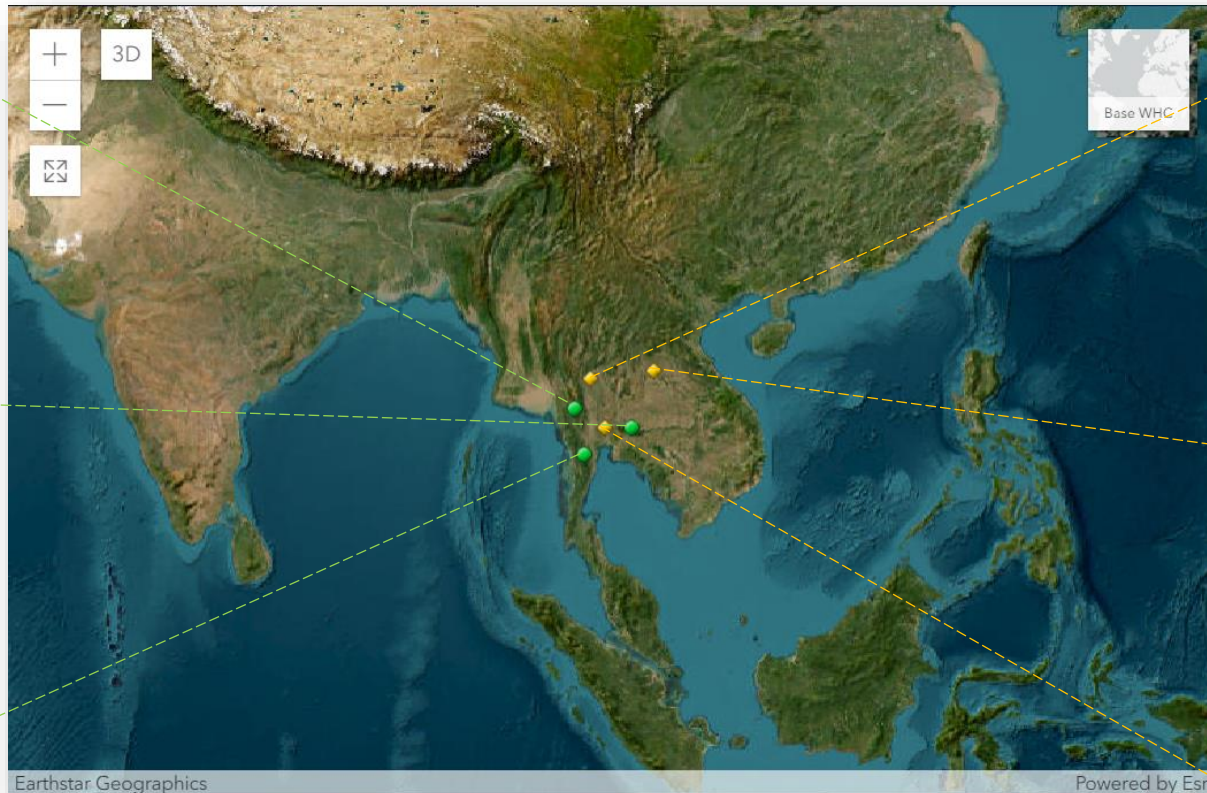
1. Thungyai-Huai Kha Khaeng Wildlife Sanctuaries (1991)



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 ➤ The Areas of High Biodiversity Value

### 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.

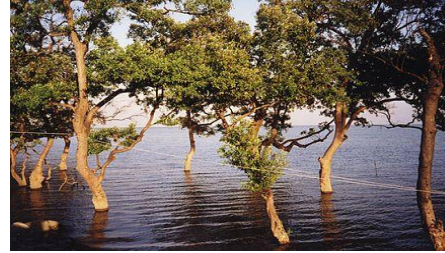
1. Kuan Ki Sian of the Thale Noi Non-Hunting Area



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-8. Kaper Estuary - Laem Son National Park - Hunting Area -Trang River Estuaries



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



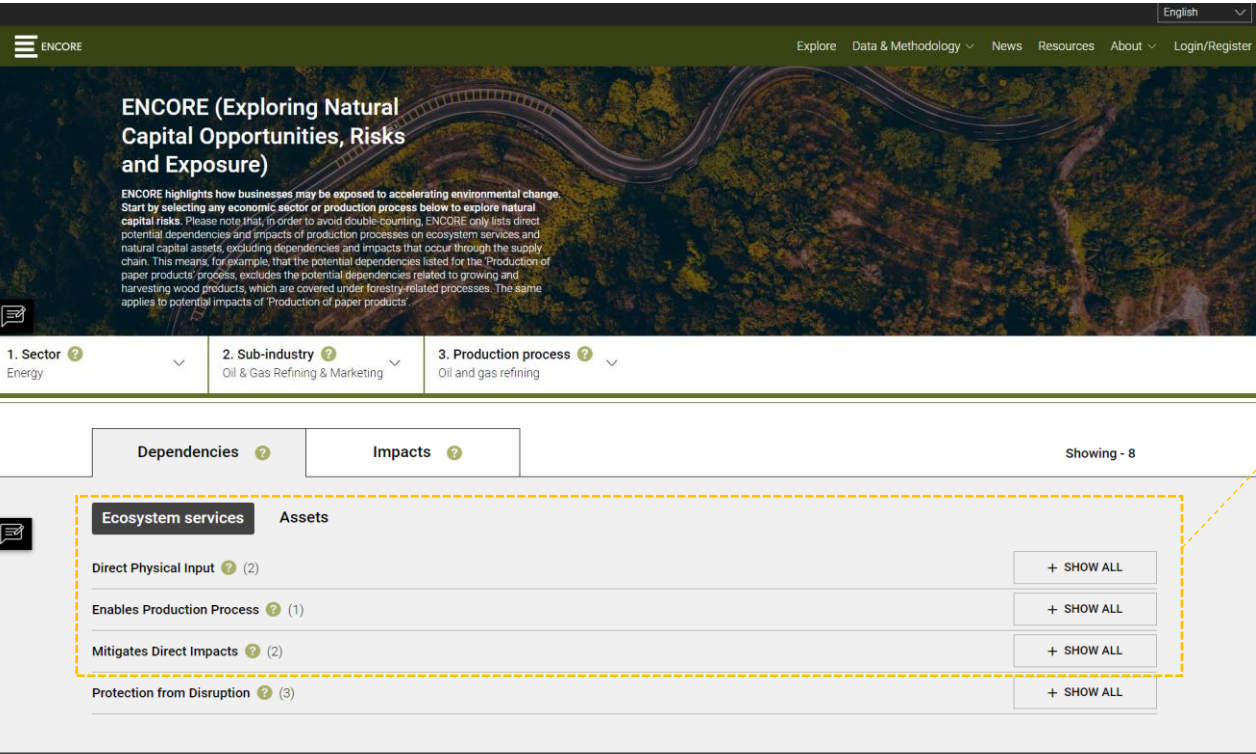
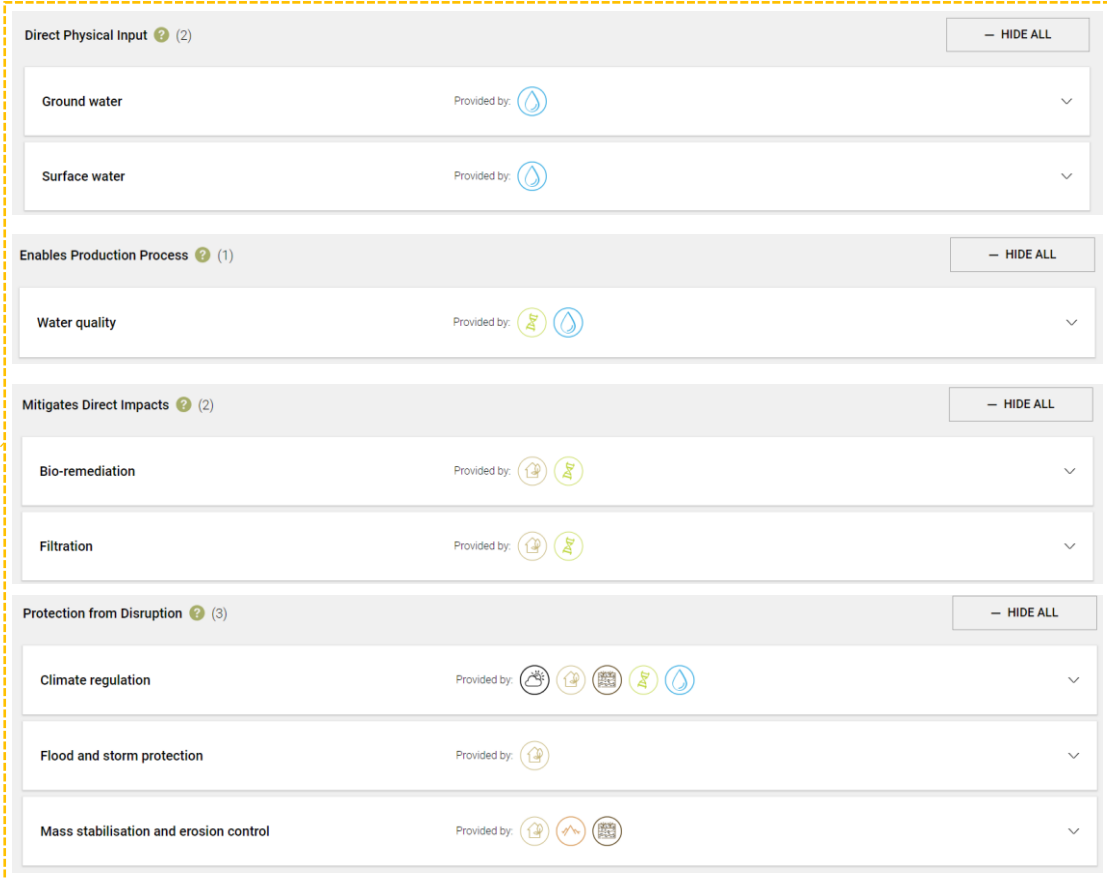


## 2. Assessment ➤ Risk Assessment

### 2.2 Assessment of dependencies on nature in business operations

The Company considers its dependencies and use of ecosystems in business activities, including physical aspects such as the use of groundwater or surface water, control and prevention aspects such as climate control, climate change, flood and storm prevention, prevention of soil degradation, etc. The assessment is done using the Exploring Natural Capital Opportunities, Risks and Exposure (Encore) tool.

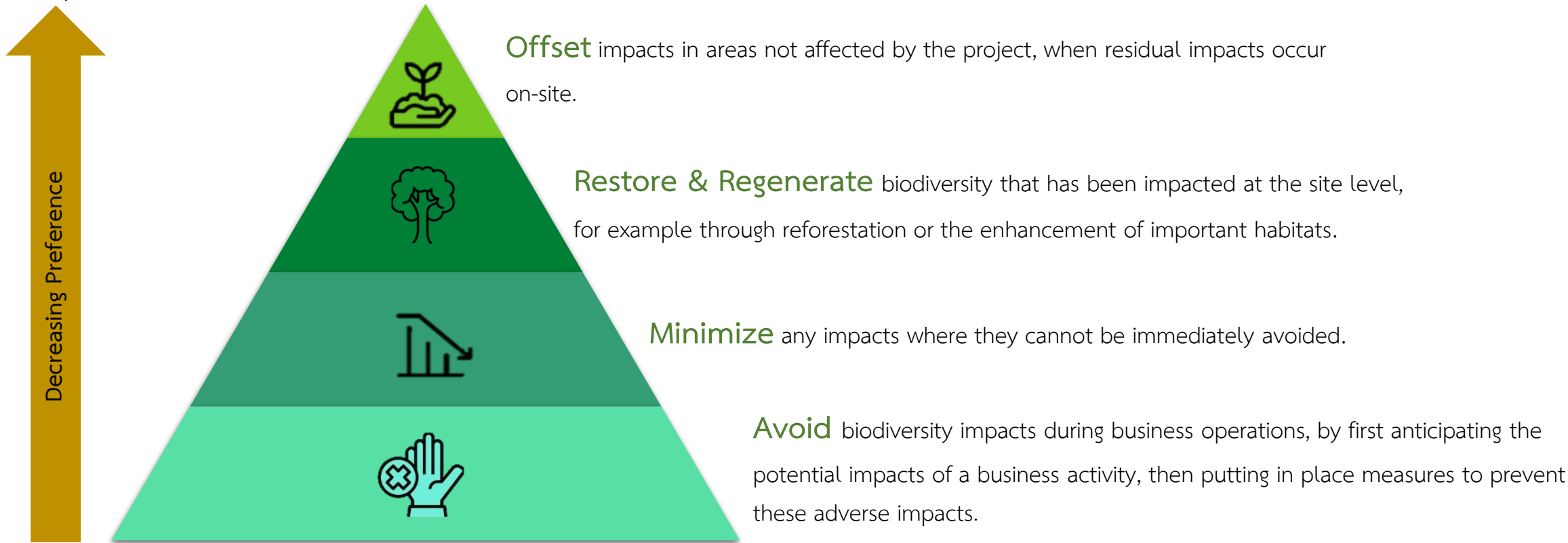
#### Business Dependencies exploring by Encore

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

### 3. Mitigation Action & Tracking

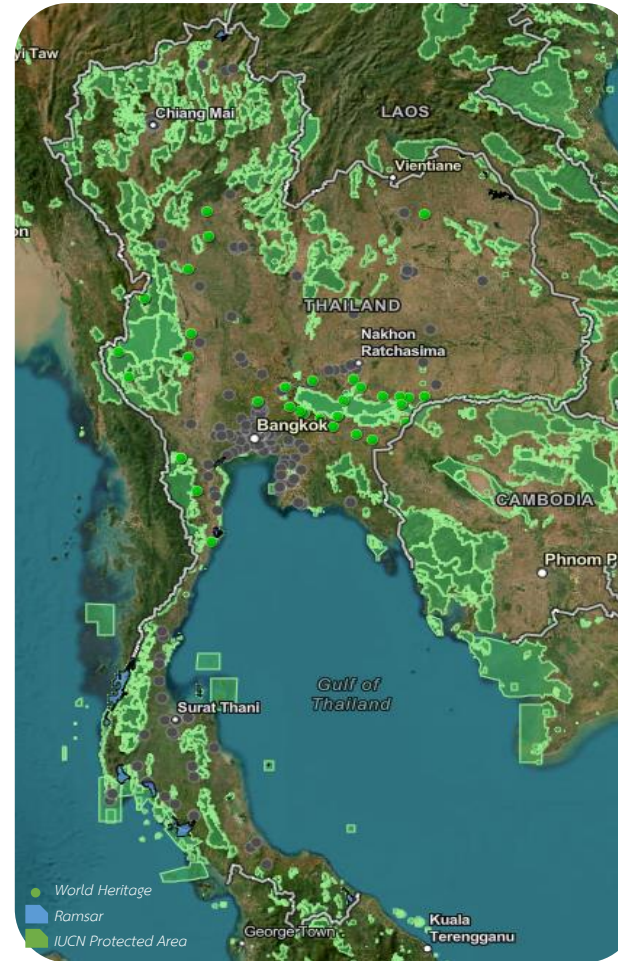
**Mitigation action** - the management plan are relied on the mitigation hierarchy that mention in the Integrating Biodiversity into Natural Capital Assessments framework. The mitigation hierarchy consist of 4 stages compromising a sequence of actions, in order of priority, to anticipate and mitigate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



**Tracking** - Monitor and report the results of operations, and identify opportunities for continuous improvement and development.

# Assessment Results

1. The assessment results of the distance between business operation areas with areas of high biodiversity value found that 22 service stations are within less than 5 kilometers radius from areas of high biodiversity value. This includes service stations in Central region comprising 3 service stations in Saraburi and Samut Sakhon provinces with 1.82 hectares total area, Eastern region comprising 8 service stations in Chonburi province with 4.74 hectares total area, Western region comprising 1 service station in Prachuap Khiri Khan province with 0.97 hectares total area, Northern region comprising 4 service stations in Chiang Mai province with 0.99 hectares total area, Southern region comprising 6 service stations in Surat Thani, Krabi, and Phuket provinces with 3.55 hectares total area as shown on the map. With subsequent environmental impact assessment for the area, **it was found that all the 22 service stations have a low risk of creating severe impacts on biodiversity**; hence, further monitoring and surveillance will continue to be carried on.



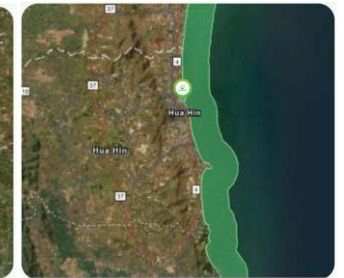
*The map illustrated the location of IUCN protected area , UNESCO World Heritage sites and Ramsar Convention wetlands in Thailand.*



Central Region



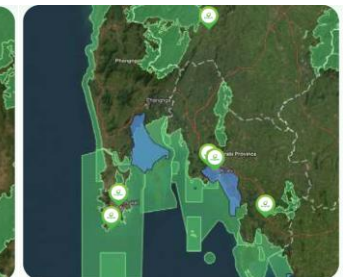
Eastern Region



Western Region



Northern Region



Southern Region



## Assessment Results (Cont.)

2. The assessment results of the dependencies on nature in business operations found that 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, the business operations rely on nature to protect against floods and storms. The Company prepares a crisis management plan for the case of acute flooding and closely monitors the flood situation and water levels in the operating area.

**Table 1 : 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

**Table 2 : 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

# Mitigating Actions and Tracking

The screening business operation areas with location-related risks, it was found that 22 out of 278 sites are situated near areas of high biodiversity value within a 5-kilometer radius. However, upon further consideration of environmental impacts, it was found that all 22 sites have a low risk of causing significant harm to biodiversity. Nevertheless, the company still maintains continuous monitoring and surveillance to avoid or minimize impacts on biodiversity in the area. (see Table 7). Additionally, there are medium risk related to dependency of flood and storm protection. The company also has the mitigation action as shown in Table 6.

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>

# Mitigating Actions and Tracking

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

Risk		Mitigating Action		Results Tracking
Pollutions	Avoid	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>	<ul style="list-style-type: none"> <li>Complying with the law or exceeding legal specifications</li> </ul> <div>   </div> <div> SHEE Policy SHEE-MK Policy </div>
		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>	
	Minimize	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 3Rs 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>

# 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</li> </ul> <p><b>Status of Phase 1</b> : Completed</p> <ul style="list-style-type: none"> <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.</li> </ul> <p><b>Status of Phase 2</b> : On progress</p> <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 (1). 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>

# 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 company has prioritized the conservation of green spaces and implemented tree planting projects to preserve biodiversity within the operating areas. Dead trees are promptly replaced with new plantings, and additional planting initiatives are undertaken in suitable areas. 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 Phra Khanong Refinery and Oil Depot has become another safe area for birds including both resident and migratory. The 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 is related to surveying the number of bird within the refinery premises, which serves as one of biodiversity index in the area. The company has a plan to conduct annual bird surveys to monitor changes in biodiversity. Simultaneously, it raises awareness about environmental conservation among both employees and the surrounding community.



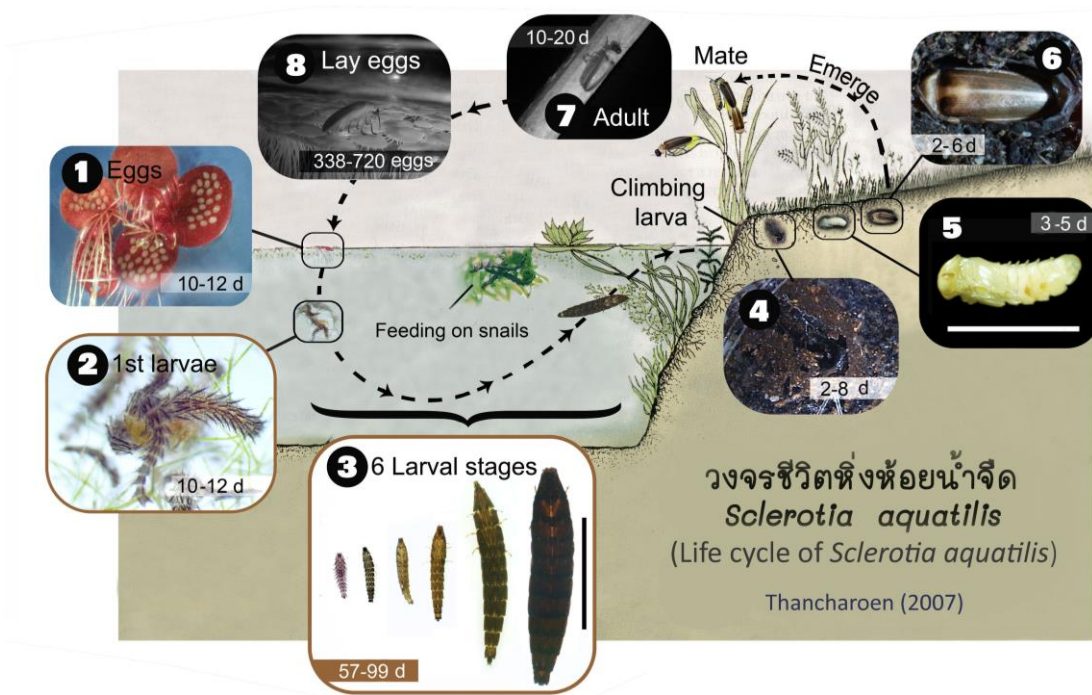
### Results Tracking :

- Maintaining the size of the green area within the project site at approximately 72.21 acres, or about 15.63% of the total project area of around 462 acres, involves the cultivation of various tree species. This ensures the preservation of biodiversity and contributes to the ecological balance of the area.
- According to the survey of bird species and population within the operational area, a total of 42 bird species were identified, comprising more than 336 individuals, including both resident and migratory birds.

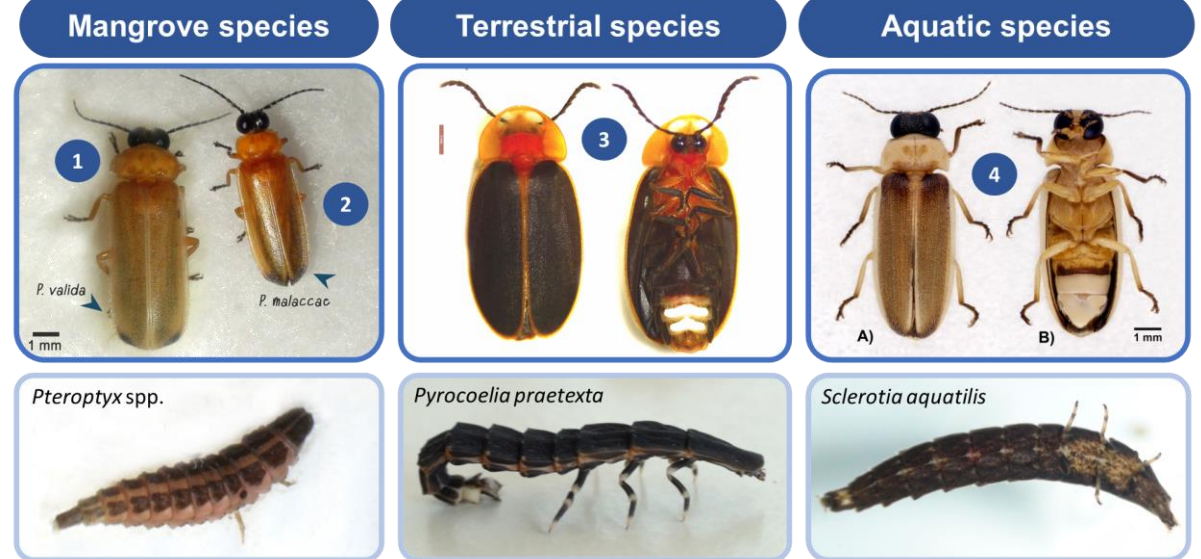


# Sen Thang Hing Hoi, The Path of Conservation Project

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 Phuang 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 quailis* (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 60 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.
- Organize projects activities:
  - Support for continuous landscape improvement
  - Training in conservation knowledge, junior guides
  - Lamphu forest planting activities; creating walkways, bridges, embankments
  - Media and public announcement for World Firefly Day; academic seminar “A Gathering of Firefly Lovers”

## The main threats to firefly populations



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## Supporting Project for the Bang Nam Phueng Large Farm Stingless Beekeeper Group

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.
- 600 bee hives being cultivated
- Number of flowers and fruit that serve as food sources for the bees  $\geq 12$  types, such as coconut, xanthostemon chrysanthus, banana, mango, lime, langsat, orange, etc. (research from samples of stingless bee honey by KMUTNB, Rayong Campus) The productivity has improved, and some areas have trees/plants that have never fruited before, such as kaffir lime, bilimbi, etc
- Products from stingless bee honey and others, totaling 8 types: 1. Honey 2. Soap (bar) 3. Premium soap (bar) 4. Shower cream 5. Shampoo 6. Lotion 7. Balm 8. Mosquito spray (herbal)



# 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 :

- Plant forests/trees for a total of 1,570 trees in an area of 19.71 rai, 11 plots (100%), by planting native tree species mixed with other suitable species, such as Lamphu, Kong Kang, Kluk, Ruang Phung, Takhian, Payom, Thong Lang, Makhamong, etc
- Organize activities for executives and employees to plant trees for 4 times, with 435 participating executives and employees





# Punsook Urban Greenery Project

The Company operates the Punsook Urban Greenery Project to create, enhance, and increase green areas, which is one of the important parts in leading to biodiversity. In 2023, continuous work was carried out at the community level through the planting of supplementary trees in the vicinity of the Bangchak oil refinery, Phra Khanong District, Bang Na District, in cooperation with Bangkok Metropolitan Administration, Phra Khanong District Office, Bang Na District Office, Expressway Authority of Thailand, community and schools in each area and the area of Khung Bang Kachao, Bang Nam Phueng Sub-district, Phra Pradaeng District, Samut Prakan Province, in cooperation with the Bang Nam Phueng Sub-district Administrative Organization, Bang Nam Phueng Sub-district community leaders, the Royal Forest Department, Green Area Management Center, Nakhon Khuean Khan, supplemented with work through the Our Khung Bangkachao project.



## Results Tracking :

- Enhance green areas through the planting of trees in the vicinity of the Company's operating area, Bangchak oil refinery, Phra Khanong District, and Bang Na District, totaling 15,550 trees. The tree species planted were selected for their suitability, in cooperation with the Phra Khanong District Office and Bang Na District Office. Example species include Ratchaphruek, Champi, Rong Phung, Thong Urai, Cha Hok Kian, Kem, etc
- Enhance green areas through the planting of trees in the Company's community relations operating area, Khung Bang Kachao area, Bang Nam Phueng Sub-district, Phra Pradaeng District, Samut Prakan Province, totaling 900 trees. The tree species planted were native species mixed with other species suitable for planting in the area, such as Pilangkasat, Kamphu, Yang Na, etc



# Appendix

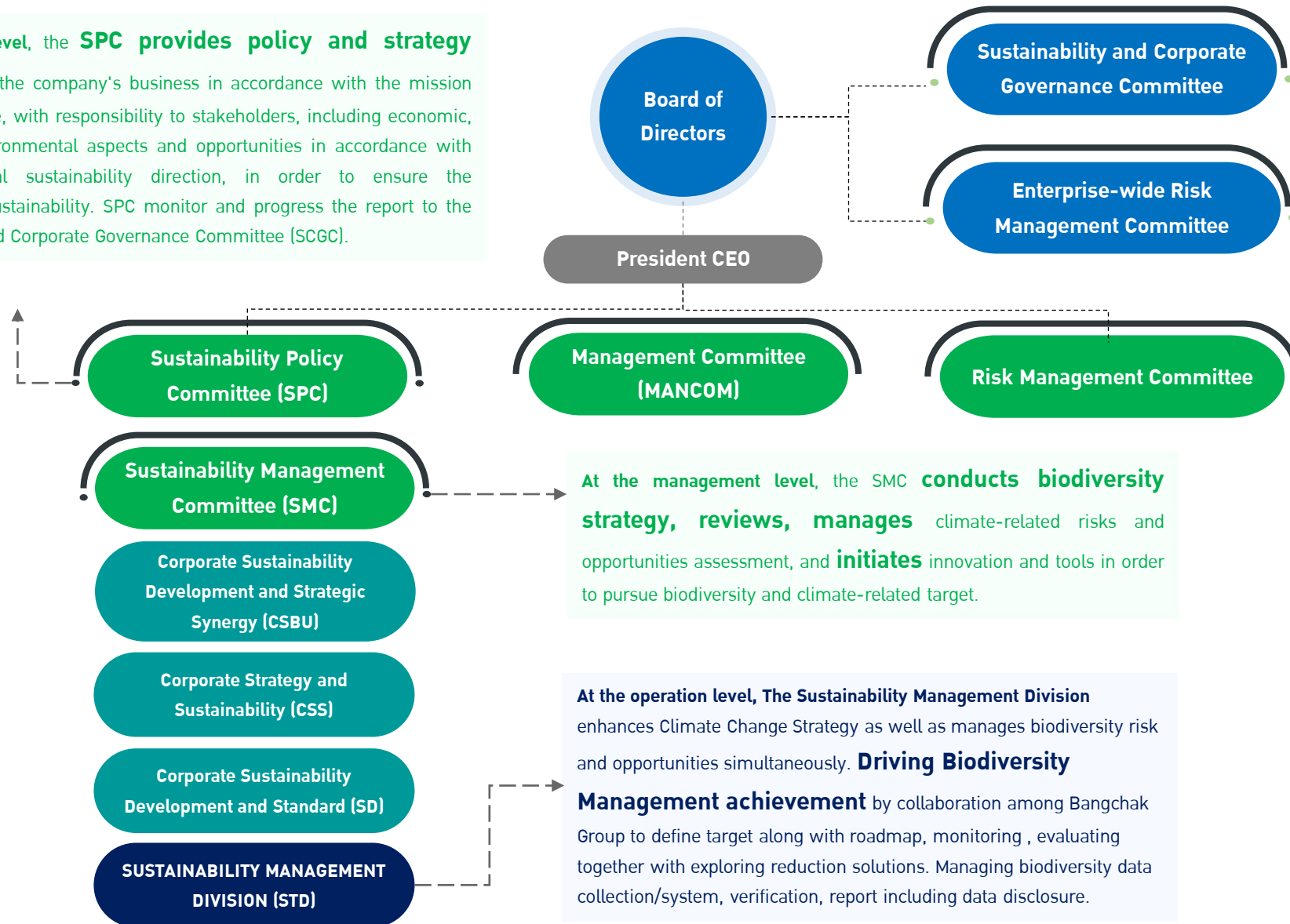
# (1) INNO-Green Station project

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).



## At board level,

- Sustainability and Corporate Governance Committee (SCGC) will monitor and review for guidelines for sustainability development UNSDG Goal 15 (Life on Land) which is one of sustainability roadmap. Biodiversity framework is developed for a major tool for enhancement task Force on biodiversity impact.
- Enterprise-wide Risk Management Committee (ERM) will monitor key biodiversity risk and opportunity.
- Any key impact issue on biodiversity risk will be report to BoD respectively.

At the management level, the SMC **conducts biodiversity strategy, reviews, manages** climate-related risks and opportunities assessment, and **initiates** innovation and tools in order to pursue biodiversity and climate-related target.

At the operation level, The Sustainability Management Division enhances Climate Change Strategy as well as manages biodiversity risk and opportunities simultaneously. **Driving Biodiversity Management achievement** by collaboration among Bangchak Group to define target along with roadmap, monitoring , evaluating together with exploring reduction solutions. Managing biodiversity data collection/system, verification, report including data disclosure.

- Board level
- Management and Policy Level
- Functional Level
- STD Division

# 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><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>Supervise the performance of the Board of Directors and the management in accordance with good corporate governance and sustainability development principles.</li> <li>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><b>Assign</b> good corporate governance and sustainability development policy, including <b>biodiversity and climate change guideline</b>.</li> <li>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><b>Propose</b> policy, strategy and goals for <b>risk management including biodiversity and climate-related risk</b>.</li> <li>Develop an organization-wide risk management system for continuous efficiency.</li> <li>Promote cooperation in risk management at all levels of the organization.</li> <li>Supervise the company to have appropriate and effective risk management.</li> <li>The Chairman of the Enterprise-wide Risk Management Committee reports the results of the next meeting to the Board of Directors.</li> <li>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 ::

01

02

03

## Corporate Risk & KPIs

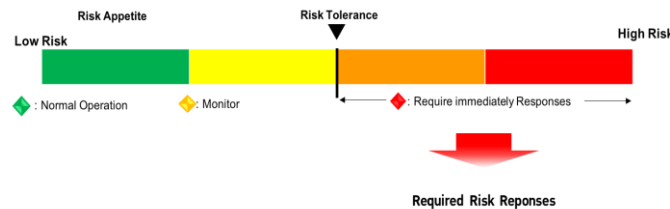
:: RMC / MANCOM / ERM and BoD Meeting ::

## Strategy: Assumption, Scenario and Budgeting

:: SSS / MANCOM and BoD Meeting ::

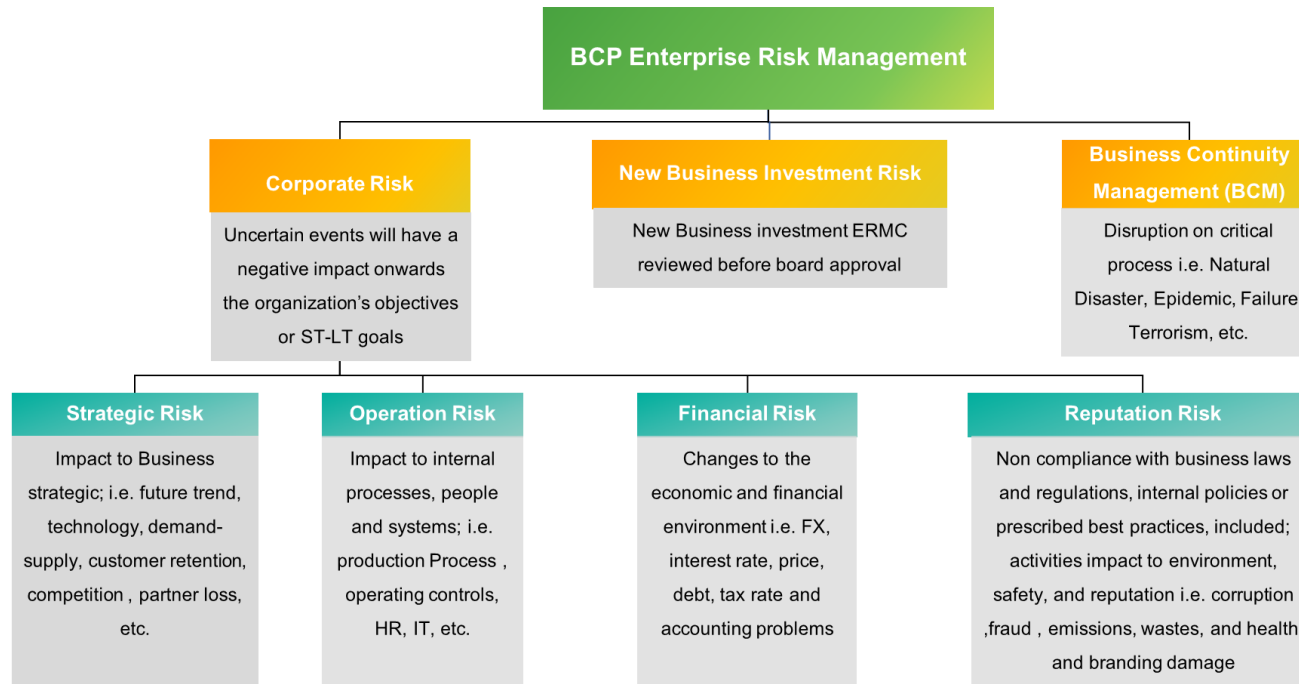
## KRI Monitoring

:: ERM and BoD 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

# Risk Management: Enterprise Risk Management 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.

- 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.