THAIOIL PUBLIC COMPANY LIMITED

Thaioil and Subsidiaries Biodiversity Management

JULY 2025

Content: Thaioil and Subsidiaries Biodiversity Management

Remarks: * Some elements of ***Step 5: Mitigation and Management Actions*** are integrated into ***Step 2: Biodiversity Exposure and Assessment*** and ***Step 3: Biodiversity Risk Assessment*** to provide a more comprehensive and interconnected analysis.

Thaioil and Subsidiaries's Biodiversity Management

Our Commitment

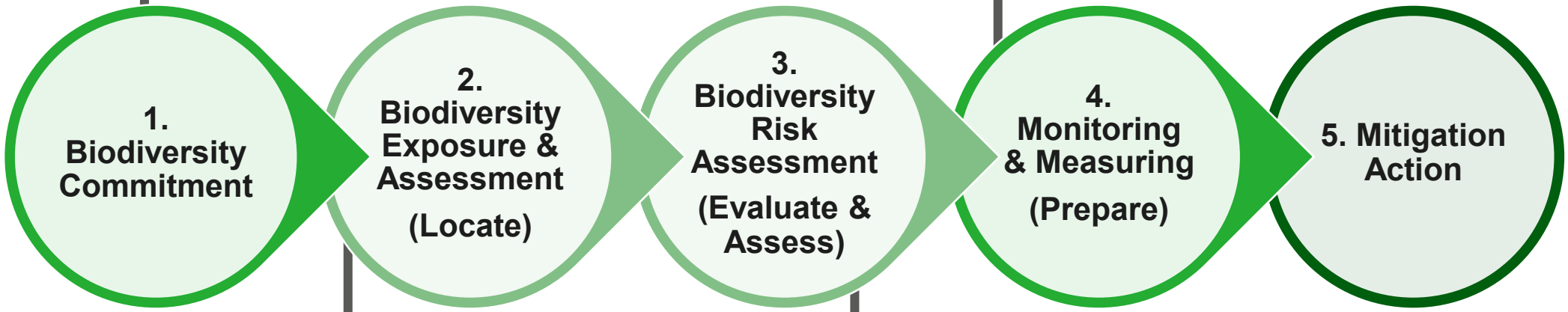
"4Ns" commitment since 2035-2050.

Monitor & Measuring

Setting measures and indicators for monitoring the biodiversity management performance

Mitigation Action

Development and implementation of mitigation actions plan based on the Mitigation Hierarchy and AR3T framework.



Biodiversity Risk Assessment across value chain

- Sensitive location screening
- Impact and dependency evaluation
- Risk assessment

Biodiversity Exposure & Assessment

- Exposure to significant biodiversity impact, or in proximity to critical biodiversity for Thaioil and Subsidiaries' material site prioritization
- Biodiversity Management Plan (BMP) development

Introduction and Objectives

Our Commitment - by applying the ***"4Ns" commitment***

No Deforestation Commitments

- By **2035**, Thaioil and Subsidiaries aim to achieve **No Net Deforestation (NND)**, ensuring that any forest loss from operations will be fully offset through restoration or reforestation activities.
- By **2040**, Thaioil and Subsidiaries commits to **No Gross Deforestation (NGD)**, ensuring that no natural forests will be cleared for any future business development.

Biodiversity Commitments

- By **2040**, Thaioil and Subsidiaries targets achieving **No Net Loss (NNL)** of biodiversity, with a commitment to avoid operational encroachment into biodiversity-sensitive or high conservation value areas.
- By **2050**, Thaioil and Subsidiaries aspires to deliver a **Net Positive Impact (NPI)** on biodiversity. To achieve this, the company will apply the **Mitigation Hierarchy** and the **AR3T framework**, **Avoid, Reduce, Regenerate, Restore, and Transform**, to address residual impacts and proactively minimize future biodiversity risks.

To fulfill these commitments, Thaioil and Subsidiaries aims to systematically manage biodiversity risks and impacts across its operations, ensuring alignment with nature-positive goals.

Assessment Objectives

To assess the potential biodiversity risks, and impacts and dependencies associated with a company's operations, as a location-specific approach for better preparation of the management approach by integrating the identified biodiversity risks into multi-disciplinary company-wide risk management processes.

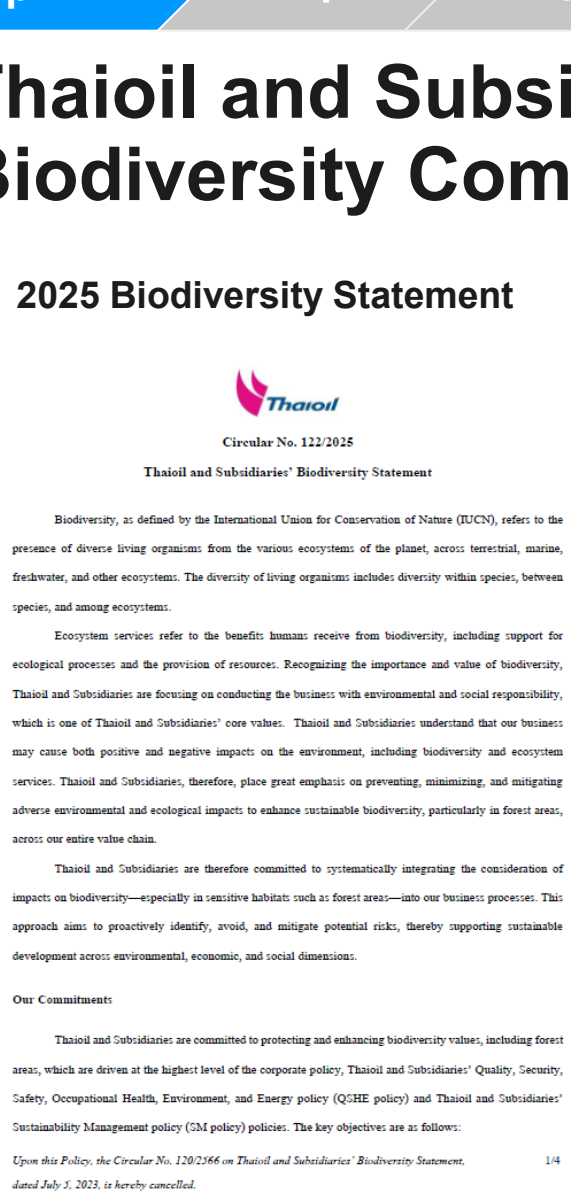
Transparency

- The biodiversity risk assessment will be performed annually to ensure the management approach remains updated.
- The updated assessment results and management approach will be communicated to address stakeholder expectations regarding environmental challenges and solutions.

1 Thaioil and Subsidiaries' Biodiversity Commitments

Thaioil and Subsidiaries' Biodiversity Commitments

2025 Biodiversity Statement



Thaioil

Circular No. 122/2025

Thaioil and Subsidiaries' Biodiversity Statement

Biodiversity, as defined by the International Union for Conservation of Nature (IUCN), refers to the presence of diverse living organisms from the various ecosystems of the planet, across terrestrial, marine, freshwater, and other ecosystems. The diversity of living organisms includes diversity within species, between species, and among ecosystems.

Ecosystem services refer to the benefits humans receive from biodiversity, including support for ecological processes and the provision of resources. Recognizing the importance and value of biodiversity, Thaioil and Subsidiaries are focusing on conducting the business with environmental and social responsibility, which is one of Thaioil and Subsidiaries' core values. Thaioil and Subsidiaries understand that our business may cause both positive and negative impacts on the environment, including biodiversity and ecosystem services. Thaioil and Subsidiaries, therefore, place great emphasis on preventing, minimizing, and mitigating adverse environmental and ecological impacts to enhance sustainable biodiversity, particularly in forest areas, across our entire value chain.

Thaioil and Subsidiaries are therefore committed to systematically integrating the consideration of impacts on biodiversity—especially in sensitive habitats such as forest areas—into our business processes. This approach aims to proactively identify, avoid, and mitigate potential risks, thereby supporting sustainable development across environmental, economic, and social dimensions.

Our Commitments

Thaioil and Subsidiaries are committed to protecting and enhancing biodiversity values, including forest areas, which are driven at the highest level of the corporate policy, Thaioil and Subsidiaries' Quality, Security, Safety, Occupational Health, Environment, and Energy policy (QSHE policy) and Thaioil and Subsidiaries' Sustainability Management policy (SM policy) policies. The key objectives are as follows:

Upon this Policy, the Circular No. 120/2566 on Thaioil and Subsidiaries' Biodiversity Statement, dated July 5, 2023, is hereby cancelled.

1/4

Sustainability Management Policy

Thaioil and Subsidiaries' Sustainability Management Policy

(Translated)

Thaioil and Subsidiaries are determined on "Empowering Human Life through Sustainable Energy and Chemical" in line with the principle and guidance on social responsibility by creating collaboration, trustworthiness, and value for stakeholders through operational excellence, transparency, and continuous innovation. To achieve the sustainable growth in three dimensions: Environmental, Social, and Governance whilst contributing to the realization of Sustainable Development Goals, the key attributes of Thaioil and Subsidiaries' sustainability management policy are identified as follows:

Environment	Conduct business in an environmentally friendly manner that embeds the principles of resource efficiency, control and minimize the impact on the ecosystem, as well as mitigate and be more resilient to climate change by applying the circular economy principle.
Social	Conduct business responsibly by respecting human rights principles and protecting labor rights, safety, health, and elevate working environment whilst continuously develop knowledge, skills and competency of employees. Apply organization core competency to create values and improve the quality of life of the community and society for sustainable growth.
Governance	Comply with the good corporate governance principle, ethics, laws, obligations, and regulations in all countries of operations and adhere to international practices and guidelines. Disclose information and performance transparently. Manage risk, adapt to change, and seek opportunities to ensure sustainable business growth and reduce the impact from operations throughout the value chain whilst balancing the interests of a diverse group of stakeholders.

Thaioil and Subsidiaries strives to conduct business with responsibility for society, environment, biodiversity, and ecosystem preservation. The Company has integrated the environmental impact assessment on biodiversity and forest areas into the business operation.

Thaioil and Subsidiaries has committed to No Net Deforestation by implementing reforestation and tree planting to compensate for any loss of forest from our business activities. This commitment ensures that the Company has controlled and minimized the environmental impacts and drives the business towards No Net Loss (NNL) of terrestrial and aquatic biodiversity. Thaioil and Subsidiaries recognizes the invaluable nature of biodiversity as a shared resource and strives to contribute to its preservation for the benefit of all.

Thaioil and Subsidiaries has elevated its commitment to biodiversity through the implementation of Thaioil and Subsidiaries' Quality, Security, Safety, Occupational Health, Environment, and Energy Management (QSHE) policy and Thaioil and Subsidiaries' Biodiversity Management Statement, and Thaioil and Subsidiaries' Sustainability Management Policy, which endorsed by the Board of Directors and CEO. This demonstrates the Company's dedication to driving continuous improvement in its management approach.

Source: https://thaioilwebsite.s3.ap-southeast-1.amazonaws.com/wp-content/uploads/2024/07/01064626/202105241204_TOPSustainabilityManagementPolicy_ENG-2.pdf

2 Biodiversity Exposure and Assessment

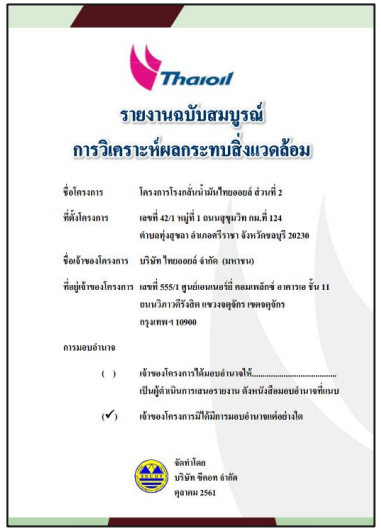
Biodiversity Exposure and Assessment

To ensure that all aspects of Thaioil and Subsidiaries' operations that may negatively impact the environment and compromise ecosystem integrity are carefully and thoroughly assessed, all projects are subject to Environmental Impact Assessments (EIAs). These EIAs include dedicated assessments of biodiversity impacts specific to each operational site.

The EIA results confirm that Thaioil and Subsidiaries' direct operations are **not located in biodiversity-sensitive or protected areas**. Therefore, the total exposure is 0 hectares.

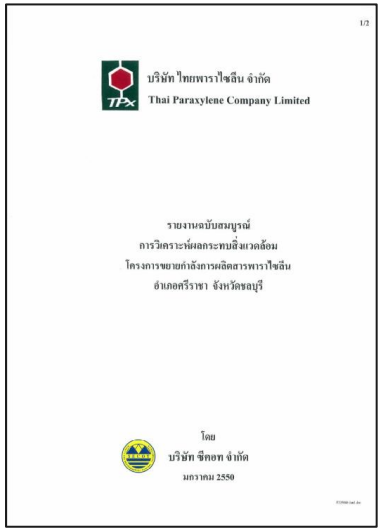
Moreover, the EIA studies comprehensively assess environmental impacts, covering both **physical and biological aspects**, including **terrestrial and aquatic ecosystems**.

Please access the full Thaioil and Subsidiaries' EIA reports at: https://eia.onep.go.th/eia/owner-detail?owner_id=5565



EIA: Thaioil Pipeline Construction Project, Phase 2 (TOP)

EIA: The Base Oil Refinery Project - Report on the Project Detail Modification (4th Revision) (TLB)



EIA: Paraxylene Production Capacity Expansion Project (TPX)

EIA: Project on the Production of Precursors for Cleaning Products (3rd Expansion) (LABIX)

EIA: Mechanical Energy Power Plant Project (1st Expansion) (TOP SPP)

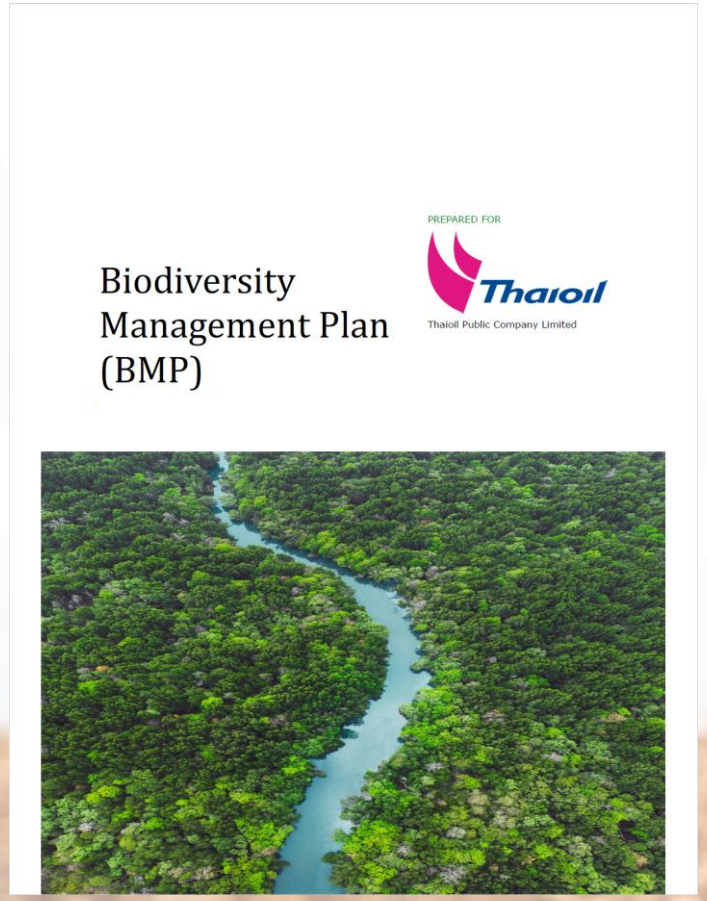
EIA: Short-Chain Chemical Manufacturing Plant Project (1st Expansion) (SAKC)

Locate | Evaluate | Assess | Prepare

Biodiversity Exposure and Assessment

Biodiversity Management Plan

A Biodiversity Management Plan (BMP) is a structured document or framework that outlines how a company or project will identify, assess, mitigate, and monitor its impacts on biodiversity throughout its operations. It helps ensure that business activities are aligned with biodiversity conservation goals, such as **no net loss** or **net positive impact** on nature (or biodiversity).



Framework Used: IFC Performance Standard 6 (PS6)
Scope: All Thaioil and Subsidiaries' direct operations sites (6 locations) Thailand

Key Components of a Biodiversity Management Plan (BMP)

1. Operational Site Screening
2. Land Cover Assessment
3. Biodiversity Goals and Targets
4. Application of the Mitigation Hierarchy
5. Monitoring and Evaluation

Approach Overview

01

Site Screening

Screen Thaioil's operational sites to identify those located near high biodiversity value sites:

- Protected Area (PA)
- Key Biodiversity Area (KBA)
- Alliance for Zero Extinction (AZE)
- Ramsar Sites
- World Heritage Convention (WHC)

02

Habitat Hectare Calculations

The residual impact on high-risk sites will be quantified using residual impact habitat hectare calculations.

03

NNL/NPI Target Setting

Considering the findings from the habitat hectare calculations and timeframes outlined in scientific publications, the NNL/NPI Target will be established for Thaioil.

Biodiversity Exposure and Assessment

Biodiversity Management Plan

Thaioil and Subsidiaries' direct operations sites are also screened with the internationally recognized areas and important biodiversity areas analysis using GIS tools. Data were derived from the Integrated Biodiversity Assessment Tool (IBAT) and the Biodiversity Management Plan (BMP) report.

A risk rating was subsequently allocated to each site that overlaps with or is in proximity to internationally recognized areas and/or important biodiversity areas. The risk rating is based on the sites' relative distance to these areas. This follows the general principle of proximity-based biodiversity risk screening consistent with guidance from BBOP and IFC PS6. The risk rating criteria are as follows:

TABLE 3.1 RISK RATING CRITERIA

Proximity to biodiversity recognised area	Definition
Insufficient data to assess the location of the site in relation to internationally recognized areas and/or important biodiversity areas	Insufficient Data
Internationally recognized areas and/or important biodiversity areas is greater than 5 km from the site.	Low
Internationally recognized areas and/or important biodiversity areas is greater than 2 km or less than 5 km of the site.	Moderate
Internationally recognized areas and/or important biodiversity areas is immediately adjacent to or within 2 km of the site.	High
Site is located within the internationally recognized areas and/or important biodiversity areas.	Very High

The internationally recognized areas and important biodiversity areas considered in this report are as follows:

1. Key Biodiversity Area
2. Protected Area
3. Alliance for Zero Extinction
4. REMSAR Site
5. World Heritage Site

IBAT Integrated Biodiversity Assessment Tool

The results show that none of The Thaioil and Subsidiaries' direct operations sites are found within of Internationally Recognized Areas and/or Important Biodiversity Areas.

TABLE 3.2 SUMMARY RISK LEVEL OF EACH SITES

Site Name	Nearest KBA (KM)	Nearest PA (KM)	Nearest AZE (KM)	Nearest RAMSAR (KM)	Nearest WHC (KM)	Risk Level
Thai Oil Public Company Limited (TOP)	Inner Gulf of Thailand (34.20)	Ko Kam Yai Marine Fisheries Reserved Area (8.95)	Khao Chamao - Khao Wong (85.84)	Don Hoi Lot (101.45)	-	Low
Thai Lube Base Public Company Limited (TLB)	Inner Gulf of Thailand (34.15)	Ko Kam Yai Marine Fisheries Reserved Area (10.01)	Khao Chamao - Khao Wong (85.73)	Don Hoi Lot (102.77)	-	Low
Thai Paraxylene Company Limited (TPX)	Inner Gulf of Thailand (35.87)	Ko Kam Yai Marine Fisheries Reserved Area (10.87)	Khao Chamao - Khao Wong (86.10)	Don Hoi Lot (102.96)	-	Low
LABIX Company Limited (LABIX)	Inner Gulf of Thailand (36.09)	Chonburi Environmental Protected Area B.E. 2018 (10.86)	Khao Chamao - Khao Wong (86.47)	Don Hoi Lot (102.96)	-	Low
TOP SPP Company Limited (TOP SPP)	Inner Gulf of Thailand (35.67)	Ko Kam Yai Marine Fisheries Reserved Area (10.63)	Khao Chamao - Khao Wong (86.51)	Don Hoi Lot (102.76)	-	Low
Sak Chaisit Company Limited (SAKC)	Pak Nam Prasae (54.46)	Khao Laem Ya - Mu Ko Samet (22.62)	Khao Chamao - Khao Wong (65.58)	Khao Sam Roi Yot Wetland (134.87)	Kaeng Krachan Forest Complex (190.28)	Low

However, the BMP defines the main actions required as part of its implementation, categorized according to the mitigation hierarchy. The scope of this BMP also includes the adjacent areas surrounding the site location.

Biodiversity Exposure and Assessment

Biodiversity Management Plan

Habitat Condition Score

According to IFC PS6 Paragraph 10, the design of a biodiversity offset must adhere to the "**like-for-like or better**" principle. The principle indicates that biodiversity offsets must be designed to conserve the same biodiversity values that are being impacted by the project or company's activities.

Condition and Score

Condition	Definition	Score
Benchmark	Benchmark habitats in a mature condition with only native origin vegetation, a diversity of species of a mature or senescent state; and no sign of human disturbance (such as the presence of waste, vegetation removal).	1
Natural	Natural condition is defined as habitat largely of native origin, and/or where human activity has not essentially modified the primary ecological functions and species composition. Some disturbance is likely present such as vegetation removal, waste and minor introduction of invasive species.	0.75
Modified level 1	Modified condition habitats (level 1) are areas that may contain a large proportion of plant and/or animal species of non-native origin, and/or where human activity has substantially modified an area's primary ecological functions and species composition.	0.5
Modified level 2 (Degraded)	Modified condition habitat (level 2) defined as significant conversion or degradation of the habitat such as the elimination or severe diminution of the integrity of a habitat caused by a major and/or long-term change in land or water use; or (ii) a modification that substantially minimizes the habitat's ability to maintain viable populations of its native species.	0.25

- Based on the application of habitat condition scores to each habitat type, the calculated area requiring offset to achieve No Net Loss (NNL) of biodiversity values is ***96.75 hectares or 604.69 Rai.***
- To comply with "like-for-like or better" principle, ***lowland deciduous forest, or dry evergreen forest*** should be enough to compensate the loss. Additionally, the relevant biodiversity supportive habitat that is related to the company's operational activities (i.e., coastal habitat) should be considered to support the "better" principle.
- Thaioil and Subsidiaries has assessed the potential to achieve biodiversity offset within areas under its own operational control, particularly through ongoing reforestation efforts and management of adjacent habitats. Based on current land use and habitat restoration programs, it is feasible for ***Thaioil and Subsidiaries to meet its No Net Loss (NNL) target by the year 2040***, aligning with long-term biodiversity commitments and international expectations under frameworks such as IFC PS6.

- The scope of this BMP also includes the adjacent area of the site location (5 km). In addition to the direct mitigation measures, the BMP also includes a number of indirect measures that can be classified as enhancements. These indirect measures create additional biodiversity value on the ground. While these actions might not directly create value, they have the potential to indirectly yield positive effects on the area, e.g., financial support to local NGOs, and/or research.
- The biodiversity monitoring should be undertaken in order to allow for direct comparison of the data and to identify changes in species distribution and abundance mentioned in **Step 4.**
- The action types were determined according to potential impact from six operational sites to related biodiversity features surrounding the sites. The mitigation measures can be grouped into baseline survey, biodiversity conservation, oil spill prevention, and stakeholder engagement and information sharing. The action type, as identified within the mitigation hierarchy, is shown in **Step 5.**

3 Biodiversity Risk Assessment

Methodology and Frameworks

Biodiversity Risk Assessment

Methodology and Frameworks

Taskforce on Nature-related Financial Disclosures

IBAT
Integrated Biodiversity Assessment Tool

ENCORE

WWF

Biodiversity Risk Filter

TNFD LEAP (Locate, Evaluate, Assess, Prepare) Framework

Guides our systematic approach to biodiversity-related assessment and disclosure.

Locate: IBAT & Spatial Analysis (Biodiversity Exposure & Assessment)

Enables location-specific biodiversity screening and proximity to protected and biodiversity important areas.

Evaluate and Assess: ENCORE & WWF BRF (Biodiversity Risk Assessment)

Helps quantify dependencies, evaluate potential impacts, and risk on ecosystem services assessment.

Prepare: Response Strategy & Mitigation Planning

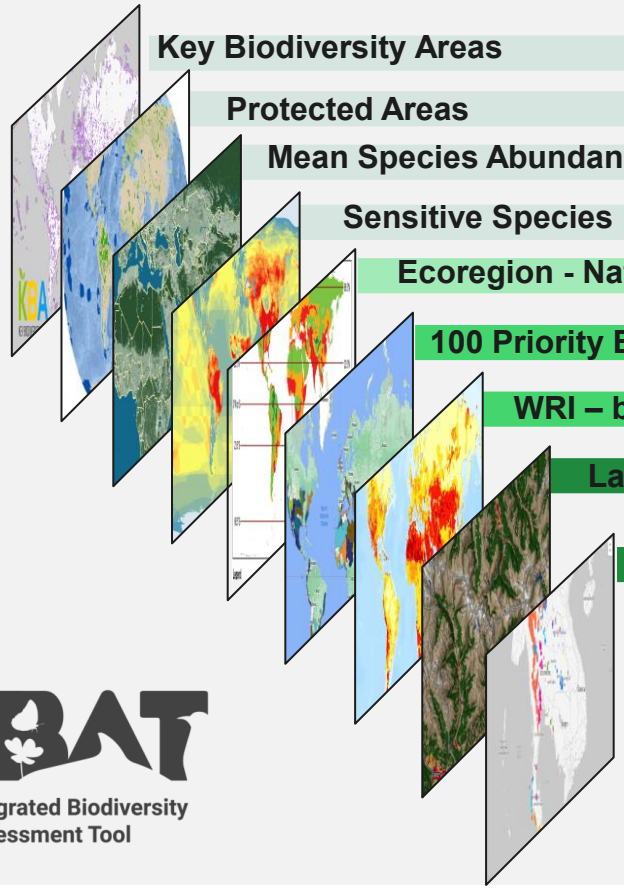
Supports prioritization of key nature-related risks and response planning, including identifying mitigation actions for priority areas, aligned with the mitigation hierarchy.

Biodiversity Risk Assessment

Methodology and Frameworks (IBAT & Spatial Analysis)

Enables location-specific biodiversity screening and proximity areas to be inputs for the analysis for areas with sensitive locations.

GIS Analysis

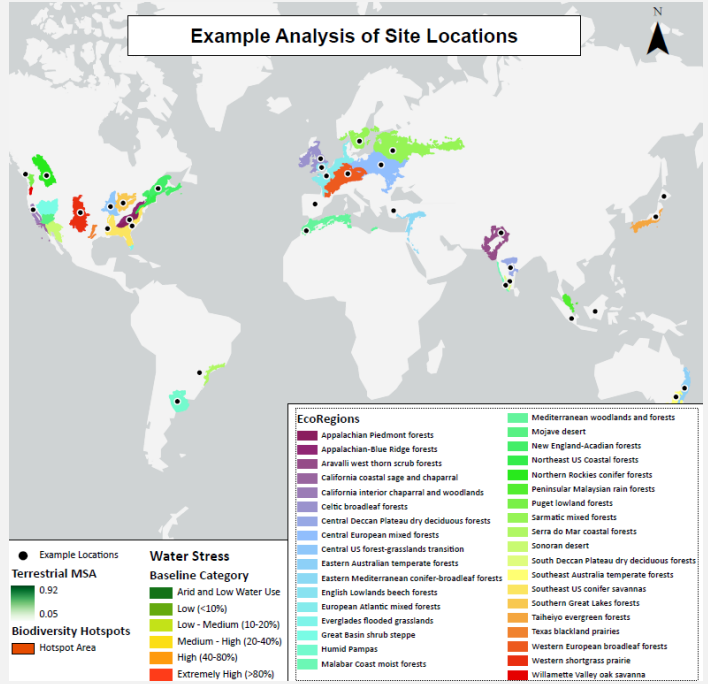


Key Biodiversity Areas
Protected Areas
Mean Species Abundance
Sensitive Species
Ecoregion - Nature needs half
100 Priority Basins
WRI – baseline water stress
Land Use Land Cover
Ethnic Group

IBAT
Integrated Biodiversity Assessment Tool

Four criterion to be evaluated

- Biodiversity Importance
- Ecosystem Integrity
- Water Stress
- Ecosystem service delivery importance



Output Analysis

	Organization_Ass	Asset Type	Countr	City	Address	MSA_at_Site	MSA_Code	Ran	bws_label	WSDI_Baseline_Code	ECO_NAME	NNH	NNH_co	Sum
1	Asset 1	Commercial Building	US	Alpharetta	[redacted]	0.568	3	1	Medium - High (20-40%)	2	Appalachian Piedmont forests	3	2	7
2	Asset 2	Agricultural Farm	NL	Amsterdam	[redacted]	0.345	1	4	Low (<10%)	1	European Atlantic mixed forests	3	2	4
3	Asset 3	Data Center Facility	US	Ashburn	[redacted]	0.300	1	7	Low (<10%)	1	Northeast US Coastal forests	4	3	5
4	Asset 4	Data Center Facility	US	Ashburn	[redacted]	0.263	1	11	Low (<10%)	1	Northeast US Coastal forests	4	3	5
5	Asset 5	Data Center Facility	US	Ashburn	[redacted]	0.318	1	6	Low (<10%)	1	Northeast US Coastal forests	4	3	5
6	Asset 6	Data Center Facility	US	Ashburn	[redacted]	0.263	1	11	Low (<10%)	1	Northeast US Coastal forests	4	3	5
8	Asset 7	Commercial Building	US	Atlanta	[redacted]	0.324	1	5	Medium - High (20-40%)	2	Appalachian Piedmont forests	3	2	5
10	Asset 8	Commercial Building	US	Atlanta	[redacted]	0.263	1	11	Medium - High (20-40%)	2	Appalachian Piedmont forests	3	2	5
12	Asset 9	Commercial Building	IN	Bangalore	[redacted]	0.441	1	2	Extremely High (>80%)	3	th Deccan Plateau dry deciduous for	4	3	7
13	Asset 10	Commercial Building	IN	Bangalore	[redacted]	0.278	1	10	Extremely High (>80%)	3	th Deccan Plateau dry deciduous for	4	3	7
14	Asset 11	Commercial Building	US	Bellevue	[redacted]	0.263	1	11	Medium - High (20-40%)	2	Puget lowland forests	4	3	6
15	Asset 12	Data Center Facility	GB	Berkshire	[redacted]	0.263	1	11	High (40-80%)	3	English Lowlands beech forests	3	2	6

GIS data extraction sheet example

Biodiversity Risk Assessment

Methodology and Frameworks (ENCORE & WWF BRF)

The selected locations will be evaluated for their Impact and Dependency using Explore Natural Capital Opportunities, Risks and Exposure (ENCORE).

- Evaluate activities' biodiversity **impacts and dependencies** at the **ISIC Section** and **ISIC Division**.
- **Impact:** the positive or negative effects a company has on the state of nature.
- **Dependency**: aspects of nature's contributions to an organization relying on nature's functions.

IMPACTS				
Land/water/sea use change	Resource exploitation	Climate change	Pollution	Invasive species and Others

DEPENDENCY		
Provisioning Services	Regulating and maintenance services	Cultural services

The selected locations will be assessed for the risk level considering the relevant impacts & dependencies based on TNFD recommendations across core and sector-specific aspects.

- The **WWF biodiversity risk filter (WWF BRF)** serves as a reference for assessing biodiversity-related risks, covering both physical and reputational dimensions.
- The assessment also integrates insights from Thaioil and Subsidiaries' TCFD-aligned climate-related risk analysis and Thaioil and Subsidiaries' Human Rights Impact Assessment and Management (HRIAM) to validate and strengthen the understanding of nature-related risks.

Nature-Related Risks

Physical Risk

- Acute risks
- Chronic risks

Transition Risk

- Policy risks
- Market risks
- Technology risks
- Reputational risks
- Liability risks

Biodiversity Risk Assessment

Methodology and Frameworks

Nature-related risk

Assess nature-related risk using WWF BRF

- Identified biodiversity-related risks
- Initial measures for risk mitigation

WWF | Biodiversity Risk Filter

Locate phase results — IBAT Integrated Biodiversity Assessment Tool

Evaluate phase results — ENCORE

Thaioil and Subsidiaries' TCFD 2024

Thaioil and Subsidiaries' HRIAM 2024

Thaioil and Subsidiaries' EIA reports and Management Approach

Thaioil and Subsidiaries' existing biodiversity risks → **Physical risks** + **Transition Risk** → **Material nature-related risks**

Thaioil and Subsidiaries' existing mitigating measures → **Thaioil and Subsidiaries' existing risk mitigation** → **Additional risk mitigation**

TOP's risk

Integrated into company's Committee of Sponsoring Organizations of the Treadway Commission (COSO) Enterprise Risk Management (ERM) framework

01 Risk identification → 02 Risk assessment → 03 Risk response and mitigation → 04 Risk monitoring and reporting

People	Environment	Reputation	Assets	Target	Net Profit

Scope of the Study

Biodiversity Risk Assessment

Scope of Biodiversity Risk Assessment

14 of the total assessed sites

- 6 sites of Own operation, including adjacent areas at 10 km buffer.
- 3 sites of upstream activities, including adjacent areas at 10 km buffer.
- 5 sites of downstream activities, including adjacent areas at 10 km buffer.

Type of site	Location	Site	ISIC Section
Own operation (6 sites)	Chonburi (5 sites)	• Thai Oil Public Company Limited (TOP)	• Manufacture of refined petroleum products
		• Thai Lube Base Public Company Limited (TLB)	• Manufacture of refined petroleum products
		• Thai Paraxylene Company Limited (TPX)	• Manufacture of other chemical products
		• LABIX Company Limited (LABIX)	• Manufacture of other chemical products
		• TOP SPP Company Limited	• Fossil fuel energy productions
	Rayong (1 sites)	• Sak Chaisidhi Company Limited	• Manufacture of other chemical products
Upstream Activities (3 sites as the representative suppliers)	Chonburi (1 sites)	• BangPra Reservoir	• Water collection, treatment and supply
	Rayong (1 sites)	• Air Liquide (Thailand) Ltd.	• Manufacture of plastics and synthetic rubber in primary forms
	-	• PTT Public Company Limited*	• Other specialized wholesale
Downstream Activities (5 sites as the representative customers)	Rayong (1 sites)	• Indorama Petrochem Company Limited	• Manufacture of plastics and synthetic rubber in primary forms
	Krung Thep Maha Nakhon (3 site)	• Shell Company of Thailand Limited	• Manufacture of gas; distribution of gaseous fuels through mains
		• SUSCO Public Company Limited	• Retail sale of automotive fuel in specialized stores
		• PTT Oil and Retail Business Public Company Limited	• Retail sale of automotive fuel in specialized stores
	Nakhon Ratchasima (1 site)	• PTG Energy Public Company Limited	• Retail sale of automotive fuel in specialized stores

Note: * *PTT Public Company Limited's operations do not have specific operational sites; therefore, sensitive location screening has not been conducted.*

Biodiversity Risk Assessment

Scope of Biodiversity Risk Assessment

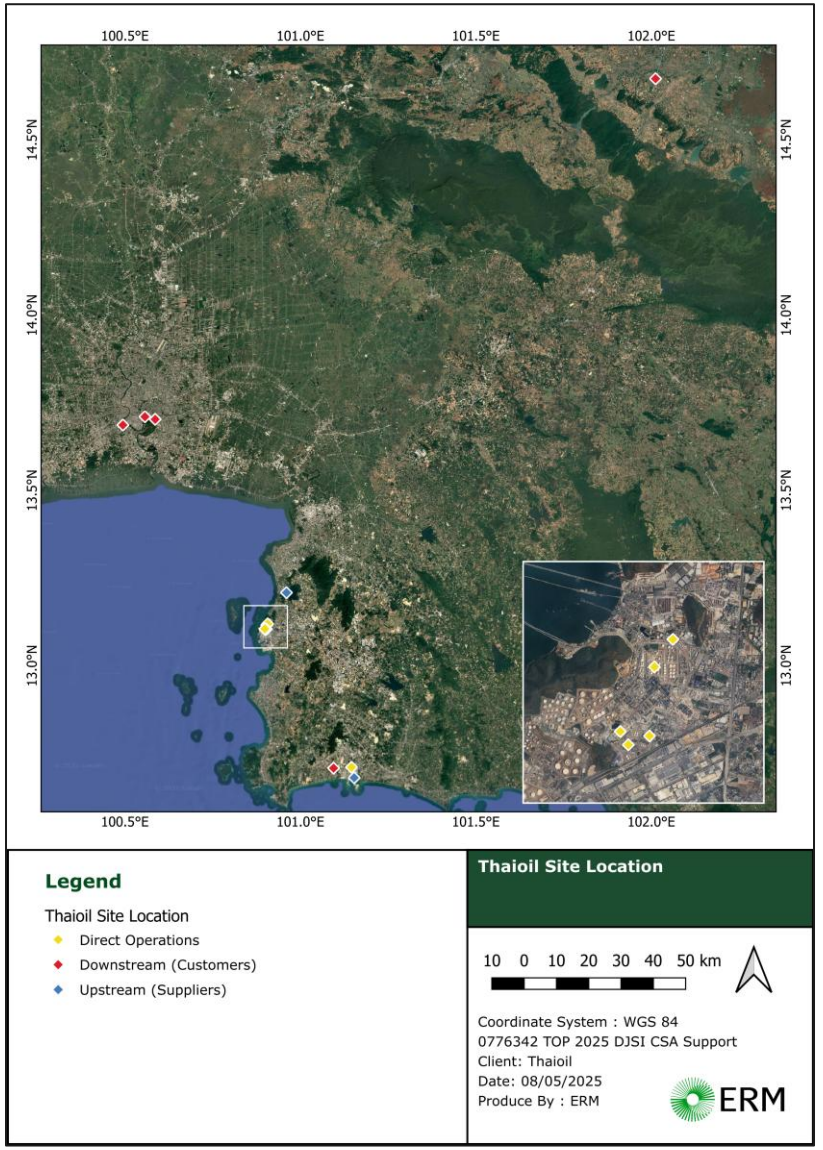
Results Summary for Thaioil and Subsidiaries' Direct Operations: The location screening assessments have been conducted, and the findings are consistent across all sites, indicating that none are situated in areas of significant biodiversity importance or sensitivity. Consequently, there is no biodiversity risk associated with Thaioil and Subsidiaries' direct operations based on the location screening results. Please find the details in the following pages.

Direct Operation (6 sites)

Value Chain	Site Name	Province
Own Operation	Thai Oil Public Company Limited (TOP)	Chonburi
	Thai Lube Base Public Company Limited (TLB)	Chonburi
	Thai Paraxylene Company Limited (TPX)	Chonburi
	LABIX Company Limited (LABIX)	Chonburi
	TOP SPP Company Limited	Chonburi
	Sak Chaisidhi Company Limited	Rayong

Value Chain Operation (7 sites)

Value Chain	Site Name	Province
Downstream (5 sites)	PTG Energy Public Company Limited	Nakhon Ratchasima
	Shell Company of Thailand Limited	Bangkok
	SUSCO Public Company Limited	Bangkok
	Indorama Petrochem Company Limited	Rayong
	PTT Oil and Retail Business Public Company Limited	Bangkok
Upstream (3 sites)	Air Liquide (Thailand) Limited	Rayong
	BangPra Reservoir	Chonburi
	PTT Public Company Limited *	-



Note: * *PTT Public Company Limited's operations do not have specific operational sites; therefore, sensitive location screening has not been conducted.*

Biodiversity Risk Assessment

Scope of Biodiversity Risk Assessment and Biodiversity Management Plan

Thaioil and Subsidiaries conducted a comprehensive biodiversity assessment across 14 sites, including its operational facilities, key upstream suppliers, and representative downstream customers. This included both a biodiversity risk assessment aligned with the Taskforce on Nature-related Financial Disclosures (TNFD) framework, and a Biodiversity Management Plan (BMP) developed based on the International Finance Corporation Performance Standard 6 (IFC PS6). These assessments were designed to identify potential biodiversity impacts and inform appropriate mitigation strategies through site-specific risk screening, habitat evaluation, and management planning.

- **Biodiversity Risk Assessment**

  Conducted for all 14 sites (6 own operations, 3 upstream, 5 downstream), each site was assessed using a **10 km buffer** to evaluate location sensitivity and capture surrounding environmental influence.
  This risk assessment was conducted in alignment with the Taskforce on Nature-related Financial Disclosures (TNFD) framework, focusing on the identification of material biodiversity risks and dependencies related to land use, resource extraction, emissions, and ecological pressures. The output supported early-stage understanding of nature-related risk exposure across the company's operations.

- **Biodiversity Management Plan**

  For the 6 own operation sites, a proximity screening was performed using the Integrated Biodiversity Assessment Tool (IBAT), applying a **5 km buffer** around each facility. The total 6 own operation sites account for the total of 245 hectares of site areas.
  This assessment aligns with the **International Finance Corporation (IFC) Performance Standard 6 (PS6)**, which guides the development of biodiversity management plans following the mitigation hierarchy.
  The screening evaluated overlaps with internationally recognized conservation areas such as KBAs, Pas, AZE, Ramsar Sites, and World Heritage Sites.
  Findings and management responses were detailed in the Biodiversity Management Plan report. *(See more detail on page 53)*

Study area overview for 6 own operations

No.	Site Name	Biodiversity Risk Assessment Area (Hectares)			Biodiversity Management Plan (Hectares)		
		Site Area	Adjacent Area (10 km)	Total	Site Area	Adjacent Area (5 km)	Total
1	Thai Oil Public Company Limited (TOP)	190	31,225	31,416	190	7,664	7,854
2	Thai Lube Base Public Company Limited (TLB)	8	31,408	31,416	8	7,846	7,854
3	Thai Paraxylene Company Limited (TPX)	15	31,401	31,416	15	7,839	7,854
4	LABIX Company Limited (LABIX)	20	31,396	31,416	20	7,834	7,854
5	TOP SPP Company Limited	5	31,411	31,416	5	7,849	7,854
6	Sak Chaisidhi Company Limited	7	31,409	31,416	7	7,847	7,854
Total		**245**	188,250	188,496	**245**	46,879	47,124

Note: In the Biodiversity Risk Assessment study for both upstream and downstream areas, each site was evaluated with a 10 km buffer, covering approximately 31,416 hectares per site.

Biodiversity Risk Assessment Result

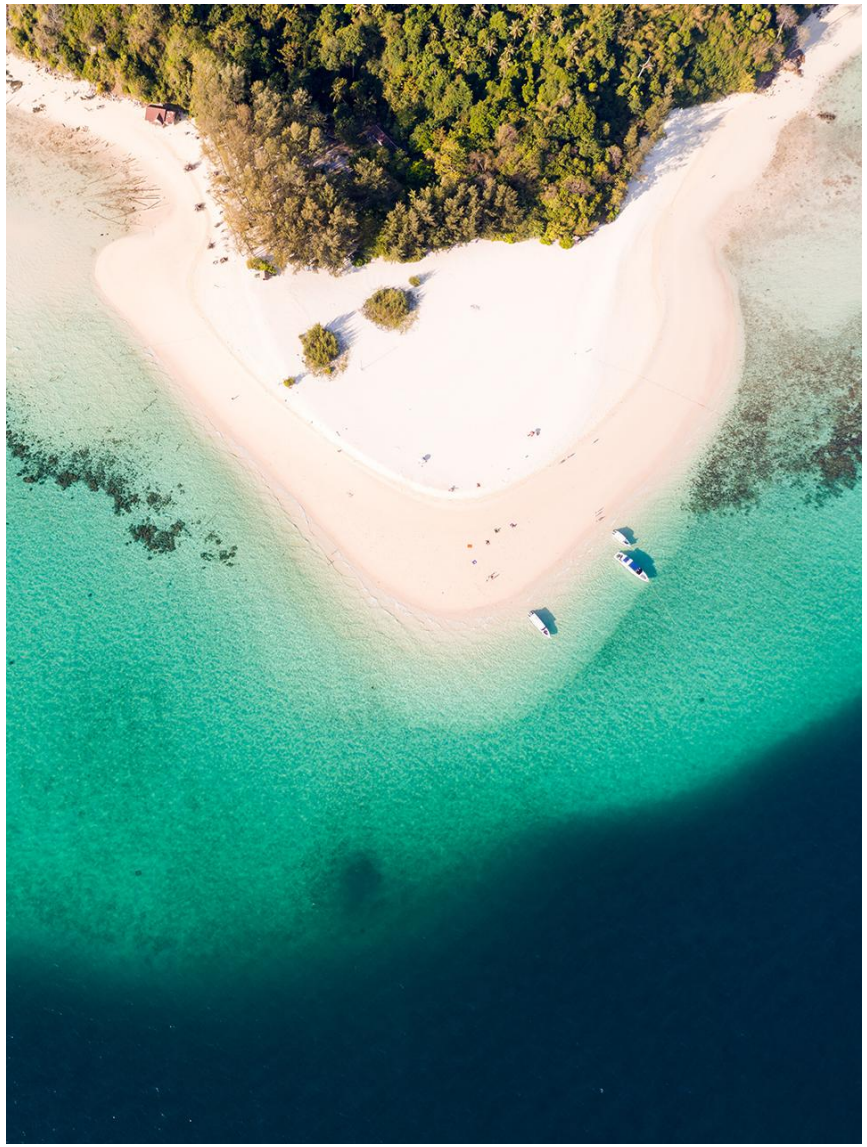
Biodiversity Risk Assessment

Result (Locate)

- **100% of Thaioil and Subsidiaries' direct operations' nature sensitivity is screened. The results reveal that all sites are located in low-sensitivity locations.**
- In contrast, potential sensitive location-related concerns arise within the downstream and upstream value chain, the indicator considered as priority locations:
  - 3 sites in the downstream (Key Biodiversity Areas)
  - 1 site in upstream (Sensitive Species - ***Halcyon pileata)***

Implication :

- Direct sites show low biodiversity impact, but require ongoing monitoring for water stress and land-use change
- Downstream and upstream actors represent material biodiversity exposure
- Recommend prioritizing value chain engagement and mitigation planning (e.g., supplier dialogue, impact monitoring)



Biodiversity Risk Assessment

Result (Evaluate - Impacts)

Thaioil and Subsidiaries have conducted an assessment to identify Impact and Dependency on nature. The study covers Thaioil and Subsidiaries' own operations and our value chain including upstream and downstream activities, by using the ENCORE tool. The priority impacts and dependencies are addressed in the diagram below to illustrate Thaioil and Subsidiaries' material biodiversity impacts and dependencies by business sectors.

Thaioil and Subsidiaries' Own Operations

- Across all of Thaioil and Susidiaries' core business operations, oil refinery, petrochemicals, and power generation—there are several common biodiversity-related impacts. These include **greenhouse gas (GHG) emissions**, **non-GHG air pollutants**, **toxic pollutants to water and soil**, and **physical disturbance**
- Some impacts are more specific to individual business activities. For instance, the **oil refinery** involves **seabed use**.
- The **petrochemical operations** are particularly associated with significant **water use**, increasing pressure on local freshwater availability.
- **Power generation** has a broader environmental footprint, with impacts such as **land use change**, **freshwater use**, and **solid waste generation**.

Upstream activities

- Common impacts across all upstream sectors include the **emission of greenhouse gases (GHG)**, **non-GHG air pollutants**, and **toxic pollutants** released into water and soil.
- Physical disturbances, such as noise, odor, and vibration, are present in water supply and chemical.
- The chemical sector and oil and gas retail activities also involve large **volumes of water use** and **solid waste generation**.
- Meanwhile, water supply operations uniquely contribute **to land use change** and **freshwater area** occupation, which may lead to habitat fragmentation or alteration of natural water flows, further impacting aquatic biodiversity.

Downstream activities

- Common biodiversity-related impacts across Thaioil and Subsidiaries' downstream businesses, include **emissions of greenhouse gases (GHG), non-GHG air pollutants,** and **toxic pollutants released into water and soil**.
- Notable volumes of **water use** are also observed across all three business areas, especially in chemical processing and oil and gas retail.
- Power generation and chemical operations contribute additional impacts through **solid waste generation** and **physical disturbances**, which can affect nearby ecosystems.
- Power generation is also associated with **land use change** and **freshwater area** occupation, potentially leading to habitat alteration and biodiversity degradation.

Biodiversity Risk Assessment

Result (Evaluate - Dependencies)

Thaioil and Subsidiaries' Own Operations

- Oil refinery business is strongly dependent on **water purification.** Other dependencies include soil and sediment retention, water flow regulation, flood and storm mitigation.
- Thaioil and Subsidiaries' Petrochemical business is notably dependent on **water supply.** The sector also has significant dependency on **soil and sediment retention, solid waste remediation, water purification, water flow regulation, flood and storm mitigation**.
- Power generation business depend on **water flow regulation in operating business.** Other dependencies include soil and **sediment retention, solid waste remediation, water purification, water flow regulation,** and **flood mitigation.** Notably, power generation also depends on **global climate regulation**, emphasizing its link to climate-sensitive natural systems.

Upstream activities

- Common dependencies across all three sectors include **soil and sediment retention, water flow regulation, flood mitigation,** and **storm mitigation**, reflecting reliance on natural systems for managing water and reducing physical risks.
- Chemical operations also depend on a wider range of services such as **water supply, rainfall regulation**, and **water purification**, which are essential for process stability.
- Water supply operations show the broadest dependency footprint, including **air filtration and solid waste remediation**, due to their close interaction with natural water sources and potential environmental releases.

Downstream activities

- Across Thaioil and Subsidiaries' downstream operations[1] there is a strong dependency on **regulating and maintenance ecosystem services**.
- Common dependencies include **soil and sediment retention, water flow regulation, flood mitigation, and storm mitigation**, particularly critical for oil and gas retail and chemical activities.
- Power generation depends notably on **rainfall regulation** and **water purification**, emphasizing the need for stable hydrological cycles and clean water sources to maintain operational reliability.
- Chemical operations show the broadest reliance among downstream sectors, drawing on **water supply, rainfall regulation, and water purification services**.

Biodiversity Risk Assessment

Integration into Business Processes

Thaioil and Subsidiaries have undertaken a comprehensive nature-related risk assessment, including biodiversity risks, across its entire value chain. This assessment identifies material nature-related risks through both impact and dependency analysis.

To ensure a robust and location-specific assessment, Thaioil and Subsidiaries leverage data from international tools (such as ENCORE, IBAT, WWF Biodiversity Risk Filter), and internal reports (TCFD, HRIAM) to identify material nature-related risks. These inputs are integrated and analyzed through the TNFD-aligned LEAP process to determine both impact and dependency risks, existing mitigation, and potential additional actions.

Both physical and transition biodiversity risks are evaluated in alignment with the Taskforce on Nature-related Financial Disclosures (TNFD) recommendations. These risks are assessed alongside existing mitigation measures to highlight gaps and areas requiring further action.

The results are integrated into Thaioil and Subsidiaries' multi-disciplinary Enterprise Risk Management (ERM) process, consistent with the COSO ERM framework. This integrated approach enhances the company's ability to understand and manage nature-related exposures, build resilience, and ensure the long-term sustainability of operations across all business units.

Biodiversity Risk Assessment

Integration into Business Processes

Thaioil and Subsidiaries integrate biodiversity-related risks into its company-wide **COSO Enterprise Risk Management (ERM) framework** to ensure responsible and sustainable business practices. This approach goes beyond one-time assessments—it forms part of a dynamic, **annual risk review cycle** that helps Thaioil and Subsidiaries continuously revisit and adapt its strategies in alignment with emerging biodiversity risks and regulatory expectations.

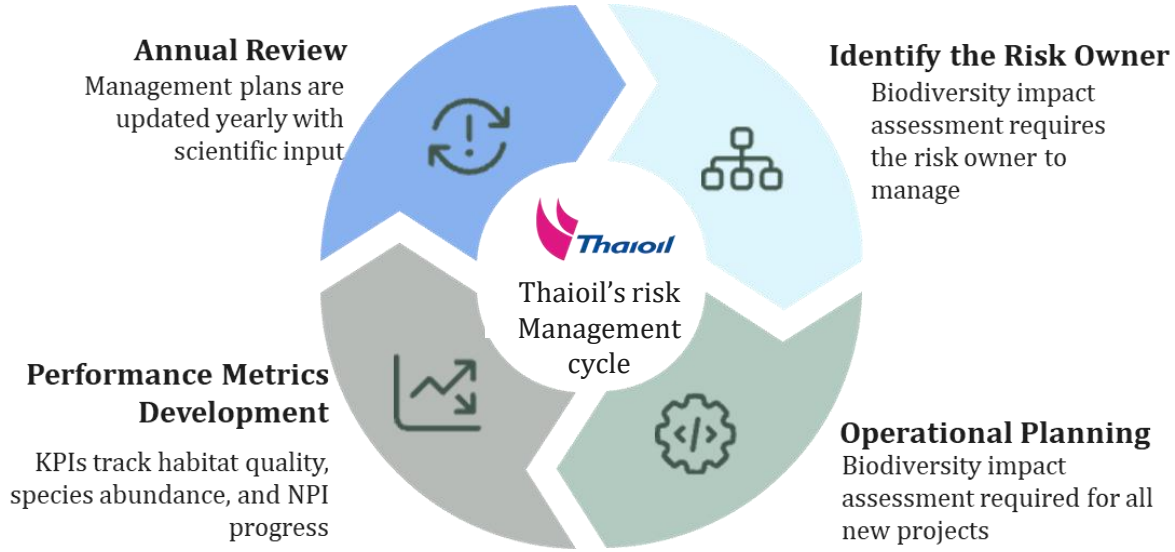
Through this process, biodiversity risks, both physical and transition, are identified, assessed, and mitigated across the company's value chain. **Thaioil and Subsidiaries place particular focus on sites with medium to high biodiversity risk levels, for which appropriate mitigation measures are defined and monitored.**

Key operational decisions, including new project planning, are supported by biodiversity impact assessments. Performance metrics such as species abundance, habitat quality, and progress toward Net Positive Impact (NPI) targets are developed and tracked annually to ensure effective performance management.

This integration:

- Supports compliance with global sustainability standards
- Enhances transparency and stakeholder confidence
- Enables proactive decision-making in response to nature-related risks

By embedding biodiversity into its risk governance processes, Thaioil and Subsidiaries strengthen thier resilience and ensure long-term value creation across all business units.



Oil Refinery

- THAI OIL PUBLIC COMPANY LIMITED

Biodiversity Risk Assessment

Nature-related risk identification and Thaioil and Subsidiaries' Risk assessment

Oil refinery

No.	Type risk	Risk category	Nature-related risk	Illustrative Business Risk	Time horizon			Thaioil and Subsidiaries' Risk Level	Management approach and mitigation
					S	M	L		
1	Physical	Acute	• Changes in the state of ecosystems and/or species • Changes to protection from natural hazards due to change in hazard mitigation services	Operational and business interruptions caused by landslides/Coastal erosion as a result of declining soil stability that may damage infrastructure.	✓			Medium	Conducting a Soil Investigation Report for preliminary assessment prior to designing buildings or infrastructure, in accordance with engineering design standards.
2	Physical	Acute		Damages to infrastructure and interruption of business activities deriving from tropical cyclones, extreme heat and other extreme weather events damaging infrastructure, worker's health and safety or interrupting business activities.	✓			Low	**Cyclone Current Mitigation** 1. Predicting and monitoring cyclone events and relevant warning system. Planning the production and delivery of products in advance before offshore cyclones occur. 2. Apply natural catastrophe insurance to cover potential damage costs
3	Physical	Acute		Health and safety risks to workers and contractors due to prolonged exposure to extreme heat conditions, such as heatstroke, dehydration, fatigue, or reduced productivity in outdoor or poorly ventilated environments.	✓			Medium	**Extreme Heat Mitigation** Thaioil and Subsidiaries have safety measures for working with heat (Heat Stress), including working in enclosed areas, high temperatures from machines that still have accumulated heat, long working hours, and heavy workloads. There are both pre-work requirements and work entry requirements, including preventive measures by measuring the work environment to measure heat and support measures in cases where the value exceeds the specified level.
4	Physical	Acute		Increased risk of damage and business interruption from floods and storms if protective terrestrial ecosystems are degraded	✓			Low	

Biodiversity Risk Assessment

Nature-related risk identification and Thaioil and Subsidiaries' Risk assessment

Oil refinery

No.	Type risk	Risk category	Nature-related risk	Illustrative Business Risk	Time horizon			Thaioil and Subsidiaries' Risk Level	Management approach and mitigation
					S	M	L		
5	Physical	Chronic	• Changes in the state of ecosystems and species • Changes to the supply of natural inputs	Disruption of operation because of increasing cost of water management and control as a result of declining water supply, possibly caused by the organisation's activities and those of others in the watershed, as well as by climate change.			✓	Low	**Water Scarcity** 1. Thaioil and Subsidiaries have monitored and predicted water scarcity risks through water risk assessment, scenario analysis, and sensitivity analysis in situations where there are water shortages at various proportions within the production processes. The Enterprise Risk team regularly works together with Thaioil and Subsidiaries' Water Management Working Committee to monitor such risks. The WRI Aqueduct Water Tools, an internationally recognized tool developed by the World Resource Institute, were adopted in the working processes. The Company also built a water management network with both government and non-government agencies, such as the PTT Group Water Committee in the Eastern region, Keyman Water War Room, and the Institute of Water and Environment for Sustainability (established under the Federation of Thai Industries), to create comprehensive water management and determine proactive measures. 2. Additional water supply from external sources and supply from RO Seawater Ref: https://www.thaioilgroup.com/en/sustainability/climate-strategy/Water purification • Wastewater from the production process must be treated through a centralized wastewater treatment system. The quality of the discharged water at the discharge point must comply with the industrial effluent standards set by the Ministry of Industry. • Monitoring and maintenance system must be implemented for the handling and transportation of raw materials and products to ensure maximum efficiency and prevent oil product leakage into marine water sources. • Safety inspections and reporting must be conducted both on ships and onshore. Any signs of leakage must be reported or announced immediately. • Oil spill response equipment must be inspected and emergency response drills must be conducted at least twice a year to ensure operational readiness in case of an emergency.

Biodiversity Risk Assessment

Nature-related risk identification and Thaioil and Subsidiaries' Risk assessment

Oil refinery

No.	Type risk	Risk category	Nature-related risk	Illustrative Business Risk	Time horizon			Thaioil and Subsidiaries' Risk Level	Management approach and mitigation
					S	M	L		
6	Transition	Policy	Changes to legislation/ regulations (to avoid and reduce pollution)	Loss of revenues and project delay potentially caused by limited access to reserve areas or potential operating areas due to new or more stringent regulations associated with the oil and gas sector.		✓		Very low	
7	Transition	Policy		Loss of revenue and project delay potentially caused by changes to policy and/or regulations (e.g., stricter emission regulations).			✓	Medium	**Regulatory Foresight and Scenario Analysis** 1. Thaioil and Subsidiaries have established systematic processes for identifying, monitoring, and complying with both draft and new law & regulations.(Advocacy) 2. Additionally, the company participates in draft regulatory meetings with relevant authorities to contribute feedback and discuss operational limitations encountered within the industrial sector.
8	Transition	Policy		Potential loss of revenue and project delay resulting from the introduction or tightening of greenhouse gas (GHG) emission regulations and mandatory carbon tax policies. These may include carbon pricing mechanisms, emissions thresholds, or fixed carbon tax rates that increase the operational costs of high-emission facilities.				Very low	
9	Transition	Technology	Requirements to transition to more efficient, resilient and less environmentally damaging technologies (to avoid and reduce pollution)	Loss of business is driven by obsolescence as more environmentally sustainable and safer technologies are developed, might lose more contracts or face challenges, especially in regions with strict environmental protection laws.		✓		Very low	
10	Transition	Market	Stakeholder conflicts e.g. due to competition for ecosystem services	Loss of market value due to stranded assets unable to operate (blocked) as a result of changes in freshwater availability or climate change, making some facilities unoperable.	✓			Very low	
11	Transition	Reputation	Changes in sentiment towards the organization/brand due to impacts on nature - Due to environmental impact	Loss of institutional support and stake divestments following negative stakeholder perception on the company's operation. This could result in divestments from institutional investors, a drop in stock prices, increased scrutiny by environmental regulators, requiring the companies to invest in less invasive exploration technologies, and a loss of brand value		✓		Low	**Communities Engagement** • Annual plan for public relations or community support activities is established by collecting data from community opinion surveys (Engagement Survey >95% by third party) and analyzing the results to design activities that are appropriate and aligned with the community's needs through C.A.R.E. strategy • A monitoring plan/Engagement is established to prevent complaints from surrounding communities and to address issues in the event of environmental complaints.

Petrochemicals

- THAI PARAXYLENE COMPANY LIMITED
- LABIX COMPANY LIMITED
- SAK CHAISIDHI COMPANY LIMITED

Biodiversity Risk Assessment

Nature-related risk identification and Thaioil and Subsidiaries' Risk assessment

Petrochemicals

No.	Type risk	Risk category	Nature-related risk	Illustrative Business Risk	Time horizon			Thaioil and Subsidiaries' Risk Level	Management approach and mitigation
					S	M	L		
1	Physical	Acute	• Changes in the state of ecosystems and species • Changes to protection from natural hazards due to change in hazard mitigation services	Damage to facilities due to extreme events (e.g., flooding and landslides) can cause operational downtime and lead to increased repair costs. These events also negatively impact employee working conditions, such as limited access to work sites, unsafe environments, and increased physical and mental stress during response and recovery efforts.	✓			Low	**Cyclone Current Mitigation** 1. Predicting and monitoring cyclone events and relevant warning system. Planning the production and delivery of products in advance before offshore cyclones occur. 2. Apply natural catastrophe insurance to cover potential damage costs
2	Physical	Acute		Damage to assets (e.g., equipment, facilities, or personnel health and safety) and operational disruptions resulting from increasingly severe weather events (such as floods, storms, or wildfires) can lead to infrastructure damage or hinder business activities. These events may also cause leakage of hazardous substances, such as chemicals or petroleum. For example, power outages or raw material shortages caused by natural disasters can severely impact supply chains and production continuity.	✓			Low	
3	Physical	Chronic	• Changes in the state of ecosystems and species • Changes to the supply of natural inputs	Progressive reduction of water supply can cause increased operational costs, changes in production lines or reductions in production capacity due to competing demand for water throughout the process (e.g. cooling, solvent, cleaning).		✓		Low	**Water Scarcity** 1. Thaioil has monitored and predicted water scarcity risks through water risk assessment, scenario analysis, and sensitivity analysis in situations where there are water shortages at various proportions within the production processes. The Enterprise Risk team regularly works together with Thaioil and Subsidiaries' Water Management Working Committee to monitor such risks. The WRI Aqueduct Water Tools, an internationally recognized tool developed by the World Resource Institute, were adopted in the working processes. The Company also built a water management network with both government and non-government agencies, such as the PTT Group Water Committee in the Eastern region, Keyman Water War Room, and the Institute of Water and Environment for Sustainability (established under the Federation of Thai Industries), to create comprehensive water management and determine proactive measures. 2. Additional water supply from external sources and supply from RO Seawater Refer to: https://www.thaioilgroup.com/en/sustainability/climate-strategy/

Biodiversity Risk Assessment

Nature-related risk identification and Thaioil and Subsidiaries' Risk assessment

Petrochemicals

No.	Type risk	Risk category	Nature-related risk	Illustrative Business Risk	Time horizon			Thaioil and Subsidiaries' Risk Level	Management approach and mitigation
					S	M	L		
4	Transition	Policy	Changes to legislation/ regulations aimed at achieving nature-positive outcomes/ reducing nature-negative outcomes (e.g. trade restrictions, taxes, permits and allocations, protected areas / OECMs)	Increased operational costs/taxation from stricter environmental regulations Some examples are: • The EU's REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) regulation is a framework that governs the use of chemicals. It requires companies to identify and manage risks linked to the substances they manufacture and market in the EU. • The Stockholm Convention on Persistent Organic Pollutants aims to eliminate or restrict the production and use of POPs, which can have adverse effects on wildlife and ecosystems. Regulations requiring companies to manage the end of life impact of their products can lead to significant financial and operational burdens. For instance, regulations mandating the recovery and recycling of chemical containers can impose additional costs.		✓		Medium	**Solid waste** • Provide a 20-square-meter waste storage area to accommodate the project's waste, designed with a roof cover, containment dikes to prevent leaks or spills, and a rainwater drainage system. **Hazardous Waste** • Contaminated waste from maintenance activities, used oil, and used lubricants must be stored according to waste type and sent for disposal by an operator authorized by the Department of Industrial Works. • Contaminated materials from the water treatment system must also be stored according to waste type and disposed of by a licensed operator approved by the Department of Industrial Works. **Non-Hazardous Waste** Includes degraded resins such as cation/anion exchange resins and used activated carbon. These must be stored according to waste type and sent for regeneration or reclamation by external companies authorized by the Department of Industrial Works
5	Transition	Policy	Changes to legislation/ regulations aimed at achieving nature-positive outcomes/ reducing nature-negative outcomes (e.g. trade restrictions, taxes, permits and allocations, protected areas / OECMs)	Stricter environmental regulations or pollution control measures may require the company to reduce emissions to air, water, and soil, or restrict the use of hazardous substances in production. Failure to comply may lead to regulatory penalties, increased operational costs from pollution control investments, delayed permitting, or even the suspension of operational licenses. There may also be trade restrictions on products failing to meet environmental standards.		✓		Medium	**Regulatory Foresight and Scenario Analysis** 1. Thaioil has established systematic processes for identifying, monitoring, and complying with both draft and new law & regulations.(Advocacy) 2. Additionally, the company participates in draft regulatory meetings with relevant authorities to contribute feedback and discuss operational limitations encountered within the industrial sector.

Biodiversity Risk Assessment

Nature-related risk identification and Thaioil and Subsidiaries' Risk assessment

Petrochemicals

No.	Type risk	Risk category	Nature-related risk	Illustrative Business Risk	Time horizon			Thaioil and Subsidiaries' Risk Level	Management approach and mitigation
					S	M	L		
6	Transition	Policy	Changes to legislation/ regulations	Loss of revenues and project delay potentially caused by limited access to reserve areas or potential operating areas due to new or more stringent regulations espeacilly the operation nearby the sea/coastal.		✓		Very Low	
7	Transition	Technological	Requirements to transition to more efficient, resilient and less environmentally damaging technologies	Potential loss of business for companies sticking to older, more damaging practices as safer and more sustainable chemical products become available. For example, the shift from solvent-based to water-based paints due to lower volatile organic compounds (VOC) emissions has reshaped parts of the chemical industry		✓		Low	
8	Transition	Market	Volatility/ changes to costs of materials - Due to sourcing restrictions/ supply /change in global abundance of resource	Loss in market share due to inability to supply green chemicals or challenges in sourcing bio feedstock and biofuels. Supply chain shortages and increased costs from the dependence on natural resources that are at risk from biodiversity loss (e.g. certain minerals used in chemical manufacturing). For example, overexploitation could lead to the scarcity of certain critical minerals essential for specific chemical products		✓		Medium	**Supplier Screening Assessment to reduce risk from material lost** The Company uses Porter's Five Force Model for Supplier's Supply Risk Analysis and visualizes it via the Company's in-house software, namely " SRM (Supplier Relationship Management) Platform". Refer to: https://thaioilwebsite.s3.ap-southeast-1.amazonaws.com/wp-content/uploads/2025/06/02144528/2024-Thaioil-Groups-Supply-Chain-ManagementSCM-Report-3.pdf
9	Transition	Market		Shifts in consumer preferences for products and services due to climate-related concerns. Shifts in market demand (e.g. for bio-based products, recycled plastics), leading to reduced revenue or market share for traditional petrochemical products.	✓			Very Low	

Biodiversity Risk Assessment

Nature-related risk identification and Thaioil and Subsidiaries' Risk assessment

Petrochemicals

No.	Type risk	Risk category	Nature-related risk	Illustrative Business Risk	Time horizon			Thaioil and Subsidiaries' Risk Level	Management approach and mitigation
					S	M	L		
10	Transition	Reputational	Changes in sentiment towards the organization/brand due to impacts on nature - Due to environmental impact	Divestments or legal actions due to environmental incidents as chemical spills or violations of environmental laws	✓			Medium	**Oil spill mitigation** Thaioil and Subsidiaries have stringent preventive measures that align with international standards, and also developed the mitigation measures to cope with unforeseen incident. For example, Thaioil and Subsidiaries conducted exercise of marine oil spill response as a Table Top Exercise to the on-duty operators assigned in the Company's Emergency Plan 4 times/year. For Environmental management, Thaioil and Subsidiaries have Environmental and Marine Ecosystem Projects focused on ecosystem restoration and close monitoring of environmental impacts. This includes the development and application of an oil trajectory model to assess potential oil spill movements.
11	Transition	Reputational		A company found responsible for a significant environmental incident may face intense negative publicity. For example, fires and subsequent chemical runoff at petrochemical storage facilities could cause extensive nature loss (waste, air pollution) leading also to major public and governmental backlash. Over time, continuous and improper discharge of toxic substances (e.g. heavy metals) from chemical manufacturing into aquatic ecosystems could impact species and all communities depending on them. This can lead to significant public backlash.	✓			Medium	**Air Quality Monitoring** • Control the emission rate and pollutant concentration from each stack during full load operation to ensure they do not exceed the limits specified in the Environmental Impact Assessment (EIA) report. • Install a Continuous Emission Monitoring System (CEMS) at the HRSG stack to monitor nitrogen oxide and oxygen gases. • Establish a Preventive Maintenance Program to regularly inspect and maintain machinery and equipment to ensure optimal performance at all times.

Biodiversity Risk Assessment

Nature-related risk identification and Thaioil and Subsidiaries' Risk assessment

Petrochemicals

No.	Type risk	Risk category	Nature-related risk	Illustrative Business Risk	Time horizon			Thaioil and Subsidiaries' Risk Level	Management approach and mitigation
					S	M	L		
12	Transition	Liability	Fines/penalties received due to nature-negative outcomes - Legal liability for nature-related risks	Chemicals companies may face lawsuits, litigation or claims for damage to nature when incidents occur within their operations. For example, companies operating in a biodiverse region may face class-action lawsuits from local communities and environmental groups after a chemicals spill contaminates a major river. The litigations could result in significant financial penalties, mandated costly cleanup operations and a directive to invest in better pipeline integrity monitoring technologies.	✓			Medium	**Air Quality Monitoring** • Control the emission rate and pollutant concentration from each stack during full load operation to ensure they do not exceed the limits specified in the Environmental Impact Assessment (EIA) report. • Install a Continuous Emission Monitoring System (CEMS) at the HRSG stack to monitor nitrogen oxide and oxygen gases. • Establish a Preventive Maintenance Program to regularly inspect and maintain machinery and equipment to ensure optimal performance at all times.
13	Transition	Reputational	Changes in sentiment towards the organization/brand due to impacts on nature - Due to social impact	Disturbances to nearby residents caused by the business activities of plants may lead to protests at the site, potentially resulting in hindered investment or operational difficulties.		✓		Medium	**Noise Monitoring** • Regularly inspect and maintain noise-generating machinery to ensure it remains in good working condition and to prevent excessive noise. • Strictly enforce the use of hearing protection in areas where noise levels exceed 85 decibels (A). • Notify the public in advance of any activities that may impact the community, such as equipment testing or maintenance shutdowns. • Control the noise level at the project boundary to not exceed 70 decibels (A), and establish a channel for receiving complaints.

Power generation

- TOP SPP CO., LTD.

Biodiversity Risk Assessment

Nature-related risk identification and Thaioil and Subsidiaries' Risk assessment

Power generation

No.	Type risk	Risk category	Nature-related risk	Illustrative Business Risk	Time horizon			Thaioil and Subsidiaries' Risk Level	Management approach and mitigation
					S	M	L		
1	Physical	Acute	• Changes in the state of ecosystems and species • Changes to regulating and maintenance services	Weakening of soil systems due to loss of vegetation on slopes, which could lead to flood/landslides, which can damage facilities, causing operational downtime and increased costs of repairs.	✓			Low	**Cyclone Current Mitigation** 1. Predicting and monitoring cyclone events and relevant warning system. Planning the production and delivery of products in advance before offshore cyclones occur. 2. Apply natural catastrophe insurance to cover potential damage costs
2	Physical	Acute		Increased tropical cyclones and other extreme weather events, which can damage facilities, causing operational downtime and increased costs of repairs. Employees working at site locations exposed to extreme heat waves may face serious health risks such as heat exhaustion, dehydration, and heatstroke.	✓			Medium	**Extreme Heat Mitigation** Thaioil and Subsidiaries have safety measures for working with heat (Heat Stress), including working in enclosed areas, high temperatures from machines that still have accumulated heat, long working hours, and heavy workloads. There are both pre-work requirements and work entry requirements, including preventive measures by measuring the work environment to measure heat and support measures in cases where the value exceeds the specified level.
3	Physical	Acute		Health and safety risks to workers and contractors due to prolonged exposure to extreme heat conditions, such as heatstroke, dehydration, fatigue, or reduced productivity in outdoor or poorly ventilated environments.	✓			Low	

Biodiversity Risk Assessment

Nature-related risk identification and Thaioil and Subsidiaries' Risk assessment

Power generation

No.	Type risk	Risk category	Nature-related risk	Illustrative Business Risk	Time horizon			Thaioil and Subsidiaries' Risk Level	Management approach and mitigation
					S	M	L		
4	Physical	Chronic	• Changes in the state of ecosystems and species • Changes to the supply of natural inputs (provisioning services)	Progressive reduction of water supply can cause increased operational and sourcing costs due to reduced water available for refrigeration processes at thermal plants.		✓		Low	**Water Scarcity** 1. Thaioil and Subsidiaries have monitored and predicted water scarcity risks through water risk assessment, scenario analysis, and sensitivity analysis in situations where there are water shortages at various proportions within the production processes. The Enterprise Risk team regularly works together with Thaioil and Subsidiaries' Water Management Working Committee to monitor such risks. The WRI Aqueduct Water Tools, an internationally recognized tool developed by the World Resource Institute, were adopted in the working processes. The Company also built a water management network with both government and non-government agencies, such as the PTT Group Water Committee in the Eastern region, Keyman Water War Room, and the Institute of Water and Environment for Sustainability (established under the Federation of Thai Industries), to create comprehensive water management and determine proactive measures. 2. Additional water supply from external sources and supply from RO Seawater Ref to: https://www.thaioilgroup.com/en/sustainability/climate-strategy/ **Water Purification** Freshwater from BangPra must be treated through a clarifier unit and sand filter before entering the storage tank. From there, the quality of the treated water must comply with the required standards before being distributed to various units.
5	Transition	Reputation	Changes in sentiment towards the organisation/brand due to impacts on nature	Thermal power plants emit significant amounts of greenhouse gases, air pollutants and water pollutants, which can cause loss in revenue due to reputational damage.	✓			Very Low	

Biodiversity Risk Assessment

Nature-related risk identification and Thaioil and Subsidiaries' Risk assessment

Power generation

No.	Type risk	Risk category	Nature-related risk	Illustrative Business Risk	Time horizon			Thaioil and Subsidiaries' Risk Level	Management approach and mitigation
					S	M	L		
6	Transition	Policy	Changes to legislation/ regulations	Loss of revenues and project delay are potentially caused by limited access to reserve areas or potential operating areas due to new or more stringent regulations associated with the power sector.		✓		Very Low	
7	Transition	Reputational	Changes in sentiment towards the organization/brand due to impacts on nature - Due to social impact	Disturbances to nearby residents caused by the business activities of plants may lead to protests at the site, potentially resulting in hindered investment or operational difficulties.	✓			Medium	**Noise Monitoring** • Regularly inspect and maintain noise-generating machinery to ensure it remains in good working condition and to prevent excessive noise. • Strictly enforce the use of hearing protection in areas where noise levels exceed 85 decibels (A). • Notify the public in advance of any activities that may impact the community, such as equipment testing or maintenance shutdowns. • Control the noise level at the project boundary to not exceed 70 decibels (A) and establish a channel for receiving complaints.
8	Transition	Reputational	Changes in sentiment towards the organization/brand due to impacts on nature - Due to social impact	Cogeneration power plants with relatively high GHG emissions may be affected by Thailand's future energy and decarbonization policies. The introduction of carbon taxation or mandatory carbon credit schemes would increase operating costs and reduce competitiveness. This will likely push Thaioil to invest in low-carbon technologies or switch to cleaner fuels to maintain compliance and profitability. In parallel, emission standards are expected to become stricter, requiring investment in pollution control systems (e.g., FGD, SCR), further adding to operational costs.		✓		Very low	
9	Transition	Technological	Requirements to transition to more efficient, resilient and less environmentally damaging technologies	Potential loss of business for companies sticking to older, more damaging practices as safer and more sustainable operation available.		✓		Low	

Upstream and Downstream

Biodiversity Risk Assessment

Nature-related risk identification and Thaioil and Subsidiaries' Risk assessment

Biodiversity Risk Assessment Results for Upstream and Downstream

This section summarizes the nature-related risks identified as **priority businesses** across Thaioil and Subsidiaries' upstream and downstream operations. The risks are categorized by type (physical or transition), and further grouped into relevant sub-categories such as policy, liability, and market. Each row outlines the specific risk driver and indicates which business units are affected.

Type risk	Risk category	Nature-related risk	Upstream			Downstream		
			Chemicals	Water Supply	Oil and Gas	Oil Retail	Power generation	Chemicals
Physical	Acute	• Changes in the state of ecosystems and species • Changes to protection from natural hazards due to change in hazard mitigation services	/	/	/	/	/	/
	Chronic	• Changes in the state of ecosystems and species • Changes to the supply of natural inputs	/	/	/	/	/	/
Transition	Policy	Changes to legislation/ regulations aimed at achieving nature-positive outcomes/ reducing nature-negative outcomes (e.g. trade restrictions, taxes, permits and allocations, protected areas / OECMs)	/	/	/	/	/	/
	Liability	Fines/penalties received due to nature-negative outcomes - Compliance penalties	/	/	/	/		/
	Technological	Requirements to transition to more efficient, resilient and less environmentally damaging technologies	/	/	/		/	/
	Market	Volatility/ changes to costs of materials - Due to sourcing restrictions/ supply /change in global abundance of resource	/	/				/
		Stakeholder conflicts e.g. due to competition for ecosystem services			/	/		
	Reputation	Changes in sentiment towards the organization/brand due to impacts on nature - Due to environmental impact	/	/	/	/	/	/
		Changes to legislation/ regulations	/	/		/		/

4 Monitoring & Measuring

Monitoring & Measuring

Biodiversity Management Plan

MONITORING PLAN

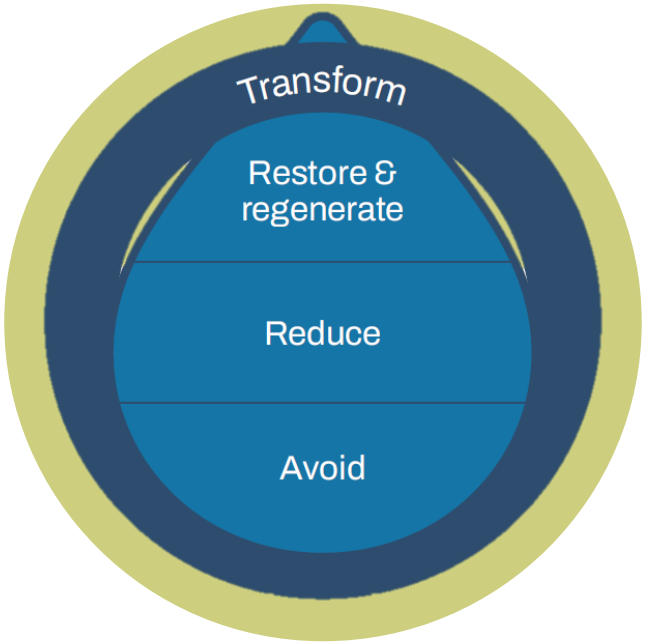
Monitoring Aspect	Location	Frequency	Stakeholder
Biodiversity Baseline Survey	Offset location	Annually, during key seasons for biodiversity activity (e.g., breeding seasons)	Biodiversity specialists
Recheck the program efficiency from the offset funding program (financial efficiency, area coverage, etc.)	Offset location	Annually	Sustainability teams and NGOs, working communities, and relevant local government organization
Equipment and infrastructure inspection	Operational sites	As per the regular maintenance plan	Recommend involving third-party inspector
Marine Water Quality and Biodiversity Monitoring	Coastal and marine area (e.g., offshore near Single Buoy Mooring (SBM) and sensitive habitats)	Annually (for at least 3–5 years) after the incident	- Biodiversity specialists - Marine biologists from universities - DMCR (Department of Marine and Coastal Resources) - NGOs/Local NGOs
Light pollution monitoring	Operational sites.	Semi-annual	-
Household plastic waste	Operational site	Monthly	-
Air pollution monitoring (from transportation)	Operational sites	Quarterly	Tech automotive companies
Stakeholder engagement	-	Quarterly or as Thaioil and Subsidiaries' CSR Plan	Relevant working groups depend on the program
Adaptive management	-	Consider all implemented programs annually for identifying gaps to improve	Relevant working groups depend on the program

5 Mitigation and Management Actions

Mitigation and Management Actions

Thaioil and Subsidiaries have adopted the Science-Based Targets for Nature (SBTs) to guide the minimization and mitigation of the impacts on critical environmental pressures. This approach also identifies opportunities for investment in regenerative and restorative solutions that enhance the health and resilience of nature. The response strategies enabled by the SBT-setting process are aligned with the mitigation hierarchy and the SBTN Action Framework 'AR3T,' first introduced in the Initial Guidance for Business in 2020.

Action Framework 'AR3T'



1. **Avoid:** Measures taken to prevent impact or dependency from happening in the first place, eliminate the impact entirely
2. **Reduce:** Measures that minimize impact and dependency on nature, but without necessarily eliminating them
3. **Regenerate:** Measures to improve existing processes' biophysical function and productivity of an ecosystem or its components
4. **Restore:** Measures aim to accelerate the recovery of an ecosystem with respect to its health, integrity, and sustainability, with a focus on permanent changes in state
5. **Transform:** Measures contributing to system-wide change, notably to alter the drivers of nature loss

Source: https://sciencebasedtargetsnetwork.org/wp-content/uploads/2020/11/Science-Based-Targets-for-Nature-Initial-Guidance-for-Business.pdf

Mitigation - Biodiversity Management Plan

Mitigation Measure

No.	Proposed Actions	Mitigation Hierarchy						Duration	Target and Indicator	Partnerships and Stakeholders
		Avoidance	Minimization	Restoration	Offset	Transformation	Additional Action			
Direct Biodiversity Conservation										
1	Conduct biodiversity monitoring of forest offset habitats to obtain baseline information.						/	Annually	**Target**: To validate monitoring of species diversity (including invasive species) and ecosystem status **Indicator**: Updated database and information on biodiversity in the adjacent area of the sites. **Methods**: To obtain biodiversity data of offset areas, series of surveys for birds, mammals, reptiles, amphibians and insects need to be considered.	• Third-party specialists (e.g. Professors from universities and/or related government agencies, consultancy companies, etc.)
2	Organize a reforestation program on lowland deciduous forest or dry evergreen forest.				/			10 years to achieve NNL target. However, the result from existing programs can be reviewed against NNL goal.	**Target**: To improve the ecosystem that be comparable to the impacted ecosystem. **Indicator**: Biodiversity improvement of the offset area. **Method:** As the program has already been implemented, the reforestation approaches should be certain.	• Third-party specialist (Professors from universities and/or related government agencies, etc.)
3	Implement adaptive management measures if biodiversity monitoring documents impact any species and/or show no significant positive change in overall habitat.						/	If an impact on any marine species is reported	**Target**: To reduce impacts on marine species. **Indicator**: Reduced or no reports regarding impacts on marine species. **Method: -**	• Third-party specialist (Professors from universities and/or related government agencies, etc.)

Mitigation - Biodiversity Management Plan

Mitigation Measure

No.	Proposed Actions	Mitigation Hierarchy						Duration	Target and Indicator	Partnerships and Stakeholders
		Avoidance	Minimization	Restoration	Offset	Transformation	Additional Action			
Indirect Biodiversity Conservation										
4	Provide funding to the relevant organization which protects the coastal habitat or works on sustainable fisheries. The objective is to improve the habitat quality that may be impacted by site activities.				/		/	Minimum 5-year commitment	**Target:** Enhance conservation outcomes in funded areas. Indicator: Number of hectares of protected habitat supported and biodiversity outcomes reported by funded organizations annually.	• Third-party specialist (Professors from universities and/or related government agencies, etc.)
5	Conduct biodiversity monitoring of coastal offset habitats to obtain baseline information.						/	Annually	**Target:** To validate monitoring of species diversity (including invasive species) and ecosystem status **Indicator:** Updated database and information on biodiversity in the adjacent area of the sites. **Methods:** To obtain biodiversity data of coastal habitat, series of surveys for fish, benthos, other invertebrates need to be considered. The area to be considered includes intertidal zone and shallow subtidal.	• Third-party specialists (e.g. Professors from universities and/or related government agencies, consultancy companies, etc.)
Oil spill prevention										
6	Ensure that all equipment and infrastructure are regularly maintained and inspected to minimize the risk of future spill incidents	/	/					Throughout the project's lifetime	**Target**: To reduce the possibility of spill incidents. **Indicator**: Number of near-miss reports, minor leaks, or mechanical failures recorded. **Method: -**	-
7	Conduct long-term environmental and biodiversity monitoring post oil spill incident		/					Annually (at least 3–5 years)	**Target:** No detectable long-term deterioration in water quality or marine biodiversity **Indicator:** Water and biodiversity survey results compared to baseline	-

Mitigation - Biodiversity Management Plan

Mitigation Measure

No.	Proposed Actions	Mitigation Hierarchy						Duration	Target and Indicator	Partnerships and Stakeholders
		Avoidance	Minimization	Restoration	Offset	Transformation	Additional Action			
8	Update Oil Spill Contingency Plan and conduct spill response drill involving community and agencies		/					Every 2 years	**Target**: Updated Oil Spill Contingency Plan (OSCP) and completed drills Indicator: OSCP document and drill report	• Royal Thai Navy (Naval support for drills) • Provincial Disaster Prevention and Mitigation Office (for official coordination) • Local Administrative Organizations
9	Conduct post-spill biodiversity impact assessment and plan restoration if needed			/				Within 6–12 months after incident	**Target:** Complete assessment of marine biodiversity recovery needs **Indicator:** Biodiversity survey report and restoration plan (if applicable)	• Marine Ecological Experts • DMCR and Department of Fisheries (Government for endorsement and support) • Local NGOs (e.g., marine conservation groups like Save Koh Sichang Project)
10	Limit the duration of artificial lighting during nighttime hours.		/					Throughout the project lifetime	**Target:** To reduce the light pollution during nighttime. Indicator: The duration of lighting during nighttime. **Methods:** To minimize light pollution, a schedule will be implemented to restrict the timeframe for nighttime activities.	-
11	Change outdoor lights to shielded light fixtures to reduce light pollution.		/					Throughout the project lifetime	**Target:** To reduce the number of nocturnal species drawn to the Operational site by the Project's light pollution. Indicator: All outdoor light should be changed to shielded light fixtures.	-
12	Encourage Thaioil's staffs to use their own reusable containers for food and beverage.		/			/		Throughout the project lifetime	**Target:** To reduce the single use plastic waste. Indicator: The number of single use plastic containers **Methods:** Tracking the household waste monthly.	-

Mitigation - Biodiversity Management Plan

Mitigation Measure

No.	Proposed Actions	Mitigation Hierarchy						Duration	Target and Indicator	Partnerships and Stakeholders
		Avoidance	Minimization	Restoration	Offset	Transformation	Additional Action			
Carbon Emissions Reduction										
13	Consider changing the logistic system, to reduce air pollution such as using EV vehicle.					/		Throughout the project lifetime	Target: Reducing carbon emission from logistic related activities. Indicator: Decrease of corporate air pollution from logistic aspect. Method: -	-
Stakeholder Engagement and Information Sharing										
14	Routinely meet with stakeholders to share updated information related to the environment, especially biodiversity and habitats. The objective is to strengthen the stakeholder relationship and monitor the funded program.						/	-	Target: To ensure continuous communication with stakeholders and encourage knowledge sharing. Indicator: Minutes of meetings from stakeholder consultations. Method: -	-

Mitigation and Management Actions

Avoid

Thaioil and Subsidiaries' facilities are designed and managed relevant activities in order to avoid biodiversity impact, including forest and marine area. In addition, we are driven by QSHE policy and biodiversity commitment which the highest level of the corporate policy for control operating to avoid loss of biodiversity in forest and marine areas. Environmental Impact Assessments (EIAs) will be conducted for 100% of Thaioil and Subsidiaries facilities prior to the commencement of construction and operations. These assessments aim to identify potential impacts and include mitigation plans. If a project is determined to pose a significant threat to biodiversity, it will be withdrawn to avoid irreversible harm.

QSHE policy

Circular No. 121/2025

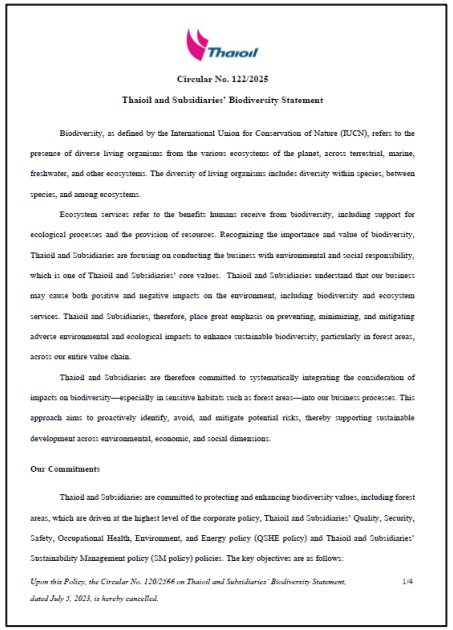
Thaioil and Subsidiaries' Quality, Security, Safety, Occupational Health, Environment, And Energy Management Policy

Thaioil and subsidiaries is committed to operating, planning, setting goals, overseeing production processes, work procedures, maintenance, productivity improvements, and continuous development, with the objective of becoming a learning organization. Thaioil and subsidiaries aims to enhance the level of operations to achieve both Operational Excellence and Business Excellence in accordance with international standards, in order to fulfill corporate goals and sustainable goals. This approach nurtures responsiveness to the visions, needs, and expectations of stakeholders, while fostering appropriate and equitable satisfaction among them. In accordance with the principles of transparency, ethical conduct, and accountability for social and environmental responsibility, Thaioil and subsidiaries' has established its Quality, Security, Safety, Occupational Health, Environment, and Energy (QSHE) Management Policy, based on the following key principles:

1. Set up plans and targets, implement and control to prevent and reduce water waste and air pollution impacts on environment and community resulting from running businesses. This would be executed by efficiently and sustainably optimizing resources throughout the supply chain applying Circular Economy principles, maintaining biodiversity and ecosystem, planning an effective water management plan both in normal and critical conditions, preventing pollution at the source, adapting to climate change, focusing on achieving net zero greenhouse gas emissions, improving energy management, and promoting energy conservation with regular review, monitoring and auditing for improvement;
2. Execute systematic risk management by prioritizing and identifying measures to control and reduce operation and process risks As Low As Reasonably Practicable (ALARP), set up challenge targets, promote good health, occupational health and work place environment to prevent incidents possibly causing damage or injury and sickness for employees, contractors and other stakeholders and recognize security threats to protect life, Thaioil and subsidiaries assets and information. Employees and contractors are encouraged to study and comprehend their responsibilities and rights of Stop Work Authority (SWA) in unsafe act and unsafe condition, constant audit operation and review performances, learn from incidents that have occurred both internally and externally, set up emergency management guideline for crisis situation well as drill schedule in all physical, chemical, and biological aspects to minimize impacts in all aspects and ensure continuity in business;

Upon this Policy, the Circular No. 119/2566 on Thaioil and Subsidiaries' Quality, Security, Safety, Occupational Health, Environment, And Energy Management Policy, dated July 3, 2023, is hereby cancelled. 1/2

Biodiversity Commitment



Circular No. 122/2025

Thaioil and Subsidiaries' Biodiversity Statement

Biodiversity, as defined by the International Union for Conservation of Nature (IUCN), refers to the presence of diverse living organisms from the various ecosystems of the planet, across terrestrial, marine, freshwater, and other ecosystems. The diversity of living organisms includes diversity within species, between species, and among ecosystems.

Ecosystem services refer to the benefits humans receive from biodiversity, including support for ecological processes and the provision of resources. Recognizing the importance and value of biodiversity, Thaioil and Subsidiaries are focusing on conducting the business with environmental and social responsibility, which is one of Thaioil and Subsidiaries' core values. Thaioil and Subsidiaries understand that our business may cause both positive and negative impacts on the environment, including biodiversity and ecosystem services. Thaioil and Subsidiaries, therefore, place great emphasis on preventing, minimizing, and mitigating adverse environmental and ecological impacts to enhance sustainable biodiversity, particularly in forest areas, across our entire value chain.

Thaioil and Subsidiaries are therefore committed to systematically integrating the consideration of impacts on biodiversity—especially in sensitive habitats such as forest areas—into our business processes. This approach aims to proactively identify, avoid, and mitigate potential risks, thereby supporting sustainable development across environmental, economic, and social dimensions.

Our Commitments

Thaioil and Subsidiaries are committed to protecting and enhancing biodiversity values, including forest areas, which are driven at the highest level of the corporate policy, Thaioil and Subsidiaries' Quality, Security, Safety, Occupational Health, Environment, and Energy policy (QSHE policy) and Thaioil and Subsidiaries' Sustainability Management policy (SM policy) policies. The key objectives are as follows:

Upon this Policy, the Circular No. 120/2566 on Thaioil and Subsidiaries' Biodiversity Statement, dated July 3, 2023, is hereby cancelled. 1/4

Environmental Impact Assessment

รายงานฉบับสมบูรณ์

การวิเคราะห์ผลกระทบสิ่งแวดล้อม

ชื่อโครงการ	โครงการโรงกลั่นน้ำมันไทยออยล์ ส่วนที่ 2
ที่ตั้งโครงการ	เลขที่ 42/1 หมู่ที่ 1 ถนนสุขุมวิท กม.ที่ 124 ตำบลทุ่งสุขลา อำเภอศรีราชา จังหวัดชลบุรี 20230
ชื่อเจ้าของโครงการ	บริษัท ไทยออยล์ จำกัด (มหาชน)
ที่อยู่เจ้าของโครงการ	เลขที่ 555/1 ศูนย์เอนเนอร์ยี่ คอมเพล็กซ์ อาคารเอ ชั้น 11 ถนนวิภาวดีรังสิต แขวงจตุจักร เขตจตุจักร กรุงเทพฯ 10900
กรรมอบอำนาจ	
( )	เจ้าของโครงการได้มอบอำนาจให้..... เป็นผู้ดำเนินการเสนอรายงาน ดังหนังสือมอบอำนาจที่แนบ
(✓)	เจ้าของโครงการมิได้มีการมอบอำนาจแต่อย่างใด

รายงาน

ผลการปฏิบัติตามมาตรการป้องกัน และแก้ไขผลกระทบสิ่งแวดล้อม และมาตรการติดตามตรวจสอบผลกระทบสิ่งแวดล้อม

โครงการโรงกลั่นน้ำมันไทยออยล์ ครั้งที่ 4
บริษัท ไทยออยล์ จำกัด (มหาชน)
ระหว่างเดือนกรกฎาคม-ธันวาคม พ.ศ. 2566

เลขที่ 555/1 ศูนย์เอนเนอร์ยี่ คอมเพล็กซ์ อาคารเอ ชั้น 11
ถนนวิภาวดีรังสิต แขวงจตุจักร กรุงเทพมหานคร 10900
โทรศัพท์: 0-2797-2999, 0-2299-0000

Mitigation and Management Actions

Reduce

Thaioil and Subsidiaries minimized the impacts on biodiversity by reducing water consumption, as dependency assessment shows that Thaioil heavily relies on water for operational activities. Accordingly, Thaioil and Subsidiaries launched the TOP CE WE GO' project, such as wastewater reduction, water consumption reduction, and also set a water consumption reduction target. Please see more information at https://www.Thai Oilgroup.com/en/sustainability/environment-dimension-circular-economy/

Water consumption reduction and Wastewater reduction
Target : 103 Ton/hr , Actual : 107 Ton/hr

Highlight

- 3Rs in process (Reduce, Reuse, Recycle) principles are adopted in water management to maximize the utilization efficiency and minimize impact on ecosystem

no.	Projects	Water saving (m3/h)	
		Target	Average'23
1	Install TOP SPP blowdown RO.	7.48	8
2	Reuse backwash water at filtration package.	35	35
3	Minimize backwash water at Demin-1/2 by partial regeneration of resin.	14	14
4	Plant water reduction at U-2230 (APU-C)	20	20
5	Swop SWS-2 to SWS-5 to save LP steam (APU-C)	14	12
6	Minimize backwash frequency of side stream filter of Q-4707 and Q-85010	3.21	3
7	TOP SPP water recovery	9	13
8	Fixed pipeline leakage	2	2
	Total	**103**	**107**

- Water saving campaign "เจอ จด แจ้ง จบ"

=> Result : 60 project , Total water saving = 7,700 L/hr

Emission Reduction
ETP Cover Project

Highlight

- Effluent Treatment Plants (ETP): The Company regularly tracks and monitors VOCs to improve wastewater treatment system. The ETP Cover Project has been initiated. The project is now in the process of installing an ETP Cover system to reduce VOCs emissions into the environment.
  Ref: IR report Y2023 Page 35

Emission Reduction
Green Product

Highlight

- Our company sold green products that reduce emissions released to the environment such as
  - Low Sulfur Fuel Oil (LSFO or Fuel Oil IMO) with sulfur content at 0.5% or below.
  - Rubber oils (TDAE, TRAE, AROS) with PCA content below the international limit, thus non-carcinogenic and does not cause genetic mutation in humans.

- Furthermore, Our company sold low-carbon products to reduce downstream emissions from end-users such as gasohol, biodiesel, and bioethanol, etc

Ref: IR report Y2023 Page 47

Examples of activity under the TOP CE WE GO project

Mitigation and Management Actions

Reduce

In addition, Thaioil and Subsidiaries launched an emission reduction project to minimize impact on biodiversity, e.g., Green Product (Promotion of Green Procurement), ETP cover project (reducing VOCs emissions into the environment).

Please see more information at https://www.Thai Oilgroup.com/en/sustainability/environment-dimension-circular-economy/

Thaioil CE WE GO Project: Promoting Circular Economy Values

Objective

To raise awareness of energy and environmental conservation among employees and foster positive coexistence behaviors within the organization.

Project Type

Thaioil CE WE GO Project: Promoting Circular Economy Values

Performances 2024

In 2024, Thaioil Group conducted activities under the "Thaioil CE WE GO" project, as follows:

1. Organized 2 sessions of Green Office training for the Auditorium Building and the Thaioil Health and Learning Center, with the aim of preparing for registration of Green Office certification with the Pollution Control Department for both buildings in 2025.
2. Conducted a study tour project with 10 representative households and the Ban Na Kao community committee by visiting the waste management model community project in Rayong Province.

Converting used cooking oil from communities into biodiesel.

Examples of activity under the TOP CE WE GO project

Mitigation and Management Actions

Regenerate

Thaioil and Subsidiaries implemented regeneration actions by enhancing the biophysical function and ecological productivity of ecosystems through improvements to existing processes. These efforts are aligned with ecosystems currently in use by humans and do not require reclassification. By systematically tracking the progress of the restoration initiatives, Thaioil and Subsidiaries ensured that its contributions are both effective and compatible with nature's contributions to people.

Restore

Thaioil and Subsidiaries implemented restoration measures aiming to recover ecosystems, either by restoring them to their original state or by reestablishing essential ecological functions and services. Thaioil and Subsidiaries implemented these efforts both during operations and at the end of project life cycles, with initiatives such as supporting species recovery and ecological restoration of specific sites. These measures are designed to initiate or accelerate the recovery of ecosystem health, integrity, and sustainability, ensuring long-term, positive environmental outcomes.

Mitigation and Management Actions

Regenerate and Restore

Examples of activity under the Regenerate and Restore actions

In 2024, Thaioil and Subsidiaries conducted a field visit to monitor the progress of the 2024 reforestation project in Phrae Province. The visit was joined by Associate Professor Dr. Lamthai Asanog, a forestry planting and maintenance advisor, and field officers from Forest Resources Management Office 3 (Phrae). Local leaders and members of the community enterprises responsible for the reforestation warmly welcomed the team. The inspection revealed significant progress, with over 5,000 rai of forest planted across five sites, marking an increase of more than 3,000 rai since August 2024.

Thaioil and Subsidiaries have made significant progress in its forestation efforts, planting over 8,000 rai of new forest

“EOSL” , Thaioil and Subsidiaries participated in the project of “Afforestation and Reparation for Khao Kheow Wildlife and Nature Education Center” in Sriracha District, Chonburi Province

Please see more information at the Thai Oil Biodiversity website

Mitigation and Management Actions

Regenerate and Restore

Examples of activity under the Regenerate and Restore actions

Thaioil and Subsidiaries organized 300-rai mangrove reforestation project in Chonburi Province

SAKC organized the 8th mangrove restoration activities at Pak Nam Prasae, Rayong Province

Please see more information at the Thai Oil Biodiversity website

Mitigation and Management Actions

Transform

Thaioil and Subsidiaries built cross-sector partnerships across sectors to drive transformative change in environmental sustainability. Through collaborations with government agencies, industry peers, and community networks, Thaioil is expanding the impact beyond traditional operations. These partnerships aim to restore ecosystems and promote biodiversity, and sustainable livelihoods.

Thaioil and Subsidiaries, as a member of the Thailand Mangrove Network, actively supported sustainable mangrove conservation. The Network aimed to expand and restore mangrove forests by 30% by 2030, with a focus on biodiversity, community empowerment, pollution reduction, and sustainable economic development.

Thaioil and Subsidiaries as a member of the Thailand Mangrove Network (signed a Memorandum of Understanding (MOU) with the Department of Marine and Coastal Resources (DMCR))

Please see more information at the Thai Oil Biodiversity website

Mitigation and Management Actions

Transform

In alignment with its 2025 strategy, Thaioil and Subsidiaries are also working with domestic and international partners to extend thier value chain, develop high-value sustainable products, and penetrate emerging markets such as Vietnam, Indonesia, and India. These cross-sector collaborations support the development of innovative solutions that enhance ecosystem resilience and promote long-term well-being for both people and the planet. The transformative strategy are as follows:

Strengthen Refinery Business and Expedite the Clean Fuel Project (CFP): Thaioil and Subsidiaries prioritize the CFP as the key to its long-term strength. The company is also implementing new technologies for productivity improvement to enhance competitiveness and control costs.

Value Chain Extension: Develop high-value products for industrial applications to meet market demands. Collaborate with partners to expand distribution in high-potential markets like Vietnam, Indonesia, and India. Notably, expand the Disinfectant & Surfactants (D+S) chemicals business in the cleaning products and infection control market. Under the TOP for The Great Future initiative, Thaioil explores new ventures with PTT Group, including bio-surfactants, blue/green hydrogen, bio-jet fuel, and CCUS.

Drive for Sustainability: Commitment to sustainable business practices, considering Environmental, Social, and Governance (ESG) factors. Focus on improving energy efficiency to reduce greenhouse gas emissions and creating value for society and communities through various projects, such as promoting education, job creation, and access to healthcare in remote areas.

Please see more information at the Thaioil Reveals 2025 Business Strategy and Expedites Clean Fuel Project (CFP) Management – Thaioil Group


Thank you