

Biodiversity Management

TPI Polene Public Company Limited is committed to responsible business conduct that is sustainable for the environment and society, aiming to prevent impacts on ecosystems and biodiversity. This is particularly crucial in the Company's primary operational site in Saraburi Province, which has unique and highly sensitive ecological characteristics. The Company is determined to protect and restore biodiversity, having established clear policies, goals, and operational guidelines to ensure that business growth is conducted in parallel with the preservation of natural balance and supports the Sustainable Development Goals (SDGs) and the Global Biodiversity Framework (GBF).

Positive and Negative Impacts

The Company recognizes that large-scale industrial operations, especially in ecologically important areas, present challenges and may impact biodiversity. Therefore, the Company adheres to the principles of systematically preventing and managing impacts, while simultaneously creating positive impacts to compensate for and enhance the ecosystem.

Negative Impacts & Challenges

Landscape Alteration and Karst Ecosystems: The quarrying of limestone and shale for the cement industry, a core activity of the industry, directly affects the karst landscape, biodiverse habitats, and the habitats of endemic species. According to surveys, the main operational site in Saraburi Province is located near critical sites and ecologically significant areas, such as the Kaeng Khoi Non-Hunting Area (approx. 3.0 km south of the project) and Khao Yai National Park (approx. 2.6 km southeast of the project). Consequently, special monitoring and mitigation measures have been established.

Impact on the Pasak River Basin: Production and operational activities in the area have the potential to affect the quality of water resources within the Pasak River Basin. The main challenge is managing the intake of raw water from the Pasak River for use in operations, as inefficient management could impact water volume and the balance of the aquatic ecosystem. Therefore, the Company places great importance on the regular monitoring of water quality and aquatic biological resources near its water pumping station.

Impacts from On-site Activities: Activities within the project area, such as noise from blasting, heavy machinery operation, vehicle traffic, and human presence, may disturb the foraging, reproductive, or movement patterns of some wildlife species, especially those highly sensitive to disturbance. These impacts may cause wildlife to avoid the area or use it only as a temporary feeding ground rather than a primary habitat. The Company acknowledges this challenge and has seriously implemented preventive and mitigation measures.

Positive Impacts & Biodiversity Enhancement

Systematic Biodiversity Monitoring and Surveillance: The Company has engaged an expert consulting firm (United Analyst and Engineering Consultant Co., Ltd.) to conduct annual surveys of wildlife resources within the project area and a 3-kilometer radius. The latest survey in March 2025 found no fewer than 136 wildlife species. The survey also tracks trends of important wildlife populations, such as the Wrinkle-lipped Bat population in a cave west of the project, which was found to have increased from approximately 324,900 individuals in 2024 to approximately 350,700 in 2025.

Quarry Rehabilitation into a Thriving Ecosystem: The Company aims to rehabilitate mined areas with the goal of creating spaces with higher ecological value (Ecological Uplift). This is achieved through reforestation with native plant species suitable for karst ecosystems, creating water sources, and developing rock cliffs to once again serve as habitats for endemic animals. In 2024, the Company reforested an area of 25 rai, planting 2,000 trees.

Promoting Off-site Biodiversity through Innovation: The Company has leveraged its unique strengths to develop and supply organic agricultural products, such as bio-fertilizers and soil conditioners. These products help restore soil health in surrounding agricultural areas, reduce chemical use, and contribute to the overall balance of the regional ecosystem.

Effective Water Management: Through an efficient water management system, the Company is able to treat and recycle water used within the plant, reducing water withdrawal from natural sources and discharging water that meets the highest standards back into the environment. This is reflected in the regular monitoring of aquatic biological resources near the pumping station on the Pasak

River. In 2024, the Company recycled 1,323,019 cubic meters of treated wastewater and used 641,181 cubic meters of rainwater from its collection ponds in the production process, replacing raw water intake from the Pasak River.

Proactive Wildlife Protection Measures:

- **Establishment of a Buffer Zone:** The Company has clearly demarcated the project boundaries and installed fencing along the perimeter adjacent to forest areas to prevent wildlife from entering operational zones where they could be harmed.
- **Emergency Response Plan for Wildlife Incidents:** An emergency plan is established and drilled annually (latest drill on May 8, 2024) to ensure that employees and security personnel can respond to situations correctly and safely for both humans and animals, such as in the case of reporting serow sightings.
- **Communication and Awareness:** Measures and procedures for when wildlife is sighted are clearly posted throughout the plant and quarry areas, including the emergency reporting channel (Tel. 777), to engage all employees in conservation efforts.

Environmental and Health Impact Studies: The Company collaborates with academic institutions (the Science Center, Faculty of Science and Technology, Suan Sunandha Rajabhat University) on the "Health and Environmental Impact Study Project for Health Risk Areas" and the "Health Risk Mapping and Health Status Monitoring for At-Risk Communities Project." These projects monitor the accumulation of heavy metals and pollutants in various organisms, such as plants, vegetables, fish, shellfish, and raw milk, to ensure that the Company's operations do not adversely affect the food chain and the health of surrounding communities.

Financial Impact Perspective

The Company views investment in biodiversity management as a key strategy for building long-term financial stability and advantage, as follows:

Risk and Cost Management: Proactive environmental management helps mitigate operational and regulatory risks, while increasing resource efficiency, which leads to tangible cost savings. For example, the Environmental Improvement Project Line 1-3, which switched to using Bag Filter technology, not only reduces dust particle impacts but also achieves energy cost savings of up to 11.4

million Baht per year. Furthermore, using Waste-Based Fuel (MSW) and electricity generated from waste and Solar Farms instead of fossil fuels helps reduce greenhouse gas emissions and production costs.

Access to Capital and Business Opportunities: An outstanding ESG performance increases opportunities to access Sustainable Finance from investors and financial institutions, such as Sustainability Bonds or Sustainability-Linked Loans. It also creates business opportunities from environmentally friendly product lines.

Enhancing Long-Term Corporate Value: A commitment to ecosystem restoration and operational excellence helps strengthen the organization's Brand Reputation and investor confidence, which positively impacts the company's long-term valuation.

Objectives and Goals

To achieve its biodiversity objectives, the Company has set the ultimate goal of becoming a Nature-Positive organization to achieve a Net Positive Impact (NPI), with clear, long-term strategic goals that are aligned with the Global Biodiversity Framework (GBF):

- **No Net Loss (NNL):** The Company aims to prevent and reduce impacts to the point where there is no overall loss of biodiversity.
- **Net Positive Impact (NPI):** The Company is committed to restoring and creating more biological value than is used, setting a target to rehabilitate ecosystems at a **ratio of 1.25 times the affected area** in order to achieve the Net Positive Impact goal by 2040.

Management Approach

The Company has established a clear framework for biodiversity management, based on the principles of the "Statement of Intent on Biodiversity Management (No. BC 087/2565)," which serves as the core policy document integrated into all aspects of operations.

Policy and Commitments

The Company is committed to protecting biodiversity by defining it as part of the Company's Quality, Safety, Health, and Environment (QSHE) Policy, with key commitments including:

- **Protection and Impact Reduction:** A commitment to protect, prevent, and reduce environmental impacts by using resources

sustainably in accordance with the Circular Economy principles.

- **No Net Deforestation:** A commitment to rehabilitate or reforest areas to compensate for any forest loss from current or future operations.

Management Framework and Mitigation Hierarchy

The Company applies the internationally recognized "**Mitigation Hierarchy**" as its operational framework to manage biodiversity impacts in a stepwise manner, from risk assessment to compensation and the creation of positive value, as follows:

1. Avoid: The first and most critical step is to prevent impacts from occurring at the outset through careful planning. The Company's actions that reflect this principle include:

- **Emergency Preparedness:** The Company has an "Emergency Response Plan for Wildlife Incidents" and conducts regular drills. It includes clear procedures, such as "do not chase or startle the animal; observe from a safe distance," to avoid harm to wildlife.
- **Preventive Design:** Fencing has been installed along the project's perimeter adjacent to forest areas to act as a buffer zone, preventing wildlife from straying into high-risk operational areas.

2. Minimize: Where impacts cannot be completely avoided, the Company will reduce the duration, intensity, and extent of impacts to the lowest possible level. This includes:

- **Proactive Impact Monitoring:** The Company conducts the "Health and Environmental Impact Study Project" with academic partners to continuously monitor pollutant levels in the environment, enabling the management and control of impacts to ensure they remain at safe levels.

3. Restore: The Company is committed to rehabilitating and repairing impacted ecosystems to return them to a healthy state or an even better condition. This includes:

- **Quarry Rehabilitation:** A key goal is the rehabilitation of post-mining areas through reforestation with native species suitable for the karst ecosystem and the creation of water sources for wildlife to restore ecological balance.

4. Offset: As a final step, the Company takes measures to compensate for any significant residual impacts. These offset measures are in the form of additional positive conservation benefits, such as:

- **Net Positive Impact Goal:** The long-term goal of rehabilitating ecosystems at a ratio of 1.25 times the affected area is considered the ultimate offset measure, ensuring that, overall, the Company's operations return more biological value to nature than was impacted.

Alignment with International Goals

The Company recognizes that biodiversity challenges are a global agenda. Therefore, it has adopted international goals and frameworks to guide its strategy, ensuring that its operations contribute to global targets and meet stakeholder expectations.

- **Global Biodiversity Framework (GBF):** The Company's goal of achieving Net Positive Impact by 2040 is directly aligned with the GBF's targets, particularly Target 15, which calls on businesses to assess and disclose their biodiversity-related impacts and risks and to halve negative impacts.
- **Sustainable Development Goals (SDGs):** The Company's operations support several SDGs, especially SDG 15 (Life on Land) through its quarry rehabilitation and reforestation projects, SDG 14 (Life Below Water) through its water management and aquatic biological resource monitoring, and SDG 12 (Responsible Consumption and Production) through the sustainable use of resources in line with the circular economy.

Stakeholder Engagement

The Company fosters engagement with key stakeholders to enhance the effectiveness of biodiversity management and achieve common goals. Key collaborations include:

Engagement with Governments or Regulators: The Company works closely with government agencies such as the Department of National Parks, Wildlife and Plant Conservation (specifically the Protected Area Regional Office 1 and the Wildlife Conservation Division). This collaboration supports the implementation of the wildlife emergency response plan and promotes various conservation projects effectively.

Engagement with Local or International Organizations and NGOs:

The Company builds diverse partnership networks to drive its biodiversity initiatives, such as:

- **Academic Institutions:** Collaborating with Suan Sunandha Rajabhat University on the "Health and Environmental Impact Study Project" and the "Health Risk Mapping Project" to ensure impact monitoring is scientifically sound.
- **Expert Organizations:** Partnering with consulting firms like United Analyst and Engineering Consultant Co., Ltd. to systematically survey and monitor biodiversity, ensuring transparent and credible data.
- **Local Communities:** Supporting projects that promote sustainable agriculture, such as the development and sale of bio-fertilizers, which helps restore soil biodiversity and create shared value with the community.

Risk Assessment, Monitoring, and Measurement

The Company systematically integrates the assessment, monitoring, and measurement of biodiversity value into its corporate risk management process, covering all operational areas to ensure that its actions align with its stated intentions.

Risk Assessment: The Company places high importance on the rigorous assessment of biodiversity risks and impacts for both Existing Operations and New Projects.

- **For Existing Operations:** The Company conducts an annual review and assessment of biodiversity risks, using data from annual ecosystem monitoring as a key input for evaluating and updating management measures to respond to current conditions.
- **For New Projects:** Biodiversity assessment is a required part of the project feasibility (Due Diligence) process and a critical component of the Environmental Impact Assessment (EIA) and Geographic Information System (GIS) mapping to identify sensitive areas before any investment decision is made. This ensures that future projects are planned to best avoid and minimize impacts from the design stage.

Biodiversity Value Monitoring: To obtain transparent and credible data, the Company engages external experts to conduct biological resource surveys at least once a year. These surveys cover all relevant ecosystems, including Terrestrial Ecosystems (e.g.,

wildlife in and around the project area), Cave Ecosystems (e.g., bat populations), and Aquatic Ecosystems (e.g., biological resources in the Pasak River Basin). The data from this monitoring is used to evaluate the effectiveness of conservation measures and serves as a baseline for creating and updating future Biodiversity Action Plans (BAP).

Auditing: The Company has both internal and planned external audit processes to verify the effectiveness of operations in all relevant areas.

- **Internal Auditing:** Processes and performance are regularly audited against established procedures, such as wildlife emergency drills, which serve to verify the readiness and understanding of employees.
- **External Auditing:** The verification of key biodiversity data, such as wildlife surveys and health impact studies, covers all main operational sites and is conducted by independent external parties, namely United Analyst and Engineering Consultant Co., Ltd. and Suan Sunandha Rajabhat University. Furthermore, the Company aims to pilot an international biodiversity management standard (by 2028), which will include certification audits by an independent third party, including audits of the Biodiversity Action Plan (BAP) at all relevant sites, to elevate its operational standards and build stakeholder confidence.

Performance and Key Projects

The Company has translated its biodiversity management approach into tangible actions through various implemented projects and activities with ongoing monitoring, as follows:

1. Biodiversity Survey and Monitoring

The Company recognizes that accurate data is the foundation of effective management. Therefore, it has implemented systematic and continuous biodiversity monitoring projects to understand the status of the ecosystem and plan management actions accordingly.

Key Measures and Activities:

- The Company engages an expert consulting firm (United Analyst and Engineering Consultant Co., Ltd.) to conduct annual surveys of wildlife resources within the project area and

a 3-kilometer radius, using various methods including direct observation, camera traps, and high-frequency bat detectors.

- The Company monitors aquatic biological resources in the Pasak River basin and surrounding streams to monitor for impacts from the water pumping station, with surveys covering plankton, benthos, and fish species.

Performance/Results:

- The data from these surveys is a crucial tool for assessing the effectiveness of conservation measures and indicating the health of the ecosystem. The latest survey (March 2025) found no fewer than 136 species, including the Serow, a reserved wild animal, and 96 other protected wildlife species.
- Monitoring of the Wrinkle-lipped Bat population showed a continuous increase to approximately 350,700 individuals (surveyed in March 2025), reflecting that the Company's activities have not negatively impacted the sensitive cave ecosystem.
- The aquatic biological resources survey (September 2024) found that the phytoplankton diversity index indicated a "moderate" water quality level, suggesting that the water source has suitable properties to support aquatic life. 42 phytoplankton species, 20 zooplankton species, 12 benthic species, and 11 fish species were identified, including common regional fish such as the Common Silver Barb, Nile Tilapia, and Three-spotted Gourami.

2. Proactive Measures for Human-Wildlife Coexistence

To mitigate operational impacts and promote safe coexistence between employees and wildlife, the Company has implemented several proactive measures focused on prevention and preparedness.

Key Measures and Activities:

- The Company has installed clear fencing along the perimeter adjacent to the forest, totaling over 2,510 meters, to serve as a buffer zone, preventing wildlife from straying into high-traffic operational areas where they could be harmed.
- An "Emergency Response Plan for Wildlife Incidents" is established and drilled annually (latest drill on May 8, 2024) with the objective of creating readiness and a standardized protocol for all employees and security personnel. The plan

emphasizes rapid reporting through the emergency control center and procedures that prioritize animal safety, such as prohibiting chasing or startling the animals and instead observing and coordinating with experts.

- Announcements detailing measures and proper conduct upon sighting wildlife are posted clearly throughout the plant and quarry to foster a corporate culture that values conservation and awareness of sharing the space with wildlife.

Performance/Results:

- These measures help create a safe working environment and effectively reduce potential conflicts, enabling the Company to systematically handle wildlife sightings without impacting operations or animal welfare.

3. Restoration and Creating Positive Value

The Company not only mitigates impacts within its operational area but also aims to create positive value for the surrounding environment and communities to demonstrate comprehensive and sustainable responsibility.

Key Measures and Activities:

- The "Reforestation and Degraded Area Rehabilitation Project" has been ongoing since 1992, focusing on planting native species to restore the forest to a state close to its original ecosystem. This not only increases green spaces but also creates and connects habitats for a wide variety of living creatures. In 2024, 25 rai were reforested with 2,000 trees.
- The Company has leveraged its innovative strengths to develop a line of organic agricultural products, such as bio-fertilizers and soil conditioners, to promote sustainable farming in the surrounding communities. This is considered an off-site positive impact, as it helps reduce the use of environmentally harmful chemicals and restores biodiversity in the soil, which is a critical foundation of the agricultural ecosystem.

Performance/Results:

- These projects reflect the Company's vision to be part of the solution to broader environmental issues by rehabilitating ecosystems both within and outside its operational footprint, which helps strengthen community relations and create shared value in the long term.

Future Operations

To build upon its current work and move towards its long-term sustainability goals, the Company has established a clear plan for future operations, divided by timeframe as follows:

Short-term Goals (1-3 Years)

1. The Company operates under its "Biodiversity Action Plan (BAP)," a master plan used to manage biodiversity in all main operational areas. The BAP is reviewed and developed continuously, using data from annual surveys to update the plan in line with the site's conditions and surveyed species.

2. The Company will study and consider participating in an internationally recognized biodiversity certification program, such as the IUCN Green List of Protected and Conserved Areas, ISO 14055 (Management of land degradation and desertification), or biodiversity offset standards, with the goal of launching a pilot scheme in a suitable area by 2028. The objective is to assess the alignment of internal processes with international standards, benchmark the effectiveness of various standards, and build personnel capacity in preparation for future expansion.

3. The Company will continuously integrate biodiversity impact and risk assessments into all new and expansion projects, in accordance with Environmental Impact Assessment (EIA) requirements.

4. The Company works closely with government agencies such as the Department of National Parks, Wildlife and Plant Conservation (specifically the Protected Area Regional Office 1 and the Wildlife Conservation Division), local communities, and conservation organizations to support conservation projects and effectively manage wildlife emergency situations according to the established plan.

Medium-term Goals (4-10 Years)

1. The Company will establish additional "Local Key Species Protection Programs" under its BAP, focusing on species that are indicators of the health of the Karst ecosystem, such as the Serow (*Capricornis sumatraensis*), a reserved wild animal found in the area, and the conservation of cave ecosystems, which are vital habitats for the Wrinkle-lipped Bat (*Chaerephon plicatus*) and other

bat species with a combined population of over 350,700 individuals.

2. The Company will use the learnings from the pilot scheme to develop a master plan for systematic application, with the goal of expanding its participation in certification programs to other operational sites with high biodiversity importance.

3. The Company will continue to implement its Biodiversity Action Plan (BAP) across all main operational areas and will conduct performance reviews of the plan with external experts, using data from annual wildlife monitoring surveys as a basis for evaluation.

Long-term Goals (Over 10 Years)

1. The Company has set a long-term goal to achieve "No Net Loss" of biodiversity and aims for a "Net Positive Impact" by 2040. This includes the objective of rehabilitating ecosystems at a ratio of 1.25 times the affected area to return more biological value than was used.

Appendix A: Biodiversity Roadmap

Objectives / Goals	Short-term (1-3 Years)	Medium-term (4-10 Years)	Long-term (>10 Years)
1. Foundation & Risk Assessment			
1.1 Review and develop "Biodiversity Action Plan (BAP)"	●		
1.2 Study and pilot international certification standard (by 2028)	●		
1.3 Integrate risk assessment into all new projects	●	●	●
2. Operations & Rehabilitation			
2.1 Implement BAP and conduct expert reviews		●	●
2.2 Establish "Key Species Protection Programs" (Serow, Bats)		●	
2.3 Plan for Systematic Application of certification standards		●	
2.4 Rehabilitate ecosystems at a 1.25x ratio			●
3. Partnership & Monitoring			
3.1 Conduct annual wildlife and bat population surveys	●	●	●
3.2 Support conservation projects with government and communities	●	●	●
4. Ultimate Goal			
4.1 Achieve "Net Positive Impact" by 2040			●