Berli Jucker Public Company Limited
บริษัท เบอร์ลี่ ยุคเกอร์ จำกัด (มหาชน)

Biodiversity Management Report	**Support answer: 2.7 Biodiversity**
	Topic: Biodiversity Risk Assessment
	Report Year: 2024

Berli Jucker Public Company Limited and the Group of Companies (BJC) place importance on environmental stewardship and non-impacting of nature, as well as giving importance to ecosystems on humans and business operations. At the same time, it is committed to helping preserve and restore biodiversity in order to create a positive impact.

In 2024, BJC enhanced its biodiversity management policy to provide clearer guidance for its subsidiaries, employees, suppliers, and partners. The updated policy emphasizes actions aligned with the No Gross Deforestation approach, aiming to prevent adverse impacts on biodiversity and ecosystems. It also reflects the company's commitment to contributing to ecosystem restoration and long-term environmental stewardship.

BJC operates on biodiversity with reference to the framework of "Taskforce on Nature related Financial Disclosures (TNFD)" and "Bio-based Economic Development Agency (Public Organization)" or "NEDA" on biodiversity and business. These frameworks are used for assessment to serve as a guideline for evaluating, analyzing, and finding appropriate, efficient, and effective management methods.

Corporate Biodiversity Management

1. Governance

The Board of Directors has assigned the Sustainable Development Committee (SDC) to oversee BJC's biodiversity-related initiatives, including conservation, restoration, and the enhancement of ecosystem abundance. The Risk Management Committee is responsible for identifying and assessing biodiversity-related risks and opportunities, ensuring that appropriate risk mitigation measures are implemented to maintain risks at an acceptable level for the organization.

In parallel, the Management Board is responsible for setting climate-related goals and work plans, as well as managing the Group's operations to ensure the achievement of these targets.

BJC has established a comprehensive set of policies covering environmental protection, biodiversity conservation, and deforestation prevention. These policies are designed to guide business operations in a way that minimizes negative impacts on ecosystems and biodiversity, supporting the company's sustainability goals and targets.

To support effective implementation, a Sustainable Development Subcommittee (SDS), comprising senior executives from each business group, has been established. The SDS is

tasked with supporting, monitoring, and evaluating biodiversity-related activities across business units to ensure alignment with corporate strategies and overarching sustainability objectives.

All biodiversity-related matters are regularly reviewed and reported to the Board of Directors by the respective committees to ensure continued focus, accountability, and strategic oversight.

2. Strategy

BJC has established strategies to support biodiversity-related actions as follows:

1) **Avoid** business operations that will negatively impact the biodiversity throughout the supply chain. Operational sites must not be close to areas that are important to the biodiversity of the country and the world.

2) **Reduce** risks and impacts on biodiversity

3) **Protect** biodiversity and prevent biodiversity loss and its impacts on ecosystems

4) **Restore** the ecosystem to return to abundance.

5) **Build** knowledge, understanding, and awareness of biodiversity stewardship among employees, suppliers, customers, and communities.

3. Risk and Opportunity Management

BJC places importance on managing risks and opportunities related to biodiversity in accordance with LEAP (Locate, Evaluate, Assess, Prepare) principles as follows:

Locate: Identifying Operational Areas and Biodiversity Risk Prioritization

As of 2024, over 90% of BJC's operations are located in Thailand, encompassing 12 manufacturing facilities, 203 hypermarket retail branches, 1,597 convenience stores, and 6 distribution centers.

BJC has reviewed the location of its operational assets and confirms that none are situated within or adjacent to Ramsar-designated wetlands or IUCN-identified Key Biodiversity Areas (KBAs).

To define priority areas for biodiversity related targets and support its goal of achieving No Net Loss, BJC applies a systematic evaluation of its operational areas based on three key factors:

- Geographic location: assessing ecological sensitivity and proximity to biodiversity hotspots.
- Nature of business activities: identifying operations with higher biodiversity interaction or impact.
- Operational scale: prioritizing sites with larger footprint or greater resource use.

Based on this assessment, operational sites are categorized into three biodiversity risk groups

1. High-Risk Group: This includes sites such as factories and distribution centers, which may have greater environmental footprints due to their proximity to natural ecosystems and the nature of industrial processes involved.
2. Medium-Risk Group: Hypermarkets, due to their scale and infrastructure, may pose moderate environmental risks. However, as most are located in urban or suburban areas distant from critical ecosystems, the likelihood of direct adverse biodiversity impacts is reduced.
3. Low-Risk Group: Convenience stores are typically small-scale operations located within community areas and have minimal environmental impact. Their limited footprint and distance from sensitive ecosystems place them in the low-risk category.

Evaluate: Assess the organization’s dependence on ecosystem and the impact of the organization's business operations on biodiversity.

BJC has conducted an assessment of its dependence on ecosystems and the impact of its business operations on biodiversity across three key business units that are closely linked to natural resource use. These include:

- Packaging: such as glass bottle and aluminum can manufacturing plants
- Consumer: including snack factories, potato chip production facilities, soap manufacturing plants, and tissue paper production facilities
- Retail: covering nationwide retail operations

Business Units	Key Activities	Dependencies	Impacts
Packaging (Glass bottles, Aluminum cans)	Melting, forming, packaging	• Water (cooling, cleaning) • Energy (electricity & heat) • Natural raw materials (sand, aluminum ores)	• Industrial waste (wastewater, dust) • High GHG emissions from heat processes • Raw material extraction affecting ecosystems
Consumer Products (Soap, Shower cream, etc.)	Formula mixing, filling	• Water (ingredient and equipment cleaning) • Plant-based ingredients (e.g. palm oil) • Biobased materials	• Wastewater with chemical substances • Upstream deforestation risks from palm oil sourcing
Food & Snacks (Potato chips, etc.)	Processing, frying, packaging	• Water • Agricultural raw materials (potatoes, corn) • Vegetable oils, palm oil	• Wastewater and food waste • Soil degradation upstream from monoculture farming
Paper Products (Tissue paper factory)	Pulping, drying, converting, packaging	• Water (for pulping and processing) • Wood pulp (from trees or recycled sources) • Energy (electricity and steam)	• High water consumption and wastewater generation • Deforestation risks if using non-certified wood sources • GHG emissions from energy use and drying process
Retail (Hypermarket, Mini Big C, DC)	Selling, refrigeration, distribution	• Energy (electricity, refrigeration) • Water (cleaning) • Packaging from natural resources	• GHG emissions from cooling and logistics • Food and packaging waste

The results of this assessment are summarized in the table below.

Assessment of Ecosystem Dependence and Biodiversity Impact by Business Unit

BJC has conducted an evaluation of the relationship between ecosystem dependence and biodiversity impact across its core business units, using the following definitions:

- Ecosystem Dependence: The degree to which business operations rely on natural systems and resources.

- Biodiversity Impact: The extent to which business activities may disrupt or harm ecosystems and biodiversity.

The assessment results are summarized in the table below:

Business Units	Key Operations	Ecosystem Dependence	Biodiversity Impact	Dependence and Impact Level	Notes
Packaging	Glass bottle plant, Aluminum can plant	High	Medium	High	Depends on natural raw materials (e.g., sand, bauxite); potential impacts from energy consumption and emissions
Consumer	Snack, potato chips, soap, tissue manufacturing	High	Medium	High	Depends on agricultural products (e.g. palm oil, potatoes, pulp); wastewater management is a key concern
Retail	Hypermarkets, convenience stores, logistics and distribution centers	Low	Low	Low	Indirect impact through product sourcing and waste generation

Assess: Assess risks and opportunities related to biodiversity and appropriate risk management.

BJC has assessed nature-related risks and opportunities across each of its core business units. This assessment is based on key risks identified through the prior evaluation of Ecosystem Dependence and Biodiversity Impact by business unit.

The table below summarizes the key risks, including physical and transition risks as well as potential opportunities for each unit:

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Business Unit	Key Nature-related Risks	Physical Risk (Water)	Physical Risk (Raw Materials)	Transition Risk	Opportunities
Packaging	Resource scarcity (sand, bauxite), high water usage, emissions	✓	✓	✓	Reuse of cooling water, investment in eco-efficient furnaces
Consumer	Agricultural products dependency, wastewater discharge	✓	✓	✓	Sustainable sourcing of raw materials
Retail	Waste generation, indirect environmental impact from product sourcing	X	✓	✓	Green logistics, implementation of waste reduction programs

BJC has biodiversity-related risk management as part of Enterprise Risk Management system (ERM) and process. Each company/ business unit considers environment, ecosystems, and biodiversity among the factors that determine risk.

Scope of Biodiversity Risk Assessment

BJC has conducted assessments on biodiversity-related management using surveys in accordance with the guidelines of the Bio-based Economic Development Agency (Public Organization) and explore risks associated with factories and distribution centers, including our own operation, areas surrounding operations, adjacent areas to own operations, upstream, and downstream operations in order to use data to assess and analyze the organization's risks and opportunities.

The assessment of biodiversity-related risks and opportunities in 2024 can be summarized as follows:

1) Physical Risk

Water

BJC conducted a comprehensive water risk assessment using the Aqueduct Water Risk Atlas, developed by the World Resources Institute (WRI). This tool was utilized to identify and evaluate water-related physical risks across:

- All BJC operations in Thailand

- The Group's total supplier base
- All critical Tier 1 suppliers
- Agricultural raw material sources

Key Findings:

- A significant proportion of the Group's value chain operates in areas with High to Extremely High-Water Stress:
    - Own Operations: 75%
    - Total Suppliers: 90%
    - Critical Tier 1 Suppliers: 88%
- For agricultural raw materials, the proportion exposed to water stress is:
    - Palm Oil: <1%
    - Sugar: 2.6%
    - Cacao: 0%

*Additional details on the water risk analysis are available on the company's official website.

BJC further incorporated water stress results into the broader nature-related risk assessment, combining them with levels of ecosystem dependence and biodiversity impact to determine overall risk exposure for each business unit, as summarized below:

Business Unit	Dependence & Impact Level	Water Stress	Overall Risk Level
Packaging	High	Extremely High	High
Consumer	High	Extremely High	High
Retail	Low	Extremely High	Medium

Risk Management:

<u>Water Resource Management</u>

BJC actively monitors water availability across all operations, particularly in areas prone to floods, droughts, or water scarcity. Key mitigation measures include:

- Establishing water reserves in high-risk areas
- Enhancing operational water efficiency by:
  - Reducing water consumption at source
  - Preventing and minimizing wastewater generation
  - Expanding the use of treated/recycled water (wastewater reuse)
- Conserving and protecting natural water systems such as rivers, canals, and groundwater sources

Agricultural Raw Materials

To mitigate upstream risks:

- BJC promotes supply diversification by sourcing from multiple suppliers and regions
- Regular monitoring of agricultural production volumes helps optimize inventory and reduce disruption
- The Group collaborates with farmers to promote sustainable agricultural practices, including:
  - Improved water use efficiency
  - Reduction of negative environmental impacts
  - Enhanced biodiversity protection throughout the supply chain

2) Transition Risk

BJC systematically assesses transition risks associated with policy and regulatory changes, technological advancements, and evolving market dynamics. The assessment incorporates considerations such as asset lifespans and operational timelines to ensure alignment with changing external conditions. This comprehensive approach covers BJC's own operations as well as upstream and downstream activities, enabling proactive risk mitigation and enhancing the company's resilience in the transition toward a low-carbon economy.

New Laws

The proposed Climate Change Act, expected to come into effect in 2025, will introduce key regulatory mechanisms, including a carbon tax and the establishment of a national Emissions Trading System (ETS). These emerging frameworks are anticipated to have significant implications for BJC's operations, potentially increasing production costs, affecting capital investment decisions, and requiring deeper engagement with suppliers to ensure compliance across the value chain.

Risk Management:
In response, BJC has proactively assessed the potential financial and operational impacts of these policy changes and is integrating relevant insights into its risk management framework and long-term strategic planning to ensure continued competitiveness and regulatory readiness in a transitioning economy.

Although BJC's business units operate in full compliance with existing environmental laws and regulations, the Group remains committed to continuously enhancing its environmental practices. Therefore, in the event that new environmental legislation or regulations are introduced, BJC is well-prepared to adapt and expects minimal impact on its overall business operations.

Consumer demand
In recent years, consumers particularly Gen Z and Millennials have shown a growing awareness of nature conservation and ecosystem protection. As this demographic increasingly becomes the dominant purchasing power, there is a marked shift toward products and services that are environmentally responsible. These consumers are more likely to support organizations that demonstrate strong environmental stewardship.

Risk Management:
BJC recognizes the importance of this trend and is committed to conducting its business in a manner that minimizes environmental impact. The Company actively communicates its environmental commitments to consumers and ensures that its product offerings include environmentally friendly options that align with evolving consumer expectations.

*Additional details on the transition risk analysis can be found in the Climate Change Management Report available on the company's official website.

3) Systemic Risk

Ecosystem Erosion
Biodiversity loss leading to ecosystem degradation poses significant risks to water resources and raw material availability. This may result in material shortages for production or product offerings, driving up input costs. In extreme cases, such

degradation could intensify disease outbreaks and negatively impact sectors such as tourism, particularly moral or nature-based tourism. A decline in tourist activity can reduce business opportunities and hinder broader economic growth.
Risk Management:
BJC places strong emphasis on protecting and restoring ecosystems to mitigate the risk of ecosystem collapse. Key initiatives include reforestation projects to rehabilitate degraded forests, farmer education programs focused on reducing chemical use in agriculture, and biodiversity restoration activities such as releasing native fish species into natural water bodies.

Financial Stability

Severe biodiversity loss may directly impact the availability and cost of raw materials required for production, leading to increased operational costs and potential revenue loss due to product shortages. This could result in income volatility and reduced financial stability.

Beyond the organization, biodiversity loss also poses systemic risks to suppliers and customers. Suppliers may experience disruptions that prevent them from fulfilling commitments, while reduced consumer purchasing power may lower overall demand, further affecting the supply chain and business performance.

Risk Management:
To address these risks, BJC diversifies its sources of raw materials and actively researches alternative materials to reduce dependency and mitigate supply disruptions. Operational enhancements are implemented to improve business efficiency and manage rising costs. BJC also employs hedging strategies and engages in price assurance measures to minimize exposure to price volatility.

Furthermore, BJC provides close support to farmers, helping them implement standardized agricultural practices to meet quality and quantity requirements. BJC also continuously explores new business opportunities to achieve its long-term revenue growth objectives.

After assessing biodiversity-related risks and opportunities and implementing risk management in line with the enterprise risk management framework, no significant biodiversity-related risks were identified.

Prepare: Establish strategies and allocate resources appropriately, as well as set goals and monitor performance continuously.

BJC has established a comprehensive biodiversity stewardship strategy, as outlined in section 2 *Strategy*. In 2025, the Management Board approved revisions to its key biodiversity-related targets, including:

- Advancing the **No Net Loss** target from 2032 to **2030**
- Accelerating the **Net Positive Impact** and **No Gross Deforestation** goals from 2050 to **2030**

Following an assessment of biodiversity-related risks and opportunities across its supply chain, and an evaluation of biodiversity surrounding its operational sites, BJC has initiated a range of targeted activities and projects across its business units. These initiatives aim to mitigate, prevent, and restore biodiversity both within and beyond its operations.

Key Projects by Business Unit

Business Unit	Projects
Packaging	• **Plastic & Hazardous Waste Reduction Initiative**: Reducing waste harmful to both human health and biodiversity. • **Tree Planting Projects**: Restoring degraded and deforested areas. • **Zero Discharge Water Treatment**: Preventing the release of wastewater into natural water bodies through a zero-discharge system.
Tissue Paper Factory	• **Zero Water Discharge Project**: Enhancing recycled water use to eliminate wastewater discharge. • **Recycled Paper Fiber Use**: Promoting circularity by using recycled fiber pulp. • **Fish Species Reintroduction**: Reintroduced 150,000 fish—including Small-scale Mud Carp, Jullien's Golden Carp, and Nile Tilapia—into the Prachin Buri River. • **FSC Certification**: Ensuring pulp sourcing does not involve natural forest degradation.

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Business Unit	Projects
Confectionery Factory	• **Fish Releasing Project**: Released 6,000 Java Barb fish into local rivers in Samut Prakan to enhance aquatic biodiversity. • **Tree Planting Projects**: In collaboration with the Chiang Mai Potato Growers Cooperative and Mae Faek Mai Subdistrict Municipality, planted 2,000 trees across 20 rai. • **Deforestation-Free Land Verification**: Verified 8,654 rai of land across Chiang Rai, Phayao, Lamphun, and Tak provinces to ensure potato farming avoids deforestation. • **Farmer Education Program**: Built capacity for efficient water use and reduced chemical dependency among farmers.
Retail	**Waste Management** - **Food Loss & Waste Measurement (GOLD System):** Tracks food loss and waste by weight, enables automatic inventory adjustment, and informs markdown and donation strategies to reduce waste at store level. - **Reduction Initiatives**: Includes the *Yellow Label* and value-added initiatives. - **Alternative Uses**: Programs to convert waste into animal feed or biodiesel from used cooking oil. - **Collaboration**: Partners with upstream and downstream stakeholders (e.g., SOS Scholars of Sustenance Foundation) to reduce food waste across the value chain.

Ongoing Biodiversity Management Guidelines

BJC continuously monitors its biodiversity impacts and implements the following management practices:

- **Avoiding Biodiversity-Sensitive Areas**: Ensuring operational sites are not located in areas critical to biodiversity.
- **Reducing Negative Impacts**: For example, increasing domestic potato sourcing to reduce imports and lower environmental impact.
- **Restoring Biodiversity**: Supporting marine biodiversity through sea turtle releases and beach clean up events at the Sea Turtle Conservation Center, Royal Thai Navy, Sattahip.
- **Transforming Operations**: Transitioning from gasoline powered trucks to electric vehicles (EVs) to reduce transportation-related emissions.

4. Goals and measurements

BJC is committed to achieving no net loss of biodiversity and moving towards a net positive impact, as well as ensuring no gross deforestation by 2030. To support this commitment, the company has established biodiversity-related targets for priority areas, which primarily cover its Packaging and Consumer businesses and their tier 1 suppliers. These suppliers provide critical raw materials such as fresh potatoes, sand, and aluminum resources that are highly linked to land use, natural resource extraction, and potential biodiversity impacts. By focusing on these key areas and suppliers, BJC ensures that the most material risks and opportunities within its value chain are addressed. Progress against these targets is summarized below:

No.	Category	Target	Performance (as of 2024)
1	Restoration / Compensation	Number of trees planted – 150,000 by 2032	53,134 trees planted
2	Reduction of resource exploitation	Reduction in water consumption – 15% by 2032 (2021 baseline)	200% reduction achieved*
3	Reduction of resource exploitation	Reduction in food waste – 15% by 2032 (2021 baseline)	42% reduction achieved
4	Avoidance / Risk identification	Biodiversity assessments – 100% coverage by 2025	100% of high-impact business groups assessed
5	Avoidance	New projects screened for biodiversity-sensitive areas – 100%	100%
6	Value chain practices	Critical Tier-1 agricultural suppliers trained in regenerative or biodiversity-friendly practices – at least 1 time per year	1 time per year (BJF's Critical Tier-1 agricultural 579 suppliers)

*Note: A 200% reduction in water consumption indicates significant overachievement due to reuse, recycling, or other efficiency measures beyond initial expectations.