CLIMATE CHANGE MANAGEMENT REPORT 2024

Task Force on Climate-related Financial Disclosures (TCFD)

Introduction

Climate change is an escalating global crisis with far-reaching impacts on economies, communities, and ecosystems. The year 2024 was the hottest on record, concluding a decade of unprecedented warming driven by human activities. According to the World Meteorological Organization, the period from 2014 to 2024 ranks as the warmest decade ever observed, with increasingly severe consequences for natural systems, public health, and economic stability.

As a multinational corporation engaged in manufacturing, packaging, consumer products, and retail, Berli Jucker Public Company Limited (BJC) recognizes the urgent need to address climate change as a critical component of its environmental and sustainability commitments. Guided by its Environmental Policy, which applies to the business operations of BJC and its subsidiaries, as well as to tier-1 and non-tier-1 suppliers within its supply chain, the company seeks to minimize the negative impact of its business activities on the climate, society, and the environment. BJC also promotes the adoption of environmental management practices that align with international standards, applicable laws and regulations, and relevant environmental agreements. In line with this policy, BJC is committed to minimizing environmental impacts, promoting sustainable resource use, and reducing greenhouse gas (GHG) emissions across its value chain, with a firm target to achieve net-zero emissions by 2050. This commitment aligns with the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement, which aim to limit the global temperature rise to well below 2°C, while pursuing efforts to restrict it to 1.5°C.

In support of Thailand's national climate goals, which include achieving carbon neutrality by 2050 and net-zero emissions by 2065, BJC has set its own target to achieve net-zero emissions by 2050.

To enhance transparency and accountability in managing climate-related risks and opportunities, BJC adopted the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) and began aligning with the TCFD framework in 2022 through its Climate Change Management Report. This report, prepared in accordance with TCFD recommendations, outlines BJC's approach to identifying, assessing, and managing climate-related risks and opportunities. The TCFD framework also guides the integration of climate considerations into the company's governance, strategy, risk management, and metrics and targets.

The report presents data for the year 2024 and covers BJC's greenhouse gas (GHG) performance across its operations. Through this disclosure, BJC reaffirms its commitment to sustainable value creation, enhanced transparency, alignment with investor and regulatory expectations, and a meaningful contribution to a more climate-resilient economy.

Governance

BJC's leadership oversees climate-related risks and opportunities.

Strategy

The actual and potential impacts of climate-related risks and opportunities on BJC's business, strategy, and financial planning.

Risk Management

The processes used by BJC to identify, assess, and manage climate-related risks.

Metrics & Targets

The specific metrics and targets used to measure and manage climate risks and opportunities.

GOVERNANCE

Structure of Climate Governance

The Board of Directors (BOD) serves as the highest decision-making authority, responsible for the overall governance of BJC, including the approval of strategic business plans and management approaches. The BOD plays a critical role in driving the company's response to environmental, social, and governance (ESG) matters, including the oversight and management of climate-related issues encompassing both risks and opportunities. Climate-related issues are regularly included on the agenda of the Board of Directors and are reviewed on a quarterly basis to enable timely and informed decision-making.

To strengthen oversight and ensure effective governance, the Board has established the Sustainable Development Committee, which responsibility for climate-related issues, challenges, monitoring sustainability performance, and ensuring the accuracy and integrity of sustainability-related disclosures.

Additionally, the Risk Management Committee has been established to develop a comprehensive enterprise risk management framework, with a particular focus on ESG-related risks, including climate-related risks and opportunities. This committee ensures that potential risks are identified, assessed, and managed in alignment with the company's long-term sustainability goals.

Furthermore, the Executive Board, appointed by BJC, is accountable for the execution and implementation of climate-related projects. This board is empowered to oversee, support, and make strategic decisions to ensure all climate initiatives align with BJC's corporate strategy while integrating stakeholder perspectives.

Through this structured governance framework, BJC ensures that climate-related risks and opportunities are effectively managed, reinforcing its commitment to sustainability and long-term resilience.

Roles and Responsibilities within BJC's Climate-Related Governance Structure

Board of Directors

- Approves climate-related policies and oversees overall climate strategy and risk management.
- Reviews quarterly reports from relevant committees to ensure proper oversight.
- Regularly includes climate-related issues in board agendas to ensure focused attention.
- Top-down communication of climate-related incentives reflects company-wide commitment.

Sustainable Development Committee

- Recommends climate policy frameworks and strategies to the Board.
- Oversees and supports subcommittees and working groups responsible for sustainability.
- Promotes integration of climate issues with corporate governance and business ethics.
- Holds quarterly meetings to coordinate climate-related oversight and strategic direction.

Risk Management Committee

- Develops climate risk policies and strategies.
- Analyzes and monitors risk management practices across the company.
- Reports findings to the Board of Directors.
- Supports risk awareness and alignment across the organization.
- Holds quarterly meetings to ensure responsive and proactive risk management.

Sustainable Development Subcommittee

- Comprised of executives from each business group.
- Supports Sustainability Management Working Group to align operations with policies.
- Coordinates among stakeholders for effective implementation.
- Convenes quarterly to track progress and address challenges.

Risk Management Subcommittee

- Prepares and proposes climate-related risk plans to the Risk Management Committee.
- Monitors and evaluates risks and opportunities regularly.
- Promotes risk culture throughout the organization.
- Conducts quarterly meetings to ensure effective communication and decision-making.

Management Board

- Led by CEO and senior executives; responsible for implementing the approved climate strategy.
- Sets climate-related goals, monitors execution, and integrates sustainability into core operations.
- Conducts monthly meetings with climate issues prioritized in sustainability discussions.

Business Groups and Departments

- Each group assesses and manages climate risks and opportunities.
- Specialized departments (e.g., SHE, Safety & Maintenance, Building Admin) handle data collection and reporting.
- Continuous monitoring and improvement align with corporate climate goals.

Board Responsibility for Climate-Related Risk and Opportunity Management

The Board of Directors oversees the Company's operations, risk management, and strategic opportunities related to climate change by delegating responsibilities to the following subcommittees:

- **Sustainable Development Committee (SDC):** Responsible for supervising the Company's sustainability initiatives, including the management of climate change-related matters.
- **Risk Management Committee (RMC):** Oversees corporate risks and opportunities, including those associated with sustainable development, in alignment with the Environmental, Social, and Governance (ESG) framework.
- **Management Board:** Sets climate-related goals and work plans, and manages the Group's operations to ensure the achievement of established targets.

These committees, comprising executives from relevant business units and supporting functions, are entrusted with execution, performance monitoring, and external stakeholder engagement.

In 2024, BJC further reinforced its sustainability governance by appointing a **Chief Transformation & Sustainability Officer (CTSO)**, as part of the Management Board, to lead the oversight of climate and sustainability matters, ensuring effective implementation, continuous monitoring, and meaningful stakeholder engagement. The respective roles and responsibilities of each committee are outlined in Table 1.

Table 1 Management's Role in Assessing and Managing Climate-Related Risks and Opportunities.

Committee	Climate-related Roles and Responsibilities	Meeting Frequency
Board of Directors	• Approves climate-related policies and oversees overall climate strategy and risk management • Reviews quarterly reports from relevant committees to ensure proper oversight • Regularly includes climate-related issues in board agendas to ensure focused attention. • Top-down communication of climate-related incentives reflects company-wide commitment.	Quarterly
Sustainable Development Committee	• Recommends climate policy frameworks and strategies to the Board. • Oversees and supports subcommittees and working groups responsible for sustainability. • Promotes integration of climate issues with corporate governance and business ethics. • Holds quarterly meetings to coordinate climate-related oversight and strategic direction.	Quarterly
Sustainable Development Subcommittee	• Comprised of executives from each business group. • Supports Sustainability Management Working Group to align operations with policies. • Coordinates among stakeholders for effective implementation. • Convenes quarterly to track progress and address challenges.	Quarterly

Committee	Climate-related Roles and Responsibilities	Meeting Frequency
Risk Management Committee	• Develops climate risk policies and strategies. • Analyzes and monitors risk management practices across the company. • Reports findings to the Board of Directors. • Supports risk awareness and alignment across the organization. • Holds quarterly meetings to ensure responsive and proactive risk management.	Quarterly
Risk Management Subcommittee	• Prepares and proposes climate-related risk plans to the Risk Management Committee. • Monitors and evaluates risks and opportunities regularly. • Promotes risk culture throughout the organization. • Conducts quarterly meetings to ensure effective communication and decision-making.	Quarterly
Management Board	• Led by CEO and senior executives; responsible for implementing the approved climate strategy. • Sets climate-related goals, monitors execution, and integrates sustainability into core operations. • Conducts monthly meetings with climate issues prioritized in sustainability discussions.	Quarterly
Business Groups and Departments	• Each group assesses and manages climate risks and opportunities. • Specialized departments (e.g., SHE, Safety & Maintenance, Building Admin) handle data collection and reporting. • Continuous monitoring and improvement align with corporate climate goals.	Quarterly

Climate-related Remuneration

To enhance climate risk management, BJC has integrated climate-related issues into its corporate KPI framework, establishing a performance-based monetary incentive system that start at the highest levels of management. The Chief Executive Officer (CEO) holds direct accountability for advancing the company's climate strategy and action plan through key performance indicators (KPIs) focused on greenhouse gas emissions, which serve as a key driver of BJC's net-zero commitments.

These climate-related KPIs are embedded in the performance evaluation and incentive structure of the CEO and other senior executives, reinforcing accountability and leadership engagement at the highest levels of the organization. This structured framework is cascaded throughout the organization, with executives from relevant business units and functions assigned specific climate-related KPIs such as targets for emission reduction and energy efficiency to ensure accountability at all levels. These functional KPIs are closely aligned with BJC's overarching sustainability strategy and play a critical role in achieving the company's climate goals. Comprehensive information regarding Climate Related Management Incentives can be found on our sustainability website at **Website**

Management Systems for Lobbying Activities and Trade Association Membership Related to Climate Change

BJC has established a structured process to regularly review and monitor its public policy engagements and lobbying activities to ensure alignment with the Paris Agreement. This process encompasses both direct lobbying activities and participation in trade associations. The company is committed to ensuring that its actions support the Paris Agreement and conducts regular assessments of whether the climate change policies of its trade association memberships are consistent with its internal objectives.

In cases of significant misalignment, BJC has a clear framework to address discrepancies between the climate change policy positions of trade associations and the company's own climate position. This may include policy adjustments, membership reviews, or efforts to influence trade association policies to achieve better alignment.

Furthermore, BJC has implemented a structured approach to managing lobbying activities and trade association memberships related to climate change, ensuring consistency with the Paris Agreement and Thailand's Net Zero objectives. The program comprehensively covers all jurisdictions in which BJC operates.

BJC also maintains reporting on:

- Climate-related direct lobbying activities
- Climate policy positions and activities of trade associations.

Policy Engagement and Trade Associations

BJC actively supports government policies aligned with climate goals and participates in initiatives such as the Thailand Carbon Neutral Network (TCNN) to promote sustainable growth and reduce greenhouse gas emissions. Thai Beverage Can, a BJC subsidiary, has contributed to the development of Thailand's Extended Producer Responsibility (EPR) law, promoting sustainable packaging and waste management. BJC has established a robust management system governing trade association memberships and negotiation activities, with the management team accountable for ensuring alignment with the Paris Agreement and Thailand's Net Zero targets.

Governance and Oversight

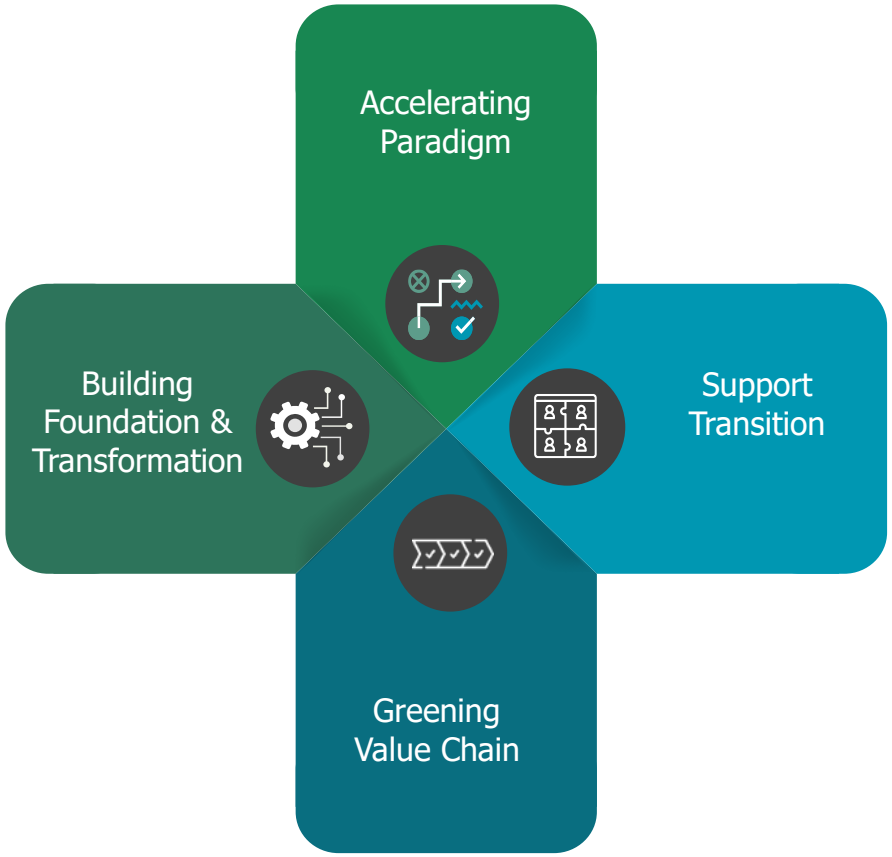
BJC has established a management system to oversee its advocacy efforts and trade association memberships. The management team is responsible for assessing the alignment of these activities with the company's climate objectives. Regular reviews ensure that any significant discrepancies are addressed, either through policy adjustments or by influencing the respective trade associations to better align with climate goals.

Reporting and Accountability

Relevant departments report on climate-related policy stances and activities of trade associations to BJC's management. Significant issues are escalated to the Sustainable Development Committee for consideration, reinforcing BJC's commitment to environmental stewardship and sustainability.

STRATEGY

BJC recognizes that climate change poses significant impacts to its value chain through both physical risks, such as increased flooding and water scarcity in various regions, and transition risks, including the introduction of climate-related policies and regulations, as well as the growing demand for low-carbon products.



To enhance business resilience and mitigate these risks, BJC has adopted a company-wide Climate Change Strategy that integrates Environmental, Social, and Governance (ESG) considerations into its core operations. The strategy, approved by the Sustainable Development Committee and overseen by the Sustainability Sub-Committee, is implemented across all levels of the organization and supports both mitigation and adaptation efforts.

As a core component of this strategy, BJC is working toward achieving **Net-Zero Emissions by 2050**, in alignment with national and international climate goals. To support this ambition, the company has established interim targets and action plans to reduce emissions across its operations and value chain. These efforts are designed to ensure measurable progress toward the net-zero objective, while reinforcing BJC's long-term commitment to sustainable growth and climate resilience.

BJC's Climate Strategy

Building Foundation & Transformation

Establish foundational systems and accelerate the transition to electrification while enhancing climate resilience across operations.

Key Actions:

Invest in quick-win projects focused on renewable energy and energy efficiency.

Accelerating Paradigm

Drive decarbonization in hard-to-abate areas by investing in low-carbon technologies

Key Actions:

Retrofit factory equipment with low-carbon technologies.

Support Transition

Partner with suppliers to enable and accelerate their climate transition through engagement, capacity building, and aligned incentives.

Key Actions:

Provide training and share best practices to promote climate resilience

Greening Value Chain

Reduce emissions from upstream activities and offset residual emissions to achieve net value chain decarbonization.

Key Actions:

Reduce scope 3 emissions through sustainable sourcing and supplier engagement initiatives.

BJC's Climate Strategy is founded on a comprehensive evaluation of climate-related risks and opportunities, underscoring the organization's enterprise-wide commitment to long-term sustainability. Guided by the strategic theme **"Highway to Net Zero,"** the strategy is designed to enhance climate resilience across BJC's operations and value chain. To ensure its effective execution, the company prioritizes organizational alignment and capacity development. This encompasses the establishment of robust governance structures, the integration of climate considerations into strategic and operational decision-making, and the empowerment of employees through access to relevant knowledge and tools to support meaningful climate action.

To advance internal competencies in climate-related matters, BJC collaborates with external institutions, including Thailand Greenhouse Gas Management Organization (TGO) and leading academic partners, to undertake assessments of organizational greenhouse gas emissions and product-level carbon footprints, following internationally recognized standards. Furthermore, BJC promotes climate literacy across the organization by delivering targeted training programs on sustainable development and climate risk assessment to employees across all business units, thereby reinforcing a culture of shared responsibility in climate governance.

In demonstrating its ongoing commitment to climate leadership, BJC hosts an annual **Sustainability Day**, aimed at enhancing employee engagement, raising awareness, and encouraging cross-functional knowledge sharing.

The company also actively participates in national platforms such as the **Sustainability Expo**, further reinforcing its public engagement and leadership in advancing climate action.

BJC's Climate Strategy by Business Unit

Business Unit Strategies

a) Retail Business

- Clean Energy Adoption: Solar rooftops installation across stores through 2025.
- EV Infrastructure: Installation of electric vehicle charging stations.
- Energy Optimization: Use of energy-saving refrigerators, lighting systems, and low-impact coolants.
- Carbon Neutral Branch: Big C Pathum Thani serves as a pilot "Carbon Neutral Store," with GHG data assessment and offset through carbon credit purchases.
- Preparedness Planning: Business Continuity Management Plan (BCM) and Business Continuity Plan (BCP) in place for acute events such as floods or storms.

b) Packaging and Consumer Business

- Solar Energy Expansion: Solar panel installations are planned across multiple factories within 3–5 years.
- Water Stress Response: Drought preparedness plans and water recycling initiatives implemented.
- Supplier Support: Assistance to contracted farms for efficient water use and risk monitoring.
- R&D Investment: Development of green technologies to minimize environmental impact.

c) Logistics and Warehousing

- Flood Response: Emergency preparedness plans to ensure continuity during extreme weather.
- Sustainable Transport: Optimization of transport routes through digital systems to reduce fuel consumption.
- Electric Equipment: Use of electric forklifts and feasibility studies on electric vehicles for logistics to lower emissions.

Scenario Analysis of Climate Risks and Opportunity

BJC is committed to achieving net-zero greenhouse gas emissions across its value chain by 2050. To support this ambition, in 2024 BJC conducted assessments of the potential impacts of climate-related risks and opportunities on the organization's business, strategic direction, and financial planning. The company uses both quantitative and qualitative climate scenario analyses, incorporating models developed by leading international organizations such as the Intergovernmental Panel on Climate Change (IPCC), the International Energy Agency (IEA), and the Network for Greening the Financial System (NGFS).

In 2024, NGFS released the fifth edition of its long-term climate macro-financial scenarios, featuring a new damage function for assessing physical risks. This enhancement includes a broader range of climate variables and considers the persistent effects of climate shocks on the economy. These updated insights enable BJC to plan and implement proactive mitigation and adaptation measures in response to climate-related impacts, thereby reinforcing the long-term resilience and sustainability of the organization.

BJC has conducted scenario analysis to assess how various climate-related risks, particularly flood exposure and future carbon pricing, may impact its strategic direction. These efforts are essential to ensuring the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.

BJC has identified time horizons for climate-related risks and opportunities over the short, medium, and long term. These timeframes allow the company to prioritize actions based on the urgency and materiality of potential impacts. The assessment includes our own operations, our upstream activities, and our downstream activities and/or clients, covering the majority of BJC's assets across all four of its core business segments. The assessment and analysis focus on our own operations, covering the majority of BJC's assets across all business units, which operate in four businesses including retail, consumer, packaging, and healthcare

Table 2 Timeframes for Climate-Related Risks and Opportunities Assessment.

Timeframes	Period	Linked to strategic and/or financial planning
Short-term	No more than 1 year	Enables BJC to respond to immediate challenges, such as supply chain disruptions and consumer/customer demands for sustainable products, ensuring operational continuity and customer satisfaction.
Medium-term	1-5 years	Helps BJC prepare for upcoming regulations such as a carbon tax and market trends by making strategic investments in technology and planning for cost impacts
Long-term	over 5 years	Facilitates the development of a robust BJC sustainability strategy and major investments to aim at achieving Net Zero emissions.

Table 3 Assessment and Analysis Scope.

Businesses	Retail	Consumer	Packaging	Healthcare
Company name	• Big C • Big C Distribution Centre	• Berli Jucker Foods Co., Ltd • Rubia Industries Ltd.	• Thai Glass Industries PLC • Thai Malaya Glass Co., Ltd. (plants 1 &2) • Thai Beverage Can Co., Ltd. (plants 1 &2)	• Berli Jucker PLC
Asset's type	Retail store, Warehouse and distribution center	Factory	Factory	Office building
Number of Assets	16 Assets	5 Assets	5 Assets	1 Asset
Location	• Bangkok, Chiang Mai • Pathum Thani, Chiang Rai • Chachoengsao • Samut Prakan	• Samut Prakan • Ayutthaya • Prachinburi	• Samut Prakan • Saraburi	• Bangkok

Physical Risks

BJC recognizes that physical climate risks pose an increasing threat to its operations, supply chains, and infrastructure. In 2024, the company identified various physical risks arising from climate change, including flooding, water scarcity, rising temperatures, and heatwaves. These climate drivers directly impact BJC's operations, particularly the sourcing of raw materials, especially agricultural inputs, as well as production yields and the resilience of manufacturing sites.

To assess these risks, BJC conducted an evaluation covering 27 key assets across four business groups, analyzing their exposure and potential financial impacts under selected climate scenarios. This comprehensive assessment enables BJC to develop effective mitigation strategies and strengthen the resilience of its operations against climate-related challenges.

Table 4: BJC Physical Risk Scenario Analysis Parameters

Climate Physical Risks	Time Horizon			Scenarios	Method		Financial Assessment
	Short	Medium	Long		Qualitative	Quantitative	
Acute							
Flood		✓	✓	RCP 4.5, 8.5 NGFS: Current Policies	✓	✓	Yes
Water scarcity			✓	RCP 2.6, 8.5	✓	✓	Yes
Chronic							
Global temperature rising and severe heat wave			✓	RCP 2.6, 8.5	✓	✓	Yes

Flood

Climate change is expected to increase the frequency and severity of riverine and coastal flooding in Thailand, raising the risk of physical damage to infrastructure. To evaluate potential exposure and financial impacts, BJC assessed key assets under climate scenarios RCP4.5 and RCP8.5 for 2030 and 2050. Flood risk assessments considered factors such as average flood depth and adaptive capacity across various asset types, including offices, retail stores, distribution centers, and manufacturing facilities.

BJC assesses the impact of flood in 3 dimensions:

Table 5: Description Of Impacts on BJC's Value Chain

Impact to	Describe impacts
Own operation	• Damage to equipment, facilities, and inventory can lead to production process disruption. • Disrupting employee's commute to work during floods.
Upstream	• Affecting raw material costs, particularly those of farmers, through the quality and yield of crops. • Flooding impacts operational costs by increasing transportation cost. For example, longer transport routes may be necessary, or businesses might have to choose transportation options that emit more GHG to procure necessary goods and services.
Downstream	• Floods can disrupt the distribution of consumer goods, leading to stock shortages in retail outlets. • Disrupt customer's travel to the store.

Flooding Scenario Analysis Risk Level and Financial Impact Results

Table 6: Flooding Impact Assessment

BU	Assets	Flood Dept 2030 (Meter)		Flood Dept 2050 (Meter)		Certain Threshold (Meter)	Flood Exposure	Financial Impacts (MTHB)
		RCP 4.5	RCP 8.5	RCP 4.5	RCP 8.5			
Retail and Logistic	**Supermarket**							
	BIG C Supercenter Ratchadamri*	-	-	-	-	1.00*	NO	-
	BIG C Supercenter Chiangrai 2*	-	-	0.01	0.04	1.00*	NO	-
	BIG C Supercenter Chiangrai*	-	-	-	-	1.00*	NO	-
	BIG C Supercenter Hangdong 1&2*	-	-	-	-	1.00*	NO	-
	BIG C Supercenter Chiangmai 1&2*	-	-	-	-	1.00*	NO	-
	BMK Pantip Chiangmai	-	-	-	-	1.00*	NO	-
	Distribution Center							
	Thanyaburi DC	-	-	-	-	1.30	NO	-
	Chachoengsao DC	0.04	0.07	0.08	0.09	1.30	NO	-
	Ging kaew DC	0.14	0.22	0.23	0.33	1.50	NO	-
	Ladkrabang DC	0.08	0.13	0.14	0.22	1.58	NO	-
	Bang Pakong DC	0.02	0.05	0.06	0.06	1.35	NO	-
	BDC1	0.39	0.52	0.56	0.74	1.60	NO	-
	BDC4	0.39	0.52	0.56	0.74	1.55	NO	-
	HBL	0.39	0.52	0.56	0.74	1.60	NO	-

BU	Assets	Flood Dept 2030 (Meter)		Flood Dept 2050 (Meter)		Certain Threshold (Meter)	Flood Exposure	Financial Impacts (MTHB)
		RCP 4.5	RCP 8.5	RCP 4.5	RCP 8.5			
Consumer Products	BJF - Snack (Bangplee)	0.26	0.32	0.34	0.43	0.50	No, but keep monitoring	-
	BJF - Dairy (Ayutthaya)	0.48	0.54	0.58	0.63	0.50	Yes	15.79 – 25.26
	BJC Cellox (Prachinburi)	-	-	-	-	0.30	NO	-
	BJC Cellox (Bangplee)	0.39	0.52	0.56	0.74	0.70	No, but keep monitoring	-
	Rubia Industry Co., Ltd.	0.26	0.32	0.34	0.43	0.26	Yes	31.58
Packaging	Thai Glass Industries PCL	-	-	-	-	2.00	NO	-
	Thai Malaya Glass Co., Ltd. 1	-	-	-	-	0.90	NO	-
	Thai Malaya Glass Co., Ltd. 2	-	-	-	-	1.70	NO	-
	Thai Beverage Can Co., Ltd. 1	-	-	-	-	7.00	NO	-
	Thai Beverage Can Co., Ltd. 2	0.04	0.08	0.06	0.08	7.00	NO	-
Healthcare	Office Building in BKK *BJC House and Big C House	-	-	-	-	1.00*	NO	-
							Total	47.37-56.84

Remark: * assumed certain threshold is 1 meter

- BDC1 refers Bangna -Trad Road Branch Km.19 Warehouse and distribution center
- BDC4 refers Suvarnabhumi Warehouse and distribution center
- HBL refers Warehouse and Distribution Center for Medicines and Medical Equipment
- BJF refers Berli Jucker Foods Ltd.

In 2024, BJC leveraged the latest NGFS Climate Scenarios (Phase V) to reassess its flood risk exposure, incorporating a sophisticated damage function that accounts for climate drivers such as temperature variability, precipitation extremes, and lagged economic effects. The model highlights region-specific vulnerabilities, with some areas facing significantly higher flood risks. This reassessment reflects BJC's advanced understanding of climate risks and enhances its ability to mitigate adverse impacts while identifying climate-related opportunities. (Source: NGFS Climate Scenarios Technical Documentation, 2024).

Table 7: Air Temperature in Each Scenario

Scenarios	Y2030	Y2050
NGFS Current Policies (Median, °C)	1.0	1.4
NGFS Current Policies (Upper, °C)	1.6	2.3
RCP4.5 (Median, °C)	0.9	1.3
RCP4.5 (Upper, °C)	1.5	2.1
RCP8.5 (Median, °C)	1.0	1.6
RCP8.5 (Upper, °C)	1.6	2.7

Based on prior assessments conducted under RCP4.5 and RCP8.5 scenarios, BJC estimated that the financial impact from riverine and coastal flooding during 2030–2050 would range between 47.37 and 56.84 million baht.

When applying linear scaling based on temperature changes and comparing the results with previous RCP based analyses, the estimated financial losses (47.37–56.84 million baht) were found to align with projections under the NGFS Current Policies scenario.

Physical Climate Risk Adaptation

Flood Adaptation Measures

BJC has implemented a comprehensive set of flood prevention measures to safeguard its operations in flood-prone areas. These efforts are designed to minimize potential damage, ensure employee safety, and maintain operational stability during extreme weather events.
The total estimated cost for implementing flood prevention measures, including sandbag deployment, water pump installation, and other supporting efforts, is approximately 50 million baht. This investment is essential to enhancing the resilience of BJC's operations in flood-prone areas, helping to mitigate potential damage and operational disruptions caused by flooding.

Key flood prevention strategies include:

Site Selection: Prioritize locations with low flood risk by avoiding floodplains, areas adjacent to rivers, and regions with inadequate drainage systems.

Building Design: Utilize elevated foundations through the use of stilts, raised platforms, or flood-resistant materials, particularly for lower building levels.

Flood Protection Systems: Install flood barriers, shields, and water-tight doors that are easily deployable and maintainable to protect critical infrastructure.

Drainage Solutions: Design efficient drainage systems surrounding buildings and incorporate permeable surfaces in landscaping to reduce surface runoff.

Maintenance and Inspection: Conduct regular maintenance of the facility's drainage systems and perform annual inspections of nearby external waterways that may pose flood risks.

Preventative Measures: Procure and maintain sandbags, prefabricated concrete barriers, and water pumps for emergency water diversion and removal.

Monitoring and Communication: Continuously monitor weather forecasts from reliable sources, observe water levels in public canals near the Rojana Industrial Park, and inspect potential water entry and exit points.

Emergency Preparedness: Ensure the availability of communication devices and maintain an updated list of emergency contact information for key personnel and relevant authorities.

Water Scarcity

Climate change is projected to intensify water scarcity across broader geographic regions, posing significant challenges to agriculture, manufacturing, and service sectors that rely on consistent water availability. As water scarcity escalates, businesses encounter increased difficulties in maintaining operational stability and managing supply chain dependencies.

Overview Business Impact

Water scarcity poses a significant risk to BJC's operations, potentially disrupting production, increasing costs, and affecting service delivery. Localized crises may require sourcing alternative water supplies or materials at higher costs, while widespread shortages could lead to operational suspensions and impact customer commitments.

Overview Financial Impacts

- **Increased Operational Costs:** Expenses may rise due to the need to find alternative water sources, invest in water storage solutions, or purchase water from external suppliers for consumption.
- **Supply Chain Adjustments:** Changing raw material sources in response to drought conditions in supplier regions can lead to higher procurement and transportation costs.
- **Revenue Decline:** Production or service interruptions caused by water scarcity can result in decreased income and potential loss of market share.

Table 8: Water Scarcity Impact Assessment and Adaptation Measures

Scenario	Business Impacts	Financial Impacts	Adaptation Measures
Best Case (RCP 2.6)	**Own operation** • In areas facing drought conditions, BJC should adopt appropriate water management practices to maintain its operations. **Upstream** • Causing a shortage of raw materials and certain products. **Downstream** • None identified	Cost and expenses increased by 10%-20% from higher cost of raw materials. Some areas may need an alternative source of water.	• Adopt advanced technologies and practices to minimize water consumption across operations. • Maintain consistent water availability during periods of scarcity, including the identification and utilization of alternative water sources. • Explore wastewater recycling and reuse opportunities.
Worst Case (RCP 8.5)	**Own operation** • Operations in many sites will be at risk of water shortage. • It is vital to find an alternative source of water with a proper and effective water management process. **Upstream** • Operations may encounter a shortage of raw materials and products for production and sales.	Cost and expenses increased by over 20% from a shortage of raw materials and goods. Alternative sources of water are rare with leaping prices.	

Scenario	Business Impacts	Financial Impacts	Adaptation Measures
	Downstream • None identified		

Global Mean Temperature Rising and Severe Heat Waves

Rising global temperatures and more frequent heatwaves, particularly in tropical regions like Thailand, pose significant risks to BJC's operations. These impacts include threats to employee health, reduced resource availability, and increased climate-related disruptions.

Overview Business Impact

- Product Integrity: Elevated temperatures can degrade fresh food and pharmaceuticals, reducing shelf life.
- Cooling Costs: Higher demand for refrigeration increases energy use and operational expenses.
- Infrastructure Strain: Heat damages roads and transport systems, causing delays and higher maintenance costs.
- Consumer Behavior: Demand may shift toward cooling-related products and away from seasonal goods.
- Construction Delays: Heat limits work hours, delaying projects and increasing costs.
- Flood Mitigation: Sea-level rise requires ongoing investment in protective infrastructure.

Overview Financial Impacts

- Storage and Logistics Costs: Upgrades to storage systems are needed to prevent spoilage of perishable goods and reduce inventory loss.
- Cooling and Energy Expenses: Maintaining optimal temperatures increases electricity use and operating costs.

- Revenue Risks from Demand Shifts: Inability to adapt products to changing consumer preferences may reduce revenue, while timely adjustments can improve performance.
- Flood Prevention Costs: Rising sea levels require increased spending on flood protection and facility maintenance.

Table 9: Global Mean Temperature Rising and Severe Heat Waves Impact Assessment and Adaptation Measures

Scenario	Business Impacts	Financial Impacts	Adaptation Measures
Best Case (RCP 2.6)	**Own operation** • In a scenario where global temperatures rise by up to 2°C, it is imperative to optimize cooling and air-conditioning systems. Additionally, stringent management of productivity and fresh product handling is necessary, which may lead to increased energy consumption and associated costs. • Health and safety of employees, especially those working in the factory having high temperature must be monitored. **Upstream** • Increased Risk of Product Spoilage During Transportation. Perishable goods are more susceptible to spoilage during transit; however, this risk can be effectively managed through enhanced cold chain logistics and real-time temperature monitoring.	The cost may increase by 10% - 20%	• Evaluate whether extreme heat conditions have been incorporated into the design specifications of high-risk sites to ensure infrastructure resilience. • Pinpoint sites with significant outdoor operations that are vulnerable to downtime during extreme heat events. Develop and implement business contingency plans, such as adjusting work schedules or instituting temporary work stoppages, to maintain operational continuity.

Scenario	Business Impacts	Financial Impacts	Adaptation Measures
	Downstream • A significant portion of customers may prefer e-commerce deliveries, leading to a notable reduction in foot traffic at physical stores.		• Provide comprehensive training to employees on recognizing symptoms of heat-related illnesses and administering appropriate first aid. This proactive approach enhances workplace safety and reduces the risk of heat-induced health incidents.
Worst Case (RCP 8.5)	**Own operation** • A global temperature increases exceeding 2 °C heightens, potentially leading to inventory shortages in stores. BJC must implement enhanced monitoring and maintenance of cooling and air-conditioning systems to ensure product integrity. • Branches located near coastlines are increasingly susceptible to flooding and infrastructure damage due to rising sea levels, necessitating the development of comprehensive flood prevention and mitigation strategies. • Prolonged high temperatures can reduce solar panel efficiency (for every degree Celsius above optimal temperature, a solar panel's efficiency can decrease by approximately 0.3% to 0.5%) potentially affecting energy production and increasing operational costs.	The cost increases by 20% - 50% Revenue drops by over 30% after reduction of customers.	

Scenario	Business Impacts	Financial Impacts	Adaptation Measures
	• Rising temperatures pose significant health risks to employees, including heat stress and related illnesses. BJC must implement comprehensive health and safety measures, such as providing heat stress training, ensuring access to hydration, and adjusting work schedules to cooler periods. **Upstream** • A global temperature increases exceeding 2 °C heightens the risk of product spoilage during transportation. **Downstream** • Extreme heat conditions may prompt customers to relocate from affected areas, leading to reduced foot traffic and sales in certain store locations. BJC should consider adapting its retail strategies to address shifting customer demographics and preferences.		

BJC's climate adaptation plan for existing operations addresses physical climate risks, including floods, water scarcity, rising temperatures, and severe heat waves. Relevant adaptation measures, including infrastructure upgrades, process adjustments, and risk mitigation strategies, are planned to be fully implemented in less than five years.

Transition Risk and Opportunities

BJC systematically assesses transition risks arising from policy and legal changes, technological advancements, and market dynamics. The evaluation considers asset lifespans and activity timelines to ensure alignment with evolving external conditions. This approach covers BJC's operations, upstream activities, and downstream activities, enabling proactive risk management and strengthening resilience in the transition to a low-carbon economy.

Table 10: BJC's Transition Risk Scenario Analysis Parameters

Climate Transition Risks	Time Horizon			Scenarios		Method		Financial Assessment
	Short	Medium	Long			Qualitative	Quantitative	
Policy & legal Risk								
Legal Risk								
• Energy Conservation Promotion Act, B.E. 2535 (1992) and Amendments		✓	✓	**IEA:**	STEPS	✓	✗	No
• Enhancement and Conservation of National Environmental Quality Act, B.E. 2535 (1992)		✓	✓		APS	✓	✗	No
• Factory Act, B.E. 2535		✓	✓		NZE	✓	✗	No
• Hazardous Substances Act, B.E. 2535		✓	✓			✓	✗	No
• Labour Protection Act and Occupational Health & Safety (OHS) Regulations		✓	✓			✓	✗	No
Current & Emerging Regulation								

Climate Transition Risks	Time Horizon			Scenarios	Method		Financial Assessment
	Short	Medium	Long		Qualitative	Quantitative	
• Carbon Pricing Mechanism: ETS & Carbon Tax		✓	✓	**NGFS:** NDC Delayed Transition Net Zero 2050	✓	✓	Yes
• More detailed and comprehensive disclosures are required according to reporting standards. • Emerging from the Sustainable Packaging Management Act, to be enforced in 2027		✓ ✓	✓ ✓	**IEA:** STEPS APS NZE	✓ ✓	✗ ✓	No Yes
Technology Risk							
Change of Technology		✓	✓	**IEA:** STEPS APS NZE	✓	✓	Yes
Market Risk							
Lack of action to serve the shift in demand/ interest to a low-carbon product		✓	✓	**IEA:** STEPS APS NZE	✓	✓	Yes

Climate Transition Risks	Time Horizon			Scenarios	Method		Financial Assessment
	Short	Medium	Long		Qualitative	Quantitative	
Reputation Risk							
Inaction leads to loss of public trust.	✓	✓	✓	**IEA:** STEPS APS NZE	✓	x	No

Table 11: BJC's Transition Risk Scenario Analysis Tools.

Scenario	Indicators	Timeframe	Description	Global Mean Temperature Change in 2100
National Determined Contribution (NDCs)	• BAU Emissions • EBITDA Growth • Carbon Price	2025-2050	• Climate policies are introduced in 2025 • Carbon pricing will be implemented in 2025 at USD 4/tCO2. It will reach USD 74/tCO2 in 2050.	2.0 °C

Scenario	Indicators	Timeframe	Description	Global Mean Temperature Change in 2100
Delayed Transition		2025-2050	• New climate policies are not introduced until 2030 • Requires accelerated and disruptive policies • Transition risks are considered very high • Carbon pricing will commence in 2035 at USD 75/tCO2. It will continually increase to reach USD 325/tCO2.	Below 2.0 °C
Net Zero 2050		2025-2050	• Ambitious climate policies introduced immediately, resulting in steady increases in carbon prices from 2025-2050 • Carbon pricing will commence in 2025 at USD 19/tCO2. It will continually increase to reach USD 938/tCO2.	1.5 °C

Note

Business-as-Usual (BAU): Assumes no implementation of decarbonization measures or adaptation plans.

SBTi-Aligned Target: Involves the adoption of decarbonization strategies and adaptation plans to meet Science-Based Targets initiative (SBTi) and Net Zero objectives.

Table 12: BJC's Transition Risk Scenario Analysis Tools.

Scenario	Definitions
Stated Policies Scenario (STEPS)	The Stated Policies Scenario (STEPS) reflects the current trajectory of the global energy system based on existing policies and measures, as well as those under development. It provides a sector-by-sector evaluation of these policies, offering insights into the likely direction of energy system progression if current policy trends continue.
Announced Pledges Scenario (APS)	The Announced Pledges Scenario (APS), introduced in 2021, evaluates the impact of major national climate commitments announced by August 2024. It includes 2030 targets and long-term net-zero or carbon neutrality pledges, whether or not they are legislated or included in updated Nationally Determined Contributions. The APS shows how far these pledges can contribute to achieving net-zero emissions by 2050.
Net Zero Emissions by 2050 Scenario (NZE)	The Net Zero Emissions by 2050 Scenario (NZE) outlines a pathway for the global energy sector to reach net-zero CO_2 emissions by 2050. It relies on clean energy technologies, energy efficiency, and behavioral shifts. The scenario also supports key Sustainable Development Goals, including universal energy access by 2030 and improved air quality. It aligns with limiting global warming to 1.5°C with at least a 50% probability, as assessed in the IPCC's Sixth Assessment Report.

Results of Transition Risk and Opportunities

Legal Risks

BJC with extensive operations in manufacturing, logistics, and retail, is exposed to legal transition risks arising from the enforcement and tightening of existing environmental and energy-related legislation in Thailand. While the ambition and pace of policy enforcement differ under various scenarios, the baseline legal exposure exists under all cases.

Table 13: Business Impact and Scenario Analysis

Law	Key risks	Business Impact		
		STEPS	APS	NZE
Energy Conservation Promotion Act, B.E. 2535 (1992) and Amendments	Manufacturing plants and logistics facilities are required to implement energy-saving measures, such as upgrading electrical systems, HVAC, and submitting annual energy consumption reports.	Basic compliance obligations, including reporting and internal monitoring. Limited cost implications.	Potential requirement for ISO 50001 certification, third-party energy audits, and penalties for underperformance.	Significant capital expenditure (CAPEX) for major retrofits to achieve advanced energy efficiency standards (e.g., cold storage upgrades, smart automation systems).
Enhancement and Conservation of National Environmental Quality Act, B.E. 2535 (1992)	Projects above specific thresholds must undergo Environmental Impact Assessments (EIA); facilities must meet air and water pollution control standards.	Minor risk if operations remain compliant with existing emission standards.	Increased regulatory scrutiny on pollutant thresholds (e.g., PM, NOx, COD, BOD), especially for facilities in industrial or urban zones.	Legal risk from litigation or project delays due to stricter EIA processes or enforcement of "zero discharge" principles.

Law	Key risks	Business Impact		
		STEPS	APS	NZE
Factory Act, B.E. 2535	Regulates occupational safety, emissions, and environmental controls at manufacturing sites. Climate resilience measures may be required.	Ongoing inspection risks with penalties for non-compliance.	More frequent audits; enhanced focus on workplace safety under changing climate conditions (e.g., heat, flood).	Mandatory investment in climate adaptation infrastructure (e.g., improved drainage, heat shielding, flood barriers).
Hazardous Substances Act, B.E. 2535	Governs the use, storage, and phase-out of hazardous substances, including refrigerants and certain packaging chemicals.	Compliance with inventory management, labelling, and reporting of hazardous substances.	Enforcement of phase-out for high-GWP substances (e.g., HFCs) and restrictions on certain chemical inputs.	Asset redesign required—particularly for cold-chain systems—using natural refrigerants (e.g., CO_2, ammonia), involving high upfront CAPEX and safety training.
Labour Protection Act and Occupational Health & Safety (OHS) Regulations	Requires employers to protect workers from occupational hazards, including extreme heat, air pollution, and unsafe conditions exacerbated by climate change.	Standard OHS requirements (e.g., PPE, health checks, shift regulations).	Implementation of climate-related worker protection measures (e.g., heat relief zones, ventilation improvements).	Heightened legal liability and productivity risk due to climate-related illnesses or fatalities; potential lawsuits and operational disruptions.

Current Regulation

Thailand, in alignment with the Paris Agreement, aims to reduce greenhouse gas emissions by 20–25% below Business-As-Usual (BAU) levels by 2030, achieve carbon neutrality by 2050, and reach net-zero emissions by 2065. To support these targets, the government is drafting climate-related legislation, including a potential carbon tax and other market-based mechanisms. While no immediate regulatory changes are expected to impact current operations, these developments indicate a clear direction for future compliance requirements.

Additionally, BJC complies with existing national climate-related regulations, including Thailand's Energy Efficiency Plan (EEP), which mandates energy audits and efficiency improvements across operations. The company also adheres to environmental reporting requirements under national policies, ensuring transparent disclosure of its environmental impact. These obligations are integrated into BJC's environmental management systems to ensure legal compliance, enhance energy performance, and contribute to national climate goals.

BJC aligns its strategy with Thailand's climate commitments and continually improves energy efficiency and emissions reporting to ensure readiness for future regulations and to support broader climate action efforts.

Emerging Regulation

BJC closely monitors policy developments related to climate change, particularly the proposed Climate Change Act, which is expected to come into force in 2025. This legislation introduces key regulatory mechanisms, including a carbon tax and the establishment of a national Emissions Trading System (ETS).

These emerging regulatory frameworks are anticipated to significantly affect BJC's operations by potentially increasing production costs, influencing investment planning, and requiring more active engagement with suppliers to ensure compliance across the value chain.

In response, BJC is proactively evaluating the potential financial and operational impacts and integrating these considerations into its risk management and long-term strategy to maintain competitiveness and regulatory readiness.

Carbon Pricing Mechanism: ETS & Carbon Tax

Thailand's planned carbon tax in 2025 is expected to have significant financial implications for businesses, including BJC. The anticipated expansion of this tax under the forthcoming Climate Change Act may lead to higher operational costs and require adjustments in production processes and supply chains. The Act introduces mandatory greenhouse gas emissions reporting, establishes a national Emissions Trading System (ETS), and implements a carbon tax, which may collectively result in substantial changes to business operations and cost structures.

To manage these risks, BJC conducts scenario analysis using the Network for Greening the Financial System (NGFS) framework, which defines carbon pricing as the marginal abatement cost of reducing an additional ton of GHG emissions under government policy. The company bases its analysis on three NGFS climate scenarios: Net Zero 2050, Nationally Determined Contributions (NDCs), and Delayed Transition. These scenarios align with Thailand's Long-Term Low Greenhouse Gas Emission Development Strategy (LT-LEDS), which outlines the national pathway toward carbon neutrality by 2050 and net-zero emissions by 2065. BJC has quantified the potential financial impacts (Unit: MTHB) as follows:

Table 14: Financial Impact and Scenario Analysis

Case	Business-as-Usual (BAU)			SBTi Aligned Target		
	NDCs	Delayed transition	Net Zero	NDCs	Delayed transition	Net Zero
2025						
Carbon Cost	172	-	926	150	-	809
%Decrease of EBITDA	1%	-	4%	0.02%	-	0.08%
2030						

Case	Business-as-Usual (BAU)			SBTi Aligned Target		
	NDCs	Delayed transition	Net Zero	NDCs	Delayed transition	Net Zero
Carbon Cost	308	-	8,702	114	-	3,212
%Decrease of EBITDA	1%	-	29%	0.01%	-	0.32%
2050						
Carbon Cost	11,979	52,558	> 52,558	-	-	-
%Decrease of EBITDA	15%	67%	>100%	-	-	-

Emerging From the Sustainable Packaging Management Act, to be Enforced in 2027

Thailand's forthcoming Sustainable Packaging Management Act, aligned with the Extended Producer Responsibility (EPR) framework and scheduled for enforcement in 2027, presents significant challenges for BJC's core businesses packaging, consumer goods, and retail. These challenges include increased production costs due to material transitions, technological investments, and enhanced waste management obligations. Non-compliance could lead to financial penalties, reputational damage, and diminished consumer confidence. Delayed adaptation may further result in operational disruptions and lost commercial opportunities.

Table 15: Business Impact and Scenario Analysis

Risk	Business Impacts		
	STEPS	APS	NZE
Emerging from the Sustainable Packaging Management Act, to be enforced in 2027	Moderate compliance burden. BJC would incur costs primarily from material substitution and incremental waste management improvements. Estimated cost increase: 3–5% of packaging-related revenues. Impact remains manageable, though slow response may erode competitiveness.	Stricter packaging regulations and digital traceability requirements are expected. Higher investments in packaging design, technology, and supply chain integration. Estimated cost increase: 7–10%. Margins may tighten, but strategic alignment could unlock opportunities in green financing and ESG positioning.	Requires full transition to circular packaging and advanced EPR compliance. Estimated cost increase: 12–15%. Non-compliance may lead to penalties or market share loss. However, early adoption may position BJC as a sustainability leader with long-term competitive advantages.

Table 16: Projected Financial Impact Based on BJC's 2024 Financials. The table below estimates cost increases and EBITDA impacts under each scenario:

Scenario	Cost Increase (MB)	Revised EBITDA (MB)	EBITDA Margin (%)	EBITDA Change (%)
STEPS	1,281.94	12,733.91	7.45%	-9.15%
APS	2,563.88	11,451.98	6.70%	-18.29%
NZE	3,845.81	10,170.04	5.95%	-27.44%

Table 17: Business and Financial Impact Analysis

Risk	Business Impacts			Financial Impacts		
	STEPS	APS	NZE	STEPS	APS	NZE
More Detailed and Comprehensive Disclosures Are Required According to Reporting Standards	Reflects current policies and measures in place. Under this scenario, BJC does not incur additional costs beyond its existing operations.	Assumes that all climate commitments made by governments and industries are met in full and on time. BJC has incurred additional costs in designing systems to closely monitor and track GHG emissions data, as well as to prepare and verify reports that go beyond current operations.	Due to increased details required, BJC has incurred additional costs in hiring employees to prepare reports. This includes capacity building, hiring consultants, designing systems to monitor data, more detailed GHG emission measurements, and preparing comprehensive reports or verifying additional data from current operations.	-	-	-

Risk	Business Impacts			Financial Impacts		
	STEPS	APS	NZE	STEPS	APS	NZE
Change of Technology	Technology change is minimal, with limited government support. The Company considers investing in a business unit that requires a relatively small budget, with only minor adjustments to existing processes needed to accommodate the technological shift.	A major technological shift is required to meet planned greenhouse gas emission reduction targets. This results in a high investment budget and potential additional operating expenses. Significant changes to existing business processes will also be necessary to support the transition.	New technology is essential to achieve the planned greenhouse gas emission reduction targets. The required investment is substantial, and the transition involves extensive changes and improvements to core business processes.	In the short term, the required investment is no more than 10 million baht per year. In the long term, operating expenses will drop by about 10%.	In the short term, the investment required is over 10 million but not exceeding 100 million baht per year. For long term, operating expense will drop around 10% - 30%.	In short term, the investment budget is over 100 million baht per year. In long term, the operating expense could drop by over 30%.
Lack of action to serve the shift in demand/ interest	Moderate shift in consumer behavior: The company will have sufficient time to adapt; however,	Rapid and noticeable shift in consumer behavior: The window for adaptation is short,	Rapid and clear shift in consumer behavior with significant business impact:	Revenue and market share may be reduced by 5%-10%.	Revenue and market share may be reduced by 10%-30%.	Revenue and market share may be reduced by over 30%.

Risk	Business Impacts			Financial Impacts		
	STEPS	APS	NZE	STEPS	APS	NZE
to a low-carbon product	this level of change may still affect long-term competitiveness if not addressed proactively.	and the resources required are significant. It is critical to establish a clear strategy and initiate investment within the next 12 months.	This change has substantial implications for business operations. To maintain market share, capture new opportunities, and protect corporate reputation, it is essential to implement a clear, comprehensive, and timely strategy and adaptation plan. The required investment may be substantial, and some operations may need to undergo complete transformation.			

Risk	Business Impacts			Financial Impacts		
	STEPS	APS	NZE	STEPS	APS	NZE
Inaction leads to loss of public trust.	If BJC does not take immediate climate action, the short-term impact may be limited, as current stakeholder expectations for comprehensive climate initiatives remain relatively low.	If BJC fails to take climate action, it faces a low but growing risk of reduced customer satisfaction and potential sales decline, as environmentally conscious consumers may shift to more sustainable competitors. Additionally, investors may hesitate or divest due to concerns over reputational risks and their potential impact on financial performance.	**Adaptation Challenges:** The company may struggle to meet evolving market expectations and comply with emerging regulations, potentially undermining its long-term business model. **Erosion of Stakeholder Trust:** Customers, employees, investors, and partners may lose confidence in BJC, making recovery of reputation and support increasingly difficult.			Sustained loss of public trust could lead to long-term financial instability and jeopardize the company's viability.

Summarize climate related risks

To assess the level of risks related to climate change, BJC applies the principles of Enterprise Risk Assessment. The criteria for evaluating impact and likelihood levels are as follows:

Table 18: Criteria for evaluating impact and likelihood levels

Level	Rating	Likelihood (%)		Financial impact (MTHB)		Non-Financial Impact
		From	To	From	To	
1	Low	1%	25%	0	25	• No impact (Cost/ expenditure) on business. • Have impacts on the production/ delivery of the products or main services, resulting in **less than 5%** decrease in product/ service.
2	Medium	26%	50%	26	51	• Result in expenditure but does not cause disruption to the business or operation. • Have impacts on the production/ delivery of the products or main services resulting in **5 - 10%** decrease in product/ service.
3	High	51%	75%	52	76	• Result in high expenditure and negative impact on business. • Have impacts on the production/ delivery of the products or main services resulting in **10 - 20%** decrease in product/ service.
4	Very High	76%	100%	77	∞	• Result in very high expenditure and extremely negative impact on business • Have impacts on the production/ delivery of the products or main services, resulting in **over 20%** decrease in product/ service

To categorize overall risk and likelihood, BJC uses a risk matrix with four levels: Low, Medium, High, and Very High risk.

Table 19: BJC's Risk Matrix

Likelihood \ Impact	Low	Medium	High	Very High
Very High	Medium	High	Very High	Very High
High	Medium	Medium	High	Very High
Medium	Low	Medium	Medium	High
Low	Low	Low	Medium	Medium

Table 20: Summarize risks related to climate change for long term (by 2030) as the table below;

Risk Level **Low** **Medium** **High** **Very High**

Risk		Potential risks	Long-term (by2030)		
			Likelihood	Max Impact	Risk level
Physical	Acute	Flood	H	H	H
		Water scarcity	H	VH	VH
	Chronic	Global temperature rising and severe heat wave	H	VH	VH
Transition risk	Policy & legal	Carbon pricing instruments such as carbon tax and ETS	VH	VH	VH
		More detailed and comprehensive disclosures are required according to reporting standards	VH	L	M
		Emerging from the Sustainable Packaging Management Act, to be enforced in 2027	VH	VH	VH
		Legal Risk	M	VH	H
	Technology	Change of Technology	L	VH	M

Risk		Potential risks	Long-term (by2030)		
			Likelihood	Max Impact	Risk level
	Market	Lack of action to serve the shift in demand/ interest to a low-carbon product	M	VH	H
	Reputation	Inaction leads to loss of public trust	L	H	M

Climate Related - Opportunities

In addition to addressing climate-related risks, BJC actively identifies opportunities arising from climate change to capture key business prospects and strengthen competitiveness and profitability. The key climate-related opportunities for BJC include:

Table 21: Key Climate-Related Opportunities for BJC

Opportunity	*Time Horizon*			Method		Financial Assessment
	Short	*Medium*	*Long*	Qualitative	Quantitative	
Products and services						
Response to the shift in demand/ interest to low-carbon product		✓	✓	✓	×	No
Resilience						
Participation in renewable energy programs and adoption of energy-efficiency measures	✓	✓	✓	✓	×	No
Stakeholder Engagement						
Collaboration with the supply chain		✓	✓	✓	×	No

Result of Climate related – Opportunities Analysis

Table 22: Opportunities Analysis

Opportunity	Impact
Products and services	
Response to the shift in demand/ interest to low-carbon product	Growing awareness of global warming is influencing consumer behavior, increasing demand for BJC's eco-friendly packaging, energy-efficient appliances, and sustainable consumer goods. These products, both under BJC's brand and those distributed through retail channels, contribute to mitigating climate change. To capitalize on this trend, BJC can develop targeted marketing programs and initiatives to engage customers who prioritize green products. Introducing exclusive product lines available only at Big C stores can further attract environmentally conscious consumers, enhance revenue and strengthen customer loyalty
Resilience	
Participation in renewable energy programs and adoption of energy-efficiency measures	The rising use of renewable energy, such as solar power, offers long-term operational cost advantages over fossil fuels despite higher initial investments. Renewable energy provides price stability, enabling more predictable financial planning, while reducing greenhouse gas (GHG) emissions and exposure to carbon taxes and regulatory risks.
Enhancement of Operational Efficiency	BJC's climate strategy focuses on reducing reliance on fossil fuels and improving energy efficiency by upgrading machinery, optimizing production processes, and enhancing building insulation.

Opportunity	Impact
	Waste reduction is also a priority, as waste management contributes to GHG emissions. Effective waste management and reuse programs can lower operating costs and improve profitability.
Stakeholder Engagement	
Collaboration with the supply chain	Supply chain emissions represent a significant portion of BJC's overall carbon footprint, making collaboration essential to achieving sustainability targets. Engaging suppliers in climate initiatives fosters long-term partnerships and supports sustainable business practices throughout the value chain. **Key initiatives include:** **Tiered Supplier Engagement:** Prioritize Tier 1 suppliers for initial collaboration through green procurement programs, then progressively engage Tier 2 and beyond to extend sustainability standards across the supply chain. **Green Procurement Program:** Develop a preferred supplier system that rewards strong sustainability performance. **Knowledge Sharing and Capacity Building:** Educate suppliers on climate action and GHG reduction to cultivate a sustainability culture throughout the supply chain.

Table 23: Summarize Opportunities Related to Climate Change for Long Term (By 2030)

Opportunity Level **Low** **Medium** **High** **Very High**

opportunities	Potential opportunities	Long-term (by2030)		
		Likelihood	Max Impact	Opportunity level
Products and services	Response to the shift in demand/ interest to low-carbon product	M	H	M
Resilience	Participation in renewable energy programs and adoption of energy-efficiency measures	VH	M	H
Stakeholder Engagement	Collaboration with the supply chain	VH	L	M

RISK MANAGEMENT

The organization's processes for identifying and assessing climate-related risks

BJC integrates sustainability and risk management as core components of its organizational management approach. Climate-related risks and opportunities are identified, assessed, and monitored through a structured process that spans the corporate level, business units, and operational sites. This process is embedded into strategic planning, operational execution, and decision-making to ensure that sustainability considerations are consistently integrated into BJC's day-to-day operations and long-term objectives.

Identifying and assessing climate-related risks and opportunities process:

The organization's processes for managing climate-related risks

The organization's processes for managing climate-related risks are embedded within BJC's structured risk management framework, developed through an integrated approach. This framework includes specific control activities designed to prevent, detect, and correct potential climate-related and operational risks. It also outlines clear risk response strategies to mitigate impacts and ensure timely, appropriate actions when risks materialize.

Control Activities

Table 24: BJC's control activities are designed to prevent, detect, and correct climate-related and operational risks.

Preventive Controls Proactive measures to reduce the likelihood of risks occurring, such as:	**Detective Controls** Mechanisms to identify and investigate irregularities:	**Corrective Controls** Measures to remediate and prevent recurrence of identified issues:
Transitioning to renewable energy to reduce greenhouse gas emissions	Reconciliation of batch and departmental records	For example, in the event of a flood, a dedicated response team assesses the situation, determines the level of risk, and coordinates corrective actions with operational leadership.
Implementing energy-efficient technologies (e.g., LED lighting)	Monitoring performance against targets and budgets	
Transferring financial risk through insurance policies	Conducting system access audits and transaction reviews	
Ensuring system integrity via robust design, security, and backup processes	Performing physical verification of assets and inventories	
Enhancing physical security with access control systems		
Applying rigorous planning, forecasting, and budgeting practices		

Risk Response Strategies

BJC applies four principal strategies based on the nature, severity, and likelihood of each risk:

Accept: Acknowledge low-level risks that fall within acceptable thresholds.

Reduce: Mitigate risk through operational enhancements or clean technologies.

Transfer: Shift risk through insurance or third-party arrangements.

Avoid: Eliminate activities or exposures associated with unacceptable risks.

Processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management framework.

BJC integrates the processes for identifying, assessing, and managing climate-related risks into the organization's overall risk management through its Enterprise Risk Management (ERM) framework, ensuring a comprehensive and forward-looking approach. Climate-related risks, including physical risks such as floods and transitional risks such as regulatory or market changes, are evaluated alongside strategic, operational, financial, and compliance risks.

The risk assessment and adaptation plan for physical climate risks cover 100% of existing and new operations. This integrated approach enables BJC to systematically assess the potential impacts of climate change on business continuity, financial performance, and long-term resilience. Where appropriate, scenario analyses and financial quantification are conducted to support informed decision-making.

BJC's Enterprise Risk Management (ERM) process encompasses a 5-step approach, including the following key steps below:

Objective

BJC defining clear business objectives and long-term strategy to ensure alignment with risk management. Objectives follow the SMART criteria:

Specific – Clearly articulated and focused.

Measurable Quantifiable to track progress.

Attainable – Realistic given available resources.

Relevant – Aligned with BJC's strategic priorities.

Time-bound – Set within a defined timeframe.

Risk Identification

Risks are identified by designated risk owners, who evaluate key internal and external risk drivers, particularly ESG factors and climate-related events, which may pose risks or offer opportunities.

This step also involves identifying root causes and assessing the relevance of these risks across business functions.

Risk Assessment

Each identified risk is assessed based on:

Likelihood (Probability): The chance that a risk event will occur.

Impact (Severity): The extent of potential consequences if the event occurs.

These factors determine the inherent risk level. Where relevant, BJC conducts scenario analyses, including financial quantification, to better understand the potential impact of significant risks and opportunities, especially those related to climate change.

Risk Management

For each assessed risk, BJC defines and implements risk mitigation strategies. The effectiveness of existing controls is evaluated, and new measures are introduced where necessary.

This step ensures that risk exposure is managed within acceptable thresholds and that all control mechanisms are aligned with business objectives.

Risk Monitoring & Reporting

Ongoing monitoring and evaluation ensure that risk mitigation strategies remain effective over time.

BJC regularly reviews its risk profile and reports key findings to relevant stakeholders. Insights from monitoring activities are used to strengthen the overall risk management framework and support continuous improvement.

CLIMATE-RELATED METRICS & TARGETS

BJC has developed a comprehensive climate strategy supported by clearly defined metrics and targets to assess climate-related risks and opportunities. These metrics are aligned with the company's broader strategy and integrated into its risk management process to ensure consistent monitoring and informed decision-making.

The key metrics focus on reducing water usage intensity, lowering greenhouse gas (GHG) emissions, decreasing overall energy consumption, and increasing the proportion of renewable energy used. These indicators are critical for evaluating both physical and transitional climate risks and their potential impacts on operations, supply chains, and stakeholder expectations.

Table 25: Climate Action Metrics and Targets

Focus Area	Target
GHG Emissions	Achieve a 15% reduction in Scope 1 and 2 emissions from the 2021 base year by 2032 (Intensity target) Achieve a 10% reduction in Scope 3 emissions from the 2022 base year by 2032 (Intensity target) Achieve Net Zero emissions by 2050
Water Management	Reduce water consumption per unit of revenue by 15% from the 2021 base year by 2032
Energy Management	Decrease non-renewable energy consumption by 15% from the 2021 base year by 2032

In 2024, BJC adopted an internal shadow carbon pricing mechanism, applying a rate of THB 200 per metric ton of CO_2 equivalent to capital expenditure decisions and scenario analyses. This approach facilitates the assessment of potential financial risks associated with future carbon regulations and supports investment decisions aligned with the company's decarbonization goals. The program, which covers GHG emissions across Scopes 1, 2, and 3, is implemented across all business decision-making processes, with metrics reviewed yearly by the Sustainability Development Committee and Risk Management Committee and incorporated into the broader ESG performance dashboard reported to the Board.

Greenhouse Gas (GHG) Emissions (Scope 1, 2, and 3) and Related Risks

In 2024, BJC is undertaking a recalculation and revision of its greenhouse gas (GHG) emissions data for past years to ensure the accuracy, consistency, and completeness of its carbon inventory, in alignment with international standards such as the GHG Protocol. The key reasons for this recalculation include:

- Improved data quality: Access to more accurate activity data, updated emission factors, and enhanced data collection systems.
- Methodological enhancements: BJC has refined its GHG calculation methodologies to align more closely with international best practices and national standards, including the use of Renewable Energy Certificates (RECs) and the recognition of renewable energy rights.

Table 26: Greenhouse gas Emission

GHG Emissions	Unit	2021	2022	2023	2024
Direct Greenhouse gas Scope 1	Metric tons CO2e	**620,972**	**660,390**	**622,571**	**580,320**
Greenhouse gas Scope 1 Intensity	Metric tons CO2e per unit revenue (Million THB)	4.01	4.39	4.03	3.68
Indirect Greenhouse gas Scope 2 (Location)	Metric tons CO2e	**616,367**	**612,723**	**618,244**	**644,573**
Greenhouse Gas Scope 2 – Location Based Intensity	Metric tons CO2e per unit revenue (Million THB)	3.98	4.08	4.00	4.09
Indirect Greenhouse gas Scope 2 (Market)	Metric tons CO2e	**648,593**	**643,497**	**633,322**	**620,543**
Greenhouse Gas Scope 2 – Market Based Intensity	Metric tons CO2e per unit revenue (Million THB)	4.19	4.28	4.09	3.93
Total GHG Emission (Scope 1+2 Market Based)	Metric tons CO2e	**1,269,565**	**1,303,887**	**1,255,893**	**1,200,863**
Total GHG Emission Intensity	Metric tons CO2e per unit revenue (Million THB)	8.21	8.67	8.12	7.61
% Data Coverage		**89.98**	**91.37**	**91.42**	**91.81**

Table 27: Breakdown of greenhouse gas scope 3 emissions (Unit: tCO2eq)

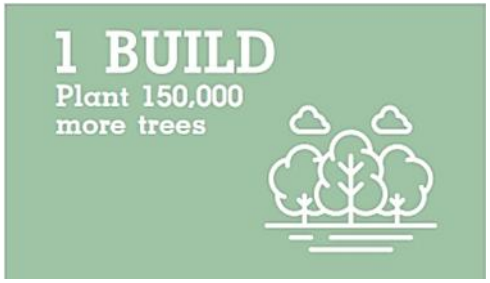
No	Category	2022	2023	2024	Emissions calculation methodology and exclusions
1	Purchased goods and services	6,176,779	6,923,857	7,208,802	Emission is calculated by carbon footprint of product of the key raw materials used in the factory and the products sold in Big C stores.
2	Capital goods	5,743	20,531	9,920	Emission is calculated by the number of newly opened Big C Mini branches in 2022 x average area per branch x EF in constructing one unit of area.
3	Fuel- and energy related activities	207,816	288,554	221,543	Emission is calculated by total amount of energy consumption within organization, which used for Scope 1 & 2 calculations
4	Upstream transportation and distribution	153,548	146,044	57,680	Emission is calculated by total amount of fuel consumption in the transportation of raw materials/mass or volume of goods.
5	Waste generated in operations	90,379	139,033	52,379	Emission is calculated by total amount of waste generated x Emission factors (EF) for specific waste treatment methods.
6	Business travel	4,172	751	509	Emission is calculated by total amount of fuel consumption by employees for business travel.
7	Employee commuting	32,193	33,846	98,370	Emission is calculated from the survey data of distance between the reporting company and the employees' home and the employees' travel methods. For employees who have not been surveyed, the average Emission value from the specified distance traveled will be used, multiplied by the remaining number of employees.

No	Category	2022	2023	2024	Emissions calculation methodology and exclusions
8	Upstream leased assets	1,557	114	119	The emissions factor for warehouse operations was estimated based on the total electricity consumption in distribution center for a one-year period.
9	Downstream transportation and distribution	6,508	12,579	4,315	Emission is calculated by fuel consumption and applying the appropriate emission factor for that fuel.
10	Processing of sold products	Processing of sold products is considered irrelevant to BJC's business because it sells a final product that does not undergo any additional processing before being sold to the end-user.			
11	Use of sold products	GHG emissions from Category 11 are included in Category 1			
12	End-of-life treatment of sold products	50,366	61,877	68,357	Emissions are calculated by the total number of sold product going to each disposal method (e.g., landfill) x Emission factor (EF) for each disposal method
13	Downstream leased assets	103,920	103,949	81,956	Emission are Calculated based on the electrical consumption of customers leasing space within Big C stores.
14	Franchises	45,365	303	9	Emissions are calculated by total number of franchise x Electricity consumption per branch x Emission factor (EF).
15	Investments	The data is not available for FY 2023 because BJC has only collected the relevant information from its subsidiaries.			
	Total	**6,878,346**	**7,731,438**	**7,803,959**	

GHG Emissions	Unit	2021	2022	2023	2024
Indirect Greenhouse gas Emissions (Scope 3)	Metric tons CO2e	**299,131**	**6,878,346**	**7,731,438**	**7,803,959**
Greenhouse Gas Scope 3 Intensity	Metric tons CO2e per unit revenue (Million THB)	1.93	45.75	49.99	49.48
% Data Coverage		**89.98**	**91.37**	**91.42**	**91.81**

BJC's Climate Commitment and Strategic Alignment with Global Standards

Planting 150,000 trees



Reducing Scope 1 and 2 GHG emissions by 15% (Intensity target)

Reducing the use of non-renewable energy by 15%

Reducing water consumption by 15%

Reducing food waste generation by 15%

Reducing the weight of packaging materials by 15%

BJC's ambitious climate targets

reflect its commitment to addressing climate change

BJC has committed to achieving net-zero emissions by 2050, underscoring its long-term ambition to support global efforts to limit the rise in global temperature to 1.5°C, in accordance with the Paris Agreement. This commitment encompasses emissions across Scopes 1, 2, and 3, covering direct operations, purchased energy, and activities throughout the value chain.

In 2021, BJC established a 10-year climate action target under the **"1+5" BJC 150th Sustainable Environmental Goal**, to be achieved by **2032**, serving as a key milestone in its net-zero journey. This initiative focuses on the following six environmental priorities:

In 2023, BJC formally acknowledged the Science Based Targets initiative (SBTi) Net-Zero Standard, the world's first science-based certification framework for corporate net-zero targets aligned with the Paris Agreement. In accordance with this standard, companies are required to reduce Scope 1 and 2 emissions by at least 42% by 2030.

To align with this global benchmark, BJC has initiated the integration of the SBTi framework into its internal yearly GHG reduction targets, which are being progressively implemented across its business operations. This process runs in parallel with the existing "1+5" environmental goals and reinforces the company's commitment to meeting the SBTi's near-term reduction pathway.

Although BJC's climate targets have not yet been formally validated by the SBTi, the company has publicly committed to seeking validation and aligning its climate strategy with internationally recognized, science-based standards.

Operational Plan to achieve Net Zero goal in 2050

BJC is committed to achieve the goal to be Net Zero within 2050. Currently, 48% of GHG emission Scope 1 consists of 57% fuel consumption, 1% transportation, 13% process emission and 29% refrigerant. For Scope 2, 52% comes from electricity consumption.

1. BJC plans to shift to renewable electricity, which is expected to cut GHG emissions by about 40%–50%.
2. The use of electric vehicles powered by clean energy for distribution is projected to reduce GHG emissions by **3%–5%**.
3. Switching to low global warming potential (GWP) refrigerants that do not contribute to GHG emissions or ozone depletion is expected to reduce emissions by **20%–30%**.
4. Enhancing energy efficiency in production processes by improving or replacing machinery to reduce fuel and electricity consumption is projected to lower GHG emissions by **10%–15%**.

According to the data above, BJC has the potential to reduce greenhouse gas emissions by 58%-80%. In addition, greenhouse gas emissions can be further reduced through trees planting projects, carbon capture and storage technologies and buying of carbon credits and REC. The estimate proportion of reduction and offsets likely to be achieved are 65% and 35% respectively.

BJC's Net Zero Road Map

2022
(Base year)

2023
- Enhance GHG accounting cover all 95% GHG emissions
- Segment suppliers and assess the carbon footprint of suppliers

2025
- Install > 130 MW of solar rooftop
- Improve energy efficiency 10% (stores, factories and machineries)
- 30% EV fleets
- 40% Renewable electricity
- Establishment of supplier engagement strategy.

2030
Scope 1&2 reduction by 42% compared to the 2022 base year

- 100% EV fleets
- 80% Renewable electricity
- 20% of majority of suppliers have transition plans in place

2040
- 100% Renewable electricity
- 50% of suppliers have transition plans in place.

2050 Target
Scope 1, 2 & 3 reduction by 90%, compared to the 2022 base year

- 95% of production processes or activities are related to electrification.
- Carbon remover

Phase 1: Restructuring to Net Zero company

Target: Achieve a 42% reduction in Scope 1 and 2 GHG emissions by 2030, compared to the 2022 base year

After the announcement of the Net Zero Goal in 2022, BJC expects that the first 10 years will be the initial phase of developing the company into a net zero company. The initial phase will highlight the continuity of our existing process - using clean energy, optimizing work process, adding recycle proportion, growing more tress, educating, and creating corporate culture for all employees to reduce the GHG emission. The aim is to enhance performance of the said operation, to study and assess for investing in innovation or to alter significant variation to certain operation, to pave robust foundation and to become the net zero company. Our further involvement includes monitoring on laws and government requirement which may be subject to changing or those to be imposed in support or promotion of the carbon-free society or carbon tax, in order to shift the business operation in conformity with the newly imposed law.

Major Factors to Achieve the Goal

- Reduce energy consumption through improve energy efficiency in owned stores and factories.
- Reduce energy fuel consumption through improve energy efficiency or replacement old machine in factories
- Reduce Non-Renewable energy consumption and install solar panels, i.e., solar roof
- Old equipment over 15 years i.e. air conditioners, central air, and boiler will be replacement by 2030
- Government support
- Purchasing carbon credits

Phase 2: Reaching net-zero emissions across its value chain

Target: Achieve a 90% reduction in Scope 1, 2, and Scope 3 GHG emissions by 2050, compared to the 2022 base year

After having a solid foundation, BJC will then emphasize the target to become the net zero company by investing or using new technologies and innovation to reduce the greenhouse gas emission. At this phase, BJC aims to progress for significant reduction of the greenhouse gas emission as a result of using clean energy, electric cars and changing work procedures, including setting the goal to increase the carbon absorption by growing trees and applying technologies for enhancement such as carbon storage technology.

Major Factors to Achieve the Goal

- Using electricity from the source of clean energy
- Using electric cars
- Changing work procedures and/or using new machinery
- Study the benefits and applying from the new laws as well as government support
- Applying the technology for carbon adsorbent
- Growing trees
- Purchasing carbon credits

Phase 3 Continuous improvement to Net Zero company

Target: Minimize residual GHG emissions, representing the remaining 10% after reductions.

This phase is called post-transition. Upon significant investment and/or change of work procedure for reduction of the greenhouse gas emission, when the greenhouse gas emission rate will have been momentous, BJC will continue with strong determination to reduce the greenhouse gas emission based on the effort to optimize the machine or system implemented for maximum efficiency. With regular maintenance and repair of the machine and continual study of new opportunities that will contribute to reducing the greenhouse gas emission. Meanwhile, BJC will also highlight the importance of growing more trees, applying carbon adsorbent technology and purchasing carbon credits, collaborating with an external entity in seeking for alternative approach to set off the greenhouse gas emission to achieve the Net Zero Goal set forth.

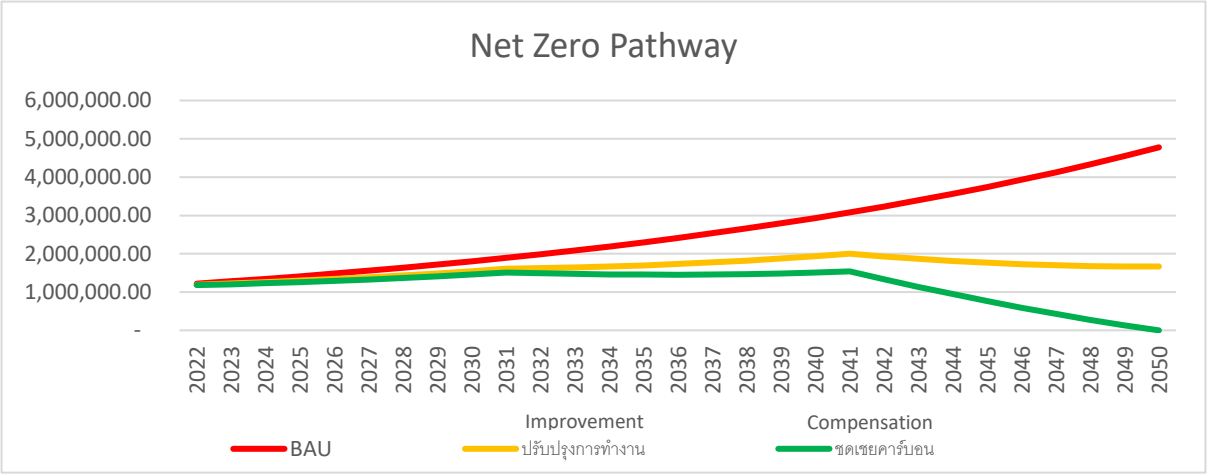
Major Factors to Achieve the Goal

- Investment and/or development of new technologies to reduce residual greenhouse gas emission.
- Growing trees and applying carbon adsorbent technology
- Increase proportion of clean energy consumption
- Applying the technology for carbon adsorbent
- Develop work procedures and/or use a new machine for improved performance and maintain the machine periodically.
- Growing trees
- Purchasing carbon credits and utilizes Renewable Energy Certificates (RECs)

According to the reduction and compensation of the greenhouse gas emission mentioned above, followings are summary of the target for reduction and compensation in each phase and different scenarios:

Scenario analysis

1. The red line - with no actions taken within 2050, there will be 4.8 million tons of greenhouse gas emission per year (it is estimated that the greenhouse gas emission rate will increase by 5% per year as a result of business growth).
2. Yellow line – if the greenhouse gas emission rate can be decreased upon change or improvement of work procedures as well as application of new technologies or innovation, the greenhouse gas emission rate will drop by 65% accordingly.
3. Green line - in addition to the greenhouse gas emission reduction mentioned in Article 2., growing trees, using carbon adsorbent technology, and purchasing carbon credits will contribute to compensation of greenhouse gas emission by 35% according to the plan.



Appendix

Climate-related scenario

BJC employs scenario analysis to evaluate climate-related risks and opportunities, utilizing frameworks from leading global institutions:

1. **Intergovernmental Panel on Climate Change (IPCC)**: BJC references IPCC's emissions scenarios, which provide comprehensive assessments of potential climate futures based on varying greenhouse gas concentration pathways. These scenarios aid in understanding the range of possible climate impacts under different emission trajectories.

There are four main RCP scenarios:

Scenario	Global Mean Temperature Change in 2100	Description
RCP 2.6	1.5-2.0°C	• Represents a low GHG emission scenario • This scenario assumes rapid adoption of renewable energy sources, significant technological advancements, and global cooperation in reducing emissions.
RCP 4.5	2.0-3.0°C	• Represents a moderate GHG emission scenario where emissions peak around mid-century and then decline due to moderate climate policies and technological advancements.
RCP 6.0	3.0-4.0°C	• Represents a medium-high GHG emission scenario where emissions continue to rise throughout the 21st century before stabilizing by 2100. This scenario assumes intermediate levels of climate policies and technological advancements.

Scenario	Global Mean Temperature Change in 2100	Description
RCP 8.5	More than 4.0°C	• Represents a high GHG emission scenario where emissions continue to increase rapidly throughout the century with no climate policies to limit them. • This scenario leads to the highest levels of global warming.

2. **International Energy Agency (IEA)**: BJC incorporates insights from the IEA's Global Energy and Climate Model, which offers detailed sector-by-sector and region-by-region long-term scenarios. These scenarios, including the Net Zero Emissions by 2050 pathway, help BJC assess energy transition risks and opportunities in alignment with global energy trends.

   There are three main IEA's scenarios:

Scenario	Acronym	Definitions
Stated Policies Scenario	**STEPS**	The Stated Policies Scenario (STEPS) reflects the current trajectory of the global energy system based on existing policies and measures, as well as those under development. It provides a sector-by-sector evaluation of these policies, offering insights into the likely direction of energy system progression if current policy trends continue.
Announced Pledges Scenario	**APS**	The Announced Pledges Scenario (APS), introduced in 2021, assesses the impact of all major national climate commitments announced as of August 2024. This includes both 2030 targets and longer-term net-zero or carbon neutrality pledges, regardless of whether they have been legislated or incorporated into updated Nationally Determined Contributions. The APS illustrates the extent to which these announced ambitions and targets can deliver the emissions reductions needed to achieve net-zero emissions by 2050.

Scenario	Acronym	Definitions
Net Zero Emissions by 2050 Scenario	**NZE**	The Net Zero Emissions by 2050 Scenario (NZE) is a normative scenario that outlines a pathway for the global energy sector to achieve net-zero CO_2 emissions by 2050. It emphasizes the deployment of a wide portfolio of clean energy technologies, energy efficiency improvements, and behavioral changes. The scenario also meets key energy-related Sustainable Development Goals, such as universal energy access by 2030 and significant improvements in air quality. It is consistent with limiting the global temperature rise to 1.5°C with at least a 50% probability, aligning with the emissions reductions assessed in the Intergovernmental Panel on Climate Change's Sixth Assessment Report.

Source : iea.org

3. **Network for Greening the Financial System (NGFS)**: BJC utilizes NGFS's harmonized climate scenarios, which integrate transition pathways, physical climate impacts, and economic indicators. These scenarios assist in evaluating the financial implications of climate-related risks and inform BJC's strategic planning and risk management processes.

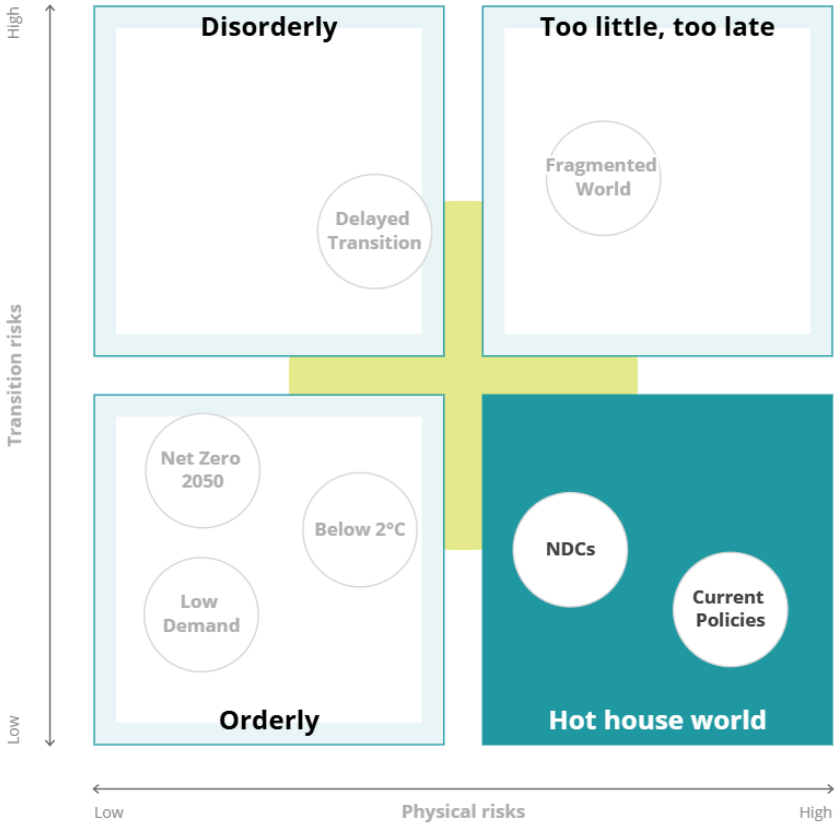
   The NGFS partnered with an expert group of climate scientists and economists to design a set of hypothetical long-term scenarios, published in November 2024 in the expanded version 5.0. They provide a common and up-to-date reference point for understanding how climate change (physical risk) and climate policy and technology trends (transition risk) could evolve in different futures. Each scenario was chosen to show a range of higher and lower risk outcomes.

   Orderly scenarios assume climate policies are introduced early and become gradually more stringent. Both physical and transition risks are relatively subdued.

   Disorderly scenarios explore higher transition risk due to policies being delayed or divergent across countries and sectors. For example, (shadow) carbon prices are typically higher for a given temperature outcome.

   Hot house world scenarios assume that some climate policies are implemented in some jurisdictions, but global efforts are insufficient to halt significant global warming. The scenarios result in severe physical risk including irreversible impacts.

   Too little, too late scenarios assume that a late and uncoordinated transition fails to limit physical risks.



Source: https://www.ngfs.net/ngfs-scenarios-portal/

By integrating these scenario analyses, BJC enhances its ability to anticipate and manage the multifaceted challenges posed by climate change, ensuring resilience and alignment with international climate objectives.