

The background of the slide is a photograph of a modern building with a prominent glass-enclosed tower and a series of vertical wooden slats. The building is situated behind a field of tall, golden-brown grass. In the distance, a body of water is visible under a clear sky. The overall scene is bathed in the warm light of a sunset or sunrise.

# **International Financial Reporting Standards (IFRS)**

## **S2 Report 2025**

Thai Beverage Public Company Limited

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# INTRODUCTION

This report aims to transparently communicate climate-related financial risks and opportunities of Thai Beverage Public Company Limited (“ThaiBev” or the “Group”), while presenting our progressive sustainability strategy and integrated management approach to all stakeholders.

ThaiBev’s sustainable development approach focuses predominantly on three core dimensions, Environmental, Social, and Governance, under the concept of “Enabling Sustainable Growth,” with additional emphasis on a fourth dimension, Arts and Culture, as guided by the Sufficiency Economy Philosophy (SEP) of His Late Majesty King Bhumibol Adulyadej the Great. Along our transformative journey to achieve our

PASSION 2030 ambition, ThaiBev is committed to contribute to the 17 UN Sustainable Development Goals (UNSDGs).

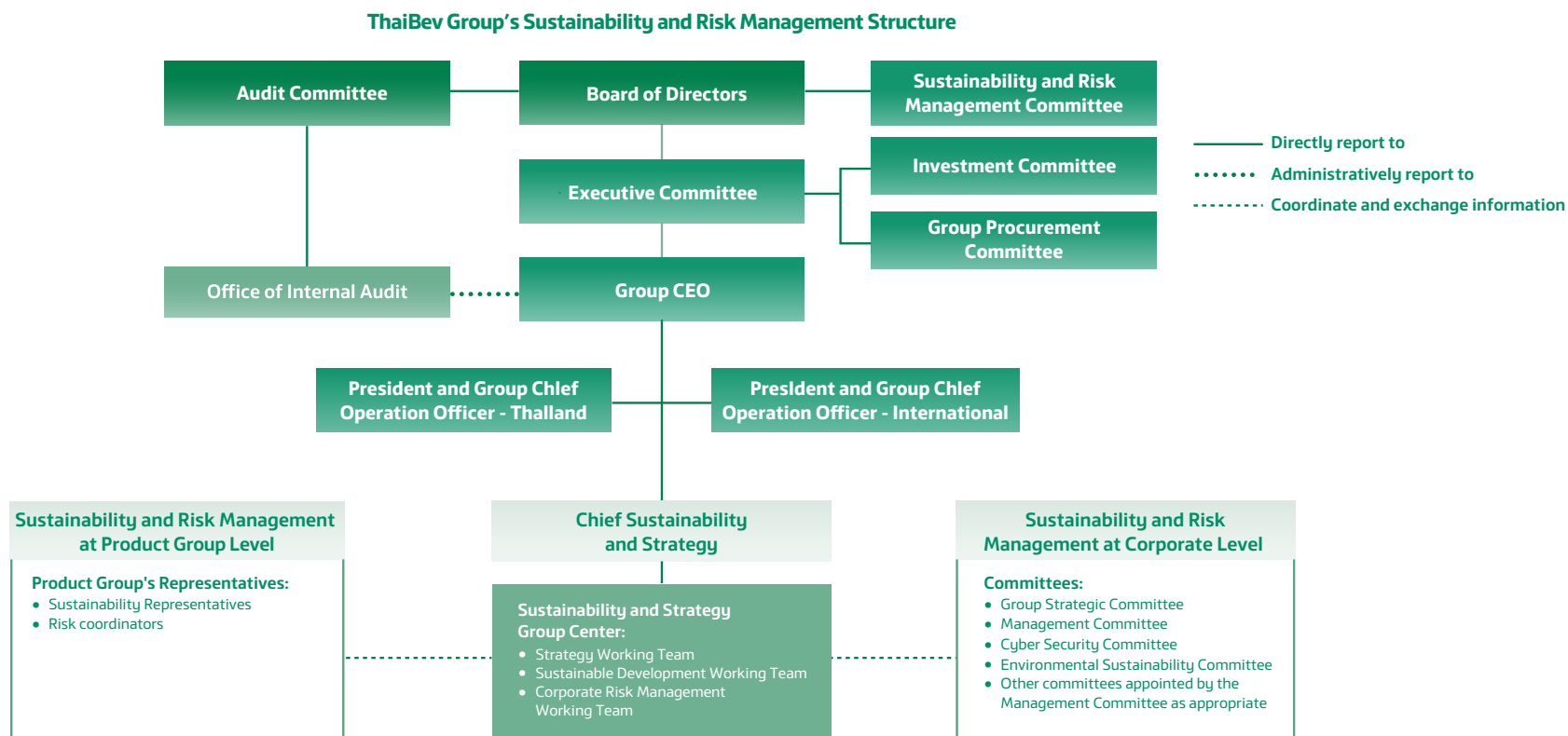
This report has been prepared in accordance with International Financial Reporting Standards (IFRS) S2, ensuring that our disclosures address material sustainability-related risks and opportunities. Our approach is further aligned with the core criteria and guidelines of the Global Reporting Initiative (GRI) and the Carbon Disclosure Project (CDP). With this report, we reaffirm our commitment to transparency and accountability, showcasing our enduring dedication to sustainability and responsible corporate citizenship.



# GOVERNANCE

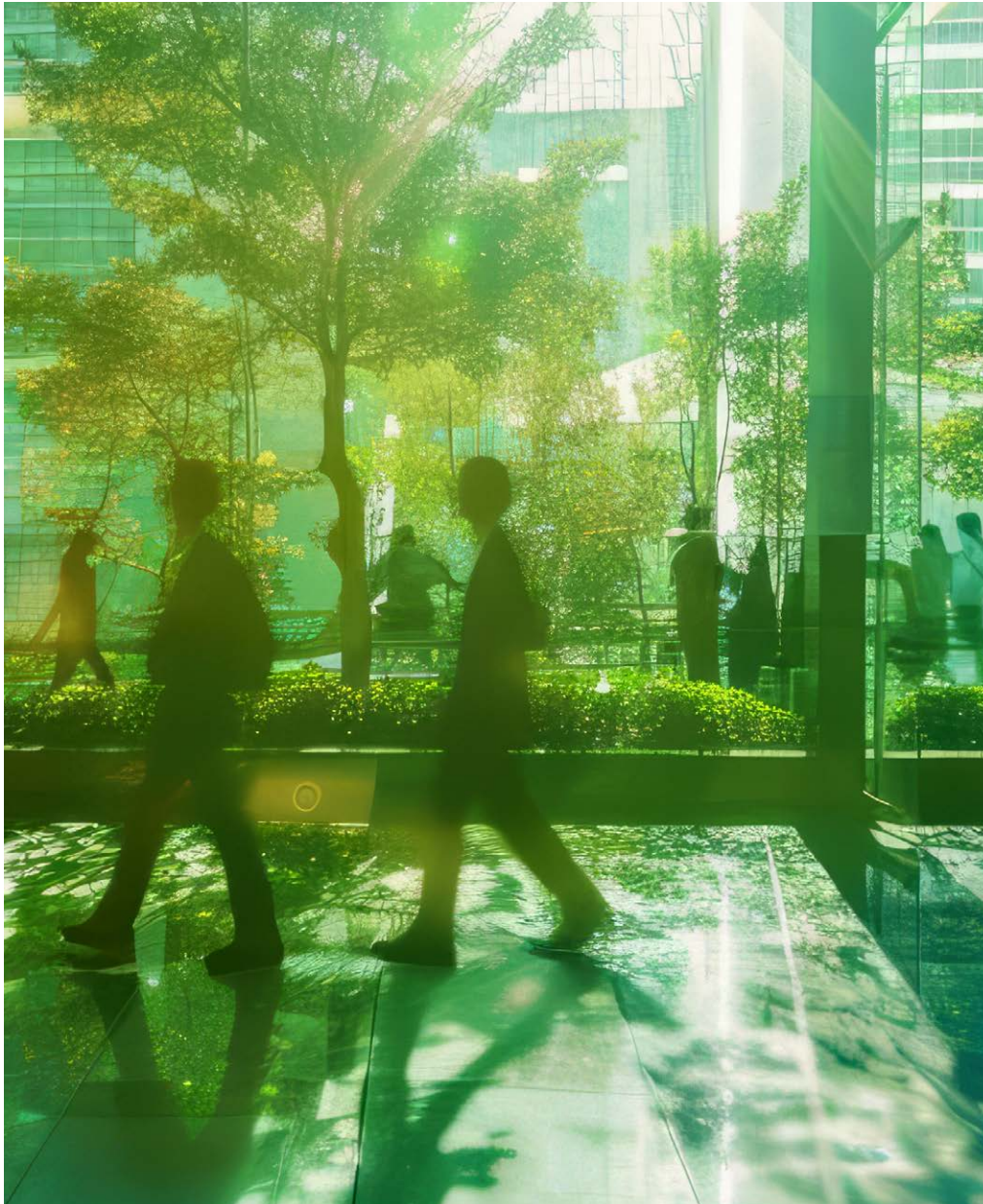
Effective governance enables companies to consider and address the risks and opportunities associated with climate change in their decision-making in a timely manner, which then ensures the long-term sustainability and resilience of its business. ThaiBev has integrated oversight of climate-related risks and opportunities into its

governance structure, demonstrating a commitment to addressing the urgency of climate issues. This structure is aimed at advancing climate-related action across the organization, ensuring coordinated efforts, clear accountability, and alignment with global sustainability frameworks.



**Figure 1:** ThaiBev's Climate-related Governance Structure





## Board-level Governance

ThaiBev's governance structure forms the foundation for its sustainability and risk management. The Board of Directors holds ultimate responsibility for risk oversight, ensuring the sustainable and successful operations of the ThaiBev Group. Supporting this, the Sustainability and Risk Management Committee (SRMC), a board-level committee comprising Directors and Independent Directors, Senior Executives (Senior Vice President or higher), and distinguished external experts, oversees key corporate risks and sustainability-related matters. This includes reviewing risk appetite and tolerance levels before presenting recommendations to the Board for approval. The SRMC plays a central role in assessing and managing risks across all key functions, Product Groups, Business Units, and subsidiaries to ensure comprehensive coverage of sustainability and corporate risks. It also collaborates closely with the Audit Committee, which oversees the integrity of the group's reporting, audit processes, and internal control systems while ensuring compliance with legal and regulatory requirements.

## Climate-related Role and Responsibility

Effective governance is critical to manage climate risks and ensure long-term organizational resilience, particularly at the Board level. ThaiBev's governance structure, established at the group level, is designed to integrate climate-related risks and opportunities into its overall corporate strategy and operations. To further enhance this structure, the table was designed to clearly link climate-related roles and responsibilities across the group, providing a comprehensive overview of accountability at each level.

**Table 1: Board-Level Climate-related Roles and Responsibilities**

ThaiBev's Function	Climate-related Roles and Responsibilities	Meeting Frequency
<b>Board of Directors</b>	<ul style="list-style-type: none"> <li>Be responsible for the governance of climate-related risks within the Company and determines the approach to climate-related risk governance for ThaiBev Group.</li> <li>Approves ThaiBev's climate-related strategy, goals, and targets. This includes annual climate-related strategy revisions and strategic</li> <li>Monitors climate-related risks and opportunities through a three-dimensional sustainability approach (environmental, social and governance) as part of ThaiBev Group's overall corporate performance and group sustainability and risk management.</li> </ul>	Quarterly
<b>Sustainability and Risk Management Committee (SRMC)</b>	<ul style="list-style-type: none"> <li>Be responsible to oversee, monitor, and manage climate-related risks and opportunities including policy development, sustainability and risk management, and progress toward climate-related goals.</li> <li>Establishes the sustainability and risk management framework that enables the effective identification, analysis, evaluation, response and monitoring of all material risks, including climate-related risks, of ThaiBev Group, the strategy on the organization and resources to be used for the sustainability and risk management operation, in line with the risk management policy, as well as the sustainability policy of ThaiBev Group.</li> <li>Oversees Management in the design, implementation, ongoing monitoring of the risk management system and recommending improvements and preventive measures for significant climate-related risks to ensure its efficiency and effectiveness.</li> <li>Reports directly to the Board quarterly on the following matters: <ul style="list-style-type: none"> <li>- Impact of climate-related risk and opportunity exposures, including those climate-related financial disclosures, and changes in sustainability and risk management frameworks, as well as effect from changes in policies and new business developments;</li> <li>- Status of sustainability and risks, including those climate-related risks and opportunities, and changes on the risk appetites or the levels of acceptable risk at appropriate time;</li> <li>- Factors likely to have significant impacts on the ThaiBev Group sustainability and risk status.</li> </ul> </li> </ul>	Quarterly

At the end of the financial year ended 30 September 2025, all Directors have completed the training on sustainability matters as prescribed by the SGX-ST. In addition, at the joint Audit Committee and Sustainability and Risk Management Committee Meeting held in 2025, the Company had arranged for the Singapore Institute of Directors ("SID") to conduct a training session, the ESG Governance and Structure for Sustainability Programme, for the Board, Audit Committee, Sustainability and Risk Management Committee, as well as management teams of the companies in ThaiBev Group, to develop their expertise and knowledge in Environmental, Social, and Governance (ESG) matters.



## Management and Operational-level Governance

ThaiBev's management-level leadership are responsible for the overall execution of the sustainability strategy, which includes climate-related issues and progress towards its climate-related goals and targets under the three pillars of ThaiBev's Climate Strategy; (1) Adaptation, (2) Mitigation, and (3) Communities (for more information, please refer to the Strategy section). On an operational level, senior

executives of each functional group are tasked with the oversight of their respective group's development of sustainability strategy and management of risks (including climate risks) to an acceptable level. They also report the sustainability and risk management outcomes of their respective group to the SRMC, at least on a quarterly basis.

**Table 2: Management and Operational-level Climate-related Roles and Responsibilities**

ThaiBev's Function	Climate-related Roles and Responsibilities	Meeting Frequency
Executive Committee	<ul style="list-style-type: none"><li>• Prepares and proposes climate-related strategies, plans and targets to the Board of Directors</li><li>• Oversees business operations of the Company and its subsidiaries, including climate-related activities, to ensure that they are aligned with the business policy, target, action plan, business strategy, budget, and scope of authority as approved by the Board of Directors, and is beneficial to the business of the Company.</li><li>• Considers and approves a budget spending for an investment or operations, which include those climate-related, application for a loan or credit facility from a financial institution, lending, as well as acting as a guarantor, in the normal course of business of the Company and its subsidiaries as determined by the Board of Directors.</li><li>• Supervises and approves the matters relevant to the Company's operations, such as climate-related activities, and may appoint or authorize a person or persons to act on the Executive Committee's behalf as deemed appropriate.</li></ul>	Monthly
Group CEO	<ul style="list-style-type: none"><li>• Determines the Company's visions, directions and strategies, including those climate-related.</li><li>• Oversees the Company's operations and day-to-day management to ensure that these are in line with the Company's targets, including those climate-related, agreed upon by the Executive Committee and the Board.</li><li>• Supervises the disclosure of adequate and appropriate information, including climate-related financial disclosure information, to Management and to the Board for further consideration and actions at the appropriate time.</li><li>• Assigns responsibilities within ThaiBev Group's functional groups toward the implementation of ThaiBev Group's climate-related strategy.</li></ul>	Quarterly (Through the SRMC)
Investment Committee	<ul style="list-style-type: none"><li>• Evaluates risks and opportunities related to mergers, acquisitions, investments, and disposal of assets within the ThaiBev Group.</li></ul>	As necessary



ThaiBev's Function	Climate-related Roles and Responsibilities	Meeting Frequency
<p><b>President and Group COO - Thailand</b></p> <p>and</p> <p><b>President and Group COO - International</b></p>	<ul style="list-style-type: none"> <li>• Work with the Group CEO to determine the Company's visions, directions and strategies, including those climate-related, and to oversee the Company's operation, day-to-day management and projects to be in line with the Company's targets, including those climate-related, agree upon by the Executive Committee and the Board of Directors.</li> <li>• Support the Group CEO to ensure that the Company's operations, including the sustainability and risk management such as climate-related risk management, are in conformity with the objectives and Articles of Association of the Company, as well as the shareholders' and the Board of Directors' resolutions, the Company's policy, and code of good corporate governance.</li> <li>• Work with the Group CEO to execute effective organization management and achieve synergy between Product Groups, functions, businesses, as well as overseeing investments and the overall business operation, including climate-related activities, according to the directions set forth by the Executive committee and the Board of Directors.</li> </ul>	Quarterly (Through the SRMC)
<b>Environmental Sustainability Committee</b>	<ul style="list-style-type: none"> <li>• Oversees, advises and ensures progress towards climate-related goals for all operation units across ThaiBev Group.</li> <li>• Considers impacts of environmental risks and opportunities, such as those climate-related, for investment decisions and existing business operations.</li> <li>• Set up action plans and monitor progress to ensure achievements of environmental targets</li> <li>• Arranges for regular reporting of environmental performance, including climate-related operations, to the SRMC and the Board of Directors.</li> </ul>	Monthly or as necessary
<b>Chief Sustainability and Strategy</b>	<ul style="list-style-type: none"> <li>• Oversees all sustainability related activities including climate-related activities within ThaiBev and orchestrates group strategy development, revision and implementation and transformation integrally with ThaiBev's sustainability plans.</li> <li>• Supervises the Sustainability and Strategy Group Center that consists of Sustainability Development Working Team (SDWT) and Corporate Risk Management Working Team (CRMWT).</li> </ul>	Monthly or as necessary
<b>Sustainability and Strategy Group Center</b>	<p><b>Sustainable Development Working Team (SDWT)</b></p> <ul style="list-style-type: none"> <li>• Supports the Product Group by providing information on sustainability and climate-related standards, including climate-related issues.</li> <li>• Plans and tracks climate goals, gathering data, such as climate-related data, for sustainability reporting.</li> <li>• Develops/implements climate-related programs / projects under the three pillars of ThaiBev's climate-related strategy, covering capacity building, stakeholder engagement programs, and partnership initiatives.</li> <li>• Coordinates with internal and external stakeholders for climate-related strategy implementation and climate-related risk management, and communicates sustainability knowledge, including climate-related knowledge, and project progress to both internal and external stakeholders.</li> <li>• Collects climate-related primary data from the Product Group / Business Unit, consolidates and analyze climate-related data for performance tracking, and prepares periodic (quarterly/annual) reports for the SRMC (and subsequently to the Board).</li> </ul> <p><b>Corporate Risk Management Working Team (CRMWT)</b></p> <ul style="list-style-type: none"> <li>• Facilitates identification and assessment of risks and opportunities, including climate-related risks, by engaging with internal and external stakeholders.</li> <li>• Evaluates the adequacy of risk management plans, monitors implementation of risk management actions, promotes risk management awareness, and ensures that these activities address climate-related risks.</li> <li>• Coordinates with Product Group's risk coordinators to monitor Product Group/Business Unit's specific climate-related risks, and reports to their senior executives and the SRMC, as needed.</li> </ul>	<p>Monthly or as necessary</p> <p>Quarterly or as necessary</p>





## Climate-related Remuneration

To ensure accountability for sustainability and climate-related actions, ThaiBev has integrated climate change-related key performance indicators (“KPIs”) and monetary incentives into employees’ targets, including at the Executive level. ThaiBev’s corporate KPIs relating to climate strategy consist of GHG emissions reduction and water stewardship. Monetary incentives are linked to the management of environmental issues. Compensation and bonus will be allocated to relevant executives and employees with related targets as follows:

- Integration of climate-related and water-related incentives into Group CEO’s KPIs and monetary rewards, contributing to ThaiBev’s commitment to achieving Net-Zero GHG for Scope 1, 2 and 3 and 100 percent water replenishment (water used in finished goods beverage products) by 2040
- Integration of climate-related and water-related incentives into Chief Sustainability and Strategy’s KPIs, contributing to ThaiBev’s commitment to achieving near term targets of 42 percent scope 1 and 2 GHG emissions reduction by 2030 compared to 2023, Net-Zero GHG emissions for Scope 1, 2 and 3 by 2050, and 100 percent water replenishment (water used in finished goods beverage products) by 2040
- Integration of water-related incentives into Head of relevant Business Units’ and employees’ KPIs and monetary rewards, of 42 percent scope 1 and 2 GHG emissions reduction by 2030 compared to 2023, and a water intensity target of reducing water intensity by 7 percent by 2030, compared to the 2023 base year.





# STRATEGY

ThaiBev has integrated climate change risks and opportunities into its strategy and operations to drive continuous improvement and to enhance its resilience toward climate change and value creation for ThaiBev's business and connected communities.



**Figure 2:** ThaiBev's Three Pillars of Climate Strategy



## Pillar 1: Adaptation

In 2025, ThaiBev's total water consumption decreased by 2 percent compared to 2023. This data includes both water withdrawals and water discharges from all manufacturing plants, offices, and other operational sites, covering 100% of ThaiBev's domestic and international facilities.

ThaiBev achieved a water reuse and recycling, at 2 percent and 2 percent. To optimize water resource efficiency, the Company implemented the following water recycling initiatives:

- Rainwater Harvesting System in Vietnam
- Reuse of Water from the PET Line 7 Bottle Rinsing Process in Malaysia
- Water Recovery Plant in Singapore

ThaiBev is committed to continuously improving water consumption efficiency by conducting comprehensive water footprint assessments throughout the product life cycle. These assessments are guided by the principles of the 3Rs: reducing water consumption, reusing water, and recycling water. Additionally, the company develops water reduction plans and strictly monitors wastewater discharge across all manufacturing plants. ThaiBev anticipates that water withdrawals will remain stable or decrease over the next two years, aligning with its goal to reduce water intensity by 7 percent by 2030 compared to the 2023 baseline.



## Water Usage Reduction Projects

Highlighted Projects	Environmental Impact	Financial Impact
<b>Rainwater Harvesting System in Vietnam</b>  At SABECO's Cu Chi and Can Tho Breweries, the installation of rooftop rainwater harvesting systems has reduced water withdrawals from natural resources by 12,588 cubic meters during rainy seasons and saved 172,420 Baht annually. SABECO plans to expand the initiative to all its breweries in the future to improve water efficiency and promote sustainable water resource management in the long term.	Save 12,588 cubic meters of water	Cost saving of 172,420 Baht
<b>Reuse of Water from the PET Line 7 Bottle Rinsing Process in Malaysia</b>  Water from the PET Line 7 bottle rinsing process is now filtered and reused for hot water spray and filler bottle body rinsing at the Shah Alam plant. This initiative has resulted in an impressive 4,640 cubic meters of annual water savings.	Save 4,640 cubic meters of water	Cost saving of 105,848 Baht
<b>Water Recovery Plant in Singapore</b>  F&N Foods Pte Ltd (FNFS) is implementing a Water Recovery Plant at its Tuas plant. Once the plant stabilizes, water savings of approximately 3,000 cubic meters per month, based on the quantity of NEWater supplied by PUB, is expected.	Save 36,000 cubic meters of water	Cost saving of 304,505 Baht

## Total cost of response for adaptation

ThaiBev is investing **14.75 million Baht** in 3Rs projects to implement a water management plan for all ThaiBev's operation sites, ensuring sufficient water supply, and improving water efficiency through water-saving technology and a water recycling system.



## Pillar 2: Transition Risks/ GHG Mitigation

In 2025, ThaiBev achieved a 11 percent reduction in total Scope 1 and 2 greenhouse gas (GHG) emissions compared to the base year 2023. This achievement encompasses GHG emissions from the organization's manufacturing plants, offices, and other operations, with comprehensive coverage of Thai and international facilities. Renewable energy projects contribute significantly to global efforts to reduce reliance on fossil fuels, decrease GHG emissions, and build a more sustainable energy future. We achieved significant renewable energy consumption of 36.73 percent. We have implemented the following projects:

- Renewable Energy Projects: Solar panels, biogas, and biomass projects
- GHG Emissions Reduction Projects: Enclosed flare, electrical forklifts

- Energy Efficiency Projects: installing high-efficiency motor systems, increasing of condensate return, and air conditioning management.

ThaiBev is dedicated to continuously enhancing its greenhouse gas (GHG) emissions reduction efforts by conducting comprehensive assessments across the product life cycle. These assessments align with key principles such as improving energy efficiency, transitioning to renewable energy sources, and optimizing operational processes. Additionally, the company develops strategic GHG reduction plans and rigorously monitors emissions across all manufacturing facilities. ThaiBev aims to maintain or further reduce its overall emissions over the next two years, in line with its target to achieve a 42% reduction in GHG emissions by 2030 compared to the 2023 baseline.

Highlighted Projects to reduce scope 1 GHG emissions	Environmental Impact	Financial Impact
<b>Biogas Plant</b>  ThaiBev constructed additional biogas plants and commenced operations in 2025 at three distilleries: Thanapakdi in Chiang Mai Province, Mongkolsamai in Uttaradit Province, and Luckchai in Ratchaburi Province, with a total investment of 476.74 million Baht. The project is expected to reduce heavy fuel oil consumption for steam production by approximately 1.17 million liters per year. At present, ThaiBev operates 13 biogas plants at its distilleries, which utilize by-products from alcohol distillation, and an additional three biogas plants at breweries that produce steam from methane gas captured from wastewater treatment systems.	Reduce GHG emissions by 50,811 tCO <sub>2</sub> e	Cost saving 9.40 USD
<b>Biomass Plants</b>  ThaiBev operates two biomass boiler plants in Thailand and Myanmar that utilize organic materials such as wood chips, rice husks, and palm shells, along with waste labels, sludge, and tea-leaf residue, to generate steam and replace fossil fuels. These boilers produce 1,016,650,800 MJ of thermal energy, reducing heavy oil and coal consumption by 1.10 million liters and 37.67 million kilograms, respectively.	Reduce GHG emissions by 95,276 tCO <sub>2</sub> e	Cost saving 3,048,832 USD
<b>Enclosed Flare</b>  ThaiBev has upgraded our biogas flare system from an open flare to an enclosed flare with an investment of 24.35 million Baht. This improvement significantly reduces methane leakage, one of the potent greenhouse gases.	Reduce GHG emissions by 76,265 tCO <sub>2</sub> e	Cost saving 2,344,480 USD





Highlighted Projects to reduce scope 2 GHG emissions	Environmental Impact	Financial Impact
<b>Solar Power Projects</b>  The solar energy project covers the installation of solar rooftops and floating solar panels in Thailand, Myanmar, Vietnam, Singapore, and Malaysia. The installation has been completed with a total capacity of 87.51 Megawatt peak (MWp)	Save electricity by 82,352 MWh Reduce GHG emissions by 41,178 tCO <sub>2</sub> e	Cost saving USD 9.34 million

### Total cost of response for mitigation

In 2025, we spent **679.86 million Baht** on energy-saving and renewable projects. These projects include expenditures aimed at reducing GHG emissions.



## Pillar 3: Community Engagement

### Supplier development program for our key agricultural commodities

ThaiBev strengthens sustainable agriculture by combining responsible sourcing, supplier capability development, and water resilience across the priority farming regions with high water-stress risk. In FY2025, 100 percent of key agricultural raw materials in Thailand were responsibly sourced, and supplier performance was advanced through targeted engagement and data-driven oversight.

ThaiBev sources key agricultural inputs, including malt, hops, sugar, broken rice, tea leaves, and palm oil, under internationally recognized standards such as Bonsucro, RSPO, FSA, SAI Platform, SEDEX/SMETA, and Rainforest Alliance. These requirements are embedded in supplier screening, assessment, and the bidding process to ensure responsible production and continuous improvement.

To build supplier capability where it matters most, ThaiBev provides bilateral technical support on GHG accounting and disclosure to priority suppliers. In FY2025, Cristalla, a key sugar supplier, progressed from Beginner to Competence level following a focused engagement on GHG accounting practice and data quality

improvement. Beyond Tier 1, ThaiBev continued community support with non-Tier 1 farmers in sugarcane and beer value chains, focusing on practical guidance for water stewardship and soil-health-oriented regenerative practices that reduce dependence on synthetic inputs and strengthen livelihoods.

To strengthen water resilience in agricultural sourcing regions, ThaiBev partners with the Hydro-Informatics Institute (Public Organization) (HII) to use data from automated telemetry stations for water disaster monitoring and flood surveillance. The use of this data is being extended to supplier farming areas identified as water-stressed, enabling continuous water-level tracking and more efficient water use. These actions enhance climate preparedness and protect raw-material continuity while supporting farming communities.

Together, these measures ensure that ThaiBev's agricultural materials are responsibly sourced, performance-managed, and climate-resilient, contributing to better environmental outcomes, stronger communities, and progress on Scope 3 GHG emissions management.

In addition, ThaiBev incorporates carbon performance into our sourcing decisions to incentivize suppliers with better carbon footprints. Key Commodity suppliers must disclose their product carbon footprints and near-term reduction actions. The carbon footprint and traceability are factors in supplier selection, with those demonstrating stronger performance recognized as preferred suppliers.



### Community Forest Restoration Project with the Mae Fah Luang Foundation

ThaiBev has partnered with the Mae Fah Luang Foundation under Royal Patronage to launch the Community Forest Restoration Project in Thailand. The initiative aims to empower local communities to conserve and restore community forests, thereby enhancing their role in carbon sequestration through a carbon credit management mechanism. This collaborative effort serves as an important approach to promote forest conservation, strengthen community resilience, and deliver positive environmental and social impacts. Commencing in 2021, the collaboration has been progressively expanded and currently covers more than 66,254 rai across 12 provinces. The project integrates natural resource conservation with community

development, contributing to reducing Thailand's greenhouse gas emissions and supporting the country's sustainable development agenda.

In 2025, ThaiBev received 29,219 tCO<sub>2</sub>e in carbon credits from the project's first phase. The credits were certified under the Thailand Voluntary Emission Reduction Program (T-VER) for the forestry sector. The achievement reflects ThaiBev's strong commitment to integrating environmental conservation into its business operations and mitigating the impacts of climate change. The company plans to utilize the carbon credits obtained to offset greenhouse gas emissions from its production processes and related activities, supporting progress toward its Net-Zero greenhouse gas emissions target across Scopes 1, 2, and 3.





## Scenario Analysis of Climate Risks and Opportunities

In 2025, Significant areas of uncertainty considered in ThaiBev's climate resilience assessment include the inherent variability of climate projections under different RCP scenarios, particularly at asset and local watershed levels; uncertainties in the timing, stringency, and implementation of transition policies under IEA STEPS and IEA NZE scenarios; assumptions related to the availability, scalability, and cost of low-carbon technologies; and the potential impacts of water stress and extreme weather events on production assets and agricultural supply chains across different time horizons.

With regards to the overarching risks and opportunities identification and qualitative assessment, the drivers identified and assessed from 2023 remain relevant to ThaiBev. Physical risks assessment was conducted using Representative Concentration Pathway (RCP) scenarios from the Intergovernmental Panel on Climate Change (IPCC), and considered the following natural hazards: riverine floods, storms, water stress, sea water intrusion, and increasing temperature. In addition, ThaiBev has conducted a Water Sustainability Assessment (WSA) for its production plants in Thailand, including both surface water and groundwater, for an in-depth assessment of any potential climate-related risks. Transition risks assessment was conducted based on the International Energy Agency (IEA)'s Stated Policies Scenario (STEPS) and Net-Zero Emissions by 2050 Scenario (NZE).

ThaiBev has identified timeframes for climate-related physical and transition risks in line with the timeframes used for business operations. These timeframes are as follows: short term (0-3 years), medium term (3-10 years), and long-term (10 years).

## Physical Climate Risks Assessment

In 2025, ThaiBev selected the RCP 2.6 (SSP1-2.6), RCP 4.5 (SSP2-4.5), and RCP 8.5 (SSP3-8.5) scenarios to assess the physical risks that the company might face in the near-term, medium-term, and long-term. These scenarios were chosen because they represent three key possibilities: the best-case scenario, the base-case scenario, and the worst-case scenario. This allows ThaiBev to holistically assess and understand the physical risks that may arise, including how current mitigation actions fare against the best-case scenario, as natural hazards are expected to worsen in a 1.5-degree-aligned pathway according to the latest IPCC report, and whether the current measures will be sufficient in the long term under the worst-case scenario.

These scenarios were selected due to the robustness and completeness of the data used in the assessment. As water is a key raw material for ThaiBev, any changes in water availability can affect production lines, supply chains, and revenue. All assessed assets already have medium to high exposure to water stress, with forecasted minimal to no change expected by 2030, 2040, and 2050.

Furthermore, it was determined that the 80 assessed assets, covering the Spirits, Beer, Food, and Non-Alcoholic Beverages product groups, are sufficiently equipped to mitigate the risk of flooding. This is due to the construction of flood barriers, stormwater drainage systems, and pumping stations at ThaiBev's assets. These measures ensure that the company's operations can continue with minimal disruption in the event of a flood, thus reducing the potential impact on production and supply chains.

The scope of the physical risks assessment is outlined in [Table 3](#). The qualitative results of the scenario analysis conducted in 2030, 2040, and 2050 with adaptation measures is outlined in [Table 4](#) while [Table 5](#) and Table 5 demonstrate the potential financial impact of physical risks on transportation and distribution logistics at asset level.

**Table 3: ThaiBev Physical Risk Scenario Analysis Parameters**

<b>Purpose</b>	To analyze whether physical related risks (both acute and chronic) have a significant impact on ThaiBev's business in the future, and the mitigation measures/adaptation plan required for significant risks.
<b>Scenarios</b>	<ul style="list-style-type: none"> <li>• <b>SSP1-2.6/ RCP 2.6:</b> A low emissions pathway limiting warming to below 2°C.</li> <li>• <b>SSP2-4.5/ RCP 4.5:</b> An intermediate emissions pathway where global temperature rises by 2.5 - 3 °C.</li> <li>• <b>SSP3-8.5/ RCP 8.5:</b> High emissions. A pathway that represents a baseline where no additional mitigation measures are implemented, assuming that increase in temperature will be about 4.3 °C by 2100.</li> </ul>
<b>Scenario Time Horizons</b>	<ul style="list-style-type: none"> <li>• <b>2020-2030 (near-term):</b> covers "Short-term" timeframes. *</li> <li>• <b>2030-2040 (medium-term):</b> covers "Medium-term" timeframes. *</li> <li>• <b>2050 (long-term):</b> covers "Long-term" timeframe.</li> </ul> <p>These scenario time horizons are aligned with ThaiBev's timeframes for risk and opportunity identification.</p>
<b>Scope of Assessment</b>	80 facilities in Thailand, Vietnam, Scotland, Myanmar, France, New Zealand, Singapore and Malaysia, accounting for 100% of the total number of facilities. And three new assets in Cambodia
<b>Target Area of Financial Analysis</b>	Operations and supply chain, transportation disruptions from factory to distributed dealers.*

\* Represents additional scopes/target areas for risk assessments conducted in 2024.

**Table 4: ThaiBev Physical Risks Assessment and Adaptation Measures**

Climate Physical Risks	Time frame	Impact	Description	Adaptation Measures
<b>Acute</b>				
<b>Coastal Flood</b>	Long term (>10 years)	Low to medium	Projected return period of the historical 100-yr coastal flood Floods can result in direct damage to property or indirectly through disruption to infrastructure (e.g. access roads) or tenant business operations.	ThaiBev conducted a flood risk assessment in areas prone to flooding for all key assets, and highlighted areas that were the most likely to be affected. To mitigate any impacts ThaiBev constructed flood barriers, storm water draining, or pumping stations in the areas highlighted.
<b>River Flood (Fluvial)</b>	Long term (>10 years)	Low to medium	Projected return period of the historical 100-yr flood Floods can result in direct damage to property or indirectly through disruption to infrastructure (e.g. access roads) or tenant business operations.	Further, alternative transportation routes are planned to minimize supply chain disruption due to potential floods.
<b>Pluvial Flood</b>	Short term (0-3 years)	Low to medium	Projected return period of the historical 100-yr precipitation. Floods can result in direct damage to property or indirectly through disruption to infrastructure (e.g. access roads) or tenant business operations.	





(Continue)

Climate Physical Risks	Time frame	Impact	Description	Adaptation Measures
<b>Acute</b>				
<b>Tropical Cyclone</b>	Long term (>10 years)	Low to medium	Projected frequency of category 3+ tropical cyclone. High winds can result in direct damage to property, but also result in indirect disruption through impacts on energy and communications infrastructure.	Each production site tracks and monitors the weather forecast including the storm and earthquake reports from the Thai Meteorological Department to receive the earliest warnings. All production sites shall ensure that the external roofing or solar rooftop systems are in adequate condition and implement response mechanisms to reduce impacts during the storms.
<b>Drought</b>	Medium term (5-10 years)	Low to medium	Probability of exceeding the 90 <sup>th</sup> percentile SPEI conditions (Standardized Precipitation Evapotranspiration Index). Prolonged periods of low rainfall can lead to water scarcity, disrupting operations, reducing water availability, and increasing competition for water resources.	ThaiBev is enhancing water efficiency, expanding water recycling and reuse, diversifying alternative water sources, and implementing site-level water risk assessments to ensure operational continuity and long-term climate resilience.
<b>Chronic</b>				
<b>Water Stress</b>	Short term (0-3 years)	Low to medium	Projected future ratio of water withdrawals to total renewable water supply in each area. Water stress has implications for the availability and cost of water for both base building and tenant operations.	<p>ThaiBev has initiated the Water Sustainability Assessment (WSA) for both surface water and groundwater, which covers all production sites, in order to conduct an in-depth assessment of present and future risks and opportunities.</p> <p>The assessment has led to the development of Integrated Water Resources Management Plan (IWRM) for each assessed factory, focusing on implementing a long-term adaptation and mitigation plan.</p>
<b>Extreme Heat</b>	Short term (0-3 years)	Low to medium	Change in annual 50 <sup>th</sup> percentile value of daily maximum temperature in degrees Celsius. The extreme heat is determined by an increase in the local temperatures rather than absolute warmest temperature. Increase in temperature may impact energy demand and costs, operation of tenant equipment, grid reliability and human health.	ThaiBev has continued to educate farmers to help conserve resources, prepare for natural disasters, and adopt technology for production efficiency.

Refer to Table 5 for the assumptions applied and Table 6 for the full results on risk level and financial impact by BUs.

**Table 5:** Key Assumptions Applied to Flooding Financial Impact Quantification

Flood Depth	Impact Level	Flooding Occurrence (times per year)		Flood Duration (days per incident)
		RCP8.5	RCP4.5	
>0.5m	High	2	1	5
0.15m < X < 0.5m	Medium	2	1	3
< 0.15m	Low	2	1	0

**Table 6:** Flooding Scenario Analysis Risk Level and Financial Impact Results

Scenario	Probability		Severity (S) at 2030			Risk Level at 2030		Financial Impact (Million Baht)				
	%	Level	%	million Baht	Level	million Baht	Level	Spirits	Beer	Food	NAB	Total
Scenario 1: High emissions (RCP 8.5)	20%	Unlikely	0	3.51	Insignificant	0.70	Low	3.19	0.00	0.00	0.32	3.51
Scenario 2: Intermediate emissions (RCP 4.5)	50%	Medium	0	1.64	Insignificant	0.82		1.44	0.00	0.00	0.20	1.64
Scenario 3: Low emissions (RCP 2.6)	30%	Unlikely	0	0.00	Insignificant	0.00		0.00	0.00	0.00	0.00	0.00
Financial impact and risk level for each product group								1.36	0.00	0.00	0.00	1.52
								Low	Low	Low	Low	Low

Impact to Profit	Risk Level
0 – 20 million Baht	Low
20 – 100 million Baht	Medium
100 – 500 million Baht	High
500 – 2,000 million Baht	Very High

Remark: The flooding scenario analysis focuses on operational facilities in Thailand, identifying them as the primary areas of potential impact on the corporation.



## Ingredient Sourcing Risk Analysis

**Table 7:** Water Stress and Cost Impact

Name of Ingredients	Country of Production	Percentage of Tier 1 Supplier's in Water Stressed Location	Percentage by Cost	Level of Ingredient cost
<b>Cereals (i.e., Barley, Hop)</b>	Australia, Denmark, France, Germany, United Kingdom and United States of America	26.19 %	55.48 %	<b>Very High</b>
<b>Broken Rice</b>	Thailand, Myanmar	88.87 %	99.64 %	<b>Very High</b>
<b>Sugar</b>	Thailand, Malaysia	47.38 %	79.31 %	<b>Very High</b>
<b>Palm Oil</b>	Thailand, Malaysia	16.75 %	26.35 %	<b>Very High</b>
<b>Tea Leaf</b>	Thailand	22.50 %	28.10 %	<b>Very High</b>
<b>Low</b>	1% of annual procurement spend (optional to disclose)		<b>High</b>	5-25% annual procurement spend
<b>Medium</b>	1-5% annual procurement spend		<b>Very High</b>	>25% annual procurement spend

**Table 8:** Scenario Analysis by country

Under The Influence of Water Stress						
Name of Ingredients	Country (Tier 1 Supplier's Location)	Crop Production in Baseline (million tonnes)	Crop Production in 2030		Crop Production in 2050	
			million tonnes	%	million tonnes	%
<b>Cereals (i.e., Barley, Hop)</b>	Australia	11.1	14.3	29.25%	18.5	67.39%
	Denmark	3.72	3.66	-1.65%	3.79	1.89%
	France	12.3	10.6	-14.34%	7.5	-39.15%
	Germany	10.9	10.8	-0.89%	9.69	-10.84%
	United Kingdom	7.31	7.03	-3.88%	5.97	-18.32%
	United States of America	3.61	4.11	13.92%	6.82	89.16%
<b>Broken Rice</b>	Thailand	26.8	26.6	-0.83%	25.1	-6.39%
	Myanmar	17.9	19.1	7.01%	20.8	16.36%
<b>Sugar</b>	Thailand	119	132	11.24%	150	25.72%
	Malaysia	24.4	20.4	-16.17%	20.8	-14.58%
<b>Palm Oil</b>	Thailand	No data				
	Malaysia					
<b>Tea Leaf</b>	Thailand	No data				

**Table 9: Environmental and Social Impacts**

Name of Ingredients	Country of Production	Reported Environmental Impact	Reported Social Impact
<b>Cereals (i.e., Barley, Hop)</b>	Europe (Denmark, France, Germany, and United Kingdom)	<p><b>Water Usage:</b></p> <ul style="list-style-type: none"><li>• Malt and hop cultivation are water-intensive crops. In regions where water resources are already scarce, excessive water use for irrigation can lead to local water stress and competition with other sectors.</li></ul> <p><b>Soil Degradation:</b></p> <ul style="list-style-type: none"><li>• Intensive farming practices, such as monoculture cropping, can degrade soil quality, leading to reduced soil fertility, erosion, and loss of organic matter.</li><li>• Both hops and barley (the main grain used for malt) can be susceptible to soil nutrient depletion over time, requiring significant use of fertilizers.</li></ul> <p><b>Pesticides and Fertilizers:</b></p> <ul style="list-style-type: none"><li>• The application of pesticides, herbicides, and synthetic fertilizers to control pests and promote growth can have negative effects on local biodiversity. These chemicals can contaminate soil, groundwater, and nearby water bodies, harming aquatic ecosystems and non-target species.</li></ul> <p><b>Greenhouse Gas Emissions:</b></p> <ul style="list-style-type: none"><li>• Agricultural machinery used in growing hops and barley contributes to CO<sub>2</sub> emissions. Additionally, the use of synthetic fertilizers and pesticides also leads to indirect emissions.</li><li>• Malt production, especially in large-scale facilities, may produce emissions from the energy used in drying and processing the barley.</li></ul> <p><b>Biodiversity Loss:</b></p> <ul style="list-style-type: none"><li>• Large-scale farming of malt and hop crops, particularly in monocultures, can reduce biodiversity by displacing natural habitats and limiting the variety of plant and animal species in the area.</li></ul>	<p><b>Labor Conditions:</b></p> <ul style="list-style-type: none"><li>• The hop and malt industries rely on seasonal labor, particularly during planting, harvest, and processing periods. While this provides temporary employment, the conditions can sometimes be precarious, with low wages and poor working conditions for laborers, particularly in fields where migrant labor is employed.</li></ul> <p><b>Rural Employment and Economy:</b></p> <ul style="list-style-type: none"><li>• Both the hop and malt industries provide vital economic support to rural communities in Europe. These crops create jobs in farming, processing, and distribution, contributing to the stability of rural economies.</li><li>• However, large-scale industrial farming can lead to consolidation, reducing the number of small-scale family farms and potentially leaving rural workers vulnerable to economic shifts in the industry.</li></ul> <p><b>Cultural Heritage:</b></p> <ul style="list-style-type: none"><li>• In some European regions, the cultivation of hops has a long history, and its production is tied to local cultural practices. The social value of hop growing is not just economic but also part of the identity of rural areas in countries like Germany and the Czech Republic. The decline of traditional farming practices in favor of more industrialized approaches may erode these cultural links.</li></ul>





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Name of Ingredients	Country of Production	Reported Environmental Impact	Reported Social Impact
Cereals (i.e., Barley, Hop)	Australia	<p><b>Water Usage:</b></p> <ul style="list-style-type: none"><li>• Malt and hop crops are water-intensive, which can strain Australia's already limited water resources. In regions like the Murray-Darling Basin, excessive irrigation for crops can lead to water scarcity and affect the sustainability of surrounding ecosystems.</li></ul> <p><b>Soil Health and Degradation:</b></p> <ul style="list-style-type: none"><li>• Intensive cultivation of hops and barley (for malt) can lead to soil degradation over time, particularly in the absence of crop rotation and organic farming practices. Soil erosion, nutrient depletion, and loss of organic matter can reduce soil fertility and crop yield.</li></ul> <p><b>Pesticides and Fertilizers:</b></p> <ul style="list-style-type: none"><li>• The use of chemical pesticides and fertilizers in hop and malt production can impact soil and water quality. Runoff from fields treated with chemicals can contaminate nearby water bodies, harming aquatic ecosystems and wildlife.</li></ul> <p><b>Greenhouse Gas Emissions:</b></p> <ul style="list-style-type: none"><li>• The production process, including the energy used in malting (such as drying the grain), contributes to greenhouse gas emissions. Additionally, agricultural machinery and the use of synthetic fertilizers contribute to CO<sub>2</sub> emissions in the production chain.</li></ul> <p><b>Biodiversity:</b></p> <ul style="list-style-type: none"><li>• Large-scale monoculture farming of hops and barley reduces biodiversity by displacing native vegetation and disrupting local ecosystems. While hop growing is often concentrated in specific regions, these practices can lead to habitat loss for local flora and fauna.</li></ul>	<p><b>Labor Conditions:</b></p> <ul style="list-style-type: none"><li>• Both hop and malt production require seasonal labor, particularly during planting and harvesting. This seasonal work can provide temporary employment, but working conditions can sometimes be difficult, with long hours and low wages for farm laborers, especially migrant workers.</li></ul> <p><b>Economic Contribution to Rural Communities:</b></p> <ul style="list-style-type: none"><li>• The hop and malt industries provide significant economic support to rural areas in Australia, particularly in regions like Tasmania, Victoria, and New South Wales. The industries create jobs not only in farming but also in malting, brewing, and distribution, helping to sustain rural economies.</li></ul> <p><b>Access to Resources and Fair Trade:</b></p> <ul style="list-style-type: none"><li>• Smaller farmers may struggle to access capital, technology, and training needed to improve crop yields or transition to more sustainable farming practices. This disparity can lead to challenges in maintaining fair competition, with larger, industrial-scale producers potentially dominating the market.</li></ul> <p><b>Community and Cultural Impact:</b></p> <ul style="list-style-type: none"><li>• In areas where hop growing has a long history, the industry plays a significant cultural role in the community. However, the industrialization of hop and malt farming can change local traditions and farming practices, leading to social tensions between traditional farming families and large-scale producers.</li></ul> <p><b>Migration and Employment Stability:</b></p> <ul style="list-style-type: none"><li>• Seasonal labor in the hop and malt industries is often filled by migrant workers. While this provides employment, it can also lead to issues of job security, housing, and integration into local communities for seasonal workers.</li></ul>



(Continue)

Name of Ingredients	Country of Production	Reported Environmental Impact	Reported Social Impact
<b>Cereals (i.e., Barley, Hop)</b>	United States of America	<p><b>Water Usage:</b></p> <ul style="list-style-type: none"><li>Both malt and hop crops require significant amounts of water. In regions like the Pacific Northwest, where most hops are grown, water scarcity due to prolonged droughts can strain water resources. Overuse of water for irrigation can lead to depletion of groundwater supplies and affect nearby ecosystems.</li></ul> <p><b>Soil Degradation and Erosion:</b></p> <ul style="list-style-type: none"><li>Intensive farming of hops and barley (used for malt) can lead to soil degradation, particularly when monoculture farming practices are used. Without crop rotation or soil management practices, soil health can decline, causing erosion, nutrient depletion, and reduced fertility.</li></ul> <p><b>Use of Pesticides and Fertilizers:</b></p> <ul style="list-style-type: none"><li>The use of synthetic pesticides and fertilizers in hop and malt production can contribute to soil and water pollution. Runoff from fields treated with these chemicals can contaminate nearby water sources, harming aquatic life and biodiversity. Pesticide exposure can also affect surrounding wildlife and farm workers.</li></ul> <p><b>Greenhouse Gas Emissions:</b></p> <ul style="list-style-type: none"><li>The production process of malting, including energy-intensive steps like drying barley, results in greenhouse gas emissions. Additionally, agricultural machinery and the use of fertilizers contribute to CO<sub>2</sub> emissions, adding to the carbon footprint of hop and malt production.</li></ul> <p><b>Biodiversity Loss:</b></p> <ul style="list-style-type: none"><li>The widespread cultivation of hops and barley, often in monoculture systems, reduces biodiversity by displacing natural habitats. This can lead to a loss of flora and fauna in the region, particularly if native plant species are replaced by large-scale crops.</li></ul>	<p><b>Labor Conditions:</b></p> <ul style="list-style-type: none"><li>Both hop and malt production rely on seasonal labor, especially during planting and harvesting periods. Workers, often migrant laborers, may face low wages, long hours, and poor working conditions. Some farm workers are exposed to harmful chemicals, which can pose health risks.</li></ul> <p><b>Economic Importance to Rural Communities:</b></p> <ul style="list-style-type: none"><li>The hop and malt industries are vital to rural economies in the U.S., particularly in states like Washington, Oregon, and Idaho. These industries provide employment in farming, malting, brewing, and distribution, supporting local economies and providing jobs to thousands of people.</li></ul> <p><b>Health and Safety of Workers:</b></p> <ul style="list-style-type: none"><li>Farm workers in the hop and malt industries may be exposed to hazardous chemicals like pesticides and fertilizers. Continuous exposure can lead to health problems such as respiratory issues, skin irritation, and long-term illnesses. Ensuring proper protective measures and workplace safety is crucial.</li></ul> <p><b>Access to Resources and Fair Trade:</b></p> <ul style="list-style-type: none"><li>Smaller hop and barley farmers may struggle with access to resources, such as capital, technology, and market access. Larger, industrial-scale producers may dominate the market, leaving smaller farmers at a disadvantage and reducing their ability to compete fairly.</li></ul> <p><b>Rural Development and Community Stability:</b></p> <ul style="list-style-type: none"><li>The hop and malt industries contribute to the stability of rural communities by providing jobs and economic opportunities. However, the concentration of large-scale farms and processing plants in specific regions can lead to social changes, including displacement of smaller, traditional farming operations and changes in local culture.</li></ul> <p><b>Migration and Employment Stability:</b></p> <ul style="list-style-type: none"><li>The reliance on seasonal labor, often filled by migrant workers, can lead to instability in employment and housing. Migrant workers may face challenges with access to healthcare, education, and integration into local communities, which can lead to social tensions.</li></ul>



Name of Ingredients	Country of Production	Reported Environmental Impact	Reported Social Impact
Sugar	Thailand	<p><b>Deforestation and Land Use Change:</b></p> <ul style="list-style-type: none"><li>Expansion of sugarcane plantations has been linked to deforestation and land use changes, particularly in regions that were previously forested or used for small-scale subsistence farming. The conversion of forested areas into large-scale sugarcane plantations can result in the loss of biodiversity, disruption of ecosystems, and reduction of carbon sinks.</li></ul> <p><b>Soil Degradation and Erosion:</b></p> <ul style="list-style-type: none"><li>The continuous cultivation of sugarcane on the same land without proper crop rotation or soil conservation techniques can lead to soil degradation and erosion. Sugarcane fields, particularly those on steep slopes, are prone to soil erosion, which reduces soil fertility and leads to loss of productive agricultural land.</li></ul> <p><b>Water Use and Pollution:</b></p> <ul style="list-style-type: none"><li>Sugarcane farming requires substantial water resources, which can lead to water depletion in areas where water resources are already under stress. Additionally, the use of chemical fertilizers, herbicides, and pesticides in conventional sugarcane farming can contribute to water pollution through runoff, affecting nearby rivers and streams and harming aquatic ecosystems.</li></ul> <p><b>Air Pollution and Greenhouse Gas Emissions:</b></p> <ul style="list-style-type: none"><li>Burning sugarcane fields before harvest is a common practice in Thailand, which helps in reducing labor costs and simplifying harvesting. However, this practice releases large amounts of particulate matter, carbon dioxide (CO<sub>2</sub>), and other pollutants into the atmosphere, contributing to air pollution and greenhouse gas emissions. The burning of sugarcane also impacts air quality, particularly in rural areas where the practice is widespread.</li></ul> <p><b>Loss of Biodiversity:</b></p> <ul style="list-style-type: none"><li>The large-scale monoculture of sugarcane can lead to a reduction in biodiversity, as the land is often cleared of native plants and animals. Monoculture farming reduces the variety of species in the area, making the ecosystem more vulnerable to pests, diseases, and climate change.</li></ul>	<p><b>Economic Contribution and Employment:</b></p> <ul style="list-style-type: none"><li>Sugarcane cultivation is a vital source of income for many farmers in rural Thailand. It provides employment opportunities not only for farmers but also for workers involved in the sugarcane processing industry. The sugar industry contributes significantly to the country's economy, with Thailand being one of the world's largest producers and exporters of sugar.</li></ul> <p><b>Livelihoods of Farmers:</b></p> <ul style="list-style-type: none"><li>For many smallholder farmers, sugarcane is a primary crop that sustains their livelihoods. However, farmers often face challenges, such as dependence on large sugar mills for buying their crops, which can lead to price fluctuations and exploitation. Many farmers are locked into contracts with mills, leaving them vulnerable to unfair pricing and debt cycles.</li></ul> <p><b>Health and Safety of Workers:</b></p> <ul style="list-style-type: none"><li>Workers in sugarcane plantations and processing mills are exposed to hazardous working conditions. Exposure to pesticides and fertilizers can lead to health problems, such as skin irritation, respiratory issues, and long-term diseases. The practice of burning sugarcane before harvest also poses significant health risks to workers, as they are exposed to smoke and toxic fumes.</li></ul> <p><b>Land Rights and Displacement:</b></p> <ul style="list-style-type: none"><li>The expansion of sugarcane plantations can sometimes result in land rights issues for local communities, particularly in rural areas where land is used for subsistence farming. There have been cases where large sugarcane companies have displaced small farmers or encroached on land used by indigenous communities, leading to social unrest and conflicts over land ownership.</li></ul> <p><b>Working Conditions and Labor Rights:</b></p> <ul style="list-style-type: none"><li>Many workers in the sugarcane sector, especially migrant workers, face poor working conditions, low wages, and limited access to labor rights protections. There are concerns about exploitation, including long working hours, unsafe working environments, and a lack of proper wages and benefits for laborers.</li></ul>



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Name of Ingredients	Country of Production	Reported Environmental Impact	Reported Social Impact
Sugar	Malaysia	<p><b>Water Use and Irrigation:</b></p> <ul style="list-style-type: none"><li>Sugarcane farming requires substantial water inputs and can pollute waterways through fertilizer and pesticide runoff.</li></ul> <p><b>Air Pollution and Greenhouse Gas Emissions:</b></p> <ul style="list-style-type: none"><li>Pre-harvest burning and processing activities contribute to air pollution and greenhouse gas emissions.</li></ul> <p><b>Loss of Biodiversity:</b></p> <ul style="list-style-type: none"><li>Expansion of sugarcane cultivation can lead to land conversion, reducing biodiversity and ecosystem services.</li></ul>	<p><b>Impact on Rural Communities:</b></p> <ul style="list-style-type: none"><li>While sugarcane cultivation provides employment and economic benefits to rural communities, the large-scale expansion of sugarcane plantations can also lead to social fragmentation. Smallholder farmers may struggle to compete with large commercial plantations, and there may be a decline in traditional farming practices. Additionally, dependence on a single cash crop like sugarcane can make rural communities vulnerable to price fluctuations and market changes.</li></ul> <p><b>Working Conditions and Labor Rights:</b></p> <ul style="list-style-type: none"><li>Sugarcane farming and processing rely on manual labor, often involving migrant workers exposed to long hours, low wages, and limited labor protections.</li></ul> <p><b>Health and Safety of Workers:</b></p> <ul style="list-style-type: none"><li>Workers face risks from heat stress, machinery, and exposure to agrochemicals.</li></ul> <p><b>Access to Resources and Fair Trade:</b></p> <ul style="list-style-type: none"><li>Small-scale farmers may be dependent on large mills or buyers, reducing bargaining power and income stability.</li></ul>
Broken Rice	Thailand	<p><b>Water Use and Irrigation:</b></p> <ul style="list-style-type: none"><li>Rice farming, including the production of broken rice, requires significant water resources. Rice paddies are traditionally flooded, which is water-intensive and can strain local water supplies, particularly during periods of drought or in water-scarce regions. Overuse of water in rice cultivation may contribute to water shortages in areas with limited water resources.</li></ul> <p><b>Soil Degradation and Erosion:</b></p> <ul style="list-style-type: none"><li>Intensive rice farming, if not managed sustainably, can lead to soil degradation. The continuous cultivation of rice without crop rotation or soil conservation practices can deplete soil nutrients, reduce soil fertility, and increase the risk of erosion. Soil erosion can be further exacerbated by improper water management and poor land practices.</li></ul>	<p><b>Economic Contribution and Livelihoods:</b></p> <ul style="list-style-type: none"><li>Broken rice is often sold at lower prices compared to whole grains, but it still holds economic value, particularly in domestic markets and for use in animal feed and food products. It provides income for farmers and millers, contributing to the livelihoods of many rural families. While farmers may not earn as much from broken rice as from whole rice, it still serves as an additional source of income.</li></ul> <p><b>Labor Conditions and Employment:</b></p> <ul style="list-style-type: none"><li>Rice farming, including the processing of broken rice, provides employment opportunities for rural communities, both for farmworkers and workers in rice mills. However, many agricultural workers face low wages, seasonal employment, and poor working conditions. Laborers may be exposed to long working hours, pesticide exposure, and the risks associated with manual harvesting and milling.</li></ul>



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Name of Ingredients	Country of Production	Reported Environmental Impact	Reported Social Impact
Broken Rice	Thailand	<p><b>Greenhouse Gas Emissions:</b></p> <ul style="list-style-type: none"><li>Rice paddies are a significant source of methane, a potent greenhouse gas, due to the anaerobic conditions in flooded fields. The decomposition of organic matter in submerged soils releases methane into the atmosphere, contributing to climate change. Although broken rice itself is not a direct emitter of methane, the farming process for rice (which includes both whole and broken rice) contributes to these emissions.</li></ul> <p><b>Pesticides and Fertilizers:</b></p> <ul style="list-style-type: none"><li>The use of chemical fertilizers and pesticides in rice farming is common, and their runoff can contaminate local water sources, affecting both aquatic ecosystems and human populations. Over-reliance on chemicals can also degrade biodiversity and disrupt the natural balance of pests and beneficial organisms in the soil.</li></ul>	<p><b>Health Risks from Pesticides and Chemicals:</b></p> <ul style="list-style-type: none"><li>Agricultural workers in rice farming, including those involved in the production of broken rice, are often exposed to harmful chemicals such as pesticides and fertilizers. Long-term exposure to these substances can lead to health problems, including respiratory issues, skin irritation, and long-term diseases. There is also the risk of contamination of food products, which can affect consumers' health.</li></ul> <p><b>Smallholder Farmers' Vulnerabilities:</b></p> <ul style="list-style-type: none"><li>Smallholder rice farmers, who form the backbone of rice production in Thailand, often face challenges such as price volatility, access to markets, and debt. Since broken rice is a low-value product, it may further exacerbate the economic vulnerability of these farmers, who may struggle with fluctuating prices and the pressure of repaying loans. Many farmers depend on large millers or traders to sell their rice, leading to a lack of bargaining power and vulnerability to price manipulation.</li></ul> <p><b>Impact on Rural Communities:</b></p> <ul style="list-style-type: none"><li>Rice farming plays a central role in the social fabric of rural communities in Thailand. However, the challenges faced by smallholder farmers, such as fluctuating rice prices, increasing costs of inputs, and environmental degradation, can lead to social unrest. Farmers may migrate to urban areas in search of better opportunities, which can result in labor shortages in rural areas and a decline in traditional agricultural knowledge.</li></ul> <p><b>Cultural Importance:</b></p> <ul style="list-style-type: none"><li>Rice is not only a staple food in Thailand but also holds cultural significance. The farming and processing of rice, including broken rice, are deeply embedded in Thai traditions and festivals. However, the increasing reliance on industrial practices and the challenges posed by modern farming methods have the potential to erode these traditions and impact the rural way of life.</li></ul>





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Name of Ingredients	Country of Production	Reported Environmental Impact	Reported Social Impact
Broken Rice	Myanmar	<p><b>Water Use and Irrigation:</b></p> <ul style="list-style-type: none"><li>Rice cultivation is highly water-intensive, placing pressure on river basins and irrigation systems, particularly during dry seasons and climate-induced droughts.</li></ul> <p><b>Greenhouse Gas Emissions:</b></p> <ul style="list-style-type: none"><li>Flooded rice paddies generate methane emissions due to anaerobic soil conditions, contributing to climate change.</li></ul> <p><b>Pesticides and Fertilizers:</b></p> <ul style="list-style-type: none"><li>Intensive rice farming practices, including heavy use of fertilizers and pesticides, can degrade soil quality and contaminate water bodies.</li></ul>	<p><b>Smallholder Farmers' Vulnerabilities:</b></p> <ul style="list-style-type: none"><li>Rice farming is dominated by smallholders with limited access to finance, technology, and crop insurance, increasing vulnerability to climate shocks and price volatility.</li></ul> <p><b>Labor Conditions and Employment:</b></p> <ul style="list-style-type: none"><li>Farm labor is largely informal, with low wages, limited worker protections, and exposure to health risks from agrochemicals.</li></ul> <p><b>Livelihoods of Farmers:</b></p> <ul style="list-style-type: none"><li>Climate impacts on rice production can directly affect rural livelihoods and national food security.</li></ul>
Palm Oil	Thailand	<p><b>Deforestation and Habitat Loss:</b></p> <ul style="list-style-type: none"><li>Palm oil production in Thailand has been linked to deforestation, particularly in the southern region. Forests, including tropical rainforests and peatlands, are cleared to make way for palm oil plantations. This deforestation leads to the loss of biodiversity, including the destruction of habitats for endangered species like tigers, elephants, and various bird species.</li></ul> <p><b>Soil Erosion and Degradation:</b></p> <ul style="list-style-type: none"><li>Large-scale palm oil plantations often involve monoculture farming, which can lead to soil erosion and degradation. The removal of vegetation and poor soil management practices contribute to the loss of soil fertility. Over time, this can reduce the land's productivity and harm surrounding ecosystems.</li></ul> <p><b>Water Usage and Pollution:</b></p> <ul style="list-style-type: none"><li>Palm oil cultivation requires substantial water resources for irrigation, particularly in dry areas. The excessive use of water can lead to water scarcity in surrounding communities and ecosystems. Additionally, the use of chemical fertilizers and pesticides on palm oil plantations can result in runoff into rivers and streams, polluting water sources and harming aquatic life.</li></ul>	<p><b>Economic Benefits and Employment:</b></p> <ul style="list-style-type: none"><li>Palm oil cultivation is an important source of income for many rural communities in southern Thailand. The industry creates jobs in farming, harvesting, processing, and distribution. It contributes significantly to the local economy, providing livelihoods for thousands of workers, including smallholder farmers.</li></ul> <p><b>Land Rights and Displacement:</b></p> <ul style="list-style-type: none"><li>Large-scale palm oil plantations can lead to conflicts over land rights, particularly in rural areas. Smallholder farmers and indigenous communities may be displaced or lose access to their land due to the expansion of plantations. This can result in social unrest and disputes over land ownership and compensation.</li></ul> <p><b>Health and Safety of Workers:</b></p> <ul style="list-style-type: none"><li>Workers on palm oil plantations may face poor working conditions, including low wages, long hours, and exposure to harmful chemicals such as pesticides and fertilizers. Health and safety standards are often lacking, and workers may suffer from respiratory problems, skin diseases, and other health issues related to pesticide exposure.</li></ul> <p><b>Social Inequality:</b></p> <ul style="list-style-type: none"><li>The benefits of palm oil production are not always evenly distributed. Large corporations often dominate the industry, leaving smallholder farmers with limited access to markets, credit, and resources. This can exacerbate social inequality, as smallholders may struggle to compete with larger, more efficient plantations.</li></ul>



(Continue)

Name of Ingredients	Country of Production	Reported Environmental Impact	Reported Social Impact
Palm Oil	Thailand	<p><b>Greenhouse Gas Emissions:</b></p> <ul style="list-style-type: none"><li>The draining of peatlands for palm oil plantations is a major contributor to greenhouse gas emissions. Peat soils store large amounts of carbon, and when drained for agricultural use, the carbon is released into the atmosphere, contributing to global warming. Furthermore, the clearing of land using fire, a common practice, results in significant air pollution and emissions of particulate matter.</li></ul> <p><b>Biodiversity Loss:</b></p> <ul style="list-style-type: none"><li>The expansion of palm oil plantations leads to the fragmentation of forests and the loss of biodiversity. Many species are unable to survive in monoculture plantations, which lack the variety of plant and animal species that natural forests provide. This results in a decline in local flora and fauna, including important pollinators and other wildlife.</li></ul>	<p><b>Community Development:</b></p> <ul style="list-style-type: none"><li>In some cases, palm oil plantations contribute to community development by funding local infrastructure projects, such as schools and roads. However, the benefits may not always reach all members of the community, and some may feel excluded from the benefits of the industry.</li></ul> <p><b>Human Rights Concerns:</b></p> <ul style="list-style-type: none"><li>The palm oil industry in Thailand has faced criticism for human rights violations, including the exploitation of migrant labor, child labor, and poor working conditions. There have been reports of workers being subjected to unfair wages, long hours, and unsafe environments.</li></ul>
Palm Oil	Malaysia	<p><b>Biodiversity Loss:</b></p> <ul style="list-style-type: none"><li>Palm oil expansion has historically driven deforestation, resulting in habitat loss for endangered species and reduced carbon sinks.</li></ul> <p><b>Greenhouse Gas Emissions:</b></p> <ul style="list-style-type: none"><li>Drainage of peatlands and land clearing release significant carbon emissions, while plantation operations contribute additional GHGs.</li></ul> <p><b>Water Usage and Pollution:</b></p> <ul style="list-style-type: none"><li>Fertilizer and pesticide runoff can pollute rivers and degrade soil quality under monoculture systems.</li></ul>	<p><b>Labor Conditions and Employment:</b></p> <ul style="list-style-type: none"><li>The sector relies heavily on migrant labor, with risks related to low wages, excessive working hours, poor living conditions, and limited freedom of movement.</li></ul> <p><b>Land Rights and Displacement:</b></p> <ul style="list-style-type: none"><li>Plantation development can lead to land tenure disputes with local and indigenous communities.</li></ul> <p><b>Access to Resources and Fair Trade:</b></p> <ul style="list-style-type: none"><li>Economic benefits are unevenly distributed, with smallholders often facing limited access to finance, markets, and productivity-enhancing resources.</li></ul>



Name of Ingredients	Country of Production	Reported Environmental Impact	Reported Social Impact
Tea Leaf	Thailand	<p><b>Deforestation and Habitat Disruption:</b></p> <ul style="list-style-type: none"><li>The expansion of tea plantations has been linked to deforestation in certain regions of northern Thailand, particularly in areas where forests are cleared to make way for agricultural land. This can lead to the loss of natural habitats, affecting biodiversity, and disrupting ecosystems, especially in highland areas that are home to diverse plant and animal species.</li></ul> <p><b>Soil Erosion and Land Degradation:</b></p> <ul style="list-style-type: none"><li>Tea cultivation, particularly on steep slopes, can lead to soil erosion and land degradation. The removal of vegetation and the continuous cultivation of tea leaves without proper soil management techniques can cause the soil to lose fertility and structure. This can lead to reduced agricultural productivity and further environmental damage, such as sedimentation in rivers.</li></ul> <p><b>Water Consumption and Pollution:</b></p> <ul style="list-style-type: none"><li>Tea plantations require significant amounts of water, which can lead to water depletion in surrounding areas. Additionally, the use of chemical fertilizers and pesticides in conventional tea farming may result in water pollution, as runoff from the fields can carry these chemicals into nearby rivers and streams, harming aquatic ecosystems.</li></ul> <p><b>Chemical Usage:</b></p> <ul style="list-style-type: none"><li>The use of chemical pesticides, herbicides, and fertilizers in conventional tea farming can lead to soil and water contamination, affecting local ecosystems and biodiversity. Organic farming practices, which avoid or minimize the use of chemicals, have gained traction in some regions, offering a more sustainable alternative.</li></ul>	<p><b>Economic Benefits and Employment:</b></p> <ul style="list-style-type: none"><li>Tea cultivation provides significant economic benefits to rural communities in northern Thailand, offering employment opportunities in farming, harvesting, processing, and distribution. It helps support local economies and provides income to smallholder farmers, contributing to the livelihood of thousands of people in rural areas.</li></ul> <p><b>Livelihood of Farmers:</b></p> <ul style="list-style-type: none"><li>For many farmers, tea cultivation represents a stable source of income, especially in areas where other forms of agriculture may not be viable. However, smallholder farmers often face challenges, such as fluctuating market prices, competition with larger plantations, and access to credit and resources. This can affect their income stability and overall well-being.</li></ul> <p><b>Health and Safety of Workers:</b></p> <ul style="list-style-type: none"><li>Workers in tea plantations may face challenges related to health and safety. Exposure to pesticides and other chemicals used in conventional tea farming can lead to health problems such as skin irritation, respiratory issues, and long-term diseases. Additionally, inadequate working conditions, such as low wages and long working hours, can be a concern in some areas.</li></ul>



(Continue)

Name of Ingredients	Country of Production	Reported Environmental Impact	Reported Social Impact
Tea Leaf	Thailand		<p><b>Land Rights and Community Displacement:</b></p> <ul style="list-style-type: none"><li>• There are cases where land rights issues arise due to the expansion of tea plantations, especially in areas where indigenous or local communities depend on land for their livelihoods. In some cases, communities may be displaced, or small farmers may lose access to their land due to land grabs by larger tea companies, leading to conflicts and social unrest.</li></ul> <p><b>Cultural Impact on Indigenous Communities:</b></p> <ul style="list-style-type: none"><li>• Indigenous communities in the northern region of Thailand, such as the Akha and Lahu people, often engage in traditional agricultural practices, including tea cultivation. While tea farming has become a key economic activity for these communities, the expansion of commercial tea plantations can sometimes clash with traditional practices and lifestyles, leading to a loss of cultural heritage and identity.</li></ul> <p><b>Improvement in Local Infrastructure:</b></p> <ul style="list-style-type: none"><li>• The growth of the tea industry can bring improvements to local infrastructure, such as roads, schools, and health facilities, especially in remote rural areas. The increased revenue from tea farming may help fund these developments, improving the quality of life for local communities.</li></ul>

**Assumption:**

This analysis evaluates the financial impact of climate-transition risks on ThaiBev's agricultural commodities under a 4°C scenario. Using tools such as WRI's Aqueduct Food, IPCC SSP scenarios, and FAO production data, the assessment incorporates region-specific climate impacts, global trade dynamics, and mitigation strategies. Projections account for advances in irrigation, crop genetics, and water efficiency, which are expected to reduce severe impacts by 10-20 percent by 2050.

The methodology applies a conservative price elasticity (1.5-2 percent 1 percent yield loss) validated through historical data from IFPRI and WRI. Adjustments were made

for regional resilience and mitigation efforts, ensuring realistic projections. Price increases are estimated at 12-15 percent for sugar and rice and up to 18 percent for palm oil, with malt showing a 15 percent increase by 2050 due to improved farming practices in source regions such as the UK and USA.

These projections emphasize the need for ThaiBev to diversify sourcing, collaborate on sustainable farming, and adopt advanced technologies in irrigation and supply chain monitoring. Proactive measures supported by tools like WRI and FAO will stabilize costs and enhance supply chain resilience while aligning with ThaiBev's sustainability objectives.

**Table 10: Financial Impact Under 4°C Scenarios (2030 and 2050)**

Name of Ingredients	Country of Production	Financial Impact Under 4°C in 2030	Financial Impact Under 4°C in 2050
<b>Cereals (i.e., Barley, Hop)</b>	Australia Denmark France Germany United Kingdom United States of America	6,820 million Baht	10,230 million Baht
<b>Broken Rice</b>	Thailand Myanmar	129 million Baht	220 million Baht
<b>Sugar</b>	Thailand Malaysia	495 million Baht	770 million Baht
<b>Palm Oil</b>	Thailand Malaysia	218 million Baht	326 million Baht
<b>Tea Leaf</b>	Thailand	17 million Baht	27 million Baht





## Transition Risks and Opportunities

In 2025, ThaiBev conducted a scenario analysis for transition risks and opportunities covering two scenarios from the IEA and assessed five drivers over two main time horizons between 2030 and 2050, in order to evaluate the financial impact of key drivers on its organization. In increasing the breadth and depth of ThaiBev's transition scenario analysis, certain transition risk and opportunity assessments were extended to include upstream and downstream activities in the value chain. For instance, the carbon tax in the supply chain from agricultural supplies was included in the financial impact analysis, while ThaiBev also assessed the downstream opportunities in material and packaging circularity.

In 2025, against the backdrop of Thailand's Revenue Department announcing the possible introduction of a carbon tax in the future, ThaiBev identified a carbon tax to be a potential material risk with high financial impact. While fully noting that transition drivers and scenarios are subject to fast-paced change, ThaiBev has determined that the qualitative results of the scenario analysis remain relevant, but has prioritized conducting a quantitative scenario analysis for carbon tax using the International Energy Agency's (IEA's) STEPS, APS, and NZE scenarios as a result of changes in the external environment. These results may serve as inputs to ThaiBev's climate strategy and transition plan in its Net-Zero journey which seeks to enhance the Company's resilience against climate-related risks and opportunities. The scope of the scenario analysis can be found in [Table 12](#) and the results in Scenario Drivers, Business Impacts, and Response Measures in [Table 13](#).

**Table 11: ThaiBev's Transition Risk and Opportunity Scenario Analysis**

<b>Purpose</b>	To analyze whether transition related drivers (policy/legal, market, technology, reputation, and litigation) have a significant impact on ThaiBev's business in the future, and what risk mitigation actions are required for significant risks.
<b>Scenarios</b>	<ul style="list-style-type: none"> <li>• <b>IEA STEPS5:</b> IEA's stated policies scenario, which expects a 2.5-3.3°C rise in global temperatures by 2100. This scenario acts as a base case for transition scenario analysis.</li> <li>• <b>IEA APS7 (For carbon pricing only):</b> IEA's announced pledges scenario includes all recent major announcements (as of September 2022) for 2030 climate targets and longer-term net zero pledges.</li> <li>• <b>IEA NZE 2050 (For carbon pricing only):</b> A Net-Zero GHG emissions scenario which sets out a narrow but achievable pathway for the global energy sector to achieve Net-Zero GHG emissions by 2050.</li> </ul>
<b>Scenario Time Horizons</b>	<ul style="list-style-type: none"> <li>• <b>2030 (near-term):</b> covered "Short-term" and "Medium-term" timeframes</li> <li>• <b>2050 (long-term):</b> covered "Long-term" timeframe</li> </ul> <p>These scenario time horizons are aligned with ThaiBev's risks and opportunities identification timeframes.</p>
<b>Target area of analysis</b>	The scope of the analysis covers ThaiBev's operations, focusing on facilities with direct greenhouse gas (GHG) emissions of at least 25,000 tCO <sub>2</sub> e per year that have been identified as exposed to climate-related transition risks, in line with the requirements of IFRS S2.*
<b>Scope of financial impact calculations</b>	ThaiBev Group

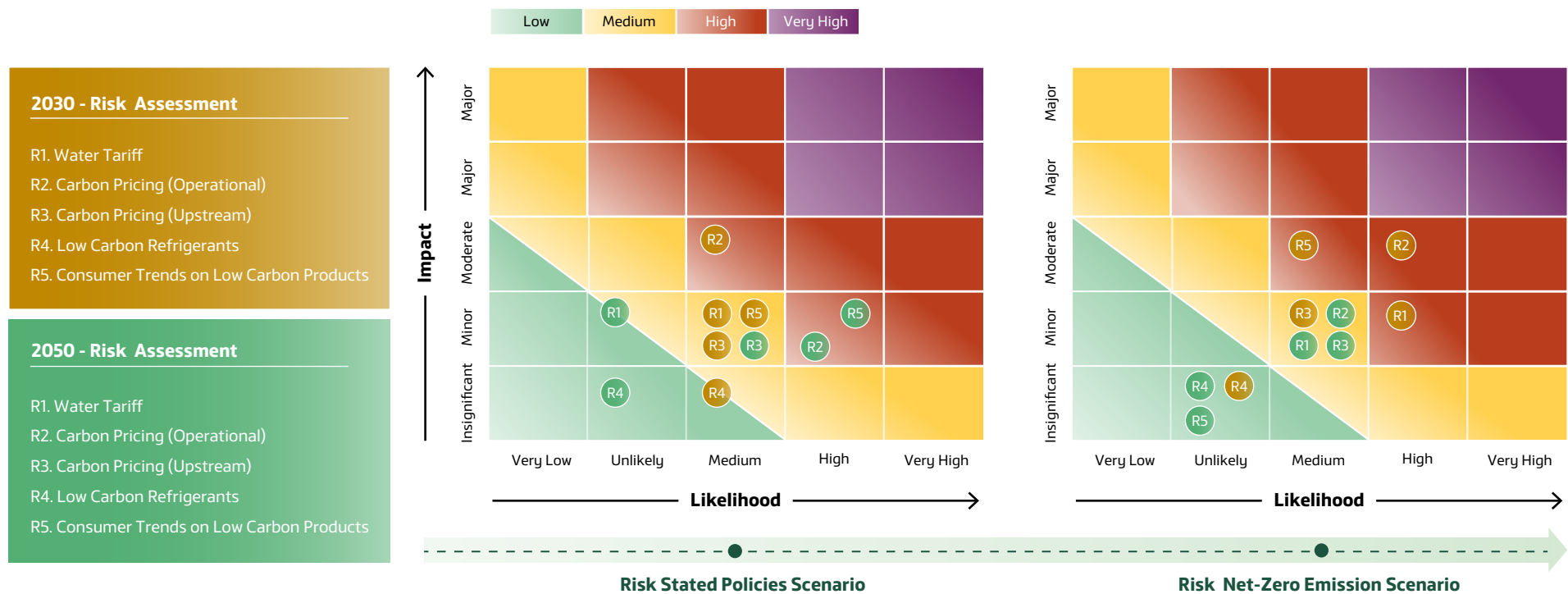
\*Approximately 19% of ThaiBev's business activities, with direct greenhouse gas (GHG) emissions of at least 25,000 tCO<sub>2</sub>e per year, have been identified as exposed to climate-related transition risks.

Transition Risk Category	Description
<b>Policy and Legal</b>	<ul style="list-style-type: none"> <li>• <b>Water Tariff:</b> possibility of increased production costs of beverage products caused by an increased water tariff in Thailand.</li> <li>• <b>Carbon Pricing (operational and upstream):</b> carbon pricing policies that are already in place in markets of ThaiBev's supply chain and expected policies in operational areas.</li> <li>• <b>Extended Producer Responsibility (EPR):</b> Changes in EPR packaging regulations may increase operational and product costs, especially for packaging with limited recyclability or collection infrastructure.</li> </ul>
<b>Market Changes</b>	<b>Consumer Trends on Low Carbon Products:</b> changing consumer and market preferences towards products seen as better for the environment.
<b>Technology Advances</b>	<b>Low Carbon Refrigerants:</b> emergence of new refrigerants with lower global warming potential to replace existing refrigerants. However, no material risk from high emission refrigerants and climate-related reputation is identified due to less exposure and usage.
<b>Litigation</b>	Exposure to litigation related to environmental, climate, or sustainability regulations may lead to fines, legal expenses, and adverse impacts on operations and reputation.

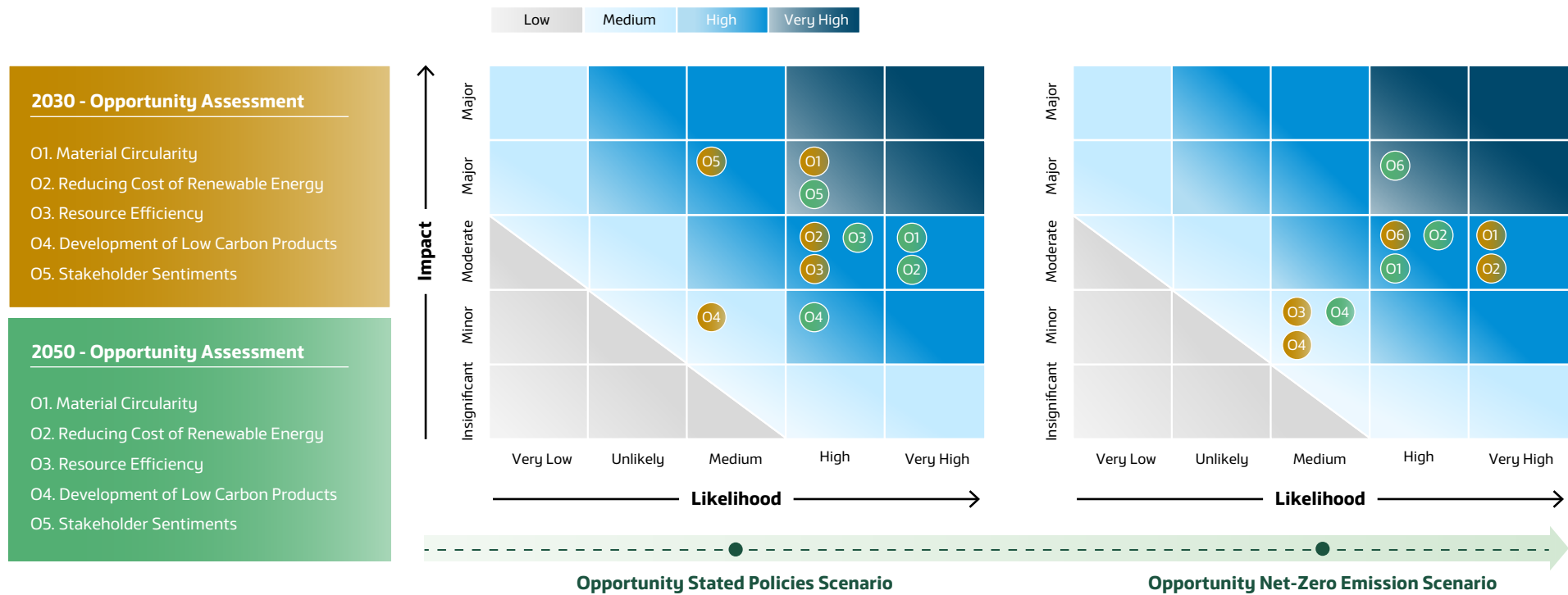


Opportunity Category	Description
Technology Advances	<ul style="list-style-type: none"><li>• <b>Material Circularity:</b> increasing financial feasibility of recycling technologies where recycled materials become cheaper than virgin materials.</li><li>• <b>Resource Efficiency:</b> utilizing/ investing in energy efficient and emissions reduction technologies/ machineries to potentially reduce future costs.</li></ul>
Market Changes	<ul style="list-style-type: none"><li>• <b>Development of Low-Carbon Products:</b> ThaiBev increasing the share of products that receive an approval for the Carbon Footprint of Products and Carbon Footprint Reduction Label.</li><li>• <b>Reducing Costs of Renewable Electricity:</b> due to increased demand from the marketplace and economies of scale while investing in these materials.</li></ul>
Reputation	<ul style="list-style-type: none"><li>• <b>Stakeholder Sentiment:</b> increased stakeholder expectations on climate action, especially amount investors, shareholders, consumers, and societal expectations.</li></ul>

ThaiBev conducted group-wide workshops to prioritize transition risks and opportunities for each scenario and time horizon, resulting in the risk and opportunity matrix below:



**Figure 3:** Results of Transition Risks Scenario Analysis Table



**Figure 4:** Results of Transition Opportunities Scenario Analysis

**Table 12:** ThaiBev Transition Risks Assessment and Response Measures

Climate Transition Risk	Timeframe	Impact to Business	Response Measures
<b>Carbon Pricing (operational and value chain)</b>	Short term (0-3 years)	<p>The application of carbon-pricing in Thailand would mean a company with high emissions would bear more operation costs, potentially affecting ThaiBev in the following ways:</p> <ul style="list-style-type: none"> <li>Increasing raw material and production costs, especially agricultural products due to transfer of carbon price costs by suppliers, and</li> <li>Increasing operational costs from regulatory carbon pricing and investment costs to install clean energy system.</li> </ul>	<ul style="list-style-type: none"> <li>Engage with suppliers that may be implementing carbon pricing to reduce impacts.</li> <li>Implement initiatives towards a Net-Zero goal and reduce emissions</li> </ul>
<b>Water Tariff</b>	Short term (0-3 years)	<p>Thailand is in the process of developing a water tariff, according to the Water Resources Act, B.E. 2561 (2018). The level of expected impact is subject to the amount of water consumption and agreed upon national regulations on the water tariff.</p> <p>It is assumed that tariff rates increases may not be frequent and that Thailand may be less impacted by on droughts due to the government's active strategy and mitigation measures.</p> <p>Nonetheless, increasing investment costs in innovation for water efficiency are expected.</p>	<ul style="list-style-type: none"> <li>Assessing operation sites for potential risks and developing a management/mitigation plan.</li> <li>Establishing a clear climate &amp; water strategy to address the issue, including channels for water recycling and water efficiency.</li> <li>Mapping market expansion and assessing the water requirements.</li> </ul>
<b>Consumer Trends on Low Carbon Products</b>	Medium term (3-10 years)	<ul style="list-style-type: none"> <li>Development of a low carbon portfolio indirectly suggests increasing production efficiency to reduce company emissions per product.</li> <li>Shifting consumer trends may influence demand for ThaiBev's products, thus impacting revenue.</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring domestic consumer trends to meet domestic demands and international patterns for upcoming trends and adapting marketing campaigns to emphasize ThaiBev's low carbon products in regions with demand for such products.</li> <li>Continue developing low carbon products and having them certified to meet customers' demands, while expanding the low carbon products in the beer and non-alcoholic beverage business.</li> <li>Conduct feasibility studies for low-carbon technologies, including how they may be integrated with current and future ThaiBev products or operating procedures.</li> </ul>





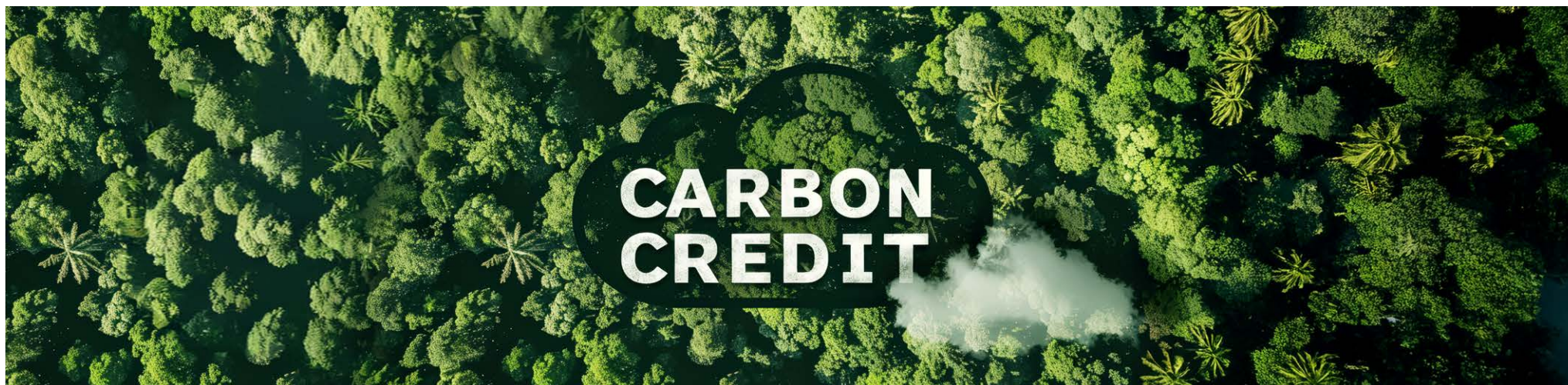
Climate Transition Risk	Timeframe	Impact to Business	Response Measures
<b>Material Circularity</b>	Short term (0-3 years)	<p>Thai Beverage Recycle Co., Ltd. (TBR) focuses on adding more value to recycled and waste materials to supply the group companies and external clients. This action aligns with the national strategy of the Bio-Circular-Green Economic Model, which aims to maximize resources efficiency and circular to assist business growth.</p> <ul style="list-style-type: none"><li>• High investment costs of technology for an early transition to a low carbon business.</li><li>• Increasing opportunities to reduce cost of using secondary materials.</li><li>• Potentially increasing the number of clients, which results in business growth.</li></ul>	<ul style="list-style-type: none"><li>• Engaging with researchers and partnering with innovators to initiate low carbon and take back technology customised for ThaiBev's business.</li><li>• Expand and increase engagement in collection/take back campaigns of product packaging, including educational and awareness campaigns on packaging indicating how each product can be recycled.</li></ul>
<b>Reducing Cost of Renewable Energy</b>	Medium term (3-10 years)	<ul style="list-style-type: none"><li>• Increasing demands and viability of renewable energy in operations.</li><li>• Increasing the cost saving of renewable electricity generation according to levelized cost of electricity (LCOE).</li></ul>	<ul style="list-style-type: none"><li>• Expanding self-generating renewable energy initiatives/ investment.</li><li>• Exploring and preparing to purchase renewable energy certificates (REC) within company financial planning for assets that cannot access direct sourcing of renewable energy.</li></ul>
<b>Shareholder and Stakeholder Sentiment</b>	Medium term (3-10 years)	<ul style="list-style-type: none"><li>• Stakeholders globally, including shareholders and investors, are increasingly aware of the Paris Agreement. It is considered that ThaiBev's reputation and access to capital may be impacted by stakeholder demands for climate action.</li><li>• Consumers are more environmentally conscious and expect companies to consider environmental issues.</li></ul>	<ul style="list-style-type: none"><li>• Continue ThaiBev's sustainability &amp; climate journey disclosure through a credible framework, such as TCFD.</li><li>• Continue engaging with key stakeholders and policy makers to encourage the transition to a low carbon society.</li></ul>

**Table 13:** Carbon Tax Scenario Analysis Risk Level and Financial Impact Results

Scenario	Probability		Severity at 2030			Risk Level at 2030		Financial Impact (Million THB)				
	%	Level	%	million Baht	Level	million Baht	Level	Spirits	Beer	Food	NAB	Total
<b>Scenario 1:</b> High emissions (STEPS)	30%	Unlikely	1.04%	670	Insignificant	201	High	111	34	22	0	167
<b>Scenario 2:</b> Intermediate emissions (APS)	50%	Medium	1.04%	670	Moderate	335	High	185	57	37	0	279
<b>Scenario 3:</b> Low emissions (NZE)	20%	Unlikely	0.87%	563	Very Significant	113	High	62	31	20	0	113
Financial impact and risk level for product group								357.73	122.08	78.45	0	558.25
								High	High	Medium	Low	Very High

Impact to Profit	Risk Level
0 – 20 million Baht	Low
20 – 100 million Baht	Medium
100 – 500million Baht	High
500 – 2,000 million Baht	Very High

Remark: The carbon tax scenario analysis applies to facilities with direct greenhouse gas (GHG) emissions of at least 25,000 tCO<sub>2</sub>e per year.



### **FOCUS: Internal Carbon Pricing informs the Investment Committee on their investment decisions**

In response to the evolving policy and regulatory environment and assessments of ThaiBev's exposure to carbon pricing across different scenarios and time horizons, ThaiBev applies Internal Carbon Pricing (ICP) as an integral part of its business and investment decision-making process. ICP is used to assess the potential financial impacts of carbon emissions on the company's operations, including climate-related risks and opportunities associated with investments in low-carbon technologies. The company also uses ICP to evaluate how the carbon value of its total greenhouse gas footprint may affect overall operating costs, profit margins, and turnover. The Investment Committee applies ICP as a shadow price to support CAPEX and procurement decisions, prioritising investments in green and energy-efficient projects while discouraging investments in high-emission projects.

(Refer to Sustainability Report 2025 page 31).

As Thailand is expected to introduce carbon pricing within the next two to three years, carbon pricing has been identified as a key climate-related transition risk for ThaiBev. ThaiBev conducted a quantitative assessment to evaluate the potential financial impacts of carbon tax exposure in 2030, representing a medium-term time horizon, across all ThaiBev operations under the STEPS, APS, and NZE scenarios. The assessment applied ThaiBev's established risk parameters and risk matrix to determine the magnitude and significance of the financial impacts associated with carbon pricing. For comparability across scenarios, a consistent key assumption was applied: a carbon tax of USD 32 per tCO<sub>2</sub>e in 2030 under all three scenarios (STEPS, APS, and NZE). The results of the scenario analysis indicate that ThaiBev could be exposed to an estimated financial impact of 558.26 million Baht, which is assessed as a "high" risk level in accordance with the company's risk assessment framework. [Table 13](#) presents a detailed breakdown of the assessed risk levels and financial.

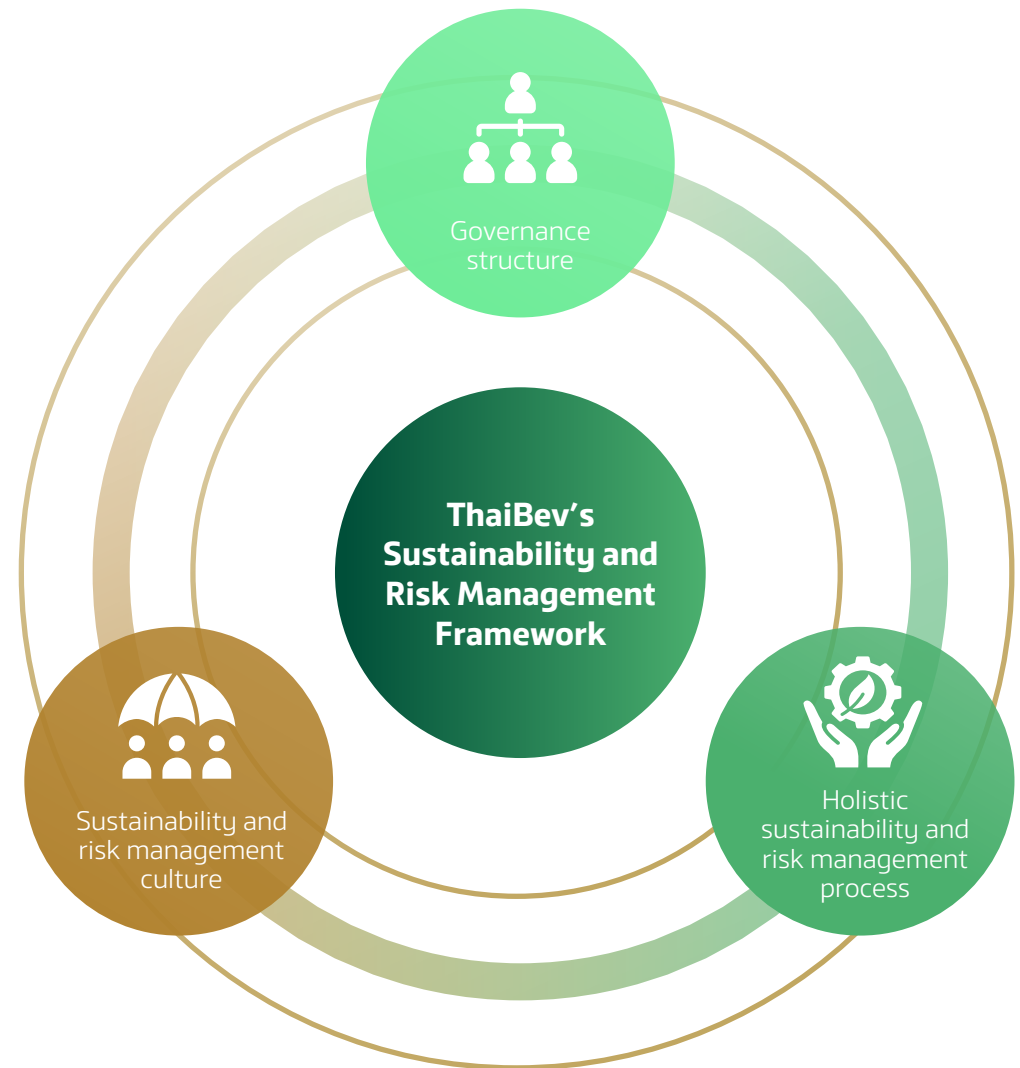


# RISK MANAGEMENT

Risk management is integral to ThaiBev's sustainability strategy, underpinning our vision to be a stable and sustainable total beverage leader in ASEAN. It reflects our mission to create and share value from business growth to the environment, society, and all stakeholders. Our long-term sustainability depends not only on our ability to adapt and manage risks arising from rapid economic, social, and environmental changes in a globalized world, but also on our capacity to identify and capture opportunities that drive continuous business growth.

At ThaiBev, sustainability and risk management are embedded throughout our organization—from policy and goal setting, strategic planning, financial decision making and daily operations. Collectively, these elements form the foundation of our sustainability and risk management framework, which is aligned with the COSO Enterprise Risk Management Framework and structured around three key components:

1. Governance structure
2. Holistic sustainability and risk management process
3. Sustainability and risk management culture







## ThaiBev's Climate-related Issues Prioritization and Management

ThaiBev systematically applies sustainability and risk management principles across all levels—corporate, Product Group, and operational units—to identify, assess, report, and monitor risks and opportunities. This process is fully integrated into management, decision-making, operations, and workflows. Senior management evaluates key risks and opportunities when planning short-and long-term operations and investments, analyzing trends, internal and external factors, and emerging risks to design effective measures.

**ThaiBev's holistic sustainability and risk management process can be divided into 4 steps:**



### 1) Assessing business context and setting business strategies and objectives

Our executives, supported by Strategy Working Team, regularly monitor industry trends, including ESG requirements, to gauge their potential effects on business operations. Analyses of these trends inform the strategy planning and strategy review of each Product Group and Business Unit to ensure alignment with and achievement of ThaiBev Group's vision, mission, and sustainability objectives.

### 2) Identifying and assessing risks and opportunities against business objectives

Using diverse techniques such as brainstorming, surveys, scenario analysis, hazard analysis and critical control points, stress testing, sensitivity analysis, and risk heat mapping, we identify and assess likelihood and potential impact of each risk and opportunity on our business performance. Risks are prioritized and treated through mitigation, acceptance, transfer, or avoidance. The results of risk assessment conducted at Product Groups and Business Units are consolidated into corporate risk register, enabling effective reporting, and monitoring of risk status, and risk management progress.

### 3) Implementing sustainability action plans while controlling and managing risks according to established risk appetite

Our action plans are designed to capture opportunities for business growth while advancing environmental and social sustainability. The aggregate of these plans is maintained within the Group's defined risk appetite, with management teams at all levels regularly monitoring their implementation to ensure that actual risk levels remain under control.

### 4) Monitoring, reporting, and evaluating progress and results

To support continuous improvement, we regularly monitor and evaluate the efficiency and effectiveness of our sustainability and risk management efforts. This includes progress reports, issue identification, and internal/external benchmarking, to ensure that sustainability initiatives and associated risks are managed effectively and in a timely manner

To ensure the adequacy and effectiveness of risk management, the Office of Internal Audit, an independent unit reporting to the Audit Committee, audits risk management, internal controls, and governance processes.

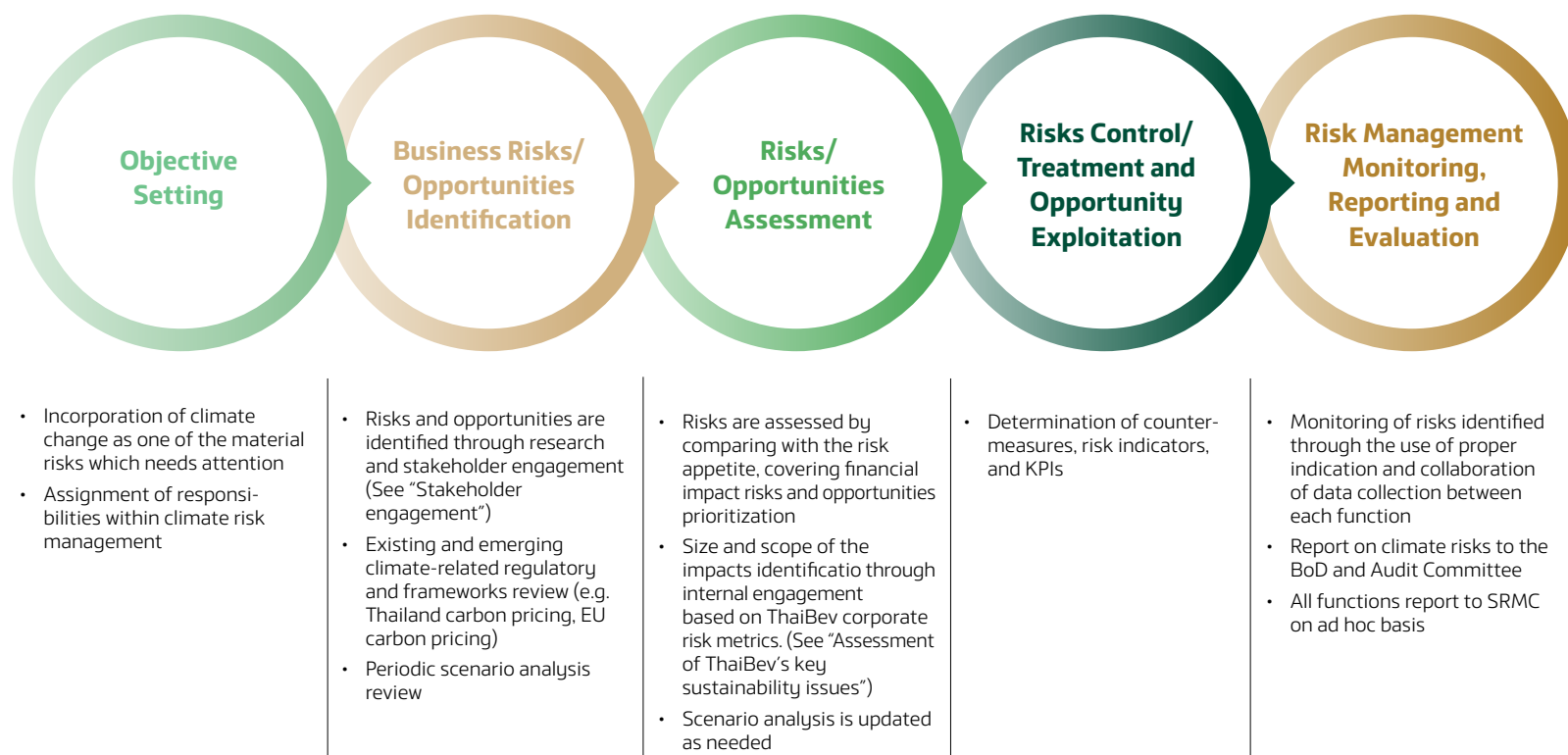
(Refer to Annual Report 2025 page 154-168)





The SRMC is responsible for ensuring sound risk and sustainability management across ThaiBev's operations in Thailand, Scotland, Myanmar, Vietnam, France, and New Zealand— monitoring possible risk and opportunities associated with climate change on company operations, planning, and taking action. To ensure comprehensive oversight and group-wide monitoring, climate-related risks

management is embedded into ThaiBev's risk management process, which is aligned with the Committee of Sponsoring Organizations of the Treadway Commission (COSO) Enterprise Risk Management Framework. An overview of roles and responsibilities related to climate-related issues is presented in Figure 5: Risk Management Process Relevant to Climate-related Risks and Opportunities.



**Figure 5:** Risk Management Process Relevant to Climate-related Risks and Opportunities

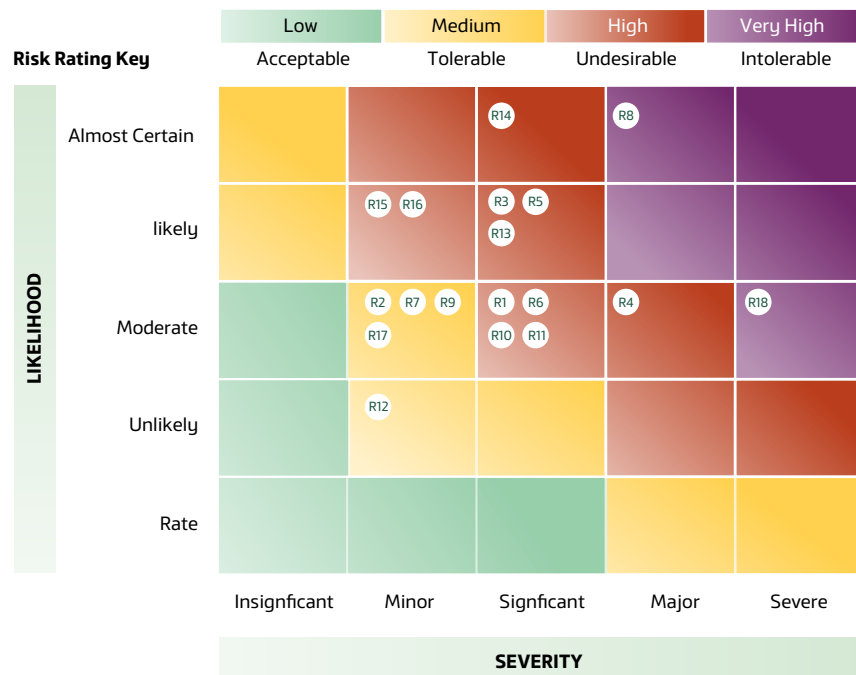


The identified climate-related risks and opportunities are prioritized via the following primary activities to develop effective risk management measures:

- Stakeholder engagements with senior ThaiBev executives to assess the impact of identified climate-related risks on the organization across three key aspects: finance, operations, and reputation.

- Interviews to evaluate the significance of potential climate-related impacts across nine key stakeholder groups: customers, consumers, investors, communities, regulators, trade associations, vulnerable group, employees, and suppliers.

Climate-related issues that were ranked as “very important” by ThaiBev and its relevant stakeholders were considered material sustainability issues (Figure 6: Risk Heat Map).



**Figure 6: Risk Heat Map**

(For details surrounding impact and key mitigation measures, refer to Annual Report 2025 page. 160-168)

### Strategic Risk

1. Business Investment Risk
2. Corporate Image and Reputational Risk
3. Macroeconomic and Industry Structure Risk

### ESG Risk

4. Water-related Risk
5. Climate Change Risk
6. Packaging Management Risk
7. Stakeholders' Health and Safety Risk
8. Changing Consumer Behavior and Demographic Shifts Risk
9. Ethics and Compliance Risk
10. Geopolitical Risk

### Operational Risk

11. Supply Chain Risk
12. Financial Risk
13. Human Capital and Succession Risk
14. Business-related Regulatory Shifts Risk
15. Cyber Threats and Data Privacy Risk

### Emerging Risk

16. Geoeconomic Confrontation Risk
17. Cyber Espionage and Warfare Risk
18. Critical Change to Earth Systems Risk



# CLIMATE-RELATED METRICS AND TARGETS

## Climate-related Targets

ThaiBev has set targets for its operations and value chain to raise its ambition level in its mitigation and adaptation efforts. Beyond GHG emission reduction targets, ThaiBev has also set targets regarding the use of renewable energy as well as efforts towards reducing water withdrawal. While this section focuses on climate change mitigation, other targets can be found in ThaiBev's Sustainability Report 2025.

### Science-based Targets Initiative



#### Science-based Targets Initiative

ThaiBev has been verified and declared a certified organization by the Science Based Targets initiative (SBTi), for its short-term GHG emissions reduction target for 2030 and its long-term Net-Zero GHG emissions target for 2050. The first target is to reduce total GHG emissions by 42 percent by 2030, covering both direct emissions (Scope 1) and indirect emissions from energy use (Scope 2). Additionally, the company aims to achieve a 25 percent reduction in indirect GHG emissions across its entire value chain (Scope 3). By 2050, ThaiBev is targeting Net-Zero GHG emissions for Scope 1, 2, and 3.

We aim to achieve our emissions reduction targets by collaborating with our suppliers and partners, working closely to implement new technologies and practices and collectively reduce emissions. Through these partnerships, we ensure that GHG emissions reduction is integrated throughout the value chain. For any residual emissions that cannot be eliminated, ThaiBev will deploy permanent carbon removal solutions. These may include carbon capture and storage (CCS) for relevant industrial processes and verified nature-based solutions, such as reforestation and afforestation, ensuring permanence, additionality, and rigorous monitoring and verification by international standards.

*Remark: Excluding F&N operations and new acquisitions made in FY2025.*

*ThaiBev will assess baselines and review targets to include F&N and new acquisitions in fiscal year 2026.*

### 2030 Targets

**42%**

reduction of GHG emissions for Scope 1 and 2 compared to 2023 as the base year

**25%**

reduction of GHG emissions for Scope 3 compared to 2023 as the base year

**50%**

renewable energy consumption within the organization by 2030

### 2050 Target

**Net-Zero** GHG emissions for Scope 1, 2, and 3 by 2050

## GHG Emissions Reduction Targets

ThaiBev is committed to reducing greenhouse gas (GHG) emissions through various strategies such as energy efficiency, renewable energy, waste reduction, reducing methane emissions, increasing fuel efficiency in transportation and logistics, and managing supply chain greenhouse gas emissions. ThaiBev reviews its targets annually by assessing the continued alignment between target boundaries and current business operations. Where significant changes in business activities or material updates to relevant standards occur, the Company reassesses and adjusts its targets as appropriate to ensure ongoing relevance, while emission reduction initiatives in the reporting year can be found in ThaiBev's Sustainability Report 2025. [Table 14: GHG Emissions Data.](#)



## Coverage of Greenhouse Gas Emissions

As part of ThaiBev's commitment to transparent climate-related disclosures and in alignment with the Greenhouse Gas (GHG) Protocol, we report on all seven GHGs covered under the Kyoto Protocol:

- Carbon dioxide (CO<sub>2</sub>)
- Methane (CH<sub>4</sub>)
- Nitrous oxide (N<sub>2</sub>O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur hexafluoride (SF<sub>6</sub>)
- Nitrogen trifluoride (NF<sub>3</sub>)

ThaiBev calculates and discloses emissions across all three scopes (Scope 1, Scope 2, and Scope 3), ensuring comprehensive coverage of both direct and indirect emissions. This approach allows ThaiBev to track progress toward its science-based targets and work towards achieving Net-Zero GHG emissions in alignment with its sustainability strategy.

## GHG Emissions Data

**Table 14:** GHG Emissions Data

Performance	Unit	2022	2023	2024	2025
Direct Scope 1 GHG emissions	Tonnes CO <sub>2</sub> e	995,890	1,000,150	958,322	883,674
Biogenic CO <sub>2</sub> emissions	Tonnes CO <sub>2</sub> e	529,137	455,626	713,053	715,362
Scope 2 GHG emissions – Location - based	Tonnes CO <sub>2</sub> e	424,465	382,936	359,170	373,203
Scope 2 GHG emissions – Market - based	Tonnes CO <sub>2</sub> e	395,561	344,884	334,287	318,597
Scope 1 and Scope 2 GHG emissions	Tonnes CO <sub>2</sub> e	1,391,451	1,345,034	1,292,609	1,202,271
Scope 3 GHG emissions	Tonnes CO <sub>2</sub> e	1,330,365	3,415,643	3,198,261	3,236,624
Scope 1, 2 and 3 GHG emissions–Location-based	Tonnes CO <sub>2</sub> e	2,750,720	4,798,729	4,515,753	4,493,501
Scope 1, 2 and 3 GHG emissions–Market-based	Tonnes CO <sub>2</sub> e	2,721,816	4,760,677	4,490,870	4,438,895

Notes:

1. ThaiBev's GHG inventory and calculation are in line with GHG protocol framework and methodology, and Thailand National Guideline on carbon footprint for organization.
2. Biogenic emissions are emissions from combustion of bio-based fuels or substances that are reported separately from the Scopes as per GHG Protocol requirement.
3. Scope 1 and 2 GHG emissions do not include biogenic emissions as per GHG Protocol requirements to report biogenic emissions separately from the scopes.
4. Scope 3 GHG emissions do not include F&N operations



## Climate-related Risks and Opportunities Metrics

**Table 15:** Climate-related Risks and Opportunities Metrics

Transition Risk and Opportunity	2022	2023	2024	2025
<b>Low Carbon Products</b>				
Number of products with Carbon Footprint of Product (CFP) certification	88	91	90	49
Number of products with Carbon Footprint Reduction (CFR) certification	47	53	51	41
<b>Renewable Energy</b>				
<b>Target:</b> To increase the share of renewable energy in energy consumption to 50 percent by 2030				
Renewable energy generation (MWh)	1,015,265	930,702	1,408,354	1,395,811
Percentage of Renewable Energy Consumption out of Total Energy Consumption	30.43%	28.37%	38.55%	36.73%

**Table 16:** IFRS S2 Appendix B – Industry-Based Metrics

Alcoholic Beverages	2022	2023	2024	2025
Volume of products sold (Millions of hectoliters (Mhl))	31.85	30.05	29.23	30.79
Number of production facilities	49	49	49	49
Total fleet road miles traveled (Miles)	1,243,505,168	1,173,233,150	1,141,174,760	1,201,955,977
<b>Non-alcoholic Beverages</b>				
Volume of products sold (Millions of hectoliters (Mhl))	20.84	22.83	21.56	22.73
Number of production facilities	19	19	19	19
Total fleet road miles traveled (Miles)	813,521,972	891,125,343	841,803,635	887,433,660
<b>Restaurants</b>				
Number of Restaurants–Company-Owned	314	335	337	332
Number of Restaurants–Franchise	426	460	502	530
Number of Employee–Company-Owned	5,700	6,523	6,436	5,519
Number of Employees–Franchise	7,325	8,155	9,153	9,183



## Methodology

### Reporting Coverage

The data in this report, which pertains to ThaiBev Group in Thailand and abroad, was taken from the fiscal year 2025, dating October 2024 to September 2025.

Data were collected from 80 production sites, including 29 spirits production facilities (19 distilleries in Thailand, five distilleries and 1 bottling plant in Scotland, one distillery and one bottling plant in Myanmar, one distillery France, and one distillery in New Zealand), 20 breweries (three in Thailand, one in Myanmar, 16 in Vietnam, excluding nine associated breweries in Vietnam), 30 non-alcoholic beverage production facilities (17 in Thailand, one in Singapore, and 12 in Malaysia), one food production facility in Thailand, and 14 distribution centers in Thailand, two printing plants (one in Singapore and one in Malaysia), excluding AgriValley in Malaysia.

### Acquisitions, New Sites and Divestments

Acquisitions are incorporated into our consolidated reports across all metrics starting from the date we gain control, or as soon as it is practically possible, but no more than one year from that date. The time frame for this integration can differ because each acquisition comes with its own set of systems and processes that need to be integrated into our operations.

New locations or expansions of existing sites are included in the scope of all measurements from the start date of their commissioning.

Regarding divestments, data related to the divested entity from the initial baseline, the years in between, and the current year's data, is excluded unless specified otherwise.

### Data Collection

ThaiBev utilizes its own environmental data collection tool across the ThaiBev Group to ensure standardized data collection and calculation. This tool collects energy, emissions, water, wastewater, waste, and environmental compliance data.

#### The tool quantifies the following Scope 1 GHG emissions activities:

- Stationary combustion (including biogenic emissions)
- Mobile combustion (including biogenic emissions)
- Biogas flaring
- CO<sub>2</sub> from carbonation (direct emissions)
- Fugitive emissions of Hydrofluorocarbons (HFCs) and Sulfur hexafluoride (SF<sub>6</sub>)
- Fugitive emissions from wastewater treatment

#### The tool quantifies the following Scope 2 GHG emissions activities:

- Purchased electricity and steam, where both location-based (solely grid-based emission factors) and market-based (a combination of emission factor from the grid and market-based instruments) methodologies are used to calculate Scope 2 GHG emissions.

ThaiBev's operating plants measure ozone-depleting substances, CO, NO<sub>x</sub>, and SO<sub>x</sub>, including Total Suspended Particles (TSP) from boiler stacks every six months, in compliance with the regulations of the Industrial Works Department, the Ministry of Industry. ThaiBev has long collaborated with suppliers and business partners to reduce Scope 3 GHG emissions, through application of the CROSS Procurement solution with the Supplier Life Cycle Management (SLCM) system. Given ThaiBev's commitment to the 1.5–2°C temperature limit this century, it has expanded its GHG accounting to all material Scope 3 GHG emission categories based on the GHG Protocol. A screening assessment of relevant Scope 3 GHG emission categories was first performed in FY2019. ThaiBev began accounting for public disclosure for the first time in FY2021, allowing a base year to be set and incorporation of the Scope 3 GHG emissions total into ThaiBev's target of Net-Eero Scope 3 GHG emissions by 2050. Other climate-related metrics and targets for energy, water, waste, and post-consumption packaging management can be found in Sustainability Report 2025. From FY2021, ThaiBev started reporting other indirect (Scope 3) GHG emissions in line with the reporting requirements of GHG Protocol.





### Emission Factors

For Scope 1 and 2 GHG emission, ThaiBev uses emission factors from the 2022 IPCC Guidelines for National Greenhouse Gas Inventories and the United States Environmental Protection Agency (US EPA). For Scope 3 GHG emissions, the Company uses emission factors from Thailand Greenhouse Gas Management Organization, UK Government GHG Conversion Factors for Company Reporting, and other literature-based emission factors. For energy conversions, Net Calorific Values (NCVs) sourced from the IPCC and Thailand's Ministry of Energy were used. Global warming potentials (100-year) from the IPCC 6th Assessment Report, 2022, were used. Our GHG data undergoes annual third-party assurance as part of our sustainability reporting process (see page 172-173 of ThaiBev's Sustainability Report 2025)

### Third-Party Verification

ThaiBev has completed its assessment and third-party verification of Scope 1, Scope 2, and Scope 3 (Category 1-7, 9, 11, 12, 15 only, excluding F&N) GHG emissions as well as climate-related metrics on energy consumption, energy intensity and water consumption with reference to GRI Standards 2021.

The company has incorporated these data into its near-term and Net-Zero science-based target which has been approved by the SBTi (for details refer to (page 32 of ThaiBev's Sustainability Report 2025)

### Reliability and Accuracy of Data

Non-financial data presented in this report is governed by established systems, processes, and controls that oversee its gathering, examination, and validation. Each year, our leadership teams review and, if necessary, update the reporting boundaries and methods. We are consistently working to enhance our data collection procedures and the controls that support them.

While our aim is to record all information with the highest accuracy, achieving complete precision in data measurement is not always feasible or practical.

In instances where we have relied on estimates or applied judgement, we make a note of it either within relevant remarks across the report.

### Restatements

We may restate past data if there are significant changes in our business structure, such as mergers, acquisitions, or sell-offs, or if we improve our data quality and calculation methods, or if there are major updates to our policies. We may decide to update previous years' data if the changes significantly affect those who use our reports, whereby, an update leads to changes greater than 5 percent. If data of previous years is not available, we estimate the environmental impact for the starting year and the years in between using current data and considering production trends and other important factors.

### Cautionary Statement Concerning ESG-Related Information

While compiling the ESG-related content of this report, ThaiBev has applied several key judgments, estimates, and assumptions across complex issues and processes. Special caution is warranted when considering the ESG-related projections, as the tools and approaches for ESG and climate analysis are relatively novel, continuously advancing, and lack the established quality when compared to financial data with established accounting practices, nor are they held to comparable disclosure norms, historical benchmarks, consensus, or universally recognized accounting standards. Particularly, it is not possible to depend on historical climate data as a strong indicator of future climate trends and their progression. The reliability of model outputs, processed data, and methodologies can be affected by the quality of the underlying data, which is often difficult to evaluate. We anticipate ongoing shifts in industry guidelines, market practices, and regulatory frameworks in this area. Additionally, there are obstacles in obtaining data promptly and issues with the consistency and comparability of the available data. Consequently, the ESG-related projections and metrics mentioned in this report are subject to a higher level of inherent risk and uncertainty. Thus, actual outcomes and progress may deviate materially from what is expressed or implied by the ESG-related forward-looking statements presented here.