



**TASK FORCE ON CLIMATE-RELATED  
FINANCIAL DISCLOSURES (TCFD)  
REPORT 2024**

Thai Beverage Public Company Limited

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# INTRODUCTION

This report aims to transparently communicate the significant business developments and ongoing sustainability initiatives of Thai Beverage Public Company Limited (“ThaiBev” or the “Group” ), while presenting our progressive sustainability strategy and integrated management approach to all stakeholders.

In the current year, ThaiBev has taken a significant step forward by adopting the International Financial Reporting Standards S2 (IFRS S2), reinforcing our commitment to transparency and accountability in sustainability reporting. This aligns with our steadfast focus on the three core dimensions of Environmental, Social, and Governance (ESG), which are foundational to our concept of “Enabling Sustainable Growth.” Additionally, we continue to honor the cultural dimension, inspired by the Sufficiency Economy Philosophy of His Late Majesty King Bhumibol Adulyadej the Great.

Building upon the progress made under our PASSION 2025 vision, ThaiBev has unveiled the ambitious “PASSION 2030” roadmap. This strategic blueprint articulates our goals and growth plans as we strive towards 2030, aiming to fortify our position as a stable and sustainable leader in the ASEAN beverage and food industry. The PASSION 2030 initiative is a clear indication of our dedication to “Creating and Sharing the Value of Growth” and highlights our actions to pursue sustainable growth in harmony with our mission.

ThaiBev’s commitment to contributing to the 17 United Nations’ Sustainable Development Goals (UNSDGs) remains unwavering as we continue our transformative journey. This report illustrates the various ways in which ThaiBev’s business operations align with best practices in sustainable development, achieved through robust collaboration and partnerships.

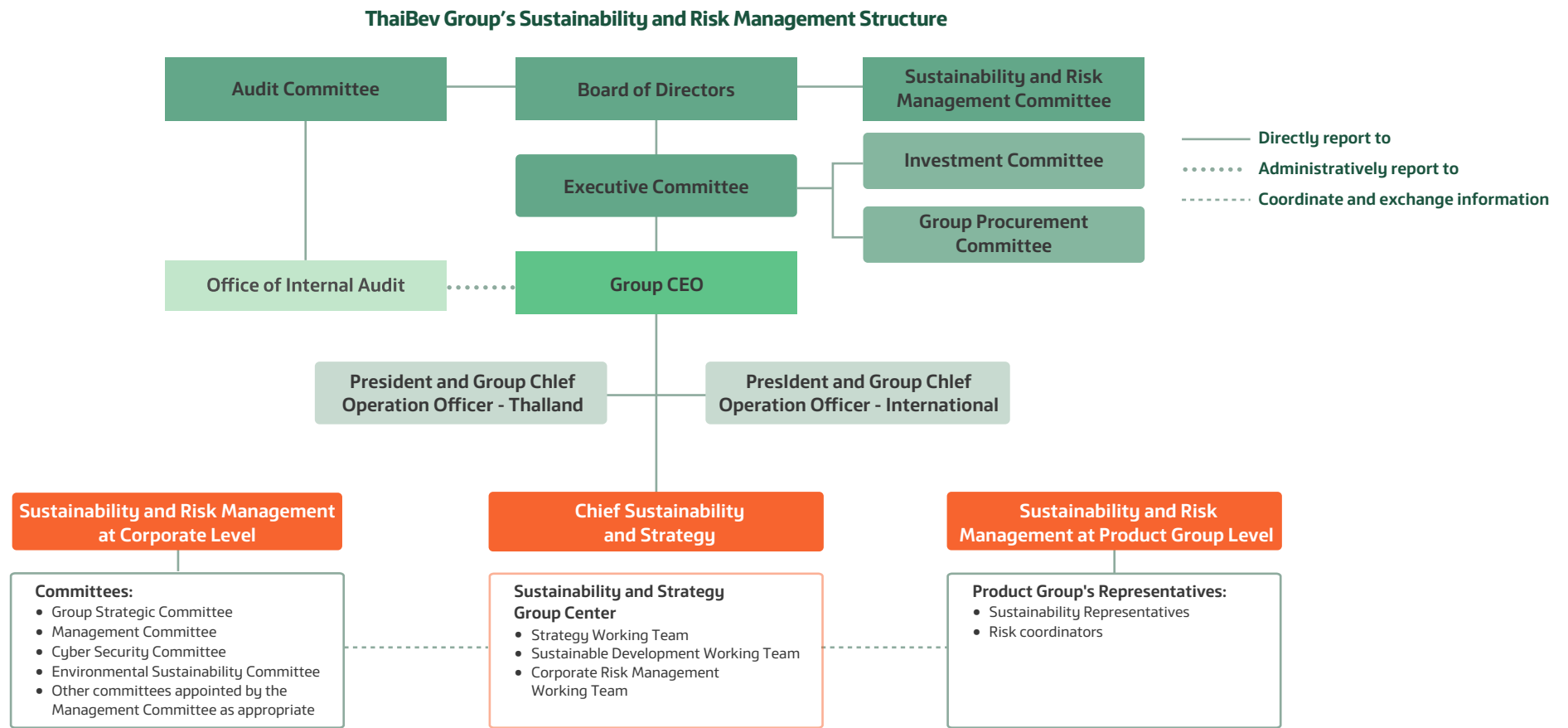
Marking a decade of sustainability reporting, this year’s TCFD Report has been prepared with consideration of the IFRS S2, enhancing our disclosures with relevant sustainability aspects. This approach complements the core criteria from the Global Reporting Initiative (GRI) and the Task Force on Climate-Related Financial Disclosures (TCFD). The report adheres to the GRI Standards 2021 and incorporates TCFD recommendations and Carbon Disclosure Project (CDP) criteria and guidelines. In our pursuit of comprehensive reporting, ThaiBev also employs an Integrated Reporting (IR) framework to holistically convey performance and value creation to our shareholders and stakeholders. 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.



**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 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.



**Table 1: ThaiBev’s 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 climate-related financial disclosures on governance within the Company and determines the approach to oversee climate-related risks and opportunities for ThaiBev Group.</li> <li>• Approves ThaiBev’s climate-related strategy, goals, and targets. This includes annual climate-related strategy revisions and strategic direction, and approvals of climate-related business and financial planning upon receiving reports from the SRMC.</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 sustainability and risk management system and recommending improvements and preventive measures for significant risks, including those associated with climate-related risks and opportunities, 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

To ensure the competency of board members in addressing climate-related risks and opportunities, all Directors have completed the training on sustainability matters as prescribed by the SGX-ST at the end of the financial year ended 30 September 2024. The Joint Audit Committee and Sustainability and Risk Management Committee Meeting was also organized in order to be the forum for receiving directions and suggestions on the process development for internal audit and sustainability and risk management, as well as to exchange ideas about key global risks in order for ThaiBev Group to enhance its execution and address potential risks in an efficient and effective manner.



## 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) Community Engagement (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: ThaiBev’s Management and Operational-Level Climate-Related Roles and Responsibilities**

ThaiBev’s Function	Climate-related Roles and Responsibilities	Meeting Frequency
<b>Executive Committee</b>	<ul style="list-style-type: none"> <li>Prepares and proposes a business policy, target, action plan, business strategy, including those climate-related, and annual budget of the Company and subsidiaries 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
<b>Group CEO</b>	<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)
<b>Investment Committee</b>	<ul style="list-style-type: none"> <li>Considers investments for business expansion.</li> <li>Be responsible for the consideration of and advises the Executive Committee on the acquisition/disposal of businesses, assets, including any merger of businesses, of 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>	<p>Quarterly (Through the SRMC)</p>
<p><b>Environmental Sustainability Committee</b></p>	<ul style="list-style-type: none"> <li>Oversees, advises and ensures progress towards environmental-related goals, including climate-related goals, for all operation units across ThaiBev Group.</li> <li>Considers financial impacts of environmental risks and opportunities, such as those climate-related, for investment decisions and existing business operations.</li> <li>Arranges for regular reporting of environmental performance, including climate-related operations, to the SRMC and the Board of Directors.</li> </ul>	<p>Monthly or as necessary</p>
<p><b>Chief Sustainability and Strategy</b></p>	<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 Sustainable Development Working Team (SDWT) and Corporate Risk Management Working Team (CRMWT).</li> </ul>	<p>Monthly or as necessary</p>
<p><b>Sustainability and Strategy Group Center</b></p>	<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 standards, including climate-related issues.</li> <li>Plans and tracks sustainability goals (ESG) and gathers 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 analyzes 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 emissions by 2050 (Scope 1, 2 and 3) and 100% replenishment of water 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% scope 1 and 2 reduction by 2030 compared to 2023, net zero emissions for Scope 1, 2 and 3 by 2050, and 100% replenishment of water by 2040.
- Integration of water-related incentives into Head of relevant Business Units’ and employees’ KPIs and monetary rewards, of 42% scope 1 and 2 reduction by 2030 compared to 2023, and a water intensity target of reducing water intensity by 7% by 2030, compared to a 2023 base year.

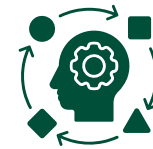


# STRATEGY

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 2024, ThaiBev’s total water consumption decreased by 2.5% compared to the previous year, despite an increase in production. This data includes water withdrawals and water discharge from all of the organization’s manufacturing plants, offices, and other operations, covering 100% of both Thailand and international facilities.

We achieved significant water reuse and recycling, at 2.7% and 4.7%, respectively. To make the most of water resources, we have implemented the following recycling measures:

- Rainwater Harvesting System in Vietnam
- Optimizing Water Usage in Plastic Crate Washing Machines
- Recycled Wastewater Project

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, aligning with its goal to reduce water intensity by 7% by 2030 compared to the 2023 baseline.



## Water Usage Reduction Projects

Highlighted Projects	Environmental Impact	Financial Impact
<p><b>Rainwater Harvesting System in Vietnam</b></p> <p>SABECO's Cu Chi Brewery in Vietnam implemented a rainwater harvesting system to reduce water consumption and operational costs. Utilizing a 20,000-square-meter rooftop and repurposing old tanks and water treatment equipment, the project required minimal new investment, with piping installation costing USD 26,909. Enhancements included reusing a sand filtration system, modifying the pump system, and installing new piping for improved collection and measurement.</p>	Save water 1,500 cubic meters per year	Cost saving 703 USD
<p><b>Optimizing Water Usage in Plastic Crate Washing Machines</b></p> <p>The Food Product Group in Thailand optimized the use of soft water in their basket washing machines by adjusting both the direction of water injection and the water pressure. This improvement significantly contributed to a reduction in the group's water consumption, which fell from approximately 15,000 to 4,000 cubic meters, resulting in annual cost savings of around 250,000 Baht.</p>	Save water 11,000 cubic meters per year	Cost saving 7,742 USD
<p><b>Recycled Wastewater Project</b></p> <p>The Beer Production Group has initiated a project to reclaim effluent from the waste water treatment process, through the use of ultrafiltration technology at the Cosmos Brewery in Ayutthaya Province. The project is expected to reduce water withdrawal from natural sources by 20% per year. The water recovered through this process will be repurposed in non-production-related areas.</p>	Save water 60,395 cubic meters per year	Cost saving 8,981 USD

### Total cost of response for adaptation

ThaiBev is investing **18.51 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: Mitigation

In 2024, ThaiBev achieved a 5.12% 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 42.6%. We have implemented the following projects:

- Renewable Energy Projects: Solar panels, biogas, and biomass projects
- GHG Emissions Reduction Projects: CO<sub>2</sub> Recovery

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 Scope 1 and 2 emissions by 2030 compared to the 2023 baseline.

Highlighted Projects to reduce scope 1	Environmental Impact	Financial Impact
<p><b>Biogas Plant</b></p> <p>ThaiBev has commenced the installation of its eighth biogas plant at a distillery in Ratchaburi Province, Thailand, with an investment of 187.275 million Baht. Scheduled for completion in 2025, the plant is expected to reduce heavy fuel oil consumption for steam production by 1.77 million liters annually.</p>	Reduce 57,193 tCO <sub>2</sub> e per year	Cost saving 0.89 MUSD
<p><b>Biomass Plants</b></p> <p>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 869,880,693 MJ of thermal energy, reducing heavy oil and coal consumption by 1.0 million liters and 32.15 million kilograms, respectively.</p>	Reduce 80,516 tCO <sub>2</sub> e per year	Cost saving 0.95 MUSD
<p><b>CO<sub>2</sub> Recovery</b></p> <p>All ThaiBev breweries in Thailand, Vietnam, and Myanmar have implemented CO<sub>2</sub> recovery practices, capturing carbon dioxide generated during the fermentation process in alcoholic beverage production. The recovered CO<sub>2</sub> is then reused for brewing and carbonating beverages like soda and beer, enhancing sustainability and operational efficiency.</p>	Reduce 28,569 tCO <sub>2</sub> e per year	Cost saving 5.30 MUSD



Highlighted Projects to reduce scope 2	Environmental Impact	Financial Impact
<p><b>Solar Panels Projects*</b></p> <p>Solar panels have been installed on rooftops and as floating systems across 41 production facilities and 8 operation sites in Thailand, Myanmar, Vietnam, Singapore, Malaysia, and France, with a total capacity of 61.86 MWp. These installations generate annually.</p> <p>*Includes F&amp;N operations</p>	<p>Save electricity 67,536 MWh Reduce 32,917 tCO<sub>2</sub>e per year</p>	<p>Cost saving 7.74 MUSD</p>

### Total cost of response for mitigation

In 2024, we invested **221.37 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 aims to achieve our emissions reduction targets by collaborating with our suppliers and business 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. Broken rice is among ThaiBev's five key agricultural commodities, which are used in white spirit distillation and beer production. ThaiBev sources 100% of broken rice from local suppliers and is committed to ensuring that 100% of broken rice is responsibly sourced in alignment with recognized international and local standards such as SAI, SMETA, SEDEX, and Thai Labor Standard (TLS). ThaiBev carries out supplier development programs with broken rice suppliers to continuously strengthen their capability and prevent supply disruption from any arising ESG risks.

In addition to ThaiBev's suppliers, the broken rice supplier promotes the sustainability agriculture standard, which is that standard that educates the farmers to ensure

an understanding of sustainable agricultural practices and how to apply them to agricultural processes. Using a life cycle assessment (LCA) technique, resource utilization is determined, and the total emissions of the product system cover the raw material process, production process, implementation, and disposal of the remains after use, which can reduce up to 17.8% of GHG emissions by water and farm management.

Sugar suppliers who participate in the program have implemented BonSucro standard in their own sugarcane supply chain. The supplier educates the farmers to ensure the understanding of sustainable agricultural practice and how to apply to the agricultural processes. These farmers are monitored regularly with dedicated team to visit their farms onsite to provide any supports during the transition period. The area with major improvement after applying BonSucro include soil health, soil nutrition, fertilization, waste management, and water quality. In addition, to the application of BonSucro standard in the sugarcane supply chain, ThaiBev also collaborates with the supplier to develop the community within supplier's facilities, e.g., provide knowledge on organic agriculture, promote the cultivation of quick-growing crop to be used as renewable energy, etc.



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

ThaiBev has joined the Mae Fah Luang Foundation's Community Forest Restoration Project in Thailand. The foundation is seeking to expand community forests through the carbon-credit management mechanism, which aims to integrate rural development with forest preservation to reduce Thailand's GHG emissions. Phases 1-4 of the project will add a total area of 61,850 rai (9,806 hectares) covering 11 provinces, please see a map.

The carbon credit earned from this project will be registered under ThaiBev's account as part of the Thailand Voluntary Emission Reduction (T-VER) Project, and can be used to offset the company's own GHG emissions

ThaiBev has developed a climate strategy which steers projects to reduce the impact of climate change across its operations and value chain, while seeking to capture opportunities that arise from the transition to a low-carbon economy. The pillars under which initiatives such as the low carbon products, supplier engagement, and reforestation are defined by ThaiBev's annual scenario analysis of climate-related risks and opportunities. Details of climate - related initiatives can be found in ThaiBev's Annual Report 2024 and Sustainability Report 2024.

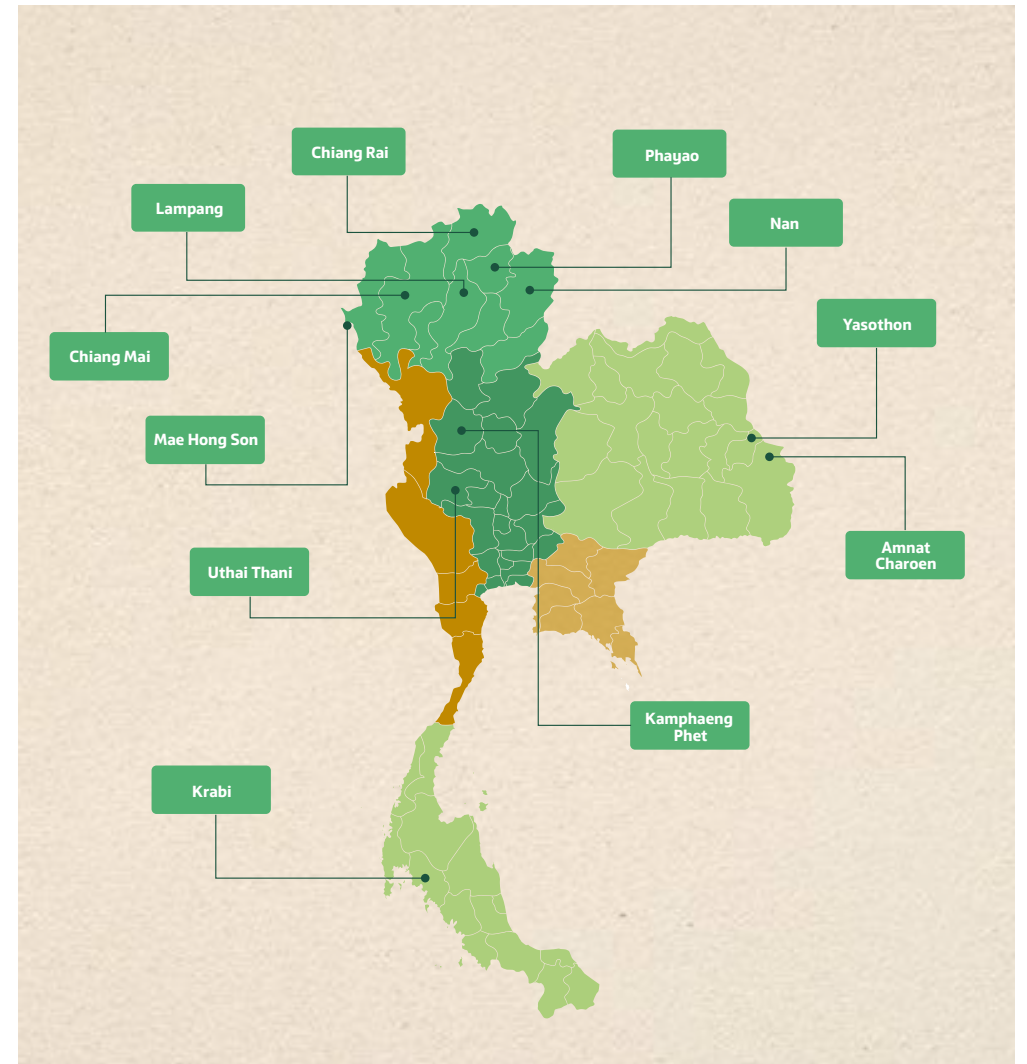


Figure 3: Location covered in Community Forest Restoration Project



## Scenario Analysis of Climate Risks and Opportunities

In 2024, ThaiBev deepened its scenario analysis for both physical and transition risks and opportunities. A Net Zero Emissions scenario (IEA NZE) was added to assess transition risks, and the financial impact on the company was quantified at the asset level to identify operational and supply chain vulnerabilities.

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, 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 Risks

In 2024, ThaiBev selected the 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 medium- and long-term. These scenarios were chosen because they represent two key possibilities: the possibility-case and worst-case scenarios. 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 and 2050.

Furthermore, it was determined that the 57 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 2020, 2030 and 2050 with adaptation measures is outlined in [Table 4](#) while [Table 5](#) and [Table 6](#) 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>• 2020-2030 (near-term): covers “Short-term” and “Medium-term” timeframes. *</li> <li>• 2050 (long-term): covers “Long-term” timeframe</li> </ul> These scenario time horizons are aligned with ThaiBev’s timeframes for risk and opportunity identification.
<b>Scope of Assessment</b>	57** facilities in Thailand, Vietnam, Scotland, Myanmar, France, New Zealand, and Cambodia, accounting for 100% of the total number of facilities.
<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 | \*\*Physical risk Assessment cover two new assets in Cambodia.

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

Climate Physical Risks	Time frame	Impact	Description	Adaptation Measures*
<b>Acute</b>				
<b>River Flood</b>	Short Term (0-3 years)	Medium to High	Proximity to known flood plain, measured in distance from 1 in 100 year and 1 in 500 year flood plain. 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>Extreme Rainfall</b>	Long Term (>10 years)	Medium to High	Flash flooding or localised flooding caused by a 24 hours extreme rainfall event measured in mm of rainfall. 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>Wind Storm</b>	Short Term (0-3 years)	Medium to High	Extreme daily wind speed measured in km/h. 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.





Climate Physical Risks	Time frame	Impact	Description	Adaptation Measures*
<b>Chronic</b>				
<b>Water Scarcity</b>	Long Term (>10 years)	Medium to High	Standardised precipitation and evapotranspiration index (%) takes into account precipitation and temperature to determine likelihood of drought. Water scarcity 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>Sea Level Rise</b>	Short Term (0-3 years)	Low to Medium (for Coastal Locations)	Potential height of ocean water level during storms, measured in meters above the Still High Water Level. Inundation from sea level rise can result in damage to property and potential for stranded assets in some areas due to regular inundation and/or erosion of foundations.	<p><b>Seawater intrusion into aquifers:</b> ThaiBev will engage with local communities and governmental authorities near the identified high-risk areas to improve the groundwater wells.</p> <p><b>Seawater intrusion into rivers:</b> Expand freshwater stock facilities and implement a management plan to ensure sufficient fresh water supply by using water saving technology, water recycling systems, and rainwater harvesting systems.</p> <p>Adaptation measures for coastal floods are drawn from our adaptation measures for riverine flood risks.</p>
<b>Chronic</b>				
<b>Heat Stress</b>	Long Term (>10 years)	Low to Medium	Number of days/year of heatwave, where a heatwave occurs when the maximum and minimum temperatures are unusually hot over a three day period. The heatwave 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	RCP2.6	
>0.5m	High	2	1	0	5
0.15m < X < 0.5m	Medium	2	1	0	3
< 0.15m	Low	2	1	0	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 THB)				
	%	Level	%	MTHB	Level	MTHB	Level	Spirit	Beer	Food	NAB	Total
<b>Scenario 1:</b> High emissions (RCP 8.5)	20%	Unlikely	0	3.51	Insignificant	0.70	Low	3.19	0.00	0.00	0.32	3.51
<b>Scenario 2:</b> Intermediate emissions (RCP 4.5)	50%	Medium	0	1.64	Insignificant	0.82	Low	1.44	0.00	0.00	0.20	1.64
<b>Scenario 3:</b> Low emissions (RCP 2.6)	30%	Unlikely	0	0.00	Insignificant	0.00	Low	0.00	0.00	0.00	0.00	0.00
<b>Financial impact and risk level for each product group</b>								1.36	0.00	0.00	0.16	1.52
								Low	Low	Low	Low	Low

Impact to Profit	Risk Level
0 – 20 Million THB	Low
20 – 100 Million THB	Medium
100 – 500 Million THB	High
500 – 2,000 Million THB	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	22.65 %	67.35 %	<b>Very High</b>
<b>Broken Rice</b>	Thailand	100 %	100 %	<b>Very High</b>
<b>Sugar</b>	Thailand	100 %	100 %	<b>Very High</b>
<b>Palm Oil</b>	Thailand	23.87 %	64.33 %	<b>Very High</b>
<b>Tea Leaf</b>	Thailand	15.31 %	23.02 %	<b>High</b>

<b>Low</b>	< 1% of annual procurement spend	<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	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%
<b>Sugar</b>	Thailand	119	132	11.24%	150	25.72%
<b>Palm Oil</b>	Thailand		No data			
<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>	Australia	<p><b>Water Usage:</b></p> <ul style="list-style-type: none"> <li>For barley and hop cultivation are water-intensive, straining Australia’s limited resources, particularly in regions like the Murray-Darling Basin.</li> </ul> <p><b>Soil Degradation and Erosion:</b></p> <ul style="list-style-type: none"> <li>Intensive monoculture farming can lead to soil erosion, nutrient depletion, and reduced fertility, particularly without crop rotation or organic practices.</li> </ul> <p><b>Use of Pesticides and Fertilizers:</b></p> <ul style="list-style-type: none"> <li>The application of fertilizers, herbicides, and pesticides (agrochemicals) can negatively affect local biodiversity, contaminate soil, as well as water sources.</li> </ul> <p><b>Greenhouse Gas Emissions:</b></p> <ul style="list-style-type: none"> <li>Agricultural machinery, agrochemicals, and malt processing contribute to direct and indirect GHG emissions.</li> </ul>	<p><b>Labor Conditions and Employment Stability:</b></p> <ul style="list-style-type: none"> <li>This industry relies on seasonal labor, often involving difficult conditions with long hours and low wages, particularly for migrant workers. This can lead to job insecurity, housing issues, and integration challenges for workers.</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.</li> </ul>
<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>For barley and hop cultivation are water-intensive crops, exacerbating water scarcity and creating competition with other sectors in resource-limited regions.</li> </ul> <p><b>Soil Degradation and Erosion:</b></p> <ul style="list-style-type: none"> <li>Intensive monoculture farming depletes soil fertility, causes erosion, and increases reliance on fertilizers.</li> </ul> <p><b>Use of Pesticides and Fertilizers:</b></p> <ul style="list-style-type: none"> <li>The application of agrochemicals can negatively affect local biodiversity, contaminate soil, as well as water sources.</li> </ul> <p><b>Greenhouse Gas Emissions:</b></p> <ul style="list-style-type: none"> <li>Agricultural machinery, agrochemicals, and malt processing contribute to direct and indirect GHG emissions.</li> </ul>	<p><b>Labor Conditions:</b></p> <ul style="list-style-type: none"> <li>This industry relies on seasonal labor, particularly during planting, harvest, and processing periods, often involves low wages and precarious conditions, especially for migrant workers.</li> </ul> <p><b>Cultural Heritage:</b></p> <ul style="list-style-type: none"> <li>Hop cultivation holds cultural significance in this regions, but industrialization may erode traditional practices and risk in reducing small-scale farms.</li> </ul>



Name of Ingredients	Country of Production	Reported Environmental Impact	Reported Social Impact
<b>Cereals (i.e., Barley, Hop)</b>	United States	<p><b>Water Usage:</b></p> <ul style="list-style-type: none"> <li>Barley and hop crops require significant water, and prolonged droughts in regions like the Pacific Northwest can strain resources, depleting ground-water and impacting ecosystems.</li> </ul> <p><b>Soil Degradation and Erosion:</b></p> <ul style="list-style-type: none"> <li>Intensive monoculture farming depletes soil fertility, causes erosion, and increases reliance on fertilizers.</li> </ul> <p><b>Use of Pesticides and Fertilizers:</b></p> <ul style="list-style-type: none"> <li>The application of agrochemicals can negatively affect local biodiversity, contaminate soil, as well as water sources.</li> <li>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>Agricultural machinery, agrochemicals, and malt processing contribute to direct and indirect GHG emissions.</li> </ul>	<p><b>Labor Conditions and Employment Stability:</b></p> <ul style="list-style-type: none"> <li>This industry relies on seasonal labor, often migrant workers, who may face low wages, long hours, and poor conditions, including exposure to harmful chemicals.</li> <li>Migrant labor can lead to job insecurity, housing issues, and integration challenges for workers.</li> </ul> <p><b>Health and Safety:</b></p> <ul style="list-style-type: none"> <li>Farm workers may face health risks from exposure to pesticides and fertilizers, necessitating proper safety measures.</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.</li> </ul> <p><b>Rural Development and Community Stability:</b></p> <ul style="list-style-type: none"> <li>The industry supports rural communities but can cause social change, including displacement of smaller farms and shifts in local culture due to industrial consolidation.</li> </ul>
<b>Sugar</b>	Thailand	<p><b>Deforestation and Land Use Change:</b></p> <ul style="list-style-type: none"> <li>Expansion of sugarcane plantations can drive deforestation, disrupting ecosystems, reducing biodiversity, and eliminating carbon sinks.</li> </ul> <p><b>Soil Degradation and Erosion:</b></p> <ul style="list-style-type: none"> <li>Continuous sugarcane cultivation without crop rotation or conservation techniques can cause soil erosion and fertility loss, especially on steep slopes.</li> </ul> <p><b>Water Use and Pollution:</b></p> <ul style="list-style-type: none"> <li>Sugarcane farming is water-intensive and can lead to depletion of local resources and water pollution from agrochemicals</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 CO<sub>2</sub> and particulate matter, contributing to air pollution and greenhouse gas emissions.</li> </ul> <p><b>Biodiversity loss:</b></p> <ul style="list-style-type: none"> <li>Large-scale monoculture sugarcane farming reduces biodiversity, displacing native species and increasing vulnerability 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 crucial for rural income and employment, contributing significantly to Thailand's economy as one of the largest sugar producers and exporters.</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.</li> </ul> <p><b>Health and Safety:</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 and respiratory issues.</li> </ul> <p><b>Land Rights and Displacement:</b></p> <ul style="list-style-type: none"> <li>Expansion of sugarcane plantations can cause land rights disputes, with some farmers and indigenous communities being displaced by large companies.</li> </ul> <p><b>Working Conditions and Labor Rights:</b></p> <ul style="list-style-type: none"> <li>Many sugarcane workers, particularly migrant workers, endure poor working conditions, low wages, and lack of labor rights protections.</li> </ul>



Name of Ingredients	Country of Production	Reported Environmental Impact	Reported Social Impact
<b>Broken Rice</b>	Thailand	<p><b>Water Use and Irrigation:</b></p> <ul style="list-style-type: none"> <li>Rice farming, including broken rice production, is water-intensive, with flooded paddies straining local water resources, especially during droughts or in water-scarce regions. Overuse may contribute to water shortages.</li> </ul> <p><b>Soil Degradation and Erosion:</b></p> <ul style="list-style-type: none"> <li>Intensive rice farming without crop rotation or soil conservation can deplete soil nutrients, reduce fertility, and increase erosion risks, exacerbated by improper water management.</li> </ul> <p><b>Greenhouse Gas Emissions:</b></p> <ul style="list-style-type: none"> <li>Rice paddies produce methane, a potent greenhouse gas, due to anaerobic conditions in flooded fields. The farming process contributes to methane emissions, impacting climate change.</li> </ul> <p><b>Use of Pesticides and Fertilizers:</b></p> <ul style="list-style-type: none"> <li>The use of chemical fertilizers and pesticides can contaminate soil as well as water sources, ecosystems, and disrupt biodiversity by affecting the balance of pests and beneficial species.</li> </ul>	<p><b>Labor Conditions and Employment:</b></p> <ul style="list-style-type: none"> <li>Farmer, particularly rural community, endure poor working conditions, low wages, seasonal work, and exposure to challenging conditions such as pesticide use and the risks associated with manual harvesting and milling.</li> </ul> <p><b>Health and Safety:</b></p> <ul style="list-style-type: none"> <li>Farmer face exposure to pesticides and fertilizers, leading to potential health issues like respiratory problems, skin irritation, and long-term illnesses.</li> <li>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 farmers face price volatility, debt, and limited bargaining power due to reliance on large millers. The lower value of broken rice adds to their economic challenges.</li> </ul> <p><b>Impact on Rural Communities:</b></p> <ul style="list-style-type: none"> <li>Challenges in rice farming, including fluctuating prices and rising input costs, contribute to social unrest, labor migration, and loss of traditional agricultural practices in rural areas.</li> </ul>
<b>Palm Oil</b>	Thailand	<p><b>Water Usage and Pollution:</b></p> <ul style="list-style-type: none"> <li>Palm oil cultivation demands significant water, often causing scarcity in dry areas.</li> <li>Chemical runoff from fertilizers and pesticides pollutes water sources, harming ecosystems and aquatic life.</li> </ul> <p><b>Soil Erosion and Degradation:</b></p> <ul style="list-style-type: none"> <li>Monoculture farming depletes soil fertility, causing erosion and reducing long-term land productivity.</li> </ul> <p><b>Greenhouse Gas Emissions:</b></p> <ul style="list-style-type: none"> <li>Draining peatlands for palm oil releases stored carbon, contributing to greenhouse gas emissions. Land clearing by fire adds to air pollution and particulate emissions.</li> </ul> <p><b>Deforestation and Habitat Loss:</b></p> <ul style="list-style-type: none"> <li>Palm oil cultivation in Thailand causes deforestation, destroying habitats for endangered species.</li> </ul>	<p><b>Economic Benefits and Employment:</b></p> <ul style="list-style-type: none"> <li>Palm oil cultivation supports rural incomes and creates jobs in farming, processing, and distribution, contributing significantly to local economies.</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 disputes, with some farmers and indigenous communities being displaced by large companies.</li> </ul> <p><b>Health and Safety:</b></p> <ul style="list-style-type: none"> <li>Workers on palm oil plantations may face poor conditions, low wages, and exposure to harmful chemicals, leading to health issues like respiratory problems and skin diseases.</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.</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 contributed to deforestation in northern Thailand, clearing forests for agricultural use and disrupting habitats, particularly in highland regions with diverse biodiversity.</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 cause soil erosion and degradation, reducing soil fertility and productivity while damaging ecosystems, including river sedimentation.</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.</li> <li>Additionally, the use of chemical fertilizers and pesticides may result in water pollution, as runoff from the fields can carry these chemicals into nearby rivers and streams.</li> </ul> <p><b>Use of Pesticides and Fertilizers:</b></p> <ul style="list-style-type: none"> <li>Conventional tea farming uses pesticides, herbicides, and fertilizers, which can contaminate soil and water. Organic farming offers a more sustainable alternative with reduced chemical reliance.</li> </ul>	<p><b>Economic Benefits and Employment:</b></p> <ul style="list-style-type: none"> <li>Tea cultivation supports rural communities in northern Thailand by providing employment in farming, harvesting, processing, and distribution, contributing to local economies and the livelihoods of smallholder farmers.</li> </ul> <p><b>Livelihood of Farmers:</b></p> <ul style="list-style-type: none"> <li>Tea cultivation offers stable income, especially in less viable agricultural areas. However, smallholders face challenges such as fluctuating prices, competition with larger plantations, and limited access to credit, impacting income stability.</li> </ul> <p><b>Health and Safety:</b></p> <ul style="list-style-type: none"> <li>Workers in tea plantations may face health risks from pesticide exposure, leading to skin irritation, respiratory issues, and long-term diseases. Additionally, low wages and long working hours can be concerns in some areas.</li> </ul> <p><b>Land Rights and Community Displacement:</b></p> <ul style="list-style-type: none"> <li>Land rights issues arise with the expansion of tea plantations, displacing local or indigenous communities and leading to conflicts over land access and ownership.</li> </ul> <p><b>Cultural Heritage:</b></p> <ul style="list-style-type: none"> <li>The growth of commercial tea plantations can disrupt traditional practices of indigenous communities, such as the Akha and Lahu people, leading to a loss of cultural heritage.</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% by 2050.

The methodology applies a conservative price elasticity (1.5%-2% per 1% 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% for sugar and rice and up to 18% for palm oil, with malt showing a 15% increase by 2050 due to improved farming practices in source regions such as the United Kingdom and United States.

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 in 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	435 MTHB	653 MTHB
<b>Broken Rice</b>	Thailand	114 MTHB	195 MTHB
<b>Sugar</b>	Thailand	72 MTHB	113 MTHB
<b>Palm Oil</b>	Thailand	19 MTHB	28 MTHB
<b>Tea Leaf</b>	Thailand	18 MTHB	29 MTHB





## Transition Risks and Opportunities

In 2024, 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 2024, 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 prioritised 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 our Company's resilience against climate-related risks and opportunities. The scope of the scenario analysis can be found in [Table 11](#) and the results in Scenario Drivers, Business Impacts, and Response Measures in [Table 12](#).

**Table 11: ThaiBev’s Transition Risk and Opportunity Scenario Analysis (2023-2024)**

<b>Purpose</b>	To analyze whether transition related drivers (policy/legal, market, technology, reputation) 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 emissions scenario which sets out a narrow but achievable pathway for the global energy sector to achieve net zero emissions by 2050.</li> </ul>
<b>Scenario Time Horizons</b>	<ul style="list-style-type: none"> <li>• 2030 (near-term): covered “Short-term” and “Medium-term” timeframes</li> <li>• 2050 (long-term): 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 target area of analysis focuses on operations and the value chain, with 11% of business activities identified as vulnerable to transition risks, as categorized under the TCFD framework*.
<b>Scope of financial impact calculations</b>	ThaiBev Group

\*11% of business activities vulnerable to transition risk calculated from coal related activities

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> </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.



Opportunity Category	Description
<b>Technology Advances</b>	<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>
<b>Market Changes</b>	<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>
<b>Reputation</b>	<p><b>Stakeholder Sentiment:</b> increased stakeholder expectations on climate action, especially amount investors, shareholders, consumers, and societal expectations.</p>

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: Please change sustainable development scenario to Net zero emission scenario

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

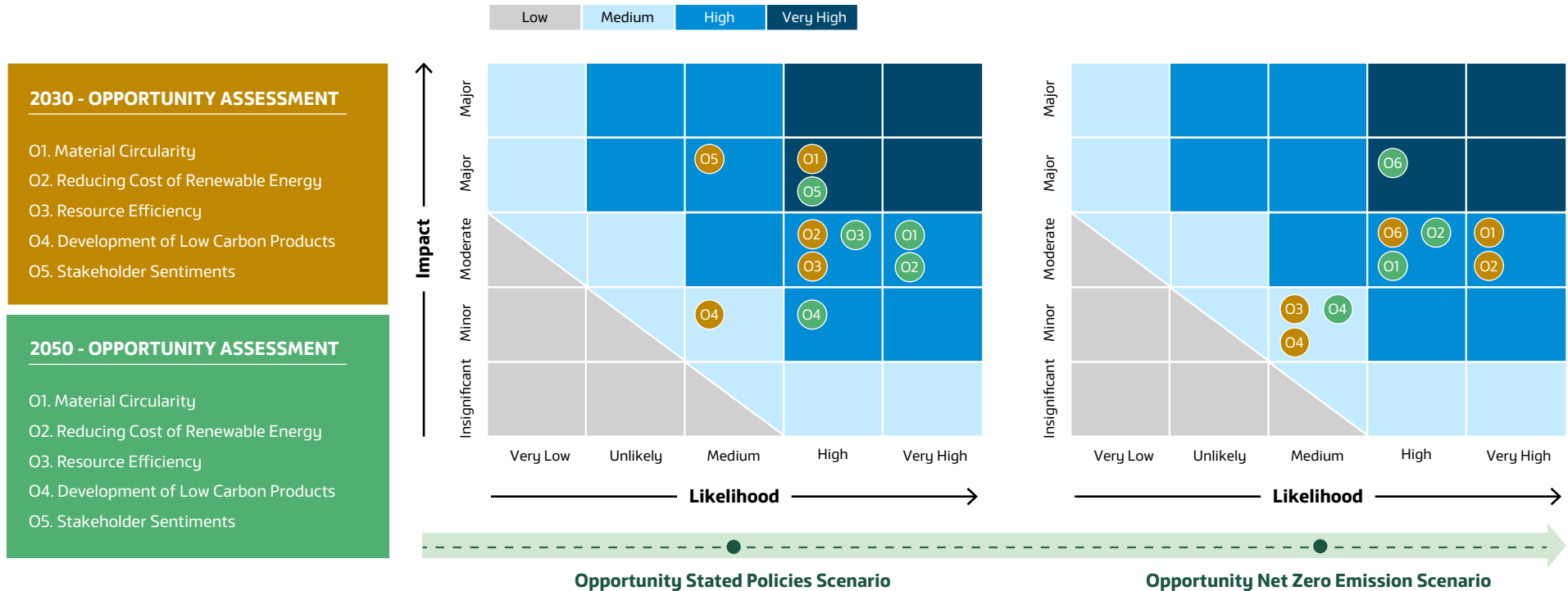
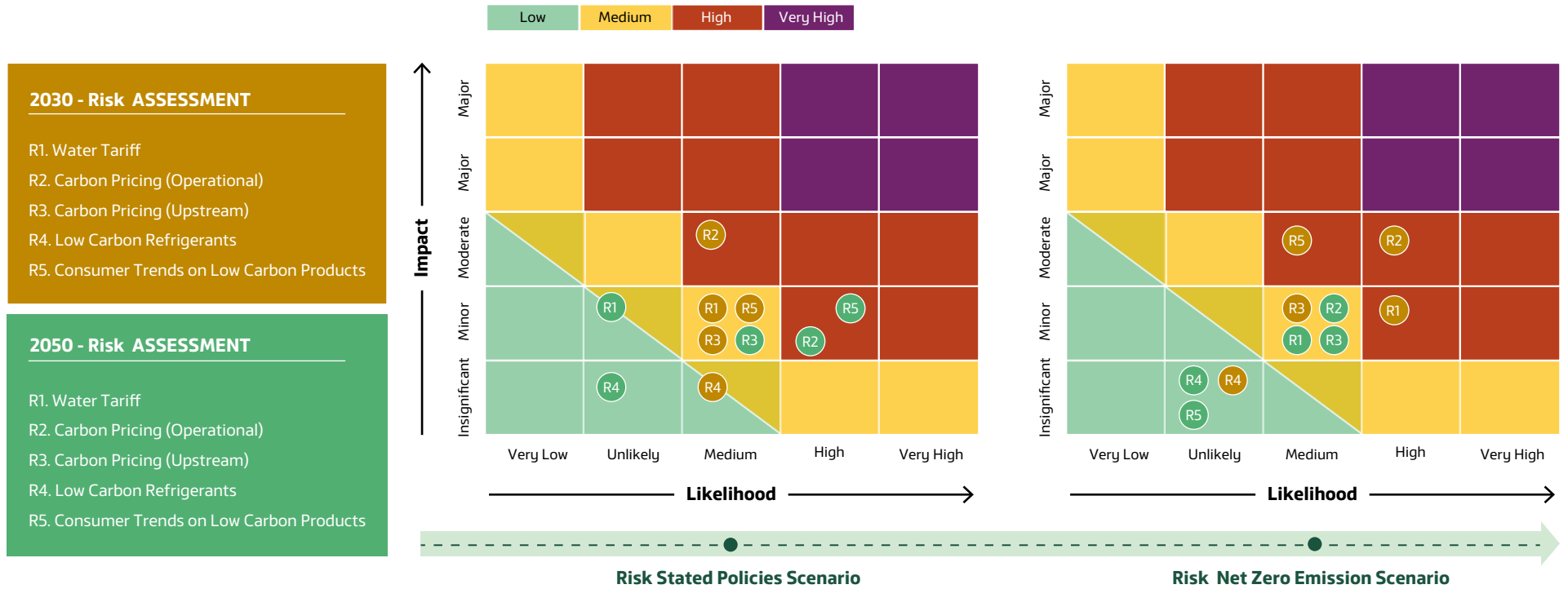




Figure 5: Results of Transition Risks Scenario Analysis



**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>	Medium term (3-10 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, IFRS S2.</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	%	MTHB	Level	MTHB	Level	Spirit	Beer	Food	NAB	Total
<b>Scenario 1:</b> High emissions (STEPS)	30%	Unlikely	0.00%	0	Insignificant	0	Low	0	0	0	0	0
<b>Scenario 2:</b> Intermediate emissions (APS)	50%	Medium	0.45%	392	Moderate	196	High	168	176	24	24	392
<b>Scenario 3:</b> Low emissions (NZE)	20%	Unlikely	1.35%	1,175	Very Significant	235	High	505	529	71	71	1,175
Financial impact and risk level for product group								185.27	193.89	25.85	25.85	430.87
								High	High	Medium	Medium	High

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

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










### FOCUS: The Investment Committee uses Internal Carbon Pricing on their investment decisions

Resulting from the changing policy environment and the assessment of ThaiBev’s vulnerability to carbon pricing across scenarios and timeframes, ThaiBev uses Internal Carbon Pricing (ICP) during the decision-making process to invest in low carbon technology to assess the potential impacts of carbon emissions on its operations, including risks and opportunities. The company also uses the ICP to comprehend how the carbon value of the company’s total carbon footprint relates to overall operating costs, profit margins, and turnover. The investment committee employed ICP as a shadow pricing to help in terms of CAPEX investment decisions in green projects and prevent CAPEX investment decisions in high-emission projects. (SR2024 p.31).

2020 – 2024	2025 – 2030
20 USD/tCO <sub>2</sub> e for investment of more than 10,000,000 THB per project	32 USD/tCO <sub>2</sub> e for project investment more than 5,000,000 THB

As Thailand is expected to introduce carbon pricing within the next two to three years, it is determined to be a key transition risk for ThaiBev. Hence, ThaiBev conducted further scenario analysis to quantify the financial impacts of carbon tax for 2030 (medium-term time horizon) across all ThaiBev operations against the STEPS, APS, and NZE scenarios. ThaiBev’s Risk Parameter and Risk Matrix was used to determine the size and scope of the financial impact related to carbon pricing. As part of the scenario analysis, the following assumptions were applied to each of the selected scenarios: no carbon tax within 2030 (STEPS), carbon tax at 5 USD/tCO<sub>2</sub>e within 2030 (APS), and carbon tax at 10-15 USD/tCO<sub>2</sub>e within 2030 (NZE). The overall results show that ThaiBev is expected to face a financial impact of 430.87 MTHB, which is assessed to be at a “high” risk level. Please see [Table 13](#) for the full results on the risk level and financial impact by BUs.

### Climate related regulation & policy monitoring over operating countries in 2025

<b>Thailand</b> Carbon Pricing Mechanism: ETS & Carbon Tax Status: Under Consideration Date: ETS - between 2025 - 2030 Carbon tax planned to implement in 2025		<b>Vietnam</b> Carbon Pricing Mechanism: ETS Status: Under Consideration Date: Pilot ETS-2027	
<b>Cambodia</b> Carbon Pricing Mechanism: ETS or Carbon Tax Status: No data Date: No data		<b>Myanmar</b> Carbon Pricing Mechanism: ETS or Carbon Tax Status: No data Date: No data	
<b>France</b> Carbon Pricing Mechanism: ETS Status: In Force		<b>United Kingdom</b> Carbon Pricing Mechanism: ETS Status: In Force	
<b>New Zealand</b> Carbon Pricing Mechanism: ETS Status: In Force			





# RISK MANAGEMENT

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

ThaiBev's holistic sustainability and risk management process involves systematically applying sustainability and risk management principles to identify, assess, report, and continuously monitor risks and opportunities at all levels-corporate, Product Group, and operational unit. This approach is an integral part of our management and decision-making processes, seamlessly incorporated into the corporate structure, operations, and workflows.

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

### 1) Understanding business context and setting business strategies and objectives. It consists of

- Analyzing and monitoring relevant factors and significant trends in the beverage and food industry including ESG requirements from all stakeholders to understand their potential impact on business operations.
- Establishing and reviewing business strategies and objectives of Product Group and Business Unit to ensure they align with ThaiBev Group's vision, mission, and sustainability strategies.

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

We employ various risk identification and assessment techniques to evaluate the likelihood and potential impacts on our business strategies and objectives.

These techniques include brainstorming sessions, surveys, scenario analysis, hazard analysis and critical control points, stress testing, sensitivity analysis, and risk heat mapping. By applying our Company's criteria to these likelihood and impact assessments, we can prioritize risks and determine appropriate treatment strategies, such as reducing, accepting, transferring, or avoiding them. The results of risk assessment at the Product Group and Business Unit level are consolidated into the corporate risk register, enabling us to report and monitor the status of risks as well as progress of our risk management efforts.

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

Our action plans are formulated to capitalize on opportunities to promote business growth as well as environmental and social sustainability. The aggregation of these action plans are kept within the Group's risk appetite level, while each level of management team regularly monitors progress of their implementation to control actual risk level.

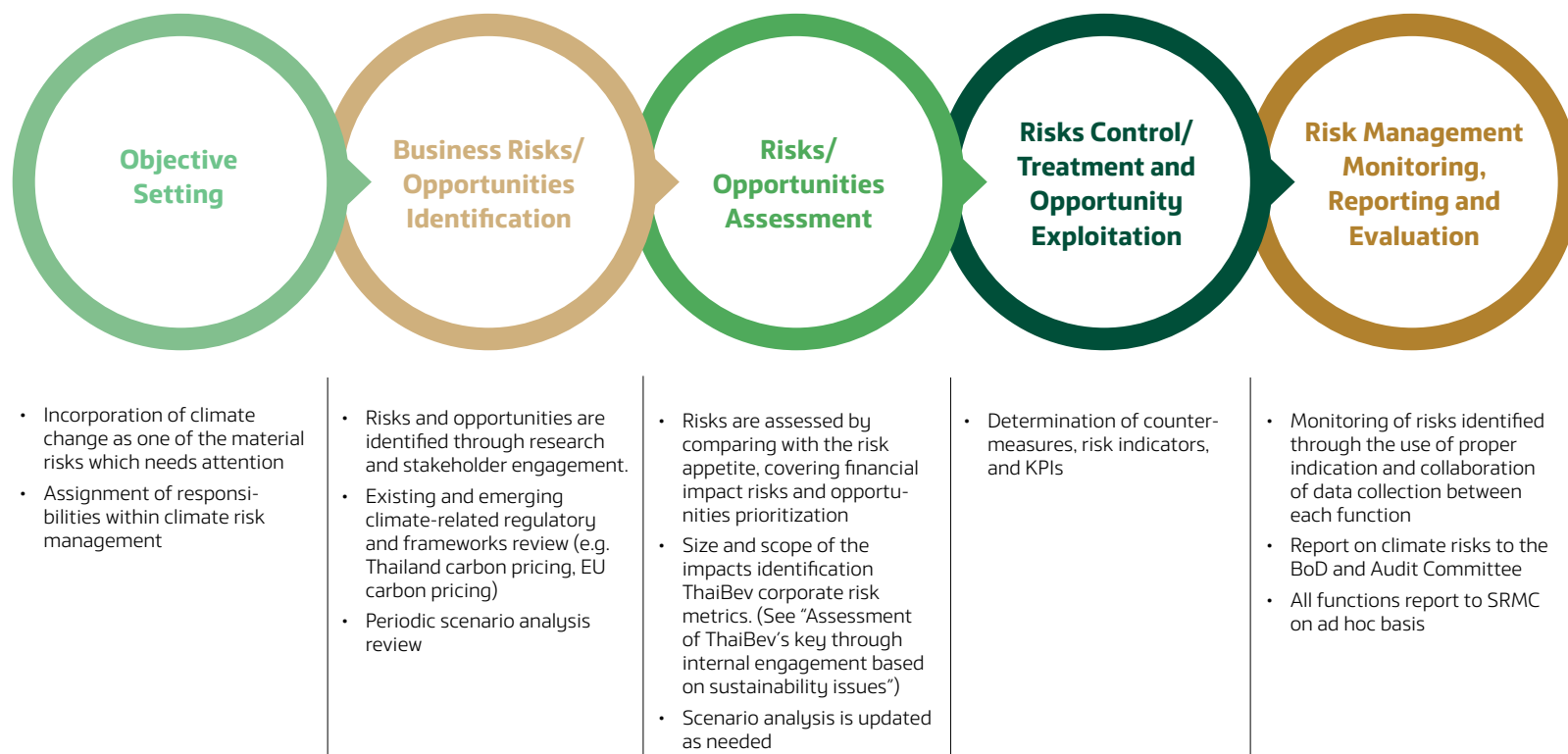
### 4) Monitoring, reporting, and evaluating progress and results

To foster continuous improvement, we regularly monitor and review the efficiency and effectiveness of our sustainability and risk management efforts. This includes reporting on the progress of our sustainability and risk management mechanism, ensuring that we can effectively manage sustainability initiatives and risks in a timely manner.

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 6](#).

**Figure 6: Risk Management Process Relevant to Climate-related Risks and Opportunities**

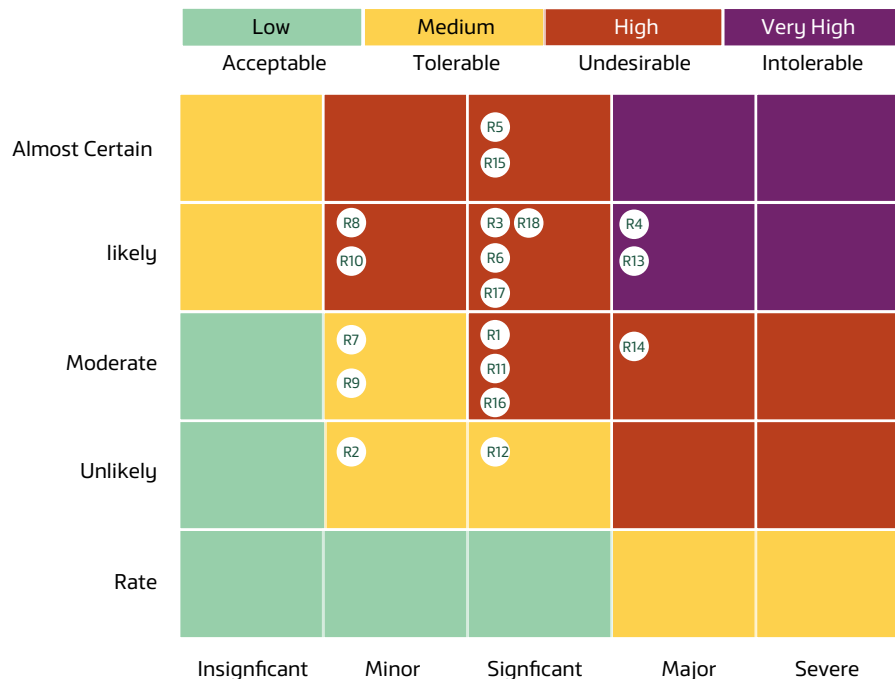


The identified climate-related risks and opportunities are prioritized via the following primary activities to develop effective risk management measures:

- 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 7). As part of the ranking, assessment, scoping, prioritization, and monitoring of identified risks and opportunities, regulatory risks are also considered. In line with the potential implementation of Climate Change Act: Thailand Climate Change Act will mandate regular climate-related assessments, which will inform decision-making and guide investments in operations. By integrating climate risk considerations in risks and opportunities assessment processes, ThaiBev aims to safeguard its business and ecosystems against the adverse effects of a changing climate and upcoming regulation.

**Figure 7: Risk Heat Map**



**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. Adverse Outcomes of AI Technologies Risk
17. Extreme Weather Events Risk
18. Natural Resource Shortages 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 2024.

## GHG Emission Reduction Targets

ThaiBev is committed to reducing greenhouse gas (GHG) emissions through various strategies such as energy efficiency, renewable energy, waste reduction, reduce methane emissions, increase fuel efficiency in transportation and logistics, and managing supply chain greenhouse gas emissions, while emission reduction initiatives in the reporting year can be found in ThaiBev’s Sustainability Report 2024. [Table 14](#) GHG Emissions Data.

### Science-based Targets Initiative



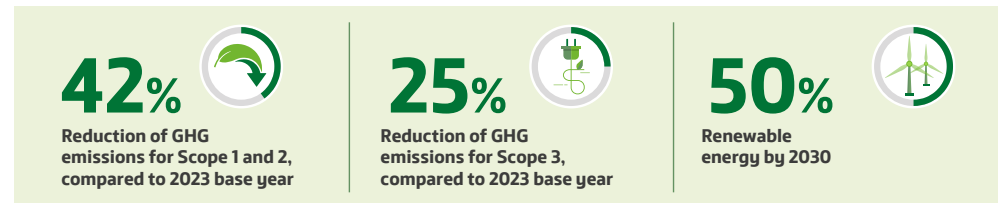
#### Science-based Targets Initiative

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% by 2030, covering both direct emissions (Scope 1) and indirect emissions from energy use (Scope 2). Additionally, the company aims to achieve a 25% 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.

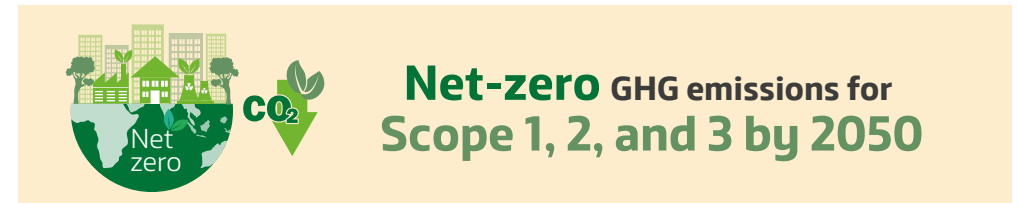
We aim to achieve our emissions reduction targets by collaborating with our suppliers and partners, working closely to implement new technologies and practices and collectively reduce emissions. Through these partnerships, we ensure that GHG emissions reduction is integrated throughout the value chain.

*Remark: Excluding F&N operations*

### 2030 Targets



### 2050 Targets



*Remark: Excluding F&N operations. ThaiBev will assess baselines and review targets to include F&N in fiscal year 2026*



## 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, 2, and 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 emissions in alignment with its sustainability strategy.

## GHG Emissions Data

**Table 14:** GHG Emissions Data

Performance	Unit	2021	2022	2023	2024
Scope 1 GHG emissions	Tonnes CO <sub>2</sub> e	905,538	932,740	934,040	888,524
Biogenic CO <sub>2</sub> emissions	Tonnes CO <sub>2</sub> e	422,576	456,368	441,776	640,284
GHG Scope 2 emission	Tonnes CO <sub>2</sub> e	276,009	322,792	273,667	257,371
GHG Scope 1 and Scope 2 emission	Tonnes CO <sub>2</sub> e	1,181,547	1,255,532	1,207,707	1,145,895
GHG Scope 3 emission	Tonnes CO <sub>2</sub> e	1,407,457	1,330,365	3,415,256	3,198,256

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 emissions do not include biogenic emissions as per GHG Protocol requirements to report biogenic emissions separately from the scopes.



## Climate-related Risk and Opportunity Metrics

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

Transition Risk and Opportunity	2021	2022	2023	2024
<b>Low Carbon Products</b>				
Number of products with Carbon Footprint of Product (CFP) certification	107	88	91	90
Number of products with Carbon Footprint Reduction (CFR) certification	38	47	53	51
<b>Renewable Energy</b>				
<b>Target:</b> To increase the share of renewable energy in energy consumption to 50% by 2030				
Renewable energy generation (MWh)	753,034	994,007	875,506	1,349,593
% of Renewable Energy Consumption out of Total Energy Consumption	28.4%	33.4%	30.8%	42.6%

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

Alcoholic Beverages	2021	2022	2023	2024
Volume of products sold (Millions of hectoliters (Mhl))	25.09	27.62	27.16	26.64
Number of production facilities	30	30	41	43
Total fleet road miles traveled (Miles)	129,052,227	131,885,836	122,428,268	124,678,400
<b>Restaurants</b>				
Number of Restaurants - Company-Owned	297	314	335	337
Number of Restaurants - Franchise	382	426	460	502
Number of Employees - Company-Owned	3,848	5,700	6,523	6,436
Number of Employees - Franchise	5,820	7,325	8,155	9,153
<b>Non-alcoholic Beverages</b>				
Volume of products sold (Millions of hectoliters (Mhl))	13.10	14.70	16.45	16.33
Number of production facilities	11	11	11	11
Total fleet road miles traveled (Miles)	17,392,719	17,150,506	25,575,480	31,111,850



## Methodology

### Reporting Coverage

The data in this report, which pertains to ThaiBev Group in Thailand and abroad, was taken from the fiscal year 2024, dating October 2023 to September 2024. Data were collected from 55 production sites, including 29 spirits production facilities (19 distilleries in Thailand, 5 distilleries and 1 bottling plant in Scotland, 1 distillery and 1 bottling plant in Myanmar, 1 distillery in France, and 1 distillery in New Zealand), 14 breweries (3 in Thailand, 11 in Vietnam, excluding 15 associated breweries in Vietnam), 11 non-alcoholic beverage production facilities in Thailand, 1 food production facility in Thailand, and 11 distribution centers in Thailand.

*Remark: Excluding F&N operations.*

### 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 (SF6)
- 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 emissions.

ThaiBev's operating plants measure ozone-depleting substances, CO, NOx, and SOx, 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 it has expanded its GHG accounting to all material Scope 3 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-zero 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 2024.



## Emission Factors

For Scope 1 and 2, 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 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 180-181 of ThaiBev's Sustainability Report 2024)

## 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) 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 (see page 31 of ThaiBev's Sustainability Report 2024)

## 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%. 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.