

Charoen Pokphand Group

# Climate-related Financial Disclosure (TCFD) Report 2023

**TCFD** | TASK FORCE ON  
CLIMATE-RELATED  
FINANCIAL  
DISCLOSURES



For a Better  
**Tomorrow**

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# 1. INTRODUCTION



Charoen Pokphand Group is proud to present our third annual TCFD report, which reflects our ongoing work to manage climate risks and opportunities, as well as our adherence to international standards in addressing climate change and preventing future crises. The Group is firmly committed to our responsibility to support the transition to a sustainable economy with net-zero greenhouse gas emissions, while also recognizing the ongoing and increasing energy needs of the global economy. The Group will continue to adhere to the fundamental risk management principles that underpin our business and work together with our clients to reduce greenhouse gas emissions and provide the necessary risk transfer capacity to support the transition to a green and sustainable society.

Charoen Pokphand Group actively evaluates climate disclosure recommendations across various risk and opportunity dimensions to identify emerging trends. In preparing this year's report, we have reviewed the IFRS requirements for climate-related disclosures, SASB standards, and the Net Zero 2050 target-setting guidelines. Although we have concerns about the substance and process regarding the proliferation of various climate disclosure regimes, we have endeavored to include relevant and applicable data in accordance with these standards.

## About Charoen Pokphand Group

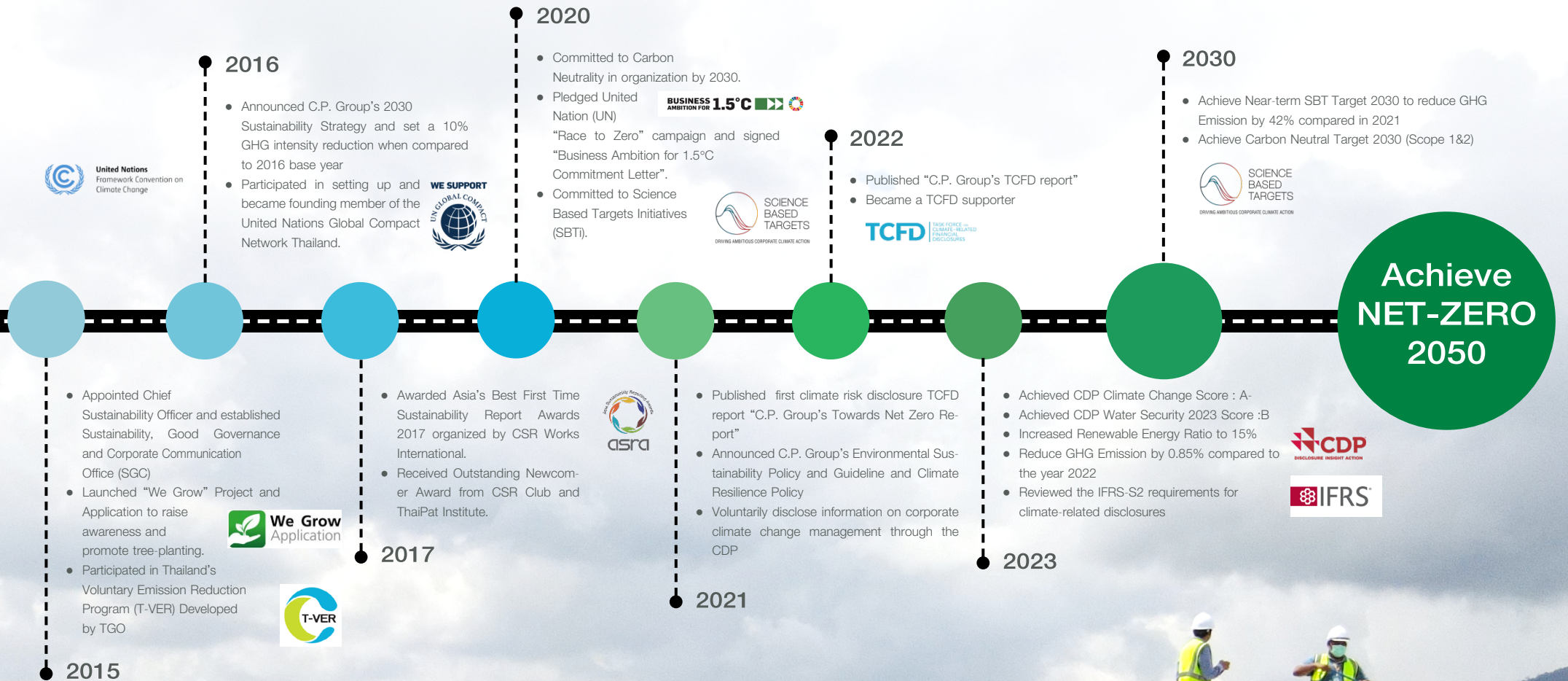
### 14 Business Groups in 21 countries Join Forces to Drive Goals into Action



**Charoen Pokphand Group** operates a diverse range of businesses including Agro-industry and Food, Retail and Distribution, Media and Telecommunications, E-Commerce and Digital, Property Development, Automotive and Industrial Products, Pharmaceuticals, and Finance and Banking. By leveraging the strengths of each sector, the Group aims to sustainably maximize benefits and deliver significant value to the country, its people, and the Company. Additionally, the Group conducts comprehensive risk assessments across the value chain to effectively manage risks, with a strong focus on sustainability.

# C.P. Group Climate Resilience Journey

Charoen Pokphand Group has set a plan to become a net zero greenhouse gas emission organization in 2050. The focus is on energy and resource management to reduce greenhouse gas emissions and improve energy efficiency to minimize environmental impact. This includes the use of clean energy and green technology, as well as promoting cooperation among stakeholders to sustainably reduce greenhouse gas emissions.

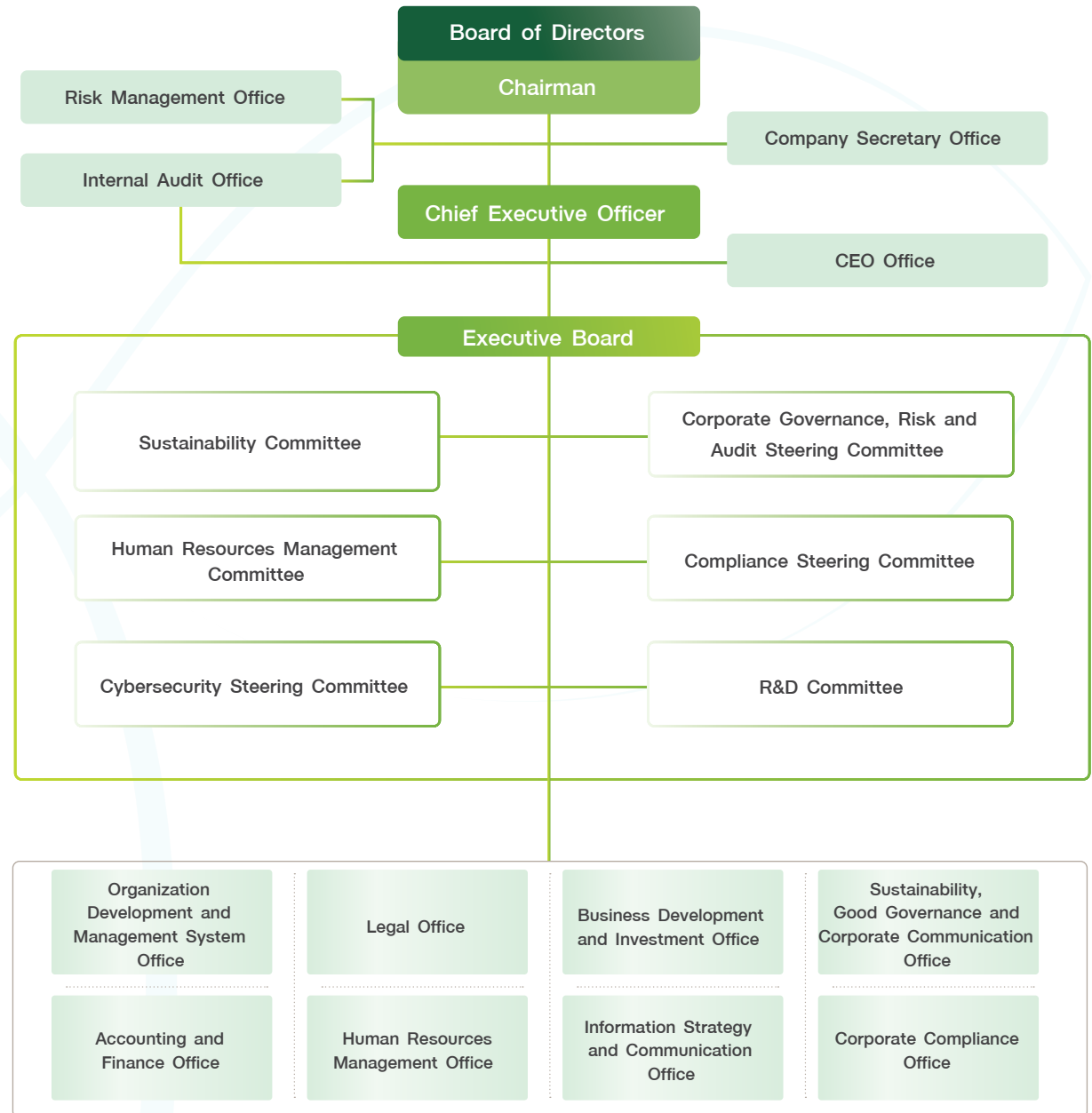


# 2. GOVERNANCE

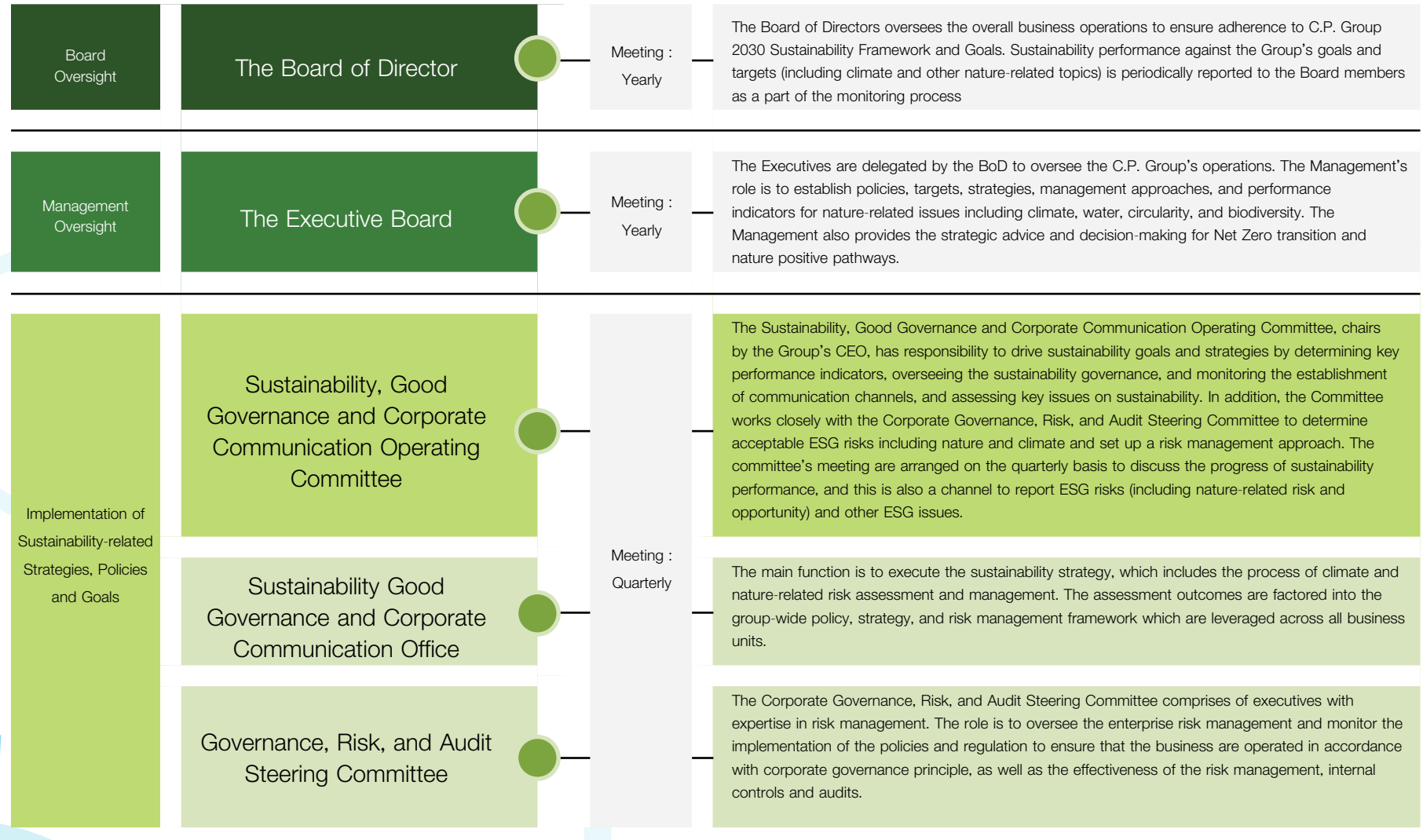
## GOVERNANCE STRUCTURE

Charoen Pokphand Group's governance structure consists of the Board of Directors (BoD), leads by the Chairman, and the Executive Board, which is chaired by the Chief Executive Officer (CEO). C.P. Group has established a Sustainability, Committee and Corporate Governance Risk and Audit Steering Committee. These two committees play a vital role in managing nature-related risks and opportunities and driving the implementation of nature climate strategies in all business units.

Under the Executive Board, there is the working level which comprises eight functions, two of which are Sustainability, Good Governance, and Corporate Communication (SGC) Office and Corporate Compliance Office. These two offices are the main functions that implement the Charoen Pokphand Group sustainability strategies and ensure that the nature/climate related risks are managed appropriately under the risk management framework model.



## Role and Responsibility



## Governance Management Approach

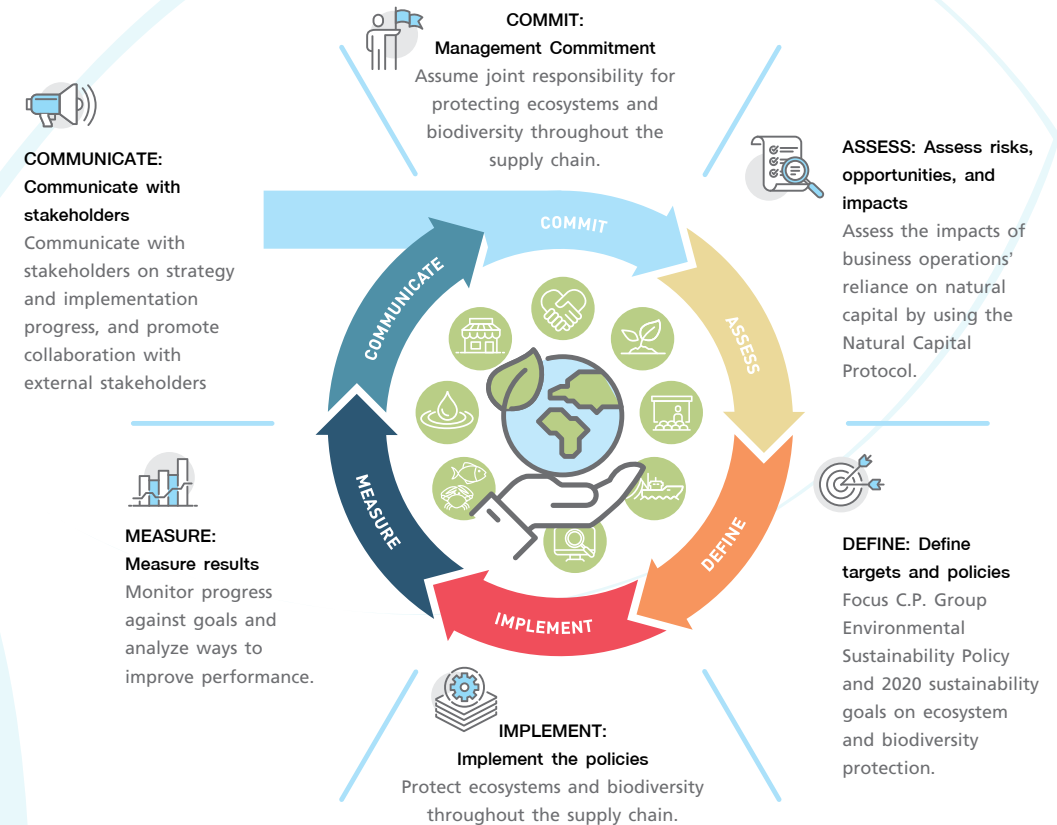
In a complex business environment characterized by rapid changes and uncertainties, Charoen Pokphand Group aims to drive corporate governance systematically across the Group. This approach integrates ecosystem and biodiversity protection into the company's supply chain management.

We have established comprehensive, group-wide policies and guidelines for protecting, preserving, and enhancing natural capital and ecosystem services. These policies and guidelines serve as a framework for all business units to implement across our entire value chain. Management has joint responsibility for protecting ecosystems and biodiversity throughout the supply chain.

The Group also assesses nature-related dependencies, impacts, risks, and opportunities according to the recommendations of the Task Force on Nature-related Financial Disclosures (TNFD) and the Task Force on Climate-related Financial Disclosures (TCFD). Additionally, we develop comprehensive risk management plans that address physical, technological, market, policy, legal, and reputational risks.

The climate targets, goal, and risk management are set and communicated to our employees and other stakeholders through various channels. The implementation of action plan is depended on the the dependency and impact of the business on the nature capital and ecosystem services. The nature-related performances are monitored and reported through the various channels including Sustainability Report, corporate website, the Communication on Progress to the UN Global Compact, and CDP's disclosure

In addition, building capacity and raise awareness for nature actions, the appropriate trainings are provided to employees and stakeholders. programs





## Alignment With TCFD (According with IFRS S2)

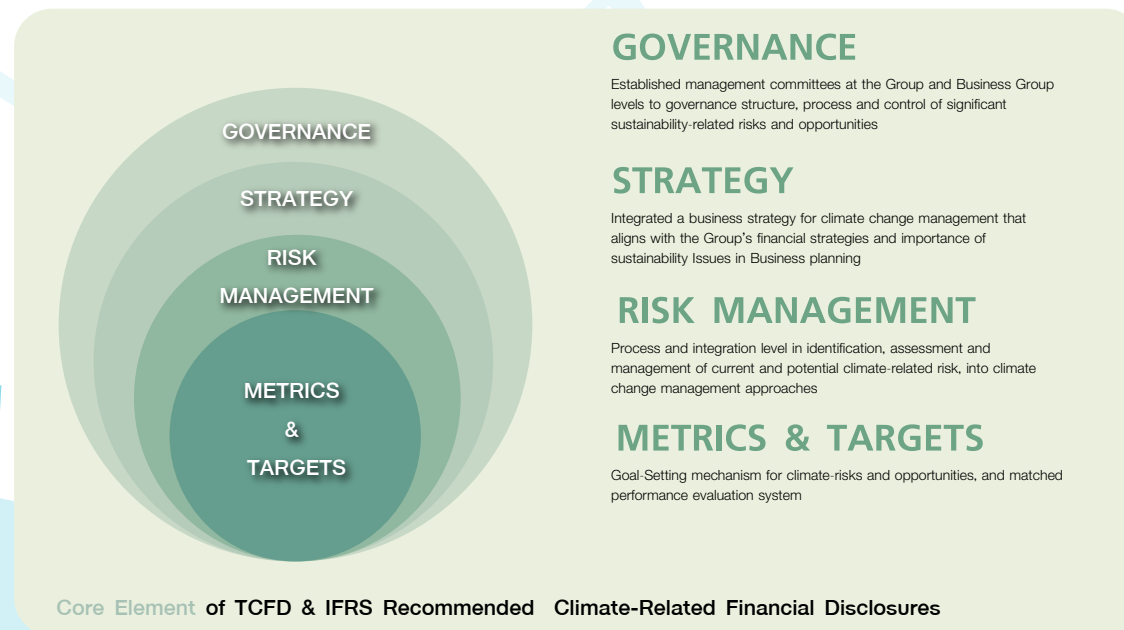
Charoen Pokphand Group has adopted a sustainability framework to guide its operations. As part of this initiative, the Sustainability, Good Governance, and Corporate Communication Office (SGC Office) and the Sustainability Committee have been established. These entities are tasked with developing management strategies, overseeing operations, verifying performance, and ensuring that the Group’s sustainability efforts align with its objectives and vision.

Furthermore, the Group communicates its efforts in managing and mitigating the impact of climate change to stakeholders through multiple channels. These include the Sustainability Report, the Communication on Progress submitted to the UN Global Compact, and participation in CDP’s climate change disclosure program.

Using four core elements: Governance, Strategy, Risk management, and Metrics & Targets. The TCFD & ISSB assessment demonstrates how an organization addresses climate-related risks and opportunities, including strategies for mitigating risks and capitalizing on opportunities.

The approach included:

- Conducting stakeholder interviews and surveys with key personnel from across the business and corporate functions to uncover and understand S&P Global’s material climate risks and opportunities.
- Performing a physical and transitional risk assessment to quantify the financial and non-financial impacts associated with a low-carbon transition, including technology, reputation, and policy risks, as well as opportunities from product innovation.



### Key elements of TCFD ( According with IFRS S2)

We outline the disclosure of material information regarding climate-related risks and opportunities, including physical risks (such as flood risk), transition risks (such as regulatory change), and climate-related opportunities (such as new technologies).

We improve processes for the measurement and disclosure of Scope 3 emissions through the guidance of IFR-S2.

Includes TCFD recommendations and SASB standards’ climate-related industry-specific topics and metrics as illustrative guidance.

# 3. STRATEGY

## Sustainability Strategy Framework

Charoen Pokphand Group has adopted a sustainability framework to guide its operations. Our strategies and sustainable goals remain robust, we regularly review these strategies and objectives. This ensures that the effectiveness of our strategies and operations in terms of sustainability can adequately respond to global trends and the needs of stakeholders. We have solicited feedback and concerns from all stakeholder groups, including organizational visions and strategies, for analysis of organizational risks and potential future risks. We have also conducted assessments of key sustainability issues to help us identify effective current and future operational directions and strategies more efficiently.



To be a leading tech and innovative conglomerate, providing food for body and mind that creates shared value and brings health and well-being for all

### Three-Benefit Principle

Sufficiency Economy Philosophy	C.P. Excellence Management Approach	The 10 UNGC Principles 17 UN SDGs & UNGP	Regulations and Standards
<b>Heart: Living Right</b>	<b>Health: Living Well</b>	<b>Home: Living Together</b>	
CORPORATE GOVERNANCE	HEALTH & WELL-BEING	CLIMATE RESILIENCE	
HUMAN RIGHTS & LABOR PRACTICES	SOCIAL IMPACT & ECONOMIC CONTRIBUTION	CIRCULAR ECONOMY	
EDUCATION & INEQUALITY REDUCTION	FOOD SECURITY & ACCESS TO NUTRITION	WATER STEWARDSHIP	
LEADERSHIP & HUMAN CAPITAL DEVELOPMENT	INNOVATION	ECOSYSTEM & BIODIVERSITY PROTECTION	
CYBER SECURITY & DATA PROTECTION	STAKEHOLDER ENGAGEMENT	RESPONSIBLE SUPPLY CHAIN MANAGEMENT	

Enabled by Partnerships, Capability, and Culture of Sustainability

## Climate Resilience Strategy

Charoen Pokphand Group has established a plan to become a net-zero greenhouse gas emissions organization. The Group prioritizes energy management and resource optimization to reduce greenhouse gas emissions and enhances energy efficiency to minimize environmental impacts by selecting clean energy and green technology. Additionally, the Group promotes sustainable collaboration with stakeholders to achieve long-term greenhouse gas reduction goals.



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### SUSTAINABLE ENERGY

- Renewable Energy
- Energy Efficiency Improvement
- Renewable Energy Procurement



### SUSTAINABLE OPERATIONS

- Green Logistics
- Zero Waste-to-Landfill
- Resource Efficiency
- Green Cooling



### SUSTAINABLE AGRICULTURE

- Low Carbon Agricultural Commodity
- Solar, Wind, and Bioenergy
- Productivity Improvement
- Farmland Carbon Storage



### SUSTAINABLE CONSUMPTION

- Low-Carbon Products & Services



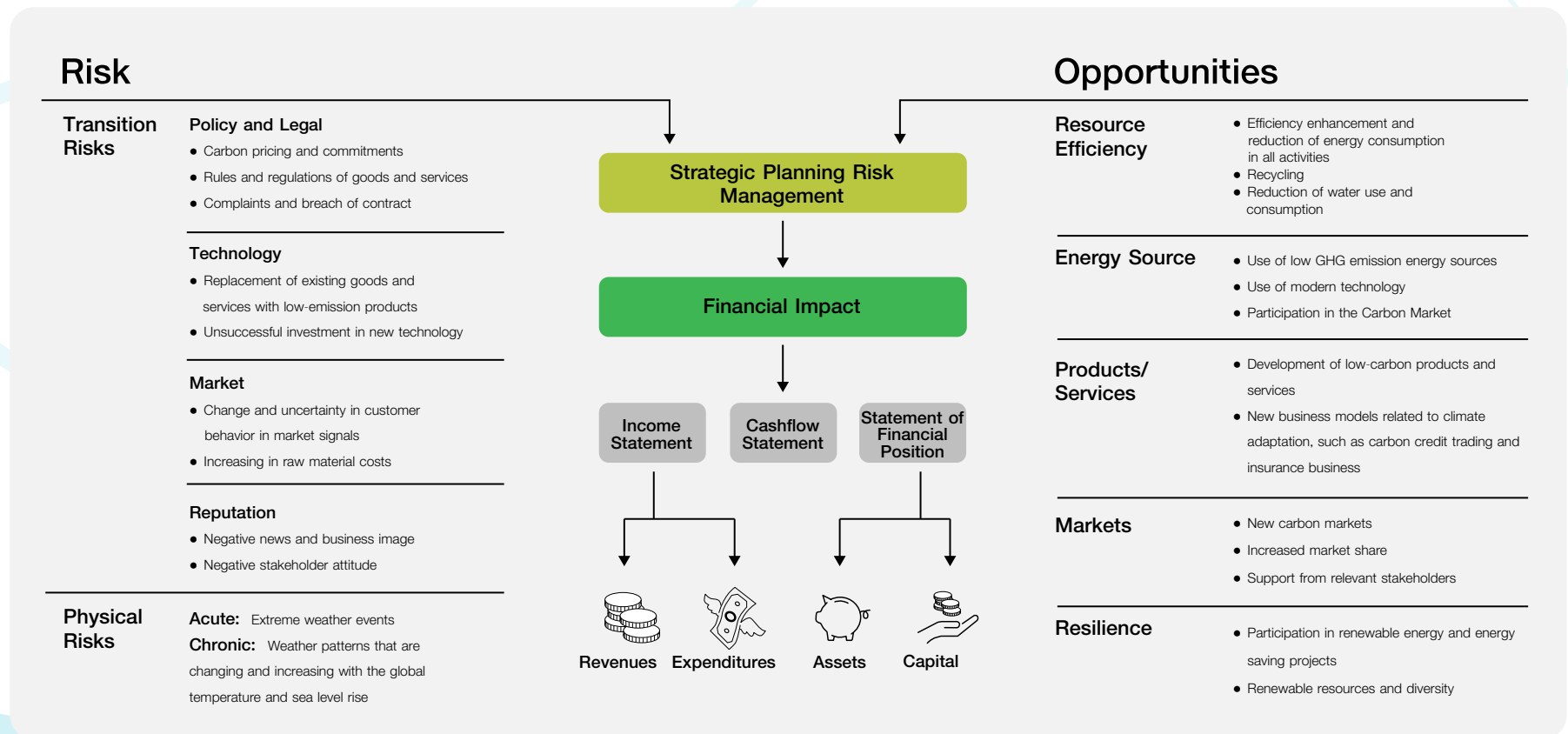
### CARBON REMOVAL

- Nature-based Solutions
- Carbon Capture, Utilization & Storage Technologies

# C.P. GROUP Climate-related Risks and Opportunities

The urgency of climate change is a top priority for Charoen Pokphand Group as climate change can impact rainfall and temperature, leading to instability in the production and supply of raw materials for the food industry. As a result, the Group has taken a comprehensive approach to ensure business continuity. Over the past few years, the Group has transformed its operations and production processes to reduce energy consumption and greenhouse gas emissions, preparing for future uncertainties.

Given the uncertainties of climate change and the complexities of business operations, the Group aims to align all its companies in a unified direction by setting common goals and management systems, especially concerning climate change management. This approach extends across the entire value chain. Therefore, the Group has conducted a risk and opportunity assessment related to climate change based on the TCFD reporting framework, identifying preventive measures for potential risks and opportunities for sustainable growth.



# Climate Scenarios

The assessment period is developed in accordance with the Group’s Sustainability Framework, Climate Risk Assessment, and Risk Management to analyze the organization’s risks and opportunities on an annual basis or whenever substantial environmental / climate-related developments occur.

- short-term: 3 to 5 years
- medium-term: 10 to 15 years,
- long-term: more than 30 years.

Risks		Period		
		Short Term	Medium Term	Long Term
Transition Risks	Policy and Legal		●	
	Technology	●		
	Market		●	
	Reputation	●		
Physical Risks	Acute	●		
	Chronic		●	

Opportunities		Short Term	Medium Term	Long Term
Products/Services		●		
Markets			●	
Resilience		●		

By adopting the recommendations and guidelines of the TCFD, and using scenarios projected by internationally accepted standards such as the IEA, NGFS, and IPCC SSP (SSP1, SSP2, SSP3, SSP5), Charoen Pokphand Group has analyzed a variety of future scenarios. The physical risk assessment model, using an assessment framework as the basis of our physical risk analysis, allows us to determine the likelihood of potential damage in our business operations based on key physical factors. We have effectively implemented measures to mitigate the risks of future climate change.

## Transition Risks



### IEA Scenarios

- International Energy Agency (IEA) provides a variety of pricing information, including carbon price in the World Energy Outlook (WEO)
- Net Zero Emission by 2050 Scenario (NZE) , Announced Pledges Scenario) scenario assuming net zero emission and average temperature rise of 1.5oC or less 2050

## Physical Risks



### IPCC SSP Scenarios

- The impact of changes in the physical environment on products and services based on RCP12) scenarios (RCP4.5, RCP8.5). Physical risk assessment was carried out based on the SSP scenarios (SSP1, SSP2, SSP3, and SSP5) from the IPCC’s Sixth Assessment Report, to allow for a broader range of social and economic changes to be accounted for.

# Materiality Assessment

We considered transition risks, physical risks, and opportunity factors proposed under TCFD recommendations, reflecting trends and climate change-related policies. The climate-related factors subject to materiality assessment selected by the Group can be classified into transition risk factors, physical risk factors, and opportunity factors.

The Group intends to continue assessing various potential issues before they arise, including the factors identified in this year’s materiality assessment. This will help us inspect our readiness and response posture, and systematically manage key factors that need consideration to achieve Net Zero by 2050.

Transition Risks	
<b>Policy and Legal</b>	<ul style="list-style-type: none"> <li>• Carbon pricing mechanisms, Carbon Tax, Cap-and-trade</li> <li>• Mandates on and regulation of existing products and services</li> <li>• Increasingly rigorous actions by national government to reduce GHG emissions</li> <li>• Increased costs associated with carbon-intensive products and minimizing embodied carbon in the supply chain, especially if commodities are sourced overseas</li> <li>• Increased expenditure associated with the use of non-renewable energy</li> </ul>
<b>Technology</b>	<ul style="list-style-type: none"> <li>• Cost to transition to lower emission technologies</li> <li>• Unsuccessful investment in new technologies</li> <li>• New technologies that disrupt markets</li> </ul>
<b>Market</b>	<ul style="list-style-type: none"> <li>• Changing customers behavior towards low carbon products</li> <li>• Uncertainty on market trend</li> <li>• Increased demand for energy efficient, lower-carbon products</li> <li>• Reduced market demand for carbon-intensive products and services</li> </ul>
<b>Reputation</b>	<ul style="list-style-type: none"> <li>• Growing expectations from stakeholders on climate responsibility and awareness of climate issues.</li> <li>• Failure to meet stakeholders and consumers needs</li> </ul>

Physical Risks	
<b>Acute</b>	<ul style="list-style-type: none"> <li>• Increased severity and frequency of extreme weather events such as floods, droughts, cyclones, higher temperatures, and changes in precipitation</li> <li>• Increased likelihood and severity of wildfires</li> <li>• Operational disruption</li> </ul>
<b>Chronic</b>	<ul style="list-style-type: none"> <li>• Long-term shifts in climate patterns</li> <li>• Changes in precipitation patterns and extreme variability in weather patterns</li> <li>• Higher frequency of severe weather events</li> <li>• Increasing extreme temperature, hot days, sea level rise, coastal erosion, water scarcity, drought, and floods</li> <li>• Increased spread of infectious diseases</li> </ul>

Opportunities	
<b>Resource Efficiency</b>	<ul style="list-style-type: none"> <li>• Use of more efficient production and distribution processes and more sustainable raw material</li> <li>• Use of more efficient mode of transport</li> <li>• Reduce waste and use circular economy solutions</li> <li>• Reduced water consumption</li> <li>• Improve resource and energy efficiency</li> </ul>
<b>Energy Source</b>	<ul style="list-style-type: none"> <li>• Use of low emission energy sources such as solar, wind, hydro or biofuels</li> <li>• Use of new low-emission technologies</li> <li>• Participation in carbon markets, and carbon reduction mechanisms</li> </ul>
<b>Products And Services</b>	<ul style="list-style-type: none"> <li>• Development of new low-emission products and services</li> <li>• Shift in consumer preferences</li> <li>• Development of new products and services through innovation and R&amp;D</li> </ul>
<b>Markets</b>	<ul style="list-style-type: none"> <li>• Organizations that proactively seek opportunities in new markets may be able to diversify their activities and better position themselves for the transition to a lower carbon economy.</li> </ul>
<b>Resilience</b>	<ul style="list-style-type: none"> <li>• Organization capability to respond to transition risks and physical risks</li> <li>• Participate in renewable energy programs</li> <li>• Adopt energy efficiency measure</li> <li>• Join climate mitigation and adaptation projects and activities</li> </ul>

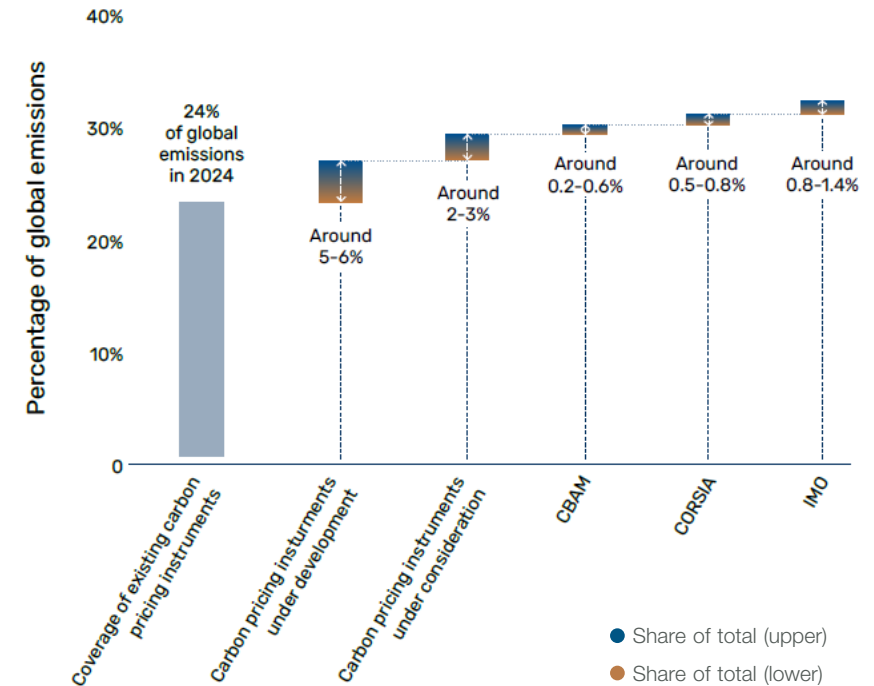
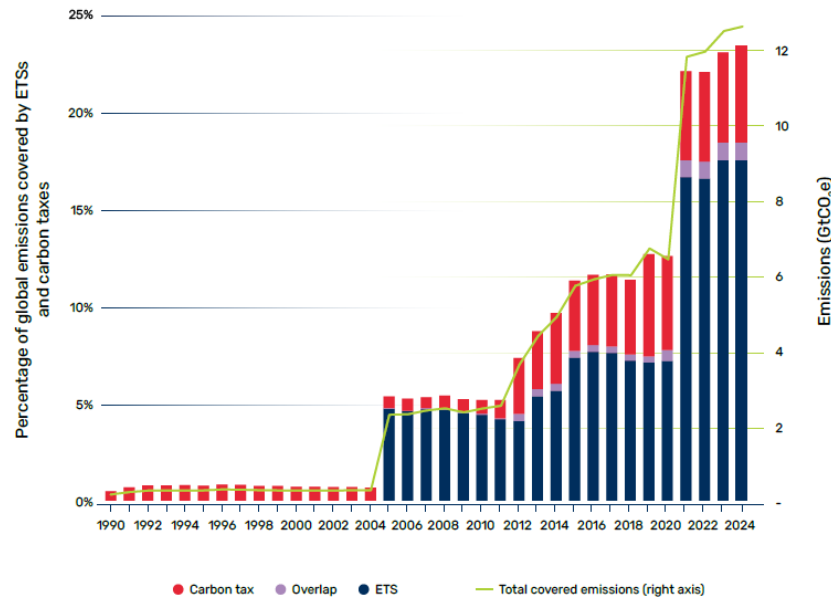
# Carbon Pricing

## ETSs and Carbon Tax in Global Markets

ETSs and carbon taxes in operation covered almost 13 Gt CO<sub>2</sub>e, around 24% of global GHG emissions. While newly implemented and expanded carbon pricing increases the share of global covered emissions, this effect can be reduced, or potentially reversed, as carbon pricing instruments deliver on their objective of reducing emissions. The presence of a successful carbon pricing policy will reduce emissions, which results in a declining share of globally covered emissions.

Carbon taxes and ETS currently considered would boost global coverage but are unlikely to exceed 30% in the short-term. ETSs currently under consideration and development in Brazil, India and Türkiye could cover approximately 3% of global GHG emissions based on current emissions profiles and depending on the final converge rule. Therefore, even with the implementation of carbon pricing in these large and strategically important economies, global emissions coverage may remain under 30% in the near future.

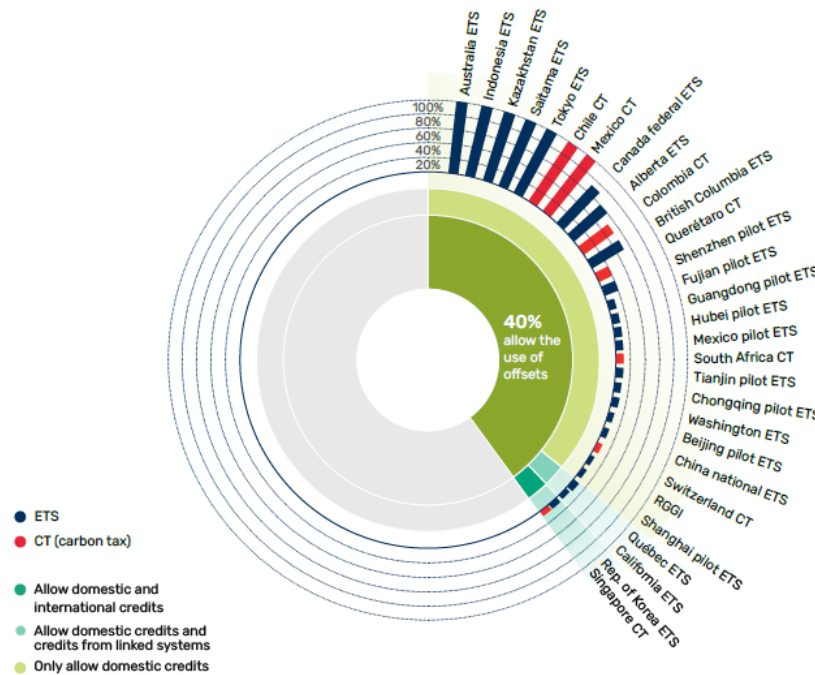
The commencement of the EU Carbon Border Adjustment Mechanism represents a significant shift in the global carbon pricing landscape, adding a strong driver for carbon pricing. The EU CBAM is designed to apply a direct carbon price on imports that is equivalent to the EU ETS. This is intended to level the carbon pricing playing field between domestic producers covered by the ETS and producers in countries that export to the EU. It does this by effectively applying a carbon price to emissions embedded in imports of covered goods.



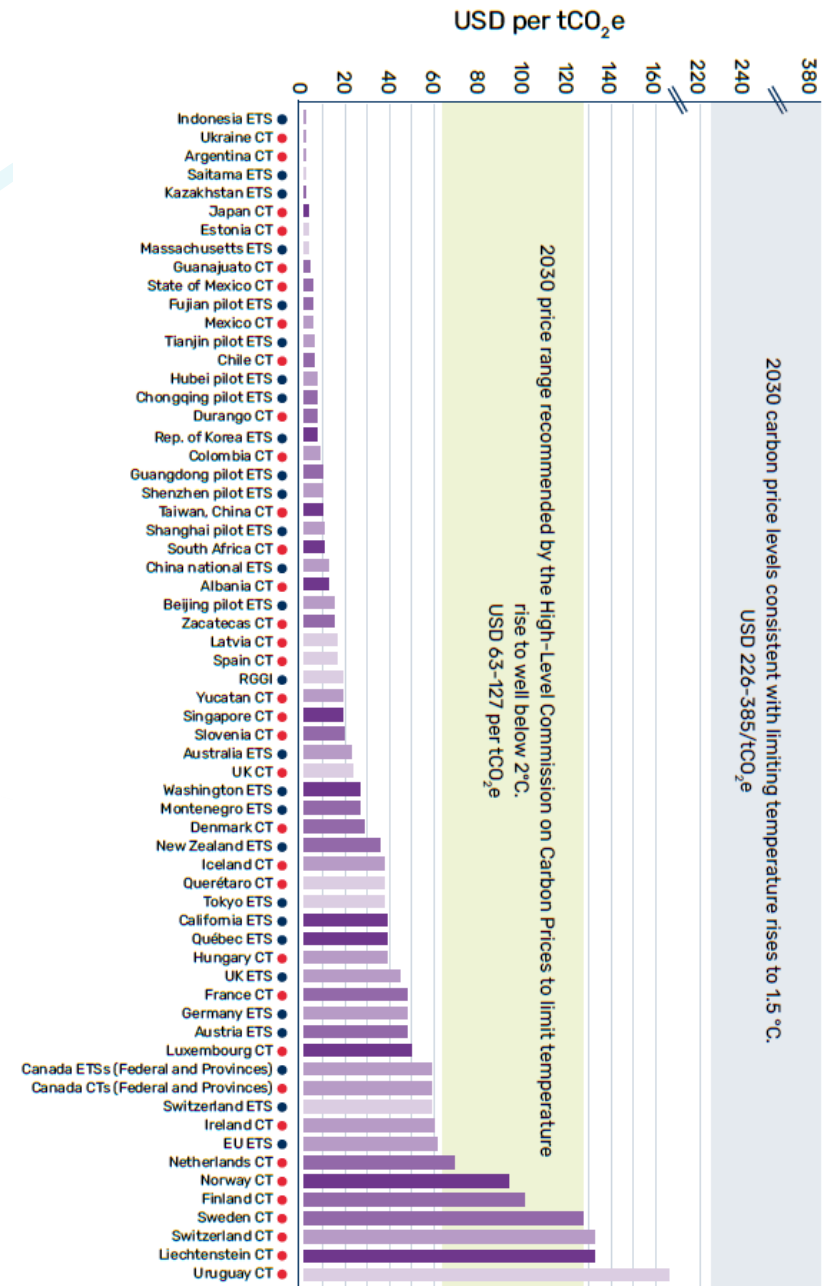
# Carbon Pricing in ETSs and Carbon Taxes

In the countries allow regulated to use carbon credits toward their GHG obligations to increase flexibility, lower compliance costs, and extend the carbon price signal to uncovered sectors. Currently, around 40% of carbon pricing instruments in operation (7 carbon taxes and 23 ETSs) allow for the use of carbon credits to offset liabilities. Carbon taxes permitting the use of domestically generated carbon credits to offset tax liabilities include Chile, Colombia and South Africa. Among ETSs, California, Mexico and the Republic of Korea allow for the limited use of carbon credits from specified crediting mechanisms. More ambition in ETSs and carbon taxes is necessary to attain a 1.5oC pathway. Carbon Prices concluded that carbon prices needed to be USD 40-80/tCO<sub>2</sub>e in 2020 and reach USD 50-100/tCO<sub>2</sub>e by 2030 to be on track to limit temperature rises to well below 2oC. Further, IPCC estimates that the marginal abatement cost to limit warming to 1.5oC is USD 170-290 per tCO<sub>2</sub>e. Coverage with carbon taxes and ETSs has been continuously increasing and new initiatives are being developed.

## Carbon Credit uses in ETSs and Carbon Taxes



Prices and coverage across ETSs and carbon taxes, as of April 1, 2024





## Carbon Pricing Scenario

Carbon pricing risk is dependent on both the total amount of GHG emission from a location and potential carbon price increases at that location. S&P Global’s operations in India are exposed to the greatest carbon pricing risk, followed by the United States, mainly due to the size of the Company’s carbon footprint at facilities located in these two countries where carbon prices would need to increase to meet the goals of the Paris Agreement.

In 2023, Charoen Pokphand Group adopted internal carbon pricing (ICP) to set a shadow price to support assessments and make decisions to invest in low-carbon projects at an initial phase.

**26**  
(\$/TonCO<sub>2</sub>e)



### SHADOW PRICE

Shadow price valuation in the development of energy and renewable energy projects to reduce Charoen Pokphand Group’s greenhouse gas emissions.

### Average carbon Price Risk Across Operating Geographies (\$/TonCO<sub>2</sub>e)

Scenario	Low	Moderate	High
	(Embedded NDCs 2-3°C alignment)	(2°C alignment)	(Below 1.5°C alignment)
2025	\$11	\$40	\$395
2030	\$17	\$71	\$907
2040	\$22	\$103	\$2,031
2050	\$17	\$111	\$3,267

# 4. CLIMATE RISK MANAGEMENT

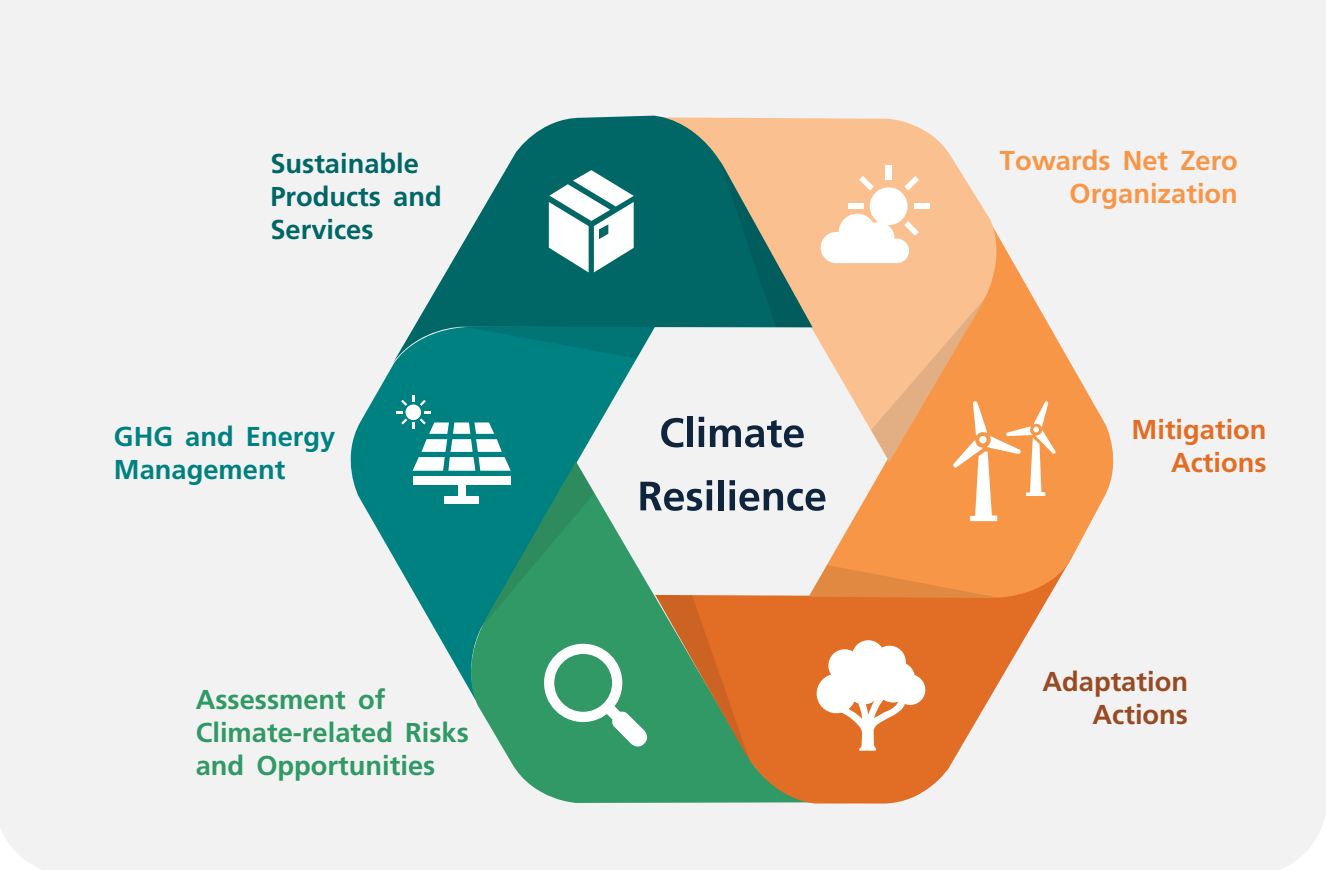
Charoen Pokphand Group has identified the short-, medium-, and long-term climate-related risks and opportunities. It has also assessed the probability and impacts of those risks and opportunities on the Group. These climate-related issues have been integrated into C.P. Group's Sustainability Framework and Climate Change Management to increase the Group's resilience to climate change.

C.P. Group has a framework for managing climate change that covers our entire supply chain. We determine policies and targets that encompass energy efficiency, renewable energy use, waste management, and reductions in plastic packaging. From the Group's climate risks and opportunities assessment, we develop comprehensive risk management plans as well as establish [C.P. Group Climate Resilience Management Approaches](#).

In addition, the Group communicates our performance on climate change impact management and mitigation to stakeholders through various channels including our Sustainability Report, the Communication on Progress to the UN Global Compact, and CDP's climate change disclosure system.



## C.P. GROUP Climate Resilience Management Approaches



## Measuring Climate-related Risk

The evaluation of financial risk associated with climate change introduces crucial concepts to risk management. These ideas play a significant role in assessing exposure to climate-related risks and quantifying their financial impact. The primary concepts relevant to C.P. Group are outlined.

C.P. Group employs various processes and tools for measuring climate risk. These include risk scoring, scenario analysis, sensitivity analysis, and climate value at risk, which are further analyzed to more accurately assess climate change risks

### Physical and transition risk measurement

Physical and transition risks are typically viewed and assessed separately. However, several aspects related to climate change are increasing the likelihood that these risks may develop interdependently, necessitating joint consideration.

### Exposure relevant risks

We focus climate-related financial risks across various business activities. To evaluate the impact of climate risk drivers and identify the most pertinent levels for risk assessment, we need to conduct thorough estimations accordingly.

### Top-down and bottom-up approaches

Top-down approaches begin by assessing risk at a general, aggregated level and then distribute this overall risk measure to component parts. In contrast, bottom-up approaches assess risk at the component level first, then aggregate these individual risk measures to form a consolidated view of risk.

### Risk mitigation and risk reduction

We evaluate how to measure climate-related financial risk, estimate the impact of potential risk mitigation, and determine the extent to which mitigants can moderate or offset risk-taking. Differentiating between net and gross exposures can help reduce the impact of both risks and mitigation actions.

### Climate risk rating

A climate risk score assesses the climate risk exposure of assets, companies, portfolios, or even countries. We combine a risk classification scheme with a set of grading criteria to assign a quality score to exposures based on this classification. The grading criteria used in these approaches can be based on both qualitative and quantitative factors.

### Scenario analysis

Climate scenario analysis is a forward-looking projection of risk outcomes that is typically conducted in four steps:

- i) Identify physical and transition risk scenarios
- ii) Evaluate the impacts of scenario to financial risks
- iii) Assess counterparty and sector sensitivities to those risks
- iv) Extrapolate the impacts of those sensitivities to calculate an aggregate measure of exposure and potential losses

### Sensitivity analysis

Sensitivity analysis is a specific subset of scenario analysis used to evaluate the effect of a particular variable on economic outcomes. It is often employed in transition risk evaluation to assess the potential effects of specific climate-related policies on economic outcomes, especially in research settings to evaluate the impact of implementation projects.

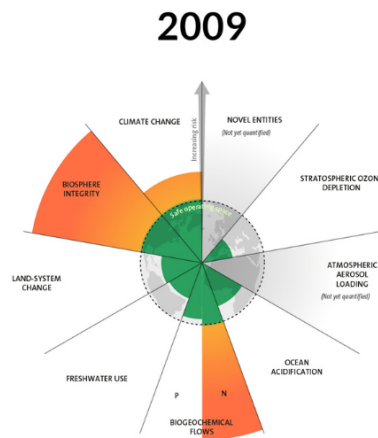
### Climate value-at-risk

Climate value-at-risk (VaR) assessments use the traditional VaR framework to evaluate the financial impacts of climate change. These forward-looking, portfolio-level metrics quantify the effects of climate change on the value of financial assets over a specified time horizon and probability, under particular climate scenarios.

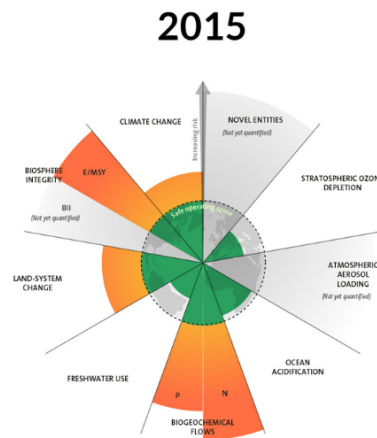
## The Planetary Boundaries Concept

From the concept of planetary boundaries, which proposes a set of nine Earth boundaries within which mankind might evolve and prosper across many human lifetimes. Crossing these thresholds raises the likelihood of creating rapid and permanent environmental change. Severe changes may not occur quickly, but these boundaries represent key tipping points that raise dangers for both humans and the ecosystems of which we are a part.

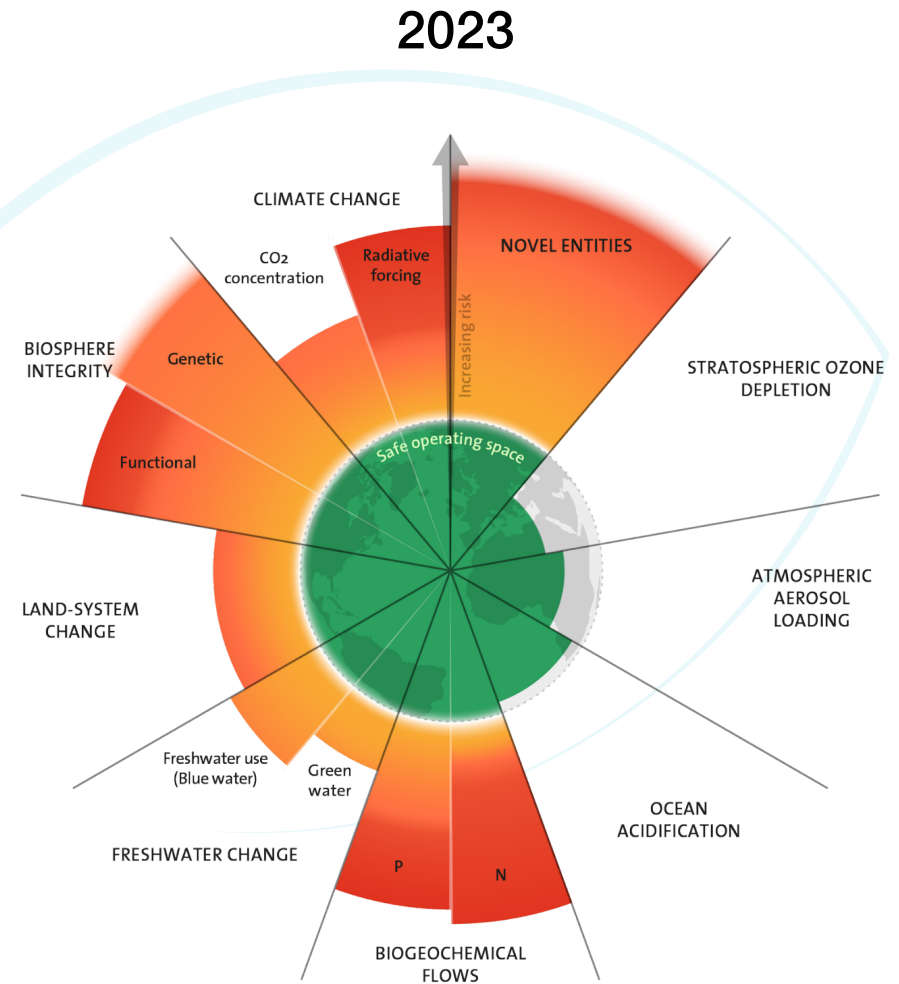
These boundaries are interconnected processes within Earth's complex physical systems, therefore concentrating merely on climate change is insufficient for sustainability. Knowledge of the links between multiple limits, including climate change and biodiversity loss, is critical for both scientific knowledge and practical action. Therefore, C.P. Group has considered various factors contributing to significant climate change in order to find ways to mitigate future risks.



7 boundaries assessed,  
3 crossed



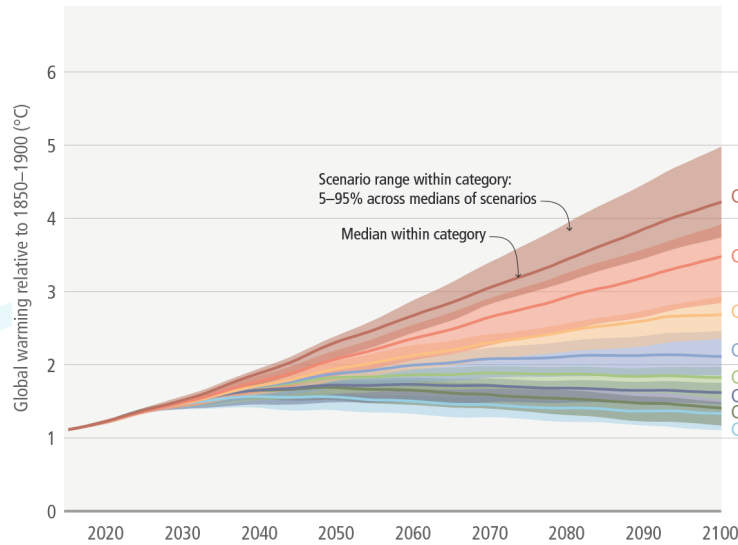
7 boundaries assessed,  
4 crossed



9 boundaries assessed  
6 crossed

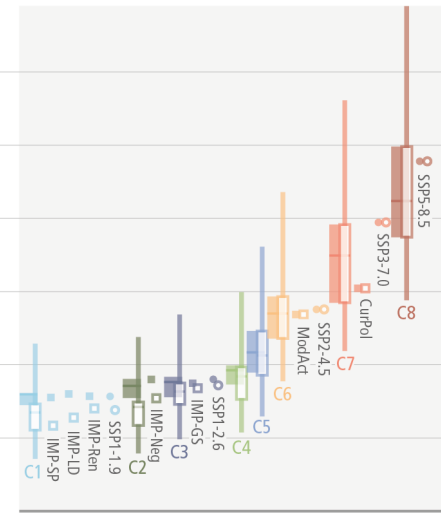
<https://www.stockholmresilience.org/research/planetary-boundaries.html>

# Assessed Scenarios in 21<sup>st</sup> Century Projected Global Warming (IPCC AR6)



- C1: limit warming to 1.5°C (>50%) with no or limited overshoot
- C2: return warming to 1.5°C (>50%) after a high overshoot
- C3: limit warming to 2°C (>67%)
- C4: limit warming to 2°C (>50%)
- C5: limit warming to 2.5°C (>50%)
- C6: limit warming to 3°C (>50%)
- C7: limit warming to 4°C (>50%)
- C8: exceed warming of 4°C (≥50%)

Medium global warming across scenarios in categories C1 to C8



- Scenario range within category: 5–95% across medians of scenarios
- Climate & scenario uncertainty: 5–95% across scenarios of 5–95% 2100 warming
- IMP
- SSPx-y
- filled: Peak warming (over the 21st century)
- open: 2100 warming

Peak and 2100 global warming across scenario categories, IMPs and SSPx-y scenarios considered by AR6 WGI

Intergovernmental Panel on Climate Change’s (IPCC) 6th we gain a synthesis of the latest science related to actions and options for emissions reductions, providing insights into the directions and trends from future climate change. In a policy context with many constraints, facing the largest fossil fuel supply shortages since the 1970s has made energy security a top political agenda. Meanwhile, the climate crisis is accelerating, with a significant greenhouse gas emissions gap to 2030 between where we are headed and what is necessary to achieve the Paris Agreement’s 1.5°C warming limit.

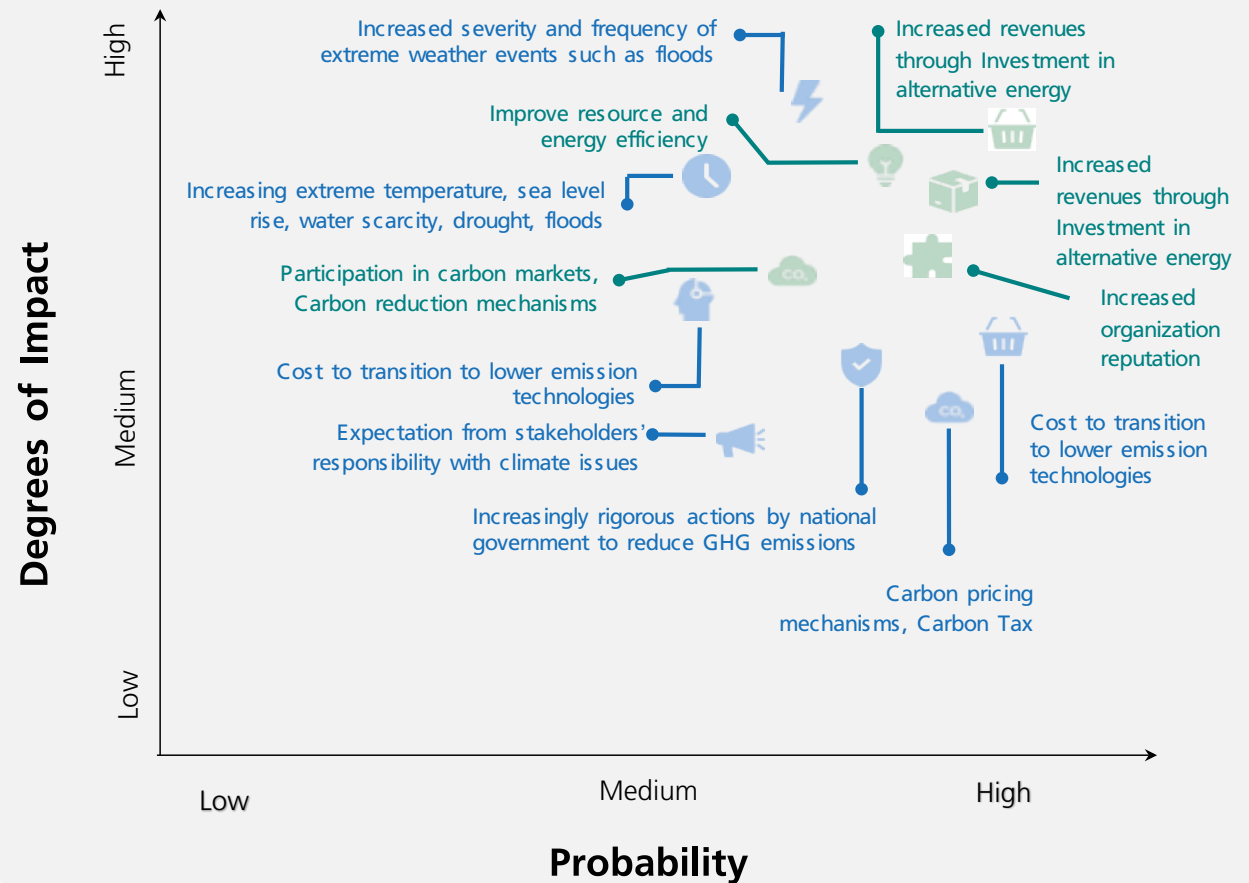
It is highly feasible to close the 2030 emissions gap and get on a pathway consistent with limiting warming to 1.5°C, but very urgent action is critical to achieve this goal. In total, pathways that limit warming to 1.5°C have been assessed, enhancing our understanding of the options and conditions needed to achieve the necessary emissions reductions.

## Scenario Analysis

Charoen Pokphand Group uses scenario analysis to understand the risks and opportunities of its climate-related operations and assess how climate change may affect business. Covers both transformational and physical risks. It assesses the impact of climate-related risks and opportunities on businesses using IEA and IPCC scenarios. The results of this analysis demonstrate the importance of climate-related impacts. Climate for our business and encourages our business commitment to climate stewardship. From these results, we have developed an action plan to reduce greenhouse gas emissions, and mitigate and adapt to the impacts of climate change.

The climate-related risk assessment helps C.P. Group understand the impacts of climate-related risks and opportunities on businesses, recognize potential financial impacts on revenues, expenditures, values of assets and liabilities, and capital and financing, assign ownership to drive specific actions around them and take relevant steps to address those risks and opportunities.

## Climate-related Risk and Opportunity Metrix



# Risks Assessment for Climate Change
















Risk Type	Risk Impacts	Key Drivers	Key Responding Criteria	Risk Level
Transition Risks 	<b>Policies and Regulations Transition (Time: Middle Term)</b> <ul style="list-style-type: none"> <li>Higher operating costs due to climate change-related regulations, resulting in an increased expense of 7,350 million THB due to high-carbon emission activities</li> <li>Regulations regarding plastic raise costs in the purchase of substitute materials with equivalent properties</li> <li>Retiring existing assets early due to policy changes and newly emerging concerns regarding legal liability, causing project implementation costs to increase by 538 million THB</li> </ul>	  	<ul style="list-style-type: none"> <li>Prepare to proceed with the plan to modify the mechanism to define GHG emissions reduction targets according to the Science Based Targets (SBTi), e.g., Internal Energy Efficiency Enhancement Project, Solar Energy Project and circular economy projects</li> <li>Encourage the reduction of single-use plastic bags, develop innovations specifically designed for sustainable packaging according to the principles of circular economy, and promote the take-back policy</li> </ul>	
	<b>Technologies Transition (Time: Short Term)</b> <ul style="list-style-type: none"> <li>Cost in switching from low GHG emission technology of 4,970 million THB</li> <li>Unsuccessful investment in new technology</li> <li>New technology affecting changes in the consumer market</li> </ul>	 	<ul style="list-style-type: none"> <li>Increased costs in developing low-emission technologies</li> <li>Reduced income and increased energy costs</li> <li>Increased costs in raising the share of renewable energy</li> </ul>	
	<b>Market Fluctuation (Time: Middle Term)</b> <ul style="list-style-type: none"> <li>Decline in demand for certain products and services as customers become more environmentally conscious, resulting in an increase in market research expenses of 6,580 million THB</li> <li>Increased production costs due to hiking energy prices</li> <li>Investment expenses in R&amp;D of low-carbon and environmentally friendly products increase by 29,610 million THB</li> </ul>	  	<ul style="list-style-type: none"> <li>Develop eco-friendly products and promote GHG emissions reduction projects across the value chain, from raw material procurement through to production processes, transportation, usage and waste management</li> <li>Encourage products of domestic and overseas subsidiaries to request for carbon footprint of products certification according to international standards and communicate to consumers to enable understanding about the importance of low-carbon products</li> </ul>	
	<b>Reputation (Time: Short Term)</b> <ul style="list-style-type: none"> <li>Higher stakeholder expectations regarding climate responsibility and understanding of climate-related problems</li> <li>Changes in consumer preferences causing income to decrease and potentially affecting brand reputation and value</li> </ul>	  	<ul style="list-style-type: none"> <li>Develop the Supplier Code of Conduct and encourage suppliers to acknowledge its importance and comply in order to achieve comprehensive supply chain management and enable sustainable business growth, demonstrate responsibility to communities, society and environment, and build confidence in the Group's management</li> </ul>	
	<b>Acute Risks (Time: Short Term and Middle Term)</b> <ul style="list-style-type: none"> <li>Disruption across the value chain, from production processes through to product delivery to customers</li> <li>Decreased income and damaged property values, e.g., 7-Eleven stores facing flood damage valued at 2,177 million THB</li> <li>Costs increased by 20% due to preventive measures</li> <li>Stakeholders and communities affected by flooding, dust and forest fires</li> </ul>	   	<ul style="list-style-type: none"> <li>Employed the Business Continuity Plan (BCP) to analyze possible risks from flooding, dust and forest fires alongside action plans for actual occurrence of each incident</li> <li>Plan production to meet customer needs</li> <li>Collaborate with suppliers and partners in planning prevention of related problems, e.g., flooding and transportation routes</li> </ul>	
Physical Risks 	<b>Severe Risks (Middle Term and Long Term)</b> <ul style="list-style-type: none"> <li>Increased product costs and lower production and quality of goods and services adversely affecting the ecosystem</li> <li>Increased insurance costs and operating costs in preventing potential risks valued at 55,195 million THB</li> <li>System maintenance costs, e.g., cooling systems, air conditioning systems and electric motors increased by 10%</li> </ul>	   	<ul style="list-style-type: none"> <li>Plan raw material purchase in advance and control raw material quality</li> <li>Use high-efficiency control systems and equipment, e.g., high-efficiency refrigeration units and air conditioning systems, high-efficiency motors and environmentally friendly refrigerants</li> </ul>	

**Key Drivers that impact to Transition Risks**


**Key Factors that impact to Physical Risks**


**Risk Level**


# Opportunities under Climate Change


Significant Opportunities	Key Drivers	Possible Impacts	Level of Opportunities
<p> <b>Efficiency Use of Resources</b></p> <ul style="list-style-type: none"> <li>Using more sustainable raw materials and more efficient transportation systems</li> <li>Reducing loss and enhancing efficiency in resource and energy consumption</li> </ul>		<ul style="list-style-type: none"> <li>Increased revenue, reduced operating and energy costs, enhanced production capacity through innovation projects and process improvements to 3,780 million THB</li> </ul>	
<p> <b>Applying Clean Energy Resources</b></p> <ul style="list-style-type: none"> <li>Using energy sources with low GHG emissions, e.g., solar energy, wind, water or biofuel</li> <li>Using low GHG emission technology</li> <li>Participating in the carbon market and GHG emissions reduction mechanisms</li> </ul>		<ul style="list-style-type: none"> <li>Reduced operating costs of 1,925 million THB, lower risks from fluctuations in fossil fuel prices, investment in low GHG emission technologies</li> <li>Gain competitive advantage through energy cost saving and compliance with customer needs</li> </ul>	
<p> <b>Environmentally friendly products and services</b></p> <ul style="list-style-type: none"> <li>Developing new products and services with low GHG emissions</li> <li>Trends in customer demands focusing on the environment</li> </ul>		<ul style="list-style-type: none"> <li>Respond to the preferences of eco-conscious consumers, e.g., low-carbon products and carbon labels</li> <li>Higher income of 35,420 million THB from demand for low GHG emissions products and services</li> </ul>	
<p> <b>Market competitiveness</b></p> <ul style="list-style-type: none"> <li>Searching for opportunities in new markets, e.g., businesses related to renewable energy, environmental management platform and carbon trading markets, to support global GHG reduction goals</li> </ul>		<ul style="list-style-type: none"> <li>Increased income through access to new markets, e.g., investment in alternative or renewable energy businesses, yielding profit of up to 1,540 million THB</li> <li>Increased reputation and brand value</li> </ul>	
<p> <b>Reputation</b></p> <ul style="list-style-type: none"> <li>Collaborating with third-party organizations to build network with all sectors, including the government, private and civil sectors, to communicate and measure results as well as extend knowledge to support stakeholders throughout the supply chain</li> </ul>		<ul style="list-style-type: none"> <li>Network of cooperation to reduce GHG according to global targets</li> <li>Increased corporate reputation, improved trust in the supply chain and the ability to perform all activities related to GHG reduction</li> </ul>	


**Key Drivers that impact to Transition Risks**


  
National Regulations


  
Others Std. Requirement


  
Carbon Pricing Mechanism

  
Technologies Transitions

  
Technologies Cost

  
Customer Behaviors

  
Market Share

  
Environmentally Friendly Products

**Level of Opportunities**




Low




Medium




High



## Risks: Acute Climate Change

Impacted Capital: Financial, Relationship, Manufacturing and Natural



### Risks and Impacts on CPG Business Operation

The effects of climate change are becoming increasingly prevalent. It has devastated the ecology, which has a direct negative impact on the economic system and lowers the degree of well-being. To maintain balance and limit global temperature rise, many countries have declared a climate emergency by enacting environmental laws and regulations, promoting alternative energy, reducing reliance on natural resources, and restoring the environment and ecosystems. Furthermore, the Group has consistently created goods that have lower environmental implications and will meet the future needs of its clients.

### Prevention Measures & Risks Mitigations

C.P. Group has continuously promoted and driven compliance with our CPG's environmental criteria and natural conservation policies, including an expanded scope of work to cover all associated business partners by developing strategies and providing guidelines for reducing GHG emissions in accordance with SBTi in 2023. Until now, our investments have attempted to focus on environmentally friendly products while also developing any creative production procedure to reduce the usage of scarce energy. Furthermore, we engage with any connected government bodies and commercial sectors to mitigate the detrimental effects of climate change.

## Risks: Rising Sea Level and Water Quality Deriving from CPG Business Operation

Impacted Capital: Financial, Manufacturing and Natural



### Risks and Impacts on CPG Business Operation

Rising sea levels and the issue of brackish water intrusion are two of the effects of climate change that have a direct impact on the Group's businesses and assets. The examination of the increasing sea level trend revealed that many of C.P. Group's commercial operations, including agricultural areas, industrial units, and production processes, will be directly affected. If there are no adequate responses, our enterprises will face a lack of agricultural raw resources. Finally, there will be a direct impact from a scarcity of raw resources and flooding. This will reduce the organization's commercial competitiveness, reputation, and capacity to provide products efficiently.

### Prevention Measures & Risks Mitigations

C.P. Group examined water-related risks by utilizing the "Aqueduct Water Risk Atlas Tool" to study and analyze our operating areas that are at risk from rising sea levels, and implemented a strategy to check the quality of brackish water on a regular basis. Furthermore, giving several solutions through partnership with any related governmental and public community sectors. For example, changing an appropriate land use modification, erecting defensive barriers surrounding agricultural areas and operating sites, boosting the service area's height, and constructing a high-quality filter capable of filtering seawater, among others.

# 5. METRIC AND TARGETS

Since it began accounting for emissions in the Greenhouse Gas Inventory, C.P. Group has established reduction targets in line with its sustainability strategy. With the maturation of the theme within the Company, today we have Carbon Neutral (S1&S2) and SBT short-term targets in 2030, Net Zero in 2050 and, in 2023, The Science Based Targets initiative has validated that the corporate greenhouse gas emissions reduction target(s).

## C.P. Group GHG Reduction Targets

**42%**

Reduction in absolute Scope 1 and 2 GHG emission by 2030 (Science-based Targets)

**25%**

Reduction in absolute Scope 3 GHG emission by 2030 (Science-based Targets)

**Carbon  
Neutrality**

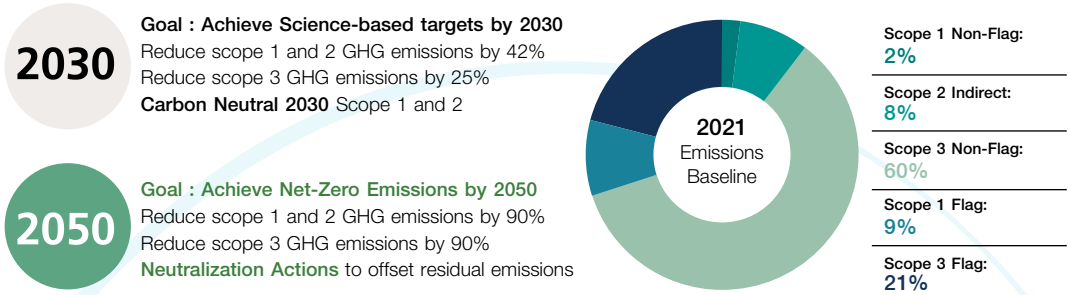
Reduction in absolute Scope 1 and 2 GHG emission by 2030 (Within Organization))

## Environmental Performance Report: 2023 Progress Against Targets

Target	Target year	Baseline (2021 figures)	Unit	2023 Performance
- 42% Scope 1&2 GHG Emissions	2030	6.42	Million tCO <sub>2</sub> e	- 9.45 %
- 25% Scope 3 GHG Emissions	2030	72.64	Million tCO <sub>2</sub> e	+ 1.21%

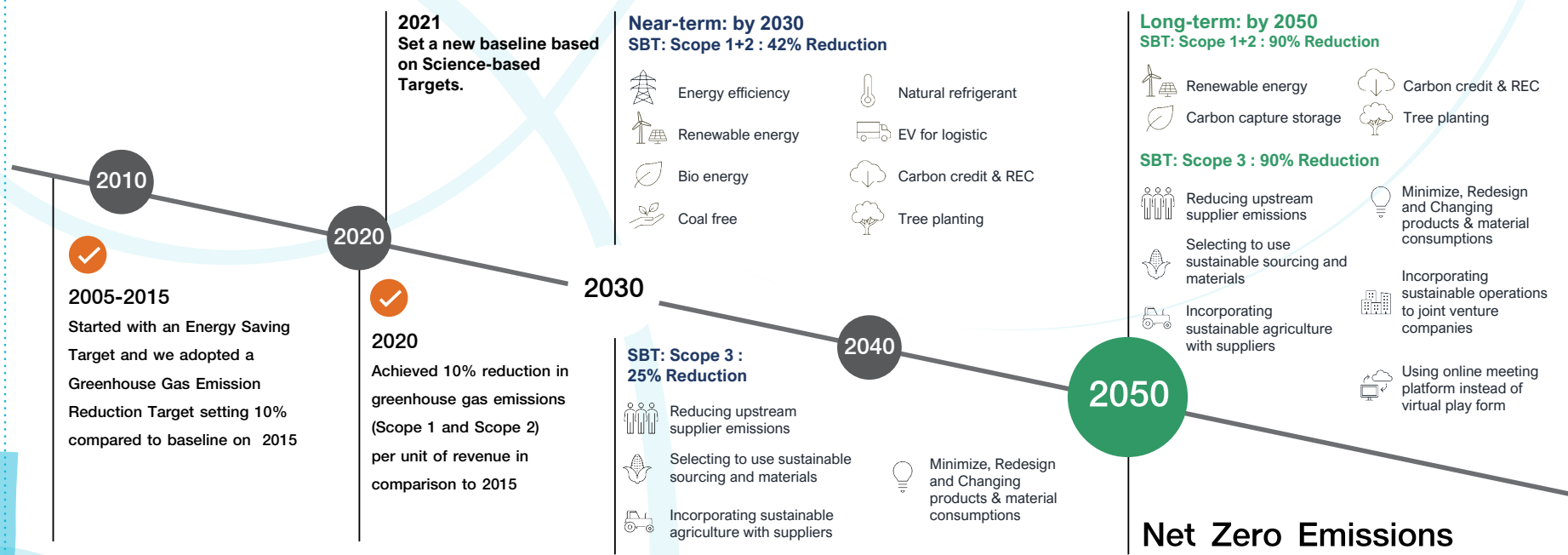
# C.P. Group Ambition to Net Zero

Including 2030 Science-based Targets for Scope 1, 2, and 3 emissions to accelerate progress.



**2030**  
Goal : Achieve Science-based targets by 2030  
Reduce scope 1 and 2 GHG emissions by 42%  
Reduce scope 3 GHG emissions by 25%  
**Carbon Neutral 2030** Scope 1 and 2

**2050**  
Goal : Achieve Net-Zero Emissions by 2050  
Reduce scope 1 and 2 GHG emissions by 90%  
Reduce scope 3 GHG emissions by 90%  
**Neutralization Actions** to offset residual emissions



**Net Zero Emissions**

## C.P. Group Net Zero Pathway 2050

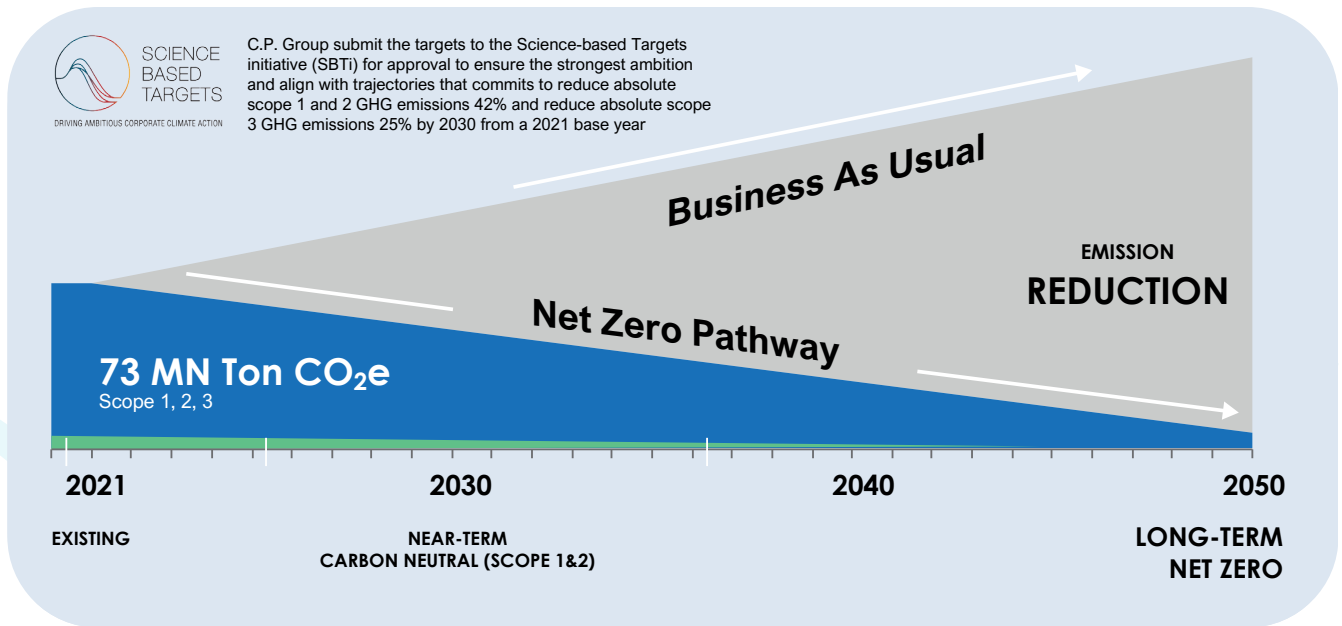
C.P. Group aims to reduce greenhouse gases according to SBTi criteria, targeting net zero greenhouse gas emissions by 2050. The focus is on managing energy and resources with maximum efficiency and improving energy efficiency to minimize environmental impact by opting for clean energy and green technology. Additionally, the Group promotes collaboration among stakeholders for sustainable greenhouse gas reduction and aims to become a carbon-neutral organization by 2030.



**BIOGAS/BIOMASS**



**SOLAR ENERGY**



**Carbon Neutrality 2030**

**Short-Term SBTi 2030**

**Long-Term 2050**

**Scope 1 and 2**

- 50%** Renewable Energy
- 20%** Energy Efficiency
- Zero** Waste to Landfill

**Scope 3**

- 25%** Collaboration with Suppliers
- 30%** Agricultural Adaptation
- 25%** Transportation in supply chain

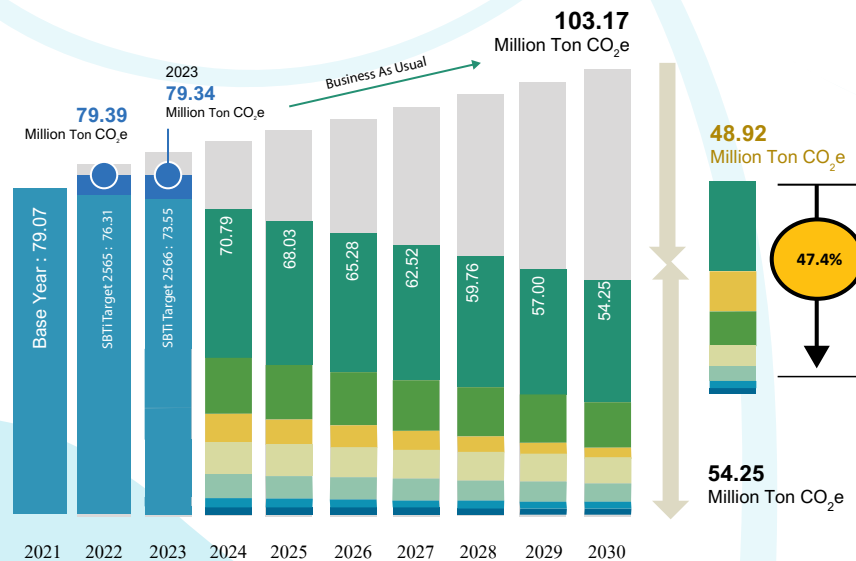
**Net Zero  
GHG Emission**



# Achieving Carbon Neutrality and Near-term 2030 (Scope 1, 2, and 3)

Charoen Pokphand Group places importance on climate stewardship while conducting businesses with responsibility, by focusing on efficient natural resources management and preventing risks from climate change impact. We strive to curb greenhouse gas emissions in line with the Paris Agreement which aims to limit global temperature rise to 1.5 degrees Celsius. We have also defined a short-term goal to reduce greenhouse gas emissions according to the Science-based Targets (SBTi) by 42% in 2030, compared to the base year 2021, and advance towards Net Zero in 2050.

The Group has set medium-term targets to achieve a carbon-neutral organization by 2030 (Scope 1 and 2), and it supports ongoing greenhouse gas reductions across the value chain. This involves improving industrial efficiency and lowering energy consumption, expanding the use of renewable energy, and safeguarding the environment, especially biodiversity and ecosystems.



**Renewable energy and Energy Efficiency (9%)**

Promote renewable energy and new clean energy sources that are environmentally friendly to create a comprehensive renewable energy system, such as generating electricity from solar energy, using biomass fuel, and producing energy from biogas. Additionally, continuously improving processes, and utilizing advanced, high-efficiency technology in production.

**Reduce greenhouse gas emissions from agriculture(20%)**

Collaborate with farmers and business partners to support knowledge sharing and the application of technology to reduce greenhouse gas emissions throughout the value chain, from upstream to downstream operations. To evaluate the sources of raw materials to ensure they do not originate from sources that negatively impact the environment and are traceable.

**Reduce carbon together with partners (8%)**

Products sold in retail stores must undergo a product carbon assessment process to guide the production of goods that can reduce greenhouse gas emissions. This includes increasing the proportion of Green Products and promoting the installation of Solar PV systems for business partners.

**Green Transport (5%)**

To implement a route management system to optimize energy use. This includes using various technologies such as intelligent traffic control systems, navigation systems, and information technology. We have increased the use of electric trucks and vehicles and expanded the installation of electric vehicle charging stations to enhance coverage.

**Green Finance (2%)**

C.P. Group has invested in businesses that generate electricity using solar energy and in clean energy projects. Additionally, it supports financing sources for business partners who invest in environmentally friendly projects.

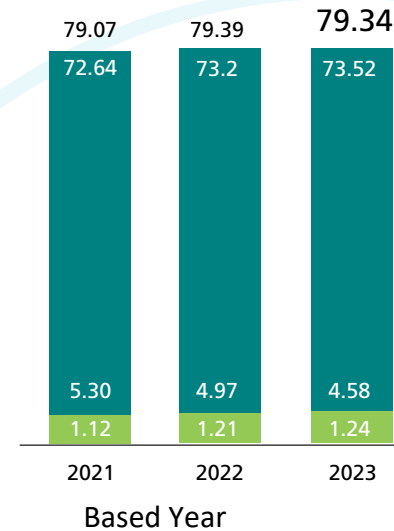
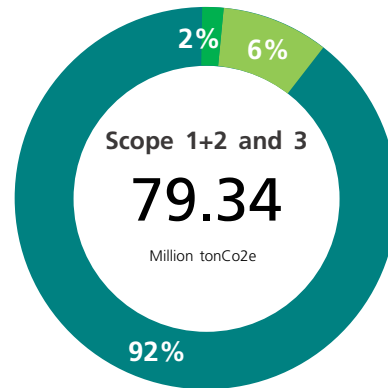
**Zero Waste, Sustainable Packaging, etc. (3.4%)**

Reduce waste and utilize resources in production. Collaborate with relevant external organizations to develop initiatives leading to the establishment of a circular economy system, while managing plastic packaging comprehensively and expanding responsibility for packaging waste to enable recycling and reuse.

# Environment Data 2023

## GHG Emission Scope 1

● Scope 1: Direct GHG Emissions from organization	1.24	2%
● Scope 2: Indirect GHG Emissions from organization	4.58	6%
● Scope 3: Other indirect GHG emissions	73.52	92%



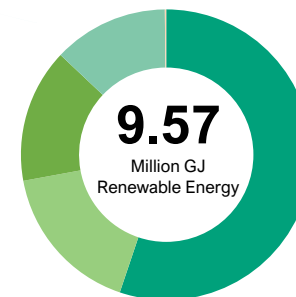
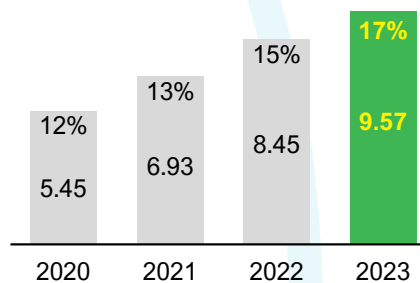
**SCIENCE  
BASED  
TARGETS**  
Increased by 0.38% according to SBTi

**0.34%**

GHG emission Scope 1,2 and 3 (Science-based Targets)  
In 2023, Absolute GHG Emission increased 0.27 million CO2e compare with 2021 (Base year)

**17%**

**Proportion of Renewable Energy Consumption**  
In 2023, the Group increased the share of renewable energy 17% , equivalent to energy consumption by 9.57 million GJ



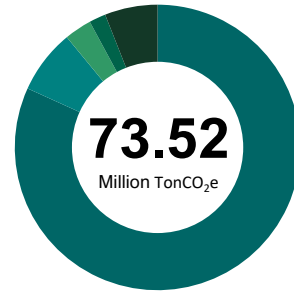
## Renewable Energy by Scope

●		BIOMASS	<b>55.2%</b>
●		SOLAR PV	<b>16.9%</b>
●		BIOGAS	<b>14.9%</b>
●		RECs	<b>12.8%</b>
●		SOLAR Thermal	<b>0.16%</b>

# GHG Emission Scope 3

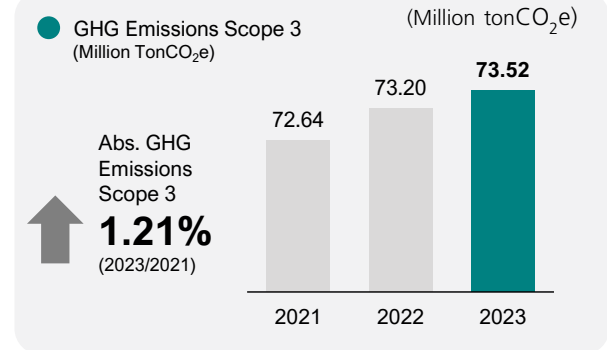
GHG Emissions Scope 3  
(Million TonCO<sub>2</sub>e)

2021-2022 2023



## GHG Emissions Scope 3 by Category

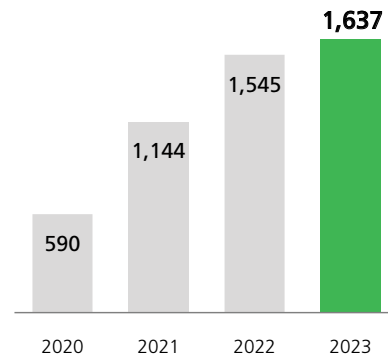
- Purchased goods and services **81.78%**
- Investments **7.52%**
- Upstream transportation **3.09%**
- Fuel and energy-related activities **1.89%**
- Others **5.99%**



**1,637**  
million THB



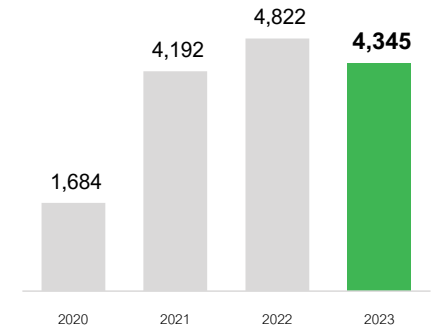
Saving from Environmental Investment  
In 2023, the Group can save cost from the energy efficiency and renewable energy projects 1,637 million THB



**4,345**  
million THB



Environmental Investment  
In 2023, the Group increased the environmental investment with renewable energy and innovation technology



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IFRS S2 Climate-related Disclosures

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The Guidelines and the Appendix: Sample of Best Practices in Managing Climate-related Risk by Global Asset Managers are available on the SEC

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