



PUT OUR
HEART
INTO FOOD

TCFD Report 2023

Charoen Pokphand Foods Public Company Limited

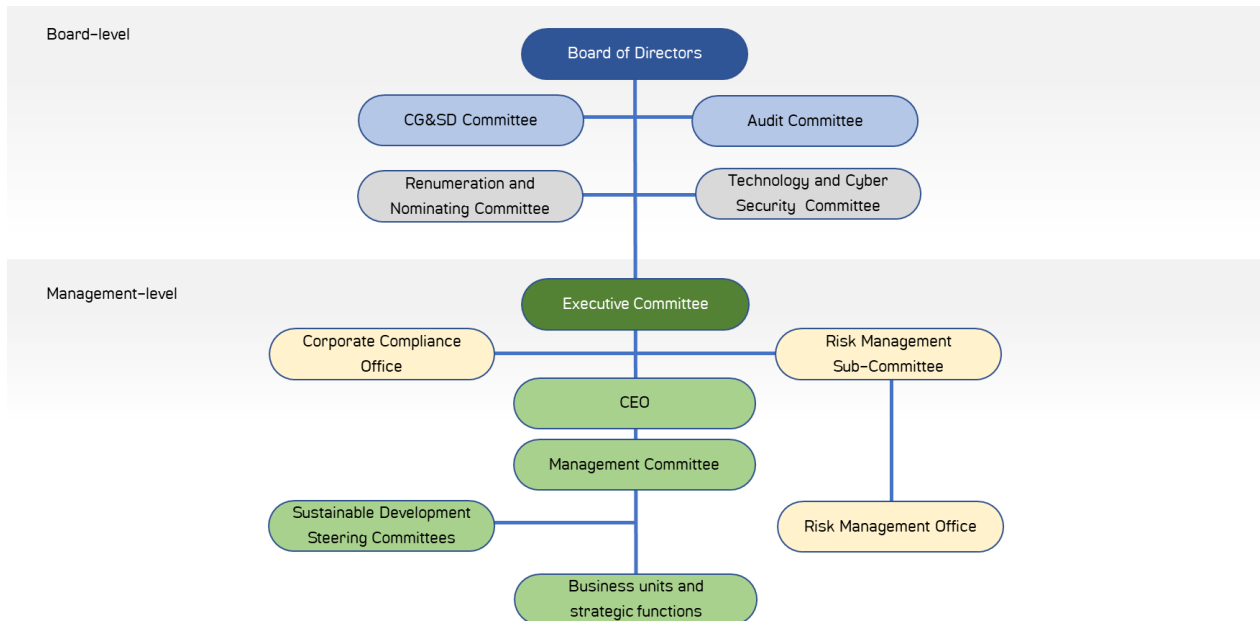
Task Force on Climate-Related Financial Disclosures (TCFD)

July 2023



Part I Governance

Climate governance is a crucial element for the success in climate risks and opportunities management. The management structure also serves as a platform to consistently drive CPF's business towards low carbon transition through collaborations across the organization.



Board-level Oversight

Climate change management of CPF is oversights by the Board of Directors (BoD) which has the responsibility to determine and approve major policies including risks and opportunity management and supervise effective implementation of the policies. The Board of Directors evaluates risk management system and assesses adequacy and appropriateness of the system on yearly basis. The Board of Directors also supports technology and innovations to enhance competitiveness with responsibilities to the society and the environment and ensures that the management takes these into consideration when reviewing the corporate strategy.

Reporting to the Board of Directors at least once a year, Corporate Governance and Sustainable Development Committee (CG&SD Committee) is responsible for establishing relevant sustainability policies and targets with regular revision, endorsing the sustainability strategy, reviewing the performance progress on action plans against the set targets and providing necessary actions to achieve these targets.

Lastly, Audit Committee is responsible for reviewing the company's management and practices in line with risk management strategy and risk appetite and assessing the efficacy of the company's overall risk management strategy.

To ensure that the board has relevant competencies, board skills matrix is used as criteria to determine qualifications of the board in terms of skills, knowledge, expertise, and experiences in accordance with the CPF's strategies and goals. In 2022, all members in the Board of Directors have competence in corporate governance and sustainability.

Board's key decisions made on climate change in the recent years include the commitment to set net-zero target in line with Science Based Targets initiative (SBTi).

Management-level Drive

CPF's Management Committee (MC) is responsible for reviewing sustainability issues and sustainability strategic plans, driving the implementation of sustainability strategy, assessing and managing climate risks and opportunities as well as monitoring the climate management performance which are reported to the CG&SD Committee at least once a year.

Moreover, Chief Executive Officer (CEO) established relevant Sustainable Development Steering Committees to oversee the management of sustainability topics. For climate change, this includes Climate Action for Sustainability Committee, Safety Health Environment and Energy Committee (SHE&En MC), and Responsible Sourcing Committee. Constituted of executives from relevant business units and support functions, these committees are tasked with execution, monitoring, and external engagements, supported by the working group under each committee.

Risk Management Sub-Committee, chaired by Chief Financial Officer (CFO), is responsible for reviewing risk impacts and likelihoods, based on criteria stipulated by the company and setting up the risk management approach with the collaboration with risk owner from each business unit. Risk Management Sub-Committee also follows up on the progress of the risk management measures and status of risk. This ensures that risks and opportunities are considered in financial planning and strategy. The results are reported to the Audit Committee on annual basis.

Furthermore, Risk Management Office closely collaborates with the Sustainable Development Steering Committees and their working groups to provide consultation and ensure that the risks and opportunities are properly identified, assessed and addressed through risk management process in alignment with COSO ERM Framework.

Climate change management is one of CPF's sustainability KPIs which are applied to CEO, relevant management and employees. The KPIs are, for example, emission reduction, water withdrawal as well as sustainability assessment results by external organizations.

Part II Risk Management

CPF has integrated climate-related risk management process into our systematic and group-wide risk management approach that conforms with “COSO ERM Framework” – The Committee of Sponsoring Organization of the Treadway Commission’s Enterprise Risk Management Framework.

This comprises of four steps as follows:



These four steps are performed based on a participatory approach with business units and support functions, facilitated by Risk Management Office under the supervision of Risk Management Sub-Committee which is chaired by the Chief Financial Officer (CFO). This structure allows the integration of climate-related risks and opportunities into business strategy and financial planning.

Part III Strategy

Considering the long-term nature of climate change impacts, CPF defines short, medium and long-term timeframe for risks assessment as 0-10 years, 10-20 years, 20-30 years respectively. CPF sets criteria to differentiate key risks and opportunities that have substantive financial or strategic impact based on financial impact (revenue and cost), operational impact (business disruption), reputational impact, compliance impact, information impact as well as health and safety impact. These impacts are considered in combination with likelihood to determine risk level.

The results of climate-related risks and opportunities identification and prioritization are as follows:

Transition Risks		
	Risk types	Relevance for CPF
High priority <--->	Policy and regulation	<p>Current policy and regulations:</p> <ul style="list-style-type: none"> Nationally Determined Contributions (NDCs), carbon neutrality, and net-zero commitment are driver for low carbon society transitioning in all countries where CPF operates <p>Emerging policy and regulations:</p> <ul style="list-style-type: none"> Cross-value chain decarbonization is required to lower product carbon footprint and increase competitiveness amid emerging low carbon trade regulations Implementation of carbon pricing mechanism such as emission trading system for food and agriculture sector may increase our operational cost. Phasing out of high Global Warming Potential (GWP) refrigerants Growing regulations on transparency and reporting
	Technology	<ul style="list-style-type: none"> Installation of low carbon technology and implementation of alternative low carbon management practices may increase operational and capital expenditures Cost of renewable energy procurement may be higher than traditional energy sources in some countries/areas
<--- Low priority	Legal	<ul style="list-style-type: none"> Growing number of legislations related to climate change such as GHG emissions, energy, waste and water may increase our exposure to environmental-related litigations
	Market	<ul style="list-style-type: none"> Sustainable sources of raw materials for green products might be limited, causing the cost to be high. This might be a challenge to upscale green product ranges at a competitive price. Failure to response to market demand on green product which is an emerging market might result in opportunity loss Intensive R&D investment is required to maintain the market leader status
	Reputation	<ul style="list-style-type: none"> Failure to achieve our environmental targets may cause the company to lose benefits from green or sustainability-linked loans.

¹ This presents a potential impact on the company's financial positioning, namely, equity and liabilities, as the ESG rating has influenced on investment attractiveness and the financial access to ESG funds/loans.

Physical Risks		
	Risk types	Relevance for CPF
High priority --->	Chronic: Rising mean temperature	<ul style="list-style-type: none"> Rising mean temperature may increase energy cost on cooling system for livestock, necessitating efficiency improvement and alternative energy sourcing Higher rate of epidemic outbreak caused by warmer temperature may affect livestock and aquaculture well-being. Investment in enhanced biosecurity system might be needed
	Acute: Riverine flood	<ul style="list-style-type: none"> Floods could lead to logistical cut-off. Resilient logistical and operational management in collaboration with suppliers and customers becomes a need Adaptation plan will be required such as the implementation of engineering measures against flood and emergency response plan Increasing temperature drive countries that are vulnerable to flood such as Thailand and Vietnam to receive larger impact
	Chronic: Water stress ¹	<ul style="list-style-type: none"> The lack of water may increase operational cost due to the emergency water procurement and the operation of water treatment system Drought may affect upstream agricultural productivity resulting in soaring price of agricultural raw materials Increased risk of conflict among water users such as community, farmers, industry
<--- Low priority	Acute: Tropical cyclone	<ul style="list-style-type: none"> Besides increased cost in asset repair and maintenance, storm may cause temporary logistic disruption and hinder customer access to our products and services, thus, lowering sales revenue Tropical cyclone could trigger lightning which increases the risk of business disruption due to power outage
	Chronic: Coastal flood	<ul style="list-style-type: none"> Coastal flood may increase asset repair and maintenance cost Sea level rise may reduce the arable land available for plantation and farming
	Acute: Heavy snow storm	<ul style="list-style-type: none"> Besides increased cost in asset repair and maintenance, snow storm may cause temporary logistic disruption and hinder customer access to our products and services, thus, lowering sales revenue

Opportunities		
	Types	Relevance for CPF
High priority --->	Energy sources	<ul style="list-style-type: none"> The use of renewable energy such as solar PV, biogas and biomass can increase energy security and save cost in some areas, besides GHG emission reduction Opportunity to sell excess energy to external parties as well as selling Energy Attribute Certificates (EACs) from renewable energy sources
	Resource efficiency	<ul style="list-style-type: none"> Increased resource efficiency, i.e. energy use, water consumption and waste reduction, helps reduce cost and increase resilience against climate impact
	Products & services	<ul style="list-style-type: none"> Growing demand of low carbon and plant-based products can be a new source of revenue generation Development of new services related to climate-smart agriculture
<--- Low priority	Markets	<ul style="list-style-type: none"> Increased market access to regions with high product environmental standards or markets with strong preference for low carbon products
	Resilience	<ul style="list-style-type: none"> Increased climate resilience in operations and enhanced supply chain reliability Opportunity to exchange knowledge, gain capacity building and foster collaborations throughout our value chain

¹ Water stress refers to the ratio of total water withdrawals to available water supplies. Higher water stress indicates more competition among users.

Impact Assessment and Scenario Analysis of Key Risks and Opportunities

To deepen the understanding on the impacts of major climate risks and opportunities on company's strategy and financial planning, CPF conducted an in-depth assessment coupled with scenario analysis to evaluate the level of positive and negative financial impact on businesses from three high-priority risks and three major opportunities. The scope of analysis covers activities in all business units and its value chain in Thailand, Vietnam, China as well as Republic of China (Taiwan) which represents around 70% of our revenue generation.

Well-recognized climate scenarios analyzed include Intergovernmental Panel on Climate Change (IPCC)'s RCP2.6 and RCP8.5² for physical risks, and International Energy Agency (IEA)'s Stated Policies Scenario (STEPS) and Net Zero Emissions by 2050 Scenario (NZE) for transition risks. Qualitative and quantitative results are used to inform our business strategy, financial planning and risk management.

Climate-related Risks																																																																													
<p>Chronic Physical Risk: Rising Mean Temperature</p> <p>Rising mean temperature can slow down the growth of livestock and affect raw material plantation. Although the majority of our farms are equipped with ventilation system to maintain optimal temperature, this could increase the energy consumption. It could also increase the risk of epidemic outbreak which affects the production across value chain.</p> <p>Area of business impact</p> <table border="1"> <tr> <td>Upstream</td> <td>Operation</td> <td>Downstream</td> </tr> </table> <p>Impact Timeframe</p> <table border="1"> <tr> <td>Short-term</td> <td>Medium-term</td> <td>Long-term</td> </tr> </table> <p>Impacts on financial planning</p> <ul style="list-style-type: none"> - Indirect cost: Increased energy cost - Direct cost: Increased animal production cost - Revenue: Sales opportunity loss <p>Financial impact level</p> <table border="1"> <thead> <tr> <th colspan="2">Short-term</th> <th colspan="2">Medium-term</th> <th colspan="2">Long-term</th> </tr> <tr> <th>RCP 2.6</th> <th>RCP 8.5</th> <th>RCP 2.6</th> <th>RCP 8.5</th> <th>RCP 2.6</th> <th>RCP 8.5</th> </tr> </thead> <tbody> <tr> <td>Low</td> <td>Low</td> <td>Low</td> <td>Low</td> <td>Low</td> <td>Medium</td> </tr> </tbody> </table> <p>Management measures</p> <ul style="list-style-type: none"> - Promote the use of energy efficient ventilation system and green design. - Use electricity from renewable sources - Maintain high standards on biosecurity 		Upstream	Operation	Downstream	Short-term	Medium-term	Long-term	Short-term		Medium-term		Long-term		RCP 2.6	RCP 8.5	RCP 2.6	RCP 8.5	RCP 2.6	RCP 8.5	Low	Low	Low	Low	Low	Medium	<p>Acute Physical Risk: Riverine flood</p> <p>Besides asset damage, riverine flood could disrupt the inbound and outbound logistic of the operations. Flood may lead to agricultural raw material production loss resulting local supply shortage which demands souring from alternative locations.</p> <p>Area of business impact</p> <table border="1"> <tr> <td>Upstream</td> <td>Operation</td> <td>Downstream</td> </tr> </table> <p>Impact Timeframe</p> <table border="1"> <tr> <td>Short-term</td> <td>Medium-term</td> <td>Long-term</td> </tr> </table> <p>Impacts on financial planning</p> <ul style="list-style-type: none"> - Asset: Asset damage - Capital Expenditure: Increased cost on floodproof infrastructure <p>Financial impact level</p> <table border="1"> <thead> <tr> <th colspan="2">Short-term</th> <th colspan="2">Medium-term</th> <th colspan="2">Long-term</th> </tr> <tr> <th>RCP 2.6</th> <th>RCP 8.5</th> <th>RCP 2.6</th> <th>RCP 8.5</th> <th>RCP 2.6</th> <th>RCP 8.5</th> </tr> </thead> <tbody> <tr> <td>Medium</td> <td>Medium</td> <td>High</td> <td>High</td> <td>High</td> <td>High</td> </tr> </tbody> </table> <p>Management measures</p> <ul style="list-style-type: none"> - Operating site selection for existing and future projects to avoid flood prone areas. - Development of location-specific flood response plan - Operational management e.g. improving system redundancy on production, logistics and raw material sourcing throughout value chain - Insurance coverage 		Upstream	Operation	Downstream	Short-term	Medium-term	Long-term	Short-term		Medium-term		Long-term		RCP 2.6	RCP 8.5	RCP 2.6	RCP 8.5	RCP 2.6	RCP 8.5	Medium	Medium	High	High	High	High	<p>Transition Risk: Policy and Regulations</p> <p>As a result of increasingly stringent climate policy and regulations, carbon pricing mechanism (e.g. carbon tax, emission trading system, carbon border adjustment mechanism) may be applied in the future resulting in increased operating cost for business. The degree of impact is expected to correlate with the amount of GHG emissions.</p> <p>Area of business impact</p> <table border="1"> <tr> <td>Upstream</td> <td>Operation</td> <td>Downstream</td> </tr> </table> <p>Impact timeframe</p> <table border="1"> <tr> <td>Short-term</td> <td>Medium-term</td> <td>Long-term</td> </tr> </table> <p>Impacts on financial planning</p> <ul style="list-style-type: none"> - Indirect cost: Increased cost for GHG intensive energy sources - Direct cost: Increased exporting cost a <p>Financial impact level</p> <table border="1"> <thead> <tr> <th colspan="2">Short-term</th> <th colspan="2">Medium-term</th> <th colspan="2">Long-term</th> </tr> <tr> <th>STEPS</th> <th>NZE</th> <th>STEPS</th> <th>NZE</th> <th>STEPS</th> <th>NZE</th> </tr> </thead> <tbody> <tr> <td>Low</td> <td>Low</td> <td>Low</td> <td>Low</td> <td>Low</td> <td>Medium</td> </tr> </tbody> </table> <p>Management measures</p> <ul style="list-style-type: none"> - Establish decarbonization strategy with GHG reduction target set in accordance with SBTi and implement the GHG reduction measures in own operation and across value chain - Assess product carbon footprint and continuously improve environmental performance - Foster sustainable supply chain management to promote low carbon raw materials 		Upstream	Operation	Downstream	Short-term	Medium-term	Long-term	Short-term		Medium-term		Long-term		STEPS	NZE	STEPS	NZE	STEPS	NZE	Low	Low	Low	Low	Low	Medium
Upstream	Operation	Downstream																																																																											
Short-term	Medium-term	Long-term																																																																											
Short-term		Medium-term		Long-term																																																																									
RCP 2.6	RCP 8.5	RCP 2.6	RCP 8.5	RCP 2.6	RCP 8.5																																																																								
Low	Low	Low	Low	Low	Medium																																																																								
Upstream	Operation	Downstream																																																																											
Short-term	Medium-term	Long-term																																																																											
Short-term		Medium-term		Long-term																																																																									
RCP 2.6	RCP 8.5	RCP 2.6	RCP 8.5	RCP 2.6	RCP 8.5																																																																								
Medium	Medium	High	High	High	High																																																																								
Upstream	Operation	Downstream																																																																											
Short-term	Medium-term	Long-term																																																																											
Short-term		Medium-term		Long-term																																																																									
STEPS	NZE	STEPS	NZE	STEPS	NZE																																																																								
Low	Low	Low	Low	Low	Medium																																																																								

² Representative Concentration Pathway (RCP) is a greenhouse gas concentration trajectory adopted by the Intergovernmental Panel on Climate Change (IPCC). The four RCPs includes RCP2.6, RCP4.5, RCP6, and RCP8.5. The higher number represents higher GHG concentrations in the atmosphere.

Climate-related Opportunities

Climate-related Opportunities																				
<p align="center">Opportunity: Energy Sources</p> <p>The cost of renewable energy is declining due to technology advancement, CPF can benefit from using renewable energy such as solar energy, biomass and biogas. The latter is derived from manure of raised animals. The use of low GHG intensive energy is essential to achieve CPF's net-zero commitment. CPF might also be able to sell excess renewable energy to external parties such as electricity, hydrogen and biogas.</p> <p>Area of business impact</p> <table border="1"> <tr> <td>Upstream</td> <td>Operation</td> <td>Downstream</td> </tr> </table> <p>Impact timeframe</p> <table border="1"> <tr> <td>Short-term</td> <td>Medium-term</td> <td>Long-term</td> </tr> </table> <p>Impacts on financial planning:</p> <ul style="list-style-type: none"> - Indirect cost: Decreased energy cost - Revenue: New revenue source from selling excess renewable energy <p>Financial impact level</p> <ul style="list-style-type: none"> - Low <p>Management measures</p> <ul style="list-style-type: none"> - Expand renewable energy usage such as solar PV and biogas - Fuel switching to less carbon intensive fuels such as biomass and biogas - Monitor technological development and regulatory changes to seize the opportunity in cost saving and revenue generation from renewable energy 	Upstream	Operation	Downstream	Short-term	Medium-term	Long-term	<p align="center">Opportunity: Resource efficiency</p> <p>Efficient use of resources such as energy, water, operational waste reduction, and packaging optimization are key intervention areas that could yield economic benefits besides GHG reduction, both for the company and suppliers. Innovation to promote food waste reduction also helps reduce climate impact among customers.</p> <p>Area of business impact</p> <table border="1"> <tr> <td>Upstream</td> <td>Operation</td> <td>Downstream</td> </tr> </table> <p>Impact timeframe</p> <table border="1"> <tr> <td>Short-term</td> <td>Medium-term</td> <td>Long-term</td> </tr> </table> <p>Impacts on financial planning:</p> <ul style="list-style-type: none"> - Indirect cost: Decreased operating cost on energy and water - Direct cost: Decreased material cost such as packaging and raw materials <p>Financial impact level</p> <ul style="list-style-type: none"> - Low <p>Management measures</p> <ul style="list-style-type: none"> - Efficiency improvement through smart technology e.g. automation, AI technology and Internet of Things (IoT) - Integration of circularity in resource utilization across the value chain. - Packaging optimization - Food loss and waste reduction program 	Upstream	Operation	Downstream	Short-term	Medium-term	Long-term	<p align="center">Opportunity: Products and Services</p> <p>In line with the low carbon society transition, the shift in consumer preferences to low carbon products and emerging interest in plant-based products are perceived as an opportunity for revenue generation.</p> <p>Area of business impact</p> <table border="1"> <tr> <td>Upstream</td> <td>Operation</td> <td>Downstream</td> </tr> </table> <p>Impact timeframe</p> <table border="1"> <tr> <td>Short-term</td> <td>Medium-term</td> <td>Long-term</td> </tr> </table> <p>Impacts on financial planning:</p> <ul style="list-style-type: none"> - Revenue: Increased revenue generation from green products - Direct cost: Potential exemption of product carbon footprint tax <p>Financial impact level</p> <ul style="list-style-type: none"> - Medium <p>Management measures</p> <ul style="list-style-type: none"> - Expansion of the range of green products including low carbon products with recognized labels - Improvement in supply chain traceability and transparency - Upstream engagement to improve supply volume and reliability of sustainable/low carbon raw materials - Downstream awareness promotion 	Upstream	Operation	Downstream	Short-term	Medium-term	Long-term
Upstream	Operation	Downstream																		
Short-term	Medium-term	Long-term																		
Upstream	Operation	Downstream																		
Short-term	Medium-term	Long-term																		
Upstream	Operation	Downstream																		
Short-term	Medium-term	Long-term																		

Integration of Climate-related Risks and Opportunities in Corporate Strategy



CPF’s climate-related risks and opportunities are embedded in the formulation of corporate strategic direction. One remarkable example is the integration in the ‘Building Solid Foundation’ strategic pillar – Take responsibility for society and environment, where 2 sub-components are established to drive low carbon transition, namely, the efficient use of resources and responsible sourcing. The efficient use of resources centered on environmental impact mitigations through efficiency improvement in terms of GHG, energy, water, raw materials, and waste. This includes renewable energy expansion and implementation of smart technology and circularity. Responsible sourcing involves deforestation-free and traceability of raw materials. This reflects the influence of climate-related risks and opportunities on our corporate strategy in order to ensure resilience against climate risks and enhance our competitiveness in low carbon society transition.

Furthermore, CPF established two approaches to enhance our resilience on climate change including;

I. Moving towards net-zero

CPF has publicly committed to set our net-zero target by 2050 in line with SBTi Corporate Net-Zero Standard. This target is currently under validation process by the SBTi. We seek to achieve the target through the following measures.

<p>I. Decarbonization & Circularity</p> <ul style="list-style-type: none"> • Renewable energy expansion with biomass, biogas and solar energy. • Efficiency improvement in energy & water consumption and waste reduction through facility upgrades and management measures. • Packaging optimization and integration of circularity concept in resource utilization across the value chain. • Development of eco-friendly feed • Food loss and waste reduction 	<p>II. Digitalization & Climate Technology</p> <ul style="list-style-type: none"> • Deforestation-free sourcing and full traceability enabled by blockchain and satellite imaging • Smart Feed Mill, Smart Farm and Smart Factory through automation, AI technology and Internet of Things (IoT) • Expanding electric vehicles (EV) • Hydrogen and methane technology
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

II. Ecosystem restoration and biodiversity protection

CPF is aspired to create shared value for our business, plant and communities through ecosystem restoration and biodiversity protection which provide climate-related benefits such as carbon sequestration and enhanced resilience against physical risks in the local areas. Thus, CPF established two flagship terrestrial and mangrove forestation projects, namely, Conserve Ecosystem Project (CPF Rak Ni-Ves) and Grow-Share-Protect Mangrove Forestation Project in collaboration with local communities and external partners across our strategic areas. With our CPF 2030 Sustainability in Action target to increase 3,200-hectares area of conservation, protection, and restoration of mangrove forests and watershed forests in strategic areas, we have achieved 2,379 hectares (74% progress) in 2022. This program has also been registered for carbon credit under Thailand Voluntary Emission Reduction Program (T-VER).



Part IV Metrics and Performance

CPF has set targets that address climate-related risks and opportunities as follows.

By 2050

- CPF has publicly committed to set our net-zero target by 2050 in line with SBTi Corporate Net-Zero Standard. This target is currently under validation process by the SBTi.

By 2030

	2022 Performance
40% of the revenue shall derive from green products by 2030 (Thailand Operations)	37%
100% of key raw materials are traceable	59%
Zero food waste from operations	2,143 tons (Thailand Operations)
100% of plastic packaging for food products to be recyclable or reusable or compostable	99.9% (Thailand Operations)
To set science-based targets for GHG emissions reduction (Scope 1, 2 and 3)	In progress
Support all tier-1 suppliers identified to have high water impact to have water management plans in place	In progress
Zero waste to landfill and incineration	17.2 thousand tons (Thailand Operations)

By 2025

	2022 Performance
25% of direct and indirect GHG emissions per production unit to be reduced, compared to the base year 2015 (Thailand Operations)	23%
30% of water withdrawal per production unit to be reduced, compared to the base year 2015 (Thailand Operations)	53%
100% of key raw materials from deforestation-free areas (Corn and Soy)	23%

For environmental performances including scope 1&2 GHG emissions, energy, water, waste please see our [Website](#). For scope 3 GHG emissions please see our [Sustainability Report 2022](#) page 85.

CPF is in the process of setting internal carbon price which will be reported in the next few years.



Charoen Pokphand Foods Public Company Limited

313 C.P. Tower, Silom Road, Bangrak, Bangkok, 10500, Thailand

Tel : 02 766 8000 Fax : 02 638 2139

www.cpfworldwide.com