

CENTRALRETAIL

The Task Force on Climate-Related
Financial Disclosures (TCFD) Report 2021



INTRODUCTION

The Task Force on Climate-related Financial Disclosures (TCFD) is a globally recognized climate disclosure framework for guiding companies and organizations how to integrate climate change considerations into governance, strategy, risk management, and metrics and targets, and to disclose relevant information to external stakeholders.

Resonating with the Stock Exchange of Thailand's support for TCFD, Central Retail Corporation Public Company Limited ("the Company" or "Central Retail") is determined to disclose climate-related information in alignment with TCFD's recommendations in this TCFD Report. Contained within the report, interested parties and stakeholders can find Central Retail's commitment and progress made toward becoming a climate resilience business. The Company will continue to strengthen its capacity to manage climate-related risks and opportunities, as well as improve the depth and scope of its TCFD disclosures in the coming years.

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OUR CLIMATE GOVERNANCE

Achieving climate targets is a challenging task that requires group-wide efforts involving executives, management, and employees. This is true for Central Retail's business operations consisting of multiple segments, formats, suppliers and customers that are spread throughout different geographic locations. In addition, achieving climate targets also requires consistent efforts at all levels within the company that must be sustained in the long-term. Therefore, climate governance becomes a critical component of our climate-related risks and opportunities management, demonstrating to key stakeholders including investors, lenders, shareholders, and other interested parties commitments and responsibilities of the Company in overseeing climate change.

OUR CLIMATE GOVERNANCE

Corporate Governance and Sustainability Committee*	▪ Oversees compliance with and promotion of sustainability issues under ESG strategy framework, which covers climate change as one of key material ESG issues ▪ With climate change as a component of ESG framework, the Corporate Governance and Sustainability Committee also oversees: ▪ Progress against climate-related goals and targets ▪ Development and revisions of climate strategy and action plans ▪ Implementation of measures to mitigate or enhance climate-related risks and opportunities
Risk Policy Committee (RPC)**	▪ Oversees effective enterprise risk management including ESG risks, which covers climate-related risks (and opportunities) ▪ With climate-related risks as a component of ESG risks, the Risk Policy Committee also oversees: ▪ Integration of climate-related risks into the Company’s enterprise risk management ▪ Management and assessment of climate-related risks
Executive Management	▪ The Chief Executive Officer (CEO) is currently a member of the Board of Directors, the Corporate Governance and Sustainability Committee, and the Risk Policy Committee. ▪ Manages business operations according to strategies and plans approved by the Board of Directors, which covers ESG strategy framework ▪ With climate change as a component of the ESG strategy framework, the Executive Management oversees: ▪ Integration of climate strategy into overall business strategy, and progress against climate-related goals and targets ▪ Implementation of effective climate-related risk and opportunity management ▪ Appointment of responsibilities for implementing climate strategy and climate-related risk and opportunity management
Sustainable Development Working Team	▪ Integrates ESG strategy framework into overall business operations, which covers climate change ▪ Implements climate strategy and actions plans to achieve climate-related goals, targets and to mitigate climate-related risks
Risk Management Working Team	▪ Integrates climate-related risks into the Company’s enterprise risk management ▪ Manages and assesses ESG risks, which covers climate-related risks

* For additional details on the Corporate Governance and Sustainability Committee, please visit:
www.centralretail.com/storage/document/cg-charter/crc-corporate-governance-and-sustainable-development-committee-en.pdf

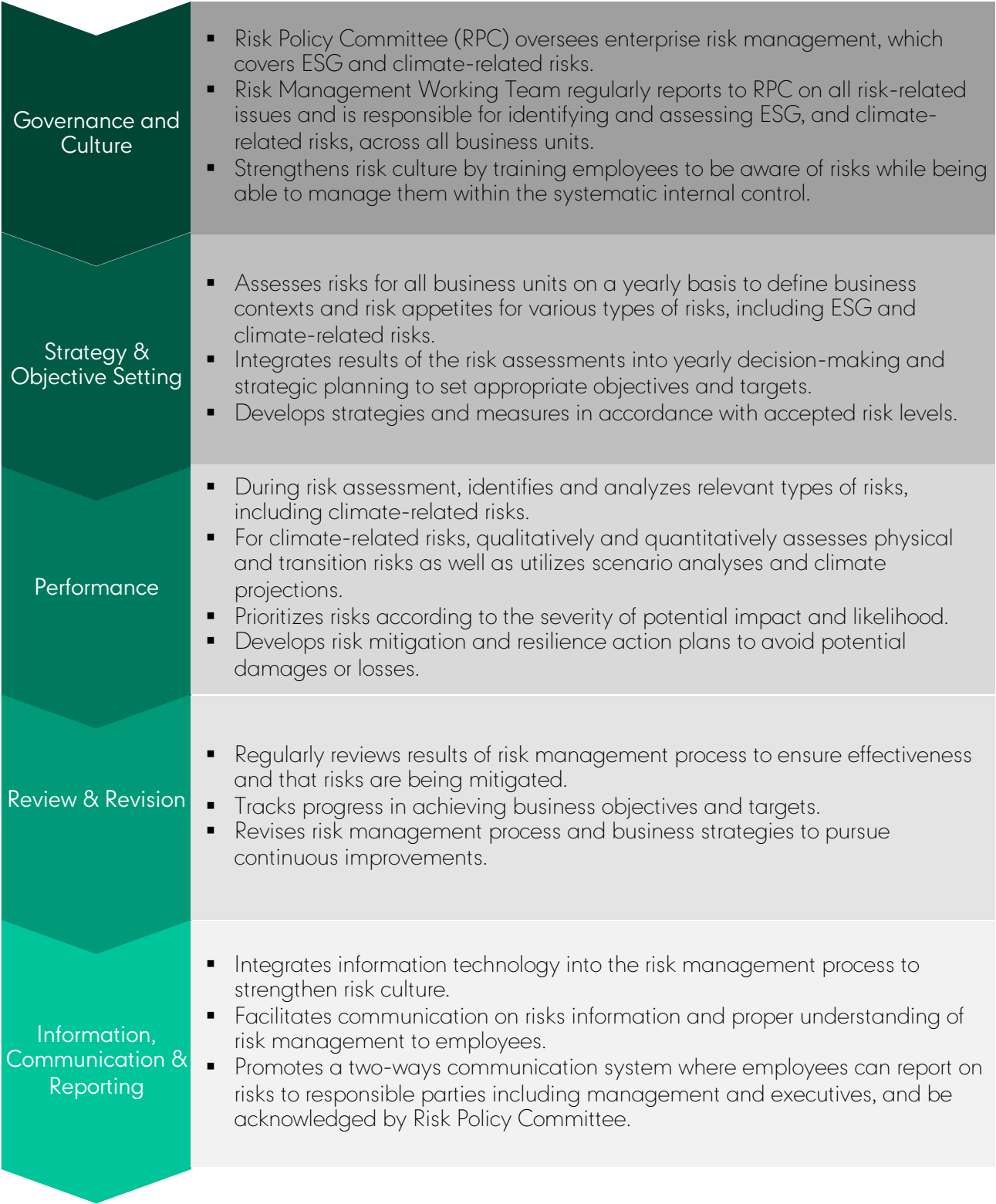
** For additional details on the Risk Policy Committee, please visit: www.centralretail.com/storage/document/cg-charter/crc-charter-risk-committee-en.pdf

RISK MANAGEMENT

Central Retail has developed a risk management policy and framework and has analyzed key risks inherent to its business operations to ensure good corporate governance and enhance confidence of all relevant stakeholders. The Company's enterprise risk management system is developed to meet the internationally recognized Committee of Sponsoring Organizations of the Treadway Commission's Enterprise Risk Management Framework 2017 (COSO ERM 2017), comply to relevant laws, and encompass all types of risks, both financial and non-financial risks including ESG risks. Importantly, climate-related risks (and opportunities) are being covered under ESG risks, and have been integrated into the Company's existing risk management framework, policies, and internal control process. Thus, climate-related risks are managed under the same risk management process as any other type of risks.

RISK MANAGEMENT

The Company’s enterprise risk management framework and process covering climate-related risks and opportunities is as follows:



CLIMATE STRATEGY

In order to develop a climate change strategy in alignment with the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD), Central Retail has conducted a climate-related risk assessment. The assessment is based on data collected from 2021 and covers both physical and transition risks and opportunities as well as applying scenario analysis recommended by TCFD.

Central Retail's businesses comprise four key business segments, including Fashion, Food, Hardline, and Property, and expand across Thailand, Vietnam, and Italy. In this TCFD-aligned climate-related risk assessment, the Company focuses on critical assets and core business units within Thailand accounting for 71% of revenue and plans to further expand the scope and depth of assessments in the future.

PHYSICAL RISKS - CATEGORIES

“Physical risks resulting from climate change can be event driven (acute) or longer-term shifts (chronic) in climate patterns. Physical risks may have financial implications for organizations, such as direct damage to assets and indirect impacts from supply chain disruption. Organizations’ financial performance may also be affected by changes in water availability, sourcing, and quality; food security; and extreme temperature changes affecting organizations’ premises, operations, supply chain, transport needs, and employee safety.”

TCFD Guidance on Risk Management Integration & Disclosure

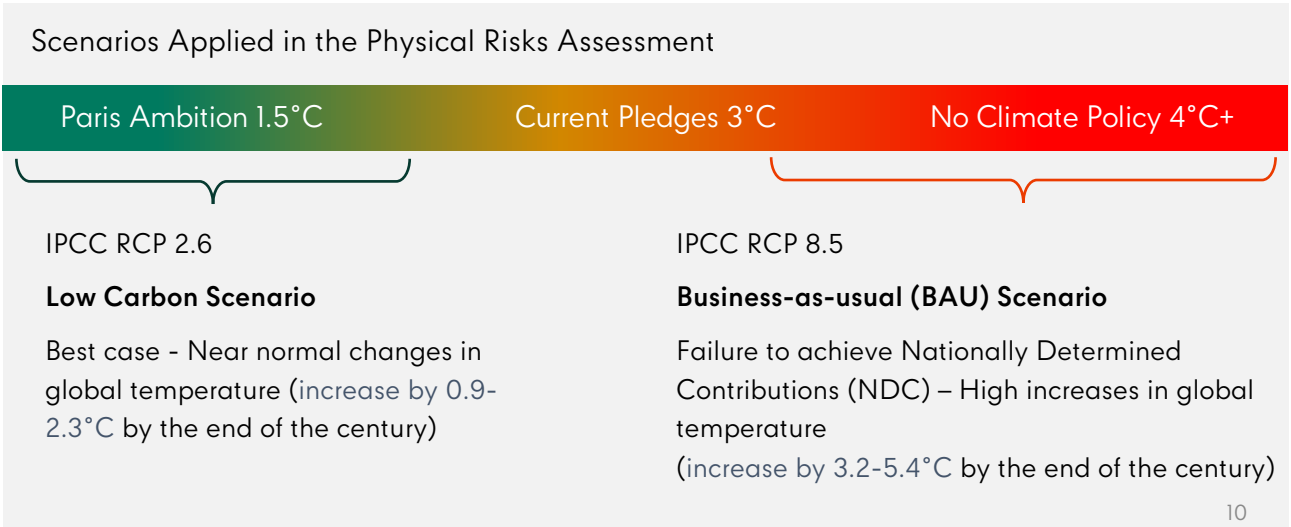
Acute	Chronic
▪ Event-driven risks (e.g. extreme weather events such as cyclones, hurricanes, floods, wildfires) ▪ Timing: Short time horizons, and can be abrupt and difficult to forecast ▪ Scope: Uncertain effects depending on type of events and geography ▪ Impact: Uncertain severity with nonlinear impact for each event ▪ Complex relationships between factors and variables that influence weather events	▪ Long-term shifts in climatic patterns (e.g. sea level rise, chronic heat waves, water stress and drought) ▪ Timing: Long time horizons ▪ Scope: Uncertain effects depending on type of event and geography ▪ Impact: Uncertain severity with nonlinear impact from going over thresholds and tipping points
Example ▪ Storm damage results in large maintenance and clean up costs ▪ Flooding can cause supply chain disruptions	Example ▪ Higher temperatures reduce efficiency of cooling units, drought reduces crop supply ▪ Drought may result in water extraction exceeding limits leading to non-compliance, or conflict with other water users

PHYSICAL RISKS – SCOPE OF ANALYSIS

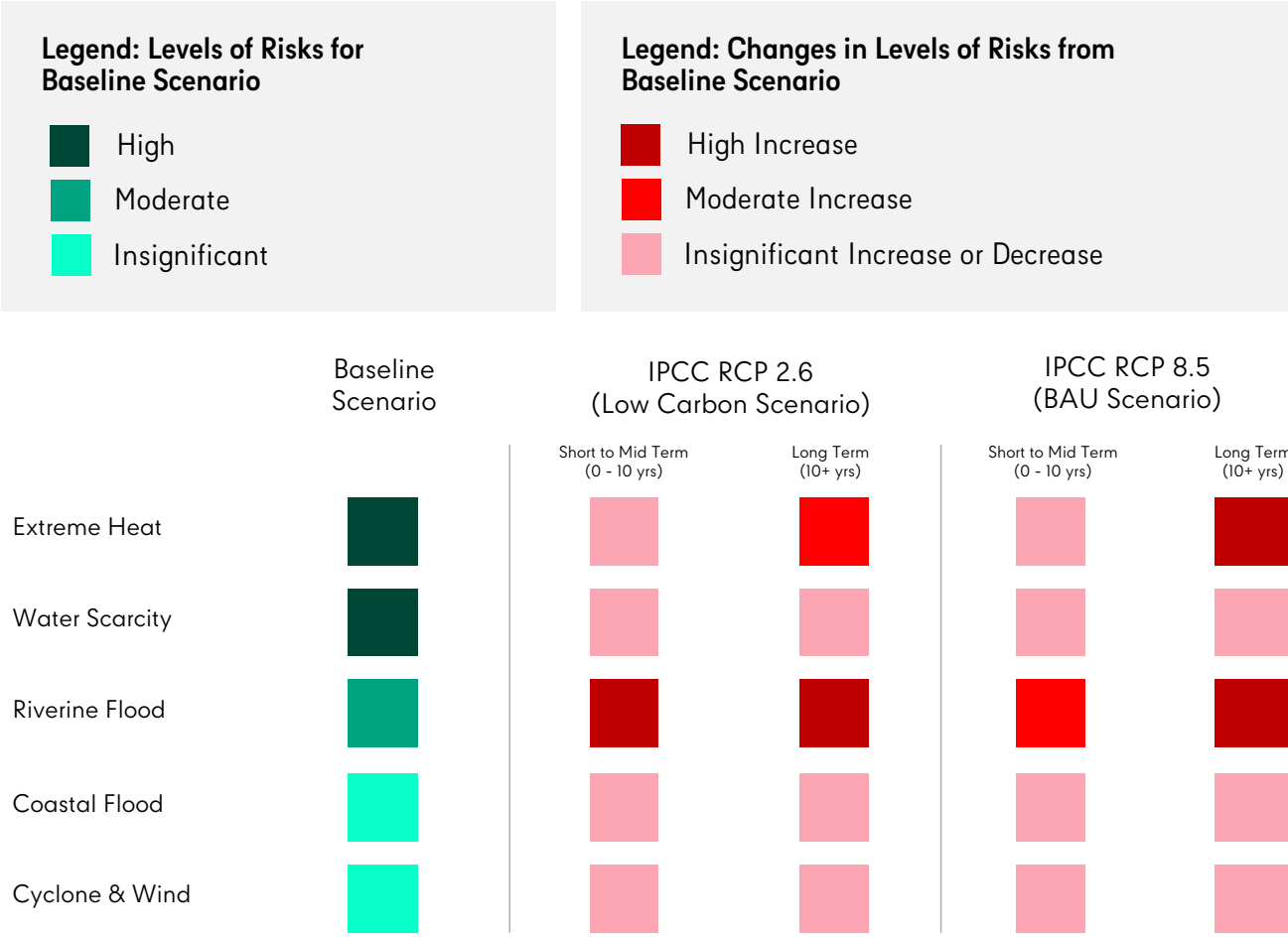
Central Retail conducted a physical risk assessment for 26 critical assets in Thailand including relevant upstream and downstream activities.

The physical risk assessment shows the levels of risks for the baseline scenario, and the projected changes in levels of risks from the baseline scenario for the Intergovernmental Panel on Climate Change (IPCC) Representative Concentration Pathway (RCP) 2.6 (low carbon scenario) and IPCC RCP 8.5 (business-as-usual (BAU) scenario) at medium-, and long-term timeframes.

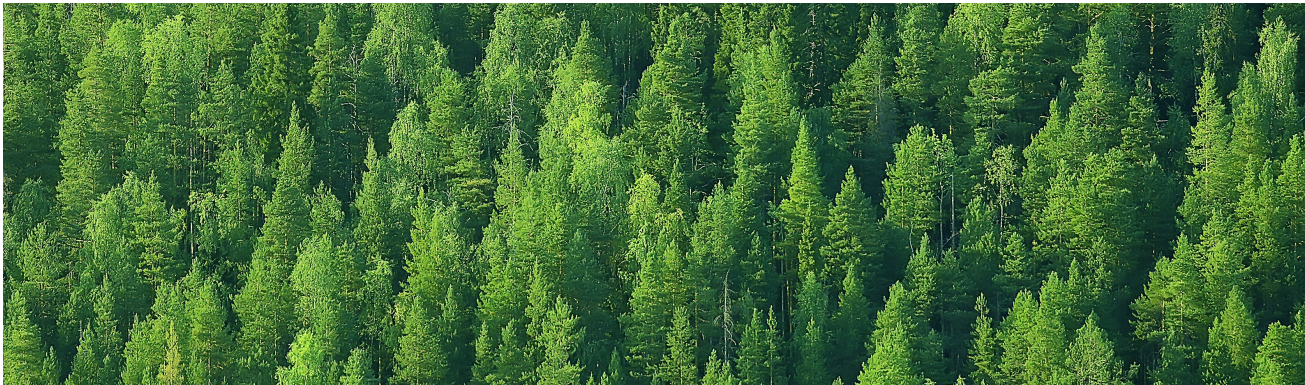
Scenarios	• Baseline • IPCC RCP 2.6 (Low carbon scenario) • IPCC RCP 8.5 (Business-as-usual scenario)
Timeframes	• Short-term: 0-2 years • Mid-term: 2-10 years • Long-term: 10 years and above
Physical Climate Hazards	• Water stress • Riverine flood • Coastal flood • Extreme heat • Cyclones/winds
Coverage	• 26 critical assets in owned by the Company in Thailand, including retail stores, shopping malls, distribution center and warehouses • Relevant upstream and downstream activities.



PHYSICAL RISKS – ASSESSMENT



- Risk of extreme heat will increase in both scenarios, especially in the long-term.
- Risk of water scarcity appears more critical in short- to mid-term than in the long-term.
- Risk of riverine floods will almost certainly become material in both scenarios and both timeframes, which stands out to be the most concerned type of physical hazard to Central Retail.
- Coastal floods, cyclones, and wind are the least significant physical risks in all scenarios and all timeframes.



PHYSICAL RISKS – KEY FINDINGS

Hazard Type	Key Findings	Business Implication			Financial Implication
		Description	Short to Mid Term (0-10 yrs)	Long Term (10+ yrs)	
Extreme Heat	The extreme heat hazard is likely to intensify for all Central Retail sites studied under all climate change scenarios.	- Potential health and safety risk for employees, contractors, suppliers, and customers due to heat stress - Reduced productivity of employees, contractors, and suppliers - Breakdown of equipment leading to increase in cost - Loss of agricultural products and lower crop yield because during cultivation	✓	✓	Not yet calculated
Water Scarcity	Most of the Company's assets studied may be exposed to increased water stress in the near-century. Water availability may be affected by factors such as local water demand and available water resources.	- Unavailability of water for operations including drinking and sanitation - Reputational risk during water stressed periods - Lower crop yield and may lead to the loss of agricultural products and lead to higher costs	✓	✓	
Riverine Flood	Likely moderate to significant increase in riverine flood intensity at most assets studied.	- Safety risks for employees, contractors and suppliers, and customers - Increased cost for replacement or repair of damaged assets - Water damage to infrastructure, equipment and stored goods - Increased insurance costs - Disruption in food production leading to higher costs - Supply chain and logistics interruptions leading to loss in revenue	✓	✓	10 - 30% increase in cost incurred from flood damage by 2030* 14 - 48% increase in cost incurred from flood damage by 2050*
Coastal Flood	Likely increase in coastal floods is expected for selected assets that are located within 5 km from the shoreline				
Cyclone & Wind	Selected assets in Southern and Northeastern Thailand may be more exposed to cyclones under all climate change scenarios.	- Safety risks for employees, contractors and suppliers, and customers - Increased cost for replacement or repair of damaged assets - Damage to buildings and infrastructure - Increased insurance costs - Supply chain and logistics interruptions leading to loss in revenue	✓	✓	Not yet calculated

Hazard Type	Response Measures / Adaptation Plan**			
	Description		Short to Mid Term (0-10 yrs)	Long Term (10+ yrs)
Extreme Heat	- Consider extreme heat conditions in emergency response plan - Provide training to employees to identify symptoms of heat stress and provide first aid		✓	
Water Scarcity	- Adopt water-efficient/ saving technology to reduce water usage - Explore opportunities for rainwater harvesting at the site and at the catchment level - Explore opportunities to reuse/recycle wastewater within the plant or from nearby communities.		✓	✓
Riverine / Coastal Flood	- Implement/ follow monitoring mechanisms with the national or regional meteorological agencies for the early warnings system. - Evaluate existing spill management plans/ storm water management plans - Design and implement suitable mitigation measures such as increasing capacity of pumping system, construction of flood barrier etc. - Consider flood hazard in emergency response plan with due consideration for passengers during flooding		✓	✓
Cyclone & Wind	- Implement/ follow monitoring mechanisms with the national or regional meteorological agencies for the early warnings system. - Develop a response mechanism to plan operations and take preventive steps (e.g. planned shut down before cyclone, etc.) to reduce impacts		✓	

* Based on a semi-quantitative estimation of 2 selected assets, and in comparison to historical cost incurred from flood damage.

**For existing and new operations within the same area.

TRANSITION RISKS - CATEGORIES

“Transitioning to a lower-carbon economy may entail extensive policy, legal, technology, and market changes to address mitigation and adaptation requirements related to climate change. Depending on the nature, speed, and focus of these changes, transition risks may pose varying levels of financial and reputational risk to companies.”

TCFD Guidance on Risk Management Integration & Disclosure

Policy and Legal



- Policy actions attempt to reduce actions that contribute to climate change
- Policy actions that seek to promote adaptation to climate change

Example

- Paris Agreement and COP26
- Carbon tax, emission trading

Market



- Shifts in supply and demand for certain products/services from climate change
- Customer behavior change to prefer energy from renewable sources

Example

- Fluctuations in price levels
- Net Zero commitments, etc.

Technology



- Technological improvements or innovations that support the transition to lower-carbon, energy-efficiency
- Disruption of old systems by new technology

Example

- Greener and cheaper clean technology

Reputation



- Stakeholders are aware and concern of emissions from fossil fuel and impacts
- Community perceptions of the Company’s contribution to or detracton from low carbon economy

Example

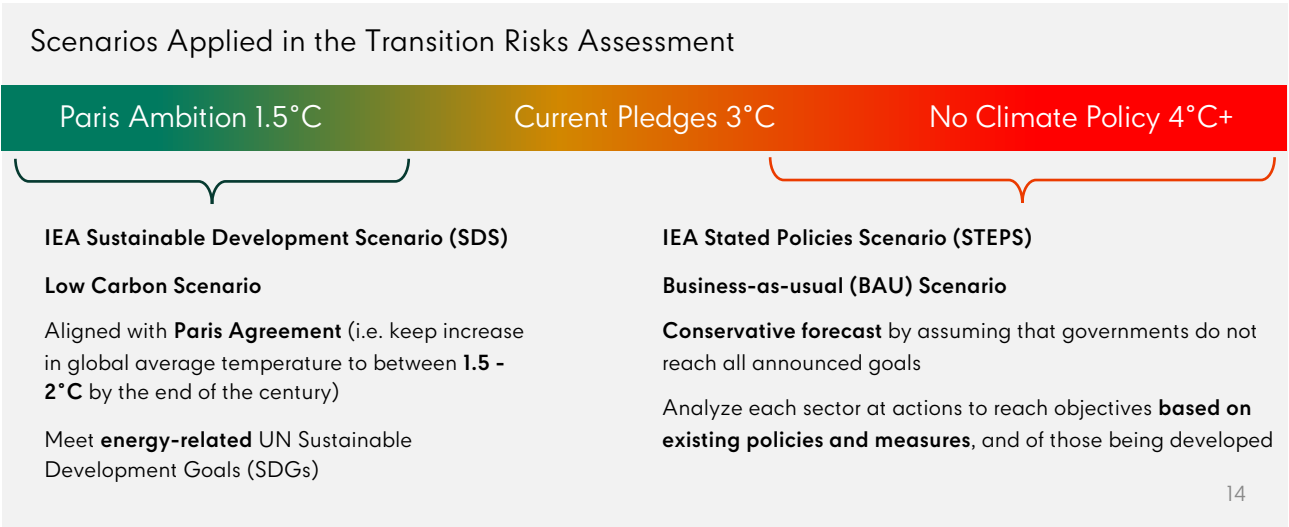
- Shifts in public perception and attitudes

TRANSITION RISKS – SCOPE OF ANALYSIS

Central Retail conducted a transition risk assessment for business operations in Thailand, and relevant upstream and downstream activities.

The transition risk assessment shows a comparison of the levels of risks between the Sustainable Development Scenario (SDS, or the "low carbon scenario") and the Stated Policies Scenario (STEPS, or the "Business-as-usual scenario"), developed by the International Energy Agency (IEA).

Scenarios	▪ IEA SDS (Low carbon scenario) ▪ IEA STEPS (Business-as-usual scenario)
Timeframes	▪ Short-term: 0-2 years ▪ Mid-term: 2-10 years ▪ Long-term: 10 years and above
Transition Drivers	▪ Carbon pricing ▪ Changing input prices ▪ Green consumerism for low-carbon products ▪ Low-carbon logistics ▪ Low-carbon solutions for commercial buildings ▪ Circular economy adoption ▪ Ban on single-use plastics ▪ Increased stakeholder appreciation for climate responsible businesses
Coverage	▪ All business units in Thailand, ▪ Relevant upstream and downstream activities.



TRANSITION RISKS – IMPLICATION OF DRIVERS

Transition Drivers	Risk or Opportunity	Category	Business Implication
Carbon Pricing	Risk	Policy & Legal	The government may introduce direct carbon tax as an economic instrument to mitigate climate change, resulting in higher operation expense (OPEX) for the Company.
Changing Input Prices	Risk	Market	Climate change may cause availability of certain inputs such as energy, water, and raw materials to become volatile, which put increase pressure on costs of those inputs and increase OPEX for the Company.
Green Consumerism for Low Carbon Products	Risk	Market	Demand for environmental-friendly products is increasing as consumers become aware of climate change, and not able to meet these demands can lead to decreases in revenue and customer satisfaction.
Low Carbon Logistics	Risk	Technology	Expanding business operations and e-commerce will lead to higher fuel consumption/costs. Climate change and other transition drivers can cause increases in OPEX and investment in response measures (CAPEX).
Low Carbon Solutions for Commercial Building	Risk	Technology	Expanding business operations will lead to construction of more department stores, distribution centers and warehouses, which lead to higher electricity consumption/costs. Climate change and other transition drivers, can cause increases in OPEX and investment in response measures (CAPEX).
Circular Economy Adoption	Risk	Technology	Investors and stakeholders are becoming increasingly aware of circular economy and environmental footprint of production. The Company can face higher CAPEX and OPEX in trying to meet these stakeholder expectations to reduce environmental impact and reduce greenhouse gas emissions.
Ban on Single-use Plastics	Opportunity	Policy & Legal	With the slated ban on single-use plastics, the Company may be able to create higher revenue from environmentally-friendly packaging made from renewable materials and using eco-design.
Increased Stakeholder Appreciation for Climate Responsible Businesses	Opportunity	Reputational	Higher awareness and more stringent expectations from regulators, investors and other key stakeholders on climate-related issues will put pressure on businesses to take climate actions. The Company's early start on climate journey ahead of certain peers can lead to competitive advantage and higher capital.

TRANSITION RISKS – ASSESSMENT

	Variance of SDS from STEPS (Variance of Low Carbon from BAU Scenarios)		
	Short Term (0 - 2 yrs)	Medium Term (2 - 10 yrs)	Long Term (10+ yrs)
Carbon Pricing (PL)			
Changing Input Prices (M)			
Green Consumerism for Low Carbon Products (M)			
Low Carbon Logistics (T)			
Low Carbon Solutions for Commercial Building (T)			
Circular Economy Adoption (T)			
Ban on Single-use Plastics (PL)			
Increased Stakeholder Appreciation for Climate Responsible Businesses (R)			
Legend: Categories of Transition Risks PL = Policy & Legal M = Market T = Technology R = Reputation Legend: Levels of Risks  High  Moderate  Insignificant Legend: Levels of Opportunities  High  Moderate  Insignificant			

TRANSITION RISKS – KEY FINDINGS

Transition Drivers	Potential Impact		Financial Implications	Response Measures
	Short to Medium Term (0-10 Years)	Long Term (10+ Years)		
Carbon Pricing (PL)	Mandatory carbon pricing in Thailand is unlikely in both SDS and STEPS scenarios, which also makes impact insignificant.	Likelihood may increase to possible while impact becomes moderate.	STEPS: Operating profits expected to decrease by 0.78% in 2030, and 1.16% in 2050. SDS: Operating profits expected to decrease by 1.93% in 2030, and 5.61% in 2050.	- Develop internal carbon pricing tool to track current and expected increase in operational costs due to carbon pricing - Implement greenhouse gas mitigation measures to reduce carbon cost.
Changing Input Prices (M)	Prices of certain inputs, such as fossil fuels and consumer goods, are possibly to become volatile, affecting operation expenses with moderate level of impact.	Changing input prices are likely to occur and to have high impact on business operations with increasing operational expenses.	Not yet calculated	- Diversify raw material sourcing strategy to avoid sourcing goods from geographic locations that experience significant impact from climate change - Review the Company's existing inventory management process with regards to warehouses and distribution centers to identify any issues that may result in unnecessary waste.
Green Consumerism for Low Carbon Products (M)	Green consumerism trend is expected to increase from higher public awareness and increasing prevalence of eco labels, which can pose high risk to Central Retail's revenue.	Trend continues to intensify and may pose high risk to revenue as low-carbon products become the norm.		- Assess and expand existing products that are categorized as low-carbon and sustainable. - Adopt carbon footprint and sustainability standards in sourcing criteria (e.g. TGO labels).
Low Carbon Logistics (T)	Poses moderate risk from increased costs of fuel as supply chains and logistic systems expand.	Risk becomes high as costs of fuel are expected to further increase along with further expansion of supply chains. Leads to increase in operating costs if no actions are taken.	Not yet calculated	- Adopt technological solutions for and smart controls (e.g. route calculation) to optimize logistics and energy management systems. - Modernize fleet of vehicles to become low-carbon, which may include pilot project for new vehicle technologies (e.g. electric trucks, fuel switch).
Low Carbon Solutions for Commercial Buildings (T)	Risk is considered moderate from increase in energy costs. Investment can lead to increase in CAPEX.	Risk becomes high due to increasing CAPEX as new department stores are being built as part of business expansion. Leads to increase in operating costs if no actions are taken.		- Increase investment in renewable energy technologies for buildings' energy supply, such as solar PV, as they becomes more cost-competitive. - Green retrofit of owned assets and replace energy-intensive with energy-efficient electrical equipment. - Reinforce energy saving measures to raise employees' awareness
Circular Economy Adoption (T)	Increased CAPEX and OPEX to improve circularity with new technologies becoming available, but risks are moderate.	Higher likelihood but impact of risks remains moderate.		- Review the existing inventory management process to address issues that result in unnecessary waste. - Implement processes to transform remaining wastes into useful products. - Engage with suppliers to reduce wastes throughout supply chain.
Ban on Single-Use Plastics (PL)	Government's ban on various plastics by 2030 presents an opportunity to reduce OPEX. However, given that packaging is a relatively minor cost item, the impact of reducing packaging may be moderate.	In the long run, the Company may be able to create higher revenue from more environmentally friendly packaging, although the impact is expected to be moderate as explained in the short and medium term.	Not yet calculated	- Transition to eliminating 100% single-use plastics. - Adopt bio-based or eco-design packaging solutions. - Engage with suppliers and customers to reduce plastic packaging
Increased Stakeholder Appreciation for Climate Responsible Businesses (R)	Reputation can have impact on revenue and costs. Central Retail early move ahead of certain peers presents a moderate opportunity in the short to medium term.	With recognition and awareness of climate disclosures increasing, the advanced progress of the Company's climate journey will become critical opportunity to increase revenue.		- Continue to improve sustainability and climate journey with information disclosure in accordance with international frameworks (e.g. DJSI CSA, TCFD, CDP, etc.) - Engage with key stakeholders to drive low carbon transition such as integrating climate-related criteria in sourcing policy

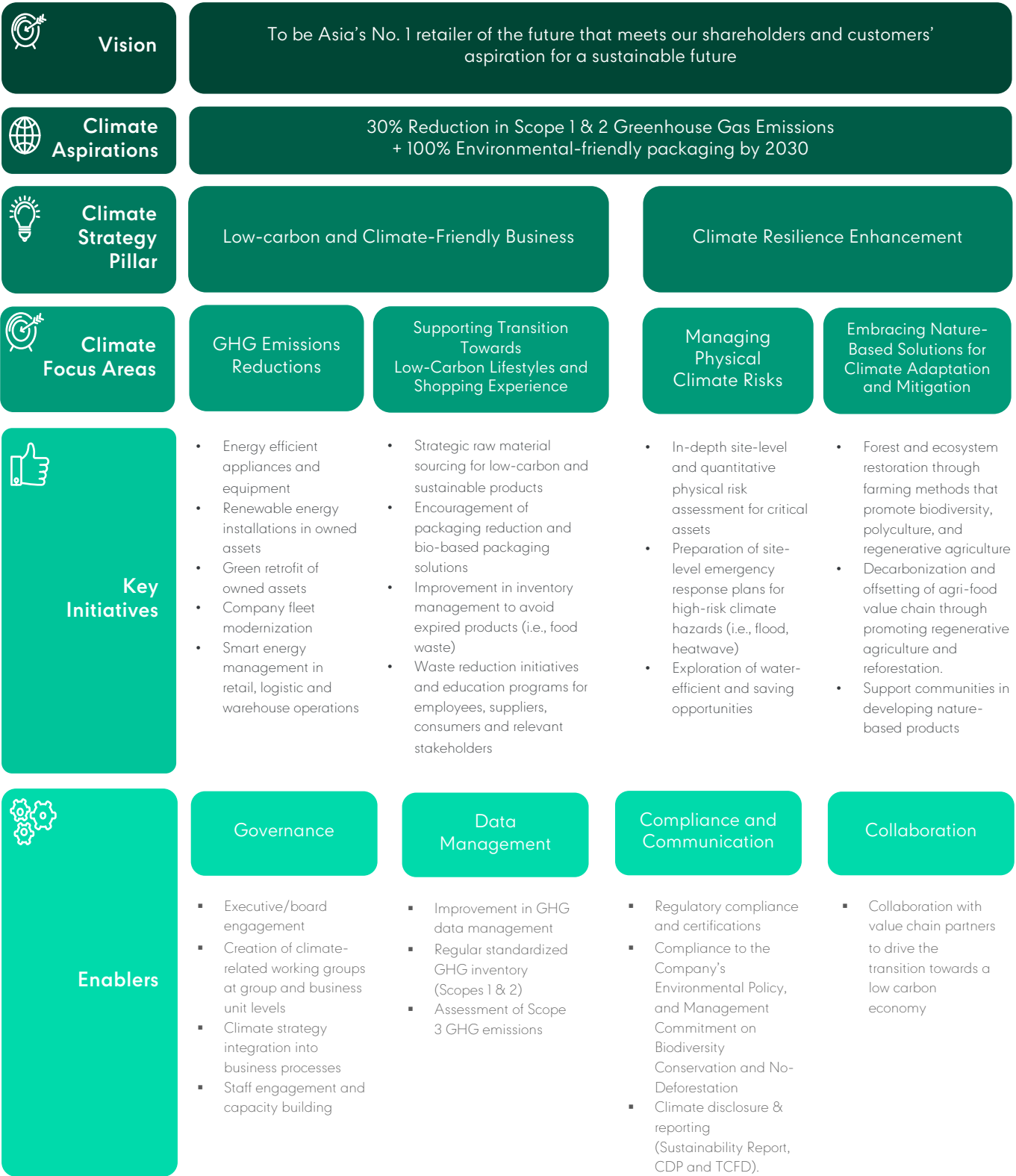
Risks

Opportunities

PL = Policy & Legal, M = Market, T = Technology, R = Reputation

CLIMATE STRATEGY FRAMEWORK

Based on climate-related risk assessment, Central Retail has formulated a climate strategy to guide the Company toward the climate aspirations of the Sustainability Goals 2030.



METRICS & TARGETS

Central Retail sees the importance of setting climate-related targets and collecting data for establishing a baseline and to track progress. With regards to climate change, the Company has been conducting greenhouse gas (GHG) inventories for scope 1 & 2 emissions on an annual basis. The Company expanded the coverage of GHG inventory towards scope 3 emissions for selected categories, including downstream transportation and distribution, employee commuting, and business travel by airplane. The GHG inventories are developed in alignment with the recommendations of the GHG Protocol.

GREENHOUSE GAS EMISSIONS AND CLIMATE TARGETS AND METRICS

The Company has adopted the recommendations of the GHG Protocol in data collection methodology since 2021, which will continue to be used in the future. The Company is determined to further improve its data collection methodology to become more comprehensive, accurate, and consistent in coverage for future years.

The Company has announced a group-wide target to reduce greenhouse gas emissions (scope 1 & 2) by 30% within 2030. Last but not least, the Company is committed to achieve group-wide net-zero emissions (scope 1 & 2) by 2050.

Direct Target	Reduce greenhouse gas scope 1 and 2 emissions by 30% by 2030	Achieve net-zero target for scope 1 and 2 emissions by 2050
Indirect Targets	Promote eco-friendly packaging by 100% by 2030	Reduce food loss and wastes by 30% by 2030

Greenhouse Gas Emissions	FY 2021
Scope 1 (tCO ₂ e)	39,526.68
Scope 2 (tCO ₂ e)	384,588
Total Scope 1 & 2 (tCO₂e)	424,110.68
Scope 3* (tCO ₂ e)	37,183.26
Scope 1 & 2 Intensity** (tCO ₂ e / Total Revenue in million THB)	3.38



*Scope 3 includes 3 categories, which are 1) Downstream transportation and distribution, 2) Employee commuting, and 3) Business travel by airplane.

**Intensity is calculated by dividing scope 1 & 2 GHG emissions by total revenues (from sales of goods, rental services, and rendering of services).

TCFD CONTENT INDEX

TCFD Recommendation		Public Disclosure
Governance	a. Describe the board's oversight of climate-related risks and opportunities.	- Pages 4-5 https://www.centralretail.com/storage/document/cg-charter/crc-corporate-governance-and-sustainable-development-committee-en.pdf https://www.centralretail.com/storage/document/cg-charter/crc-charter-risk-committee-en.pdf
	b. Describe management's role in assessing and managing climate-related risks and opportunities.	
Strategy	a. Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	Pages 8-18
	b. Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	
	c. Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	
Risk Management	a. Describe the organization's processes for identifying and assessing climate-related risks.	- Pages 6-7 https://hub.optiwise.io/en/documents/46391/20220407-crc-ar2021-en.pdf Pages 160-161, 172-173
	b. Describe the organization's processes for managing climate-related risks.	
	c. Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	
Metrics & Targets	a. Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	Pages 19-20
	b. Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas (GHG) emissions and the related risks.	- Pages 19-20 https://www.centralretail.com/storage/document/sustainability-reports/2021/sd-report-2021-en.pdf Page 44
	c. Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	- Pages 19-20 https://www.centralretail.com/storage/document/sustainability-reports/2021/sd-report-2021-en.pdf Pages 27, 44

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