

Task Force on Climate-Related Financial Disclosures (TCFD)



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01 | Introduction



Introduction



CKPower voluntarily adopts the TCFD recommendations in 2023 to disclose climate-related financial information for its stakeholders and investors to make informed investment decisions. The adoption complements CKPower’s sustainability reporting, as “Energy Management and Climate Strategy” is one of CKPower high-priority ESG material issues.

CKPower has assessed and prioritized climate-related risks and opportunities in accordance with Task Force on Climate-related Financial Disclosures (TCFD) framework, which includes four core elements as shown in the Figure 1.

Core Elements of Recommended Climate-Related Financial Disclosures

Governance

The organization’s governance around climate-related risks and opportunities

Strategy

The actual and potential impacts of climate-related risks and opportunities on the organization’s businesses, strategy, and financial planning

Risk Management

The processes used by the organization to identify, assess, and manage climate-related risks

Metrics and Targets

The metrics and targets used to assess and manage relevant climate-related risks and opportunities

Figure 1: Core Elements of Recommended Climate-Related Financial Disclosures



02

TCFD Core Element: Governance



Governance

Recommended Disclosure: a) Describe the board's oversight of climate-related risks and opportunities

CKPower's management structure is composed of the Board of Directors, four subcommittees, and the management team. The four subcommittees include the Audit Committee, the Executive Committee, the Nomination and Remuneration Committee, and the Corporate Governance, Risk Management, and Sustainable Development Committee.

To promote and support sustainable development and business continuity management, CKPower has established the Sustainable Development Steering Committees and the Plant Sustainability Working Teams. These groups report directly to the Corporate Governance, Risk Management, and Sustainable Development Committee. The Sustainable Development Steering Committees are led by the Managing Director, who serves as their head. Additionally, the Corporate Sustainability Working Team and the Business Continuity Management Working Team are responsible for supporting efforts to increase efficiency.

The Committee is tasked with overseeing climate-related risks and opportunities across CKPower's operations, ensuring alignment with corporate sustainability and climate strategies. This includes assessing climate-related risks and opportunities, creating climate risk mitigation and adaptation plans, and monitoring climate-related performance. The Committee also provides oversight for strategic business planning, budgeting, monitoring, and implementation.

Progress updates regarding sustainability and climate change issues are provided to the Committee on a semi-annual basis by CKPower's sustainability working team. This ensures that the Committee is regularly informed and can offer guidance and advice on decision-making related to sustainability and climate change issues. Further details can be found in Figure 2 on page 8 of the report.

Governance

Recommended Disclosure: b) Describe management's role in assessing and managing climate-related risks and opportunities

CKPower has established the Sustainable Development Steering Committee, chaired by the company's management team and comprised of executives from all power plants, representing all relevant areas of work. The committee is responsible for the following tasks:

- Establishing strategic directions and goals that align with national and international sustainability policies and frameworks for sustainable organizational management standards.
- Providing recommendations and guidance on sustainability management to the sustainability working teams.
- Appointing the sustainability working teams of CKPower and its subsidiaries.
- Monitoring, reviewing, and evaluating the performance of the sustainability working teams of CKPower and its subsidiaries.
- Reporting the progress of sustainability management to the Corporate Governance, Risk Management, and Sustainable Development Committee and the Board of Directors.

Additionally, CKPower has appointed a Sustainability Supporting and Disclosure Working Team and a Plant Sustainability Working Team at each of its plants to collaboratively advance the sustainability initiatives of the CKPower Group.

Furthermore, executives are eligible for variable monetary incentives tied to climate-related performance, determined by the achievement of Key Performance Indicators (KPIs), such as long-term emission reduction, renewable energy capacity growth, energy consumption reduction and increase renewable electricity consumption within the organization.

Governance Structure of CKPower

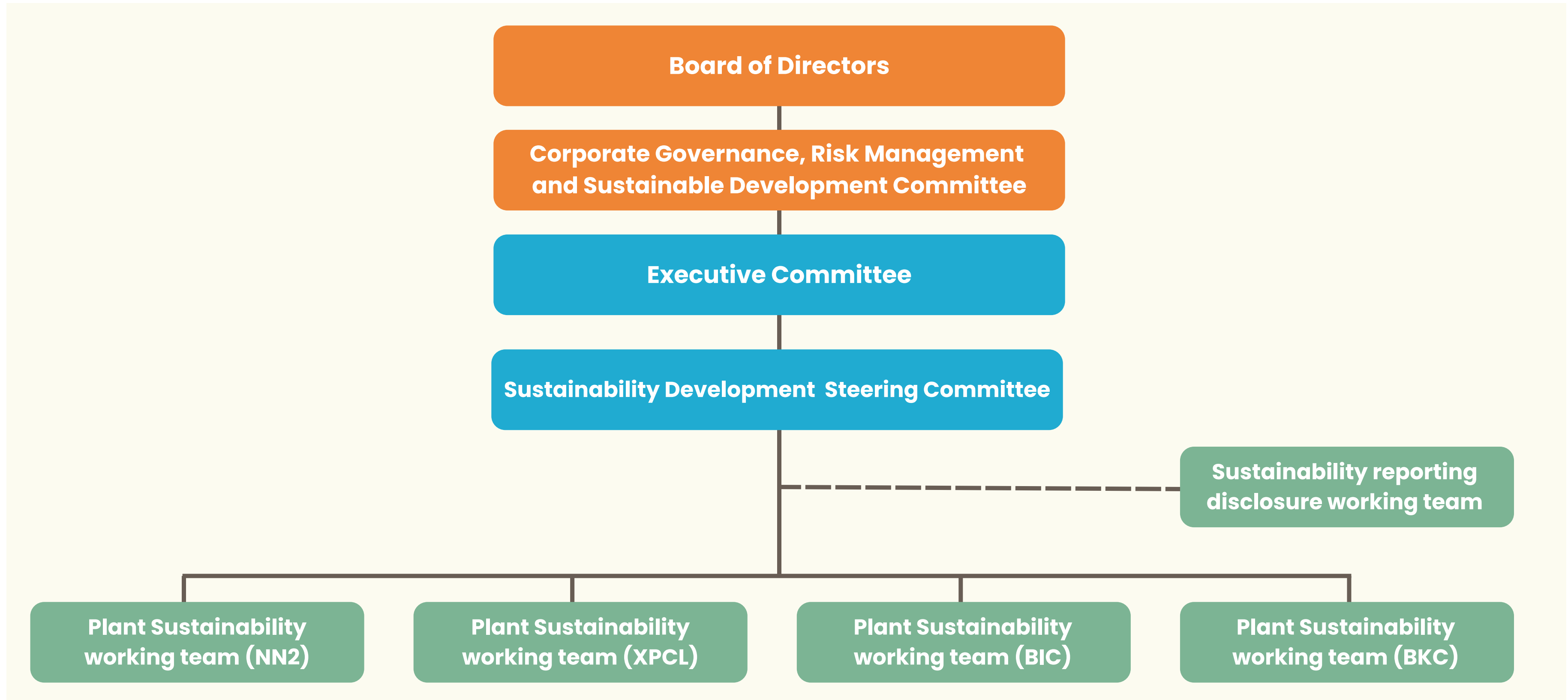


Figure 2: Structure of Sustainability and Climate Change Governance



03 | TCFD Core Element: Strategy

Strategy

 **Recommended Disclosure: a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term**

CKPower recognizes the importance of climate change management and has identified it as a key materiality topic. Consequently, the company conducted a comprehensive risk and opportunity assessment analysis of all business activities along the value chain, including both core and support activities. This process aimed to gather relevant data for assessing the impact on all stakeholders involved in the value chain.

In accordance with the TCFD guidelines, an international standard for disclosing financial information related to climate change, CKPower categorized risks into physical and transition risks. Key physical risks include increased extreme weather events, floods, droughts, and increased temperatures. Conversely, key transition risks encompass the impact of renewable plants, stakeholder concerns and negative feedback, increased technological competition, changes in customer demand and behavior, increased pricing of greenhouse gas (GHG) emissions, and regulatory mandates on existing products and services. Based on risk evaluation results, increased temperature is the only physical risk posing a potential long-term impact on the company, while several transition risks will have an impact in the medium term onwards.

CKPower conducted the risk assessment in line with recognized guidelines and models from multiple sources, such as the Sixth Assessment Report by the IPCC, Aqueduct Tool by the World Resources Institute, the U.S. Climate Resilience Toolkit and Climate Explorer managed by NOAA's Climate Program Office, and the World Energy Outlook by the IEA. The assessment covered CKPower Group's business operations in Thailand and Laos over short (1-2 years), medium (3-5 years), and long-term (>5 years) timeframes. Additionally, the company utilized the Climate-Related Risk and Opportunity Assessment to develop a management system, oversee strategy, and create plans for addressing climate change. This includes setting targets and directions for implementation to achieve net-zero greenhouse gas emissions by 2050.

CKPower incorporated a corporate financial risk matrix and criteria to prioritize and evaluate the level of impact (including financial impacts) and likelihood for the identified risks. A summary of the climate-related risks can be found on pages 12-15 of the report.

Strategy

 **Recommended Disclosure: b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.**

The impact of climate-related risks and opportunities is integrated into CKPower's Enterprise Risk Management (ERM) framework as strategic and operational risks. The company systematically reviews and actively defines appropriate risk mitigation and adaptation strategies to manage risks across business operations and future investments. These insights inform decision-making and the formulation of a climate strategy, which focuses on long-term greenhouse gas (GHG) emission reduction toward net-zero while maintaining the company's capability to handle climate-related risks through mitigation and adaptation approaches.

CKPower has developed energy management and climate change strategies in accordance with international assessment standards and the guidelines of the Task Force on Climate-Related Financial Disclosures (TCFD). The results of these strategies are utilized in risk and opportunity analyses to formulate action plans for the Energy Management and Climate Change Roadmap.

CKPower is committed to promoting renewable energy technologies, such as hydroelectric and solar power plants, in order to reduce carbon emissions and the greenhouse gas effect. The company also aims to increase awareness of energy conservation. CKPower has created a five-year strategic plan (2022-2026) that aligns with the net-zero GHG emissions goal by 2050. Accordingly, the company has set a target to increase the proportion of renewable energy in its electricity production to 95% by 2043, while also striving to achieve 100% renewable electricity consumption within the organization (RE100) by 2043. These targets have been integrated into the company's business development plan, which emphasizes innovation to conserve energy and reduce greenhouse gas emissions throughout its supply chain.

Strategy

 **Recommended Disclosure: b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.**

In 2023, the risk related to increased temperature posed a potentially high impact for CKPower in the long term. As a result, the company has established management approaches to address this risk through both mitigation and adaptation strategies, as well as setting up a strategy to reduce GHG emissions in the long term. Similarly, risks related to technology and the market could potentially have a high impact on the company if not managed effectively in the long term. CKPower's climate strategy aims to achieve net-zero GHG emissions by 2050, focusing on accelerating renewable energy development without additional fossil power plant investment. The company will also accelerate GHG scope 1 and 2 reduction through power plant optimization, fuel switching (e.g., renewable electricity consumption within the organization, including REC and replacement of existing vehicles with electric vehicles), and offsetting through afforestation and reforestation.

CKPower has identified opportunities to diversify its business into low-carbon products that correspond to changes in customer behaviors and global energy consumption trends. The company plans to participate in the voluntary environmental attribution market by generating carbon credits and Renewable Energy Certificates (RECs) where applicable as financial opportunities. A summary of climate-related risks can be found on pages 12-15 of the report.

Physical Risks

Climate-Related Risks	Implication to CKPower's Business	Financial Implication	Time Horizon		
			Short-term	Medium-term	Long-term
Increase Extreme Weather (i.e. hail, lightning, wind/cyclones)	<ul style="list-style-type: none"> Weather extremes (i.e., thunderstorm, hailstorm and typhoon) can damage infrastructure or machinery and equipment, resulting in higher maintenance cost and discontinuity of power generation. Revenue may be impacted from plant shut down in which CKPower cannot deliver electricity to customer. High rainfall or cloudy condition can reduce the power generation of solar panel. The falling of hail can potentially damage solar panel leading to the increased cost toward repair and replacement. 	<ul style="list-style-type: none"> Revenue impacted from plant shut down in which CKPower cannot deliver electricity to customer. Increase operational & maintenance cost. 			
Flood	<ul style="list-style-type: none"> Flooding can damage infrastructure or machinery and equipment, resulting in higher maintenance cost and discontinuity of power generation . Revenue may be impacted from plant shut down in which CKPower cannot deliver electricity to customer. Flooding can cause sediments load, which can reduce the capacity of dams and reservoirs and can damage turbines. CKPower's maintenance costs might increase as turbines suffer from higher sediment loads. 	<ul style="list-style-type: none"> Revenue impacted from plant shut down in which CKPower cannot deliver electricity to customer. Increase operational & maintenance cost. 			
Drought	<ul style="list-style-type: none"> Low water supply can affect generating capacity and the plant's ability to deliver reliable power supply. 	<ul style="list-style-type: none"> Revenue impacted from plant shut down in which CKPower cannot deliver electricity to customer. Decrease generation capacity due to lack of water supply. 			
Increased Temperature	<ul style="list-style-type: none"> Extreme heat decreases the efficiency of power plant. Higher temperatures lower the ability of transmission lines to carry power, possibly leading to electricity reliability issues during heat waves. This can also reduce the thermal efficiency of power production because the increase in ambient air temperature can cause power output from steam turbine to decrease by 9%. 	<ul style="list-style-type: none"> Currently, no significant financial impact from this risk. 			

Legend: Very Low Low Medium High Very High

Transition Risks 1/1

Climate-Related Risks	Implication to CKPower's Business	Financial Implication	Time Horizon		
			Short-term	Medium-term	Long-term
Impact caused by renewable plant	<ul style="list-style-type: none"> Local communities and stakeholder in the downstream of Mekong river might argue that CKPower's hydropower plant's operations can influent water supply level affect sediment flows, or cause negative impact to biodiversity. CKPower can receive negative reputation, if the company does not provide sufficient communication and build an understanding to local stakeholders. 	<ul style="list-style-type: none"> Operation disruption can cause power plant to be suspended in case of stakeholder protest which directly affects to company's revenue. 	Medium	High	High
Stakeholder concern and negative feedback	<ul style="list-style-type: none"> Stakeholder groups are becoming aware and concerned of GHG emissions from fossil fuel and its impacts to climate change. CKPower can receive negative reputation and might lose of opportunities/privileges, if the company does not take appropriate actions and communication its GHG emission reduction and climate strategy clearly. 	<ul style="list-style-type: none"> Currently, no significant financial impact from this risk as CKPower's majority portfolio is renewable energy. 	Medium	Medium	Medium
Increased technological Competition	<ul style="list-style-type: none"> The company might be less competitive compared to its peers and might be unable to grow revenue consistently, if the company does not adopt low carbon technology and provide low carbon energy that respond to customer's demand. On the contrary, the company will benefit from the consistent supply and growth of renewable energy together with the best available technology. 	<ul style="list-style-type: none"> Lost of company's competitiveness to attract new customers which cause the company unable to grow revenue in the future. 	Medium	Medium	High

Legend: ■ Very Low ■ Low ■ Medium ■ High ■ Very High

Transition Risks 2/2

Climate-Related Risks	Implication to CKPower's Business	Financial Implication	Time Horizon		
			Short-term	Medium-term	Long-term
Change in customer demand and behavior	<ul style="list-style-type: none"> Shifting customer preference towards low carbon energy will positively affect CKPower's revenue. The effect will increase if the company continue to expand renewable energy. Increasing of company competitiveness among peers in the industry enabling CKPower to get better position in the market. Climate change trend causing the increasing use of renewable energy. Customers (EGAT) will be forced to increase in purchasing or investing in renewable energy in order to offset their GHG emissions. Increased investment in renewable energy might be a great opportunity in the future. 	<ul style="list-style-type: none"> Currently, no significant financial impact from this risk as CKPower's majority portfolio is renewable energy. 	Medium	High	High
Increased pricing of GHG Emissions	<ul style="list-style-type: none"> CKPower will be encouraged to invest in renewable energy. The company might be impacted by carbon taxes (on fossil fuel power plants) as the power sector is defined as one of the major GHG emitters that will increase operating cost e.g., higher compliance costs, increased insurance premiums, etc. 	<ul style="list-style-type: none"> Get financial penalty if the amount of GHG emission exceeds the acceptable level. 	Low	Medium	High
Mandates on and regulation of existing products and services	<ul style="list-style-type: none"> CKPower will be encouraged to invest in renewable energy. Fossil fuel power plants are potentially subjected to the cap and trade scheme of Thailand in the future in which CKPower should prepare for adaptation or compliance. Failing to comply with regulation could lead to financial penalty and loss of investment privilege. 	<ul style="list-style-type: none"> Get financial penalty if the amount of GHG emission exceeds the acceptable level. 	Low	Medium	High

Legend: ■ Very Low ■ Low ■ Medium ■ High ■ Very High

Strategy

 **Recommended Disclosure: c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario**

CKPower is dedicated to taking action to mitigate climate change impacts and increase the company's resilience by setting a target to achieve net-zero GHG emissions by 2050. The company has also studied GHG emission reduction pathways consistent with 2°C and 1.5°C scenarios, derived from the 1.5°C-aligned science-based targets for Electric Utilities established by the Science Based Targets initiative (SBTi). These pathways incorporate the Absolute Contraction and Sectoral Decarbonization target-setting approaches, international guidelines for the Electric Utilities sector, and the guidelines of the Task Force on Climate-Related Financial Disclosures (TCFD).

To accomplish these objectives, CKPower has established clear organization-wide guidelines regarding climate change within a five-year strategic framework (2022-2026). The company has also announced its intention to become a Net-Zero GHG emissions organization by 2050, with its GHG emission pathway aligned with the 2°C and 1.5°C scenarios.

04 | TCFD Core Element: Risk Management



Risk Management

 **Recommended Disclosure: a) Describe the organization's processes for identifying and assessing climate-related risks.**

In 2023, CKPower conducted climate-related risk assessment by identifying relevant physical and transition risks derived from TCFD framework with reference from various sources; ranging from scientific publication, global trend, emerging regulations, and news. The company then screened and short-listed the relevant risks which have potentially impacts to CKPower. Each risk was assessed in collaboration with third-party consultant to evaluate level of impacts across CKPower's operations in different scenarios aligning with Representative Concentration Pathway (RCP 2.6, 4.5, 6.0 and 8.5). The consolidated outcomes were taking into consultation with internal stakeholders which enables the company to be aware and understand the impacts of key risks and also conduct a systematically review on risk management strategies and approaches across the business. More information is presented in the Figure 3 (page 20).

Risk Management

 **Recommended Disclosure: b) Describe the organization's processes for managing climate-related risks**

The identified climate-related risks were prioritized in accordance with corporate risk matrix, which include several aspects including financial, operational, strategic, and compliance aspects. The strategies and management approaches of these risks were defined as well as integrated into Enterprise Risk Management (ERM) framework as corporate risks. By making decision to mitigate risk, CKPower cascades climate-related risks to company executive members and site representatives for decision making and to validate that the management strategy are appropriate. This process was done on an annual basis to systematically review and update to be in line with internal and external context. Relevant Key Performance Indicators are set up and deployed to key functions and employees to ensure the effectiveness of risk management, which are reviewed on an annual basis. More information is presented in the Figure 3 (page 20).

Climate-related risk Identification, Assessment and Management Process



Figure 3: Climate-related risk Identification, Assessment and Management Process

Risk Management



Recommended Disclosure: c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.

The process for climate-related risk identification, assessment and management are conducted regularly, in which the results are integrated into Enterprise Risk Framework (ERM) by embedding into corporate risks including strategic and operational risks (Figure 4). These risks were then translated into overall risk management framework under Plan-Do-Check-Act (PDCA) principle, to set up and define roadmap and Key Performance Indicator (KPI) to effectively implement risk management across the company. In addition, CKPower has actively taken actions to identify key strategies to not only manage this risks but also consider opportunities arising from these risks, which could lead the company into more advantageous position in the industry.

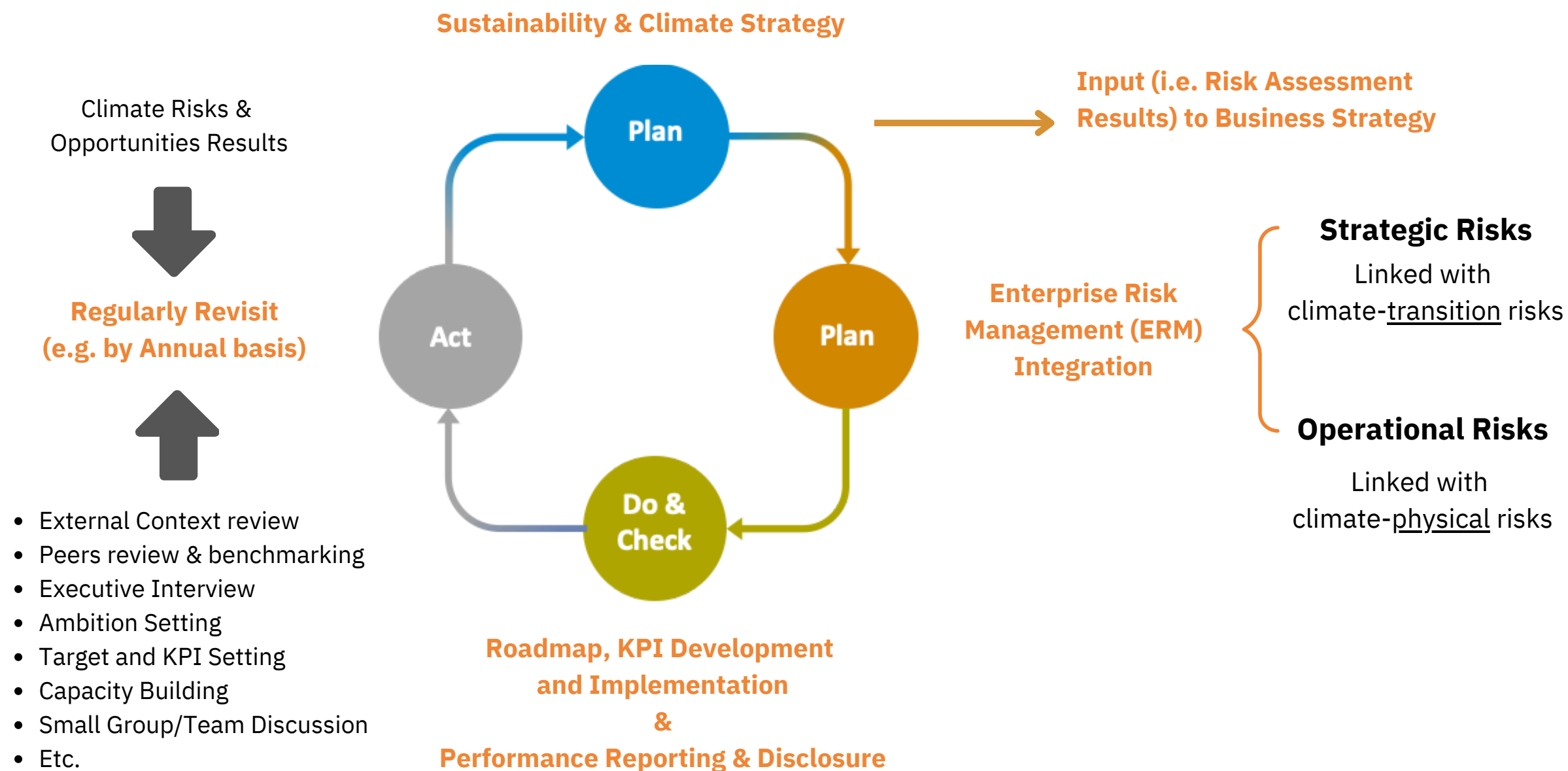


Figure 4: The integration of climate-related risks into CKPower's risk management process

05 | TCFD Core Element: Metrics and Targets



Metrics and Targets



Recommended Disclosure: a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.

CKPower defines a numbers of key metrics for climate-related risks and opportunities. These include the following key indicators:

- Direct GHG emission (Scope 1 – tCO₂e)
- Indirect GHG emission (Scope 2 – tCO₂e)
- GHG Intensity Emission (tCO₂e/MWh)
- Renewable Energy Capacity (%)
- Renewable Energy consumption within the organization (%)

These indicators are measured in accordance with internationally recognized standards to ensure quality of performance monitoring and reporting. GHG inventory methodology is aligned with the GHG Protocol Corporate Accounting and Reporting Standard by WRI and WBCSD, in which the emission factors are taken from multiple sources including the Fifth Assessment Report (AR5) of IPCC, and national sources (Thailand Greenhouse Gas Management Organization or TGO and Ministry of Energy of Thailand)

Moreover, the company set additional metrics associated with water consumption, energy consumption, and waste management as part of climate-related metrics and environmental performances, which also were disclosed on CKPower’s sustainability report and website. These indicators are cascaded into functional and individual KPIs of CKPower employee, and are directly linked to monetary incentive as part of their performance evaluation in order to drive goal achievement.

In addition, to drive low carbon investment and low carbon activities across the group, CKPower has collaborated with external partner (i.e. Thailand Greenhouse Gas Management Organization or TGO) to study the use of internal carbon price with an appropriate values to CKPower’s business. The company expects to utilize Internal Carbon Pricing : ICP to accelerate GHG emission reduction, changing behavior in the company, discovering new markets and revenue opportunities.

Metrics and Targets

 **Recommended Disclosure: b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.**

The scope of our GHG emissions cover all business operations, which is calculated based on the GHG Protocol Corporate Accounting and Reporting Standard. Since 2021, GHG emissions were verified by an independent third-party in line with GRI Standards (GRI 305-1 and 305-2)

GHG Emissions	Unit	2020	2021	2022	2023
Direct GHG Emission (Scope 1)	tCO ₂ e	713,447.64	716,049.77	715,530.79	719,930.32
Indirect GHG Emission (Scope 2)	tCO ₂ e	3,849.19	5,159.88	2,425.17	1,851.15
Total GHG Emission (Scope 1 and Scope 2)	tCO ₂ e	717,296.83	721,309.65	717,775.96	721,781.47
Other relevant indirect GHG emission (Scope 3)*	tCO ₂ e	ND	ND	122,367.29	119,586.41
GHG Intensity**	tCO ₂ e/MWh	0.0810	0.0670	0.0613	0.0693

*CKPower is currently collecting and reporting of GHG scope 3 emissions, Category 3: Fuel-and energy-related activities not included in scope 1 or 2.

**Total energy generated (GWh) were 8,851.87, 10,771.90, 11,704.38, and 10,412.37 in the years 2020, 2021, 2022, and 2023 respectively.

Metrics and Targets

 **Recommended Disclosure: c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.**

The scope of our GHG emissions cover all business operations which is calculated based on the GHG Protocol Corporate Accounting and Reporting Standard. Since 2021, GHG emissions were verified by an independent third-party in line with GRI Standards (GRI 305-1 and 305-2)

Key Performance Indicator	Unit	Baseline		Target
		Value	Baseline Year	
Absolute GHG Emission (Scope 1 and Scope 2)	tCO ₂ e	721,310.00	2021	To achieve Net Zero GHG Emission by 2050
Intensity GHG Emission	tCO ₂ e/MWh	0.07	2021	
Installed Capacity of Renewable Energy	% of portfolio	89%	2021	95% by 2043
Renewable electricity Consumption within organization including REC	%	89%	2021	100% by 2043

