

CKPower

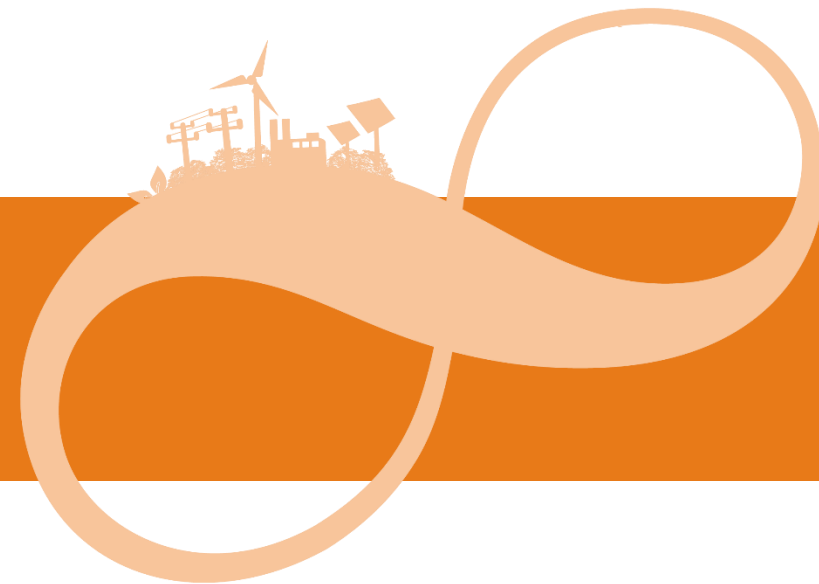
Task Force on Climate-related Financial Disclosures (TCFD) 2022



Chapter	Content	Page no.
01	Introduction	3-4
02	TCFD Core Element: Governance	5-7
03	TCFD Core Element: Strategy	8-13
04	TCFD Core Element: Risk Management	14-17
05	TCFD Core Element: Metrics and Target	18-21

01

Introduction



CKPower voluntarily adopts the TCFD recommendations in 2022 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.

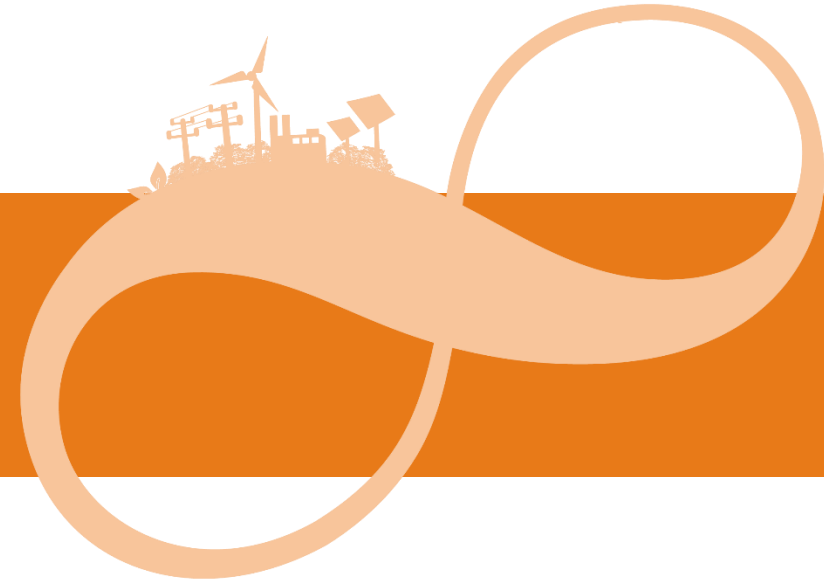
CKPower has assessed and prioritized climate-related risks and opportunities in accordance with Task Force on Climate-related Financial Disclosures (TCFD) framework, which includes four core elements as shown in the **Figure 1**.



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

02

TCFD Core Element: Governance



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

The Board of Directors appoints the Corporate Governance, Risk Management and Sustainable Development Committee, comprising non-executive director, independent director, and executive director (Managing Director), with the duty to supervise and monitor the operations of CKPower to be in line with corporate managerial strategies, as well as ensuring administration, monitoring and management of risks with efficiency. Accordingly, the Committee has oversight of climate-related risks and opportunities across CKPower's operations to align with corporate sustainability and climate strategies including climate-related risks and opportunities assessment, climate risk mitigation and adaptation plan, and climate-related performance. They also provide an oversight on strategic business plan, budget, monitoring and implementation. They are regularly informed for progress against target on a semi-annual basis through CKPower's sustainability working team to provide guidance and advise on decision making related to sustainability and climate change issues. More information is presented in the **Figure 2** on page 7.

Disclosure Source: [CKPower's Website](#) (Page 4), 56-1 One Report 2021 (Page 123,126-127, 133-134)

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

CKPower assigns executive members from corporate and power plant directors as leaders of Sustainability working team to take lead on sustainability and climate change performance to be in line with corporate strategy and goals (**Figure 2**, page 7). They are regularly informed of climate-related issues and performance against corporate target on a quarterly basis. They take roles to closely oversee and provide guidance on climate-related risk and opportunities assessment and management and also provide a regular report to the board of directors. In addition, the executives are entitled to variable monetary incentives linked with climate-related performance through level of Key Performance Indicators (KPIs) achievement. (i.e. long-term GHG emission reduction, renewable energy growth, and energy consumption reduction)

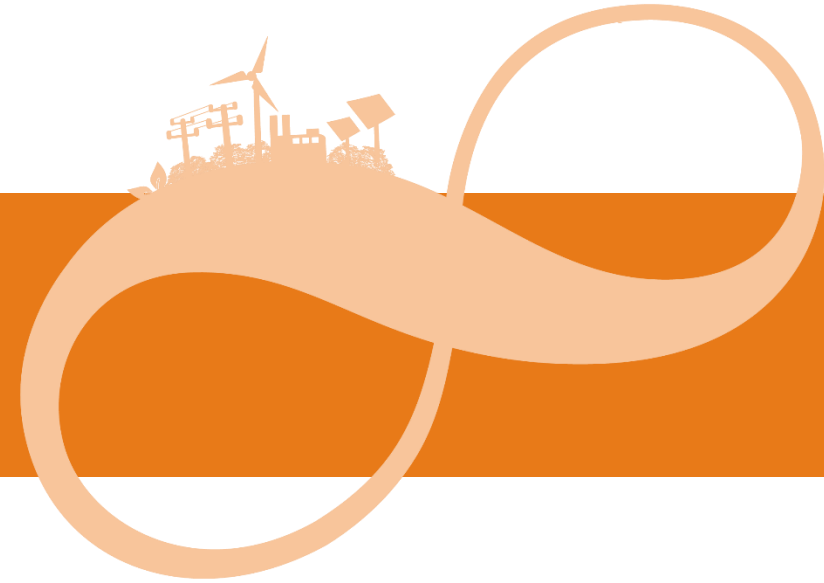
Disclosure Source: [CKPower's Website](#) (Page 4), 56-1 One Report 2021 (Page 123, 126-127, 133-134)



Figure 2: Governance Structure of Climate-Related Risk and Opportunity

03

TCFD Core Element: Strategy



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

CKPower recognizes an importance of climate change management and has identified it as key material issues in 2021. Therefore, the company conducted risks and opportunities assessment and prioritization workshop by working closely with an independent external consultant. We categorized risks in accordance with TCFD guideline comprising of physical and transition risks. Our identified key physical risks include 1) an increased of extreme weather, 2) flood, 3) drought, and 4) an increased temperature. On the contrary, the key transition risks include 1) impact caused by renewable plant, 2) stakeholder concern and negative feedback, 3) an increased technological competition, 4) change in customer demand and behavior, 5) an increased pricing of GHG emissions, and 6) mandates on regulation of existing products and services. Based on risk evaluation results, an increased temperature is only physical risk that poses potential impact to the company in the long-term. On the other hands, several transition risks will pose impact in the medium-term onwards.

CKPower conducted risk assessment in line with recognized guidelines and model from multiple sources which include the Sixth Assessment Report by IPCC, Aqueduct Tool by World Resources Institute, the U.S. Climate Resilience Toolkit and Climate Explorer managed by NOAA's Climate Program Office, World Energy Outlook by IEA, etc. The assessment covered CKPower group's business operations located in Thailand and Laos over a short- (1-2 years), medium- (3-5 years), and long-term (>5 years) timeframes.

The company incorporated corporate financial risk matrix and criteria to prioritize and evaluate the level of impact (including financial impacts) and likelihood for the identified risks accordingly. The summary of climate-related risks are presented in page 10-13.

Disclosure Source: [CKPower's Website](#), CKPower Sustainability Report 2021 (Page 86-89)

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

The impacts of climate-related risks and opportunities are integrated into CKPower's Enterprise Risk Management (ERM) framework as strategic and operational risks, where the company systematically review and actively define appropriate risk mitigation and adaptation strategies to manage risks over business operations and future investment.

These were used as an input for decision making and to formulate our climate strategy focusing on long-term GHG emission reduction strategy towards net zero while maintaining company's capability to handle climate-related risks through mitigation and adaptation approaches. In 2021, risk related to an increased temperature posed potentially high impact for CKPower in long-term timeframe. Therefore, the company has set up the management approach to cope with this risk on both mitigation and adaptation as well as setting up strategy to reduce GHG emission in long-term. Similarly, risks regarding to technology and market potentially pose high impact to the company if CKPower does not manage this issues well in the long-term. Our climate strategy aims to achieve a net-zero GHG emission by 2050 focusing on accelerating renewable energy development with no additional fossil power plant investment. In addition, we will accelerate GHG scope 1 and 2 reduction through power plant optimization, fuel switching (e.g. internal renewable energy consumption and replacement of existing vehicles with electric vehicles), and offsetting through afforestation and reforestation.

We also identify opportunities to diversify business into low carbon products that correspond to the changes in customer behaviors and global energy consumption trends. CKPower plans to participate in voluntary environmental attribution market by generating carbon credit and Renewable Energy Certificates (RECs) where applicable as financial opportunities. The summary of climate-related risks are presented in page 10-13.

Disclosure Source: [CKPower's Website](#), CKPower Sustainability Report 2021 (Page 86-89)

Climate-Related Risks	Implication to CKPower's Business	Financial Implication	Time Horizon		
			Short-term	Medium-term	Long-term
Increase Extreme Weather (i.e. hail, lighting, 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 (1/2)

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. 	High	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. 	High	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

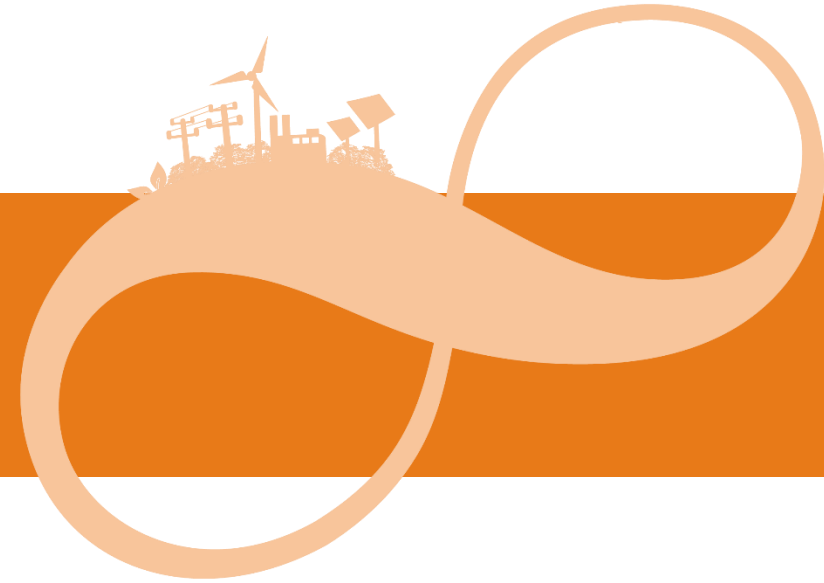
Legend: ■ Very Low ■ Low ■ Medium ■ High ■ Very High

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 committed to take action to mitigate climate change impacts and increase resiliency of the company by setting up target to achieve net zero GHG emission before the mid-century. The company also studied GHG emission reduction pathway consistent with 2°C and 1.5°C scenarios derived from the 1.5°C-aligned science-based targets for Electric Utilities from The Science Based Targets initiative (SBTi) which includes the Absolute Contraction and Sectoral Decarbonization target setting approaches. To achieve this, CKPower is committed to expanding of renewable energy capacity with no additional fossil-fire power plant, implementing plant efficiency initiatives, increasing internal use of renewable energy, accelerating fuel switching and investing in afforestation and reforestation activities.

04

TCFD Core Element: Risk Management



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

In 2021, 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 16).

Disclosure Source: [CKPower's Website](#)

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 16).

Disclosure Source: [CKPower's Website](#)

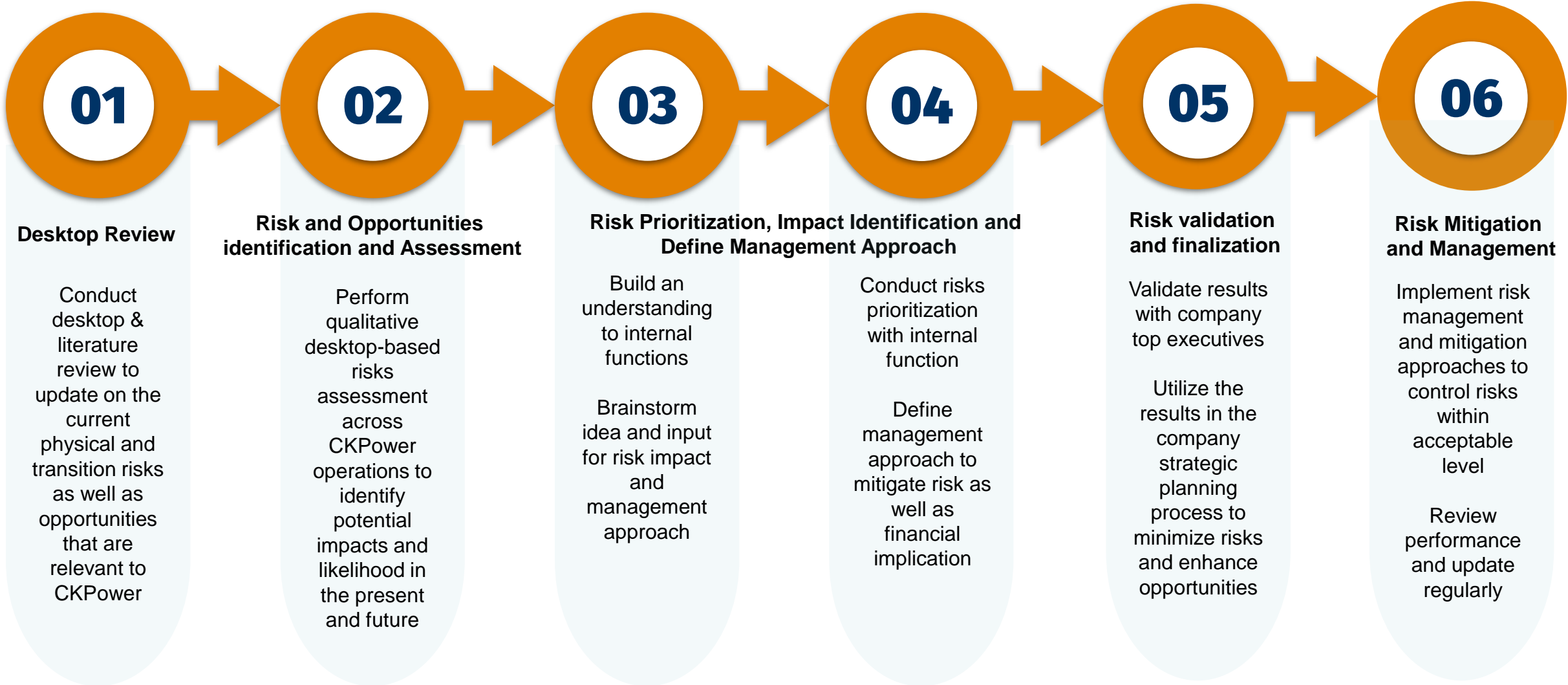


Figure 3: Climate-related risk Identification, Assessment and Management Process

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.

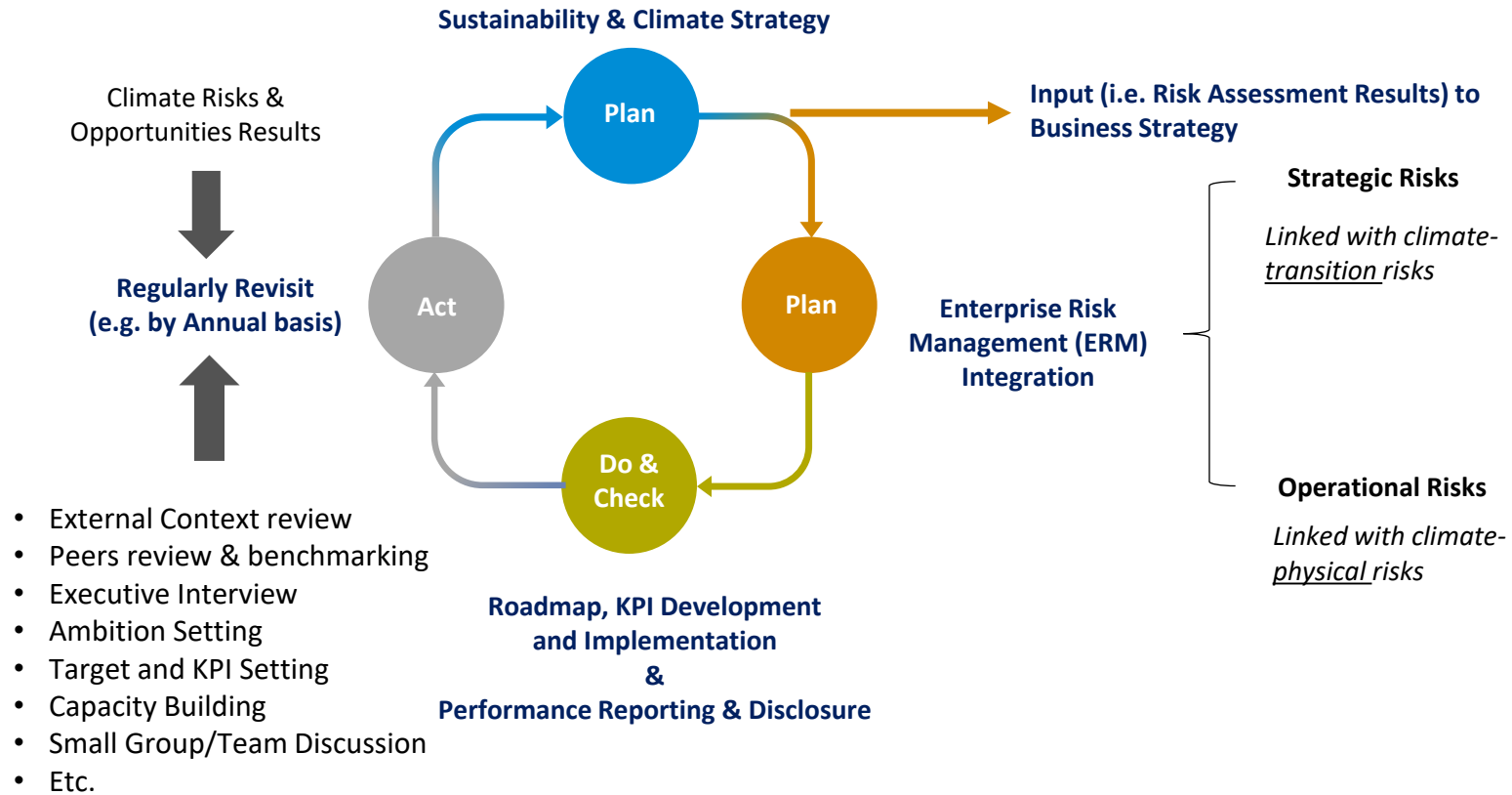
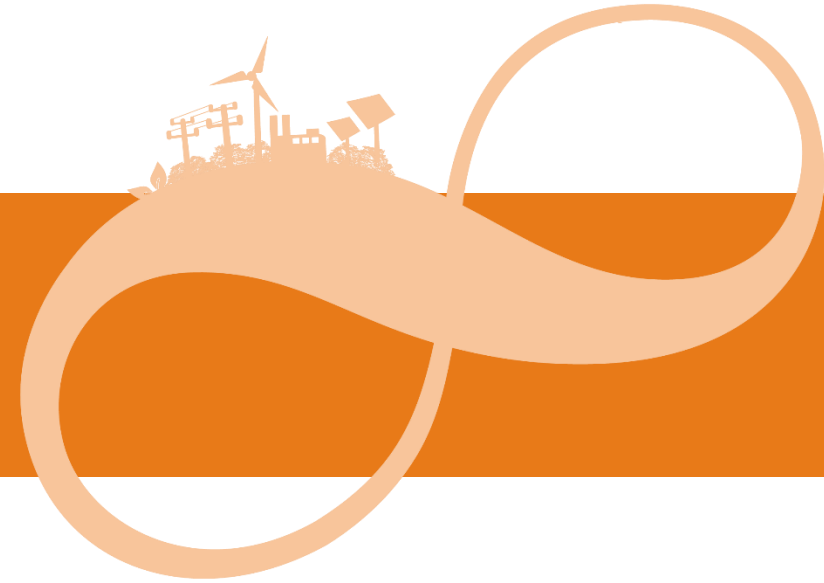


Figure 4: The integration of climate-related risks into CKPower’s risk management process

05

TCFD Core Element: Metrics and Targets



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 (MW)
- Renewable Electricity consumption (MWh)

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 ICP within 2023 to accelerate GHG emission reduction, changing behavior in the company, discovering new markets and revenue opportunities.

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. In 2021, GHG emissions were verified by an independent third-party in line with GRI 305-1 and 305-2.

GHG Emissions	Unit	2018	2019	2020	2021
Direct GHG Emission (Scope 1)	tCO ₂ e	725,050.61	723,443.46	713,439.47	716,049.76
Indirect GHG Emission (Scope 2)	tCO ₂ e	1,762.00	7,798.27	3,849.19	5,259.88
Total GHG Emission (Scope 1 and Scope 2)	tCO ₂ e	726,812.62	731,141.74	717,288.67	721,309.64
Other relevant indirect GHG emission (scope 3)*	tCO ₂ e	N/A	N/A	N/A	N/A
GHG Intensity	tCO ₂ e/MWh	0.17	0.22	0.08	0.07

*CKPower is currently collecting and reporting of GHG scope 3 emissions. The data will be disclosed on 2023 onwards by reporting GHG scope 3 on Business Travel category.

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. In 2021, GHG emissions were verified by an independent third-party in line with GRI 305-1 and 305-2.

Key Performance Indicator	Unit	Baseline		Remarks
		Value	Baseline Year	
Absolute GHG Emission (Scope 1 and Scope 2)	tCO ₂ e	721,310	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	-
Renewable electricity Consumption	%	89%	2021	-

Thank You

Click to edit Master text styles



Click to edit Master text styles



Click to edit Master text styles



Click to edit Master text styles