

# EGCO TCFD Disclosure 2023

September 2023

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## 1. INTRODUCTION

The Electricity Generating Public Company Limited (EGCO) acknowledges the pivotal role of the power sector in global climate change efforts, striving to limit temperature rises to 1.5°C as per the Paris Agreement. With climate change being a material issue, EGCO demonstrates its commitment through a long-term target of becoming Carbon Neutral by 2040 and achieving Net Zero by 2050. Transparent public disclosures on performance and key initiatives commitment to all stakeholders. Moreover, EGCO firmly declares its refusal to invest in coal-fired power plants, emphasizing the company's focus on clean and renewable energy sources.

To better understand and manage climate-related impacts on our business, EGCO has been actively working on climate-related disclosure in accordance with the Task Force on Climate-Related Financial Disclosures or TCFD and registered as a TCFD Supporter. EGCO has aligned with this widely recognized and globally supported climate disclosure framework. TCFD is a supported climate disclosure framework aims to assist companies in disclosing the financial effects of climate change to their investors and other stakeholders. This disclosure framework centers around four key pillars: governance, strategy, risk management, and metrics and targets.

In this third year of TCFD disclosure, EGCO has expanded the scope of the climate-related risks and opportunities assessment to include additional drivers that may potentially impact EGCO's operations and upstream and downstream value chain. To comprehensively assess EGCO's greenhouse gas (GHG) emissions, the scope of this year's GHG inventory was also expanded to cover all relevant out of 15 scope 3 categories as defined by the GHG Protocol.

EGCO is committed to continually improving our climate-related performance and associated disclosures to be in line with best international practices.

## 2. GOVERNANCE

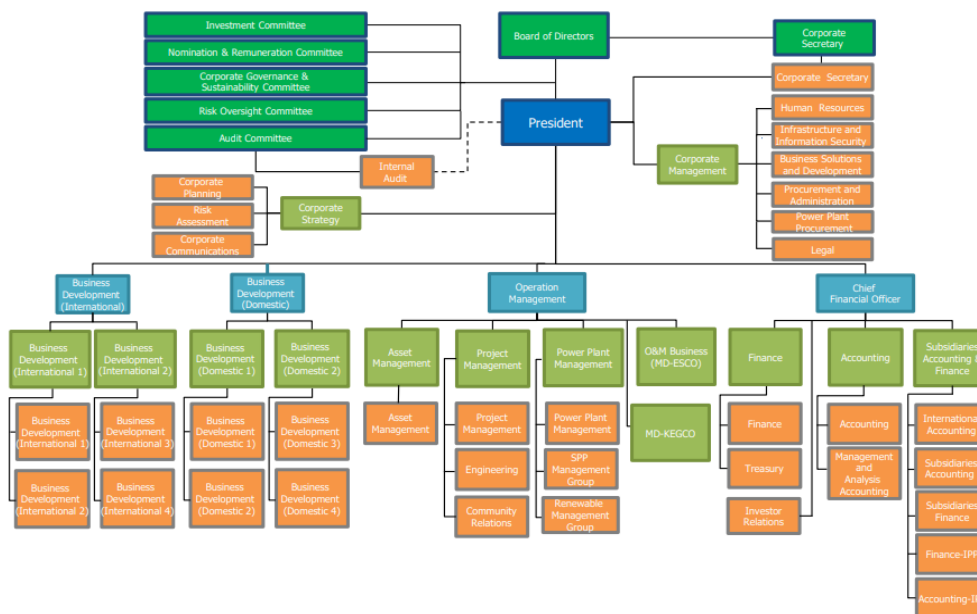
In recognizing the critical role that the power sector has to play in driving climate action and the transition towards a low-carbon economy and society, EGCO has effectively incorporated climate change issues into its governance structure, spanning from the board level to managerial positions. Notably, climate issues are an integral part of the Board of Directors' annual agenda, affirming their significance. The roles and responsibilities of the Board, Board-level committees, and managerial functions are described below.

Figure 1 EGCO's Organization Structure



Energy for life

## EGCO's Organization Structure



Effective Date: January 1, 2023

Table 1 EGCO's Climate Governance

EGCO Functions	Climate Risks & Climate Strategy Roles and Responsibilities
Board of Directors (BoD)	<ul style="list-style-type: none"> <li>Approves climate strategy and climate-related annual action plans, and KPIs, targets and goals</li> <li>Oversees progress against goals and targets related to climate change every six months</li> </ul>
Corporate Governance & Sustainability Committee (CC)	<ul style="list-style-type: none"> <li>Provides oversight over the implementation of climate strategy and climate-related risks and opportunities management at the corporate level</li> <li>Endorses climate strategy, climate-related policies, objectives, and annual plans in line with strategic plans, for the Board's approval</li> </ul>
Risk Oversight Committee (ROC)	<ul style="list-style-type: none"> <li>Assesses monthly the corporate risks, which includes climate-related risks and opportunities, and risk mitigation plans under the risk management systems and processes as presented by the Risk Assessment Division</li> <li>At least quarterly reviews the progress of climate-related issues and initiatives, corporate action plans, KPIs, targets and goals</li> </ul>
Investment Committee (IC)	<ul style="list-style-type: none"> <li>Direct annual budgets and approve major CAPEX, acquisitions, mergers, and divestitures</li> </ul>
Nomination & Remuneration Committee (NRC)	<ul style="list-style-type: none"> <li>Direct employee incentives for climate-related KPIs</li> </ul>
Executive Management Committee (EMC)	<ul style="list-style-type: none"> <li>Incorporates climate-related risks and climate strategy into EGCO business strategy</li> <li>Approves and monitors the implementation of climate strategy, to align with strategic direction, areas of action, goals, targets, projects – and timely presentation to the Board</li> <li>Assigns responsibilities for climate strategy and risk management implementation</li> </ul>

EGCO Functions	Climate Risks & Climate Strategy Roles and Responsibilities
Risk Management Committee	<ul style="list-style-type: none"> <li>Integrates climate-related risks and opportunities assessment and management into risk management systems and processes</li> <li>Oversees the risk management of EGCO and routinely reports to the Risk Oversight Committee and the Board of Directors</li> </ul>
Corporate Planning	<ul style="list-style-type: none"> <li>Coordinates with internal stakeholders for climate-related issues</li> <li>Responsible for climate reporting and disclosure to external stakeholders</li> </ul>
Risk Assessment (RA)	<ul style="list-style-type: none"> <li>Monitor and assess corporate risks, including climate-related risks</li> <li>Reports to the RMC and ROC on a monthly basis</li> <li>Conduct project assessment for all new projects</li> <li>Collaborate with Corporate Planning to conduct short-, medium-, and long-term climate-related scenario analysis</li> </ul>
Asset Management	<ul style="list-style-type: none"> <li>Oversees the overview of power plant operation (including Financial, Non-financial and Operation performance summary from power plants both subsidiaries and JVs)</li> <li>Monitors GHG emissions and climate related-risks and implementation of low carbon projects at each asset</li> <li>Monitors asset performance at a managerial and central level and liaises with internal stakeholders on physical and transition risks</li> </ul>
Business Development (BD)	<ul style="list-style-type: none"> <li>Incorporates climate-related risks and opportunities into strategic business decisions</li> <li>Integrates climate strategy into overall EGCO business strategy and in identifies business opportunities</li> </ul>
Power Plant Management (PPM)	<ul style="list-style-type: none"> <li>Oversees operational management of EGCO subsidiaries' power plants only, including general management of each power plants and reporting of GHG emissions and climate-related risks at plant level</li> <li>Responsible for the implementation of low carbon projects and climate-related risks management at operations</li> </ul>
Power Plant	<ul style="list-style-type: none"> <li>Responsible for driving sustainability and climate-related policies at operational plants</li> <li>Monitor and report progress of implemented low carbon projects and climate-related risks management at operations against targets</li> </ul>
Finance	<ul style="list-style-type: none"> <li>Assesses financial implications of climate-related risks and opportunities</li> <li>Integrates climate-related financial risks disclosures into mainstream reporting</li> </ul>

## 2.1 Climate-related KPIs and Incentives

EGCO implemented corporate-wide climate-related Key Performance Indicators (KPIs) and targets to drive climate action at all levels of the organization, from CEO to business unit managers, power plant teams and employees. These KPIs, approved by the Board of Directors, focus on carbon intensity reduction and increasing renewable energy generation. Additionally, each power plant has its own established KPIs to improve sustainability performance in areas such as GHG emissions reduction, energy efficiency improvement, and pollution control.

In 2022, EGCO announced its corporate targets and KPIs for reducing GHG emissions. These targets include a 10% reduction in carbon emission intensity by 2030 from a 2020 baseline and increasing power generation from renewable energy to 30% of overall capacity by 2030. Achieving these targets aligns with EGCO's long-term goal of becoming a Carbon Neutral Organization by 2040 and achieve Net Zero by 2050. The CEO, business unit manager and employee are provided with a monetary incentive associated with these targets and related KPIs, emphasizing the importance of executive engagement in driving climate action.



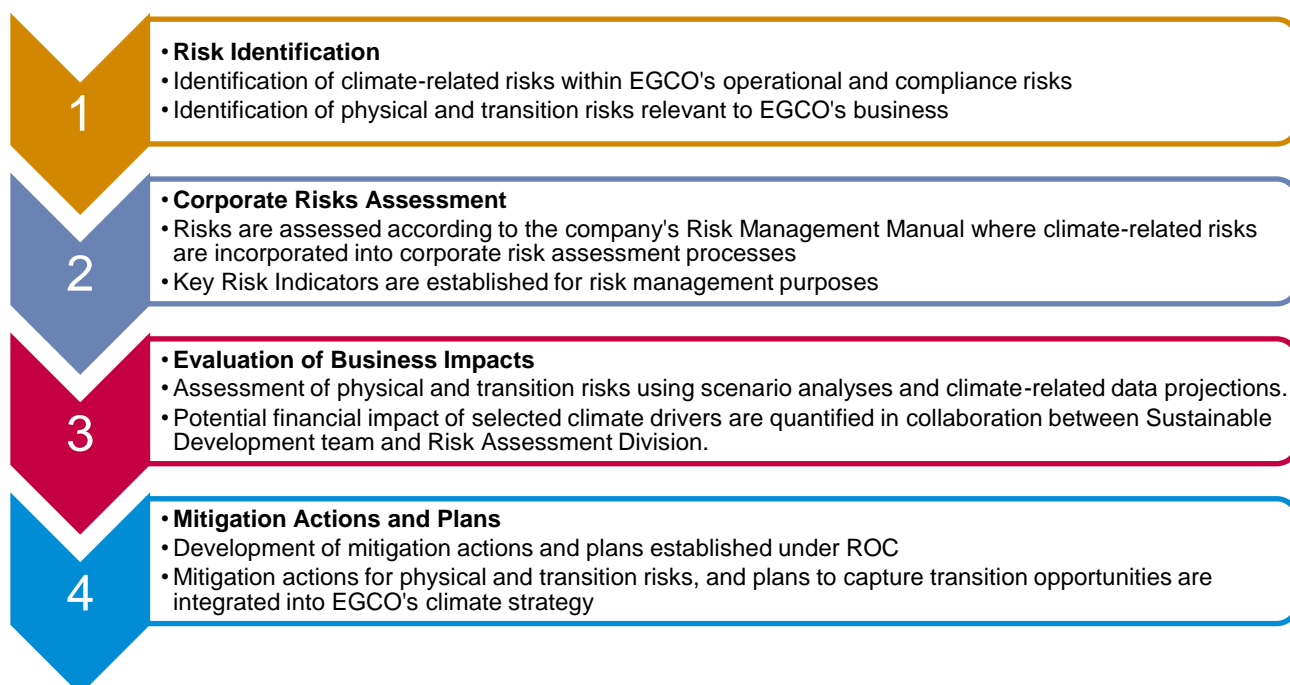
### 3. RISK MANAGEMENT AND CLIMATE STRATEGY

#### 3.1 Climate-Related Risks and Opportunities Management

EGCO has made climate-related risks and opportunities management one of the company's primary goals. The Group identifies, assesses and manages climate-related risks (and opportunities) in accordance with the procedures defined in the company's **Risk Management Manual**, which was developed in line with the 2017 COSO-Enterprise Risk Management framework (COSO ERM). It is common for the Power sector that the climate-related risks are generally considered under Operational Risk (e.g. risk from water shortage caused by extreme climate conditions) and Compliance Risk (e.g. carbon tax). Climate change oversight has been allocated to the Corporate Sustainability Steering Committee which reports to the Corporate Governance and Sustainability Committee and incorporates performance against climate-related goals that are informed by climate risks and opportunities assessments into the company-wide KPIs to ensure a rigorous approach to the issue. EGCO has established key risk indicators (KRIs) which comprise the leading and lagging indicators in risk management and has also encouraged the employees to appropriately utilize these KRIs in their operation, along with monitoring and evaluating procedures, as well as periodic reporting to the Board and the Board Committees.

The Risk Assessment Division (RA) is responsible for monitoring, assessing and reporting Corporate Risk Management Performance to the Risk Management Committee (RMC) and the Risk Oversight Committee (ROC) according to the EGCO's risk management policy. Risk mitigation actions and plans are established under the purview of ROC upon determination of risk level and probably impact towards earning loss, business interruption and reputation.

**Figure 2 EGCO's Risk Management Process**



#### 3.2 Scenario Analysis

EGCO has further expanded the scope of climate risks and opportunities assessment to better identify, evaluate, and manage our potential impacts. The assessment of climate-related risk scenarios is

reviewed and categorized based on scenario patterns: the climate impact of key transitional and physical risks under specific scenarios. For this analysis, EGCO included the following inputs:

**Table 2 Scenario Analysis Inputs**

<b>Scope</b>	<ul style="list-style-type: none"> <li>For transition scenario analysis, group-wide impacts were assessed. For physical scenario analysis, a total of 25 assets were assessed, covering 89% of operations.</li> <li>Considered the impacts of climate change on three aspects of the EGCO's business operations: fossil-fuel based generation, green energy generation, supply chain (including upstream and downstream impacts).</li> <li>Business operations and value chain impacts were assessed.</li> </ul>
<b>Transition Scenarios<sup>1</sup></b>	<ul style="list-style-type: none"> <li><b>IEA Stated Policies Scenario (STEPS):</b> a scenario that takes account of announced climate-related policies (e.g. the Paris Agreement, 'Nationally Determined Contributions'), but does not forcefully pursue decarbonization. Implied climate warming is between 2.5°C and 3.3°C.</li> <li><b>IEA Announced Pledges Scenario (APS):</b> a scenario which assumes all climate commitments made by governments around the world and longer-term net zero targets will be met in full and on time.</li> </ul>
<b>Physical Scenarios</b>	<ul style="list-style-type: none"> <li><b>Baseline:</b> based on historical data at EGCO's assets' locations</li> <li><b>IPCC RCP 2.6:</b> to assess physical phenomena that occur when the transition to low carbon society is incorporated, and Paris Agreement goals are met.</li> <li><b>IPCC RCP 8.5:</b> to demonstrate the physical impacts in the worst-case scenario where no measures are taken to combat climate change.</li> </ul>
<b>Time Horizons</b>	<ul style="list-style-type: none"> <li><b>Short-term:</b> 1-4 years</li> <li><b>Mid-term:</b> 5-10 years and represented by <b>2030</b> to estimate impacts and prioritize mitigation actions, while considering the expected lifetime of assets and PPAs</li> <li><b>Long-term:</b> over 10 years and represented by <b>2050</b> to align with EGCO's Net Zero target</li> </ul>

Last year's transition scenario analysis assessed risks and opportunities in two scenarios from the IEA that reflect a global temperature rise trajectory that is limited to 2°C (APS) and well-below 2°C (SDS). This year's transition scenario analysis was updated using the STEPS scenario and the latest APS scenario data which was released in 2022. The STEPS and APS scenarios reflect global temperature rise trajectories that is above 2°C and below 2°C warming scenario, respectively. We have also revisited our selected transition drivers and expanded our assessments to cover additional two drivers such as risks from International Maritime Organization (IMO) shipping regulations and exposure to climate-related litigation, for EGCO's business operations and value chain.

<sup>1</sup> The transition scenario analysis conducted this year utilizes data from the IEA World Energy Outlook 2022.

### 3.2.1 Transition Scenario Analysis

The scenario analysis on transition risks and opportunities was intended to comprehensively analyze EGCO's exposure to potential impacts arising from a global transition to a low carbon economy. Through internal stakeholder consultation, EGCO first identified transition drivers that were relevant to the business before conducting a semi-quantitative assessment and prioritization of transition drivers to EGCO's business and value chain under the selected scenarios. EGCO's scenario analysis intended to include both the upstream risks, such as carbon tax on suppliers, and downstream opportunities, such as decarbonization of the transportation sector, for a holistic understanding of the transition risks and opportunities that could impact EGCO. EGCO then quantified the potential financial impact of carbon tax and expected renewable electricity growth. Consequently, EGCO has developed response measures to mitigate expected risks and capture potential opportunities.

**Table 3 Transition Scenario Analysis Results and Implications<sup>2</sup>**

Transition Drivers	Potential Impact <sup>3</sup>						Implications for EGCO	Response Measures	
	Fossil-Based Energy Generation		Green Energy Generation		Supply Chain				Financial Impact (Without Any Intervention by EGCO) <sup>4</sup>
	2030	2050	2030	2050	2030	2050			
<b>Carbon Tax</b>  (Emerging Regulatory Risk)  <i>National carbon pricing regulations being introduced resulting in higher costs</i>							<ul style="list-style-type: none"><li>• STEPS: operating costs increase by 9% in 2030 and 10% by 2050</li><li>• APS: operating costs increase by 5% by 2030 and 16% by 2050</li></ul>	<ul style="list-style-type: none"><li>• Increasing OPEX for coal and natural gas electricity generation</li><li>• Near-term all generation linked to PPA, merit order, and planned phase out (2025)</li><li>• Green electricity will become more cost-competitive</li></ul>	<ul style="list-style-type: none"><li>• Set up internal carbon price which reflects current or expected carbon pricing on operating and supplier jurisdictions</li><li>• Engage with at-risk suppliers to reduce impact</li><li>• Pursue opportunities in line with Net Zero strategy to reduce emissions and impact</li></ul>

<sup>2</sup> EGCO assesses the short-term impact of transition risks as part of its corporate risk management, which includes Government Policy, Legislative Change and Compliance Risk Due to Climate Change. Additional information can be found in [the Sustainability Report](#) p.89

<sup>3</sup> Significant changes in this year's results are due to changes in this year's selection of scenarios comprising STEPS and APS with the APS dataset being updated in 2022. In comparison to the previous year's selection of APS and SDS, this year's assessment is less stringent. Notable changes in results include carbon tax in the green energy portfolio no longer identified as an opportunity, fossil-fuel based generation identified as a risk in the supply chain, less intensity in risks and opportunities from renewable electricity growth, and ROI on low-emissions technology no longer a risk in the supply chain with new opportunities for the green energy generation portfolio.

<sup>4</sup> Percentage changes of financial impact is derived from several components. First, the changes in financial impact based on data indicators from IEA World Energy Model in each scenario at each time horizon. Second, a weighting is added to determine the relationship between data indicator and EGCO's business and value chain.



Transition Drivers	Potential Impact <sup>3</sup>						Implications for EGCO	Response Measures	
	Fossil-Based Energy Generation		Green Energy Generation		Supply Chain				Financial Impact (Without Any Intervention by EGCO) <sup>4</sup>
	2030	2050	2030	2050	2030	2050			
<b>Fossil Fuel-Based Generation Decline</b>  (Market Risk)  <i>Development of renewable power generation leading to reduction in fossil-fuel based generation</i>							<ul style="list-style-type: none"><li>• Not yet calculated</li></ul>	<ul style="list-style-type: none"><li>• Analyze electricity markets in relevant jurisdictions in terms of renewable capacity and national decarbonization strategies</li></ul>	
<b>Carbon Capture, Utilization and Storage</b>  (Technology Risk)  <i>Risk of delayed CCUS commercialization will reduce ability of existing power plants to support GHG emissions reductions targets</i>							<ul style="list-style-type: none"><li>• Not yet calculated</li></ul>	<ul style="list-style-type: none"><li>• Investments required for carbon capture, utilization and storage (CCUS) increase CAPEX but also allow existing plants and fuel types to continue operation and generate revenue at low net emissions.</li></ul> <ul style="list-style-type: none"><li>• Conducted preliminary assessment for Carbon capture at KEGCO (Nakhon Sri Thammarat, Thailand) and storage in geological formations.</li></ul>	
<b>IMO Shipping Regulations</b>  (Current Regulatory Risk)  <i>Vessel compliance to new regulations result in higher freight costs that is reflected in higher supplying and transportation costs</i>							<ul style="list-style-type: none"><li>• Not yet calculated</li></ul>	<ul style="list-style-type: none"><li>• Demand for fossil-based energy may decrease due to increased OPEX (e.g. freight costs for coal and natural gas).</li><li>• Supply chain faces higher shipping costs</li></ul> <ul style="list-style-type: none"><li>• To continue monitoring changes to IMO shipping regulations and choose shipping companies that comply to the new regulations.</li><li>• To consider potential suppliers that are located closer to EGCO's operations to reduce freight costs.</li></ul>	
<b>Sustainability-Linked / Green Loans</b>  (Market Risk)  <i>Increasing climate-related assessments/requirements to access capital</i>							<ul style="list-style-type: none"><li>• Not yet calculated</li></ul>	<ul style="list-style-type: none"><li>• Fossil-based generation poses risks to access capital, especially in plants without CCUS due to sustainability and climate-related requirements.</li></ul> <ul style="list-style-type: none"><li>• Demonstrate clear and strong efforts to reduce carbon emissions, e.g. setting emission reduction targets, future capacity expansion in green and renewable business ventures.</li></ul>	

Transition Drivers	Potential Impact <sup>3</sup>						Implications for EGCO	Response Measures	
	Fossil-Based Energy Generation		Green Energy Generation		Supply Chain				Financial Impact (Without Any Intervention by EGCO) <sup>4</sup>
	2030	2050	2030	2050	2030	2050			
								<ul style="list-style-type: none"><li>Clearly identify limitations (e.g. long-term PPAs), and action items to mitigate GHG emissions generated.</li></ul>	
<b>Exposure to Climate-related Litigation</b>  (Legal Risk)  <i>Increasing awareness of climate trends and enforcement of climate commitments</i>	Not assessed, no proxy indicator available						<ul style="list-style-type: none"><li>Not yet calculated</li></ul>	<ul style="list-style-type: none"><li>Greater scrutiny and litigation on climate-related issues and disclosures</li></ul>	<ul style="list-style-type: none"><li>Demonstrate clear climate strategy and actions in line with EGCO's climate commitments.</li><li>Ensure truthfulness and transparency in climate disclosures.</li></ul>
<b>Shareholder Sentiment</b>  (Reputational Risk)  <i>Increased external stakeholder pressure to disclose climate-related activities.</i>	Not assessed, no proxy indicator available						<ul style="list-style-type: none"><li>Not yet calculated</li></ul>	<ul style="list-style-type: none"><li>EGCO's reputation and access to capital may be impacted by stakeholder demands for climate action.</li><li>EGCO's continued implementation and disclosure of the low carbon transition will positively impact EGCO's reputation, creating business and investment opportunities.</li></ul>	<ul style="list-style-type: none"><li>Continue and improve EGCO's sustainability and climate journey disclosure through credible frameworks.</li><li>Continue engaging with key stakeholders and policymakers to encourage transition to low carbon society.</li></ul>
<b>Renewable Electricity Growth</b>  (Energy Source Opportunity)  <i>Increased revenue from the growing demand of renewable electricity</i>							<ul style="list-style-type: none"><li>STEPS: opportunity in revenues of 9% by 2030 and 30% by 2050</li><li>APS: opportunity in revenues of 15% by 2030 and 129% by 2050</li></ul>	<ul style="list-style-type: none"><li>As electricity demand is expected to rise, expect growth in both fossil and renewable generation in short-medium terms</li><li>Under APS, the financial impact is the maximum potential assuming no ceiling on the capacity and demand, which is dependent on electricity demand growth.</li></ul>	<ul style="list-style-type: none"><li>Integrate national decarbonization strategies and renewable electricity targets analyses in jurisdictions of planned investments.</li><li>As part of EGCO's climate existing strategy to increase revenue from low carbon businesses and contributing to smart grid and smart city,</li></ul>

Transition Drivers	Potential Impact <sup>3</sup>						Implications for EGCO	Response Measures	
	Fossil-Based Energy Generation		Green Energy Generation		Supply Chain				Financial Impact (Without Any Intervention by EGCO) <sup>4</sup>
	2030	2050	2030	2050	2030	2050			
<b>Electrification of Other Sectors (e.g. EV uptake)</b>  (Market Opportunity)  <i>Increase access to new markets and partnerships e.g. with transport sectors</i>							<ul style="list-style-type: none"><li>• Not yet calculated</li></ul>	<ul style="list-style-type: none"><li>• Increased demand for green electricity as part of sectorial decarbonization plans, leading to additional revenues.</li><li>• Transport electrification may rely heavily on green electricity &amp; batteries, increasing cost of shipping and thus OPEX.</li></ul>	<p>EGCO may push for new business collaborations in public charging infrastructures to support growing demand for EVs.</p> <ul style="list-style-type: none"><li>• EGCO may also register renewable energy plants with the relevant electrical authorities to issue RECs.</li></ul>
<b>ROI on Low-Emissions Technology</b>  (Market Opportunity)  <i>Investments in technical development (i.e. R&amp;D in battery storage capacity)</i>							<ul style="list-style-type: none"><li>• Not yet calculated</li></ul>	<ul style="list-style-type: none"><li>• Investments and technology developments e.g. energy storage, can help reduce cost and enhance applicability of green electricity, such as energy storage.</li><li>• Fuel distributors may increase cost of shipping and OPEX</li></ul>	<ul style="list-style-type: none"><li>• Feasibility studies for low-carbon technologies, including how it may be integrated with current and future EGCO business strategy.</li><li>• Conducting piloting studies with relevant business partners to accelerate commercial viability of low-emission technology, such as battery storage.</li></ul>
<b>Hydrogen Use</b>  (Market Opportunity)  <i>Large scale deployment of hydrogen as a clean energy source</i>							<ul style="list-style-type: none"><li>• Not yet calculated</li></ul>	<ul style="list-style-type: none"><li>• CAPEX will be incurred to retrofit existing plants for hydrogen</li><li>• Increased shipping costs for suppliers</li></ul>	<ul style="list-style-type: none"><li>• Conducted pre-feasibility study for hydrogen cofiring at BPU gas-fired power plant (Ratchaburi, Thailand).</li><li>• Identify opportunities to supply renewable electricity to the production of green hydrogen.</li></ul>

## Risk Score Colour Key

High Opp.	Mod. Opp.	Low Opp.	Neutral	Low Risk	Mod. Risk	High Risk
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### 3.2.2 Physical Scenario Analysis

Acute and chronic risks of climate change from a variety of conditions, such as riverine flooding, cyclone/wind, water scarcity/water stress, coastal flooding and sea level rise, and extreme heat are evaluated as physical risk factors. EGCO prioritized 25 assets to be assessed against physical climate impacts, whereby each asset's location was reviewed and the related regional and country-level physical risks were assessed and evaluated. At this level, a “hot spot” site-level risk analysis was conducted, and EGCO seeks to expand this risk analysis further in the upcoming years. In this initial stage, EGCO has identified two core risk areas and quantified their potential financial impact to EGCO's business under various scenarios. It is important to note that this risk and impact analysis is conducted under the assumption of **no intervention conducted** by EGCO. Through this, EGCO has developed short-term (less than 5 years) group-level strategic responses, covering all existing and new operations (100%), to address and mitigate these risks.

Figure 3 Physical Scenario Analysis Heat Map

Asset	Water Scarcity					Riverine Floods					Coastal Floods					Extreme Heat					Cyclone and Wind					
	BSL	RCP 2.6		RCP 8.5		BSL	RCP 2.6		RCP 8.5		BSL	RCP 2.6		RCP 8.5		BSL	RCP 2.6		RCP 8.5		BSL	RCP 2.6		RCP 8.5		
		2030	2050	2030	2050		2030	2050	2030	2050		2030	2050	2030	2050		2030	2050	2030	2050		2030	2050			
Coal																										
Philippines	Red	Green	Green	Green	Green	Yellow	Red	Green	Green	Red	Red	Green	Green	Red	Red	Yellow	Green	Green	Green	Green	Red	Green	Green	Red	Red	
Thailand	Red	Green	Green	Green	Green	Blue	N/A				Red	Green	Green	Red	Red	Red	Green	Green	Green	Green	Red	N/A				
Geothermal																										
Indonesia	Yellow	Green	Green	Green	Green	Blue	N/A				N/A				Yellow	Green	Green	Green	Red	N/A						
Hydro																										
Laos	Red	Green	Green	Green	Green	Red	Red	Red	Red	Red	N/A				Yellow	Green	Red	Red	Red	Red	Green	Green	Green	Red	Red	
Natural Gas																										
Thailand	Red	Green	Green	Green	Green	Yellow	Red	Red	Red	Red	N/A				Red	Green	Red	Red	Red	Red	Green	Green	Green	Red	Red	
South Korea	Red	Green	Green	Green	Green	Blue	N/A				N/A				Blue	Green	Red	Red	Red	Red	Green	Green	Green	Red	Red	
USA	Red	Green	Green	Green	Green	Red	Green	Green	Red	Red	N/A				Blue	Red	Red	Red	Red	Red	Green	Green	Red	Red	Red	
Solar																										
Thailand	Red	Green	Green	Green	Green	Green	Red	Red	Red	Red	N/A				Red	Red	Red	Red	Red	Red	Green	Green	Green	Red	Red	
Wind																										
Australia	Yellow	Green	Green	Green	Red	Blue	N/A				N/A				Yellow	Green	Red	Red	Red	Red	N/A					
Thailand	Red	Green	Green	Green	Green	Blue	N/A				N/A				Yellow	Green	Red	Red	Red	Red	N/A					
Taiwan	N/A					N/A					Red	Green	Green	Green	Red	Red	Green	Green	Green	Red	Red	Green	Green	Red	Red	

Note: BSL – Baseline<sup>5</sup> and N/A – not applicable

Baseline Hazard Rating	Forecast hazard rating
High	Significant Increase
Medium	Moderate Increase
Low	Minimal Increase
No Hazard	Near Normal
N/A	Minimal Decrease
	Moderate Decrease
	Significant Decrease

Table 4 Physical Risks Impact and Business Implications

Hazard	High Exposure Assets	Key Findings	Business Implications	Potential Financial Impact	Response Measures/Adaptation Plan (2022-2027)
<b>Coastal Floods and Sea-Level Rise</b>	<ul style="list-style-type: none"> <li>Coal in the Philippines</li> <li>Coal in Thailand</li> <li>Wind in Taiwan</li> </ul>	<ul style="list-style-type: none"> <li>In recent years, an increasing number of <b>coastal floods due to sea level rise is expected to impact the South-East Asia region</b>, which may cause coastal floods in the future.</li> <li>Due to the location of EGCO's assets, the assets that may receive the <b>highest impact are in Taiwan followed by the Philippines and Thailand.</b></li> <li>While baseline risk is already high for these assets, in <b>RCP8.5 scenario, this risk is expected to increase moderately to significantly in 2030 and 2050.</b></li> </ul>	<p><b>Physical Damages</b></p> <ul style="list-style-type: none"> <li>Damage to coastal infrastructure, tools and equipment and increase in associated costs</li> <li>Loss of land due to permanent inundation</li> </ul> <p><b>Business/Supply Chain Interruptions</b></p> <ul style="list-style-type: none"> <li>Impact on accessibility</li> <li>Downstream transmission and distribution network to EGCO's sites can be susceptible to coastal disturbances and storm surges.</li> </ul> <p><b>Health, Safety and Environment</b></p> <ul style="list-style-type: none"> <li>Electrical safety hazard for solar farms</li> </ul>	<ul style="list-style-type: none"> <li>Not yet calculated</li> </ul>	<ul style="list-style-type: none"> <li>Coastal flood risk assessments to identify vulnerable key assets</li> <li>Implement any additional mitigation measures</li> </ul>

<sup>5</sup> Baseline scenario refers to **short term** scenario reflecting 1-4 year timeframe.

Hazard	High Exposure Assets	Key Findings	Business Implications	Potential Financial Impact	Response Measures/Adaptation Plan (2022-2027)
<b>Extreme Heat</b>	<ul style="list-style-type: none"> <li>Natural Gas in Thailand</li> <li>Solar in Thailand</li> </ul>	<ul style="list-style-type: none"> <li>Climate change projections indicate higher maximum temperature and longer warm spell duration in the future.</li> <li>Projected to have <b>significantly increased hazard impact</b> on all asset types except Coal and Geothermal.</li> <li>The impact is <b>particularly high for Solar and Natural Gas plants</b>, where a moderate to significant increase is expected on top of an existing high risk hazard.</li> </ul>	<p><b>Physical Damages</b></p> <ul style="list-style-type: none"> <li>Reducing capacity/efficiency and potential shutdown of thermal power plants, such as coal and natural gas</li> <li>Solar panels/batteries quality degradation</li> </ul> <p><b>Business/Supply Chain Interruptions</b></p> <ul style="list-style-type: none"> <li>Increased downstream transmission losses</li> <li>Reduced availability of water for cooling plants or fuel transportation, reducing output.</li> <li>Temperature of water discharged does not exceed regulation, leading to business interruption/increased cost to ensure discharged water temperature to maintain generation capacity</li> </ul> <p><b>Health, Safety and Environment</b></p> <ul style="list-style-type: none"> <li>Potential discomfort due to heat stress leading to reduced efficiency and harm to employees</li> </ul>	<ul style="list-style-type: none"> <li>Not yet calculated</li> </ul>	<ul style="list-style-type: none"> <li>Provide training to employees to identify symptoms of heat stress and provide first aid</li> <li>Analysis on two current mitigation measures of reducing generation capacity or increasing technology cost</li> </ul>
<b>Riverine Floods</b>	<ul style="list-style-type: none"> <li>Hydro in Laos</li> <li>Natural Gas in Thailand</li> </ul>	<ul style="list-style-type: none"> <li>It is observed that <b>Assets located in South-East Asia are more prone to Flood hazard</b>. Climate projections indicate an increasing trend in extreme rainfall in this region.</li> <li>Significant change in <b>extreme rainfall</b> is projected under climate change scenarios, increasing hazard impact for <b>EGCO's Hydro and Natural Gas</b></li> </ul>	<p><b>Physical Damages</b></p> <ul style="list-style-type: none"> <li>Water damage to electrical/electronic components, including PV panels, and increase in associated costs</li> <li>Sediment load, reducing capacity of dams and reservoirs and damage turbines.</li> </ul>	<ul style="list-style-type: none"> <li>Financial impacts on assets assessed are varied, but <b>all see an increase in revenue loss</b> due to flood risk.</li> <li>The financial impact of flood risk is <b>most varied for a coal plant in Philippines</b>, with losses rising by 28% in 2030 under RCP2.6) but peaking in 2050 under RCP8.5 (46%)</li> </ul>	<ul style="list-style-type: none"> <li>Installed flood protection infrastructure. For instance, at a co-generation power plant in Thailand EGCO has installed flood walls with management costs of ~10 million THB.</li> <li>Evaluate existing spill management plans and</li> </ul>



Hazard	High Exposure Assets	Key Findings	Business Implications	Potential Financial Impact	Response Measures/Adaptation Plan (2022-2027)
		<p><b>plants</b> from an already high risk baseline.</p> <ul style="list-style-type: none"> <li>The increased rainfall may lead to riverine / urban drainage inundation and water logging in low lying areas, potentially leading to operational and supply chain disruptions.</li> </ul>	<ul style="list-style-type: none"> <li>Erosion of foundation and collapse of supporting structure</li> </ul> <p><b>Business/Supply Chain Interruptions</b></p> <ul style="list-style-type: none"> <li>Riverine / urban drainage inundation and water logging in low lying areas, potentially leading to operational and downstream disruptions</li> <li>Interruption to hydropower plants -&gt; inability to release water</li> <li>Raw materials for biomass, stock may be reduced (cost or supply) due to flood</li> </ul> <p><b>Health, Safety and Environment</b></p> <ul style="list-style-type: none"> <li>Safety of employees</li> <li>Electrical safety hazard for solar farms</li> <li>Migration of hazardous material/waste from natural gas and coal fired plants to the off-Site areas, risk of contamination.</li> </ul>	<ul style="list-style-type: none"> <li><b>A solar plant in Thailand sees the steepest increase in losses in RCP 8.5</b> by 2050, with an increase of 69%.</li> </ul>	<p>measures at hydropower plants</p> <ul style="list-style-type: none"> <li>Alternative feedstock sourcing for biomass plants to ensure supply</li> <li>Insurance</li> </ul>
<b>Cyclone and Wind</b>	<ul style="list-style-type: none"> <li>Coal in Thailand</li> <li>Coal in Philippines</li> <li>Wind in Taiwan</li> </ul>	<ul style="list-style-type: none"> <li>It should be noted that in recent years an increasing number of cyclones have been reported to affect some parts of the Globe.</li> <li>Considering the locations of the assets, <b>minimal to moderate change in cyclone hazard</b> is expected. Future cyclone trend indicates significant increasing trend in South-east Asia and East Asia region.</li> <li><b>Assets in Philippines and Taiwan are most exposed to cyclone and</b></li> </ul>	<p><b>Physical Damages</b></p> <ul style="list-style-type: none"> <li>Damage to coastal infrastructure, particularly in plants in Southeast Asia and East Asian regions, tools and equipment and increase in associated costs</li> <li>Damage to PV panels</li> <li>Loss of land due to permanent inundation</li> </ul> <p><b>Business/Supply Chain Interruptions</b></p>	<ul style="list-style-type: none"> <li>Not yet calculated</li> </ul>	<ul style="list-style-type: none"> <li>Comply with international best practices for wind load for design and construction of structures</li> <li>Implement monitoring mechanisms with regional meteorological agencies for early warning system</li> <li>Develop response mechanism to plan</li> </ul>

Hazard	High Exposure Assets	Key Findings	Business Implications	Potential Financial Impact	Response Measures/Adaptation Plan (2022-2027)
		<p><b>wind hazard</b>, and should expect a minimal to moderate increase to the risk and impact of the hazard.</p> <ul style="list-style-type: none"> <li>Increase in strong winds and cyclones may disrupt business operations due to damages to equipment.</li> </ul>	<ul style="list-style-type: none"> <li>Disruption of value chain and associated revenue loss</li> <li>Supply chain - Unloading of coal during storm/cyclone in coastal plants</li> </ul> <p><b>Health, Safety and Environment</b></p> <ul style="list-style-type: none"> <li>Safety of employees</li> </ul>		<p>operations and take preventive steps to reduce impact</p> <ul style="list-style-type: none"> <li>Insurance</li> </ul>
<b>Water Scarcity</b>	<ul style="list-style-type: none"> <li>Natural Gas in Thailand</li> <li>Coal in Thailand</li> <li>Solar in Thailand</li> <li>Wind in Thailand</li> </ul>	<ul style="list-style-type: none"> <li>Climate change projections indicate minimal changes from baseline on water scarcity across EGCO's assets. The water availability of water at local level (e.g. at site) may be affected by water usage patterns in and around the site area.</li> <li>Across <b>almost all of EGCO's assets</b>, the baseline risk for water scarcity is <b>medium to high</b>. This risk continues to be a <b>high risk hazard</b> to all of EGCO's assets.</li> <li>EGCO may need to consider conducted detailed site-level water risks assessments and water stewardship programs to reduce potential business disruptions.</li> </ul>	<p><b>Business/Supply Chain Interruptions</b></p> <ul style="list-style-type: none"> <li>Reduced generation capacity in coal-fired due to water use in boilers, co-gen (due to steam production) power plants due to municipal water protection</li> <li>Reputational risk during water stressed periods</li> <li>Low water flows or high water temperatures reduce hydropower generation</li> <li>Water for solar panel cleaning</li> </ul> <p><b>Health, Safety and Environment</b></p> <ul style="list-style-type: none"> <li>Unavailability of water including for communal drinking and sanitation</li> </ul>	<p>The <b>expense to water scarcity in 2030</b> from a 2021 baseline:</p> <ul style="list-style-type: none"> <li><b>Natural Gas Small Power Producer in Thailand</b> expects an 25.7% increase in RCP4.5<sup>6</sup> and 36.7% increase under RCP8.5</li> <li><b>Natural Gas Independent Power Producer in Thailand</b> expects an 30.4% increase under RCP4.5 and 43.4% increase under RCP8.5.</li> </ul>	<ul style="list-style-type: none"> <li>For plants at risk of water scarcity, such as EGCO Cogen, we have constructed water reserves to ensure water availability</li> <li>Conduct detailed water risk assessment to evaluate water risks on availability, infrastructure, and governance at asset level</li> <li>Explore opportunities to reuse recycled wastewater within the plant or from nearby communities</li> </ul>

<sup>6</sup> RCP 4.5 is only used in quantifying financial impact of water stress due to data availability. All other physical risks assessments are based on RCP 2.6 and RCP 8.5.

In the upcoming years, EGCO seeks to develop a deeper understanding of the risks posed to sites through site-specific physical climate risk assessments, focusing on key assets and key hazards. As part of ongoing efforts to mitigate and adapt to physical risks, EGCO considers appropriate insurance products to cover damages and losses due to potential natural hazards at given locations and has developed context-specific mitigation plans for each site.

EGCO has prioritized assets' water management as an integral part of physical risks mitigation and adaptation, which is further supported by the physical risks scenario analysis results where EGCO's assets have significant water-related risk exposure. To better understand the impact of these risks, EGCO has conducted demonstrational quantification of financial impact of water scarcity and riverine floods in a scenario where no mitigation or adaptation efforts have been implemented by EGCO.

In implementing appropriate response measures for high water risk plants, such as at EGCO Cogen, EGCO has constructed water reservoirs to ensure year-round water supply and implemented fuel reservation plans to avoid operational disruptions. In flood risk areas, EGCO has implemented prevention action plans and emergency response measures, such as construction of flood control structures. Additional adaptation efforts can be found in EGCO's sustainability reports.

### 3.3 Climate Strategy

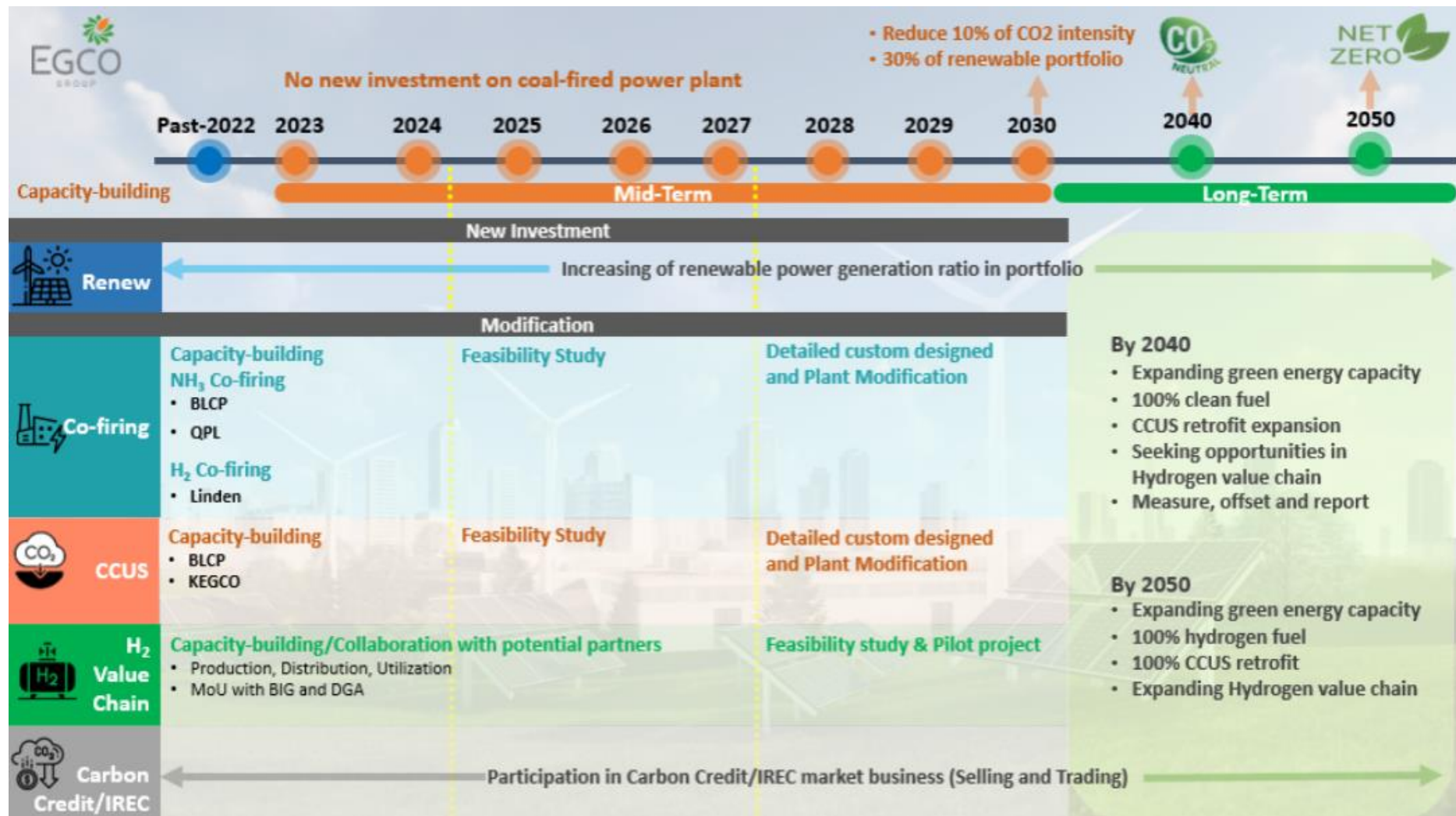
EGCO transforms results of the climate risks and opportunities assessments into action plans and strategic frameworks. As a consequence of such assessments in recent years, EGCO has developed a climate strategy effective through 2021-2030 with a strategic focus on the achievement of the GHG goals and implementation of key elements to pursue stellar climate change management. With the EGCO 2030 Strategic Climate Vision: "Accelerating the Energy Transition to a Low Carbon Society with Superior Innovation", EGCO's goals are focused on three key strategic pillars:

- **Resilient Portfolio** is based on phasing out carbon-intensive electricity generation in favor of increasing renewable electricity generation, with a target of 30% installed renewable energy capacity and 10% carbon intensity reduction within 2030. As resilience is a key element of ensuring growth in a transition towards a low-carbon society, based on our transition risks and opportunity assessment, renewable electricity growth and decarbonization of downstream sectors are expected to be key opportunities that EGCO seeks to capture under this Pillar.
- **Accelerate the Development of Innovative Businesses** by increasing revenue from low-carbon businesses, while also planning to promote decentralized renewable generation. To enhance the Group's drive towards innovative business, EGCO has been investing toward renewable energy projects such as hydrogen power generation and other alternative energy technology companies. As evident by EGCO's analysis of global technological trends and opportunities assessment, hydrogen use has been identified as a key strategic focus for this pillar. EGCO seeks to pursue clean hydrogen in 2 of EGCO's plants and explore further capacity expansion.
- **Enabling Programs** to support capacity building and stakeholder engagement through improving internal climate risk and opportunity management. This also contributes to an organization's climate reputation. EGCO has developed KPIs and targets for capacity building and engagement initiatives, expects all conventional power plants to use 100% Best Available Technology, and is dedicated to becoming a CDP A-List member.

Further details under these three core strategic pillars can be found through pages 123-129 of [EGCO's 2022 Annual Report](#). Additionally, further details on EGCO's climate lobbying efforts can be found in Annex A.

EGCO has also developed a net zero roadmap which outlines near-, medium-, and long-term key actions to achieve net zero ambitions and drive EGCO's climate strategy. EGCO will continue to employ this roadmap throughout upcoming years, to meet our goals.

Figure 4 EGCO's Net Zero Roadmap



The first phase, **Capacity Building**, continues up until 2030. Key activities in this phase consist of:

- No new investments in coal-fired power plants
- Readiness analysis and feasibility studies on EGCO's assets for CCS retrofitting and co-firing
- Purchase carbon credits to prevent increase in emissions during the first phase
- Expand renewable electricity generation portfolio to 30% by 2030

The second phase, **Carbon Neutral**, details EGCO's key actions in the mid-term between 2030 and 2040. Key activities include:

- Expand further green energy capacity and renewable energy generation
- Invest in permanent carbon removal through expanding CCS retrofitting
- Utilize 100% clean fuel
- Seek opportunities in the hydrogen value chain
- Achieve carbon neutral status through offsetting where necessary to compensate for residual GHG emissions to reach yearly target

The third phase, **Net Zero**, lays out EGCO's priorities by 2050 in the long term in order to achieve the Net Zero target.

- Green energy capacity and renewable energy generation continuously expanded
- Invest in permanent carbon removal through expanding CCS retrofitting to 100%
- Utilize 100% hydrogen as a fuel source
- Expand the hydrogen value chain

## 4. METRICS AND TARGETS

### 4.1 Climate-Related Metrics

EGCO aspires to be a major sustainable Thai energy company committed to environmental protection and social development. With its "Cleaner, Smarter, Stronger" business model, EGCO aims for sustainable growth. Its medium-term targets include increasing renewable energy generation to 30% and reducing carbon dioxide emissions intensity by 10% by 2030. EGCO's long-term goal is to achieve net-zero emissions by 2050. By reporting climate-related metrics and targets, EGCO builds trust with stakeholders and demonstrates its dedication to a sustainable future.

The GHG inventory was developed in alignment to the GHG Protocol. The reporting boundary covered EGCO's headquarters and 14 power plants under EGCO's operational control. This year's scope 3 emissions inventory covers all relevant out of 15 scope 3 categories as defined in the GHG Protocol. The Scope 3 assessment results are available in Annex B.

**Table 5 GHG Emissions Data**

Performance	Unit	2019	2020	2021	2022
<b>Direct (Scope 1) GHG emissions</b>	Metric tons CO <sub>2</sub> e	7,034,130	6,529,416	6,241,230	6,180,957
<b>Energy indirect (scope 2) GHG emissions</b>	Metric tons CO <sub>2</sub> e	7,127	10,474	10,750	9,108
<b>GHG emissions intensity (Scope 1 &amp; 2)</b>	Metric tons CO <sub>2</sub> e per MWh	0.49	0.49	0.50	0.46

**Table 6 Climate-Related Risk and Opportunity Metrics**

Opportunity Metrics	Unit	2019	2020	2021	2022
<b>Renewable Energy</b>					
Total renewable energy generated	Megawatts (MW)	1032.8	1,042.5	1,050.3	1,077.2
Share of renewable energy generation compared to total energy generation	%	18.9	19.2	19.0	18.0
Risk Metrics	Unit	2019	2020	2021	2022
<b>Water-Related Risk</b>					
Production plants in water-stressed areas	%	N/A	0	0	0
Cost of goods sold (COGS) in water-stressed areas	%	N/A	0	0	0

For other climate-related metrics please refer to EGCO's [environmental performance report](#). As EGCO's climate journey progresses, further climate risks and opportunities metrics and targets will be publicly disclosed.



## 4.2 Climate-Related Targets

**Table 7 Climate-Related Targets**

Emissions-Related Targets	
<b>Scope 1 and 2 Targets:</b>	
■	Reduce Scope 1 and Scope 2 emissions intensity by 10% (Metric tons CO <sub>2</sub> e per megawatt hour (MWh)) by 2030 from 2020 baseline
■	Achieve carbon neutrality by 2040 and net zero by 2050 for Scope 1 and Scope 2 emissions
<b>Scope 3 Targets:</b>	
■	Reduce Scope 3 emissions by 53% by 2022 from 2021 baseline (Target achieved this year)
■	Reduce Scope 3 emissions by 50% by 2050 from 2020 baseline
Other Climate-Related Targets	
■	No new investments in coal-fired power plants
■	Increase the portion of renewable energy to 30% of the total generating capacity by 2030
■	Increase the utilization of clean fuel to 100% by 2040 and replace with hydrogen fuel and CCUS retrofit by 2050
Remark:	<p>Scope 1+2 combined base year emissions (2020) is 6.5 million metric tons CO<sub>2</sub>e. (Target scope and related emissions reduction of scope 1&amp;2 represent 100% of base year emissions)</p> <p>Scope 3 base year emissions (2021) is 0.052 million metric tons CO<sub>2</sub>e.</p> <p>In addition to our internal targets, EGCO conducts climate lobbying practices with external organizations. We assess our climate lobbying practices against the Global Standard on Responsible Climate Lobbying with the aim of achieving goals in line with Thailand's NDC and the Paris Agreement (Annex 1).</p>

## 5. TCFD CONTENT INDEX

TCFD Recommendation	EGCO's Public Disclosure
<b>Governance</b> - Disclose the organization's governance of climate-related risks and opportunities.	
a) Describe the board's oversight of climate-related risks and opportunities	<ul style="list-style-type: none"> <li>TCFD Disclosure 2023 – Governance (PDF page 4-6)</li> <li><a href="#">Annual Report 2022</a> – Climate Strategy (PDF page 124-129)</li> <li><a href="#">Sustainability Management Structure</a></li> </ul>
b) Describe management's role in assessing and managing climate-related risks and opportunities	<ul style="list-style-type: none"> <li>TCFD Disclosure 2023 – Governance (PDF page 4-6)</li> <li><a href="#">Annual Report 2022</a> – Risk Governance Structure (PDF page 78-79)</li> <li><a href="#">Sustainability Management Structure</a></li> </ul>
<b>Strategy</b> - Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.	
a) Describe the climate-related risks and opportunities the organization has identified over the short, medium and long term	<ul style="list-style-type: none"> <li>TCFD Disclosure 2023 – Scenario Analysis (PDF page 7-13)</li> </ul>
b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning	<ul style="list-style-type: none"> <li>TCFD Disclosure 2023 – Scenario Analysis (PDF page 7-13); Climate Strategy (PDF page 18-21)</li> <li><a href="#">Annual Report 2022</a> – Emerging Risks (PDF page 89-90); Risk from Raw Water Shortage and Fuel Shortage Risk (PDF page 84); Climate Strategy (PDF page 124-129)</li> <li><a href="#">Adaptation Plan to Climate Risk</a></li> </ul>
c) Describe the resilience of the organization's strategy, taking into consideration different climate related scenarios, including a 2°C or Lower scenario.	<ul style="list-style-type: none"> <li>TCFD Disclosure 2023 – Scenario Analysis (PDF page 7-13); Climate Strategy (PDF page 18-21)</li> <li><a href="#">Annual Report 2022</a> – Emerging Risks (PDF page 89-90), Climate Strategy (PDF page 124-129)</li> </ul>
<b>Risk Management</b> - Disclose how the organization identifies, assesses, and manages climate-related risks	
a) Describe the organization's processes for identifying and assessing climate-related risks	<ul style="list-style-type: none"> <li>TCFD Disclosure 2023 – Climate-related Risks and Opportunities Management (PDF page 6)</li> </ul>

TCFD Recommendation	EGCO's Public Disclosure
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	<ul style="list-style-type: none"> <li>■ <a href="#">Annual Report 2022</a> – Risk Governance Structure (PDF page 78-79); Risk Management Philosophy and Policy (PDF page 79-80); Assessing Corporate Key Risks, Emerging Risks and Risks Mitigation (PDF page 81-88)</li> </ul>
<b>Metrics &amp; Targets</b> - Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material	
a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process	<ul style="list-style-type: none"> <li>■ TCFD Disclosure 2023 – Climate-Related Metrics (PDF page 21)</li> <li>■ <a href="#">Performance Data 2019-2022</a> – Direct (Scope 1) GHG Emissions; Indirect (Scope 2) GHG Emissions; GHG Emissions Intensity; Reduction of GHG Emissions; Water Withdrawal; Water Consumption</li> </ul>
b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 GHG emissions, and the related risks	
c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets	<ul style="list-style-type: none"> <li>■ TCFD Disclosure 2023 – Climate-Related Targets (PDF page 22)</li> <li>■ <a href="#">Annual Report 2022</a> – Business Targets (PDF page 34); Climate Strategy (PDF page 124-129)</li> </ul>

## 6. ANNEX A: GLOBAL STANDARD ON RESPONSIBLE CLIMATE LOBBYING

EGCO, as a leading company in Thailand, recognize the significance of shaping climate-related policies and regulations to align with our business interests. To ensure our climate lobbying efforts are conducted responsibly and in line with global best practices, EGCO has established a set of framework indicators. These indicators serve as a guide for our lobbying activities and demonstrate our dedication to engaging transparently and ethically in discussions surrounding climate policies.

No.	Framework Indicator	EGCO Actions	Reference
1.	Make a public commitment to align all of its climate change lobbying with the goal of restricting global temperature rise to 1.5°C above pre-industrial levels	EGCO is committed to support a managed transition in line with the Thailand NDC and Paris Agreement.  EGCO is also committed to become Net Zero by 2050 with the goal of restricting global temperature rise to 1.5°C above pre-industrial levels.	TCFD – Metrics and Targets
2.	Apply the scope of this commitment to all of its subsidiaries and business areas, and all operational jurisdictions	Climate Strategy Framework and other ESG-related policies are applied for all types of power businesses conducted by EGCO.	
3	Publicly commit to taking steps to ensure that the associations, alliances and coalitions of which it is a member conduct their climate change lobbying in line with the goal of restricting global temperature rise to 1.5°C above pre-industrial levels	EGCO is an active member of various groups and has made public commitments to adhere to the policies and roadmaps established by these groups and the government. These commitments are aligned with Thailand's NDC and the Paris Agreement.	TCFD – Metrics and Targets
4	Assign responsibility at board level for oversight of its climate change lobbying approach and activities	The board is responsible for approving climate strategy including climate lobbying policies, overseeing progress and appointing the Corporate Governance and Sustainability Committee that is responsible for environmental stewardship and addressing climate change. Apart from that, EGCO has assigned Board Director, Mr. Thepparat Theppitak, to sit as an Association President for Electricity Supply Industry	TCFD - Governance

No.	Framework Indicator	EGCO Actions	Reference
		Association of Thailand (TESIA) and a President in Thailand Business Council for Sustainability Development (TBCSD).	
5	Assign responsibility at senior management level for day-to-day implementation of its climate change lobbying policies and practices	At the senior level, individuals are assigned the responsibility of developing and implementing effective strategies, coordinating with relevant stakeholders, and ensuring that the organization's lobbying activities are aligned with its climate goals. In line with this, EGCO has designated two senior management personnel, Dr. Worapong Sinsukthavorn and Mr. Nakul Rakpanya, to serve as Director and Treasurer, and Director and Secretary, respectively, for their roles as Association President within the Electricity Supply Industry Association of Thailand (TESIA).	TCFD - Governance
6	Establish an annual monitoring and review process to ensure that all of its direct and indirect climate change lobbying activities across all geographies are consistent with the goal of restricting global temperature rise to 1.5°C above pre-industrial levels	EGCO has established procedures to evaluate, supervise, and determine the compatibility of its public policy engagements and lobbying efforts with the objectives of the Paris Agreement. This evaluation encompasses both our direct lobbying activities and those conducted through our trade associations. However, currently, our financial contributions are restricted to trade associations only.	<a href="https://sustainability.egco.com/en/reporting-center/performance-data">https://sustainability.egco.com/en/reporting-center/performance-data</a>  TCFD – Risk management and Climate Strategy (3.3 Climate Strategy)
7.	Establish a process for engaging with stakeholders related to setting and reviewing its climate change lobbying policies, positions and activities	EGCO and stakeholders participated in focus group meetings under the Carbon Capture Utilization and Storage Technology Roadmap (CCUS TRM), which is a climate lobbying activity to serve Thailand's commitment in UN COP26 which is Carbon Neutral by 2050 and Net Zero Greenhouse Gas Emissions by 2065, to collect and analyze important data as well as convene brainstorming sessions	<a href="https://www.youtube.com/watch?v=HZVrWp_mHkQU">https://www.youtube.com/watch?v=HZVrWp_mHkQU</a>  TCFD - Risk management and Climate Strategy

No.	Framework Indicator	EGCO Actions	Reference
		with relevant stakeholders to gather useful information for the roadmap.	
8.	Establish a clear framework for addressing misalignments between the climate change lobbying positions adopted by the associations, alliances and coalitions of which it is a member and the goal of restricting global temperature rise to 1.5°C above pre-industrial levels	EGCO actively participates in association gatherings to encourage dialogues and guarantee that the actions taken by the organization are consistent with Thailand's NDC and the Paris Agreement. As part of this commitment, EGCO has implemented a transparent framework to address any inconsistencies that may arise between the climate change policy positions of trade associations and our own stance on climate issues.	TCFD - Risk management and Climate Strategy
9.	Publish a detailed annual review covering the company's assessment and actions related to the 1.5°C-alignment of: (a) its own climate change lobbying activities; (b) the climate change lobbying activities of the associations, alliances, coalitions or thinktanks of which it is a member or to which it provides support	As a member of various climate change lobbying organizations, EGCO regularly monitors and reviews the Thailand NDC and Paris Agreement. They collaborate with government entities to develop a roadmap for addressing climate change effectively.	<a href="https://www.youtube.com/watch?v=HZVrWPMHkQU">https://www.youtube.com/watch?v=HZVrWPMHkQU</a>
10.	Recognise the existence of and report on action to address any misalignments between its climate change lobbying and/or the climate change lobbying activities of its trade associations, coalitions, alliances or funded thinktanks and the goal of limiting global temperature rise to 1.5 °C above pre-industrial levels	Given EGCO's extensive membership in various organizations and alliances, the company leverages the commitments established within these groups to review, compare, and assess its activities for any potential misalignments. If any misalignments are identified, EGCO initiates further discussions within the respective group to address and resolve the discrepancies in order to ensure a cohesive approach towards their climate change lobbying efforts.	TCFD - Risk management and Climate Strategy



No.	Framework Indicator	EGCO Actions	Reference
11.	Create or participate in coalitions that have the specific purpose of lobbying in support of the goal of restricting global temperature rise to 1.5°C above pre-industrial levels	EGCO has participated in several meetings to discuss environmental policies and the changing global climate in collaboration with the government, with the aim of developing a project that will lead Thailand towards carbon neutrality and net zero. This initiative is also in line with the commitments declared at the UN Climate Change Conference of the Parties, specifically COP26.	TCFD - Risk management and Climate Strategy
12.	Publicly disclose, for all geographies, its membership of, support for and involvement in all associations, alliances and coalitions engaged in climate change-related lobbying	<p>EGCO has disclosed its membership and all relevant associations engaged in lobbying activities pertaining to climate change on its official website as follows:</p> <p>Climate policy positions and activities of trade associations:</p> <ol style="list-style-type: none"> <li>1. Electricity Supply Industry Association of Thailand (TESIA)</li> <li>2. Petroleum Institute of Thailand (PTIT)</li> <li>3. Association of Private Power Producers (APPP)</li> <li>4. Power Producer Industry Club</li> <li>5. International Council on Large Electric System (CIGRE)</li> <li>6. Thai Chamber of Commerce</li> <li>7. Federation of Thai Industries (FTI)</li> <li>8. Thailand Business Council for Sustainability Development (TBCSD)</li> <li>9. Thai Listed Companies Association</li> <li>10. Thailand Environment Institute (TEI)</li> <li>11. Global Compact Network Thailand (GCNT)</li> <li>12. Thailand Carbon Neutral Network (TCNN)</li> <li>13. Thailand Bio-Diversity Network (B-DNA) Alliance</li> </ol> <p>Climate-related direct lobbying activities:</p> <p>None</p>	<a href="https://sustainability.egco.com/en/reporting-center/performance-data">https://sustainability.egco.com/en/reporting-center/performance-data</a>

No.	Framework Indicator	EGCO Actions	Reference
13.	Publicly disclose, for each of these organisations: (a) how much it pays to them on an annual basis; (b) those organisations where it sits on the board or plays an active role in committees or other activities related to climate change	EGCO consistently discloses its annual contributions to associations actively involved in lobbying activities. Notably, EGCO has co-founded certain organizations and participates in the promotion and support of lobbying initiatives focused on addressing climate change concerns.	<a href="https://sustainability.egco.com/en/reporting-center/performance-data">https://sustainability.egco.com/en/reporting-center/performance-data</a>
14.	Publicly disclose its overall assessment of the influence that its climate lobbying has had on (a) supporting ambitious public climate change policy; (b) the company's ability to deliver its own corporate transition strategy	EGCO, through its membership in various organizations promoting climate lobbying, ensures a clear roadmap towards achieving carbon neutrality. This objective is reinforced by the company's own policy and the implementation of projects within the organization, such as the utilization of Carbon Capture, Utilization, and Storage (CCUS). These initiatives align with Thailand's commitment to the UN COP26 target of becoming Carbon Neutral by 2050 and Net Zero by 2065. Active participation in such endeavours empowers the company to develop climate-related policies that align with its long-term objectives, enhancing preparedness, optimizing investments, and ultimately attaining carbon neutrality.	

## 7. ANNEX B: SCOPE 3 GHG EMISSIONS 2022

Performance	Emissions (Metric tons CO <sub>2</sub> e)	Methodology
<b>Other indirect (scope 3) GHG emissions</b>	7,723,237	<p>The analysis was conducted within the scope of the headquarters and encompassed 14 power plants under EGCO's control.</p> <p>The calculation methodology and standards utilized included the Greenhouse Gas Protocol's Corporate Value Chain (Scope 3) Accounting and Reporting Standard, ISO14064-1:2018 Specification with guidance at the organizational level for quantification and reporting of greenhouse gas emissions and removals, and the IPCC Guidelines for National Greenhouse Gas Inventories, 2006.</p>
<b>Category 1 Purchased Goods and Services</b>	878	<p>The data include only the top 5 goods and services purchased from the total spending items listed in the year 2022.</p> <p>The method employed in this calculation is the spend-based approach, utilizing the spend value of each item. These goods and services are classified into categories based on the United States Environmentally Extended Input-Output model (USEEIO). Their associated emission factors are used by multiplying the spend value of each item with its respective emission factor.</p>
<b>Category 2 Capital Goods</b>	11,538	<p>In this category, EGCO considers the top spending goods that depreciate and have a minimum spending requirement of 5,000,000 THB.</p> <p>The methodology used for calculation is similar to category 1, purchased goods and services. EGCO employs a spend-based approach, where the emission factor is multiplied by the respective classified item. It's important to note that the spending value in this category is significantly higher compared to the items listed in category 1. Consequently, this leads to higher emissions being emitted.</p>
<b>Category 3 Fuel- and Energy- Related Activities</b>	1,410,583	<p>Emissions are calculated specifically focusing on the well-to-tank aspect, which covers emissions generated during the extraction, production, refining, and transportation of the fuel before it reaches EGCO's operations.</p> <p>The calculation methodology employed is the Average Data Method, taking into account fuel-and-energy-related items like natural gas, diesel oil, husk and electricity. To ensure accuracy, well-to-tank emission factors from the Department for Environment, Food and Rural Affairs in the United Kingdom (DEFRA) are used in the calculation.</p>
<b>Category 4 Upstream Transportation</b>	84	<p>The methodology used in this category is a distance-based approach, considering both well-to-tank and tank-to-wheel emissions for products purchased in 2022.</p> <p>The distance is determined from EGCO's tier 1 suppliers to the company of powerplants listed in the scope of calculation, and transportation modes are classified as per DEFRA categories. The emissions associated with transportation are calculated by converting the distance into fuel consumption using the Net Calorific Value (NCV) obtained from Department of Alternative Energy Development and Efficiency (DEDE) and multiplying them by the relevant emission factors.</p>
<b>Category 5 Waste Generated</b>	1,952	<p>Emissions are solely accounted for waste, as EGCO does not send any wastewater to third parties for treatment. Consequently, there are no scope 3 emissions associated with wastewater.</p> <p>For the calculation of waste emissions, the Average Data Method is employed. The total annual weight of waste generated from power plants and EGCO headquarters is collected and classified based on the treatment methods listed in DEFRA. For waste the undergoes multiple treatment methods, the method with the highest ratio, landfilling, is used to determine emissions.</p>
<b>Category 6 Business Travel</b>	498	<p>This calculation considers emissions solely from employee transportation for business activities, excluding hotel stays.</p>

Performance	Emissions (Metric tons CO2e)	Methodology
		The methodology used is a spend-based approach, converting expenditure into emissions using the IPCC volume 2 (2006) emission factor and United States Environmentally Extended Input-Output model (USEEIO v2.0).
<b>Category 7 Employee Commuting</b>	2,267	The methodology employed for this calculation is a distance-based approach. It involves converting distances gathered through a commuting survey into emissions using emission factors sourced from the Department for Environment, Food and Rural Affairs (DEFRA).
<b>Category 8 Upstream Leased Assets</b>	1	The methodology employed for this category is the Average Data Method. The emissions in this category are estimated by considering the area utilized by EGCO's power plants and converting it into electricity consumption based on the IEA Emission Factors.
<b>Category 9 Downstream Transportation</b>	N/A	Excluded. EGCO already included electricity related emissions under Scope 1
<b>Category 10 Processing of Sold Products</b>	N/A	Excluded. EGCO does not have any intermediate products.
<b>Category 11 Use of Sold Products</b>	N/A	Excluded. EGCO includes the energy used by the end-user in category 3 – fuel- and energy-related activities
<b>Category 12 End- of-Life Treatment</b>	N/A	Excluded. The product (i.e. electricity) does not need any end-of-life treatment
<b>Category 13 Downstream Leased Assets</b>	0	In this category, the methodology employed is the Average Data Method. The emissions generated from leasing assets of EGCO are estimated by considering the total area of the leasing assets and converting it into electricity consumption using the IEA Emission Factors for the year 2022.
<b>Category 14 Franchises</b>	N/A	Excluded. EGCO does not have any franchises
<b>Category 15 Investments</b>	6,295,436	Emissions from EGCO's investments are calculated using the equity share method. This method takes into account only associate companies and joint ventures with less than 50 percent of EGCO's ownership. The emissions are calculated based on the revenue generated by these companies and the emission factors specific to their respective business areas.