



# Disclosures 2022





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# INTRODUCTION



The Electricity Generating Public Company Limited or EGCO Group acknowledges the pivotal role of the power sector in global efforts to address Climate Change and to limit global temperature rises to 1.5°C in line with the Paris Agreement. Consequently, Climate Change is a material issue for EGCO Group, and to demonstrate EGCO Group's commitment to climate action, EGCO Group has announced a long - term target to become Carbon Neutral by 2050. EGCO has been continuously making public disclosures on its performance and key initiatives to demonstrate its commitment to all stakeholders to further this agenda.

To better understand and manage Climate - Related impacts on its businesses and inform its stakeholders on the progress, EGCO Group has been developing Climate - Related disclosure in line with the Task Force on Climate - Related Financial Disclosures or TCFD and is also registered as a TCFD Supporter. TCFD is a widely and globally supported climate disclosure framework aiming to help companies disclose to their investors and other stakeholders the financial impacts from Climate Change and their resilience strategy to these impacts. The TCFD disclosure framework centers around four pillars: governance, strategy, risk management, and metrics and targets.

In this year, EGCO Group has increased the scope and deepened Climate - Related risks and opportunities assessment, as well as further developed its climate strategy to address the risks and meet long - term greenhouse gas (GHG) emission reduction targets. To assess the potential impact of Climate - Related risks and opportunities more rigorously, EGCO Group has conducted scenario analyses of transition and physical risks and quantified the potential financial impacts of selected priority risks to EGCO businesses. Similarly, following EGCO Group declaration of a Carbon Neutral target, it has developed a roadmap to demonstrate the commitment and actions needed to meet this target.

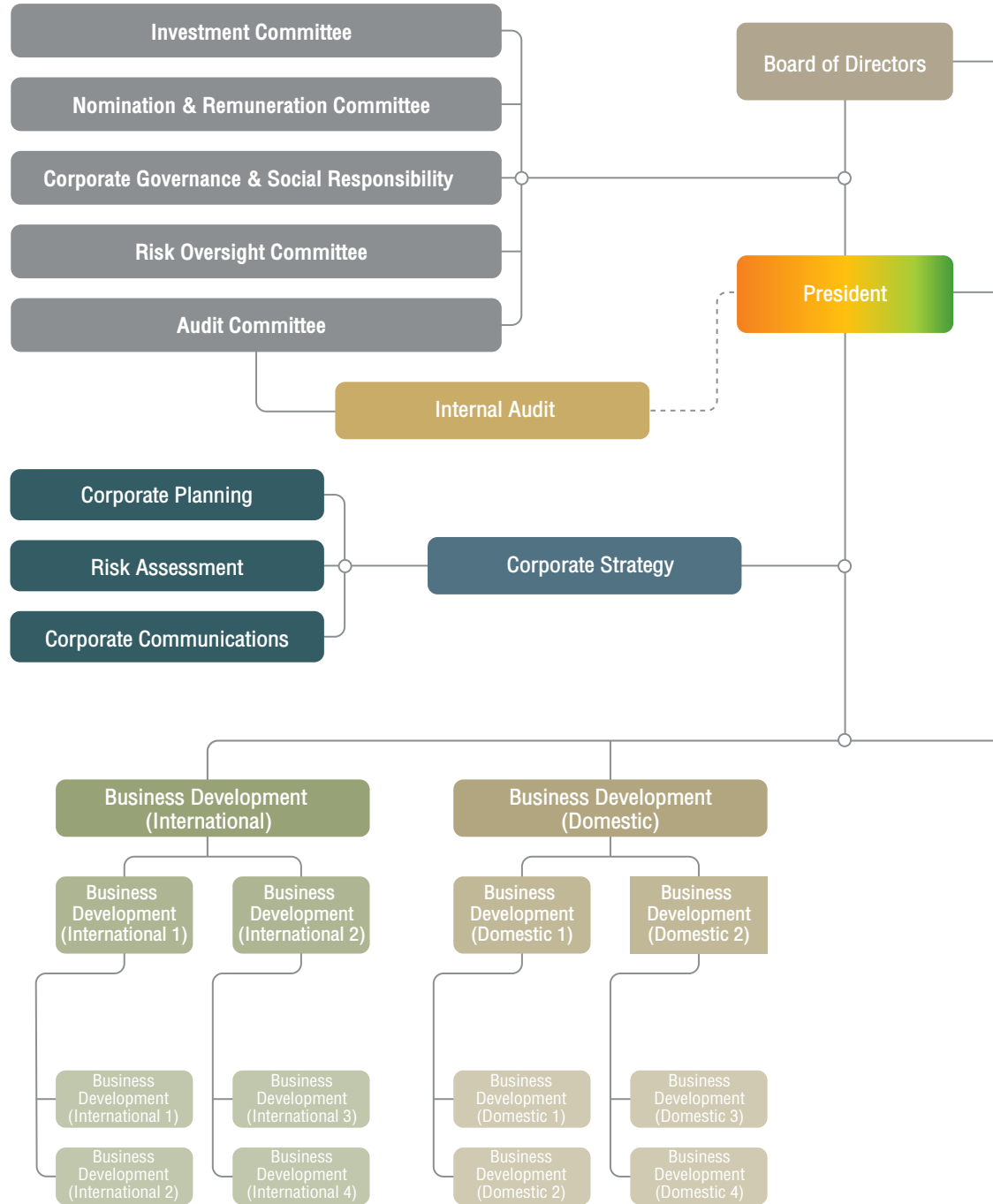
EGCO Group is committed to continually improving its Climate - Related performance and associated disclosures to be in line with best international practices.



# 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, Climate Change issues have been incorporated into EGCO governance structure from the Board level through to the managerial level. The roles and responsibilities of the Board, committees, and managerial functions are described below.

## EGCO's Organizational Structure



Effective Date: January 1, 2023





EGCO Group’s Climate Governance

EGCO Functions	Climate Risks & Climate Strategy Roles and Responsibilities
Board of Directors	<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 at least every quarter</li> </ul>
Corporate Governance & Sustainability Committee	<ul style="list-style-type: none"> <li>• Oversee 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 corporate strategic plans, for the Board’ of Directors’ approval</li> </ul>
Investment Committee	<ul style="list-style-type: none"> <li>• Invest in clean energy business in line with annual budget as well as short - term and long - term strategies</li> <li>• Endorse Climate - Related strategies, action plans, performance indicators, and goals for the Board of Directors’ approval</li> </ul>
Risk Oversight Committee	<ul style="list-style-type: none"> <li>• Assesses 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 every month</li> <li>• Reviews the progress of Climate - Related operations, action plans, KPIs, targets and goals on a quarterly basis</li> </ul>
Executives	<ul style="list-style-type: none"> <li>• Integrates Climate - Related risks and climate strategy into EGCO Group’s business strategies</li> <li>• Approves and monitors the implementation of climate strategy to align with strategic direction, goals, targets, projects that will be presented to the Board of Directors</li> <li>• Assigns responsibilities for climate strategy and risk management implementation to relevant persons/ units</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 Management Committee	<ul style="list-style-type: none"> <li>• Integrates Climate - Related risks and opportunities assessment and management into corporate 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>
Asset Management	<ul style="list-style-type: none"> <li>• Monitors GHG emissions and Climate - Related risks and implementation of low carbon projects at each asset</li> <li>• Monitors performance at managerial and central levels and liaises with internal stakeholders on physical and transition risks</li> </ul>
Business Development	<ul style="list-style-type: none"> <li>• Incorporates Climate - Related risks and opportunities into business strategy planning</li> <li>• Integrates climate strategy into overall EGCO business strategies and identifies business opportunities</li> </ul>
Power Plant Management	<ul style="list-style-type: none"> <li>• Oversees the operations of power plants, GHG emission reporting, and Climate - Related risks at plant level</li> <li>• Take charge of low carbon projects and Climate - Related risks management at operational level</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 financial reports and annual reports</li> </ul>



EGCO Group has set Climate - Related KPIs and targets to drive climate action at the leadership level and across its organization. Climate - Related targets, moreover, have been used as parts of executives' KPIs every year. Energy and Climate - Related performance indicators have also been set at each asset to support a unified executive and managerial push for climate action.



# RISK MANAGEMENT AND CLIMATE STRATEGY



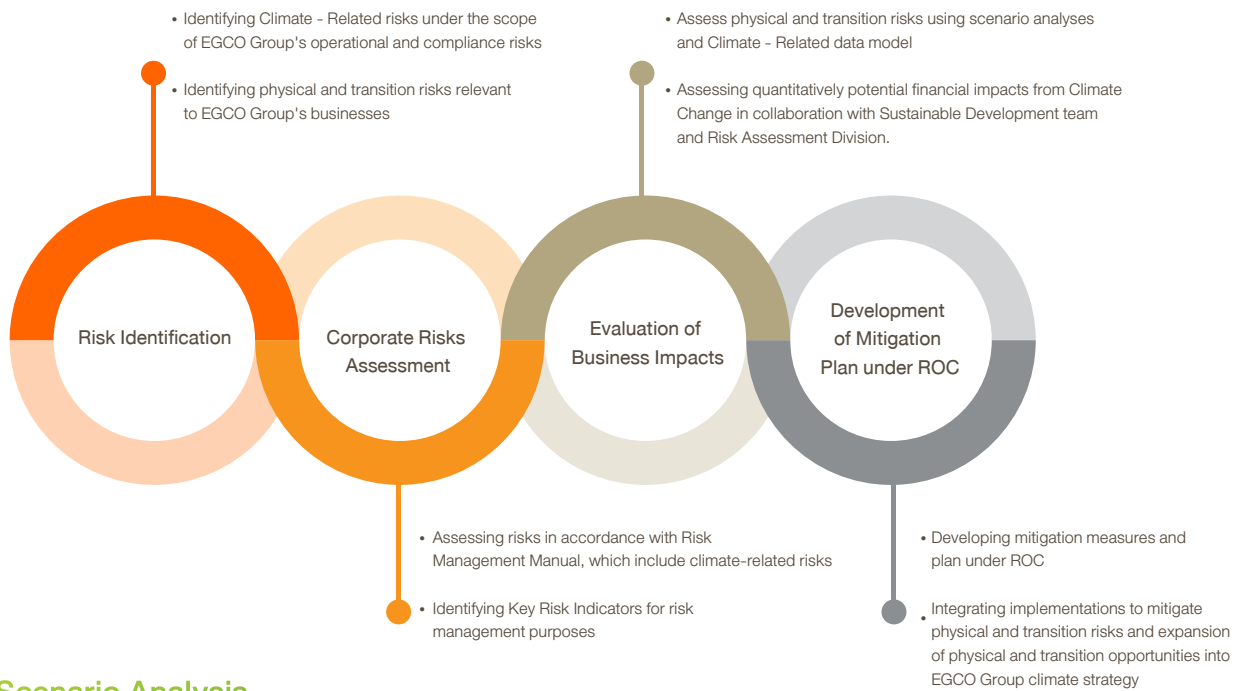
## Management of Climate - Related risks and Opportunities

EGCO Group has made Climate - Related risks and opportunities management as 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 its **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 as Operational Risks (e.g. risk from water shortage caused by extreme climate conditions) and Compliance Risk (e.g. carbon tax). Climate Change oversight has been assigned to the Corporate Sustainability Steering Committee, which reports to the Corporate Governance and Sustainability Committee. Moreover, performance based Climate - Related goals are incorporated into corporate KPIs to ensure a rigorous approach to the issue. EGCO Group has established key risk indicators (KRIs) which comprise leading and lagging indicators of risk management and encouraged employees to appropriately handle these KRIs in their operation. Implementations have been monitored and evaluated with results reported to the Board of Directors and committees on a regular basis.

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 risk management policy. ROC is responsible for drawing up risk mitigation plan and its implementation with aim to curb risks and their possible impacts on EGCO Group's revenue/ reputation and to prevent them from causing business disruption.



## EGCO Risk Management Process



## Scenario Analysis

In 2022, EGCO Group has expanded the scope of climate risks and opportunities assessment to better identify, evaluate, and manage their potential impacts. The assessment of Climate - Related risk scenarios is reviewed and categorized based on scenario patterns. Covered are climate impact of key transitional and physical risks. For this analysis, EGCO Group included the following inputs:

### Time Horizons

- Short - term:** 1 - 4 years
- Mid - term:** 5 - 10 years and represented by 2030 to estimate impacts and prioritize mitigation actions, while considering the expected lifetime of assets and PPAs
- Long - term:** over 10 years and represented by 2050 to align with EGCO Carbon Neutral target

### Scope

- Assessments of transition risks comprehensively covered the Company's operations with risks to physical structures covering a total of 25 assets or 84% of operations. Also considered in the assessment were climatechange impacts on three aspects of the EGCO Group's business operations: fossil - fuel based generation, renewable energy generation, supply chain (including upstream and downstream impacts).
- Assessment of climatechange impacts on three aspects of the EGCO Group's business operations: fossil - fuel based generation, renewable energy generation and supply chain (including upstream and downstream impacts).
- Business operations and value chain impacts were assessed.

### Scenario Analysis Inputs

#### Physical Scenarios

- Baseline:** Historical data at EGCO Group's assets locations
- IPCC RCP 2.6:** a scenario used to assess physical phenomena that will occur when the transition to low carbon society materializes and Paris Agreement goals are met.
- IPCC RCP 8.5:** a scenario used to assess physical impacts in the worst - case scenario where no measures are taken to combat climate change.

#### Transition Scenarios

- IEA Announced Pledges Scenario (APS):** 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.
- IEA Sustainable Development Scenario (SDS):** a scenario which assumes that the goals of the Paris Agreement are met where the global temperature rise is well below 2 degrees above pre - industrial levels.

The previous year’s transition scenario analysis focused on two drivers, projected emissions pathways across seven scenarios to 2030, and financial impact of carbon tax across two scenarios to 2030. This year, although EGCO Group has reduced the number of scenarios to two, it has assessed nine drivers that incorporates both EGCO Group’s business operations and value chain for a deeper and more holistic understanding. Similarly, for physical scenario analysis, the number of assessed assets rose from 14 to 25 also with an additional scenario and additional time horizon. Please find more information about the previous year’s scenario analysis at [EGCO Scenario Analysis 2021](#).

### Transition Scenario Analysis

The scenario analysis on transition risks and opportunities from Climate Change is intended to comprehensively analyze EGCO Group’s exposure to potential impacts arising from a global transition to a low carbon economy. Through internal stakeholder consultation, EGCO Group first identified transition drivers that were relevant to the business before conducting a quantitative assessment and prioritization of transition drivers to EGCO Group’s business and value chain under these selected scenarios. EGCO Group sought to ensure that both the upstream risks, such as carbon tax on suppliers, and downstream opportunities, such as decarbonization of the transportation sector, were included in this analysis to ensure a holistic understanding of the transition risks and opportunities that could impact it. EGCO Group then quantified the potential financial impact of carbon tax and expected renewable energy generation growth. Consequently, EGCO Group has developed response measures to mitigate expected risks and capture potential opportunities.

#### Transition Scenario Analysis Results and Implications

Transition Drivers	Potential Impact <sup>1</sup>						Financial Impact (Without any Intervention by EGCO) <sup>2</sup>	Implications for EGCO	Response Measures
	Fossil-Based Generation		Green Energy Generation		Supply Chain				
	2030	2050	2030	2050	2030	2050			
<b>Carbon Price (Risk)</b> <i>National carbon pricing regulations being introduced resulting in higher costs</i>							APS: operating costs to increase by 28% in 2030 and 130% in 2050  SDS: operating costs to increase by 28% in 2030 and by 225% in 2050	Increasing OPEX for coal and NG electricity generation  Short-term generation linked to PPA, merit order, and planned phase out (2025)  Clean energy generation becoming more cost-competitive	Internal carbon pricing to reflect current or expected carbon prices in EGCO Group’s operating areas and suppliers’  Internal carbon pricing to match EGCO Group’s operations and suppliers’ in accordance with current or expected carbon prices

<sup>1</sup> EGCO assesses the short - term impact of transition risks as part of its corporate risk management, which includes government policies, legislative changes and compliance risks arising out of climate change. Additional information can be found in [the Sustainability Report](#) p. 60

<sup>2</sup> Percentage changes of financial impact is derived from several components. The first part involves changes in financial impacts, which vary based on each scenario and time horizon using indicators of IEA World Energy Model. The second part is weighting, which determines the relationship between value - chain indicators and EGCO Group’s businesses.



Transition Drivers	Potential Impact <sup>1</sup>						Financial Impact (Without any Intervention by EGCO) <sup>2</sup>	Implications for EGCO	Response Measures
	Fossil-Based Generation		Green Energy Generation		Supply Chain				
	2030	2050	2030	2050	2030	2050			
Fossil Fuel - Based Generation Decline (Risk) <i>Development of renewable energy generation technologies to curb fossil - fuel based generation</i>							Not yet calculated		Analyzing power generation markets in operating areas in terms of renewable energy generation capacity and national decarbonization strategies.
Carbon Capture, Utilization and Storage (Risk) <i>Risk of delayed CCUS commercialization to reduce ability of existing power plants to support GHG emissions reductions targets</i>							Not yet calculated	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 with low GHG emissions.	Monitoring the commercial viability and costs of CCUS in operating areas.  If deployment of CCUS is expected to delay, consider phasing out carbon intensive plants at a faster rate.
Sustainability Linked Loans (Risk) <i>Increasing Climate - Related assessments/ requirements to access capital</i>							Not yet calculated	Fossil - based generation poses risks to access to capital, especially in plants without CCUS due to increasingly strict sustainability and Climate - Related requirements.	Demonstrating clear and strong efforts to reduce GHG emissions, e.g. setting emission reduction targets, future capacity expansion in green and renewable business ventures.  Clearly identifying limitations (e.g. long - term PPAs), and action items to mitigate GHG emissions generated.
Renewable Energy Generation Growth (Opportunity) <i>Revenue increase from the growing demand for power produced by renewable energy</i>							<p>APS: Opportunity for revenue to increase by 12% by 2030 and 22% by 2050</p> <p>SDS: Opportunity for revenue to increase by 32% by 2030 and by 239% by 2050</p>	<p>As energy demand is expected to rise, power generation by both fossil fuel and renewable energy will likely grow in the short run.</p> <p>Under SDS, biggest possible financial impacts are on an assumption that demand and production capacity for renewable energy generation rises boundlessly, depending just on power demand growth.</p>	<p>Addressing national decarbonization strategies and renewable energy generation targets for operating areas.</p> <p>Pushing for new businesses related to charging infrastructure so as to spur demand for EVs and support climate change strategy, which focuses on raising revenue from low carbon businesses and contributing to smart grid and smart city development</p> <p>EGCO may register renewable energy power plants with authorities responsible for issue RECs issuance.</p>

**RISK/ OPPORTUNITY SCORE COLOUR KEY**

Higher Risk	Mod. Risk	Lower Risk	Limited	Lower Opp	Mod. Opp	Higher Opp
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Transition Drivers	Potential Impact <sup>1</sup>						Financial Impact (Without any Intervention by EGCO) <sup>2</sup>	Implications for EGCO	Response Measures
	Fossil-Based Generation		Green Energy Generation		Supply Chain				
	2030	2050	2030	2050	2030	2050			
<p>Electrification of Other Sectors (e.g. EV uptake) (Opportunity)</p> <p><i>Enhanced access to new markets and partnerships e.g. with transport sectors</i></p>							Not yet calculated	<p>Demand for power produced by renewable energy to rise as part of sectorial decarbonization plans, leading to EGCO Group's revenue growth</p> <p>Transport sector's transition into electrification may rely heavily on green power generation &amp; batteries, increasing cost of transportation and business operations. Transport electrification may rely heavily on renewable energy power generation &amp; batteries, increasing cost of transportation and OPEX.</p>	
<p>ROI on Low - Emissions Technology (Opportunity)</p> <p><i>Investments in technical development (i.e. R&amp;D in battery storage capacity)</i></p>							Not yet calculated	<p>Investments and technology developments e.g. energy storage, can help reduce cost and promote the use of green electricity.</p> <p>Fuel distributors may increase cost of shipping and OPEX</p>	<p>Conducting feasibility studies on low - carbon technologies and their application to current and future EGCO Group's business strategies.</p> <p>Launching pilot projects with relevant business partners to accelerate commercial viability of low - emission technologies, such as battery storage.</p>
<p>Hydrogen Use (Opportunity)</p> <p><i>Large scale deployment of hydrogen as a clean energy source</i></p>							Not yet calculated	<p>Increase CAPEX to retrofit existing plants for hydrogen</p> <p>Increased shipping costs for suppliers</p>	<p>Analyzing the readiness of blue or green hydrogen technologies, and their application to current and future EGCO Group's business strategies.</p> <p>Identifying opportunities to supply green electricity to the production of green hydrogen.</p>
<p>Shareholder and Stakeholder Sentiment (Opportunity)</p> <p><i>Increased pressure from external stakeholders for disclosure of Climate - Related activities.</i></p>	N/A						Not yet calculated	<p>EGCO Group's reputation and access to capital may be impacted by stakeholder demands for climate action.</p> <p>EGCO Group's continued GHG emission reduction and disclosure of related data will enhance its reputation and lead to new business and investment opportunities.</p>	<p>Continuing and improving EGCO sustainability and climate disclosure through credible frameworks.</p> <p>Continuously engaging key stakeholders and policymakers to encourage transition to low carbon society.</p>

RISK/ OPPORTUNITY SCORE COLOUR KEY

Higher Risk	Mod. Risk	Lower Risk	Limited	Lower Opp	Mod. Opp	Higher Opp

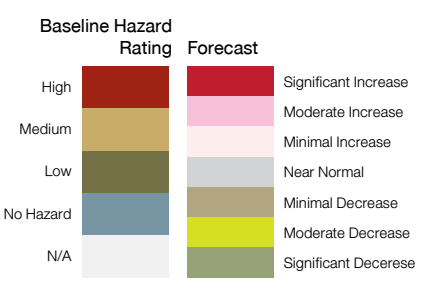
Transition Risks & Opportunities: EGCO Group has a clear upside from a transition to a low carbon company if the world moves in line with SDS trajectory. EGCO has potential profitability risks of - 1% under APS and opportunity of 35% higher profitability under SDS by 2030, with long - term revenue growth potential of 4% under APS and 242% under SDS by 2050 (SDS upside dependent on the demand and supply of greener form of energy).

### Physical Scenario Analysis

Sudden and long-term risks from climate change include riverine flooding, cyclone/ wind, water scarcity/ water stress, coastal flooding and sea level rise, and extreme heat. These risks are considered physical risks. EGCO Group assessed these risks at both regional and national levels against its 25 assets. “Hot spot analysis was also conducted for each site. EGCO Group intends to increasingly expand the scope of its risk analyses in the following years too. In this initial stage, EGCO Group has identified two core risks and quantified their potential financial impacts on its businesses 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 Group. Presently, EGCO Group has developed strategies to reduce the risks across its organization.

#### Physical Risk Map and Opportunities from Scenario Analysis

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	
		2030	2050	2030	2050		2030	2050	2030	2050		2030	2050	2030	2050		2030	2050	2030	2050
<b>Coal</b>																				
Philippines	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High
Thailand	High	High	High	High	N/A	N/A	N/A	N/A	High	High	High	High	High	High	High	High	N/A	N/A	N/A	N/A
<b>Geothermal</b>																				
Indonesia	High	High	High	High	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	High	High	High	High	N/A	N/A	N/A	N/A
<b>Hydro</b>																				
Laos	High	High	High	High	High	High	High	High	N/A	N/A	N/A	N/A	High	High	High	High	High	High	High	High
<b>Natural Gas</b>																				
Thailand	High	High	High	High	High	High	High	High	N/A	N/A	N/A	N/A	High	High	High	High	High	High	High	High
South Korea	High	High	High	High	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	High	High	High	High	High	High	High	High
USA	High	High	High	High	High	High	High	High	N/A	N/A	N/A	N/A	High	High	High	High	High	High	High	High
<b>Solar</b>																				
Thailand	High	High	High	High	High	High	High	High	N/A	N/A	N/A	N/A	High	High	High	High	High	High	High	High
<b>Wind</b>																				
Australia	High	High	High	High	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	High	High	High	High	N/A	N/A	N/A	N/A
Thailand	High	High	High	High	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	High	High	High	High	N/A	N/A	N/A	N/A
Taiwan	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	High	High	High	High	High	High	High	High	High	High	High	High



Note:  
BSL - Baseline<sup>3</sup>  
N/A - not applicable

<sup>3</sup> Baseline scenario refers to short term scenario reflecting 1 - 4 year timeframe.



Physical Risk Impacts and Business Implications

Hazard	High Exposure Assets	Key Findings	Business Implications	Potential Financial Impact	Response Measures/ Adaptation Plan
Coastal Floods and Sea - Level Rise	Coal - fired power plant in the Philippines Coal - fired power plant in Thailand Wind farm in Taiwan	In recent years, more coastal floods have occurred due to sea level rise that will likely affect South - East Asia region. Coastal floods therefore may worsen in the future.  Due to their location, EGCO Group's assets that may be affected the most in respective order are the one in Taiwan, the one in the Philippines and the one in Thailand.  While baseline risk is already high for these assets, in RCP 8.5 scenario, this risk is expected to increase moderately to significantly in 2030 and 2050.	<b>Physical Damages</b> Damage to coastal infrastructure, tools and equipment and increase in associated costs  Loss of land due to permanent inundation  <b>Business/Supply Chain Interruptions</b> Impact on accessibility  Downstream transmission and distribution network to EGCO Group's sites can be susceptible to coastal disturbances and storm surges.  <b>Health, Safety and Environment</b> Electrical safety hazard for solar power plants	Not yet calculated	Assessing coastal flood risk at vulnerable key assets  Implementing any additional mitigation measures
Extreme Heat	Natural - gas power plant in Thailand Solar power plant in Thailand	Climate change projections indicate higher maximum temperature and longer warm spell duration in the future.  Hazard impacts on all asset types except coal-fired and geothermal plants will likely rise significantly.	<b>Physical Damages</b> Reduced capacity/ efficiency and potential disruption of thermal power plants, such as those using coal and natural gas  Solar panels/ batteries quality degradation	Not yet calculated	Educating employees about symptoms associated with heat stress, and training them to provide first aid  Analyzing two measures that are designed to curb impacts from shrinking generation capacity or higher technology costs

Hazard	High Exposure Assets	Key Findings	Business Implications	Potential Financial Impact	Response Measures/ Adaptation Plan
		<p>Impacts will be especially high on solar and natural - gas power plants, whose already high risk is expected to increase moderately to significantly.</p>	<p><b>Business/ Supply Chain Interruption</b> Increased power transmission losses</p> <p>Reduced availability of water for cooling plants or fuel transportation, resulting in a lower output.</p> <p>Compliance with regulation on the temperature of water discharge may result in business interruption/higher costs.</p> <p><b>Health, Safety and Environment</b> Heat stress may lead to employees' reduced efficiency or even harm their health.</p>		
<p>Riverine Floods</p>	<p>Hydropower plants in Laos</p> <p>Natural gas power plants in Thailand</p>	<p>Assets in South - East Asia face a high flood risk. Climate Change models forecast more downpours for the region.</p> <p>Significant change in rainfall is predicted in climate change scenarios, with higher hazard impacts on EGCO Group's hydro and natural-gas power plants from the already high risk baseline.</p>	<p><b>Physical Damages</b> Water damage to electrical/ electronic components, including solar - cell panels, and increase in associated costs</p> <p>Growing sediment load, reducing capacity of dams and reservoirs, as well as turbine damages</p> <p>Erosion of foundation and supporting structures</p>	<p>Financial impacts on each assessed asset vary. But all assets see bigger revenue loss due to flood risk.</p> <p>Financial impacts from flood risk varies the most at the coal plant in Philippines, with losses rising by 28% in 2030 under RCP 2.6) but peaking in 2050 under RCP 8.5 (46%)</p> <p>A solar plant in Thailand sees the steepest increase in losses in RCP 8.5 by 2050, with an increase of 69%.</p>	<p>Constructing floodprevention structures. For instance, at a natural - gas power plant in Thailand, EGCO Group has installed flood walls with management costs of about THB. 10 million.</p> <p>Evaluating existing spill management plans and measures at hydropower plants</p> <p>Alternative feedstock sourcing for biomass plants to ensure adequate supply</p> <p>Insurance</p>

Hazard	High Exposure Assets	Key Findings	Business Implications	Potential Financial Impact	Response Measures/ Adaptation Plan
		<p>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.</p>	<p><b>Business/ Supply Chain Interruptions</b>  Riverine/ urban drainage inundation and water logging in low lying areas, potentially leading to downstream operation disruptions</p> <p>Interruption to hydropower plants -&gt; inability to release water</p> <p>The availability of raw materials for biomass fuel may reduce, resulting in higher costs or lower production volume in the face of floods</p> <p><b>Health, Safety and Environment</b>  Safety of employees</p> <p>Electrical safety hazard accidents at solar farms</p> <p>Migration of hazardous material/ waste from natural gas and coal fired plants to the off - Site areas pose a risk of contamination.</p>		
<p><b>Cyclone and Wind</b></p>	<p>Coal - fired power plant in Thailand</p> <p>Coal - fired power plant in the Philippines</p> <p>Wind farm in Taiwan</p>	<p>It should be noted that in recent years an increasing number of storms have been reported in many parts of the world.</p> <p>Based on the locations of EGCO Group's assets, <b>minimal to moderate change in cyclone. wind hazard is expected.</b> Storms risk is expected to go up significantly in South - east Asia and East Asia.</p>	<p><b>Physical Damages</b>  Damage to coastal infrastructure, particularly those at Southeast Asia - and East Asia - based assets, as well as damages to tools/ equipment and higher associated costs</p> <p>Damage to solar panels</p> <p>Loss of land due to permanent inundation</p>	<p>Not yet calculated</p>	<p>Complying with best practices for wind load for design and construction of structures</p> <p>Implement monitoring mechanisms with regional meteorological agencies for early warning system</p> <p>Develop response mechanism to plan operations and take preventive steps to reduce impact</p>



Hazard	High Exposure Assets	Key Findings	Business Implications	Potential Financial Impact	Response Measures/ Adaptation Plan
		<p>Assets in the Philippines and Taiwan have the biggest risk of cyclone and wind hazard. The risk and possible impacts may rise slightly or moderately in the future.</p> <p>Stronger winds and cyclones may damage equipment and disrupt business operations.</p>	<p><b>Business/ Supply Chain Interruptions</b> Disruption of value chain and associated revenue loss</p> <p>Supply chain - Unloading of coal during storm/ cyclone in coastal plants</p> <p><b>Health, Safety and Environment</b> Safety of employees</p>		Insurance
Water Scarcity	<p>Natural gas plants in Thailand</p> <p>Coal - fired power plant in Thailand</p> <p>Solar power plants in Thailand</p> <p>Wind farms in Thailand</p>	<p>Climate Change models suggest that slight changes from baseline on water scarcity across all EGCO Group's assets. The availability of disposal water at local level (e.g. at site) may be affected by water usage patterns in and around the site area.</p> <p><b>At most of EGCO Group's assets, the baseline risk for water scarcity is medium to high. This risk continues to be a high - risk hazard to all of EGCO Group's assets.</b></p> <p>EGCO Group may need to consider conducting detailed water risks assessments at site level and water stewardship programs to reduce potential business disruptions.</p>	<p><b>Business/ Supply Chain Interruptions</b> Municipal authorities' water - usage limit rule may result in lower generation capacity at coal - fired power plants where water for steam generators will reduce in volume and also at cogeneration power plants where water for steam production will reduce likewise.</p> <p>Risk to EGCO Group's reputation during water-shortage crisis</p> <p>Slow-running water or high water temperature reduces hydropower generation capacity.</p> <p>Water used for solar panel cleaning Health, Safety and Environment</p> <p><b>Health, Safety and Environment</b> Communities lack water for consumption.</p>	<p>Cost of water scarcity in 2030 from a 2021 baseline: <b>Small natural gas power producer in Thailand</b> expect 25.7% cost increase in RCP 4.5 and 36.7% increase in RCP 8.5</p> <p><b>Independent natural gas power producers in Thailand</b> expect 30.4% cost increase in RCP 4.5 and 43.4% increase in RCP 8.5.</p>	<p>Creating a dike to ensure adequate water supply at plants with water - scarcity risks such as EGCO Cogen</p> <p>Conducting detailed water risk assessment to analyze risks of water availability, infrastructure, and governance at asset level</p> <p>Exploring opportunities to reuse treated wastewater from power plants or nearby communities</p>

<sup>4</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.

For the near future, EGCO Group seeks to develop a deeper understanding of the risks to its assets through site - specific, Climate - Related physical risk assessments that focus on key hazards. As part of ongoing efforts to mitigate and adapt to physical risks, EGCO Group considers appropriate insurance products to cover damages and losses its assets may face because of natural disasters. Moreover, it has prepared site-based impact mitigation plans.

EGCO Group has treated assets' water management as an integral part of mitigation of and adaptation to Climate - Related physical risks. Such priority is in line with scenario analysis results, which show its assets have a high risk of water hazards such as water scarcity and floods. To better understand the impacts of these risks, EGCO Group has quantified financial implications of water scarcity and riverine floods in a scenario where no mitigation or adaptation efforts have been implemented by EGCO.

In response to the risks, EGCO Group has already constructed dikes at assets facing the risk of water scarcity, such as at EGCO Cogen, to ensure an adequate water supply year - round. It has also prepared fuel reserve plans to avoid operational disruptions at assets with flood risks. In addition, EGCO Group has implemented plans to prevent and handle emergencies. For example, anti - flood structures have been constructed. Additional adaptation efforts can be found in EGCO Group's public disclosure on [adaptation to climate risk](#) and sustainability reports.

### Climate Strategy

EGCO Group has developed its climate action plans and strategic framework based on climate risks and opportunities assessments in recent years. Its Climate Strategy for Years 2021 - 2030 focuses on GHG emission reduction target 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 Group'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 energy-based power 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 energy - based power generation growth and decarbonization of downstream sectors are expected to be key opportunities that EGCO seeks to capture under this Pillar.
- **Innovative Business** focuses on increasing revenue from low carbon businesses, while also planning to promote decentralized renewable generation to contribute to Smart Grid and Smart Cities. To enhance the Group's drive towards innovative businesses, EGCO Group has planned to invest in 3 new business projects each year. Based on EGCO 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 power plants and explore further capacity expansion.

- **Enabling Programs** support capacity building and stakeholder engagement through improving climate risk and opportunity management. They will contribute EGCO Group’s climate reputation. Moreover, EGCO Group has developed KPIs and targets for capacity building and engagement initiatives in pursuit of goals that all conventional power plants will eventually use 100% Best Available Technology. It is also determined to become a CDP A - List member.

Further details under these three core strategic pillars can be found through [EGCO public disclosure of the climate strategy](#) and pages 85 - 90 of [EGCO 2021 Sustainability Report](#).

To pursue its carbon neutral ambitions and drive its climate strategy, this year EGCO has developed a Carbon Neutral Roadmap.

### Carbon Neutral Roadmap



# METRICS AND TARGETS

## Climate - Related Metrics

EGCO Group aspires to be a major sustainable Thai energy company. In 2021, EGCO Group re-examined its business direction and announced its low-carbon society commitment under the concept “Cleaner, Smarter, and Stronger to Drive Sustainable Growth”. EGCO Group is also committed to building trust among stakeholders by reporting climate-related metrics and targets.

### GHG Emissions Data

Performance	Unit	2019	2020	2021
Direct (Scope 1) GHG emissions	Metric tons CO <sub>2</sub> e	7,034,130	6,529,416	6,241,230
Energy indirect (scope 2) GHG emissions	Metric tons CO <sub>2</sub> e	7,127	10,474	17,044
GHG emissions intensity (Scope 1 & 2)	Metric tons CO <sub>2</sub> e per MWh	0.49	0.49	0.50

### Climate - Related Risk and Opportunity Metrics

Opportunity Metrics	Unit	2019	2020	2021
<b>Renewable Energy</b>				
Total power by renewable energy	Megawatts (MW)	1,032.8	1,042.5	1,050.3
Share of renewable energy generation compared to total generation	%	18.9	19.2	18.6

### Climate - Related Risk and Opportunity Metrics

Risk Metrics	Unit	2019	2020	2021
<b>Water - Related Risk</b>				
Power plants in flooded areas	%	N/A	0	0
Cost of goods sold (COGS) in flooded areas	%	N/A	0	0

For other Climate - Related metrics please refer to [Performance Summary: Environment](#). As EGCO climate journey progresses, further climate risks and opportunities metrics and targets will be publicly disclosed.

## Climate - Related Targets

### Emissions - Related Targets



- Reducing carbon emission intensity by 10% by 2030 from 2020 baseline
- Becoming carbon neutral in 2050

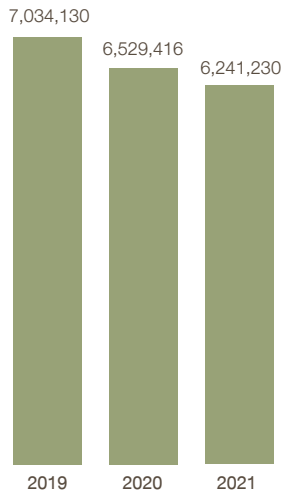
### Other Climate - Related Targets



- Increasing the portion of renewable energy to 30% of the total generating capacity by 2030
- Power generated from coal to be maintained at 20 - 21% of the portfolio

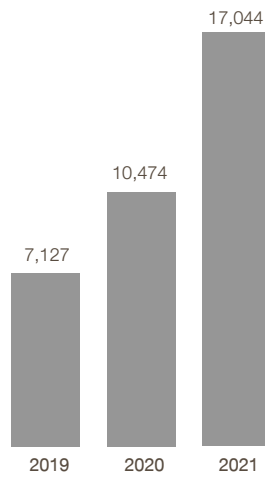
### Direct (Scope 1) GHG emissions

Unit: Metric tons CO<sub>2</sub>e



### Energy indirect (scope 2) GHG emissions

Unit: Metric tons CO<sub>2</sub>e



### GHG emissions intensity (Scope 1 & 2)

Unit: Metric tons CO<sub>2</sub>e per MWh



### Total power by renewable energy

Unit: Megawatts (MW)



### Share of renewable energy generation compared to total generation

Unit: %





# TCFD CONTEXT INDEX



TCFD Recommendation	EGCO Public Disclosure
<p><b>Governance</b> • Disclose the organization’s governance of Climate - Related risks and opportunities.</p>	
<p>a) Describe the Board’s oversight of Climate - Related risks and opportunities</p>	<p><a href="#">Sustainability Management</a></p> <ul style="list-style-type: none"> <li>• Sustainability Management Structure</li> </ul> <p><a href="#">Annual Report 2021</a></p> <ul style="list-style-type: none"> <li>• Climate strategy, p. 86</li> </ul> <p>2022 TCFD Disclosure - Governance</p>
<p>b) Describe Management’s role in assessing and managing Climate - Related risks and opportunities</p>	<p><a href="#">Sustainability Management</a></p> <ul style="list-style-type: none"> <li>• Sustainability Management Structure</li> </ul> <p><a href="#">Annual Report 2021</a></p> <ul style="list-style-type: none"> <li>• Risk governance structure, p. 52</li> </ul> <p>2022 TCFD Disclosure - Governance</p>
<p><b>Strategy</b> • Disclose key data on actual and potential impacts of Climate - Related risks and opportunities on the organization’s business strategies and financial planning</p>	
<p>a) Describe the Climate - Related risks and opportunities the organization has identified over the short, medium and long terms</p>	<p>2022 TCFD Disclosure - Strategy</p> <ul style="list-style-type: none"> <li>• 3.2 Scenario Analysis</li> </ul>
<p>b) Describe the impact of Climate - Related risks and opportunities on the organization’s businesses, strategies, and financial planning</p>	<p><a href="#">Annual Report 2021</a></p> <ul style="list-style-type: none"> <li>• Emerging Risks p. 59</li> <li>• Risk from Raw Water Shortage, p. 56</li> <li>• Climate Strategy p. 86 - 90</li> </ul> <p><a href="#">Adaptation plan to climate risk</a></p> <p>2022 TCFD Disclosure - Risk Management and Strategy</p> <ul style="list-style-type: none"> <li>• 3.2 Scenario Analysis</li> <li>• 3.3 Climate Strategy</li> </ul>
<p>c) Describe the resilience of the organization’s strategies, taking into consideration different Climate - Related scenarios, including a 2°C or Lower scenario.</p>	<p><a href="#">Annual Report 2021</a></p> <ul style="list-style-type: none"> <li>• Emerging Risks p. 59</li> <li>• Climate Strategy p. 86 - 90</li> </ul> <p>2022 TCFD Disclosure - Risk Management and Strategy</p> <ul style="list-style-type: none"> <li>• 3.2 Scenario Analysis</li> <li>• 3.3 Climate Strategy</li> </ul>

TCFD Recommendation	EGCO Public Disclosure
<p><b>Risk Management</b> • Disclose how the organization identifies, assesses, and manages Climate - Related risks</p>	
<p>a) Describe the organization’s process for identifying and assessing Climate - Related risks</p>	<p><a href="#">Annual Report 2021</a></p> <ul style="list-style-type: none"> <li>• Risk Governance Structure p. 52</li> <li>• Risk Management Philosophy and Policy p. 53</li> </ul>
<p>b) Describe the organization’s process for managing Climate - Related risks</p>	<ul style="list-style-type: none"> <li>• Assessing Corporate Key Risks, Emerging Risks and Risks Mitigation p. 54 - 56</li> </ul> <p>2022 TCFD Disclosure - Risk Management and Strategy</p> <ul style="list-style-type: none"> <li>• 3.1 Climate - Related risks and Opportunities Management</li> </ul>
<p>c) Describe how processes for identifying, assessing and managing Climate - Related risks are integrated into the organization’s overall risk management</p>	
<p><b>Metrics &amp; Targets</b> • Disclose key data on metrics and targets used to assess and manage Climate - Related risks and opportunities</p>	
<p>a) Disclose the metrics used by the organization to assess Climate - Related risks and opportunities in line with its risk management strategy and process</p>	<p><a href="#">Performance Summary: Environment</a></p> <ul style="list-style-type: none"> <li>• Direct (Scope 1) GHG emissions</li> <li>• Indirect (Scope 2) GHG emissions</li> </ul>
<p>b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 GHG emissions</p>	<ul style="list-style-type: none"> <li>• GHG emissions intensity</li> <li>• Reduction of GHG emissions</li> <li>• Water withdrawal</li> <li>• Water consumption</li> </ul> <p>2022 TCFD Disclosure - Metrics and Targets</p> <ul style="list-style-type: none"> <li>• Climate - Related Metrics</li> </ul>
<p>c) Describe the targets used by the organization to manage Climate - Related risks and opportunities and performance against targets</p>	<p><a href="#">Annual Report 2021</a></p> <ul style="list-style-type: none"> <li>• Business Targets p.18</li> <li>• Climate Strategy: Goal and Performance p. 87</li> </ul> <p>2022 TCFD Disclosure - Metrics and Targets</p> <ul style="list-style-type: none"> <li>• Climate - Related Targets</li> </ul>



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