

# DEF/NE THE SUSTA/NABLE FUTURE

Sustainability Report 2019  
Electricity Generating Public Company Limited





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**DEF/NE**  
**THE**  
**SUSTA/NABLE**  
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## Message from the President



EGCO Group has always given priority to a harmonious between business, communities, society and the environment. We have integrated this value into our corporate vision and mission since 1992. For this reason, sustainability does not only about the continuity on performance growth, but it is also about consideration to communities, society and the environment to peacefully coexist, at all operations sites, throughout our value chain. This is in accordance with the global sustainable development guidelines that each organization focuses on economic, environmental, social and good corporate governance aspects.

Guided by this approach, EGCO Group always gives importance to its stakeholders. In 2019, EGCO Group revisited its materiality issues for a sustainable operation, and conducted an engagement with its key stakeholders in order to verify their expectations on sustainable development topics. Results collected shows that EGCO Group and its stakeholders' expectations are consistence, including, market opportunities, human resources development, innovation and digitization, and energy management.

In order to ensure that EGCO Group is able to create and maintain the balance of sustainable business operation, amid the challenges of the utilities industry, such as limited domestic opportunities, higher competitive in international opportunities, rapidly evolving technologies, as well as climate change, which affects the utilities business as a whole and globally. EGCO Group has been preparing for this transition, adjusting investments portfolio, along with reviewing its vision, mission and strategic plan by emphasizing business expansion from electricity generation to energy. The new vision is aimed "To be a major sustainable Thai energy company with full commitment to environment protection and social development support".

However, despite facing various challenges, EGCO Group is successfully manage the **economic aspect**. In 2019, we are able to expand the international investment to Taiwan for the first time, through the offshore wind power project "Yunlin" as well as completing other construction projects, the Xayaburi Power Plant in Laos and the San Buenaventura Power Plant in the Philippines commenced the commercial operation in the 4<sup>th</sup> quarter as scheduled. Apart from this, EGCO Group has also expanded the investments into an energy which is related to its core businesses, by investing into the oil pipeline extension project to the Northeastern region of Thailand, through Thai Pipeline Network Co., Ltd.

On an aspect of being a **good corporate citizen and be considerate to community and environment**, in 2019, various important initiatives were implemented, such as, for **community and society**, EGCO Group officially opened the Khanom Learning Center, as a knowledge center, sharing knowledge about electricity, and coexistence with surrounding communities and the environment to youth, communities and public. The center is the first and only learning center in Thailand as a floating power plant, with over 15,000 visitors throughout the year. For **human rights**, we have assessed risks and conducted a comprehensive human rights due diligence covering all business activities in EGCO Group's value chain to ensure that EGCO Group conducts our business on the basis of protect, respect, and remedy as per internationally recognized human rights standards. For **supply chain management**, we have reviewed a supply chain management strategy, including policies and guidelines for procurement and required our suppliers to perform the suppliers' self-assessment which covers Environment, Social, and Governance (ESG) topics. All these are how EGCO Group develop and drive sustainability throughout its business operation as well as creating an awareness to its stakeholders in the value chain so that they understand and grow along with EGCO Group toward sustainability.

Moreover, EGCO Group has established guidelines to be an **organization of learning and growth**, with a strong foundation from its personnel to drive investment opportunities both new and future businesses, while promoting **innovation** within the organization, enhancing work efficiency and creating a positive impact on society and the environment simultaneously. In addition, EGCO Group arranged an internal session regarding **information security, cybersecurity and privacy protection** for customer, business partners, suppliers, and personnel as part of reviewing those policies to be in accordance with recognized international standard. The updated policies are scheduled to be completed by 2020. This will ensure that we have guidelines and system in place to protect our stakeholders' personal information with the safety highest level.

As a result of our determination on sustainable development, EGCO Group has been listed in **Thailand Sustainability Investment (THSI) 2019** by the Stock Exchange of Thailand for **5<sup>th</sup> consecutive year**, as well as being selected from ThaiPAT Institute to be listed in **ESG 100**, resources sector for **5<sup>th</sup> consecutive year** as a listed company with outstanding performance on environment, social, and governance.

With our grateful to a strong supportive from our stakeholders that enhance EGCO Group for the continuity and successful in our business, on behalf of EGCO Group's executives and employees, I would like to thank you all of you for the great support that making us today's achievement. I hope that this sustainability report conveys our intention and commitment of operating our business based on consideration to society and environment as well as good corporate governance in order to create mutual benefits and values in every aspect for all of our stakeholders and to be recognized on an international level as a leading Thai energy company with sustainable business operation.



Mr. Jakgrich Pibulpairoj  
President

## About This Report

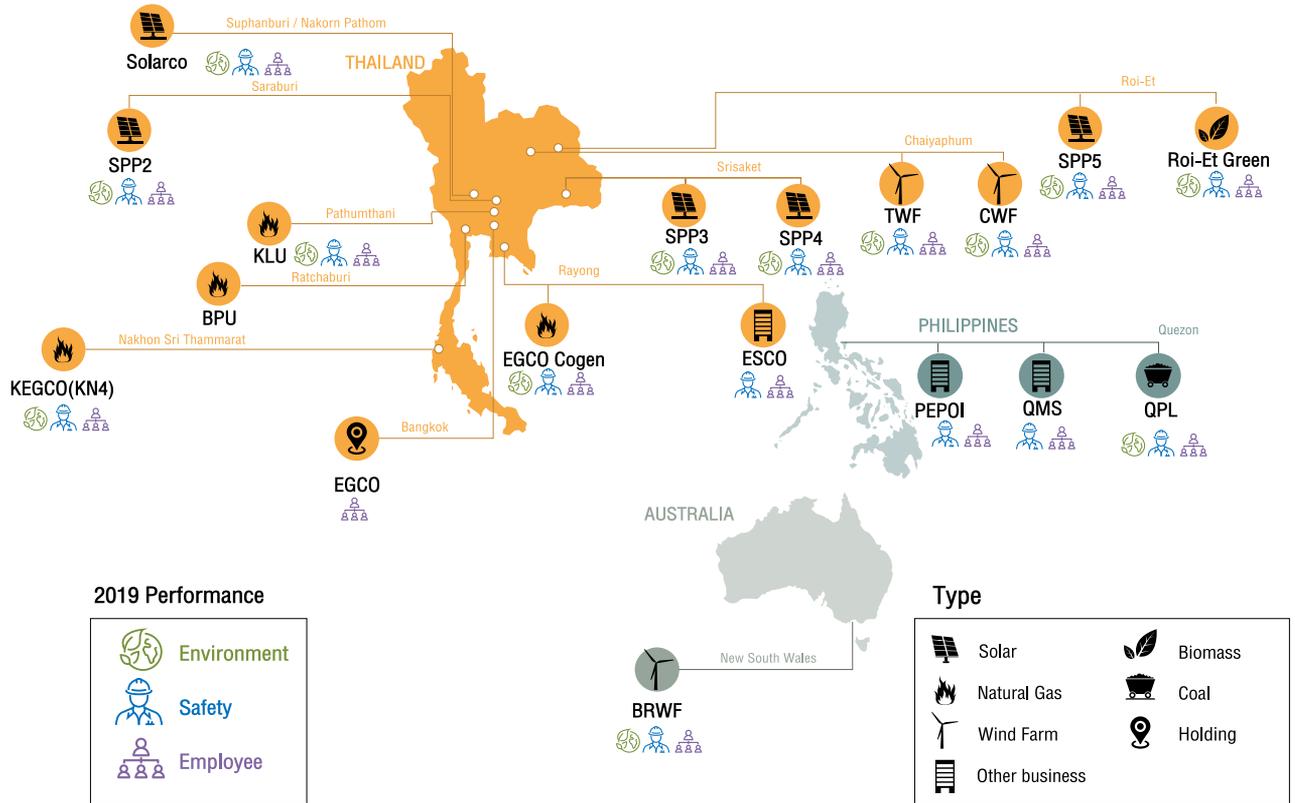
GRI 102-45, 102-50, 102-51, 102-52, 102-53, 102-54

EGCO Group has been publishing their sustainability report annually since 2007, disclosing our economic, social, and environmental performances; as well as material topics to the company's sustainable development. This year is the first year that EGCO Group has applied an Integrated Report Framework <IR> of the International Integrated Reporting Council (IIRC) and in accordance with the Global Reporting Initiative Sustainability Reporting Standards' (GRI Standards) Core Options. Furthermore, EGCO Group's data on performance, environment, occupational health, and safety have been audited by a third-party organization to ensure accurate, transparent, and reliable reporting.

This EGCO Group's 2019 sustainability report continues to focus on the sustainability topics that are of importance to EGCO Group's stakeholders in relation to the company's strategies and operations towards sustainability. This report includes the data from 1<sup>st</sup> January 2019 to 31<sup>st</sup> December 2019, covering EGCO Group's subsidiaries in Thailand and overseas. This covers approximately 87% of the total revenue. This information is also available in Annual Report 2019 and on EGCO's website at [www.egco.com](http://www.egco.com)



Scope of Reporting



EGCO Group appreciates and is open for suggestions and feedback regarding sustainability reporting for the improvement of EGCO's future sustainability reports and to support sustainable development with all stakeholder groups. For any comments, feedback, and further inquiries, please contact us through the following communication channels below:

Corporate Planning Division,  
Electricity Generating  
Public Company Limited (EGCO)  
EGCO Tower, 14<sup>th</sup>, 15<sup>th</sup> Floor,  
222 Vibhavadi-Rangsit Rd.,  
Tungsonghong, Laksi, Bangkok 10210



Sustainability@egco.com



## Sustainable Journey of EGCO Group

### We are EGCO Group

GRI 102-1, 102-2, 102-3, 102-4, 102-5, 102-6, 102-7, 102-9

Electricity Generating Public Company Limited (EGCO) is the first independent power producer in Thailand, established in May 1992 by the Electricity Generation Authority of Thailand (EGAT) under the Thai government's initiative to promote privatization of the power and utility sector. The initiative focuses on primary investment in the power and utility sector, in Thailand and overseas. There is possible business expansion in the energy sector.



#### Vision

To be a major sustainable Thai energy company with full commitment to the environment protection and social development support

#### Mission

- 1) To consistently grow and maximize value for shareholders
- 2) To offer reliable energy supply and services
- 3) To be good corporate citizen and be considerate to the society and environment

### Milestones



**1992**

Established on May 12<sup>th</sup>, 1992 by the Electricity Generation Authority of Thailand (EGAT)



**1994**

Transformed into a public company on March 23<sup>rd</sup>, 1994



**1995**

Listed on the Stock Exchange of Thailand (SET) on January 16<sup>th</sup>, 1995

### Core Value



TEAMWORK



INNOVATION



STAKEHOLDER CONCERNS



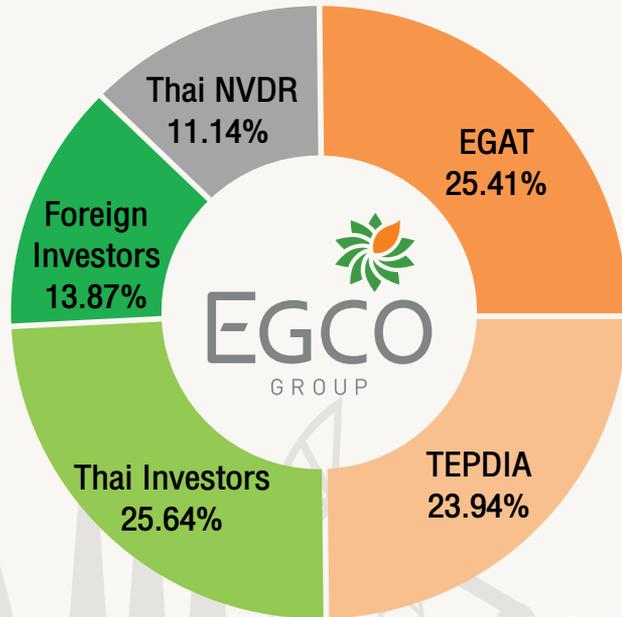
RESULT - ORIENTED



ETHICS & INTEGRITY

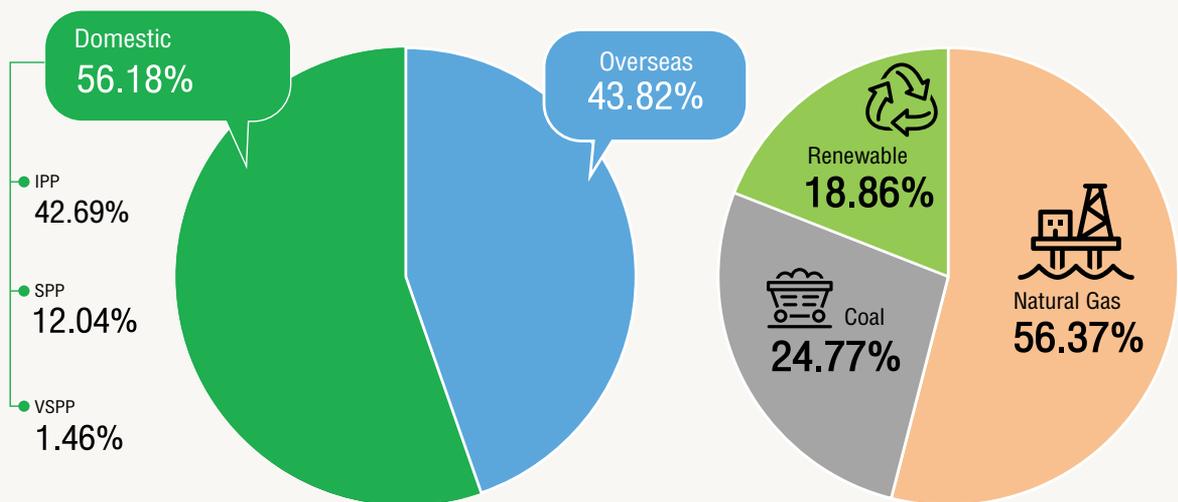
**Shareholding Structures**

EGCO's major shareholders are Electricity Generating Authority of Thailand (EGAT), TEPDIA Generating B.V., Thai investors, foreign investors, and Thai NVDR Co., Ltd. respectively.



As of September 6, 2019

**Gross Energy Generation by Type of Fuel**



Generating power is EGCO Group's core business. As of December 31<sup>st</sup>, 2019, there were 28 operating power plants with a total equity contracted capacity of 5,475.07 megawatts equity (MWe). 3,076.07 MWe or 56.18% generated by domestic power plants and 2,399 MWe or 43.82% by overseas power plant with 1,032.83 MWe generated from renewable energy sources.

## Inputs

<b>Financial Capital</b> <ul style="list-style-type: none"> <li>Total equity 105,106 MTHB</li> <li>Total debt 103,416 MTHB</li> <li>Operating cost 31,921 MTHB</li> </ul>	
<b>Manufactured Capital</b> <ul style="list-style-type: none"> <li>Property, plant and equipment 57,782 MTHB</li> <li>Non-current assets 172,728 MTHB</li> </ul>	
<b>Intellectual Capital</b> <ul style="list-style-type: none"> <li>Digitalization and Innovation investment 75 MTHB</li> <li>Procedures and processes</li> </ul>	
<b>Human Capital</b> <ul style="list-style-type: none"> <li>Employee 1,197 persons</li> <li>Training spending 35 MTHB</li> </ul>	
<b>Social and Relationship Capital</b> <ul style="list-style-type: none"> <li>CSR investment 1.67 MTHB</li> <li>Social donation 8.7 MTHB</li> <li>Customer relationship</li> <li>Community trust</li> <li>Collaborative business partnership</li> </ul>	
<b>Natural Capital</b> <ul style="list-style-type: none"> <li>Energy consumption 50,090 TJ</li> <li>Water withdrawal 1,214 million m<sup>3</sup></li> </ul>	

### Financial Management Risk

Secure competitive funding sources with financial exposure optimization to enhance financial competitiveness

Strengthen core business, extend to value-added business, explore and sculpt into new business

### Strategic and Investment Risk

## Business Activities



## Outputs

**Production**

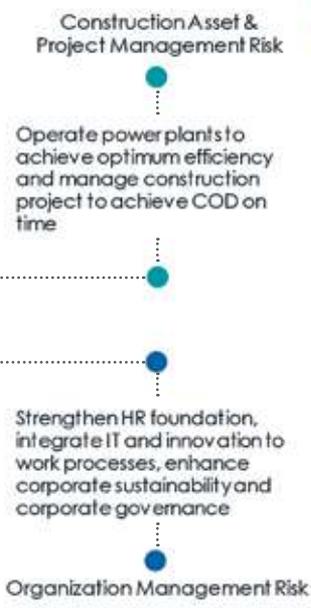
- Electricity 13,610 GWh
- Steam 768,687 tons

**By-product**

- Ash 44,667 tons

**Discharge / Emission**

- Total waste 2,597 tons
- NOx 7,649 tons
- SOx 6,661 tons
- GHG emission (Scope 1 and 2) 6.80 million tons of CO<sub>2</sub>e
- Water discharge 1,209 million m<sup>3</sup>



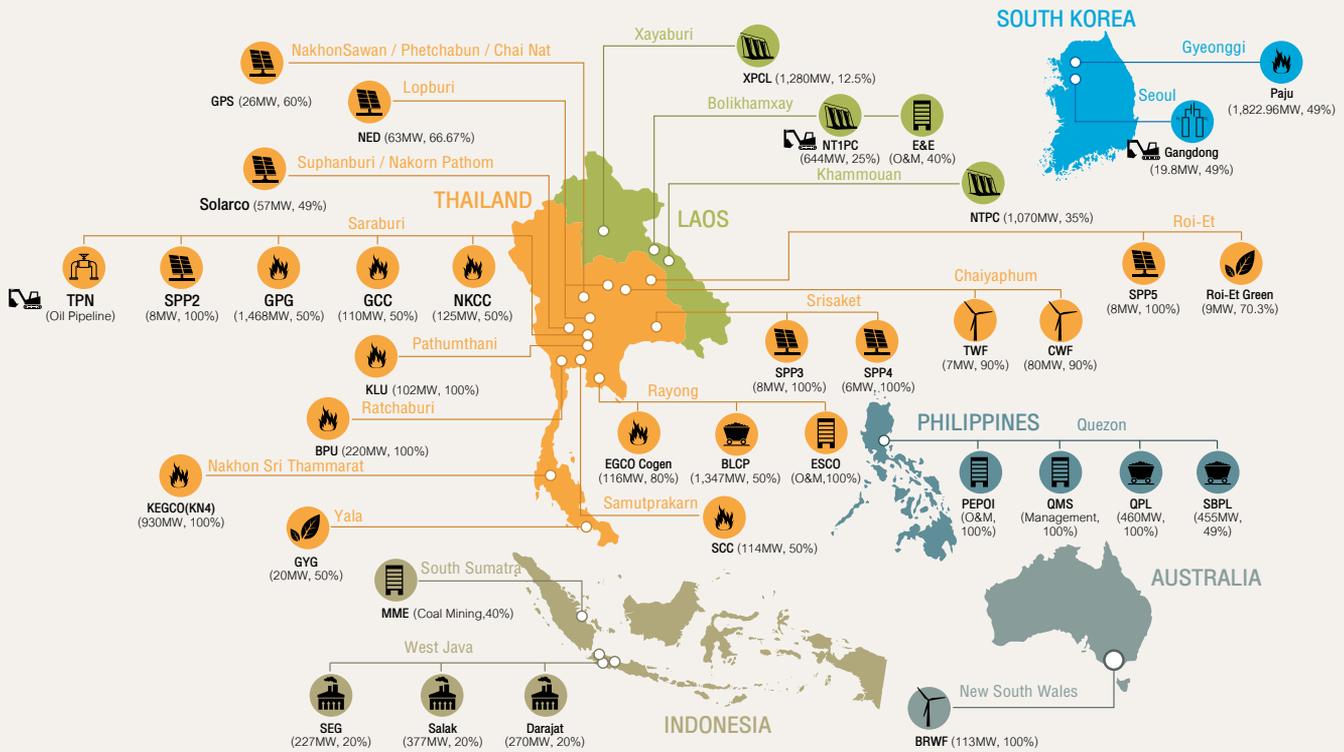
## Outcomes

	For EGCO Group		For Stakeholders
	<b>Financial Outcome</b> <ul style="list-style-type: none"> <li>Revenue 47,460 MTHB</li> <li>Net Profit 13,059 MTHB</li> </ul>		<b>Financial Outcome</b> <ul style="list-style-type: none"> <li>Earnings per share 24.81 THB</li> <li>Return on shareholder's equity 12.76%</li> </ul>
	<b>Manufactured Outcome</b> <ul style="list-style-type: none"> <li>Operating asset 28 assets</li> <li>Construction project 3 projects</li> <li>Total contracted capacity 5,475 MWe</li> </ul>		<b>Manufactured Outcome</b> <ul style="list-style-type: none"> <li>Generating long-term returns for the investors through investment in the new project, construction project management and asset management</li> </ul>
	<b>Intellectual Outcome</b> <ul style="list-style-type: none"> <li>Cost saving from innovation projects 117 MTHB</li> <li>Internal innovation 22 projects</li> </ul>		<b>Intellectual Outcome</b> <ul style="list-style-type: none"> <li>Operational performance improvement</li> <li>Knowledge sharing with employees, communities and suppliers</li> </ul>
	<b>Human Capital</b> <ul style="list-style-type: none"> <li>Employee engagement 44%</li> <li>Turn over rate 4.93%</li> <li>Lost Time Injury Frequency Rate (LTIFR) 0 case/1 million manhours</li> </ul>		<b>Human Capital</b> <ul style="list-style-type: none"> <li>Average training hours 30.83 hours per employee</li> <li>Salary and benefits 2,257 MTHB</li> </ul>
	<b>Social and Relationship Outcome</b> <ul style="list-style-type: none"> <li>Customer satisfaction 92.42%</li> <li>Community satisfaction 96.35%</li> <li>No case of human rights complaints</li> </ul>		<b>Social and Relationship Outcome</b> <ul style="list-style-type: none"> <li>Tax paid to government 1,576 MTHB</li> <li>Community development 88 projects</li> <li>Local employment and procurement 340 MTHB</li> <li>Participant in power plant learning centers 15,000 persons</li> </ul>
	<b>Natural Outcome</b> <ul style="list-style-type: none"> <li>100% Environmental complied with laws</li> <li>Water reused and recycled 146,698 m<sup>3</sup></li> </ul>		<b>Natural Outcome</b> <ul style="list-style-type: none"> <li>GHG emission reduction 613,129 tons of CO<sub>2</sub>e, to align with (Nationally Determined Contribution) and the COP21 Paris agreement.</li> </ul>

As a holding company, EGCO Group's main source of revenue comes from the dividend from subsidiaries and joint ventures in Thailand and other countries across Asia Pacific region such as Lao PDR, Indonesia, Philippines, Australia, and South Korea. There are currently two projects under construction with total equity contracted capacity of 171 MW which will begin operating in 2020 and 2022.

In addition to power business, EGCO Group operates other related power businesses comprising of operation and maintenance, coal mine, and oil pipeline business.

**28 Operating Power Plants, 5,475.07 MWe**  
**2 Power Plant Under Construction, 170.78 MWe**  
**1 Other Business Under Construction**  
**5 Other Business**



= Solar	= Wind Farm	= Biomass	= Geothermal	= Fuel Cell
= Natural Gas	= Other business	= Coal	= Project Under Construction	= Petroleum Pipeline

## Key Performance Indicators (KPI) 2019

### Reliable Power Supply

Electricity and Steam Contracted Capacity

**5,475**

MWe



Electricity Generation

**13,610**  
million units



Steam Generation

**768,687**  
tons

### Economic Value



Net Profit

**13,059**

million THB

Sales and Services

Income 47,460 million THB

### Corporate Governance

**80%**

Average Individual Committee Member Meeting Attendance Rate

**99%** Percentage

of Employees Passed Good Governance and Employee Ethics Assessments



### Employee

Total Number of Permanent Employees

**1,197** persons

Lost Time Injury Frequency Rate (LTIFR)

was **0**



Turnover rate

**2.01%**



**Zero** fatality for employees and contractors

### Environment

Energy Consumption Intensity

**3.55**  
GJ/MWh

Water Consumption Rate

**0.35**  
cubic meters/MWh



Greenhouse Gas (GHG) Emission Intensity (Scope 1&2)

**0.48**  
tons of CO2e/MWh



Total waste (Non-hazardous and Hazardous)

**116** tons

### Community and Society



**340**  
million THB

for Local Employment and Local Procurement



**1,576**  
million THB

of Tax paid to government for country development



**167**  
million THB

for community development

## Opinions from Stakeholders

Dr. Songtam Suksawang, PhD  
Director of National Parks Office

Opinions on EGCO:

Due to rapid changes in technologies and consumer behaviors, EGCO should change how they conduct business accordingly. Clean/ renewable energy is an opportunity for EGCO Group to decrease GHG emissions. Not only this help the Group meets customers' expectation, it also minimizes the company's carbon footprint at the same time.

Creditor

Opinions on EGCO:

Not only EGCO Group creates opportunities and conducts their business with transparency, the company also treats all stakeholders equitably, and acts responsibly towards society and environment.

### EGCO Group’s Management for Business Sustainability

GRI 102-19, 102-20

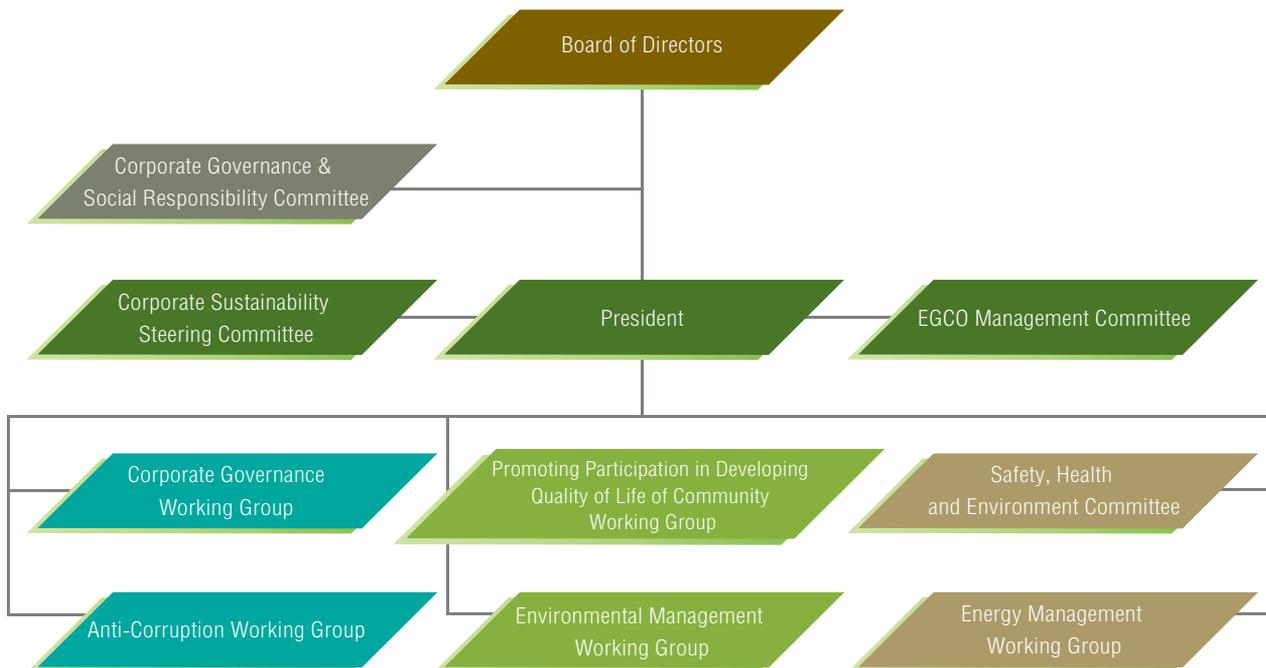
#### Establishing Operational Frameworks and Management Guidelines

EGCO Group operates while emphasizing on sustainable development by incorporating it into the company’s strategies. Hence, the management structure for business sustainability has been developed to oversee that business operations comply with the established guidelines and policies to ensure EGCO’s operational efficiency.

At the Board level, a Corporate Governance and Social Responsibility Committee has been appointed to monitor sustainability operations.

At the management level, EGCO Group has established a Corporate Sustainability Steering Committee comprising of Executive Vice Presidents from all functional groups, leading by Strategy and Asset Management Senior Executive Vice President. The task of this committee is to analyze standards and practical guidelines on corporate sustainability regularly as well as planning and setting targets for improvements towards EGCO Group’s sustainability.

Furthermore, EGCO Group has established several sub-committees, namely Corporate Governance Working Group, Anti-corruption Working Group, Promoting Participation in Developing Quality of Life of the Community Working Group, Safety, Health, and Environment Committee, Environmental Management Working Group, and Energy Management Working Group. The aforementioned teams are crucial to EGCO Group’s emphasis on sustainable development principles in economic, social, and environmental aspects in our operations as shown in the management structure below:

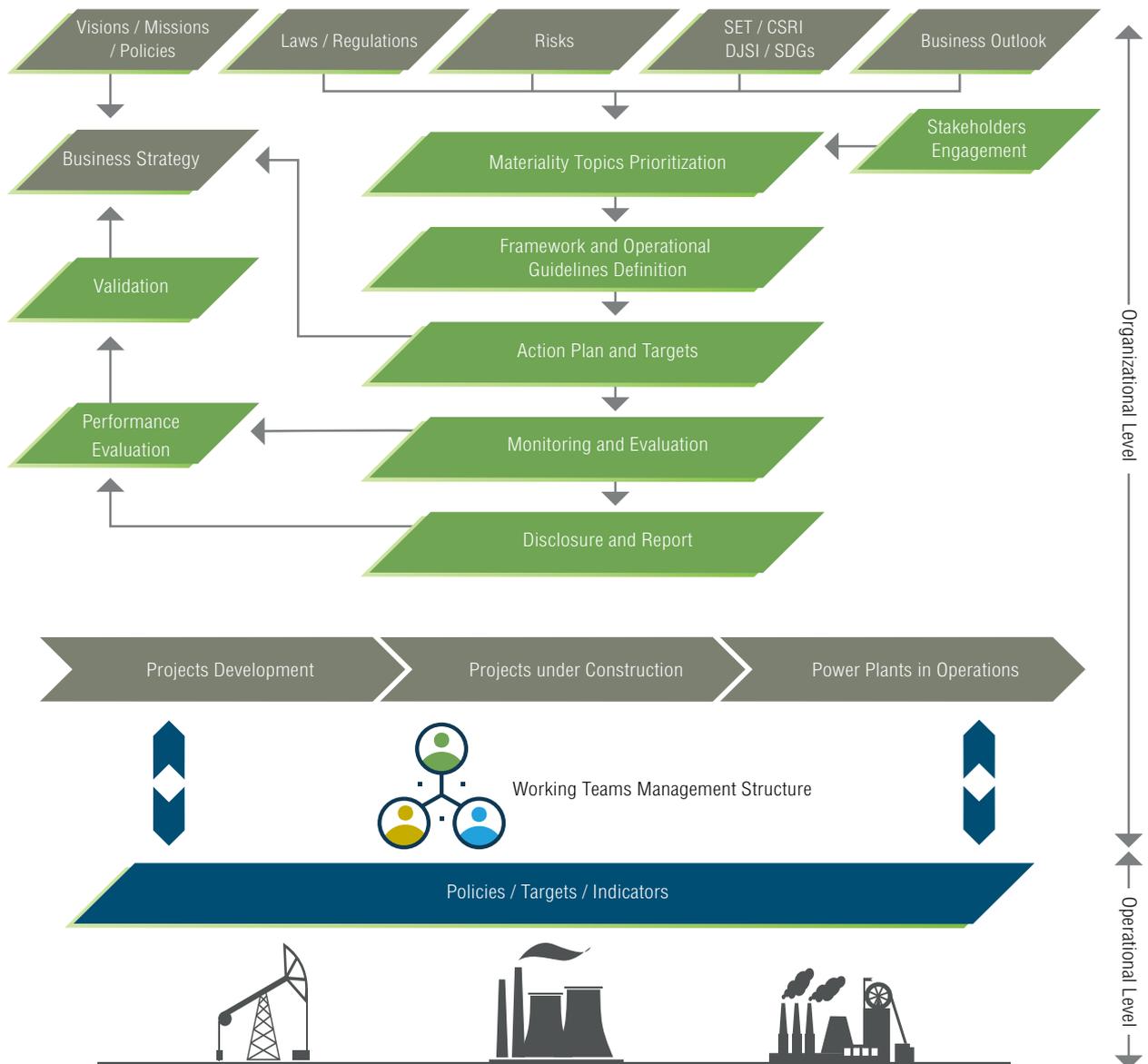


Moreover, EGCO has established policies, manuals, and guidelines to ensure smooth integrated operations, build corporate culture, and to inform executive, employee as well as all relevant stakeholders.

**EGCO Group's Path on Becoming a Sustainable Power Producer**

As EGCO Group's visions to be a major sustainable Thai energy company with full commitment to environment protection and social development support, the management has integrated EGCO Group's social and environmental responsibilities with a part of the strategic plan to thrive towards sustainability. EGCO would analyze all external and internal stakeholders' information to identify and prioritize the pressing sustainability issues starting from project developments, constructions, to the operation throughout the power plant's contracted period. A framework is then established alongside the business strategies, specific action plans, and targets in accordance with the company's policies in both organizational and power plant levels, monitored and evaluated by the Corporate Sustainability Steering Committee and other working teams.

Furthermore, EGCO Group discloses operational information and communicates with the stakeholders through variety of communication channels such as the Sustainability Report, Annual Report, EGCO's website, and SUKJAI quarterly magazine. The summary of management guidelines is seen below:



### Action Plan and Objective

In EGCO Group's operations, action plans are established in accordance with the company's business policies and strategies. Each plan consists of specific procedures, objectives, guidelines, timeframes, and key performance indicators to establish a precise framework with consideration of EGCO group's responsibilities to the society and environment in every step as follows:



### Monitoring and Evaluation

EGCO Group is monitoring the performance following established action plan through monthly and quarterly Board meetings. The performance is evaluated according to the objectives, targets, and key performance indicators of each action plan together with the evaluation of the entire corporate by external organization such as the Stock Exchange of Thailand (SET), Thai Institute of Directors, and Dow Jones Sustainability Indices (DJSI).

Moreover, EGCO Group organizes 2 meetings on community's engagement annually in the operational level to report on the preventive and corrective measures of environmental impacts, to listen the suggestions and opinions from the communities and government agencies around the power plants, and to propose solutions to issues that may present.

### Reporting and Disclosure of Operational Information

EGCO Group has a process of collecting and gathering sustainability performance data and verification of guidelines, measuring methods, and data collection methods. The data obtained may be reviewed and certify by an external organization which will be published and available to the stakeholders through following channels:

- Annual Report
- Sustainability Report (under GRI Standards)
- EGCO Group's Website
- Annual General Meeting
- Life magazine
- SUKJAI magazine
- Involvement in the community and society through joint activities

### Performance Analysis and Issues Validation

Due to possible changes in the Materiality Matrix and issues prioritization when the context of the stakeholder changes, EGCO Group frequently conducts Gap Analysis and reevaluates the important issues in order to plan and improve our performance.

### EGCO Group's Sustainability Report Development Plan



#### A: Stakeholder Engagement & Setting Priority

GRI Indicators: 102-40, 102-42, 102-43, 102-44, 102-47

EGCO Group pays close attention on conducting business and the impacts it may have on different groups of stakeholders as each of them affects our business both directly and indirectly, for instances; on business expansions, profits, and company's reputation. EGCO is consistently accepting opinions and expectations from our stakeholders to incorporate the current issues into decision making process and business planning. It is one of the company's policies to show responsibilities in treating and communicating with every group of stakeholders with fairness.

#### Stakeholders Engagement

EGCO Group's internal and external stakeholders are categorized into 12 groups. More details on stakeholders' expectations, the company's response, and the stakeholder engagement approach will be mention in the next part of this report.



## Stakeholders Engagement

Stakeholder	Expectation from the Stakeholder	The Company's Response	Stakeholder Engagement Approach
1. Customers	<ul style="list-style-type: none"> <li>Power generation and distribution as specified in the Power Purchase Agreements (PPAs) at a reasonable price</li> <li>Providing accurate information and satisfactory, reliable power supply</li> <li>Operations will not affect the community, society, and the environment</li> </ul>	<ul style="list-style-type: none"> <li>Effective performance together with good customer relations and has responsibility to the community, society, and the environment</li> </ul>	<ul style="list-style-type: none"> <li>Information and opinions exchanging meetings with the Transmission Control Unit from the Electricity Generating Authority of Thailand (EGAT)</li> <li>Bonding activities with the EGAT Group</li> <li>Meetings with the customers in the industrial estates for the production planning that will meet the customers' demand.</li> </ul>
2. Shareholders	<ul style="list-style-type: none"> <li>Continuous and sustainable growth of the company's stock value</li> <li>Established risk management model</li> <li>Respect and preserve shareholder's rights with equitable treatment</li> <li>Disclosure of truthful, complete, and sufficient information</li> <li>Compliance with relevant laws</li> <li>Professional and honest executives</li> </ul>	<ul style="list-style-type: none"> <li>Effective operational performance</li> <li>Good corporate governance and risk management plan</li> <li>Disclosure of essential information to the public</li> </ul>	<ul style="list-style-type: none"> <li>Attend shareholder meetings</li> <li>Informed through annual reports</li> <li>Power plants visit</li> <li>Private information session</li> <li>Roadshows</li> <li>LIFE quarterly magazine</li> <li>Provide suggestions and complaints through designated communication channels</li> <li>Inform through company's website</li> </ul>
3. Government Agencies	<ul style="list-style-type: none"> <li>Compliance with relevant laws, rules, and regulations</li> <li>Established environmental management plans</li> <li>Support community's activities</li> <li>Prevent and anti against corruption while conducting business with ethics</li> <li>Disclosure of truthful, complete, and sufficient information</li> </ul>	<ul style="list-style-type: none"> <li>Strictly adhere to relevant laws and regulations</li> <li>Responsible to community, society, and environment</li> <li>Maintain good relationship with government agencies</li> <li>Disclosure of a comprehensive and sufficient information</li> </ul>	<ul style="list-style-type: none"> <li>Organize meetings</li> <li>Company visits</li> <li>Open channels for complaints, opinions, and suggestions</li> </ul>

Stakeholder	Expectation from the Stakeholder	The Company's Response	Stakeholder Engagement Approach
4. Employees	<ul style="list-style-type: none"> <li>• Appropriate compensation and benefits benchmarked against peers in the same industry</li> <li>• Support on career development in related fields</li> <li>• Human resource development</li> <li>• Job security</li> <li>• Positive and safe work environment</li> </ul>	<ul style="list-style-type: none"> <li>• Fair compensation and benefits</li> <li>• Emphasize human resource development</li> <li>• Precise promotion criteria</li> <li>• Appropriate workplace</li> <li>• Has policy and activities to maintain good relationship with employees</li> </ul>	<ul style="list-style-type: none"> <li>• Field relevant business update meetings</li> <li>• Communication Day</li> <li>• Team building activities</li> <li>• Internal communication system</li> </ul>
5. Community	<ul style="list-style-type: none"> <li>• Disclosure of truthful information</li> <li>• No disruption to and participate in improving life quality in the community</li> </ul>	<ul style="list-style-type: none"> <li>• Support local employment</li> <li>• Promote learning for youth in the community</li> <li>• Encourage occupational skills development</li> <li>• Promote sanitation and utility developments in the community</li> </ul>	<ul style="list-style-type: none"> <li>• Power Development Fund meetings</li> <li>• Power plant visits</li> <li>• Quality of life and community development project from a tri-party cooperation between power plants, government agencies, and local communities</li> <li>• SUKJAI quarterly magazine</li> <li>• Open channels for complaints</li> </ul>
6. Creditors	<ul style="list-style-type: none"> <li>• Strict compliance to loan agreements</li> <li>• Repayment capacity in a complete, accurate, and punctual manner</li> <li>• No concealment of actual financial status</li> <li>• Fair and equal treatments to all creditors</li> <li>• No illegitimate solicitations, acceptances, or payments of any kind</li> </ul>	<ul style="list-style-type: none"> <li>• Strictly follow the loan agreements</li> <li>• No concealment of true financial status</li> </ul>	<ul style="list-style-type: none"> <li>• Meetings</li> <li>• Power plant visits</li> <li>• Prior notice given in case the company is not able to fulfill the conditions of the loan agreement in order to find solutions to the problems together</li> </ul>

Stakeholder	Expectation from the Stakeholder	The Company's Response	Stakeholder Engagement Approach
7. Suppliers and Business Partners	<ul style="list-style-type: none"> <li>• Financial security</li> <li>• Personnel with knowledge and expertise</li> <li>• Fair and transparent business operation</li> <li>• Combination of strengths from each company</li> </ul>	<ul style="list-style-type: none"> <li>• Strict compliance with the contracts</li> <li>• No illegitimate exploitation of partnerships</li> <li>• Build good relationship with suppliers and business partners</li> </ul>	<ul style="list-style-type: none"> <li>• Organize meetings</li> <li>• Company visits</li> <li>• Joint activities</li> <li>• Open channels for complaints, opinions, and suggestions</li> </ul>
8. Investors	<ul style="list-style-type: none"> <li>• Sustainable returns</li> <li>• Good corporate governance principles</li> <li>• Established risk management guidelines</li> <li>• Respect and preserve shareholder's rights with equitable treatment</li> <li>• Disclosure of truthful, complete, and sufficient information</li> <li>• Compliance with relevant laws</li> <li>• Professional and honest executives</li> </ul>	<ul style="list-style-type: none"> <li>• Effective operational performance</li> <li>• Good corporate governance and risk control</li> <li>• Disclosure of essential information to the public</li> </ul>	<ul style="list-style-type: none"> <li>• Quarterly analyst meetings</li> <li>• Annual Reports</li> <li>• Company's website</li> <li>• Suggestions and complaints through designated communication channels</li> </ul>
9. Society	<ul style="list-style-type: none"> <li>• Disclosure of factual information</li> </ul>	<ul style="list-style-type: none"> <li>• Disclosure of honest facts and information</li> <li>• Continuously contributing to the society</li> <li>• Responsibilities to the society</li> </ul>	<ul style="list-style-type: none"> <li>• Press conferences</li> <li>• Communication through company's website</li> </ul>

Stakeholder	Expectation from the Stakeholder	The Company's Response	Stakeholder Engagement Approach
10. Contractors and Subcontractors	<ul style="list-style-type: none"> <li>• Operate as a good business alliance and maintains good relationship</li> <li>• Equitable treatment in consideration of mutual benefits</li> <li>• Appropriate payout period</li> <li>• Financial stability</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain good business partnership</li> <li>• Fair and just</li> <li>• Strictly following terms of payment</li> </ul>	<ul style="list-style-type: none"> <li>• Meetings</li> <li>• Company visits</li> <li>• Joint activities</li> <li>• Open channels for complaints, opinions, and suggestions</li> </ul>
11. Media	<ul style="list-style-type: none"> <li>• Disclosure of factual information</li> </ul>	<ul style="list-style-type: none"> <li>• Press releases</li> </ul>	<ul style="list-style-type: none"> <li>• Press conference</li> <li>• Exclusive interviews with executives</li> <li>• Company visits</li> </ul>
12. Non-Revenue Organizations (NGOs)	<ul style="list-style-type: none"> <li>• Have least possible impacts on the environment and community</li> <li>• Participate in the caring of the environment and development of the community</li> <li>• Timely disclosure of truthful, complete, and sufficient information</li> </ul>	<ul style="list-style-type: none"> <li>• Straightforwardly disclosing information</li> <li>• Responsible for the community, society, and environment</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental conservation projects through the Thai Conservation of Forest Foundation</li> <li>• Company visits</li> <li>• Open channels for complaints, opinions, and suggestions</li> </ul>



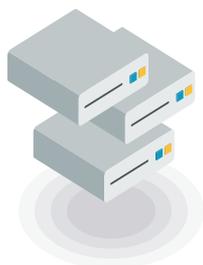
**B : Sustainable Engagement Approach****GRI 102-46****The Process to Identify Materiality Topics**

EGCO Group has identified our materiality topics in consideration of all stakeholder expectations. The report has been prepared in accordance with the Global Reporting Initiative (GRI) : 'Core Criteria' and GRI's G4 Electric Utilities Sector specific disclosure criteria in compliance with the United Nations' Sustainable Development Goals (SDGs). These identified issues would be determining factor on EGCO's direction towards sustainable future.

The steps to identify the materiality topics are as follow:

**1) Identification of Material Issues and Definition of the Reporting Scope**

Revising all sustainability issues in 2019 and identifying the material issues in economic, social, and environmental aspects that may have positive or negative impacts on the company's business operations and activities with consideration to all stakeholder groups. The ranking are estimated according to global sustainability issues and benchmarked against other peer companies. Stakeholders' opinions remain in consideration.

**2) Prioritization of Material Issues**

Material issues are prioritized and ranked by two factors; the importance of the issue towards stakeholder groups and the significance they have on business operations in regards to the environment and the society. The topics are then distributed along a Materiality Matrix based on their importance.

**3) Validation of Material Issues**

External stakeholder groups are selected to help validate the material and prioritized issues after being ranked. After validation, the issues are organized by GRI criteria, in accordance to the United Nations' SDGs and the scope of report on each topics are defined.

Afterward, material issues are reported to executives and Board members who will approve public disclosure of the issues. They may give further feedback and inputs regarding the context, strategies, and objectives of the company.

**4) Continuously Report Development**

EGCO Group has prepared and reviewed the content integrity of the report which will be double checked by internal committees. Moreover, the process of reporting, stakeholders' engagement, and the quality of the information are reviewed at the end by an independent organization to ensure a disclosure of factual, transparent, and sufficient information.

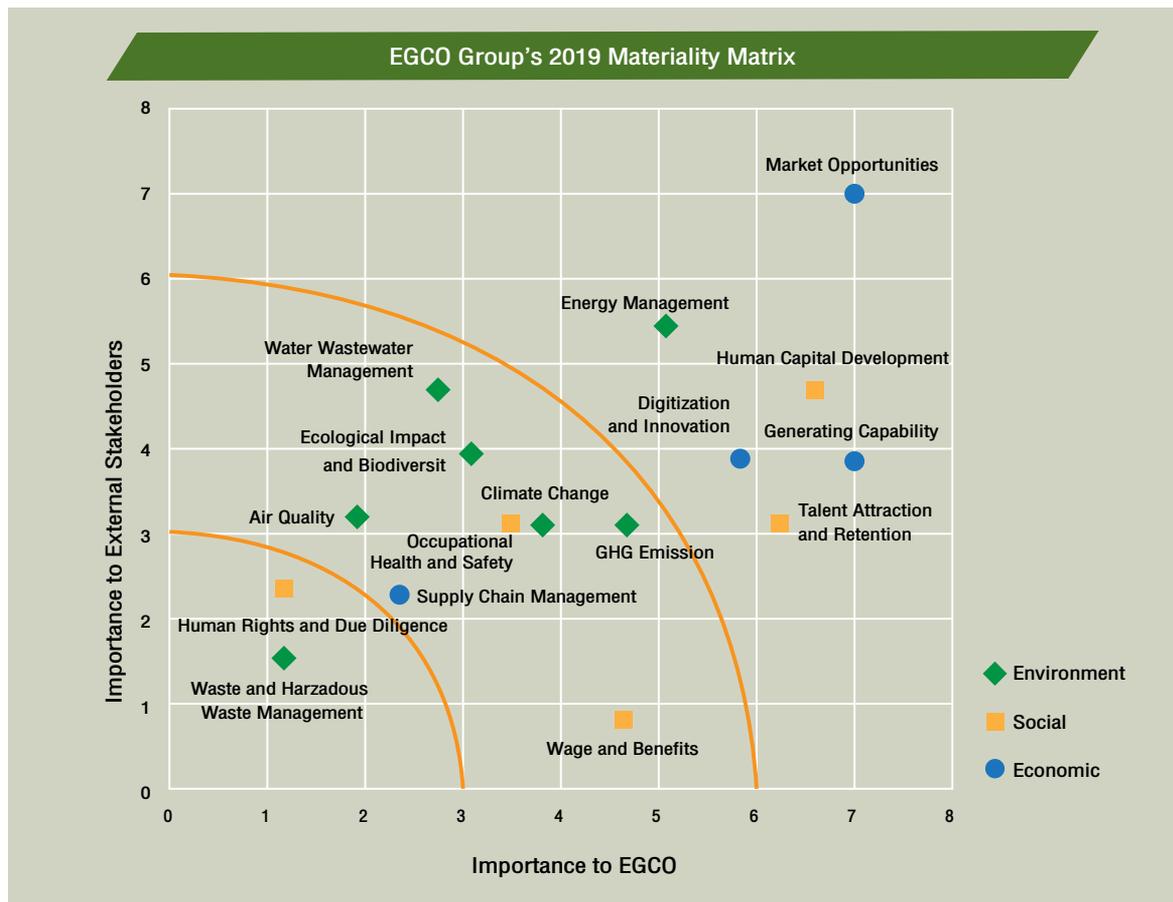
Independent Assurance Statement is available on page 149.

### EGCO Group's 2019 Materiality Matrix

The identified materiality topics have been prioritized by stakeholders' input and validated by EGCO Group's executives and Board members. These issues have been ranked and distributed across a matrix indicating importance across the economic, environment, and social dimensions of sustainability.

In 2019, EGCO Group has revisited the topics identified in the Sustainability Report 2018, and has added two newly identified topics to the existing 14, becoming 16 topics in total.

There are six issues ranked in high importance to us and our stakeholders, namely market opportunities, human capital development, talent attraction and retention, energy management, generating capability, as well as digitalization and innovation.



According to the matrix, the top three pressing issues are market opportunities, energy management, and human capital development.

In 2020, EGCO Group will revisit materiality topics identified in the Sustainability Report 2019 and improve the issues identification process by ensuring and committing more engagement from the external stakeholders for validity and accuracy of the materiality assessment process through methods such as online surveys and stakeholders' interview. This will be a part of the validation process, providing more depth and accuracy.

C : EGCO Group's Sustainability Journey:

GRI 102-12, 102-13

EGCO Group is the first power producer in private sector of Thailand after being established in May 1992. In June 1992, the United Nations held the first Conference on Environment and Development, or better known as the Earth Summit in present days, in Rio de Janeiro with a purpose to raise awareness and call for collective actions to address global issues such as climate change, biodiversity, water resource management, and human rights. We have been operating on the grounds of sustainability for past 27 years, steering our course in synced with the ever-changing global landscape.



### EGCO Group and the Sustainability Development Goals: SDGs

For the past 27 year, EGCO Group has consistently been thriving towards sustainable business development in accordance to the UN's Sustainability Development Goals (SDGs), established in 2015 as a framework for an efficient cooperation between the government, businesses, and individuals. The SDGs focus global attention on 17 pressing issues in economic, environmental, and social dimensions. EGCO Group is proud to be working towards the sustainability development of Thailand and the world.



EGCO Group is willing to endorse and take parts, directly and indirectly, in achieving all targeted Sustainability Development Goal, and intended to integrate the goals the company has great impact on into our action plan. For 2019, EGCO has chosen to focus on five SDGs as follow:



#### SDG 3: Good Health and Well-Being

EGCO Group value our employees greatly, and hence has chosen to focus on providing benefits that help improve their quality of life. Because EGCO cares about the community and the people involved, plans on promoting and developing quality of life of the community were established, including being supportive of local employment, youth development, and encouraging occupational skills development.

- Supports local employment
- Occupational skills development for youths and the communities
- Promotes good sanitation in the communities
- Improving utilities in the communities in power plant regions
- Promote safe work environment

**7 AFFORDABLE AND CLEAN ENERGY****SDG 7: Affordable Clean Energy**

One of EGCO Group's core missions is to provide reliable, appropriate, and sufficient power supply in correspondent to the country's demand.

- Seeking investment opportunities in renewable energy business
- Improving production efficiency to increase system stability and reducing operational costs
- Implementing latest technologies to maximize efficiency
- Reducing energy consumption in the offices and power plants

**8 DECENT WORK AND ECONOMIC GROWTH****SDG 8: Decent Work and Economic Growth**

EGCO Group prioritizes marketing opportunities expansion and building a solid base to provide flexibility as a preparation to take on abrupt changes in global events. It is also vital to the company's sustainable development to hire employees with knowledge and capabilities.

- Seeking opportunities to invest in power and utilities sector for sustainable revenue growth
- Expanding investment plans to other related business such as LNG Supply and Smart Energy Solution

**9 INDUSTRY, INNOVATION AND INFRASTRUCTURE****SDG 9: Industry Innovation and Infrastructure**

With EGCO Group's nature of business that has wide range of stakeholders, the company give great importance in innovation and infrastructure development for risk prevention and to minimize impacts from the operations.

- Overseas business expansion
- Using innovation to increase production efficiency and reduce environmental impacts
- EGCO Group InnoPower 2019

**13 CLIMATE ACTION****SDG 13: Climate Action**

EGCO Group has been actively seeking solutions to decrease impacts from activities that contribute to global warming which ultimately leads to disastrous climate change.

- Improving performance efficiency to reduce CO2 emission
- Developing investment plans in environmental friendly technologies
- Promote energy conservation in the organization
- Reducing Greenhouse gases emission indirectly by conducting business with environmental friendly partners

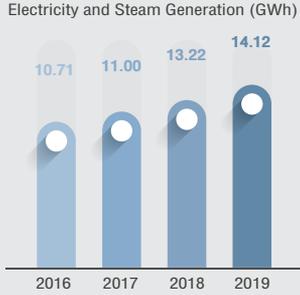
In this Sustainability Report, EGCO Group has gathered and disclosed company's performance in many ways in accordance to the SDGs. This year's main focus has been the marketing opportunities expansion for the sustainable growth of the company, production capacity, and the development and care for employees, so they can work efficiently, have good quality of life, and are loyal to the company. Moreover, EGCO Group has given extra attention and care in selecting employees with knowledge and abilities to drive the organization forward while providing appropriate compensation and benefits, so that the company can develop, adapt, and thrive in the current digital era. These focuses are specifically related to the aforementioned SDG 3, SDG 7, SDG 8, SDG 9, and SDG 13.

EGCO Group wants to grow together with equality in the society and sustainable environment. The company therefore endorses the rest of SDGs at the same time, though they might not be EGCO's main focus in 2019. EGCO Group strongly believes that the Sustainable Development Goals will have more influence on the company's strategies, action plans, and policies in the future.

EGCO Group's Response to the Sustainability Development Goals (SDGs)

Economic

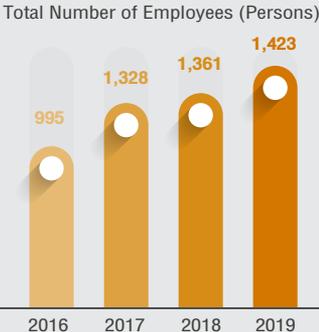
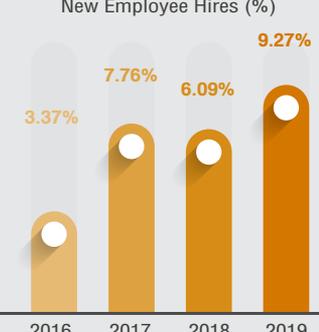
Material Issue	Business Approach	Performance
<p>Market Opportunities</p>  <p>See page 54-56</p>	<p>EGCO Group plans to expand outside of our core business investments in non-renewable and renewable energy businesses to fuel supply and 'Smart Energy Solution', both in Thailand and overseas, to increase market opportunities and to generate long-term revenue for the company Performance.</p>	<p><b>2016</b> Increased investment in the MPPCL Power Plant in Philippines by 8%</p> <p><b>2017</b> Investment in geothermal power plant, SEGSD, in Indonesia</p> <p>Expanded investment to LAO PDR, hydro power plant NT1PC</p> <p><b>2018</b> Business expansion in South Korea - Paju Power Plant</p> <p><b>2019</b> Investment in Gangdong Fuel Cell Power Plant, South Korea</p> <p>Investment in fuel supply business: oil pipeline system expansion to Northeastern region project</p>

Material Issue	Business Approach	Performance										
<p>Generating Capability</p>  <p>See page 62-66</p>	<p>Generating capability is a Key Performance Indicator (KPI) of EGCO Group's power plants to ensure sufficient supply. The company continues to expand, catering to the growing consumers' demand.</p>	<p>Electricity and Steam Generation (GWh)</p>  <table border="1"> <thead> <tr> <th>Year</th> <th>Electricity and Steam Generation (GWh)</th> </tr> </thead> <tbody> <tr> <td>2016</td> <td>10.71</td> </tr> <tr> <td>2017</td> <td>11.00</td> </tr> <tr> <td>2018</td> <td>13.22</td> </tr> <tr> <td>2019</td> <td>14.12</td> </tr> </tbody> </table>	Year	Electricity and Steam Generation (GWh)	2016	10.71	2017	11.00	2018	13.22	2019	14.12
Year	Electricity and Steam Generation (GWh)											
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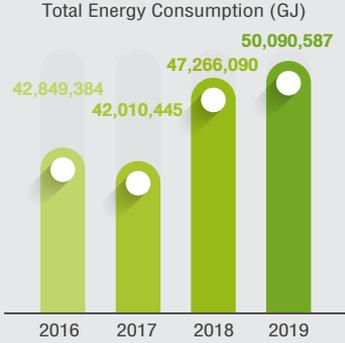
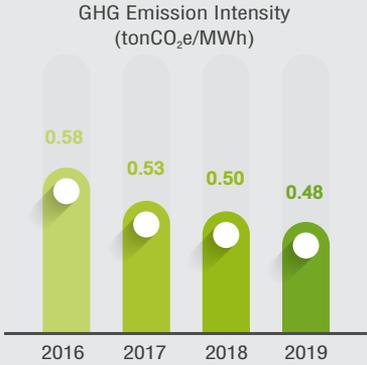
Material Issue	Business Approach	Performance
<p>Digitization and Innovation</p>  <p>See page 57-61</p>	<p>Preparing and developing personnel along with encouraging innovation is very important to EGCO Group's sustainability, creating business advantages and positive impacts on the society and environment.</p>	<p><b>2018</b> 1<sup>st</sup> year internal innovation contest in theme "EGCO Group Innovation Team Challenge"</p> <p><b>2019</b> 2<sup>nd</sup> year internal innovation contest in theme "EGCO Group InnoPower 2019"</p>

Social

Material Issue	Business Approach	Performance										
<p>Human Capital Development</p>  <p>See page 89-94</p>	<p>EGCO Group has developed and implemented an integrated human resource management policy, which includes all human capital development topics, as well as organized regular internal trainings.</p>	<p>Average Training Hours (Hour/Employee)</p>  <table border="1"> <tr> <th>Year</th> <td>2016</td> <td>2017</td> <td>2018</td> <td>2019</td> </tr> <tr> <th>Hours</th> <td>28.07</td> <td>26.62</td> <td>30.39</td> <td>30.83</td> </tr> </table>	Year	2016	2017	2018	2019	Hours	28.07	26.62	30.39	30.83
Year	2016	2017	2018	2019								
Hours	28.07	26.62	30.39	30.83								

Material Issue	Business Approach	Performance																														
<p>Employee Care</p>  <p>See page 85-89</p>	<p>EGCO Group values employee care greatly. Starting with recruiting personnel equipped with knowledge and attitudes that correspond to the company's values and culture, providing appropriate benefits and compensation for financial stability and security. EGCO also value improvement in employees' quality of life, fair assessment of their performance and relevant skill to nurture and retain quality employees to grow along with the company.</p>	<p>Total Number of Employees (Persons)</p>  <table border="1"> <tr> <th>Year</th> <td>2016</td> <td>2017</td> <td>2018</td> <td>2019</td> </tr> <tr> <th>Persons</th> <td>995</td> <td>1,328</td> <td>1,361</td> <td>1,423</td> </tr> </table> <p>New Employee Hires (%)</p>  <table border="1"> <tr> <th>Year</th> <td>2016</td> <td>2017</td> <td>2018</td> <td>2019</td> </tr> <tr> <th>Hires (%)</th> <td>3.37%</td> <td>7.76%</td> <td>6.09%</td> <td>9.27%</td> </tr> </table> <p>Employee Turnover (%)</p>  <table border="1"> <tr> <th>Year</th> <td>2016</td> <td>2017</td> <td>2018</td> <td>2019</td> </tr> <tr> <th>Turnover (%)</th> <td>2.76%</td> <td>4.30%</td> <td>2.86%</td> <td>4.93%</td> </tr> </table>	Year	2016	2017	2018	2019	Persons	995	1,328	1,361	1,423	Year	2016	2017	2018	2019	Hires (%)	3.37%	7.76%	6.09%	9.27%	Year	2016	2017	2018	2019	Turnover (%)	2.76%	4.30%	2.86%	4.93%
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Environmental

Material Issue	Business Approach	Performance																				
<p>Energy Management</p>   <p>See page 66-67</p>	<p>EGCO Group has been operating our projects efficiently to benefit the business as well as to reduce environmental impacts. For instance, by implementing new technologies to optimize the operations, automated ventilation control outside workhours, and by raising awareness on environmental issues among employees.</p>	<p>Total Energy Consumption (GJ)</p>  <table border="1"> <thead> <tr> <th>Year</th> <th>Total Energy Consumption (GJ)</th> </tr> </thead> <tbody> <tr> <td>2016</td> <td>42,849,384</td> </tr> <tr> <td>2017</td> <td>42,010,445</td> </tr> <tr> <td>2018</td> <td>47,266,090</td> </tr> <tr> <td>2019</td> <td>50,090,587</td> </tr> </tbody> </table> <p>GHG Emission Intensity (tonCO<sub>2</sub>e/MWh)</p>  <table border="1"> <thead> <tr> <th>Year</th> <th>GHG Emission Intensity (tonCO<sub>2</sub>e/MWh)</th> </tr> </thead> <tbody> <tr> <td>2016</td> <td>0.58</td> </tr> <tr> <td>2017</td> <td>0.53</td> </tr> <tr> <td>2018</td> <td>0.50</td> </tr> <tr> <td>2019</td> <td>0.48</td> </tr> </tbody> </table>	Year	Total Energy Consumption (GJ)	2016	42,849,384	2017	42,010,445	2018	47,266,090	2019	50,090,587	Year	GHG Emission Intensity (tonCO <sub>2</sub> e/MWh)	2016	0.58	2017	0.53	2018	0.50	2019	0.48
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## 2019 Performance Highlights

# GO BEYOND POWER GENERATION



**Manage construction projects to be completed on schedule**



**Continue investments in electricity business expertise**



**Step into new investment in other energy-related businesses**



San Buenaventura power plant commenced commercial operation on September 26, 2019



Invest in a 19.8-MW Gangdong fuel cell power plant



Acquisition of a 44.6% stake in Thai Pipeline Network Co., Ltd. to undertake an Oil Pipeline Extension to Northeastern Region project



Xayaburi power plant commenced commercial operation on October 29, 2019



Signed Share Purchase Agreement for 25% investment in a 640-MW Yunlin offshore wind farm in Taiwan

## CREATE VALUE TO STAKEHOLDERS



Take care of the community,  
society and environment across  
business processes



Develop smart employees and encourage  
good employees towards becoming  
a knowledge-based organization

## GOVERN BUSINESS WITH INTEGRITY

Enhance corporate governance and business ethics  
to meet international standards



Establish a Risk  
Oversight Committee



Enterprise  
risk management



Policy revision for  
corporate governance enhancement

## Govern Business with Integrity

### Good Corporate Governances

GRI 102-16, 102-17, 102-18

Good corporate governance is the crucial foundation for corporate value creation in multiple aspects. This comprises ethical business, respecting stakeholders' rights and being responsible towards them, minimization of impacts, creating positive impacts to society, environment as well as having adaptability under ever changing context. These values are the crux enabling the Company for secure and sustainable growth, as can be observed from governance structure and business ethics. 2019 Performance demonstrates EGCO Group has been committed in building the fundamental for good corporate governance, as the starting point for sustainability, and illustrates the determination of the Board, Executives and all employees who adopt corporate governance as the guiding principles, and ultimately becoming a corporate culture.



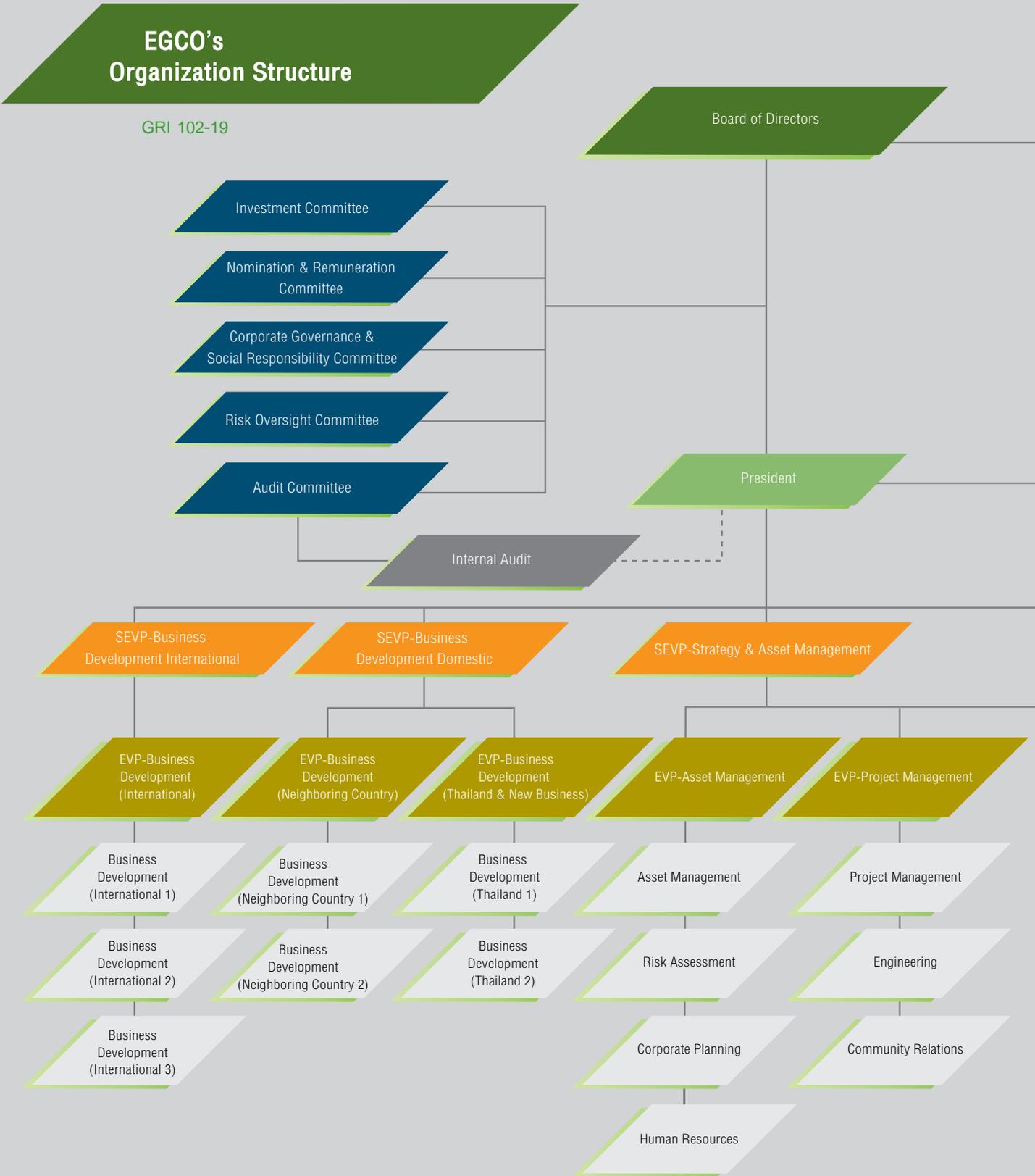
### Corporate Governance Structure 102-18

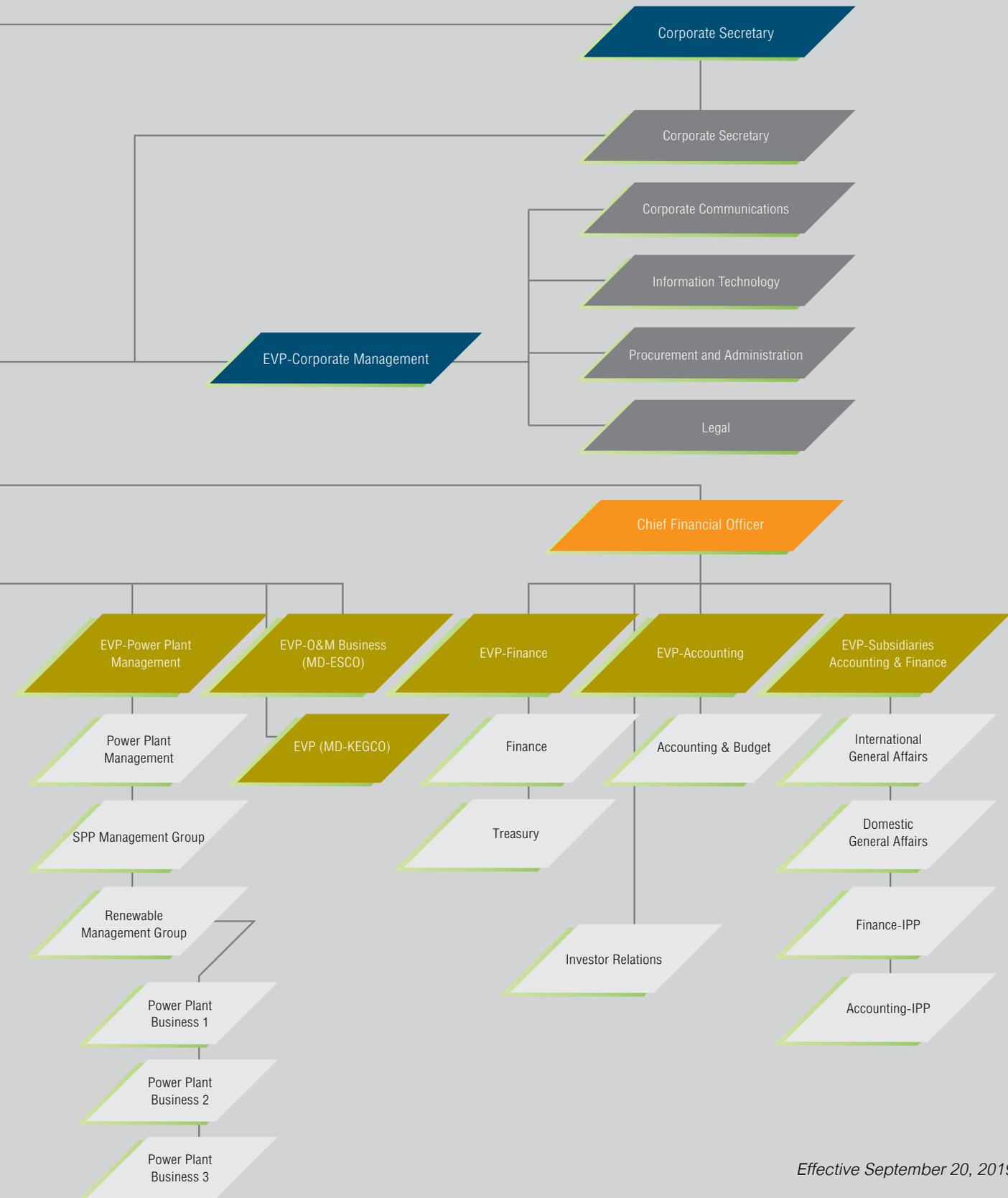
EGCO Group grounded its corporate governance principles by appointing the board of directors with the assignment to govern and oversee the executives' performance, apart from laying out the corporate strategy and policy. Those major responsibilities impact the Group's present and future operational directions. The well established corporate governance ensures the EGCO Group's compliance with international standards,



builds trust and credibility for stakeholders in transparent and fair management system. Furthermore, the Board has appointed 5 sub-committees to responsible in these specific areas as follows: Audit Committee, Investment Committee, Nomination and Remuneration Committee, Corporate Governance and Social Responsibility Committee, and Risk Governance Committee. The Board also, well designs the structures of sub-committees where each committee comprises EGCO's President, Non-Executive Director, and other Independent Directors. Similarly, the roles and responsibility of each subcommittees have been clearly stipulated. Each committee reports directly to the Board of Directors as below chart.

1. Audit Committee, comprises 3 independent directors. They are tasked with review of financial statements, compliance to business laws, internal control system and internal audit system. This includes appointment and removal of external auditors.
2. Investment Committee comprises of 4 directors. It is assigned to consider the executives' proposals regarding investment, asset management, treasury management and funding.
3. Nomination and Remuneration Committee comprises 5 non-executive directors, 3 of whom are independent directors. This is more than half of the Nomination and Remuneration members. The committee is tasked with selection and nomination of qualified candidates to serve as directors and high-level management. The committee is also responsible for recommendation of appropriate remuneration for the Board, Executives and employees. The recommendations of the Nomination and Remuneration Committee have been provided in accordance to the established criteria on clear and transparency basis. Furthermore, the aforementioned committee is also in charged with scrutinize the board's structure, composition and qualifications to align with EGCO Group's good governance principles.
4. Governance and Social Responsibility Committee comprises 5 directors, 3 of whom are independent directors. One of its responsibilities is to ensure that EGCO Group's performance has complied to the good corporate governance principles defined by the Securities and Exchange Commission (SEC), ASEAN CG Score's Corporate Governance Criteria, and Dow Jones Sustainability Indices (DJSI). The committee also takes responsibility for considering any associated risks and measures and for corporate social responsibility related issues, as well as taking responsibility in operating community and social activities. Further information is available under topic Our Community and Society.
5. Risk Management Committee was first established and active in 2019. The Committee comprises 5 directors, 2 of whom are independent. The committee is tasked with governing and monitoring EGCO Group's Enterprise Risk Management Plan and providing feedback on risk appetite and risk tolerance. Moreover, in order to report risk assessment results and risk mitigation performance to the Board regularly. As directly reporting to the Board of Directors, the committee shall regularly provide the update of the risk assessment and risk mitigation to the Board.





Details of committees and their respective roles are available in annual report, under the topic of management structure.

EGCO Group has appointed the President who acts as the leader in management, and directly reports to the Board of Directors on a monthly basis. The corporate structure, as shown in the organization chart, comprises 5 business lines namely international business development, domestic business development, strategy and asset management, accounting and finance. Apart from those 5 business lines, the corporate management unit, a one tier lower than the business line, is directly report to the President and is assigned to take responsibility for corporate communication, information and technology, legal works, procurement and transactions. Furthermore, there are 2 divisions: Internal Audit Division and Corporate Secretary Division which administratively report to the President. The former is functionally report to the Audit Committee while the latter is under the supervisory of the President. Additionally, the Corporate Secretary who directly reports to the Board of Director has obligatory duties as stated in the Securities and Exchanges Act (No. 5) B.E 2559 covering records of the company's significant document and activities related to the Board of Directors and shareholders such as directors' data, board of directors' monthly meeting, shareholders' meeting and the minutes of meetings of board of directors and shareholders. Furthermore, the corporate secretary also coordinates with the executives to ensure their activities and performance have complied with the Board's resolutions.

### Management Approach

#### 1) Corporate Management According to Good Governance Principles

EGCO Group is committed in upholding incessantly its corporate governance principles and sustainability approach. The Board and all employees adhere to laws, obligatory rules and regulations related to business operation, the best practices for directors recommended by the Stock Exchange of Thailand ("SET"), regulations for listed companies by SET and Securities and Exchange Commission ("SEC"). Since operation, EGCO Group has complied such good corporate principles and regulations.



Independent Director  
has an average tenure of  
**2 years**

#### 2) Development of Policies, Code of Conduct, and Guiding Principles for Executives, Employees and Suppliers

EGCO Group established Code of Conduct and guiding principles for Board of Directors (BOD), executives, employees, and suppliers. Regular revisions for the Code and principles are in place to keep the principles updated with related local laws and regulations of the locations our businesses where EGCO Group are situated to ensure good corporate governances.

#### 3) Internal Control and Risk Management

EGCO Group's BOD has appointed Internal Control Committee to monitor internal control system. Also, the Risk Oversight Committee to ensure EGCO Group's risk management system complying to the COSO Enterprise Risk Management Integrated Framework (ERM) 2017. Such organization structure could confirm the credibility of EGCO Group, efficiency and effectiveness of EGCO Group's operation which align with the Group's policy, regulations and obligatory rules and regulations.

#### 4) Regularly Appraise, Review, and Educate

EGCO Group's Corporate Governance and Social Responsibility Committee is established to govern the operation of the Group, following good governance principles and Code of Conduct. The committee is also assigned to encourage education and create awareness among the Group, leading to the right practice. The committee is trusted by the Board of Directors to handle complaints and regularly appraise the compliance to the code of conduct by executives and employees. At EGCO Group, all employees are required to complete an online appraisal form with the minimum required score of 70%; as an approach to assess the employees' understanding of the company's good corporate governance principles. It is targeted that the assessment scores of employees for the comprehension of corporate governance principles will increase up to 80% by 2021.

More information on the aforementioned performance is available in the Annual Report 2019 under the topic Corporate Governance.

## Goal in 2019



Being assessed by external organizations with the “Excellent” level

## Long-term sustainability goals between 2020 - 2024



80%



- Be recognized as an international organization model for corporate governance
- No corruption cases or complaints
- Increase of employees' assessment score on good corporate governance principles and business ethics up to 80%
- Exchange of best practices regarding the corporate governance and business ethics with overseas subsidiaries where EGCO has controls of power

## Business Ethics

### GRI 102-17

Business ethics is one of the standards EGCO Group established for all personnel to follow in compliance with the good corporate governance principles. Personnel's non-compliance of the Code of Conduct can cause serious damage to an organization such as inequity, corruption, etc. Every employee at EGCO, including executives, therefore requires to adhere to and follow the Code of Conduct. In this regard, the executives and all employees have signed the form to acknowledge the compliance with the Code of Conduct. The Code acts as the guidelines for every business operation to ensure transparency and equal treatment of all stakeholder groups according to EGCO's good corporate governance.

### Management Approach

#### 1) Development of Business Ethics and Policy

EGCO Group develops business ethics as a part of our good corporate governance principles in order to be used as a framework for the business conduct which ensures honesty, morality, and legality for transparency, including promoting anti-corruption, preventing conflicts of interest, and respecting the right of all stakeholders and being responsible towards them. The Code of Conduct could be summarized as follows:

- Responsibilities to stakeholders
- Responsibilities to the Company
- Procurement and transactions
- Prevention of conflicts of interest
- Employees
- Occupational safety, health, and environment
- Anti-corruption

Furthermore, everyone associated to EGCO Group is expected to uphold a set of business policies under the good corporate governance principles. EGCO Group operations are thus conducted according to the strong business foundation as summarized below:

- We conduct our business with honesty and integrity
- We carry out our business in compliance with all related business and commercial laws
- We strive to maintain honest business procedures.
- We are respectful and considerate towards local traditions and cultures.
- We use natural resources efficiently and responsibly.
- We encourage our employees to carry themselves professionally with teamwork spirit.
- We strictly uphold our corporate culture, “Corruption is unacceptable in any transaction”.

EGCO Group regularly revises the contents of the ethics and policies to ensure that the guidelines will cover all of EGCO Group's operations and are up-to-date.

## 2) Establishment of Anti-Corruption Working Group

EGCO Group places importance in conducting business transparently. We have therefore established an Anti-Corruption Working Group in 2019. The Anti-Corruption Working Group comprises 8 executives with responsibilities as follows:

1. Formulate, revise EGCO Group's anti-corruption policy and guideline.
2. Assess, publish, and revise anti-corruption measures in accordance to the good corporate governance principles.
3. Work as a member of anti-corruption network such as Thailand's Private Sector Collective Action Coalition Against Corruption ("CAC").
4. Encourage and support EGCO's subsidiaries to formulate, revise and improve anti-corruption policy and practices, join anti-corruption networks such as Thailand's Private Sector Collective Action Coalition Against Corruption ("CAC")
5. Encourage, promote, and communicate anti-corruption policy and guidelines as a part of the corporate culture to EGCO Group's employees .

For the governance structure on EGCO Group's anti-corruption, the roles and responsibilities of the Sub-committees and the responsible units are defined as summarized below:

1. The Board formulates policy and monitors anti-corruption guidelines to ensure efficient implementation.
2. Corporate Governance and Social Responsibility Committee regularly reviews and revises anti-corruption policy and practices.
3. Audit Committee oversees that the Company's operations follow the anti-corruption measures, and reviews related measures and internal control.
4. President and executives encourage and support anti-corruption policy as well as adhere strictly to EGCO's Code of Conduct and business ethics as a model for personnel and related parties.
5. Good Governance Working Group is responsible for risk assessments and formulates preventive measures, revises and updates guidelines according to the most current anti-corruption policy, and presents and distributes to the employees.
6. Internal Control Department reviews and assesses the operations to ensure adequacy of the internal control system.

## 3) Communication of the Good Corporate Governance Policy

Business ethics and anti-corruption policy are at the core of EGCO Group's business operations. We organize many informational activities to raise awareness and understanding of our principles such as CG Day: CG Film Awards – an activity which encourages employees to apply good corporate governance principles to their task, a knowledge on business ethics appraisal questionnaire through an e-learning system which is accessible anywhere, not limited to inside the office, etc.

## 4) Whistleblowing

EGCO Group has set up communication channels for whistleblowing and complaints, accessible by employees and other stakeholders. All individuals are advised to report or notify any illegal and unethical actions, violation of the Code of Conduct through the channels below. Information obtained from the whistleblowers is kept confidential and known only among the responsible parties to protect the whistleblower's identity.

In 2019, the Board of Directors has not received any complaints regarding misconduct and violations of the business ethics and anti-corruption policy as well as having no damage value.

## Whistleblowing channels

Whistleblowing channels and procedures:

**1** Channel 1  
via emails to one of the followings:

- @ Audit Committee:  
auditcommittee@egco.com
- @ Good Governance Working Group:  
GoodGovernance@egco.com
- @ Board of Directors:  
directors@egco.com

**2** Channel 2  
via post addressed to one of the aforementioned committees at the following address:

 Electricity Generating Public Company Limited  
EGCO Tower, 222 Vibhavadi Rangsit Rd.,  
Tungsonghong, Laksi, Bangkok 10210

### 5) Review and Investigation of Reported Corruption Concerns

Receiving corruption or fraudulent behavior complaints can affect the Company's operations or sustainable development. The Chairman of the Board of Directors will assign the Audit Committee to investigate such complaints before reaching any type of conclusions. More information on the complaint investigation process and methods can be found in our Anti-Corruption Manual in the QR Code below:



### Sustainability Goal in 2019



No significant warnings or investigative results from regulator

### Long-term sustainability goals between 2020 - 2024



- No significant warnings or investigative results from regulator
- No violation of ethics complaints against EGCO Group employees
- Encourage and support at least one of EGCO's subsidiaries to apply for the CAC membership.

**Performance**

**Assessment Results by Thai Institute of Directors (IOD)**

EGCO Group participates in Corporate Governance Report of Thai Listed Companies (CGR) Assessment Project by Thai Institute of Directors (IOD) to assess and monitor corporate governance developments of the listed companies in Thailand. The assessment is conducted annually, using the criteria developed from the Good Corporate Governance Principles by Organization for Economic Cooperation and Development (OECD). In 2019, EGCO Group was rated “Excellent” with the score of 96%, ranked in the Top Quartile of listed companies with a market value of at least THB 10,000 million. EGCO Group will take and apply the assessment results as the guidelines for the development of sustainable corporate governance. Additionally, we have defined CGR as one of our corporate governance KPIs to demonstrate our commitment to uphold EGCO Group’s good corporate governance principles.

**Corporate Governance Report of Thai Listed Companies (CGR) Assessment Results:**

Year	Average Score	Average CGR Score of SET100 Index Group	Average CGR Score of SET50 Index Group	EGCO Group
2019	82%	90%	92%	96%
2018	81%	88%	91%	95%
2017	80%	87%	90%	96%
2016	78%	85%	88%	94%

**Corporate Governance Day 2019 (“CG Day”)**

CG Day was held at EGCO Tower under the theme “CG Film Awards” to promote corporate governance principles, business ethics and anti-corruption guidelines. CG Day encourages employees to take part in corporate governance through short film competition based on the main idea of the implementation of the good corporate governance principles. Activity includes a show of the special short film featured EGCO’s executives to promote application of the good corporate governance principles. Moreover, EGCO Group organized educational games related to the good corporate governance principles and CSR activity, namely making pillows out of plastic straws. The pillows were donated to Central Special Education Center Bangkok, Udon Thani Hospital, Nayoong Hospital, and Nonsaad Hospital, Udon Thani.

A total of 170 employees participated in the CG Day: CG Film Awards activity, surpassing the goal of 150 participants. CG Day 2019 received 90% satisfactory feedback which also exceeds the rating target.

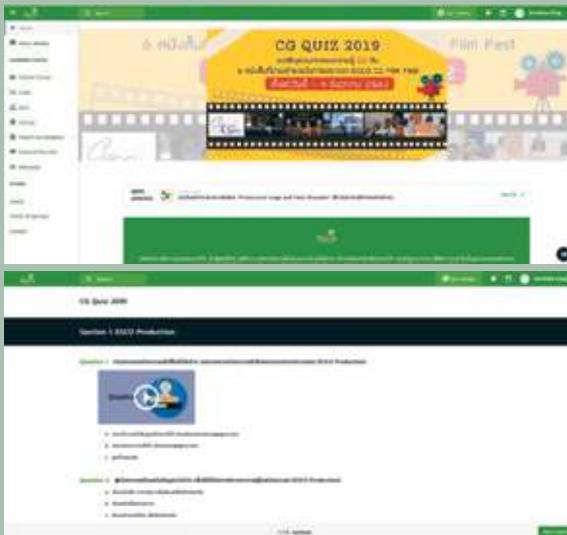


### Anti-corruption

Mr. Jakgrich Pibulpairoj, President of EGCO, attended Thailand's Private Sector Collective Action Coalition Against Corruption ("CAC") membership certificate awarding as the first-time renewed member after being certified in 2018. The event was held on February 26<sup>th</sup>, 2019 at Intercontinental Hotel Bangkok by the IOD. Similarly, EGCO Engineering & Service Company Limited ("ESCO")'s membership has also been renewed with Mr. Sathit Thanomkul, Managing Director of ESCO, accepted the certificate on October 18<sup>th</sup>, 2019 at Hyatt Regency Hotel Bangkok. We always encourage our subsidiaries to apply for CAC membership. There are currently three certified CAC member companies under EGCO Group, namely EGCO, ESCO, and KEGCO.



Furthermore, EGCO Group together with ESCO as CAC members participated in a National Anti-Corruption Day 2019 on September 6<sup>th</sup>, 2019 held by the Anti-Corruption Organization of Thailand (ACT) under the theme, "Joint Forces Against Corruption", at the Bangkok International Trade and Exhibition Center, Bang Na, Bangkok.



### Enhancing Good Corporate Governance Knowledge through E-learning System

In 2019, EGCO Group remodeled the appraisal system to be accessible online through the e-learning system. After promoting awareness and understanding of the good corporate governance principles and the Code of Conduct through various channels and activities, the employees completed an online form, with the questions adapted from the short films' story submitted to CG Day: CG Film Awards, to assess their own knowledge and understanding. The results showed that 99% of EGCO's employees passed the assessment criteria.

**Contribution to Organizations GRI 415-1**

EGCO Group adheres to the good corporate governance principles and works against all types of corruptions, both direct and indirect. We strictly uphold our belief, "Corruption is unacceptable in any transaction in both public and private sectors". It is stated in EGCO's anti-corruption policy that donations and contributions must be made with clear and transparent intentions. Similarly, political contributions must be transparent in compliance with the law. We strictly abide by the guidelines stated in our Anti-Corruption Manual that any act of contribution, support, or membership of any organization is conducted with a sole purpose for EGCO Group's growth in accordance to the Sustainable Development Policy.

In 2019, EGCO Group has joined various organizations amounts to a total of THB 377,344 membership fee. Details are shown in the table below:

Name of the Organization	Type	2016	2017	2018	2019
Electricity Supply Industry Association of Thailand (TESIA)	Trade association	200,000	200,000	200,000	200,000
Petroleum Institute of Thailand	Trade association	50,000	50,000	50,000	50,000
The Association of Private Power Producers (APPP)	Trade association	40,000	40,000	40,000	40,000
Power Producer Industry Club	Trade association	40,000	40,000	40,000	40,000
International Council on Large Electric Systems (CIGRE)	Trade association	23,035	22,068	22,789	21,944
The Thai Chamber of Commerce	Trade association	17,000	17,000	17,000	17,000
The Federation of Thai Industries (FTI)	Trade association	2,400	11,877	6,400	8,400
The Association of the Electricity Supply Industry of East Asia and the Western Pacific (AESIEAP)	Trade association	-	60,209	-	-
Thailand – Cambodia and Thailand - Vietnam Business Council	Trade association	-	5,607	-	-
<b>Total</b>		<b>372,435</b>	<b>446,761</b>	<b>376,189</b>	<b>377,344</b>

\*In 2019, EGCO Group has involved in no political contribution, lobbying, ballot measures, or referendums.

## Important Issues or Topics EGCO Group Supports in 2019:

Issue/Topic	Corporate Position	Description of Position/Engagement	Total Spend in FY 2019
Supporting technology and innovations for the power industry	Support	<p>EGCO Group has joined and supports many trade associations with an aim to encourage and develop power industry innovations. EGCO Group is one of the founding members of Electricity Supply Industry Association of Thailand (TESIA) together with EGAT, PEA, MEA, and RATCH Group PCL with the main objective to support technological knowledge and experiences exchange in regard to the power industry. This includes building good relationship and promoting unity between members as well as protecting members' interest and job security in the power industry.</p> <p>EGCO Group currently has 2 representatives being a committee in TESIA. Moreover, Executive Vice President – Business Development (Thailand &amp; New Business) who holds the position as the President of the Academic Sub-Committee, responsible for developing curriculum, formulating academic plans, estimating academic budget of the association, monitoring and assessment of training curriculums, etc.</p> <p>Activities organized by the association in 2019:</p> <ul style="list-style-type: none"> <li>• “Modification of Internal Combustion Engine into Electrical Engine in Thailand” Seminar on August 29, 2019 at Chaopraya Park Hotel with an objective to promote knowledge on electric vehicle (EV) innovations, directions, policies, and the modification of internal combustion engines into electrical engines as well as developing foundation to support EV in the future. EGAT supported a modified EV to be displayed at the venue for participants.</li> </ul>  <ul style="list-style-type: none"> <li>• “Electrical System Analysis Software: Flow of Current in Short-Circuit Analysis and Coordination of Protective Equipment” Training on November 26<sup>th</sup> – 28<sup>th</sup>, 2019 at Chaopraya Park Hotel with an objective to promote electrical system analysis and the use of analysis software. This is highly beneficial to people responsible for electrical system analysis whether it'll be factories, power producers, or officials from the Electricity Authority to prepare for a more complicated system analysis in the future.</li> </ul> 	301,944
Creating good relationship among private power producers in Thailand	Support	<p>EGCO Group participates and supports activities that will create good relationships among private power producers in Thailand. This can lead to future collaborations and knowledge exchange, driving the power industry towards a sustainable future. EGCO Group participates in the Association of Private Power Producers (APPP) which consist of Small Power Producer (SPP) and Independent Power Producer (IPP) with an objective to create a common ground for networking and cooperation, to promote good corporate citizenship, and to represent the private power producers in voice suggestions and protect our collective interests. One of the performance highlights in 2019 includes, urging the government to renew the PPAs which gradually expire between 2017 to 2024. In 2019, EGCO Cogen, SPP, received approval for PPA renewal.</p>	280,000

## Risk Management

### GRI 102-11

The risks of business operations impact sustainability factors that are important to the organization's progress and growth, including all stakeholders along the value chain. Therefore, risk and crisis management minimizes the causes of scenarios that may cause damage, as well as decrease the level and magnitude of that damage. If the organization is not able to manage its risks effectively, it will affect its ability to respond to possible crises, as well as its adaptability to both present and future situations.

EGCO Group is aware that risks are inherent to business, and the company is committed to effective risk management, by considering striking a balance between risks and opportunities for stakeholders. This way, risk management not only creates an opportunity to achieve the organization's targets, but also allows the organization to create sustained value.

### Management Approach

In order to identify, assess, and respond to possible risks that may occur in the present, as well as predict possible risks in the future, EGCO Group applies the COSO Enterprise Risk Management Integrated Framework to its organization. The company also set its risk management philosophy to reflect EGCO Group's beliefs and attitude in managing the different organizational risks as follows:

"Despite the risks implicit in doing business, we strive to manage risk efficiently with consideration of balancing risk and return for all stakeholders' benefits. Our risk management shall increase the opportunities for achieving corporate goals and creating sustainable corporate values."



#### 1) Establishment of Risk Oversight Committee

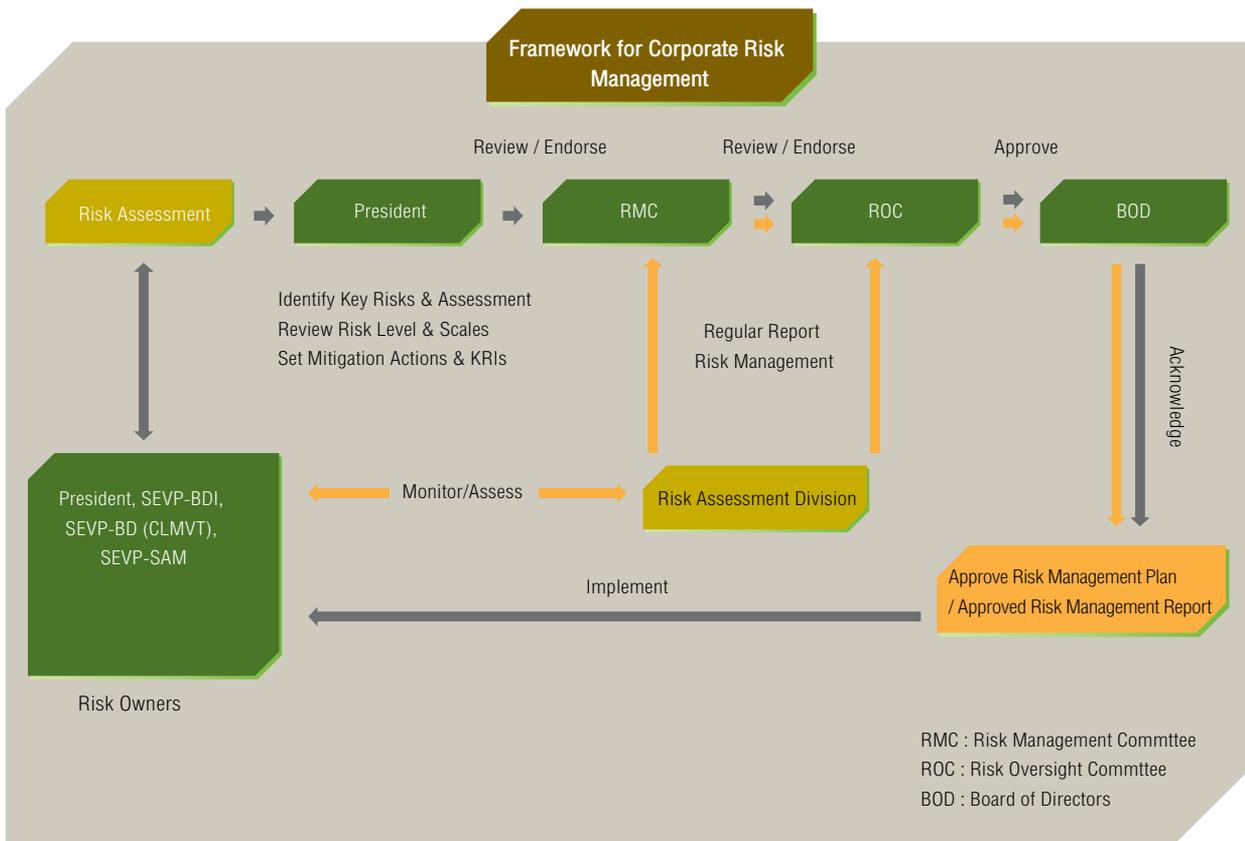
In 2019, EGCO Group officially confirmed the importance of risk management by creating the Risk Oversight Committee (ROC) via a resolution from its board of directors. The establishment of this committee was effective on September 20, 2019 and it is comprised of five experienced directors from the fields of risk management, law, finance and banking, engineering, and the energy business. The appointed ROC members are listed below.

- |                              |   |
|------------------------------|---|
| 1. Prof. Dr. Anya Khanthavit | Chairman of Risk Oversight Committee (Independent Director) |
| 2. Mr. Pisan Mahapunnaporn   | Risk Oversight Committee Member (Independent Director)      |
| 3. Mr. Patana Sangsriroujana | Risk Oversight Committee Member                             |
| 4. Mr. Tomoyuki Ochiai       | Risk Oversight Committee Member                             |
| 5. Mr. Jakgrich Pibulpairoj  | Risk Oversight Committee Member (President)                 |

The Risk Oversight Committee’s responsibilities are to consider, review, and provide recommendations regarding the enterprise risk management policy and framework, risk tolerance and risk appetite. It also provides oversight to ensure that key risks are identified, and that the impacts and opportunities are evaluated. The Committee also considers, monitors and assesses the organization’s risk management framework and plans, provides recommendations and support to the Board of Directors and management regarding appropriate and effective risk management that relates to business operations. Lastly, the Committee regularly reports to the Board of Directors on the results of the risk assessment and mitigation measures.

At the management level, EGCO Group’s has a Risk Management Committee, which consists of a board director as the Committee Chairman, as well as Senior Executive Vice Presidents from all business units as committee members, and Executive Vice President on Asset Management as the committee secretary. The Risk Management Committee oversees that operations are in line with EGCO Group’s risk management policies and approach, promotes and supports risk management activities throughout the organization, including regularly, reporting to the Risk Oversight Committee and Board of Directors on risk management. In the event in which a new risk arises and has a material impact on EGCO’s operations, the Risk Oversight Committee must report to the Risk Oversight Committee and Board of Directors promptly.

In order to promote risk management, EGCO Group’s Risk Assessment Division monitors and reports performance according to the company’s risk management policy and approach. The division also supports various functions to identify, assess, and design risk management measures that remain within the risk tolerance. In 2019, the Risk Assessment Division reported to the Risk Management Committee six times, and reported to the Risk Oversight Committee three times. The organizational risk management framework is as follows:



## 2) Determining risk management policy

EGCO Group conducted an additional review of its risk management policy and approach, in order to cover risk issues, in parallel with enterprise-wide risk management. The company focuses on striking a balance between risks and returns, which is an important foundation that will lead the organization towards long-term success, which optimizes stakeholder value. Nevertheless, EGCO Group gives importance to the identification, assessment and response to key risks in organizational management, and reviews operations and establishes risk mitigation measures appropriately, in order to respond to all aspects of risk consistently and within the present context. This enables all stakeholders to have confidence in EGCO Group's ability to operate its business smoothly.

## 3) Operations to support the risk management policy

EGCO Group conducts its operations with relevant parties within the organization to support the risk management policy, through cooperation among senior management and employees. The policy covers companies in which EGCO Group has management control. In addition, EGCO Group supports supplier companies, through to stakeholders, in acknowledging the policy, which contains the principles to conduct business in the same direction. EGCO Group will conduct the following:

- Support all parties to gain awareness of risks and to understand that risk management is everyone's duty and responsibility.
- Set up a governance structure and resources that are able and have the risk management expertise according to the COSO-ERM risk management framework.
- Have processes in place that enable confidence in management to drive awareness of the organizational risk culture thoroughly.
- Determine the risk appetite and risk tolerance that aligns with the business and strategic environment.
- Conduct risk management training throughout the organization, which includes laws and regulations related to the job, on a continuous basis.
- Assess risks in all investment projects according to risk management principles, and obtain authorization by the board.
- Prepare a risk management report, manual, and business continuity plan for companies within the group, and review their content on a continuous basis.
- Establish the policy to assess internal controls regarding risk management, and assess risk management processes on a continuous basis.

EGCO Group management will drive and support the company to operate according to the aforementioned policies on a continuous basis, in order to achieve its aspirations.

## 4) Assessment of organizational risk factors and potential risks

EGCO Group assesses and categorizes its risks by considering factors that relate to business operations, climate change, and natural disasters, by using variables, the probability of occurrence, and the impact of key risks that affect EGCO Group, including risk prevention and mitigation.

Furthermore, EGCO Group reviews trends and set measures to respond to emerging risks that may affect future business operations. Further information regarding emerging risks is publicly available in EGCO Group's Annual Report and on the website ([www.egco.com](http://www.egco.com)).

### Promoting risk culture and risk management within the organization

Promoting efficient risk culture and risk management within the organization will help to reduce the occurrence and severity of different risks to an acceptable level. In addition, this helps the organization's analysis and decision-making, when faced with risks or uncertainty that may affect operations, so that the organization may achieve its set objectives and targets.

In order to promote a sustainable risk culture, EGCO Group gives importance to human resource development, skills, knowledge, understanding, and awareness of risk management throughout the organization. To ensure that the Board of Directors, management, and employees have the knowledge and understanding of risk management processes and procedures according to the international COSO ERM Integrated Framework, EGCO Group conducts an annual risk management training to all members of Board of Directors, management and employees. The trainings provide the risk owner and related personnel knowledge of risk identification, assessment, and development of the risk management plan. They are then able to apply the knowledge gained to manage organizational, functional, departmental, subsidiary and partnership-level risks within EGCO Group (power plant asset level), to create more sustainable value for the organization. Within the seminar, participants work together to specify and consider various risk factors that may impact EGCO Group's business operations, and those factors are applied to identify organizational risks.

EGCO Group developed an e-learning curriculum to expand upon its risk management content, so that employees are able to access this topic. The company also created a risk management manual that acts as guidelines in the work environment, risk management articles and journals, and risks according to lines of work, so that employees can conveniently access the information. Furthermore, the power plants within EGCO Group are establishing a Risk Management Committee within its power plants, to manage risks in a more comprehensive and specific manner.

### 2019 Performance

In 2019, EGCO Group considered risk factors and emerging risks in its business operations. The company assessed and categorized the risks according to the business structure, as well as establish prevention and mitigation measures. There are five risk categories, as follows:

#### 2019 Key Risks Management

Organizational Risk	Prevention or Mitigation Measures
<p><b>1. Strategic and Investment Risk</b></p> <p>EGCO Group invests both locally and internationally, in both commercially operating power plants and those under construction, which may cause risks in achieving average shareholder return targets in the future, which will affect shareholder benefits.</p>	<p>Regarding mitigation measures for investment risk, EGCO Group plans to focus its investments in commercially operating power plants and accelerate the progress of projects that are in EGCO Group's business plan, with particular focus on high potential projects to complete their development according to the plan. In parallel, the company is also searching for new investment opportunities.</p>
<p><b>2. Construction Asset and Project Management Risk</b></p> <p>1) EGCO Group carries the risk of not being able to predict its earnings according to the target, due to the availability payments from commercially operating power plants when compared to the budget.</p>	<p>1) Regarding mitigation measures, the asset management function has a responsibility to monitor the performance of companies within EGCO Group's portfolio, analyze the returns, compare to set targets, and determine risk management. The function also develops performance analysis reports of joint venture companies to present to senior management, as well as engage with joint ventures in assessing the joint business, in order to ensure confidence in the sufficiency and effectiveness of the business' internal controls.</p>

Organizational Risk	Prevention or Mitigation Measures
<p>2) EGCO Group's green field investments may cause the risk of not being able to achieve the progress of the construction project according to plan, due to delays.</p>	<p>2) EGCO Group conducts business according to its new power plant construction plan, selects construction contractors who have good reputation and expertise, as well as create concise contracts. In addition, the company communicates and develops an understanding with various surrounding communities in order to build good relations. In 2019, the company established a project management function, whose responsibility is to control and monitor project progress on a consistent basis. The company also has measures to increase the number of experts to conduct site visits, in order to resolve any construction issues.</p>
<p><b>3. Financial Management Risk</b></p> <p>1) EGCO Group is a private company with a large number of shareholders. Therefore, there is a risk that the company may not be able to increase the value for its shareholders, according to set targets.</p>	<p>1) EGCO Group discloses its information in an accurate, complete, and timely manner, in a way that is appropriate to investors, including estimating shareholder returns on a consistent basis.</p>
<p>2) There is a risk of not being able to source investments for a new project that has competitive costs.</p>	<p>2) EGCO Group is in the process of researching information to adjust its debt to equity ratio to meet its target, and search for new funding sources, in order to reduce the average financial costs and increase its ability to borrow in the future.</p>
<p>3) EGCO Group uses a large amount of money for its investments, where the majority of its funding is from loans by financial institutions both within the country and abroad. Therefore, the company incurs a risk of exchange rate fluctuations from new loans.</p>	<p>3) EGCO Group tries to source loans that are of the same currency or at a proportion that is closest to its income (natural hedge), and enters into cross currency swap contracts to reduce floating interest rate fluctuations. The company changes the floating interest rate to stable interest, when market conditions allow for loan management to be in line with the expenses for project development and construction.</p>
<p><b>4. Organizational Management Risk</b></p> <p>1) EGCO Group's sustainable business development requires personnel with the knowledge and expertise to support its strategy and investments. Risks may arise from the inability to develop human resources in a timely manner.</p>	<p>EGCO Group's Human Resources department developed a plan regarding the retirement age, and explored the list of successors with the potential to take on a key management role, in order to prepare for roles that will be vacated in the next 5 years. The department developed a succession plan to prepare those individuals with the knowledge and expertise to step into the key roles, and has a plan to increase successor development training, both for management and employees.</p>
<p>2) EGCO's business operations require continuous IT development, in order to support management's decision-making regarding the strategy and investments. Risks may arise from delays or the inability to develop IT according to the work plan.</p>	<p>EGCO Group developed the Planning, Budgeting, Forecasting and Reporting (PBFR) Phase I project to increase the speed in which to obtain information that is necessary for management's decision-making, and to support information for different departments.</p>

Organizational Risk	Prevention or Mitigation Measures
<p>3) Risks may arise from not being able to meet the performance target for the sustainability assessment, due to gaps in material topics in evaluating the organization's sustainability.</p>	<p>EGCO Group conducted a gap analysis on material topics in evaluating the organization's sustainability. This was combined with improvements to close the material topic gaps in all dimensions - economic, social, and environmental. In addition, EGCO Group created an operations plan and organized workshops to close the gaps of material topics on a continuous basis, such as human rights, supply chain, and climate change.</p>

**EGCO Group's Emerging Risks**

5. Emerging Risk	Risk Prevention or Mitigation Measures
<p>1) Risk of Global Economic Growth Slowdown</p>	<p>EGCO Group prepared mitigation measures by sending representatives to countries in which it has investments, in order to closely monitor, report, and assess the situation. Furthermore, EGCO Group diversifies its investments in many countries.</p>
<p>2) Risk from Changes in Governmental Policies, due to Climate Change</p>	<p>EGCO Group closely monitors and analyzes trends of changing governmental policies, and established an appropriate target for renewable power plant investments. In addition, it promotes increased efficiency in electricity generation and decreased greenhouse gas emissions.</p>
<p>3) Risk from Technological Changes</p>	<p>EGCO Group closely monitors and analyzes changing trends, and develops technological innovations to increase working efficiency. Creating new businesses increases the company's competitive advantages, and EGCO's innovation development program is called the 'Innovation Team Challenge'.</p>
<p>4) Cyber security and Personal Data Protection Risk</p>	<p>EGCO Group established a policy and measures to prevent leaks of important information, as well as develop an information security and protection system and data privacy protection, by aggregating, collecting, using, and disseminating employee, supplier, and contact personnel information in the form of electronics, in order to prevent any violations of personal data privacy. Furthermore, the company conducts employee training to create awareness, knowledge, and understanding of the Cyber Security Act B.E 2562 (2019) and the Personal Data Protection Act B.E. 2562 (2019). EGCO Group's IT function is also developing its information security management system to be in line with ISO 27001, within its data center.</p> <p>In the past year, the company had no incidents and impacts from cyber security and personal data threats.</p>

## Cyber Security and Data Privacy Protection

The organization's information is a business asset that must be protected in an efficient manner. The prevention and determination of the security level for internal information use is therefore of great importance. The purpose of all necessary processes or actions is to prevent the organization from risks or damage that affect all forms of IT security. This includes the prevention of various cybercrimes, attacks, sabotage, espionage and mistakes, by considering the foundational components of IT security, or the three aspects of CIA, which are Confidentiality, Integrity and Availability.



Regarding the organization's activities and prevention against data privacy violations, the use of internal information for the benefit of the individual or any other party beyond the intended business objective, for which it has received consent, is considered a violation of the owner's privacy. This action causes damage to the organization and affects its credibility.

Personal data in the electronic form must be protected and stored appropriately, throughout all stages, from collection, storage, through to disclosure.

Nevertheless, cyber security must consider privacy protection, as well as ensure convenient access to the system for each individual. A strong focus on integrity may infringe upon personal rights. Therefore, the organization must maintain an appropriate balance between cyber security, privacy protection, and convenient access to the system.

EGCO Group focuses and gives importance to the organization's information security and the privacy of its employees, customers, and all stakeholders. It has established stringent guidelines to protect the use of internal information. The organization has appointed the IT Development Governance Committee and Working Group, whose duty and responsibility cover privacy protection and the absolute prevention of any misuse of personal or internal information, according to the Code of Conduct and Good Corporate Governance Principles. Furthermore, the organization established a strict internal information control system to prevent information leaks and any external disclosure prior to its official release. It is the duty and responsibility of respective leadership to control and protect internal information according to set principles. In the event where an employee uses internal information that has not been officially disclosed to the public for their own personal use, or that of others, such as securities trading, this will be considered a violation of the company's Code of Conduct. The individual will be penalized according to set rules.

### 2019 Targets



- Improve the system to monitor and prevent information breaches.
- Improve the cyber security and personal information protection policy so that it is up to date and aligns with international standards. This policy will be announced in 2020.

### 2020 - 2024

#### Long-Term Targets



- Improve the organization's information security system according to the ISO 27001 standard.
- Zero grievances of personal data violations by customers or external parties.
- 80% of employees receive training to build knowledge and understanding of information security and privacy to high-risk relevant parties and stakeholders.

## Performance

In 2019, EGCO Group improved its system to monitor and prevent data breaches. It is currently developing its cyber security and personal data protection policy, which will act as guidelines for employees and all relevant parties. After the announcement of the policy implementation, EGCO Group will conduct internal communications for all employees to acknowledge the aforementioned policies, and to ensure confidence in their compliance to the use and storage of personal information, in line with the personal data protection policy.

In addition, the company reviewed the information disclosure policy and guidelines, last updated in 2017, and concluded that both were still appropriate and aligned with the rules and regulations of the governance body and the SEC's Corporate Governance Code. The policy and guidelines cover updated evaluation criteria for good corporate governance, are appropriate to the present context and align with technology and online communications. Based on these conclusions, their contents and guidelines were upheld.

To ensure compliance with its Code of Conduct and information security approach, EGCO Group planned IT management programs for various organizations in 2020, to increase the efficiency of cyber security, through to facilitating the convenience of employees and relevant parties, such as:

### Improvement of the information security system according to ISO 27001 standards

The program objective is to improve the organization's information security system, which will help to reduce the risk of security violations by those with mal-intent, which may cause legal or business continuity ramifications. Important information will be accessed and adjusted solely by authorized personnel, with anticipated completion in 2020.

### Distributed Denial of Service (DDOS) Protection

The program objective is to improve the information security system, where the DDOS system assesses dangerous or unwanted behavior towards the system's network and its activities. The system enables responses in real time, in order to prevent or stop the behavior. It detects the quantity of network traffic, in order to identify addresses or attacks of a malicious nature. When abnormal activity occurs, the system will prevent those behaviors, while allowing normal activities to continue.

### IT Security Awareness Training

The training objective is to provide knowledge to and increase the understanding of EGCO Group employees, through to raising awareness of the responsibility towards the organization's IT security and personal data protection. This training covers the knowledge of potential emerging risks and improvement of practice guidelines according to the policy and security standards, in order for organizational and personal data protection.

The table below summarizes fines and the number of grievances received, which relate to the IT system and privacy violation:

	2016	2017	2018	2019
Grievances received from individuals or external parties (Number of cases)	0	0	0	0
Grievances received from governance bodies (Number of cases)	0	0	0	0
Total number of information security breaches or other cyber security incidents	0	0	0	0
Total number of information security breaches involving customers' personally identifiable information	0	0	0	0
Number of customer affected by company's data breaches	0	0	0	0
Total amount of fines/penalties paid in relation to information security breaches or other cyber security incidents	0	0	0	0

# Form a Sustainable Energy

## Climate Change

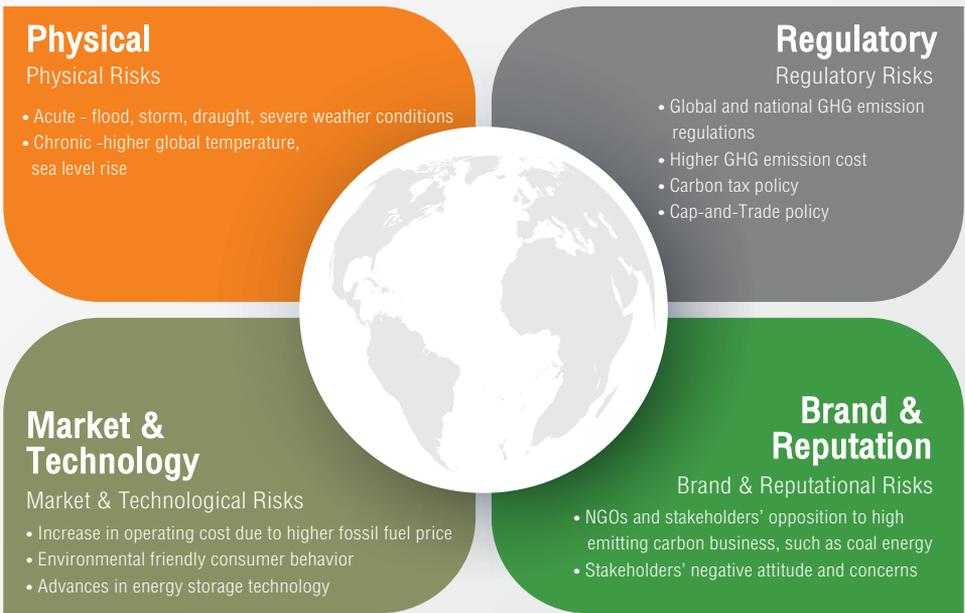
Climate change is one of the greatest challenges the world is facing. It takes the form of natural disasters with rising severity, threatening lives and the environment. Effects of climate change include risk of food and water scarcity, extinction threats, and slow restoration of degraded environment. It is our collective duty to maintain and preserve the Earth for future generations. As a leading power producer in Thailand, EGCO Group is committed to improve operational efficiency to lessen any negative impacts we may have on the environment, through utilization of clean energy and other renewable energy sources. Additionally, we have established climate change risk adaptation plans as well as identifying business opportunities amidst the climate change.

## Management Approach

### Management Structure

EGCO Group has appointed a committee and working group to manage the scope of climate change. These issues are the responsibility of Corporate Sustainability Steering Committee in cooperation with the environmental management working group, comprising of executives from every power plant. The working group monitors and reports to the Corporate Sustainability Committee to ensure efficiency of the operations. EGCO Group has set goals for related executives and personnel as a part of annual key point indicators (KPIs) as well.

## Exposure to Climate Change Risk Assessment



We have developed our business strategies in regards to four risk categories, namely physical risks (natural disasters, increase of global temperature, sea level rise, etc.), regulatory risks (GHGs emission tax, social license to operate), market and technological risks (environmental friendly consumer behavior, increase in operating cost), and brand and reputational risks.

#### **Increase Renewable Energy Portfolio to 30%**

EGCO Group commits to the transition into using more clean energy or renewable sources in power generation. This is part of an effort to mitigate climate change in accordance to the Thai government's intent to reduce greenhouse gas emissions by 20-25% by 2030, compared to the usual business. As for us, we aim to increase our renewable energy portfolio to 30% by 2026. Furthermore, EGCO Group plans to increase investment proportion in renewable energy, invest in environmental-friendly technology, promote energy conservation within our company, and indirectly reduce greenhouse gas emissions through collaboration with environmental-friendly partners.

As of December 31st, 2019, EGCO Group owns a total of 17 renewable energy power plants with 1,033 MW or 19% of all EGCO Group's operations. There are currently two projects under construction, namely Nam Theun 1 power plant (NT1PC) in Lao PDR with 161 MW equity and a fuel cell power plant in South Korea with 9.7 MW equity. The commercial operation date is scheduled in 2022 and 2020 respectively, they will increase the proportion of renewable capacity in our portfolio to 21%.

#### **Climate Change Risk Adaptation Plans**

EGCO Group's operations currently face increasing climate change risks. We therefore prioritize strategy and action plan developments to mitigate the risks, as well as establishing guidelines in case of escalated incidences and response to climate impacts. For instance, response plans to counter effects of El Nino and La Nina, fuel reservation to avoid operational disruptions and building water reservoirs to maintain production during drought seasons.

#### **Performance**

##### **Investment expansion into clean energy business and strive to become a low-GHG emitting organization**

In 2019, EGCO Group has organized climate change training to raise awareness and understanding among our employees in related fields, such as risk management department, environmental department, power plant operation department, and social responsibility department. We organized operation exposures to climate change risk assessment workshops which includes business opportunity identification as well. Through training and workshops, we found changes in climate laws and regulations to be beneficial to us in relation to the development of new projects related to the core business, community's power plant, increasing revenue from carbon credit trading, etc. Moreover, the rise of the "Prosumer", a consumer who generates their own power supplies, give an opportunity for EGCO Group into Smart Energy business.

### Excess Oxygen Control

Previously, Biomass power plant used gas analyzer to observe combustion in the boilers through ratios of left over Carbon Monoxide (CO) and Oxygen (O<sub>2</sub>) gasses. However, the results from gas analyzer were not incorporated into the monitor and control process. The fuel's properties change with the change in compositions or even the humidity, leading to a shift in CO/O<sub>2</sub> ratio. Heat rate increases as concentration of O<sub>2</sub> rises. On the contrary, decrease in O<sub>2</sub> leads to excessive production of CO. Thus, engineers at EGCO Group have developed a program which helps monitor and control the amount of O<sub>2</sub> used in the combustion. Our goal is to improve combustion efficiency, reduce heat loss, improve boilers' function, reduce fuel consumption, and, most importantly, keeping CO amount below the threshold in order to decrease the amount of GHG we're emitting.

### Carbon Credit

EGCO Group is continuously developing to improve operational efficiency as well as working towards power generation from clean and renewable sources. Not only that engaging in carbon credit trading emphasizes our intention to help reduce the GHG emissions on an international level, it is also a brilliant way to increase our revenue. Participated power plant includes:

**Boco Rock Wind Farm (BRWF)**, a wind power plant, has been trading carbon credits in Large-Scale Generation Certificates (LGCs) since 2014.

#### Revenue generating from Boco Rock Wind Farm's Carbon Credit Trading

Year	2015	2016	2017	2018	2019
Income (AUD)	15,163,247	18,299,146	17,945,299	19,704,642	19,526,826

**Solar power plant SPP 2-5** have been trading carbon credits under Clean Development Mechanism (CDM) in accordance with United Nations Framework Convention on Climate Change (UNFCCC) and Asia Development Bank (ADB) during 2015 to 2019. EGCO Group is now trading carbon credits under International Renewable Energy Certificates (I-REC) following the expiration of the previous contract.

#### Quarterly Carbon Offset by Solar Power Plant SPP2-5 in 2019

	1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	3 <sup>rd</sup> Quarter	4 <sup>th</sup> Quarter	Total
Total carbon offset (tCO <sub>2</sub> e)	8,289	8,753	7,619	8,361	33,023
Goal / Quarter	7,541.50	7,541.50	7,541.50	7,541.50	30,166.00

### Lighting System Conversion to LED

The Quezon power plant has replaced the old lighting system with Light-Emitting Diode (LED) to reduce energy consumption and avoid contamination from hazardous waste (mercury) since 2011. 67.97% of the system has been replaced with LEDs so far. In 2019, GHG emissions were reduced by 535 metric tons CO<sub>2</sub>e.

**Refrigerant Recovery & Reuse**

In 2019, Quezon power plant reused 56.5 kg of R-22 refrigerants from the air conditioning system, decreasing GHG emissions by 102 metric tons of CO<sub>2</sub>e.



**Utilizing Solar and Wind Energy for Lighting in Remote Areas**

Quezon power plant utilizes wind and solar energy to generate electricity in remote areas where such utilities remain inaccessible. Aside from producing clean energy, this operation has conserved 7,987 kWh of energy, which amounts to 7.5 metric tons of CO<sub>2</sub>e from GHG emissions reduced.



**Planting Forest to Offset CO<sub>2</sub> Emissions**

Quezon and SBPL power plants have been nurturing sprouts and planting trees since 2015 to offset areas used to construct SBPL power plant. During the four years of this on-going project, forest plants and mangrove trees were planted. In 2019, we have planted approximately 12,000 trees, which absorb around 500 tons CO<sub>2</sub>e (calculated according to tree’s age and trunk’s diameter varied by species)

**Direct & Indirect Greenhouse Gas Emissions**

		2016	2017	2018	2019
Direct GHG emission (Scope 1)	tCO <sub>2</sub> e	6,247,557	5,828,891	6,664,845	6,794,414
Indirect GHG emission (Scope 2)	tCO <sub>2</sub> e	4,409	6,762	8,670	7,137

## Market Opportunity and Business Diversification

GRI 103-1, 103-2, 103-3

Amidst rapid technological changes, flexibility is a vital characteristic that helps companies to adapt efficiently. In the power industry, there is always an opportunity for new development or investment to expand business in related fields and tangential type of businesses. An investment diversification can help stabilize EGCO Group's investment portfolio and distribute risks. However, certain assessments are needed when exploring new business opportunities, as external factors can have significant effects on consumers' demand. Such factors comprise, namely the economy, society, politics, technologies, market competition, and the consumers' changes in values and attitudes.

### Management Approach

EGCO Group values opportunities greatly. The company is determined to develop business strategies in consideration of our responsibilities to the society and environment in the digital transformation era. Some of the challenges EGCO face consists of an increasing amount of retail consumer generating electricity independently (or prosumer), resulting in high electricity reserve and leading to delays in renewable energy purchasing process from the public sector as well as climate change situation. While considering in utilizing the best technology for business operation to maximize efficiency and effectiveness together with environmental conservation and no negative impact creation, EGCO Group plans to expand into renewable energy power plants overseas, as well as consider investing in new potential business opportunities which related to core business. In addition, EGCO group has linked performance on this aspect as part of executive's performance evaluation.

### Goals in 2019



- At least 80MWe investment in renewable energy power plants
- Conduct feasibility studies for at least three new projects



**Performance**

EGCO Group's successfully invested in Paju power plant in South Korea and two projects under construction, namely "Xayaburi" hydro power plant in Lao PDR and "San Buenaventura" coal power plant in Philippines were successfully commenced their commercial operation. These achievements added great strength and value to our business. Not only we have gained a partner specializing in liquefied natural gas (LNG) through our acquisition of Paju power plant, it is also our gateway to the regional LNG business. Moreover, we have entered into a share purchase agreement to expand investment in Taiwan through Yunlin Holding GmbH in an offshore wind farm project with 160 MW equity. EGCO Group has also been exploring opportunities to expand our investment into new business including fuel supply and smart energy business. Starting with an expansion into the fuel supply business, we have successfully invested in a 343 km oil pipeline extension to the Northeastern region project.

In 2020, EGCO Group plans to expand our portfolio through investments in power generation, including renewable energy power plants, extend to fuel supply business, and explore investment opportunity in Smart Energy Solution, enhancing investment opportunity as well as providing long term value to EGCO Group. The revised vision and missions will thus be implemented in 2020. We aim to elevate organizational excellence with good governance while being considerate to the society, environment, and stakeholders.

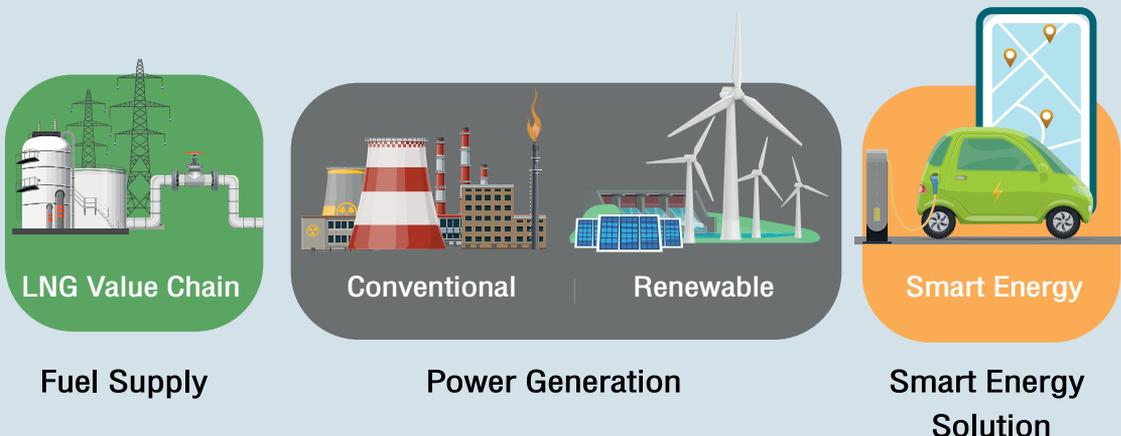
**Vision**

To be a major sustainable Thai energy company with full commitment to the environment protection and social development support

**Missions**

1. To secure continuous growth in order to maximize shareholder's value
2. To offer reliable energy supply and services
3. To be good corporate citizen and be considerate to the society and environment

**Value Integration**



## EGCO Group's Investment

**1) Power Business:** Power business is EGCO Group's core and strengths, particularly on the variety of fuel sources and extensive investment bases both in Thailand and overseas. We are always looking to strengthen our core through regional investment, with our expertise and network for our future expansion.

- **Pursue opportunities for Greenfield projects to support company's growth in long term** collaborate with strategic partners for technical support, funding, relationship building among local government agencies, industry, and the community as well as support from shareholders
- **Acquire operating assets, which could immediately generate revenue to EGCO Group** explore investment opportunities in collaboration with strategic partners
- **Explores opportunity to utilize existing project to expand its investment** expedite through EGCO's local staff to explore investment opportunities and build up regional connection

**2.) Fuel Supply Business :** Seek opportunity to expand investment from existing power generation business to fuel supply's upstream and downstream businesses, which considered as value-added business in energy value chain.

- **Acquire or develop fuel supply projects from upstream towards downstream** Monitor and analyze market , government policies, law and regulations in each country, and collaborate with local strategic partners to explore investment opportunities
- **Invest in strategic projects with consideration on strategic value** Consider value-added for a strategic investment in term of corporate interest, knowledge & know-how transfer, hands-on experiences, and business connection, with potential partners to achieve mutual benefits.

**3.) New Business Opportunity in Smart Energy Solution :** explore new business opportunities with consideration to disruptive technology trend.

- **Pursue strategic investment in Smart Energy Solution** to gain knowhows and knowledge to apply in disruptive business environment such as renewable energy, solar energy service provider, energy storage, hybrid power plants and micro grid components, etc.
- **Seek investment opportunity with potential partners** - which provide value-added scheme, further collaboration and/ or future expansion in Smart Energy Solution.

EGCO Group's strategies in 2020 highlights the importance of human resource development. We believe human resource is an important foundation for the company's sustainability and growth. Further information is available in Our People chapter of this report.

## Digitization and Innovation

GRI 103-1, 103-2, 103-3

In the digital age where technology plays an important role in our lives, businesses must be moving forward accordingly through implementing innovations into business operations for constant flexibility and efficacy improvement. Thus, EGCO Group prioritizes innovation development alongside human resources development, preparing employees for upcoming changes. EGCO strongly believes that such encouragement will give them business advantages as well as creating positive impacts to the society and environment.



### Management Approach

EGCO Group started to develop action plans to handle the transition into the digital era through conducting business strategy reviews. It was an important starting point for improvement in many other aspects. For instance, the company focused on improving employees' understanding of company goals, ensuring effective communications to achieve said goals, and building creative and innovative corporate culture to spark the drive to improve within the organization. In addition, the company also focused on continuously improving the information system to facilitate operations competently, as well as implementing the "Knowledge Management System" to apply employee knowledge and experiences to benefit the business operations and the company's sustainable development.

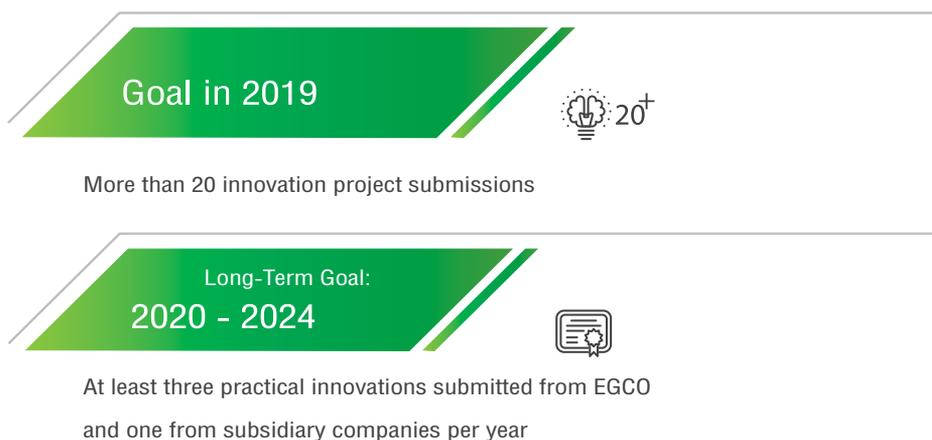
Hence, EGCO Group organized projects and activities in innovations for the second year, to stimulate inventive corporate culture, encourage their employees to present their creative ideas and innovations that could benefit the organization in greater efficacy, cost reduction, and effective cooperation within the group.

EGCO Group plans to integrate the knowledge management system with the company's internal innovations contest. The experience includes knowledge distribution among individuals and departments along the process of developing an innovation. This is one of the most crucial contributions to EGCO Group's goal in becoming a

sustainable organization, driven by knowledge and innovation, in accordance to the company's sustainable development strategies.

Furthermore, EGCO Group plans to collaborate with Asian Institute of Technologies (AIT), a notable international institute for higher education that provides study programs to facilitate the country's economic development, such as technology and sciences. As one of EGCO's open innovation approaches, it seeks to encourage the digitalization of entrepreneurs and the industrial sectors. In 2020, AIT will be EGCO Group's academic ally in the energy industry and innovations development, pushing the company's innovative threshold higher towards sustainable development.

The 2018 innovations contest successfully brought employees together to create innovations and improvements in working processes. The management therefore decided to support further developments of the awarded projects, such as the "Power Plant and Main Equipment Performance Assessment by Microsoft Excel" from EGCO Cogen Co., Ltd. in the Innovation category which has been implemented in other cogeneration power plants in EGCO Group's subsidiaries. The creative idea winner, "Portable Confined Space Air Monitor", was also approved for further development, and is expected to begin operations in 2020.



## Performance

### Established Knowledge Management Committee and the Organization of Learning

Their duty is to define the scope, goals, framework for knowledge and innovation management, and to appoint the Knowledge Management working team. The working team is responsible for the development of the Knowledge Management System. The working team is working on selecting a Knowledge Management consultant to begin work within the first quarter of 2020.

### EGCO Group's E-Learning Development

has been test running since October 2019. In 2020, EGCO Group plans to improve the system by linking the database to the application, enable Single Account Logins for employees' convenient access to the online training courses.

### EGCO Group Innovation Project, EGCO Group InnoPower 2019

focused on building corporate culture that encourages working process improvements, which is a strong foundation of innovation. The project was divided into two parts: (1) Trainings and workshops for skills and knowledge development and competition preparations, and (2) The Competition.

The competition was separated into two main categories, namely "Creative Idea", practical innovative ideas that

were not yet implemented in any operational processes, and "Innovation Project", which are the innovative project that has already been implemented in the business operations. In addition to the main categories, subcategories were added to increase the judging criteria specificity, as follows:

1. "Creative Idea" is separated into two following subcategories:
  - 1.1 "Creativity in Process Improvement" – creative/innovative ideas that will improve the working, producing, managing processes and services.
  - 1.2 "New Business Creative Idea" – innovative ideas in creating a new type of business that is related to electricity production, new technology, and disruptive innovative ideas.
2. "Innovation Project" is separated into two subcategories, as follows:
  - 2.1 "Power Plant Operation and Maintenance Innovation" - projects related to power plant operations and maintenance (O & M)
  - 2.2 "Other Innovations" – other projects unrelated to power plant operations and maintenance, such as finance and human resource management.

Twenty-two teams participated in 2019, as shown below, according to each category;

1. "Creativity in Performance Improvement" – 7 teams
2. "New Business Creative Idea" – 1 team
3. "Power Plant Operation and Maintenance Innovation" – 12 teams
4. "Other Innovations" - 2 teams

Winners and honorable mentions in 2019:

Prize	"Power Plant Operation and Maintenance Innovation"	"Other Innovations"	"Creativity in Process Improvement"	"New Business Creative Idea"
1 <sup>st</sup> Prize	Intelligent Heat Rate Control by Monitoring Dew Point		Smart Project Assessment	
2 <sup>nd</sup> Prize	Analysis Program for Heat Rate Monitor and Main Equipment Performance Assessment of Khanom Power Plant Unit 4		Solar Hybrid System and Microgrid	
Honorable mentions	1. Temporary Solution to Coolant Pipe Leak 2. Solar Panel Deterioration Analysis	Application ESCO 4.0	1. Planning, Monitoring, and Project Status Reading Program for Maintenance Business Department 2. Easy Car Reservation System	Rapid Organic Fertilizer

### “Power Plant Operation and Maintenance Innovation”

The First Prize was awarded to Klongluang Utilities Company Limited (KLU)’s “Intelligent Heat Rate Control by Monitoring Dew Point”

Project Concept : KLU Power Plant was facing problems from frequent changes in gas turbine filters, due to particle deposits and water condensation, causing a blockage that resulted in a total of 8 filters changed per year, which cost 7.4 Million THB plus an approximate 2 Million THB in opportunity cost, and significant heat rate increases. Thus, the team found a way to decrease blockage on the filters, as well as increase the machines’ efficiency by increasing the coolant temperature to be near but not above its dew point (i.e. the temperature at which air becomes saturated with water vapor and condenses into water droplets/dew).

Results : When the cooling system is close to the dew point temperature, this not only decreases filter obstructions but also uses one less chiller. As a result, operational expenses decreased by approximately 8.73 Million THB per annum, of which 0.48 Million THB is from opportunity costs, 3.70 Million THB from new filters costs, and 4.55 Million THB from lower heat rates.

The Second Prize was awarded to Khanom Electricity Generating Co., Ltd. (KEGCO)’s “Main Equipment Performance Assessment and Heat Rate Monitor and Analysis Program of Khanom Power Plant Unit 4”

Project Concept : KEGCO conducted weekly heat rate analysis and summarized the reports on a monthly basis which took too long to notice any abnormalities in fuel consumption, that led to an increase in operational costs.

Results : Instead of conducting weekly analysis, this program generates daily heat rate analysis that enables quicker detection of any abnormalities, which could help reduce the cost from fuel losses, save time of report preparation from 2 hours to 15 minutes, and ensure consistent operational standards among O&M officers.

### “Other Innovations”

Honorable mention was given to EGCO Engineering and Service Co., Ltd. (ESCO)’s “Application ESCO 4.0”

Project Concept : Due to the variety of ESCO’s working locations and tasks, there is a need for human resources management improvement. ESCO developed a Digital Employee ID Card Application that can be linked to the SAP of the existing HR Module. The digital ID card is now used for recording work hours, as well as digital name cards, then the old timesheet system was nullified. Additionally, the application can be used as a communications channel to distribute company news and announcements. It will be fully launched in January 2020.

Results : Decreasing administrative tasks in collecting timesheets and calculating employee working hours, while personnel has access to company announcements from all of ESCO locations.

### “Creativity in Process Improvement”

The First Prize was awarded to EGCO's “Smart Project Assessment”

Project Concept : Use Microsoft Excel to analyze and summarize large amounts of data faster for EGCO's investment risk analysis.

Results : The analysis method is 15%, or 24 hours, faster than the old method and saves the cost of analysis program procurement by approximately 2 Million THB. This project contributes to EGCO's sustainable development goals through project risk assessments, which also has impacts on the company as a whole.

The Second Prize was awarded to a cooperative study by EGCO and ESCO, “Solar Hybrid System and Microgrid”

Project Concept : Operating business with the electricity from a single source, namely the solar farm, cannot cater to the power demand differences throughout the day. Thus, electricity cost remains one of our operational costs. However, the implementation of a solar hybrid system, the system of combining solar power from the solar farm with solar rooftop, floating solar, and battery storage will help to address the aforementioned problem, as well as prepare the company for future changes in the energy industry.

Results : The electricity purchased from the Provincial Electricity Authority (PEA) will be reduced by at least 80%, or approximately 1 Million THB per year. Knowledge gained from the study, which is being conducted in three consecutive years (2019 - 2021), will be beneficial to the company in the future, in case there is a change in electricity distribution, both regarding hybrid power plants and smart grid platform.

Furthermore, EGCO Group plans to develop the operations system, with the support of new technology to make it faster, more flexible, and efficient. For example:



Data Management System to store all financial budgeting information on the same platform, optimizing storing, searching, and preparing information for future budgeting throughout each project.



HR Data Warehouse, which is in the development phase. Its goal is to gather HR data in one place for faster and more efficient analysis and reporting.



A study on implementing Finance and Accounting Automation for routine works, which saves finance officers and accountants time, in order to supervise and review machine-generated reports instead. This gives employees more time for more important tasks and skills development, such as improving analysis skills and versatility.

In 2019, EGCO Group spent a budget of approximately

## 75 Million THB

to promote digitalization and build an innovative corporate culture.

### Generation Capability

G4-EU1, G4-EU30, GRI 302-1, GRI 302-4

EGCO Group always drives our ability to generate electricity ensuring reliable power supply for Thailand, as well as facilitating transition for clean energy and other renewable fuel sources in our operations. By improving our energy management through reducing our greenhouse gas (GHG) emission and internal power consumption throughout our managerial and operational levels, EGCO Group helps maintaining the balance in the economic, social, and environmental development. This is part of the many factors leading EGCO Group to the sustainable energy organization.

### Excellence Generation

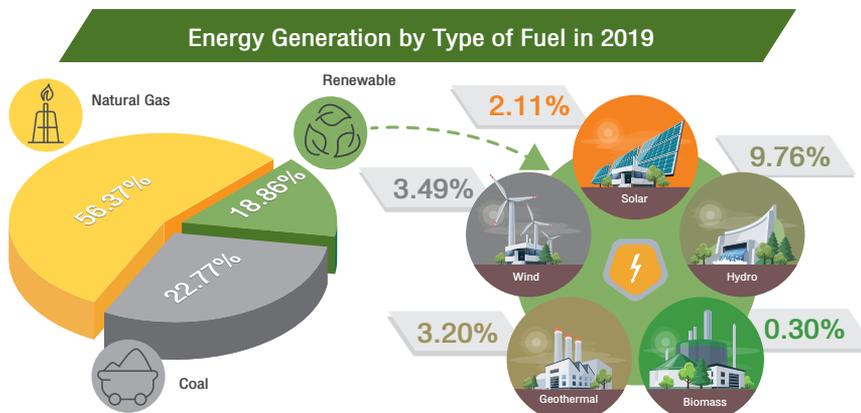
#### Management Approach

EGCO Group focuses on improving the power production capability excellent through innovations to enhance production efficiency with environmental friendly technologies. For example, we embrace new technologies to reduce fuel consumption in order to decrease social and environmental impacts in power plants communities. In addition, we regularly inspect and maintain a machine's efficiency. Furthermore, we analyze the production performance and energy management in power plants' performance evaluation as well as set KPIs for both executive and employee.

San Buenaventura power plant (SBPL) has commenced its commercial operation on September 26<sup>th</sup>, 2019. It is the first coal power plant in the Philippines that implements the Supercritical technology which has better combustion efficiency than Quezon coal power plant's Sub-critical technology. Additionally, there is utilization of higher heating value coals reduces emissions and ash as shown in the table below:

	SBPL	Quezon
Installed Capacity (MW)	500	502.50
Heat Rate (BTU/kWh)	8,583	9,883
Air Pollution		
- NOx (Ton/Month)	241	487
- SOx (Ton/Month)	27	550

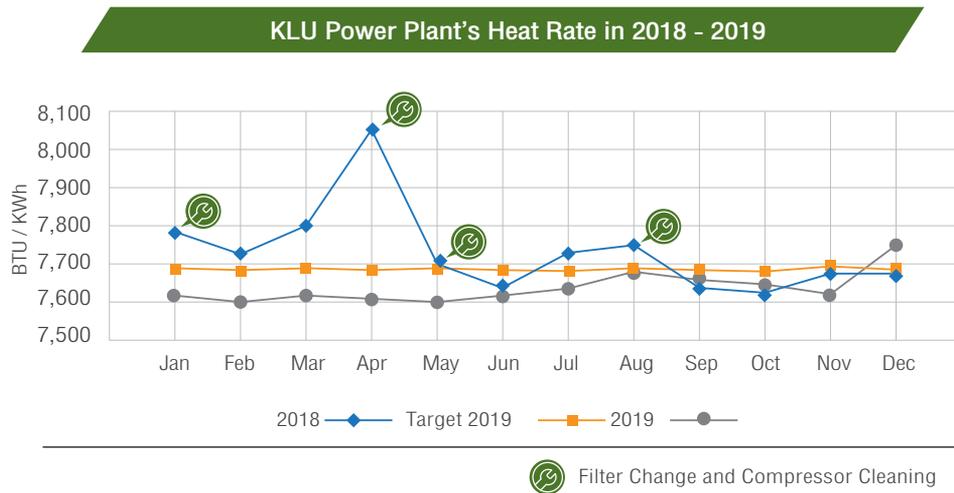
Furthermore, EGCO Group looks for investment opportunities in renewable energy domestically and overseas. This is a response to climate change and a support to Thailand's effort in a mitigating GHG emissions. We commit to facilitate a transition towards adoption of cleaner energy or more renewable sources in power generation. EGCO aspires to increase our renewable energy portfolio to 30% by 2026.



Performance

Smart Heat Rate Monitoring Project

KLU power plant has been facing a blockage problem on gas turbine’s filters, resulting in an increasing heat rate and frequent filter change. According to a study, low inlet temperature of a Gas turbine (16°C) is causing particle deposits and water condensation. The team has determined appropriate temperature with no water condensation at 20°C. This not only decreased filter obstructions and improved heat rate but also used one less chiller. As a result, it saves operation cost approximately 9 Million THB.



Main Equipment Performance Assessment and Heat Rate Monitor and Analysis Program

Engineers at KEGCO have developed a Main Equipment Performance Assessment and Heat Rate Monitor and Analysis Program which enables daily heat rate analysis instead of weekly. This program detects any abnormality in energy consumption faster by 8 times which could help reduce cost from energy losses by approximately 8 Million THB per year.



Heat Rate/Generated Unit (BTU/kWh)	2016	2017	2018	2019	Target 2019
<b>Coal</b>					
Quezon	9,862	9,887	9,839	9,883	10,067
<b>Natural Gases</b>					
KEGCO	7,500	6,672	6,666	6,632	6,652
EGCO Cogen	8,792	8,680	8,784	8,697	8,811
BPU	-	-	7,744	7,736	7,844
KLU	-	-	7,717	7,637	7,753

Note: KLU and BPU power have commenced their commercial operation in July and October, 2017 respectively

## Reliability & Availability

### Management Approach

As a power producer, EGCO Group understands the great importance of the reliability and stability in power supply. We therefore set the target for availability beyond the amount indicated in our Power Purchase Agreements (PPAs). The availability factor is one of the power plants' Key Performance Indicators (KPI) used in performance evaluation for those who work at power plants. This ensures sufficient electricity production into the system. In 2019, EGCO Group has set the average target for plant availability at 86.70% for coal power plants and 96.79% for natural gas power plants.

Average Plant Availability Factor (%)	2016	2017	2018	2019	Target in 2019
Coal	89.50	82.54	80.00	89.96	86.70
Natural gas	95.90	95.94	92.32	97.05	96.79

## Performance

### Ventilation System for the Uninterruptible Power Supply (UPS) Control Room

UPS system supplies electricity to various of other equipments as well as continuously adjusting the voltage to a stable and safe level for all devices. However, the UPS system can trip when the room temperature rises above 80°C. Therefore, BPU power plant has installed a ventilation system in the control room to avoid heat accumulation, resulting in an increase in reliability, stability, and the lifetime of the UPS system

Before Installation



After Installation



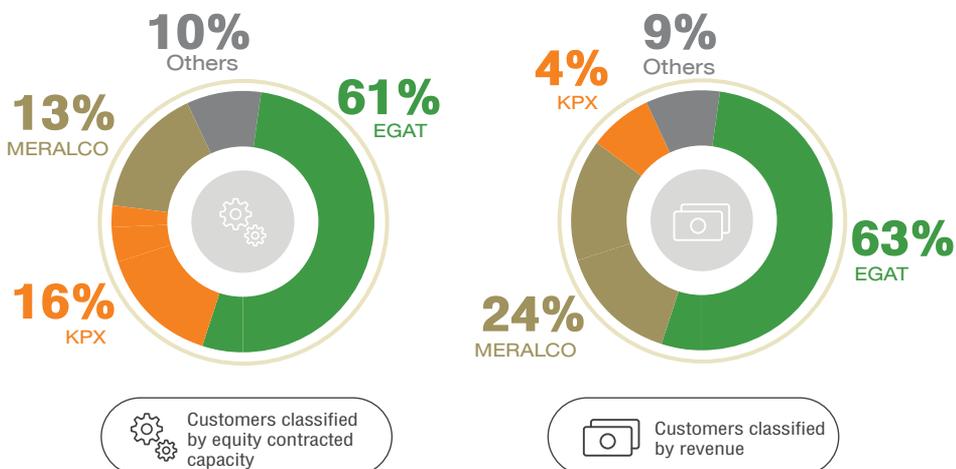
### Customer Relationship Management

#### Management Approach

Customer is one of the most important stakeholders in business operations. Their support is one of the most crucial factors determining corporate growth. Failure to effectively maintaining customers' relationship has lasting impact on customer satisfaction. EGCO Group continues to deliver reliable power supply specified in our PPAs through expanding our production capability and availability, ensuring sufficient supply that will meet our customers' growing demand. Furthermore, EGCO Group's customer service policy covers a standard of conducts and customers handling. We take pride in advising on efficient energy use, our fair treatment of all customers, our anti-corruption policy, punctual delivery of quality goods and services, and client confidentiality. At the same time, EGCO Group organizes regular customer relation activities and meetings to exchange information and receive feedbacks on the services provided.

#### EGCO Group's Customers

As of 2019, EGCO Group commercially operates 28 power plants in Thailand and overseas with contracted total equity capacity of 5,475 MW. The highest generated capacity is distributed to EGAT with 61%, following by 16% to KPX Power Exchange (KPX), and 13% to Manila Electric Company (MERALCO). The remaining is distributed to PLN, Energy Australia Pty Ltd., industrial customers, and Provincial Electricity Authority (PEA).



Customers' classification based on revenue shows that 63% of EGCO Group's revenue came from EGAT, following by MERALCO 24%, and 4% from KPX, respectively. Obviously, EGAT is a key customer regardless of the classification criteria.

EGCO therefore strives to generate and distribute generated electricity in accordance to the electrical system standards and the PPA with EGAT, contributing adequate and reliable power supply for Thailand.

### Satisfaction Survey

EGCO Group conducts customer satisfaction survey annually. In 2019, EGCO Group achieved 92.42%, surpassing our target of 90%.

### Customer Satisfactory Survey in 2016 - 2019

	2016	2017	2018	2019
Target	90.00%	90.00%	90.00%	90.00%
KEGCO	87.60%	91.20%	92.60%	95.10%
RG	90.50%	90.50%	96.00%	94.30%
EGCO Cogen	-	93.10%	95.45%	95.16%
KLU	-	-	91.04%	89.30%
BPU	-	-	88.57%	92.75%
ESCO	94.26%	94.02%	96.15%	96.80%
Quezon	-	-	-	83.50%
Average	90.79%	92.21%	93.30%	92.42%

## Energy Management

### Management Approach

Aside from enhancing operational efficiency and power plant's availability, EGCO Group aims to improve the efficiency of the company's overall energy management as well. Energy conservation policy has been developed as a framework for energy management which is part of the solution to decrease our GHG emissions. Moreover, EGCO Group has appointed an energy committee to review, develop, and monitor the company's performance on energy management every month. In accordance with this approach, Khanom power plant has been certified for ISO 50001 on energy management, emphasizing how EGCO gives importance to continuously improve on energy management efficiency.

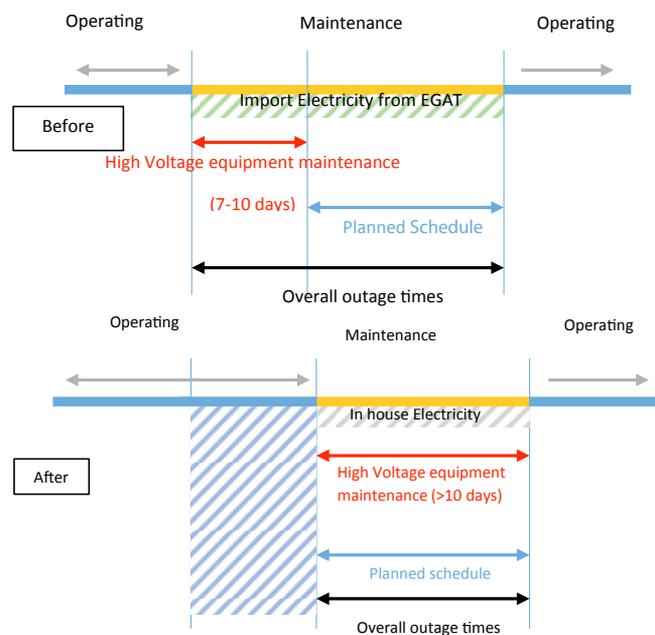
### Performance

In 2019, EGCO Group's power plants consumed a total of 50,090,587 GJ energy to generate 14,121,991 MWh, reducing the energy consumption per generated unit to 3.55 GJ/MWh, reduced 0.02 GJ/MWh from year 2018.

		2016	2017	2018	2019
Gross Energy Generation	MWh	10,708,653	11,004,699	13,223,341	14,121,991
Non-renewable fuel consumption	GJ	80,282,618	80,348,846	93,704,051	99,664,666
Coal	GJ	30,286,907	29,769,911	25,215,135	28,548,751
Gas	GJ	49,802,582	50,362,998	68,266,718	70,936,554
Others: Diesel, gasoline	GJ	193,128	215,937	222,198	179,361
Renewable fuel consumption: Biomass	GJ	1,090,244	1,236,642	1,118,660	1,226,128
Purchased Electricity, Heating, Cooling, and Steam	GJ	27,672	41,873	47,407	38,962
Sold Electricity, Heating, Cooling, and Steam	GJ	38,551,151	39,616,917	47,604,028	50,839,169
Electricity	GJ	38,445,508	39,465,028	45,440,073	48,997,505
Steam	GJ	105,642	151,889	2,163,955	1,841,663
Total energy consumption	GJ	42,849,384	42,010,445	47,266,090	50,090,587
Energy consumption per generated unit	GJ/MWh	4.00	3.82	3.57	3.55

### Power Supply for Maintenance Unit

KEGCO power plant consists of two operational units. During maintenance, one unit generates and supplies electricity for the maintenance work on another. This type of operation helps reduce the amount of energy purchase from external sources, saving approximately 17,000 THB/day or 35%. Moreover, this helps in outage time reduction, resulting in an income rise by approximately 7 Million THB per day from longer operational hours.



## Environmental Management

GRI 303-3, 303-4, 303-5 GRI 305-7, GRI 306-2, GRI 307-1

EGCO Group is committed to operate business with consideration to the environment through a thorough management of the company's environmental aspects to, such as air pollution management, water management, and waste management. This reduces negative impacts in our value chain. EGCO Group recognizes of the differences in the environment, society, as well as environmental laws and regulations between countries. We have therefore set different developmental goals for each country to ensure harmony with local communities, and strict compliance to environmental laws and regulations of respective countries.

### Management Approach

EGCO Group conducts an Environmental Impact Assessment (EIA) of all potential sites to assess and manage possible environmental impacts effectively when the new project begins. Every conventional power plants are obligated to report the EIA monitoring twice a year (Read more on EIA reports by scanning the QR Code).



Furthermore, EGCO Group has established an environmental policy (More information on the policy available through QR Code) as a framework for our subsidiaries, associates, suppliers, and stakeholders. Simultaneously, EGCO encourages subsidiaries to comply with international environmental management standards, such as ISO 14001, EMSCOP (American Environmental Standards). We also study and learn from best practices. KEGCO, Quezon, and TWF power plants are certified with international environmental management standards. EGCO Group plans to apply CWF power plant for ISO 14001 certification in 2020, then following by BPU and KLU power plants in 2021. EGCO Group's environmental working group will also conduct annual assessment of other power plants.



We conduct an annual stakeholder satisfaction survey to ensure that EGCO Group is managing environmental effectively without affecting the communities and other stakeholders. In 2019, We received neither complaints nor fines for environmental laws and regulation violations.

	2016	2017	2018	2019
Number of violations of legal obligations	0	0	0	0
Amount of penalty paid related to above violations (THB)	0	0	0	0
Environmental liability accrued at year end (THB)	0	0	0	0

### Air Emission Quality

#### Management Approach

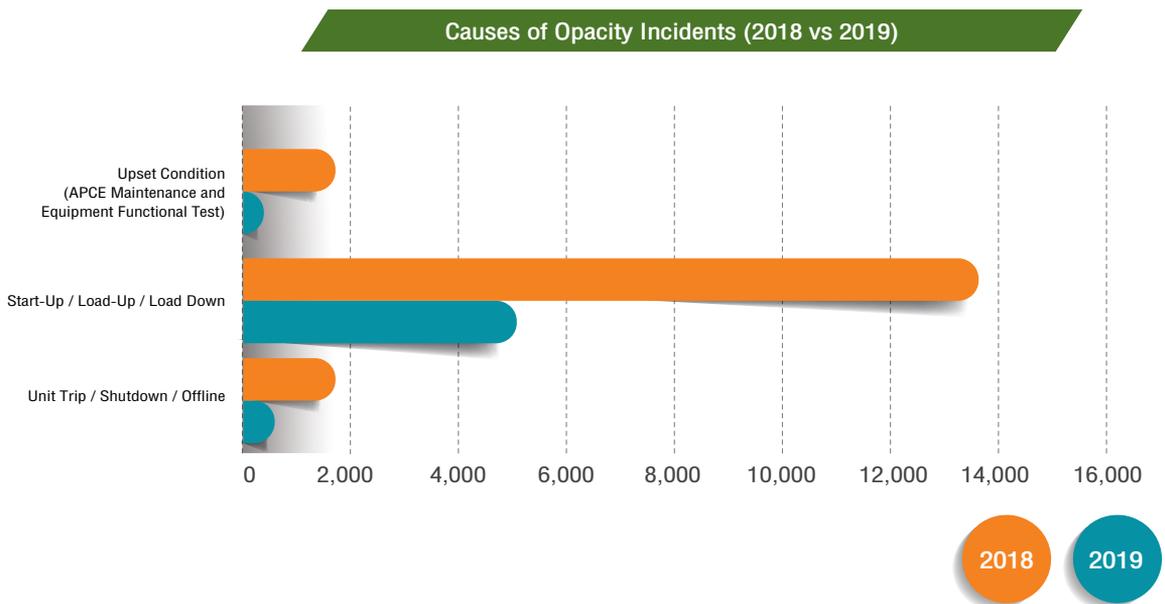
EGCO Group manages air quality, both in power plants and the surrounding areas, which may be potentially affected by our operations. We do this via quality control of power plants' emission. We constantly look for ways to improve our air quality control system and operational efficiency, as well as developing an effective assessment plan. EGCO Group selects and implements new technologies alongside regular maintenance of current machineries and related equipment. This helps mitigate negative impacts from air pollution on both the environment and the community.

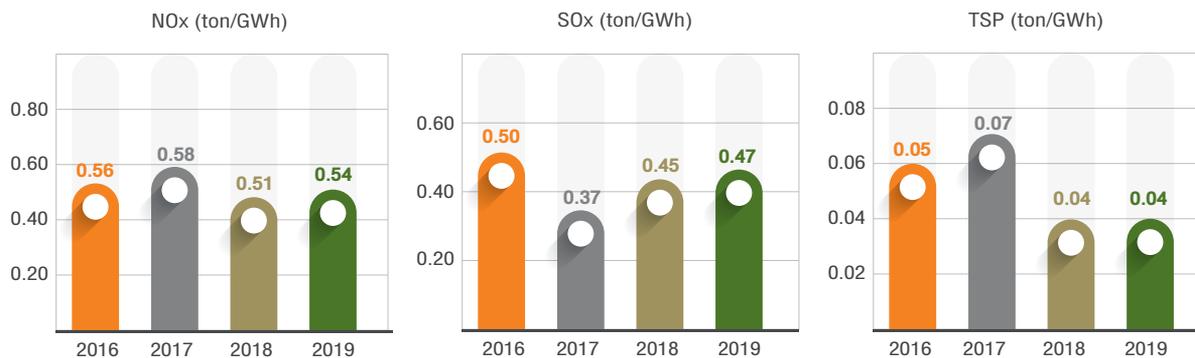
EGCO Group has established standard criteria for power plants' emission and defined it as one of our power plants' KPIs. We aim to keep the air quality higher than the EIA and environmental law's standard. Moreover, the air emission quality is inspected every six months by a certified external auditor. These are the measures we take to ensure our operations result in minimal negative impact, as much as possible.

#### Performance

##### Rigid Discharge Electrode: RDE

Quezon coal power plant has always prioritized controlling amount of dust emitted to the standard level. Nevertheless, inconsistent machine operation decreases the efficiency of the Electrostatic Precipitators (ESP). Quezon power plant therefore replaced the old Discharge Electrode with 1,920 of Rigid Discharge Electrode sheets (RDE), optimizing the dust removing process despite inconsistent machine operations. Quezon plans to install approximately 2,700 more RDE sheets in 2020.





## Water Management

### Management Approach

EGCO Group's strategy is based on the 3Rs, namely Reduce, Reuse, and Recycle to optimize water management efficiency and reduce consumption within the company. For example, we use wastewater for plant watering, road cleaning, dust controlling, and decreasing exhaust pipe temperature through sprayed wastewater. Wastewater from our operations are closely monitored to ensure it is up to local standards before it is discharged.

In search for measures to reduce impacts and mitigate risks from water scarcity in the future, EGCO Group uses AQUEDUCT Water Risk Atlas for annually short-term and long-term water risks assessments. The assessment helps the company for risk management planning, such as building water reservoirs to maintain sufficient water supply for our power plants during drought season. It ensures there will be no disruptions to the operations and avoiding conflicts of water resources in the vicinity between industrial sector and agricultural sector. As of 2019, none of EGCO Group's power plants are situated in water-stressed areas.

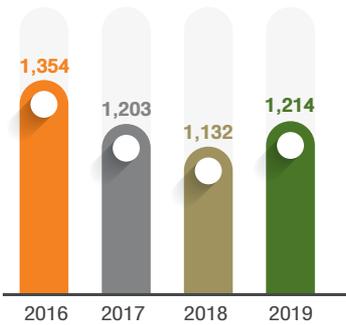
EGCO Group not only manage internal water management, but the external management as well. We work with local communities to understand and manage water related issues, such as supporting sustainable conservation and rehabilitation of the upstream forests. We also actively participate in meetings involving representatives from power plants, public sector, private sectors, and the communities twice a year. At such meetings, we report the power plants' environmental performance and acknowledge stakeholders' suggestions.

## Performance

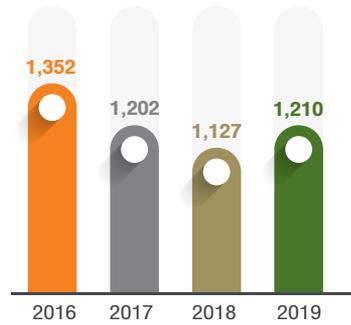
### Reducing Turbidity in the Cooling Tower to Conserve Water

BPU power plant has been encountering seasonal turbidity problem in the Cooling Tower Basin which is a result of the fine dust accumulated around the cooling tower. This leads to an excessive treatment and discharge of the unusable turbid water, wasting both water and chemicals in the process. BPU therefore reuse the appropriate Reverse Osmosis (RO) Reject in cooling towers. As a result, we reduced raw water withdrawal from Maeklong river by 10,999 m<sup>3</sup>/month and water discharge by 2,700 m<sup>3</sup>/month. This way, we conserve the resources of Maeklong river and preserve natural water source of the community.

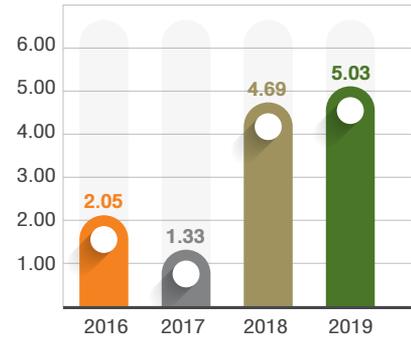
Water Withdrawal (million m<sup>3</sup>)



Water Discharge (million m<sup>3</sup>)



Water Consumption (million m<sup>3</sup>)



Increased water consumption from 2018 onwards is due to the BPU and KLU power plants commenced their operations in 2017. They sell steam to industrial customers approximately 0.7 million tons/year.

### Solid Waste Management

#### Management Approach

EGCO Group manages waste with the 3Rs principles, namely Reduce, Reuse, and Recycle, to reduce the amount of hazardous and non-hazardous waste generated by our operations. Our power plants are operated with a complete waste management system from sorting to disposal as we aim to reduce the impacts on the environment and the society.

EGCO Group aims to reduce waste to landfill and continually create waste management projects such as a waste decomposition system to make fertilizer in order to reduce the amount of chemical fertilizers usage. In 2019, KEGCO power plant was produced 18,800 kg of fertilizer. Quezon power plant in collaboration with the local community recycled 1,347 ton of waste.

The Quezon power plant received awards and certificates from the Pollution Control Association for an excellent environmental management performance, demonstrating our commitment in implementing best environmental technology and practices in our power plants for waste management.



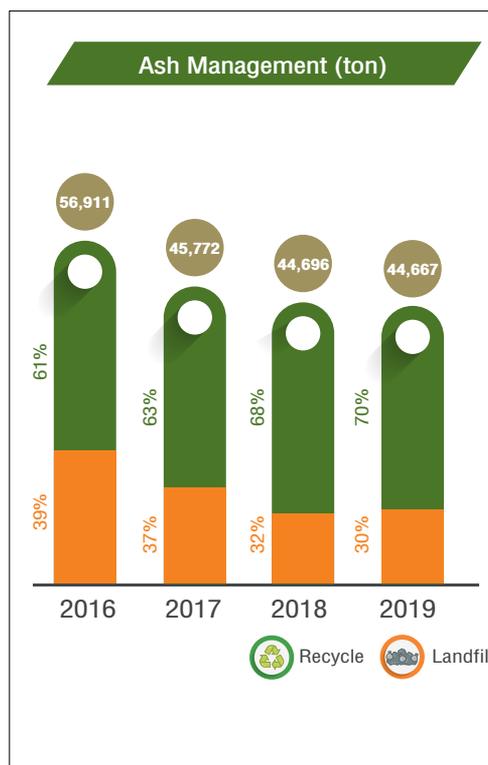
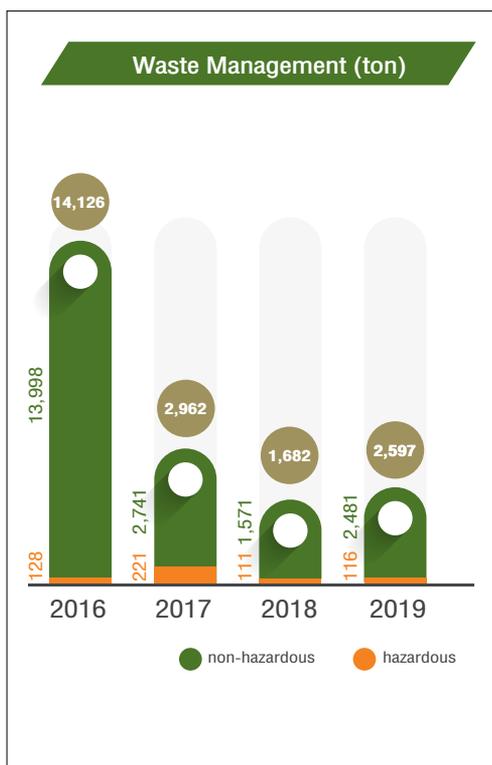
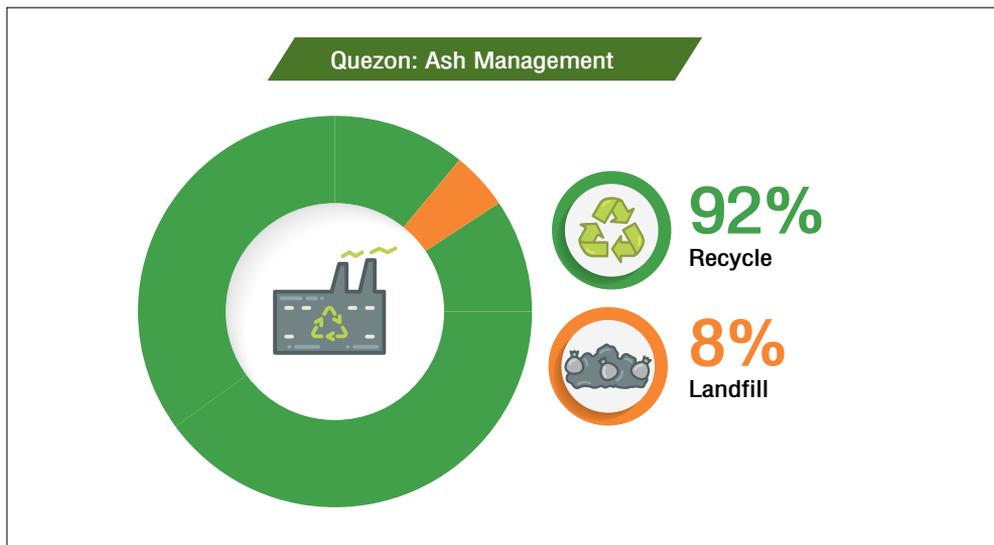
Performance

Ash Management

Quezon power plant collaborates with Pozzolanac Philippines, Inc. (PPI) to transport fly ash generated and recycle it into raw material for cement or base fill for roads.

On the other hand, Quezon initiated a collaborative projects with the Department of Public Works & Highways (DPWH) in 2018 to use bottom ash in road concreting. The initial project is now completed, with possibility in extending bottom ash's usage in other future projects.

In 2019, Quezon power plant generated 33,834 tons of ash with 92% of it recycled instead of being landfilled which equals to approximately 97,986 tCO<sub>2</sub> of GHG emission reduced.



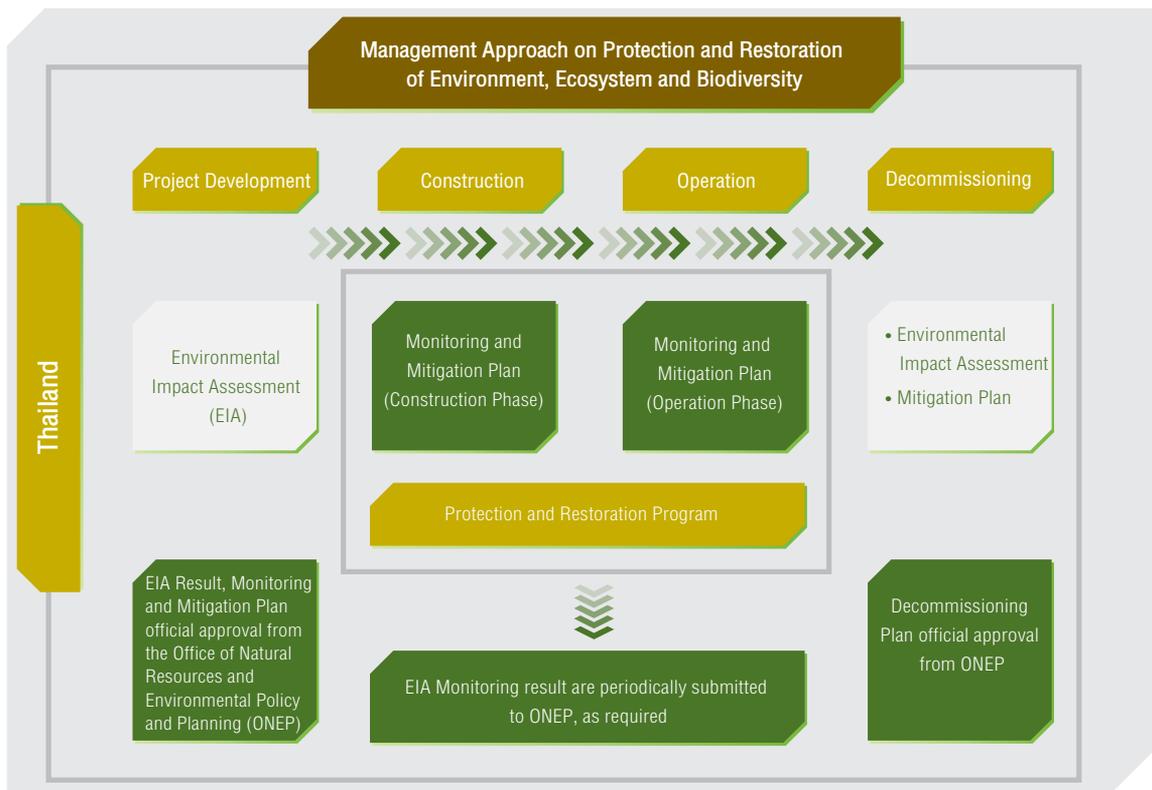
### Ecological Impact Management and Biodiversity Protection

Economic development and human activities cause direct impacts on ecology and biodiversity, which are seen as the origin of natural resources. Environmental imbalance has started to greater affect human lives, both at present and in the future. Being aware of these impacts, EGCO Group conducts its business operations with deliberation and care to protect ecology and manage natural resources sustainably. This covers not only its power plant areas, but also includes collaboration with related organizations, to reduce ecological impact to restore, protect, and support biodiversity in the most complete manner.

#### Management Approach

EGCO Group has the intention and commitment to conduct business with no net loss of biodiversity within a manageable scope. Therefore, the group gives importance to the protection of ecology and biodiversity in all areas of power plant operations within its network. Neither EGCO Group power plant is situated within protected areas, as defined and determined by the International Union for Conservation of Nature (IUCN), nor in UNESCO World Heritage areas. The company has applied the mitigation hierarchy to its operations, from avoiding, minimizing, restoring, and offsetting in accordance with the intention and commitment announced within its environmental management policy.

Furthermore, EGCO Group conducts an environmental survey and impact assessment at all power plants, from project development, construction, and operations. In addition, the company develops a long-term plan to prevent, monitor, and mitigate the impacts according to each phase. The plan, whose specifications differ according to each project's laws and areas, covers the entire duration of the operational contract, in line with the concession period, and is approved by all related local, national, and international units. Moreover, the plan is clearly communicated to related personnel of all levels, so that they are able to ensure strict compliance.



### 2019 Target



- Zero environmental grievances
- 100 percent of EGCO Group’s power plants are strictly operate according to the environmental protection/mitigation plan and measures

### 2020 – 2024 Targets



- Zero environmental grievances
- 100 percent of EGCO Group’s power plants conduct a survey on environmental and social impacts with an annual basis.
- 100 percent of EGCO Group’s power plants strictly operate according to the environmental protection/mitigation plan and measures.

### Performance

	2016	2017	2018	2019
Environmental grievances	0	0	0	0
Number of EGCO group’s power plants complied to the environmental protection/mitigation plan and measures	100	100	100	100

In order to ensure that the environment, ecology, and biodiversity in areas surrounding all of its power plants are being protected and cared for, EGCO Group established an expert committee to assess the progress of each project on a regular basis, by incorporating into the environmental protection/mitigation plan and in annual assessment. At the same time, EGCO Group started a project to protect and restore wildlife and ecology on land within a 3 - 5 kilometer radius of the power plant, in order to monitor the impacts that may affect the environment and biodiversity.

### Approach to operations in 2020

- Develop the **EGCO Group Environmental & Social Management System Manual (ESMS)**. The EGCO Group ESMS is scheduled to be released and effective by 2021.
- **Initiate educational research projects to advance biodiversity protection and restoration in Khanom district** (area-based) and promote ecological learning and ecotourism. Collaborate with governmental agencies for coastal resources, fisheries, research, and mangrove forest conservation, as well as youth and communities within the area. Study and prepare preliminary data to promote collaboration in protecting Khanom district’s richness and biodiversity.
- **Activity to study lessons learned in developing a hydropower plan that is friendly to water ecology**, by using engineering innovations, at Xayaburi Power Plant.

2019 Performance

**Khanom Power Plant**  
(Nakhon Si Thammarat Province, Thailand)

- *Protecting the animal population in the power plant's operational areas*

Khanom Power Plant set rules and installed signage to prohibit employees, families, and hunters from hunting. Furthermore, employees receive support to participate in local conservation and biodiversity through the wildlife sighting project, by recording photos and information to the environmental department and/or general service department to continue a conservation. In 2019, the area surrounding the installed 'no hunting' signage was inspected regularly, where no incidents of harm or hunting were found in the power plant's and surrounding areas.



Signage prohibiting hunting in Khanom Power Plant and surrounding areas

- *Protection of green areas within the power plant,* where more than 10 percent of the Khanom Power Plant's area was determined as green areas. These areas are open to the general public for relaxation by improving the coastal landscape of Khanom Bay. Safety and cleaning measures are in place, through to public utilities. In 2019, Khanom Power Plant conserved the various green areas in order to uphold their richness and beauty, as well as implemented measures to prohibit the use of chemical fertilizers, in order to protect the overall ecology.



- Activity to promote the reduction of chemical fertilizer use, for agricultural sustainability in Khanom district.

Khanom Power Plant, together with agricultural organizations and Ban Pret, Village No. 7, promote the capabilities of the latter's agricultural center in Khanom sub - district, Khanom district. The objective is to promote organic agricultural livelihood, according to the sufficiency economy approach, since 2016. The target is for farmers who participated in the project to have an average additional income of 10,000 Thai Baht per month. In 2019, the project progressed through the following key activities:

- Plantation development activities
- Activities for volunteers to prepare and allocate bio-fertilizers for sustainable agriculture
- Activities to promote the development and sale of agricultural products



- Project to promote youth awareness through the 54<sup>th</sup> "EGCO Thai Rak Pa Youth Camp" at the Krung Ching Waterfall, Khao Luang National Park, Noppitam district, Nakhon Si Thammarat province.

Khanom Power Plant, in collaboration with Khao Luang National Park, Doi Inthanon National Park, Hat Khanom - Mu Koh Thale Tai National Park, and EGCO Group's Thai Rak Pa Foundation, developed a project to build youth awareness. Over there, youth can learn about the importance of natural resources and the environment, such as forests, wildlife, and streams, which are the origins of biodiversity in ecology. There were 120 participants, which consisted of teachers, students, and volunteers.



• Project to raise awareness and participation in reducing 'ocean waste'

Khanom Power Plant supported the activity enhancing employee volunteers to participate in protecting the environment with governmental agencies and Khanom district's community throughout 2019, as follows:



• "Do Good with Heart" activity to minimize receiving, distributing, and using plastic bags. This volunteering activity reduced plastic use and included trash pick-up, cleaning, and participating in organizing ditch utilization, to protect the overall environment and promote eco-tourism.

• Khanom power plant in collaboration with local government and private sectors organized annual trees planting activity.



• "Protect Bang Phaeng Bridge with Our Hands" "Protect Bang Phaeng Bridge with Our Hands", community clean up activity, to protect the canal. Management and employees volunteered to clean up Bang Phaeng Bridge as part of the "Protect Bang Phaeng Bridge with Our Hands" project. The project was a collaboration among Thong Nian Municipality, governmental agencies, the private sector, and the local community.

### Project to Protect and Restore Aquatic and Coastal Ecology

- *Project to assess the biodiversity and richness of plankton and benthic organisms*

Khanom Power Plant surveyed and monitored the variety of species and richness of plankton and benthic organisms in the Khanom Bay and Canal areas. The number of plankton and organisms are key indicators of good living conditions and richness of life. The assessment found that there are diverse lifeforms that are beneficial to the ecology, as plankton is a key foundation of the entire oceanic food chain. Khanom Power Plant has in place a plan and measures to survey and monitor the number of plankton and benthic organisms twice a year. The survey is divided into seven locations, where water is released from the power plant's cooling system. In 2019, the biannual survey of all seven locations did not find any material changes, where overall changes related to climatic conditions, water circulation direction, and other factors that change according to seasons. In addition, many of small fish, which are benefit to local community were also found, as follows:

Found during January - June



Soldier Fish (Class: Ambassidae)



Mullet (Class: Mugilidae)



Drum Fish (Class: Scieanidae)



Yellow Strip Travally/Caranx (Class: Carangidae)

Found during January - June



Scrawled Filefish (Class: Monacanthidae)



Soldier Fish (Class: Ambassidae)

- Project to protect and restore biodiversity to enrich marine ecosystem

- *Project to breed and release blue crabs, in order to increase the population of aquatic animals and support sustainable fishermen livelihoods*

Since the population of aquatic animals is an indicator of the richness of the environment, Khanom Power Plant therefore collaborated with the Nakhon Si Thammarat Aquaculture Genetics Research and Development Center to breed and release blue crabs and other aquatic animals that provide economic benefits to the community. A total of 6,000,000 blue crabs and shrimps were bred and released, to help increase the richness of the coastal ecology and support local fishermen livelihoods.



- *"Increasing the population of freshwater animals in 2019" Project at Khlong Ban Klang Reservoir, Village No. 4, Khuan Thong sub-district, Khanom district, Nakhon Si Thammarat province.*

Khanom Power Plant collaborated with local organizations and the community to protect and develop the reservoir, which is a key freshwater source for Khanom district since the operations' early phases. Rules were collectively established to bring water from public sources to store in the reservoir during appropriate seasons, and to ensure that the water quantity is within the set limit. In addition, the parties established the community group, whose responsibility is to protect the reservoir and determine that the surrounding areas become protected areas. This is to ensure that this important reservoir will be sustained, serving as a knowledge source for the natural aquatic ecology, a relaxation area, and a key water source for the Khanom district. In 2019, Khanom Power Plant, led by a group of management and employees, with Khanom district's local office and community, released 300,000 aquatic animals, which increased the aquatic population in the canals. This is to ensure that the ground and water bodies of these areas sustain their richness. Over 300 participants joined this activity. In the next phase, there a plans to study the possibility of conducting research into water biodiversity, as well as developing the area to become a sustainable learning center and eco-tourism destination.



- **Participating in restoring mangrove forests, to promote eco-tourism**

Khanom Power Plant collaborated with the conservation and ecotourism club of Baan Tha Bo Go district, Mangrove Forest Development Station 44 (Nakhon Si Thammarat) Department of Marine and Coastal Resource, Mangrove Conservation Office and Local Community in Nakhon Si Thammarat province monitor and organize activities to conserve mangrove forest ecosystems continuously. The objective is to build a natural classroom and promote as a new eco-tourism spot in Khanom district.

- *Volunteering activity to improve Kho Khao Beach at Kho Khao Beach, Village No. 2, Khanom sub-district, Khanom district, Nakhon Si Thammarat province. Khanom Power Plant, together with governmental agencies, the private sector, and a large number of the public and students, volunteered to improve Kho Khao Beach by collecting trash and cleaning up the beach, to conserve the richness of the ecology and reduce the issue of ocean trash.*



### Quezon and San Buenaventura Power Plants, the Philippines

#### Relocating hardwood trees and trees in mangrove forest areas

The construction of the San Buenaventura Power Plant affected approximately 761 hardwood and mangrove trees within the area. These trees were relocated from January through November 2016 by earth balling, which is the digging out of the soil around the trees in a circular shape, and replanting them in another area. This process digs up the soil by not disturbing the roots, and is able to preserve both the tap and fibrous roots. Based on the latest information from October 2019, 657 of the relocated trees, or 86.33 percent, are still able to grow well, and an additional 100 trees were planted to replace those that were not able to survive.



The construction of the Quezon Power Plant affected mangrove trees in nearby areas. 931 trees were relocated to a new area, from April to May 2016. Based on the latest information from September 2019, 453 of the relocated trees, or 48.66 percent, are still able to grow well. During relocation, new plant species totaling 291 trees in the area were also discovered. 113 trees, or 38.83 percent, were able to grow well. Nevertheless, for trees that were unable to revive after relocation, replanting will occur at a rate of 1:100 trees.



#### Establishing a nursery for mangrove trees and seedlings for the coastal forest

to plant 20 strains of seedlings for the mangrove forest and other species for the coastal beach, of the 26 strains that were discovered in Muang sub - district, Mauban district, Quezon province. 93,100 trees were prepared for re-planting, and of the planted strains, the *Aegiceras Floridum* (tindu-tindukan) was registered by the IUCN as being a threatened species.



**Monitoring the animal population, support wildlife and protect wildlife biodiversity in IUCN and CITES**

By monitoring and surveying the animal population in the ecology since 2007, a total of 139 wildlife were discovered, recorded, aided, and released back into nature. From January to October 2019, Quezon Power Plant recorded helping and discovering seventeen wildlife and six sea turtles. The seventeen wildlife animals included birds, snakes, and the Philippines' monitor lizard.



Wedge-tailed Shearwater rescued on Jan 3, 2019  
IUCN Status: Least Concern



Philippine Eagle Owl rescued on Mar 10, 2019  
IUCN Status: Vulnerable



Yellow-vented bulbul rescued on Aug 5, 2019  
IUCN Status: Least Concern



Marbled water monitor lizard spotted on Aug 29, 2019  
IUCN Status: Least Concern



Sea snake spotted on Jul 24, 2019  
IUCN Status: Can't be determined

**Sea Turtle Conservation Project**

Sea turtles are endangered, as they are often caged and fall victim to human consumption, which can affect the overall ocean ecology. Quezon Power Plant therefore participated in the sea turtle conservation project with local governmental agencies, to help alleviate the risk of sea turtle extinction, by organizing activities to spread knowledge and train the local community, especially fishermen. The fishermen are in charge of taking photos, measuring the turtle, and recording the strain and other information, before releasing it back into the ocean. The recorded information is sent to related local organizations. The project began in 2007, and since then, fifty-seven sea turtles have been recorded. In 2019, six sea turtles were discovered and helped, where three of those were found near the seawater pumps routing into the Quezon plant. One was found by a local community member, and the last two were found swimming near a container ship.

Whenever there is a sea turtle sighting near the Quezon plant's seawater pumps, the following management procedure is followed:

1. Temporarily stop the spray of chlorine into the incoming seawater.
2. Plan a detailed rescue, by considering the safety of the rescue officer. Each sea turtle rescue differs according to the situation, location, and turtle size.
3. After the turtle is rescued, it is taken for evaluation and is tagged (if it has characteristics that should be monitored. The tags that are used by the power plant are according to standard, made of stainless steel that is accredited by the local environmental organization for trained personnel) and returned to Lamon Bay immediately.
4. Submit a report to the Department of Environment and Natural Resources, Biodiversity Management Bureau (DENRE-BMB).



Green Sea Turtle  
rescued on Mar 3, 2019  
Tag No.: PH1103L & PH1104L  
IUCN Status: Endangered



Hawksbill Sea Turtle  
rescued on Mar 22, 2019  
Tag No.: Not Tagged CCL < 40cm  
IUCN Status: Endangered



Green Sea Turtle  
rescued on Jun 4, 2019  
Tag No.: PH1105L & PH1106L  
IUCN Status: Endangered



Hawksbill Sea Turtle  
rescued on Jun 23, 2019  
Tag No.: PH1107L & PH1108L  
IUCN Status: Endangered



Green Sea Turtle  
rescued on Sep 27, 2019  
Tag No.: PH1109L & PH1110L  
IUCN Status: Endangered



Two Sea Turtles spotted swimming  
near ship unloading area  
on Aug 31, 2019

**Annual Beach Cleanup and Planting Activity**

In April, volunteers from the Quezon Power Plant participated in planting trees and cleaning up the beaches at the Cagsiay and Sitio Barrio Ecological Centers. The activities were part of the Earth Day event. The group also introduced Pawie, a mascot that represents wildlife protection, especially the endangered sea turtles.



In September, Quezon Power Plant volunteers participated in an activity to clean up and plant trees at Sitio Barrio, where 757 trees were planted at Cagsiay 1 Ecological Center.



**Boco Rock Wind Farm (Australia)**

Situated in the Tablelands, to the south of New South Wales (NSW) in Australia, the power plant contains sixty-seven wind turbines. Because the area is abundant with birds and bats, the company established a long-term plan, covering a period of five years, to monitor changes. The objective of the plan is to assess the impact of the power plant’s operations on birds and bats in the area. The overall conclusion is that the strains within the forest area are highly rich, and the same conditions were retained throughout the monitoring period. When compared to other wind power plants in Australia, the number of bird and bat accidents in BRWF is within the limit, and the causes of negative impacts on the bird population were not found. In addition, the area’s biodiversity, which was affected by plant operations, was restored through various projects, as follows:

• **Project to monitor bird and bat population according to the 5-year restoration plan**

The Boco Rock wind power plant has conducted a monitoring and survey of the impact on bird and bat population every quarter, and recorded monthly as per the Bird and Bat Monitoring Plan for 4 years. In 2019, the survey of the rates of bird and bat carcasses compared to the survey since the 1<sup>st</sup> year found no significant impact to these animals’ population.

• **Project Biodiversity Banking (Bio-Banking) in 2 areas, 443.86 Hectares in Lochla area, and 656 Hectares in Weerona area, which has been continuously rehabilitate and maintain.** The project implements in accordance with the Bio-Banking Land Conservation Agreement in 2 main areas; grazing for conservation and weed control. Overall, in 2019, a performance from both areas is as per below:

KPI	Measurement
No significant erosion incidents on rehabilitated land as per incident register	incident register
Vegetation ground cover >90% and weeds <20%	Inspections and Audit Reports

Additionally, followings are key due to rehabilitation, monitoring, and maintenance of the areas;

• Increase the number of Kangaroos entering the rehabilitation area and longer period of drought seasons affect the growth and quality of plants in the area. For the problem due to the increased number of Kangaroos entering the area, the projects build a fence to protect the area with legal permission to ease the problem due to the Kangaroos in the Weeroona area, while the Locklee area plans to implement this solution in 2020.



• Problems of weeds and pests that propagate continuously due to the blowing of wind. Since the previous year, the study is still under way to plan the control of weeds in the area, in accordance to specified target.

## Create Value to Our Stakeholder

### Our People

#### GRI 401-2

Employees are our most important asset for the organization success. Not only they are the ones achieving goals and targets facilitating company's visions and missions, they are the representation of the company's character. Therefore, EGCO Group emphasizes on the importance of our recruitment criteria. We look for personnel equipped with knowledge and attitudes that correspond to the company's values and culture. It is important to us to retain potential employees. The Group goes beyond providing appropriate benefits and compensation based on their needs, regularly offering programs related to career development, and conducting fair assessment on their performance and relevant skills. EGCO Group does not only aim to enhance our personnel's expertise in their current positions but also supporting and encouraging their professional growth along with that of our EGCO Group.



## Goals in 2019



- 80% of all employees received training in human capital management system reformation
- Achieve more than 80% of the preparation and development of high potential employees for corporate requirement.

## Long-term sustainable goals in 2020-2022



- Completion of the planned human capital management system reformation
- 100% of employees attended the Succession Planning & Development Program are considered for executive positions as planned
- Result from employee engagement survey is higher than 60%

### Management

EGCO Group treats all employees with equality in accordance to the United Nation Guiding Principles on Business and Human Rights (UNGPs), the Principles of Humanity and Human Rights of the International Labor Organization (ILO), and the Principles of the United Nations Global Compact (UNGC). We have developed and implemented an integrated human resources management policy which covers every personnel-related aspects, such as organization structure established in accordance to the business policies, recruitment policy, employee's compensation and benefits policy, performance assessment standard, human capital development, and employee relations. Additionally, this performance aspect will be taken into consideration during executive performance assessment. The details are as follow:

**1) Recruitment and Employment Policy:** the recruitment process of potential candidates is conducted transparently under clear guidelines with respect to human rights and fair treatment of labor. The candidates are evaluated based on their qualifications and experiences related to the positions they applied for. The recruitment committee grades every potential candidate with equality according to the criteria listed on the interview evaluation form.

**2) Fair and Appropriate Remuneration and Welfare Policy:** EGCO Group finds importance in a fair and appropriate remuneration and welfare policy in accordance to the company's performance. We are looking to provide financial stability for our employees which covers until after their termination or retirement. EGCO Group has defined clear criteria and guidelines for a consideration of salary raise through employee's performance assessment, capabilities, and other qualities without any discrimination of gender, age, or race. Additionally, EGCO Group is offering provident fund, saving and personal loans from EGAT Savings and Credit Cooperative Limited including other benefits for employees which are in line with other peer companies in the industry. Moreover, a welfare committee and employee committee have been selected through election process by personnel in every power plants under EGCO Group. The committee has a 2-year term length and oversees 100% of EGCO Group's employees' welfare as well as being a communicating medium for employees to voice their suggestions and concerns. These will be taken seriously and handled professionally with all affected parties in mind. We believe this is the road to maintaining good relationship between the organization and its employees and among the employees themselves. Every employee of EGCO Group will be under the care of the welfare committee, employee committee, and the labor union.

3) **Employee care and human capital development:** EGCO Group supports every level of employees in learning, training, and expertise developments to prepare for EGCO Group's continuous expansion. We create a corporate culture with learning at the core. Learning is an important ground for growth and development, both for the employees and the company. The yearly trainings and workshops are planned according to the Training Needs analysis, performance assessment results, the company's policies and strategies, and related laws and regulations. EGCO Group's in-house training is therefore specific to the developmental needs of our employees tailored to their tasks and responsibilities. We are preparing our personnel in case there's a need for adaptation on an organizational scale as well as succession of important positions in the future. EGCO Group's personnel has an option to join external training programs and seminars related to their field of work as well.

4) **Fair performance evaluation:** evaluations conducted according to the performance efficacy and related skills with an emphasis on operational results of the employee.

5) **Employee engagement survey:** EGCO Group has been conducting employee engagement surveys continuously throughout the years and has taken those results into improving our operations, human capital developments, and employees' welfare. We take their concerns and make improvements to ensure a happy working environment for our personnel. EGCO group believes that happy employees with pride in their organization are the most efficient.

### Performance

In 2019, EGCO Group has established a short-term plan for human capital management system reformation to address urgent issues including performance assessment management system development and implementation, talent management system implementation, compensation structure implementation, and redesigning competency model. The short-term plan is in effect alongside a 3-year development plan for a sustainable human capital management system which is a human resource management paradigm-shift. The three main focuses for developments are as follow: Future Business Platform, Organization Transformation Management, and Enhanced Business as Usual Organization.

EGCO Group is determined to build strong foundation and raise awareness among employees as well as influencing the human capital management system reformation for the sustainability in the new paradigm of human resource management.



## New Employee Hires and Employee Turnover

### GRI 401-1

Human capital management of EGCO Group's personnel recruitment process is conducted according to the recruitment and employment policy. In 2019, EGCO Group's new hires ratio is at 9.27%.

#### New Hire

Gender	Hire Rate	Age Group	Number of Employees
Male	Female 79.27%	under 30 years old	47
		30 - 50 years old	40
		over 50 years old	1
Female	Female 20.72%	under 30 years old	18
		30 - 50 years old	5
		over 50 years old	0

EGCO Group is determined in retaining our quality employees. A decreasing turnover rate over the years is an indicator of our success in attracting and keeping our valued employees.

#### Turnover Rate

2016	2017	2018	2019
2.76%	4.30%	2.86%	4.93%

#### Turnover rate in 2019

Voluntary Turnover of Permanent Employee	24
<b>Age Group (Number of Employees)</b>	
under 30 years old	9
30 - 50 years old	4
over 50 years old	11
<b>Gender (Number of Employees)</b>	
Male	17
Female	7

**Highlight: EGCO Group Site Visit Batch 5 and 6 in 2019**

The objective of EGCO Group Site Visit is to promote learning about energy and electricity generation processes to students as well as providing experiences in the actual work environment and a chance to meet students from other institutions. This activity receives an overwhelming positive feedback as participants discover beneficial new ideas and knowledge from the visits.



**Dates and Participants:**

5<sup>th</sup> batch on April 4<sup>th</sup>, 2019 with 27 participants

6<sup>th</sup> batch on October 25<sup>th</sup>, 2019 with 39 participants

**Highlight: EGCO Internship**

Each year, EGCO Group offers internship opportunities for university students to garner the knowledge, skills, and experiences. In 2019, we have collaborated with various academic institutions to organize a 2-month internship program in power plants under EGCO Group and our subsidiaries.



During the internship, the students will have the chance to learn about the company's operating structure, work process, and a chance to develop the skills they might find beneficial later on in their career.

**Employee Training and Development GRI 404-1**

In 2019, EGCO Group has organized various trainings and workshops for personnel across all levels in the company regularly to improve their skills and knowledge. In average, one employee has received over 30.83 training hours.

Average Training Hours by Topics in 2019	
Environment, Occupational Health and Safety	6.21 hours per year
Others	24.62 hours per year

Furthermore, EGCO Group encourages knowledge sharing as it is one of the most potent tools to help sharpen skills and knowledge in a short span of time. Knowledge sharing is undeniably one of the important steps as we integrate Knowledge Management system into EGCO Group's corporate culture.

Workshop on	"Risk Management for Organization Sustainability"
Participants:	32 employees
Objective	To educate employees responsible for risk management on implementing the COSO ERM Integrated Framework and other techniques in risk management to sustainably add value to the organization
Dates	March 4 <sup>th</sup> - 5 <sup>th</sup> , 2019
Result	The participants have identified key corporate risks for risk assessments to define risk control activities/ measures as well as to design Key Risk Indicators (KRI) with related management approach in case of any KRI's level rising.

Training on	"Analytical Thinking for Problem Solving"
Participants:	32 employees
Objective	To develop analysis skill for employees, so they can recognize issues and understand tasks and circumstances by breaking down complex data into single manageable components so to improve their work processes and solve the problem systematically.
Dates	July 22 <sup>nd</sup> , 2019
Result	Participants applied the skills acquired from the workshop to improve the efficiency in their daily tasks

Training on	"Critical Thinking for Decision Making"
Participants:	27 employees
Objective	To help first-level management employees understanding the concept of critical thinking that the ideas should be reasoned and well thought out by identifying biases and errors in thinking. The systemic analysis affects the logical decision making .
Dates	July 30 <sup>th</sup> - 31 <sup>st</sup> , 2019
Result	Adaptation of critical thinking skill to help understand the issue which leads to a timely prevention and correction with fresh perspectives.

Knowledge Sharing on	"CEO Vision"
Participants:	25 Middle management employees
Objective	To share knowledge and experiences in management from the CEO to the middle management personnel and to nurture good relationship within the managerial level members.
Dates	May 15 <sup>th</sup> , 2019
Result	CEO's and middle management's visions are in alignment and will be applied in the management of their respective teams.

Knowledge Sharing on	"Behind the Success of 2018 Innovation Winners"
Participants:	30 employees
Objective	The winners of EGCO Group Innovation Team Challenge 2018 share their knowledge and experiences from competing in 2018 which cover topics, such as innovative ideas, innovation development process and how they can be beneficial to the current operations. Additionally, the sharing aimed to inspire and motivate our personnel to value designing, developing, and practically applying their innovations to their works.
Dates	August 1 <sup>st</sup> , 2019
Result	Participants acquired experiences which can help in developing creative solutions for respective tasks as well as insights on innovation development process and competition from their peers.

Knowledge Sharing on	"LNG Business"
Participants:	61 employees
Objective	To exchange basic knowledge on the LNG business overview and LNG businesses that are related to EGCO Group.
Dates	August 7 <sup>th</sup> , 2019
Result	Participants gained insights on LNG business operation and its processes which covers the whole natural gas generation process as well as the pricing factors on LNG market in the USA.

Training on	"Climate Change"
Participants:	25 employees
Objective	To educate employees on climate change and its impact on EGCO Group's business operation.
Dates	September 24 <sup>th</sup> and December 4 <sup>th</sup> , 2019
Result	Participants are educated and understood climate change. They're able to identify the operation's exposure to climate change risks and develop plans to prevent or mitigate potential risks as well as identify business opportunities in relation to climate change.
Workshop on	"Real Option Valuation"
Participants:	31 employees
Objective	To develop an understanding in using Real Option Valuation method to determine the value of future investment prospects.
Dates	November 25 <sup>th</sup> , December 17 <sup>th</sup> - 18 <sup>th</sup> , 24 <sup>th</sup> , 2019, and January 27 <sup>th</sup> , 2020
Result	Incorporating Real Option Valuation to the currently implemented valuation method on both current and future projects investment.

#### Training Courses Supporting Learning and Innovative Culture

EGCO Group greatly values innovation; therefore, we are committed to encourage the culture of learning through skill developments. Not only will our employees improve the company's quality and efficacy but the innovative culture will help EGCO Group create new business opportunities in the future as well.

In 2019, EGCO Group has organized step-by-step innovation workshops to encourage our employees to present their creative ideas and innovations that could benefit the organization in greater efficacy through an internal innovation competition, "EGCO Group InnoPower 2019" (More information available in chapter Digitization and Innovation). The details on structure of the workshops are as follows:

Innovation Drive for Leaders	Project	<b>Driving Innovation for Leaders</b>
	Participants:	27 middle management and higher level executives
	Objective	To define corporate innovation strategies and directions. To enhance the process of creating innovations for executives in order to provide guidance to their employees on implementing their innovations or submitting it to the competition.
	Dates	April 25 <sup>th</sup> , 2019
	Result	Established strategies and directions of the company's innovation to be used as a framework for organizing internal innovative activities and competition.
Developing Ideas into Practicality	Project	<b>Practical Innovation</b>
	Participants:	43 employees
	Objective	To promote employees' knowledge and understanding how to develop creative ideas into practical innovation and how to apply innovation to their current operations as well as to attend the EGCO Group InnoPower 2019.
	Dates	May 17 <sup>th</sup> , 2019
	Result	Participants acquired innovative knowledge and skills which can help improve the current operations.
Innovation Prototyping & Testing	Project	<b>Prototyping &amp; Testing</b>
	Participants:	25 employees
	Objective	To educate and improve understanding and basic skills in prototyping and testing with strategic tools to develop or implement their innovation project as targeted.
	Dates	July 11 <sup>th</sup> , 2019
	Result	Participants gained knowledge and skills in developing ideas into practical innovation to be implemented in their works and/ or competing in EGCO Group's InnoPower 2019, which total 22 teams participated.

Moreover, EGCO Group encourages employees to engage in continuous improvement using KAIZEN and Lean approaches that are the ground principles for innovation. In 2019, two batches of personnel, total 48 employees, from all levels attended trainings on KAIZEN and Lean principles.

EGCO Group conducts assessments of the in-house trainings using Third-party Methodology "Kirkpatrick Model" Level 3 and Level 4. We analyze the results mainly in the aspect of participant's application of the acquired knowledge and skills into their works and the impacts of the trainings on EGCO Group's business.



#### Result from Employee Engagement Survey

Creating bonds between the organization and its employees has been proven to support work continuity and efficacy. EGCO Group is determined to increase employees' engagement through regularly organizing employee relations and career-related development activities. In 2019, EGCO Group conducted an employee engagement survey with the higher score topics include, supportive supervisor, technology provided by the company to increase work efficiency, adequate channels of formal communication within the company, fair and accurate performance assessment, active supports of employees' learning and developments, etc.

These aspects emphasize EGCO Group's stance in human capital management which focuses on employee care, their development, and fair performance evaluation. Nevertheless, the result of the employee engagement survey has brought employees' other concerns and issues which need improvements to our attention. However, our management approach to all concerns are already included in EGCO Group's 5-year human capital management and development plan from 2020 till 2024. For instances, remuneration and welfare policy revision, career path development, learning and development to prepare EGCO Group's personnel for a possible change in our business directions, etc.

## Occupational Health and Safety

GRI 403-1, 403-2, 403-3, 403-7, 403-8, 403-9,

Building a culture that focuses on occupational health and safety promotes effective working conditions for employees, suppliers, contractors, as well as other related personnel, where they are able to work continuously, in parallel to maintaining hygiene. In addition, managing power plants with the utmost determination and care towards safety helps to build confidence and trust in the surrounding communities.



### Our Approach

EGCO Group has established its occupational health and safety policy and guidelines, which align with the Company Policy, of which the company strictly adheres to. Furthermore, EGCO Group has established a Safety, Health, and Environment (SHE) Committee and Working Group, which consists of executives, workers, and safety officers at both the headquarters and power plants. The Committee establishes the direction, rules, and governance of operations, through the improvement and development of safety for EGCO Group's subsidiaries. The SHE Committee is also responsible for developing the Safety Health and Environment Management System Manual, which serves as internal guidelines for the EGCO Group. Meetings are organized to report on and receive feedback regarding the operations, to be in line with legal requirements and safety standards in the workplace. Furthermore, the committee promotes and supports activities related to safety in the workplace, including the consistent monitoring of safety operations and applying the information to inform operations planning.

EGCO Group's Safety, Health, and Environment Policy covers four main topics, as follows:

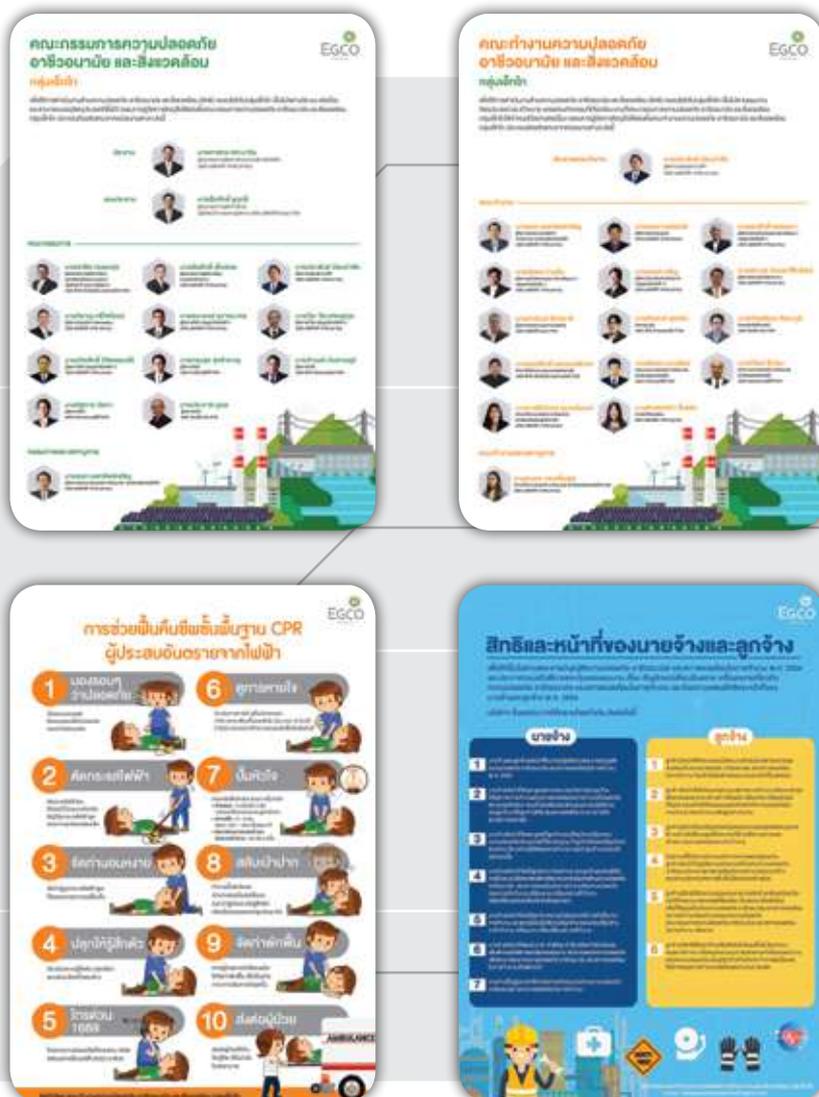
1. The Company shall properly implement and develop SHE management system in compliance with the laws and regulations.
2. The Company shall specify a framework for SHE management system to identify its objectives and goals, then monitor and also assess its implementation results.
3. All employees shall be aware of preventing and resolving such activity which may impact on safety, health and the environment.
4. The Company shall support and provide resources for implementing SHE management system suitably.



EGCO Group has mandated that all of its power plants must abide by this policy, including establishing a management framework to minimize and control the risks in all working operations and company business that may lead to the loss of life, injury, illness, or adverse impacts to the surrounding communities. In addition, all power plants must strictly comply with legal requirements concerning occupational health and safety. The company also requires its power plants to consistently develop employee and contractor knowledge and skills regarding occupational health and safety, so that they gain awareness and are able to perform work that strictly aligns with rules, regulations, and legal requirements. Furthermore, EGCO group has established measures to handle possible emergencies, which can affect workers and stakeholders. These measures also help to build confidence in the surrounding communities.

In addition to the SHE Policy, EGCO Group has upgraded its operations to comply with the International Organization for Standardization (ISO) system, to align with legal requirements and the Group's operational direction. Thus, EGCO Group has received certification for both national and international management system standards on a continuous basis until present. Examples include the quality management system (ISO 9001:2015), the Occupational Health and Safety Assessment Series (OHSAS 18001:2007) and Thai Industrial Standard (TIS) 18001:2011, the energy management system (ISO 50001:2011), and environmental management system (ISO 14001:2015) standards. Certification to these standards reflect the Company's commitment and care in creating occupational health and safety for its employees, workers, and contractors, through to EGCO Group stakeholders. The Khanom power plant has developed its safety management system in a continuous and consistent manner, by accounting for risks, opportunities and legal requirements pertaining to occupational health and safety management. The plant upgraded its certification to achieve the international occupational health and safety standard (ISO 45001:2018).

Furthermore, EGCO Group communicates relevant information on occupational health and safety to both its employees, contractor and suppliers. The Company communicates to its employees and contractor via multiple channels, such as the Sharepoint, posters, Microsoft TEAMS and LINE groups.



EGCO Group has identified occupational health and safety as one of its material ESG topics and communicates the topic's importance to suppliers through the Group's business partner Code of Conduct. Furthermore, occupational health and safety is a factor that is evaluated through both the supplier sustainability self-assessment and onsite audit, where the results are incorporated into the selection of new suppliers and monitoring on performance of existing suppliers.

#### Performance

In 2019, EGCO Group set targets regarding occupational health, safety, and the working environment, as follows:



which EGCO Group has been able to achieve all the established targets, in safety, health promotion, and the working environment aspects.

Regarding safety, EGCO Group set its lost time injury frequency (LTIFR) target as zero, by incorporating the performance results of occupational health, safety, and the working environment as one of the key factors in determining organizational performance.

Operating with strength, commitment, and improvement in a continuous manner has resulted in the occupational health and safety operations of power plants, both nationally and internationally, to achieve its LTIFR target, with a record of 28,545,449 accumulated safe working hours.

## Work-related injuries and fatalities for EGCO Group's employees and contractors GRI 403-2, 403-9

Unit		2016	2017	2018	2019
<b>Work-related fatalities</b>					
Employees	Persons	0	0	0	0
Contractors		0	0	0	0
<b>Loss Time Injury Frequency Rate (LTIFR)</b>					
Employees	Cases / Million	0.00	0.00	0.00	0.00
Contractors	hours worked	0.30	0.00	0.25	0.00
<b>Injury Frequency Rate (I.F.R)</b>					
Employees	Cases / Million	1.01	0.00	0.00	0.45
Contractors	hours worked	3.89	0.00	0.25	0.26
<b>Injury Severity Rate (I.S.R)</b>					
Employees	Day / Million	0.00	0.00	0.00	0.00
Contractors	hours worked	0.90	0.00	8.14	0.00

Promotion of worker quality of life and well-being  
GRI 403-6

EGCO Group not only gives importance to employees' occupational safety, the Company is aware of and gives importance to all workers' quality of life, health, and well-being, by continuing to adhere to creating a healthy lifestyle. The SHE Committee commits to and tries its best to ensure that all EGCO Group employees have good health and positive interactions with one another.

In 2019, power plants within the EGCO Group organized activities for healthy promotion throughout the year. Activities include Sports Days, which consist of various exercises and competitive games, and Healthy Camps, which covers informative activities to encourage healthy behavioral changes, and campaigning for continuous health promotion through public relations and media to build knowledge for EGCO Group employees on a consistent basis.

Order	Power Plant	Number of Times / Year
1	KEGCO	6
2	SPP2 SPP3 SPP4 and SPP5	2
3	BPU	5
4	ESCO	4
5	EGCO COGEN	8
6	Solarco	7
7	CWF and TWF	2
8	RG	5
9	KLU	4
10	GPS	2

Examples of activities to promote employees' quality of life and well-being are as follows:



Informative activity to encourage healthy behavioral changes: February 6, 2019 at Khanom Power Plant



KEGCO Healthy Camp Project August 20 - 22, 2019 at Koh Pitak, Chumphon



'Doctors Invite to Run' Project Salaeng Phan Municipality, Saraburi: March 7, 2019 at SPP2, SPP3, SPP4, and SPP5 Power Plants



Football Competition: Power Plant vs. Provincial Electricity Authority (PEA) Ubonratchathani Office 2 : June 13, 2019 at SPP2, SPP3, SPP4, and SPP5 Power Plants



Sepak Takraw (Kick Volleyball) Competition: Sports Against Drug Abuse with the Hin Mun Sub District Community February 17 , 2019 at Solarco Power Plant



7-Person Football Competition for the 24<sup>th</sup> Nong Phai Cup (Nuea Mueang District) October 23 , 2019 at Roi Et Green Power Plant

**Worker Training and Activities to Promote Occupational Health & Safety GRI 403-5**

EGCO Group is committed to build knowledge, understanding, and awareness of occupational and personal safety for employees and contractors consistently, by improving occupational safety standards. Operations consists of assessing and managing risk, which includes organizing occupational health and safety training on a continuous basis for both employees and contractors. The objective is to ensure that all individuals is able to perform work in a safe manner, beyond set standards, at all times, and these measures are incorporated into EGCO Group’s emergency response plan, in line with the Company’s SHE Policy. In 2019, EGCO Group organized the following training programs for its employees and contractors :



“Behavior-Based Safety” Curriculum, on May 30, 2019

**Training details:**

- Definition of ‘risk’
- Risk, hazards, and accidents that may occur by working in a factory
- Causes of hazards and accidents within a factory
- Approach to the control, prevention, and elimination of risk for safety
- Employee responsibility in eliminating risks to safety within the organization

**Training duration:** 6 hours

**Number of participants:** 30 employees



“Techniques for effective safety communication” Curriculum on September 17, 2019

**Training details:**

- Key principles for creative safety communication
- Compulsory channels of communication for occupational safety that employees should be aware of
- Communication approach that enables safety-related work to run smoothly and effectively
- Obstacles in communication that prevents effective safety-related work
- Coordination approach that allows safety-related work to not be met with opposition

**Training duration:** 6 hours

**Number of participants:** 26 employees

Both workers and contractors operating within the site area must pass a safety training curriculum before commencing work. Furthermore, the Company organizes additional occupational health and safety training, in order to ensure that all individuals are always able to perform work in a safe manner, above set standards.

Training Topic	Number of Participants	Workers	Contractors
Review of crane operations with workers	30	✓	-
Management-level safety officer (Japanese language)	1	✓	✓
Advance Fire Fighting Training Course	55	✓	✓
Management-level safety officer	3	✓	-
Revision of oil terminal emergency plan	26	✓	✓
Training of occupational health and safety management system ISO 45001	87	✓	-
Training of safety curriculum prior to work commencement, for hires and contractors	311	-	✓
Training of supervisor-level safety officer	1	✓	-
Boiler Control Operators/Refreshment	44	✓	-
Forklift Safety Drive Training	21	-	✓
Training for work in confined spaces	21	-	✓
Sustainable safety innovations	129	✓	✓
Safety training outside of work	144	✓	✓
First aid training	22	✓	✓
Training for health care in 4 aspects: rest, eat, move and sleep	143	✓	✓
Safety in work related to hazardous chemicals and emergency response	41	✓	-
Training review of basic fire fighting	217	✓	✓
Training of basic life support / CPR, AED & choking	71	✓	✓
Safety of Work and Occupational Diseases Training	32	✓	✓
Safe forklift operations	1	-	✓
Basic First Aid Training, Basic Fire Fighting and Evacuation Fire Drill Training	26	✓	✓
Chemical Spill Prevention and Response Plan	64	✓	✓

### '2019 Occupational Safety Week' Exhibition

EGCO Group organized the 2019 Occupational Safety Week exhibition at its headquarters and power plants, with the objective that workers, contractors, and hires are aware of the importance of occupational health, safety, and the working environment. In addition, the exhibition seeks to inform the organization's employees of safety working practices, so that they are able to reduce the number of accidents both within and outside of the workplace.



The exhibition consisted of various activities, such as the occupational workplace exhibition, the informative sessions 'Creating Happiness and Fun at Work' by Professor Jatupone Chompoonich and 'Sustainable Safety Innovations', first aid review, and a competition of workers' and contractors' safety recommendations. EGCO Group is confident that organizing these activities is able to promote employees to be conscious about occupational safety, and be able to prevent workplace accidents effectively.



### Emergency Preparedness and Crisis in Power Plants

A prompt and effective response in the event of emergency or crisis builds confidence that the power plants' production is able to operate in a continuous manner, as well as not creating any safety risks to the surrounding community and environment. Therefore, all power plants have set an emergency and crisis contingency plan, and conducted contingency drills for emergencies that are dangerous and may affect life, resources, and the environment. These drills include the evacuation of workers from the site and coordination with surrounding communities in the event that the emergency is severe enough to affect those communities.



Power Plant	Practice of Emergency Plan 2019			
	Emergency Situation (Number of times)			
	Basic Fire Fighting and Evacuation Plan Drill	Chemical spillage Emergency Prevention	Oil Spill Response	Flood Emergency Response Plan
Headquarters	1			
ESCO	1			
CWF	1	1		
TWF	1	1		
SPP 2	1			
SPP 3	1			
SPP 4	1			
SPP 5	1			
Solarco (6 sites)	12			1
GPS (4 sites)	8			
RG	1	1		
KLU	1	1		
BPU	1	1		
EGCO COGEN	1			
KEGCO	1	1	2	

BLCP power plant site visit in Rayong province in 2019, to study the occupational health, safety, and environment management system.

EGCO Group's SHE Working Group conducted a visit to the BLCP power plant, to study its occupational health, safety and environment operations. This power plant is renowned for its leading occupational health and safety management. Furthermore, BLCP power plant's occupational health, safety, and environment management system is certified according to ISO45001, and aligns with BLCP Safety Rules and the process safety management (PSM) standard. The power plant also employs proactive safety measures, such as the management walk down, safety rule audit, behavior-based safety (BBS) observation, and near miss reporting, whose stringent characteristics create a safe and healthy working environment for employees. The Company aims to apply BLCP power

plant's high-quality occupational health, safety, and environment standards as a guidance in creating a safety culture for EGCO Group's operations.



Moreover, EGCO Group consistently monitors its safety performance through the SHE Working Group. The working group conducts a SHE internal audit, to assess whether the organization has developed a management system that aligns with standards set by legal requirements, and whether it has applied the system effectively, through consistent implementation and continuous improvement. In 2019, the SHE internal audit was conducted in 14 sites which are Khanom, EGCO COGEN, Roi-Et Green, SPP2, SPP3, SPP4, SPP5, Solarco, and G-Power Source power plants, Chaiyaphum and Thepphana wind farms, Khlong Luang and Ban Pong Utility power plants, and EGCO Engineering and Service Co., Ltd. in Rayong province.



2019 Occupational Health & Safety Awards and Achievements



**Khanom Electricity Generating Company Limited**  
The National Excellence Award for Occupational Safety, Health, and Working Environment (Gold level for 3 consecutive years)

**Roi-Et Green Company Limited**  
The National Excellence Award for Occupational Safety, Health, and Working Environment (Platinum level for 10 consecutive years)

### Human Rights

Human rights is one of the key principles within good corporate governance, and is essential to business operations. EGCO Group has thus continuously promoted both employees' and suppliers' understanding in human rights and respective guiding principle. The latter of which is in accordance with Universal Declaration of Human Rights. Promotion of human rights has long served as part of EGCO Group's core values.

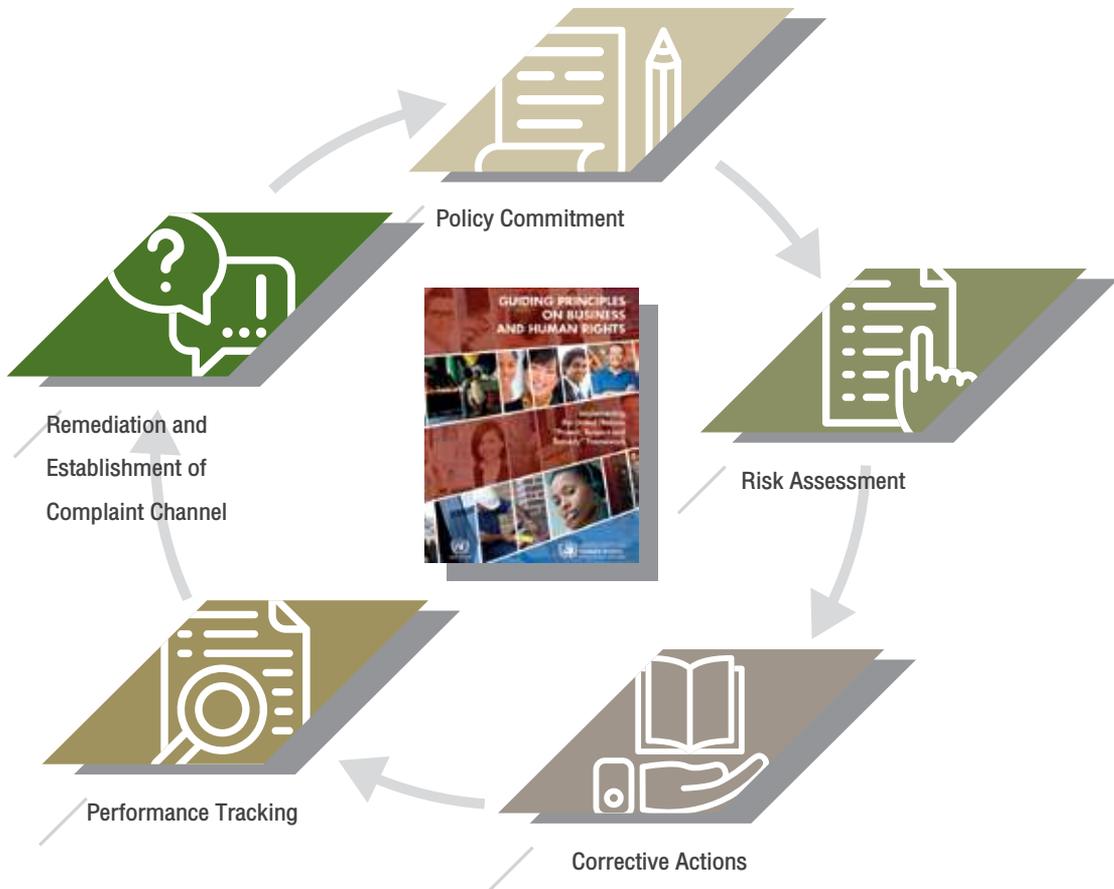
human rights. Furthermore, EGCO Group has conducted human rights due diligence and risk assessment at every business operation level, inclusive to activities within the Group's supply chain. The process is in accordance to the UN Guiding Principles on Business and Human Rights (UNGP). It ensures that there will be no human rights violations in the Group's external and internal operations, as well as within all stakeholder groups throughout the supply chain.

### Management Approach

EGCO Human Rights policy was recently updated in 2019, ensuring coverage of material issues. The policy serves as a guiding principle for employees, business partners, and suppliers. It exhibits the Group's commitment and determination to conduct business with respect for



## EGCO Group's Human Rights Due Diligence



EGCO Group reviews and assesses potential human rights risks for business operations annually, in tandem with conducting human rights due diligence and risk assessment. This is according to EGCO Human Rights Policy. Assessment results are assessed to improve relevant business operations, and develop appropriate mitigation measures against future risks and impacts.



#### **Reinforcing Human Rights into Corporate Culture**

EGCO Group promotes corporate culture on human rights via human rights trainings and risk assessment throughout EGCO's value chain. The aim is to increase understanding and awareness among employees. In 2019, 100% of EGCO Group's employees have received human rights training. Through human rights risk assessment workshops, with 100% coverage of business operations, EGCO identified 33.33% of business operations to be at risk. Human rights risks identified are as follows, (1) occupational health and safety in raw material work and services within supply chain. For this, EGCO Group collaborated with relevant suppliers to identify measures to address or mitigate aforementioned risks. Within EGCO Group's operations, measures and processes to evaluate and mitigate human rights risk have been implemented in all levels of operations.

#### **Human Rights Dialogues with Suppliers**

EGCO Group has been communicating with suppliers regarding human rights, and has revised the Group's procurement policy. EGCO supplier code of conduct, which address human rights policy, has also been developed. (further information is available in Sustainable Supply Chain Management page 107)

EGCO Group plans on conducting human rights due diligence every three years, and to review human rights risks related to business activities throughout the supply chain on an annual basis. This effort ensures human rights work plans and human rights risk prevention measures are always up to date.

As of 2019, EGCO Group received no complaints or reports concerning human rights issue, either from business activities, operations, or throughout the supply chain. Therefore, no remediation was required. However, EGCO Group is aware of plausibility and risks that may occur. The Group has therefore prepared remediation measures for victims, to mitigate impacts from human rights violations.

### Supply Chain Management

GRI 102-9, 102-10, 204-1, 308-1, 308-2, 414-1, 414-2

To generate electricity efficiently and without interruptions, supply chain management, which minimizes possible risks that may affect electricity generation, is necessary to operate business in a sustainable manner. This is a key priority for EGCO Group. Achieving sustainability throughout the supply chain arises by adhering to a core principle: to create sustainable growth with suppliers.

In 2019, EGCO Group reviewed its sustainable supply chain management approach, from critical supplier and sustainability risk identification that may occur throughout its supply chain, strategy and guideline development for sustainable supply chain management, and other related activities. The policy, guidelines, and activities were announced to clearly show EGCO Group’s commitment. EGCO Group will annually review them, to ensure that they are updated and can enable responses to the highest efficacy in managing EGCO Group’s sustainable supply chain.

#### Management Approach

EGCO Group’s sustainable supply chain management approach follows the UN Global Compact’s framework. The framework consists of six steps: (1) announce commitment to sustainable supply chain management, (2) assess ESG risks and impacts across the entire supply chain, (3) define goals, strategies, and policies for sustainable supply chain management, (4) implement strategies, policies, and work plans, (5) measure and monitor progress, and (6) communicate strategies and work processes to suppliers for continuous improvement.



## Performance

### Critical Supplier Identification

In 2019, EGCO Group organized a workshop with all of its procurement sections, where officers and related personnel participated in analyzing over 1,000 suppliers, using the 2018 procurement database, with the equivalent of spending around 22,000 million baht. EGCO Group categorized its suppliers into two groups: (1) Supplies of goods and (2) Supplies of services. Thereafter, EGCO Group conducted an analysis to identify its critical suppliers, using the following criteria: (1) suppliers with the top 80 percent of EGCO Group's procurement spending (2) suppliers who supply critical components of materials, goods, or services to EGCO Group's production processes, and (3) suppliers who are monopoly or non-substitutable.

Results from this workshop enabled EGCO Group to identify both its Critical tier 1 suppliers and Critical non-Tier 1 suppliers, as follows:

Type of supplier	Absolute number of suppliers	Share of total procurement spent (percent)
Total tier 1 suppliers	1,123	100
Critical tier 1 suppliers	77	97.54
Critical non-tier 1 suppliers	52	-

### ESG Risk Identification and Assessment Process in EGCO Group's Supply Chain

EGCO Group organized an additional workshop with its procurement sections and related personnel, to identify environmental, social, and governance (ESG) risks that are related to sustainable supply chain management. During the workshop, all suppliers were assessed in order to identify those with ESG risks that are important to EGCO Group. Assessment results showed that out of 1,123 total suppliers, 234 suppliers were identified as having ESG risks. EGCO Group reviewed and selected 30 suppliers from this group and sought their cooperation for assessment and site visit processes, in order to conduct an in-depth risk analysis.

Based on the results of the 30 suppliers site visits, the five topics with the highest scores were (1) Employee practice (92.48 percent): the assessed suppliers gave importance to and upheld good relations with their employees, conducted appropriate skills development according to the employees' roles, and promoted good relations with employees through various activities. In addition, a communications channel was established to receive employee grievances or concerns, resulting in employees being satisfied with their work. (2) Business ethics (92 percent): most suppliers had policies and guidelines that were based on good business conduct, such as corporate governance, anti-bribery and corruption, and protection of intellectual property rights. (3) Occupational health and safety (89.6 percent): a portion of the companies that were assessed provided services within local areas. Thus, they did not have relevant policies or had only guidelines regarding basic safety, which caused the score for this topic to decrease. (4) Human rights (79 percent): the assessed suppliers had policies and guidelines that respect human rights, in compliance with international standards. Nevertheless, EGCO Group found that most suppliers did not yet conduct comprehensive human rights-related risks assessments, which is an area that EGCO Group will consider the way to promote its supplier capacity building. (5) Environmental management (75 percent): most suppliers had good performance in reducing their environmental impacts. However, they do not yet give importance to reducing resource consumption.

Furthermore, results showed that most suppliers did not promote sustainable supply chain management to their own suppliers and assess business operations' impacts on the community and the environment. Based on the supplier assessment results, EGCO Group proposed a development and improvement approach as corrective action plan for all suppliers to consider in their risk reduction planning. EGCO Group will continue to monitor suppliers' performance, as well as build overall guidelines for supplier development approach.

## ESG Risk Identification Process



### Communications in Sustainable Supply Chain Management to Suppliers

EGCO Group held Supplier Day, at which EGCO communicated to its suppliers its commitment and determination to operate its business sustainably, its sustainable supply chain management approach, its anti-corruption commitment within EGCO Group's Supplier Code of Conduct (updated version) and Self-Assessment which covers the environmental, social, and governance aspects (updated version). Amount 100 percent of suppliers and under 85 percent of critical and ESG-risk suppliers, who attended Supplier Day engaged and answered on supplier substantiality self-assessment. The results showed that 100 percent of suppliers had an approach to operate business on the sustainability based. Amount 87 percent of suppliers had good performance in the social and governance dimensions, which is according to EGCO Group's expectations.

Nevertheless, only 60 percent of suppliers had good environmental guidelines, and topics that had slight management, such as risk assessment of the environmental impacts of business operations and the recording of carbon dioxide emissions. Therefore, EGCO Group will develop a plan to increase awareness and cooperation with suppliers.

### EGCO Group's Sustainable Supply Chain Strategy Development, Review of the Policy and Approach for Goods and Services Procurement, and EGCO Group's Supplier Code of Conduct

EGCO Group has incorporated ESG topics that are of importance to its sustainable supply chain management into its supply chain strategy development, and into the review of the policy and approach for goods and services procurement. EGCO Group's Supplier Code of Conduct covers 7 topics, which are (1) business ethics, (2) human rights, (3) employee practice, (4) occupational health and safety, (5) social responsibility, (6) environmental management, and (7) sustainable procurement and knowledge. This includes supplier sustainability self-assessment. To ensure continuous operations and the accomplishment of true sustainable supply chain management, EGCO Group has set the following supply chain management KPIs in 2019:



## 2019 KPIs

KPIs	Goal
1. Organize a meeting with suppliers	Once a year
2. Communicate in EGCO Group's Supplier Code of Conduct to all critical suppliers	100 percent of critical suppliers
3. All critical suppliers must complete a self-assessment, which covers environmental, social, and governance (ESG) topics	100 percent of critical suppliers
4. Since 2019, all new suppliers must provide a signed acknowledgement of EGCO Group's Supplier Code of Conduct and complete a self-assessment, which covers environmental, social, and governance (ESG) topics	100 percent of new suppliers
5. No corruption case in supply chain	Zero
6. No fatality of suppliers	Zero
7. No complaints related to the environment from suppliers	Zero

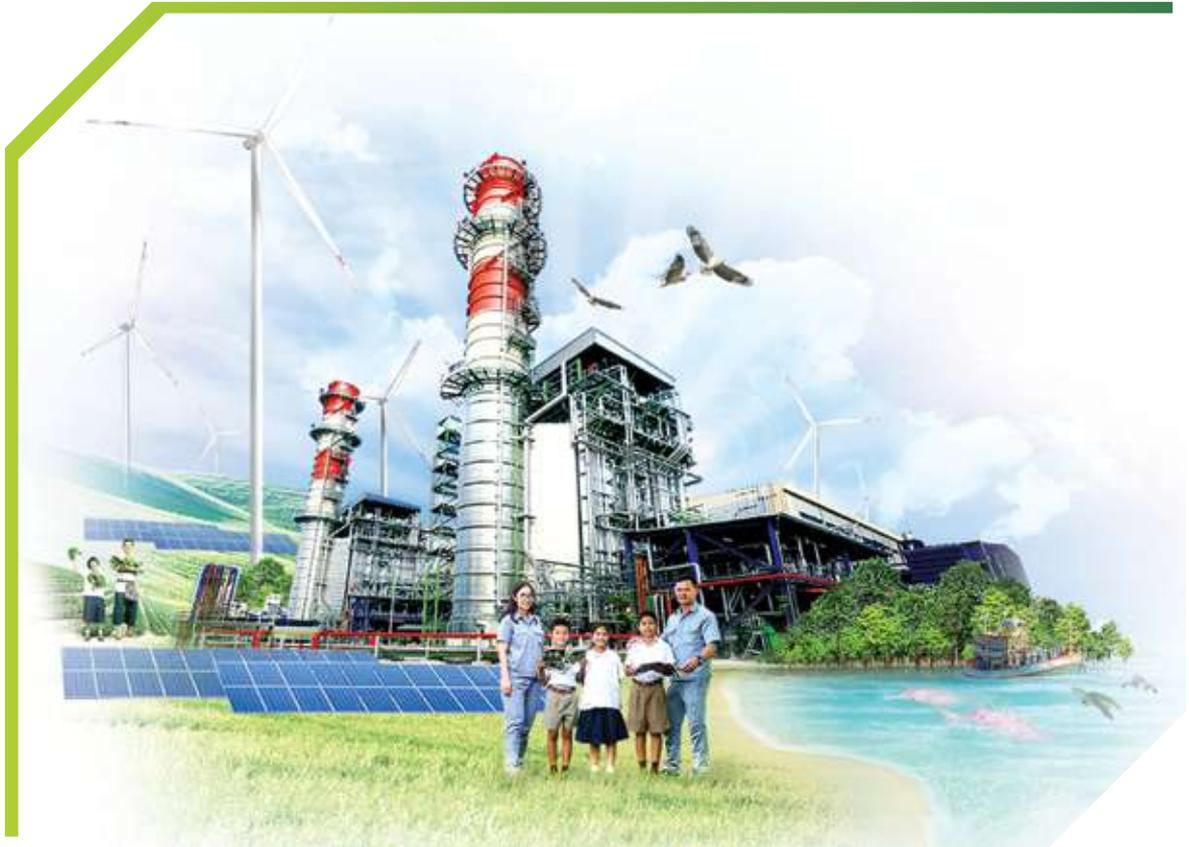
## Performance as per KPIs

Details	Unit	Year 2016	Year 2017	Year 2018	Year 2019	Target Year 2019
1. Meeting with suppliers	Number of meeting	1	1	1	1	1
2. Critical suppliers acknowledge and consent to follow EGCO Group's Supplier Code of Conduct	Percent	100	100	100	100	100
3. Critical suppliers answer on self-assessment	Percent	100	100	100	100	100
4. Complaints related to corruption from suppliers	Percent	0	0	0	0	0
5. Suppliers Fatality Rate	Percent	0	0	0	0	0
6. Complaints related to the environment from suppliers	Number of cases	0	0	0	0	0

As detailed above, EGCO Group was able to achieve all of its goals.

In 2020, EGCO Group will set out a plan to promote and increase environmental awareness among suppliers, as the supplier self-assessment results showed that most suppliers had slight management in environmental issues, such as conducting risk assessments of the environmental impacts of business operations and the recording of energy and water consumption, as well as greenhouse gas emissions.

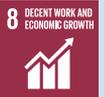
## Our Community and Society



EGCO Group is in the power generation industry, which is a foundational utility used in everyday life. With its vision as a leading company, operating its business sustainably, with full commitment to environmental protection and social development support. The company believes that “A Good Start will Lead to A Successful Outcome”. EGCO Group’s sustainable business approach therefore focuses on business growth, in parallel to its mission to be a good corporate citizen, by coexisting with community and society. Through this approach, the company creates additional value to all stakeholders, covering both internal and external social groups. Internally, EGCO Group incorporates stakeholder importance as part of its corporate values. The company also supports employees to use their capabilities and participate in volunteering by joining related activities. Furthermore, the company commits to reducing its negative impacts and increasing its positive impacts to stakeholders, the environment, community, and society throughout its business processes and activities. EGCO Group’s principle is continuing to carry out projects for communities and society, both at a local and national level.

### EGCO Group’s Commitment and Approach

The company’s sustainable business policy aims to mitigate negative impacts and increase positive impacts to stakeholders, the environment, community and society, throughout its business processes. EGCO Group uses its policy as a foundation for its approach and operating framework to promote sustainable business operations, as follows:

Brand Vision	Energy for Life		
Mission	A Good Corporate Citizenship Power Producer		
Corporate Belief	“A good start will lead to a successful outcome”		
Value creation for stakeholders	Prevent and mitigate negative impacts and increase positive impacts		
Goal	Coexistence with Community		Indicator
Internal Stakeholders	Instill public mindedness amongst employee Core Value (No.5) : Be considerate to stakeholders		Number of employee participation hours
External Stakeholders	Community	Society	
	Coexistence with Community	Responsibility to the broader society	- Zero grievances - Continuity of CSR Execution - Benchmark: national and international assessment scores
Operational Framework	 Project to improve the quality of life for communities surrounding the power plant 50%	 Project to promote energy and environmental education and conservation 30%	 Project to conserve upstream forests and biodiversity 20%
Project	Community Development project framework under 6 principles - Support Local Hiring - Development of children and youth - Development of skills beneficial to occupation - Promotion of sanitation of the community - Development of public utilities - Conservation of natural resources and environment	<ul style="list-style-type: none"> <li>• Khanom Learning Center</li> <li>• “Rong Fai Fha Phee, Rong Rien Nong” a 5 years Youth Development Project</li> <li>- Vocational scholarship for 3<sup>rd</sup> batch</li> <li>- EGCO Ranger on-tour and publication of EGCO Ranger comic book.</li> <li>- Energy and Environmental Conservation Youth Camp: Preparation towards Low Carbon Society</li> </ul>	Thai Rak Pa Foundation a project to preserve the watershed forest in Mae Jam, Chiangmai and Phu Long, Chaiyaphum.
Alignment to the SDGs	     		  

**Internal Society: Instilling stakeholder importance in employees alignment with corporate values**

EGCO Group supports employees to participate in projects and activities that use their knowledge, abilities, and skills, to create additional value throughout business processes. This includes increasing the efficiency of business processes to create value for shareholders and investors, and volunteering in projects for communities and society on a continuous basis. EGCO Group promotes a culture of engagement at all employee levels to realize this corporate value, from management, departmental heads, operational and new employees, through to interns.

**External Society: Upholding its mission of being a good corporate citizen to society**

Operations are divided into two levels, as follows.

**Community Level:** Coexisting with local communities, by committing to reduce negative impacts and increase positive impacts, through participation within communities in areas of operations. Building good, long-term relations through community activities, and participating in developing the quality of life for communities for sustainably growth.

**Societal Level:** Being a good corporate citizen by increasing the positive impacts, by creating value that aligns with the corporate belief that “A good start will lead to a successful outcome”, with two main aspects:

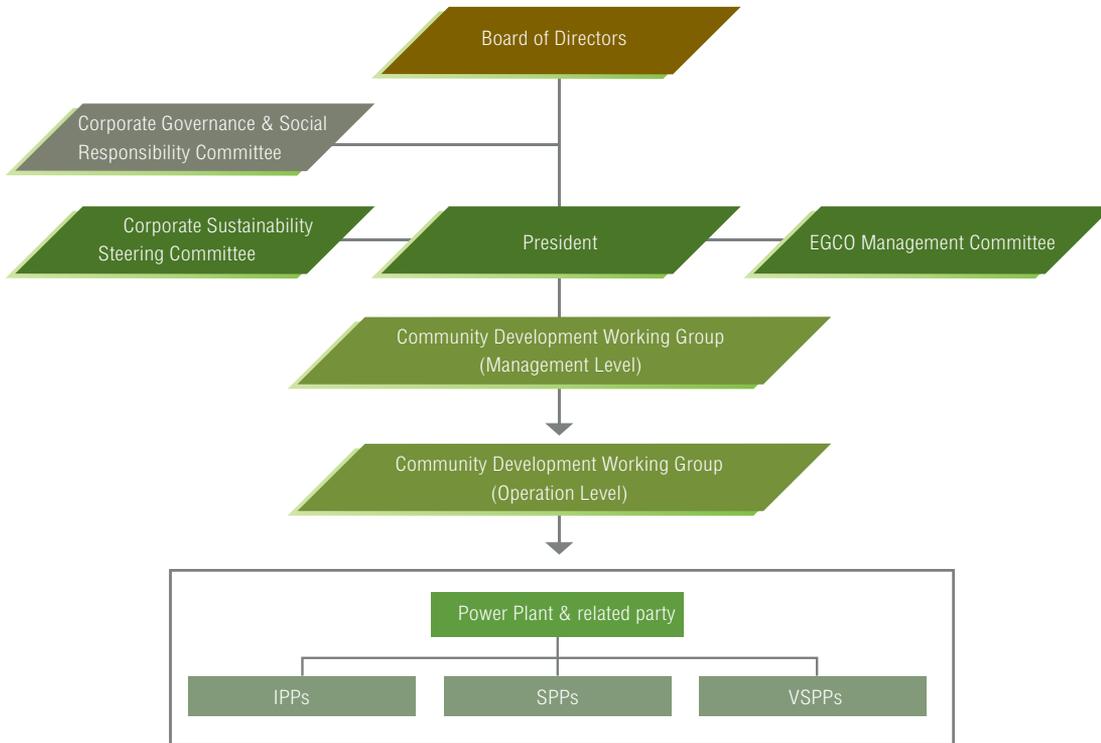
- **Promoting education and a conscious mindset for youth in energy and environmental conservation**, according to the sustainable development approach through educational projects. Spread knowledge that aligns with EGCO Group’s core competencies.
- **Conserving natural resources of watershed forests** in which EGCO Group has supported the country’s energy and watershed forest conservation through the Thai Rak Pa foundation (Thai Forest Conservation) for more than 13 years. EGCO Group founded this foundation together with its network, which consists of the Royal Forest Department, the Department of National Parks, Wildlife and Plant Conservation, and the Ministry of Natural Resource and Environment, as well as various local state and private networks, schools and NGOs. The foundation focuses on the importance of forest protection, creation of a conscious mindset, and building a united front to create power in the nation’s watershed forest conservation.

**Management Approach**

EGCO Group establishes a community and society development policy and guidelines as its operational approach to enable continuous and efficient community and society development operations. Furthermore, this promotes engagement among internal functional units and related personnel, to understand and be able to apply the policy into action, in a manner that ensures alignment across all functional units. The company has also established a policy to review and verify the information by an advisory committee, which consists of Executive Vice President Management level, senior management, and plant-level managing directors. The committee reviews the information prior to its release on a consistent basis, in order to ensure its accuracy, timeliness, and appropriateness to the context and situation. In addition, community operations results is reported to the advisory committee on a quarterly basis. Furthermore, communities can directly communicate their suggestions, as well as report grievances, through the EGCO Group’s various channels, including via phone and e-mail.

 <p>Policy to Promote Community Engagement and Development</p>	 <p>Policy to Promote Participation in Social Development</p>	 <p>Community Engagement &amp; Development Practice Guidelines</p>	 <p>Social Development Practice Guidelines</p>
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In parallel, the company has organized a working plan in accordance with internationally accepted approach, by giving importance to the community surrounding the Group’s power plants. A Working Group was established to specifically manage and determine the approach of various projects to promote participation in developing the quality of life for communities. This is to protect and mitigate the impacts or risks that are related to the community and environment as well as co-creating business benefits so that the community can live sustainably.



EGCO Group’s community operations framework is under the promotion and development of the “community’s quality of life” in areas surrounding the power plants, which consist of three phases, with the following processes and operations:



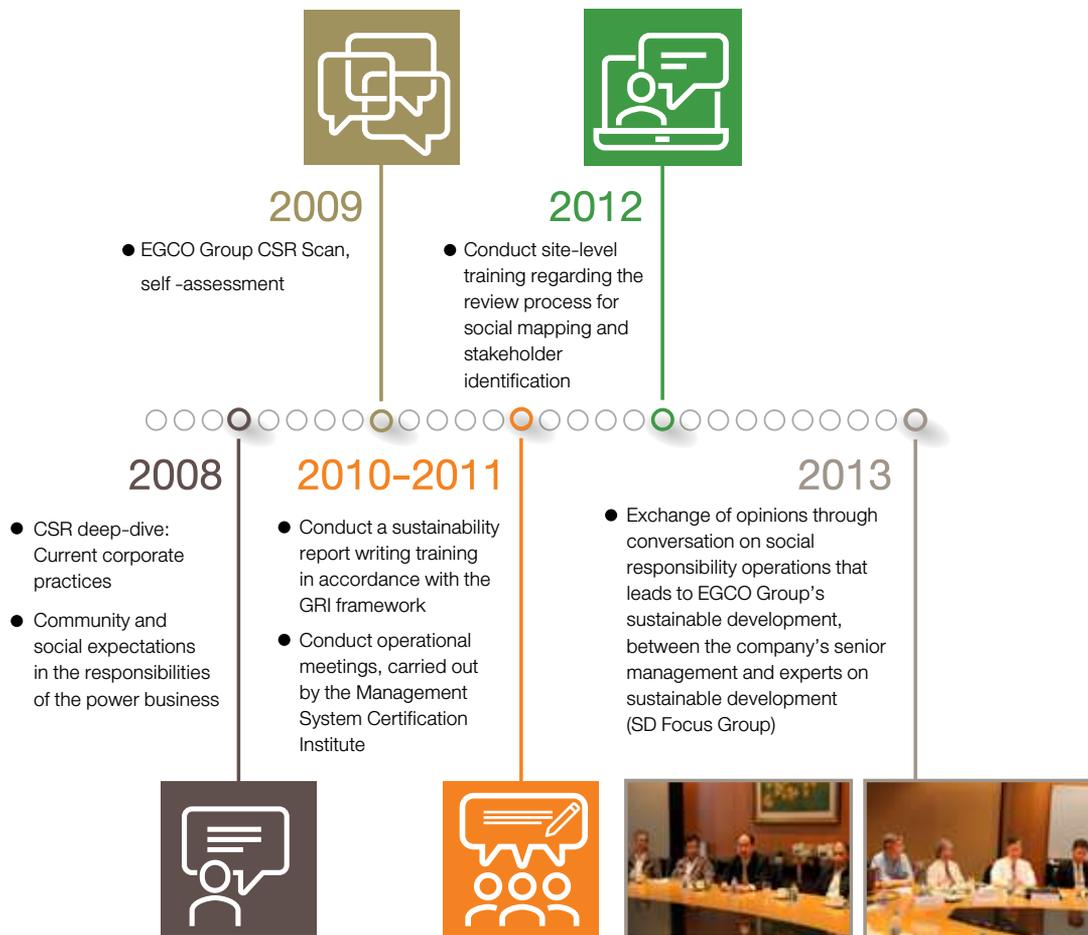
Framework	Operations
<p><b>Phase 1: Project Development</b></p> <p>In this phase, the Working Group will work with the Business Development Project Management and Community Relations teams, to build community participation, understanding and trust, ensuring a good relations with local community from early stage of project development and that it is able to receive the social license to operate, and construction permit in compliance with legal regulations. Community activities are in the form of community engagement activities, seminars and public hearing. A designated person is in charge of overseeing community relationship and engagement in the long term, up until project completion (end of the operations contract).</p>	<ul style="list-style-type: none"> <li>• Evaluate environmental and community impacts, by surveying, assessing, and creating a plan to monitor and mitigate possible impacts.</li> <li>• Create participation and encourage opinions through public stages.</li> <li>• Spread information regarding the project, to develop understanding.</li> </ul>
<p><b>Phase 2: Project Construction Phase (Quarterly)</b></p> <p>During project construction, the Project Management, Procurement, Contract Management, and Community Relations teams work closely to control operations according to the monitoring and mitigation plan. Furthermore, progress is communicated to the community periodically, and communication channels are set up as appropriate. These operations cover the overseeing of related contractor operations to strictly comply with the company’s operational approach.</p>	<ul style="list-style-type: none"> <li>• Proceed according to the monitoring and mitigation plan, which was developed during the Project Development phase.</li> <li>• Support local employment in accordance with the appropriate positions.</li> <li>• Allow for power plant visits.</li> <li>• Open up the power plant to visitors.</li> <li>• Organize community relations activities.</li> <li>• Conduct a satisfaction survey of communities around the power plant.</li> </ul>
<p><b>Phase 3: Operations</b> <b>(Commercial operation through to contract end)</b></p> <p>In this phase, EGCO Group’s Community Development Working Group oversees and monitors operations, through to community relations activities, in all power plant areas, according to the set plan. Furthermore, the corporate affairs and corporate communications unit protects against potential risks and other negative impacts from operations. They also support the Community Development Working Group to build knowledge and understanding of the approach regarding social responsibility to all related personnel in EGCO Group, as well as communicate with the public through the SukJai journal. This way, the community is notified of EGCO Group’s various projects, and is able to provide opinions to the related working groups. Lastly, the Working Group reports progress and results to EGCO Group’s management.</p>	<ul style="list-style-type: none"> <li>• Proceed according to the monitoring and mitigation plan, which was developed during the Project Development phase.</li> <li>• Support local employment, according to the appropriate positions.</li> <li>• Open-house activity for community and visitors</li> <li>• Organize “Coffee-Talks” with the community to receive feedback, or receive feedback through the Tri-party Committee.</li> <li>• Support and build good, long-term relations with the community, through activities that improve the quality of life and community relations activities.</li> <li>• Communicate and spread information regarding the project and power generation through “SukJai” journal to build knowledge and understanding.</li> <li>• Conduct a satisfaction survey of communities around the power plant.</li> </ul>

In addition to its collaborative approach, EGCO Group has a framework to improve the community and society's quality of life. This framework consists of six principles, as follows:

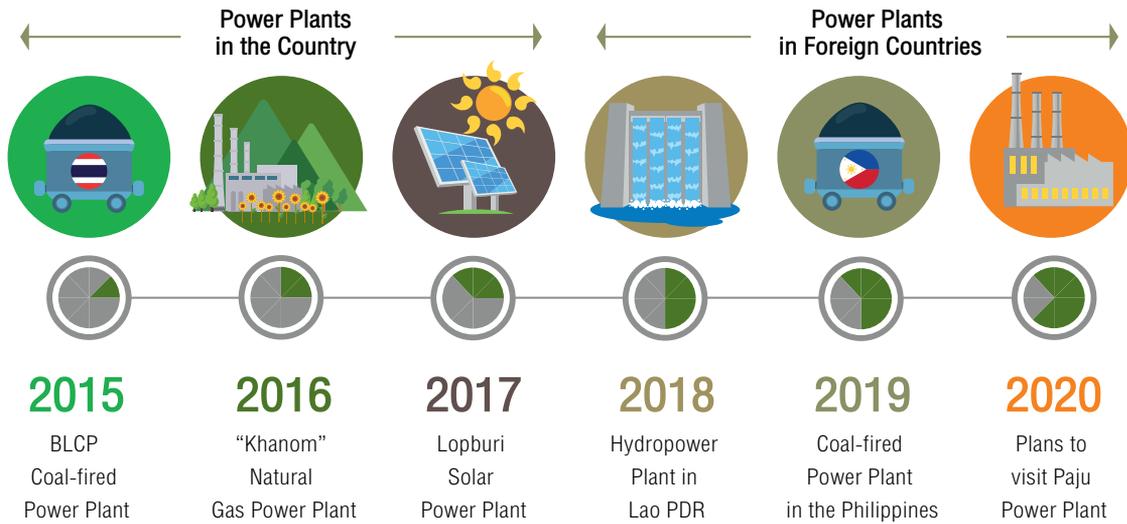
1. Support local employment
2. Develop children and youth
3. Develop skills that are beneficial to relevant professions
4. Promote good health in the community
5. Develop public utilities
6. Conserve natural resources and the environment

**Training and Experience Exchange**

EGCO Group organized activities for the exchange of operational knowledge regarding participation in improving the quality of life in EGCO Group's power plants. The objective is to exchange knowledge between employees who work for the communities around the power plants. Content includes external stakeholder expectations in operations, and new realms of knowledge that are useful to operations, in order to develop operations on a continuous basis, and in a manner that is comparable to international standards. Activities have been conducted since 2008 to present, as follows:



Since 2018, the training process has been improved by adding the knowledge management for power plants within EGCO Group. The knowledge exchange that occurs during training is developed into case studies, and are used as an approach to advance future operations.



In order to increase the level of knowledge for personnel working in community development, the company mandated that all EGCO Group power plants with appropriate qualification have to participate in registering personnel for the Corporate Social Responsibility, Department of Industrial Works (CSR-DIW). Currently, EGCO Group's power plants have 13 staff who are registered in the CSR-DIW, covering all types of power plants that are open for registration.

**2019 Performance Results**

**Promoting Employee Participation according to Core Values**

EGCO Group promotes the instilment of core values and care for stakeholders in all employee levels, throughout business operations. Beyond delivering value to stakeholders according to set responsibilities, the company encourages management at all levels to provide an opportunity for employees and contractors to participate in community and development activities on a continuous basis. In 2019, employee participation amounted to 15,940 hours.

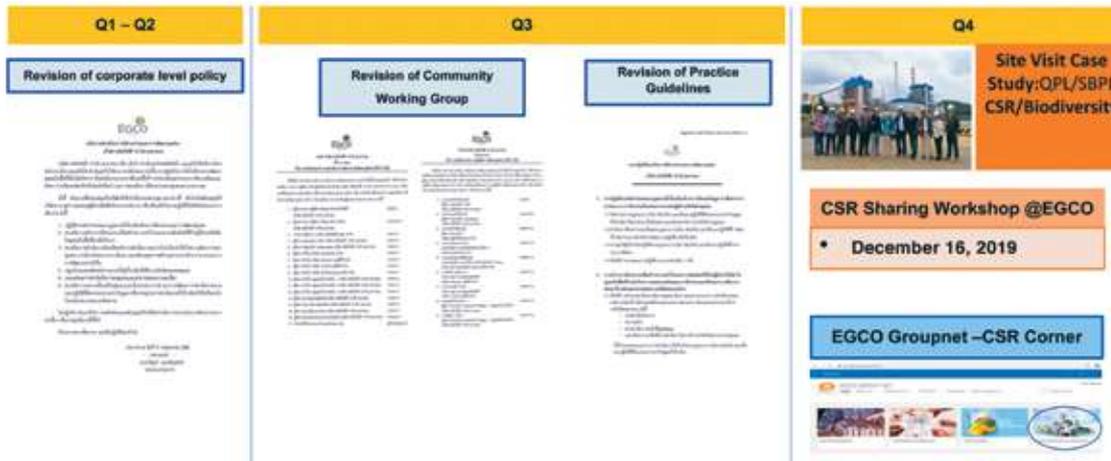
**Hours of Employee Participation**

	2017*	2018*	2019
Hours of participation in activities for society, on a company level	3,564	513	6,379
Hours of participation in activities for communities within power plant areas	2,280	7,217	9,561

Remark: \*the data of 2017-2018 are partial reported

**Operations Improvement Benchmarking with National and International Standards/Practice Guidelines**

In 2018, EGCO Group improved its operations regarding participation in community development on a continuous basis, covering both the policy and operations levels. The improvements includes communications to related operational personnel, and gives importance to the participation of related internal personnel from the operational, supervisory, and management levels regarding policy. The company achieved 100 percent of its targets, as follows:



**• Review and Improvement of Policy & Guidelines**

Using the assessment results that compare the company's operations to good practices recognized in both national and international criteria and guidelines, the company regularly revises and improves its policy and guidelines, which were developed in 2012 and 2015, to promote participation in community development. In addition, the company thoroughly communicates the policy and guidelines to operations personnel to ensure that the policy and guidelines have been implemented in corporate wide.

2012	2015	2019
<ul style="list-style-type: none"> <li>• Policy for social activities</li> </ul> Changed to: <ul style="list-style-type: none"> <li>- Policy for social development</li> <li>- Policy for community engagement &amp; development in surrounding areas</li> </ul>	Create guidelines for community development participation in areas surrounding the power plants, to be used as the working framework for EGCO Group's power plants, which has increased due to the period's business expansion	Improve the policy and guidelines for <b>community development participation</b> in areas surrounding the power plants, by reviewing the policy and guidelines in regards to <b>community engagement</b> and <b>community development</b> .

**• Training and Knowledge Exchange between EGCO Group's Power Plants**

- **Combining guidelines for community development at Quezon Power Plant, Philippines.** In 2019, the company established a process where personnel from each Independent Power Producer (IPP) power plant can conduct knowledge exchange. Khanom power plant's operations team for community development, power plant maintenance, and the chemicals and environmental unit conducted an educational site visit at Quezon and SBPL power plants in the Philippines. These two power plants have similar characteristics to the Khanom plant, both the business size and the areas' physical context. The site visit covered the study of the community's condition and challenging topics for the power plant, which is considered a large industry that is located within close vicinity to the community. In addition, the team studied the diverse environment, success factors for coexisting with the community and earning their respect and confidence, methods to create close participation with the community, including connecting with internal units to build a good understanding of the operational targets. The educational visits are an opportunity for the operations team at power plants with similar characteristics to exchange their experience and knowledge regarding topics that are specific to those contexts, and apply the experience to advance their operations.



- Activities to exchange knowledge regarding EGCO Group power plants' participation in improving communities' quality of life in 2019. The Community Development Working Group consists of community relations personnel from different power plants, both those commercially operating, as well as those that are under construction and development, in Thailand and other countries. A total of 20 people from 12 power plants participated in the activity. The objective is to promote knowledge exchange among EGCO Group personnel who work for the community, to lead to the development of future operations. This exchange of knowledge covers two main activities:

- o Knowledge exchange: communicating the 2019 policy and guidelines, revised version, the approach for developing EGCO Group's operations according to the guidelines of the governance and international units, the operational approach which supports the UN SDGs, including conducting an educational visit at Quezon Power Plant in the Philippines.

- o Visit Khanom Power Plant's learning center, as an educational case study of using the company's core competence for knowledge sharing.

**o Establishment of the CSR Platform for knowledge sharing in the EGCO Group intranet**

This followed the knowledge exchange and the aggregation of EGCO Group power plants' case studies, which have been operating since 2008, as well as EGCO's business growth in the past ten years. At present, EGCO Group has a continued increase in the number of IPPs, SPPs, and VSPPs. To ensure thorough communication and to increase the efficiency of applying the policy to operations in the same direction throughout the group, information regarding community development for EGCO Group's power plants are aggregated within this channel, which all power plants can access more efficiently.

### CSR Platform on EGCO GROUPNET

- Policy
- Practice Guideline
- CSR working group
- Template/Forms
- Contact List
- EGCO Group CSR Case Study

• **Creating participation with the community**

100 percent of EGCO Group’s power plants achieved their target of zero grievances.

Year	2016	2017	2018	2019
Number of grievances from communities surrounding the power plants	0	0	0	0

**Tri-party Committee Meeting:**

- Khanom Power Plant organized meetings for the tri-party and other related committees covering environmental monitoring and community development as follows:

- Tri-party community development steering committee total 3 meetings
- Tri-party joint committee for environmental monitoring Total 2 meetings
- Tri-party community voluntary inspection team for environmental monitoring total 4 meetings

Furthermore, the company organized “Coffee Council Activities” with local organizations to meet the community to communicate information and receive suggestions, total 12 times, 100 percent according to plan.

- The power plants at Khlong Luang and Banpong Utilities organized tri-party committee meetings 2 times, 100 percent according to plan.

Community Relations Activities: EGCO Group’s power plants and its volunteers participated in the community’s important activities, which consists of key dates of the year, important days for the community, cultural and religious days, and other special monthly activities, 100 percent according to plan.

**Publishing “SukJai” journal, a media to enhance community relations :**

on a quarterly basis (issues 23 to 26), with 20,000 copies published. In 2019, readers sent suggestions and questions, in which the topics received were not of any concerns related to the power plant and EGCO Group’s business operations. For the other questions below, the editorial team replied through our question/answer column:

- Question from youth regarding the EGCO Ranger, an educational cartoon, inquiring who the Water Ranger is
- Question from the community inquiring for recommendations when there is an electricity outage



**Power Plant Open House:**

Utilizing the benefits of EGCO Group’s power plants as a source of knowledge in electricity generation. The goal is to present an accurate information and understanding regarding the electricity generation process, by providing an opportunity for youth, the community, and other organizations to visit the power plant.

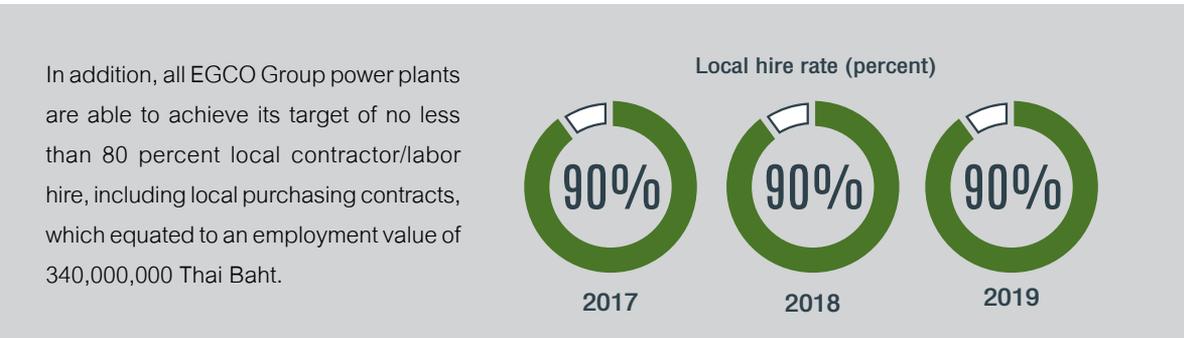
Number of EGCO Group power plant visitors in 2019

Year	2016	2017	2018	2019
Number of EGCO Group power plant visitors (People)	N/A	29,500	29,000	20,526

Furthermore, the power plants have various forms of learning centers, such as the **GreenEducation learning center** at the Lopburi Solar Power Plant, in Lopburi province, which opened for operations in 2011 and teaches about circular energy. The Visitor Center at Nam Theun 2 Power Plant, in Lao PDR, provides information regarding electricity generation from hydropower.

• **Improving the Community's Quality of Life, according to Operational Framework's 6 Principles**

EGCO Group's Khanom power plant has established a local employment policy since operating its first unit in 1981. Although the first unit completed its commercial operation, the policy has remained active till present, the 4<sup>th</sup> unit of operation. Local personnel were employed, as part of the management through to the operations teams.



**Sarunporn Petcharat (Fern)**  
Administrative Officer, Khanom power plant

"Khanom is my birthplace. Khanom power plant was one of my favorite playground since I was born here, I went to the power plant very often, there were areas that the children can play around, and I wanted to work at the power plant since then. Khanom power plant, a private company with very secure job opportunity, as a power producer with good reputation and recognition on excellent business performance and also trusted for its social performance, is one of the desired workplaces for most of the local people not only me.....It's a very good opportunity for me, working here, safe and warm though, living in the same community with family and friends. Working for the power plant, I've learned a lot, the company encourages me and other staffs an opportunity to improve and develop our potential,.....and I'm very proud to work here because Khanom power plant not only provides us a good opportunity but also cares for all the people here in Khanom. Personally, I want to thank to Khanom power plant for giving me this opportunity and I'm proud to be part of the company in doing my best to serve and be part of community development for my birthplace"

**Buntharika Jaimoh (Amp)**

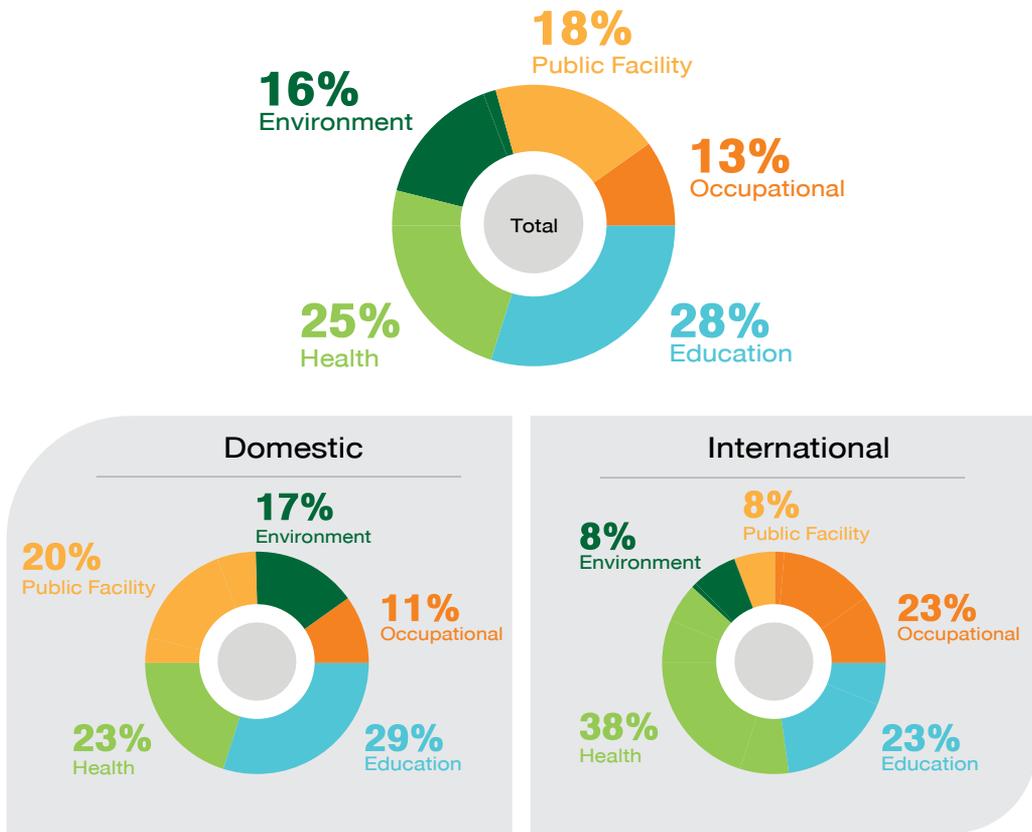
Officer - Muscum Tour Guide and Visitor Experience, Khanom Learning Center

"I was born and lived in Khanom, before moved out to further my study in B.B.A. Information Technology Business at Prince of Songkla University.

After obtaining my B.B.A., I have returned to Khanom. Working here is a very good opportunity, I feel very proud to be part of the team at the Khanom Learning Center, passing on the valuable history of Khanom to our young generation and other visitors. My early months of working here was tough though, of course, I didn't know much about the power plant, the generation process, and even the history of Khanom community itself, I didn't have many clues.....When I was young, I had no idea how the power plant important to us, and what the power plant has involved in the development of our community. Working here, is a good opportunity to get to know the power plant closely enough to truly trust in how the power plant managed to be coexisting with environment and communities, participated in all range of community development activities including support for education, quality of life, local culture and religion, and etc...Being part of the learning center, it is also a good opportunity to learn a lot more."



**Community Development Projects in 2019,  
with 88 projects in total**



Participation in creating economic value for the community and society in 2019

Expense Type	Amount (THB)
Investment in community and social development	166,703,076
Time value - employee volunteering during work hours	9,964,103
In-kind giving: items, service, product support, and others	2,296,184
Management headcounts on community and social development	23,059,330
<b>Total</b>	<b>202,022,693</b>

Community and Social Development Investment Type	Percentage
Charitable Donations	5.21
Community Investment	67.25
Commercial Initiatives	27.54

Social: Promotion of energy and environmental education and conservation

**Khanom Learning Center Project**

On the 25<sup>th</sup> anniversary of the founding of the company in 2017, EGCO Group created the “Khanom Learning Center”, located at the Khanom Power Plant in Khanom district, Nakhon Si Thammarat province. The Khanom Power Plant Unit 1, which is the first floating power plant in the country, completed its commercial contract and underwent renovations to become an out-of-classroom learning center for electricity and the generation process. It also reflects the coexistence of the power plant, community, and the environment, as well as is a tourist destination for youth, the community, and the general public.



Khanom Power Plant, Unit 1



Khanom Power Plant's learning center

A special power plant constructed on a large ship and assembled in Japan, it is the only power plant of its kind in Thailand. The plant responded to a sharp increase in Thailand's electricity demand, at a time when the country did not have sufficient supply. The power plant therefore is of importance and value to the history of the energy business in Thailand.

In Khanom Power Plant's learning center, the exhibition covers the following contents, broken down into three aspects:

Energy and Electricity Generation	Environmental Conservation	Coexistence with the Community
<ul style="list-style-type: none"> <li>• Electricity Generation</li> <li>• Electricity Business in Thailand</li> <li>• About Khanom Power Plant Unit 1                             <ul style="list-style-type: none"> <li>- History of the special designed barge mounted power plant</li> </ul> </li> <li>• Electricity Generation Process                             <ul style="list-style-type: none"> <li>- Natural Gas power plant</li> <li>- Technological Evolution Khanom Power Plant Units 1-4</li> <li>- Various types of power plants</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Environmental Management in the Power Plant</li> <li>• Key Local Natural Resources</li> </ul>	<ul style="list-style-type: none"> <li>• History of the Khanom Community and Local Knowledge</li> <li>• Khanom People's Way of Life, Customs, Culture and Traditions</li> <li>• Knowledge/Tourism Source for Culture and Nature</li> </ul>

**There are seven exhibition zones:**

**ZONE 1**

Electricity Generation



**ZONE 2**

History of Khanom Power Plant 1



**ZONE 3**

- How do We Produce Electricity?
- Electricity City



**ZONE 4**

Forest, Mountains, Ocean are Khanom's Attractions



**ZONE 5**

Environmental Protection is More Than a Duty



**ZONE 6**

Khanom, Our Home



**ZONE 7**

- Khanom District Learning Sites
- Event Space

Contact details and visitor registration for the Khanom Power Plant Learning Center is at:



[www.egco.com/eg/khanom-learningcenter](http://www.egco.com/eg/khanom-learningcenter)



[www.facebook.com/khanomlearningcenter](https://www.facebook.com/khanomlearningcenter)

The opening ceremony for the "Khanom Power Plant Learning Center" was co-chaired by Mr. Charoen Tipayapongtada, Governor of Nakhon Si Thammarat province and Dr. Pasu Loharjun, Chairman of EGCO Group's Corporate Governance and Social Responsibility Committee.





**งานสัปดาห์วิทยาศาสตร์ Science Week**  
 16-24 สิงหาคม 2562  
 08:00-18:00 น.  
 ณ ศูนย์การเรียนรู้

**Special activities for Science Week**  
 The Khanom Power Plant Learning Center organized a special activity under the theme “Power Detective finds clues along the electricity path” during Science Week. Participants included primary and secondary school students, with the objective to drive the learning process and spread knowledge of electricity, the generation process, and energy conservation among youth.

Date: August 16-24 , 2019  
 Participants: 22 schools in Nakhon Si Thammarat province  
 Number of visitors during Science Week: 2,572 people

Number of Visitors:

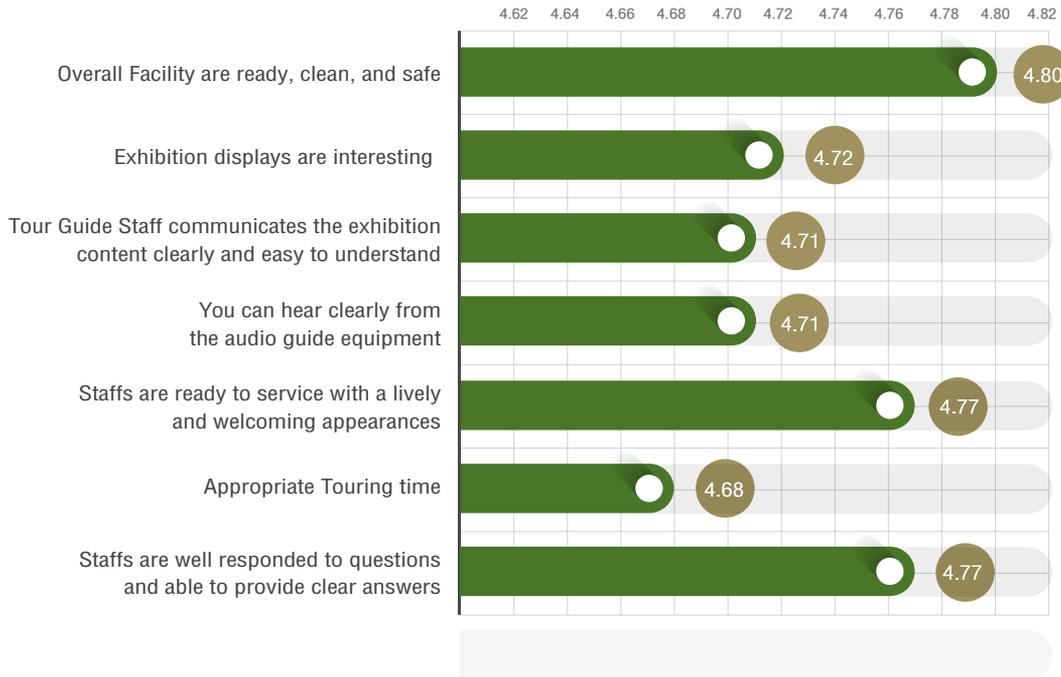
From March to December, the number of visitors was more than 14,821, with 80 percent being youth and educational institutions, 12 percent public and private organizations, and 8 percent the general public.



Number of Visitors from March to December Total 14,821

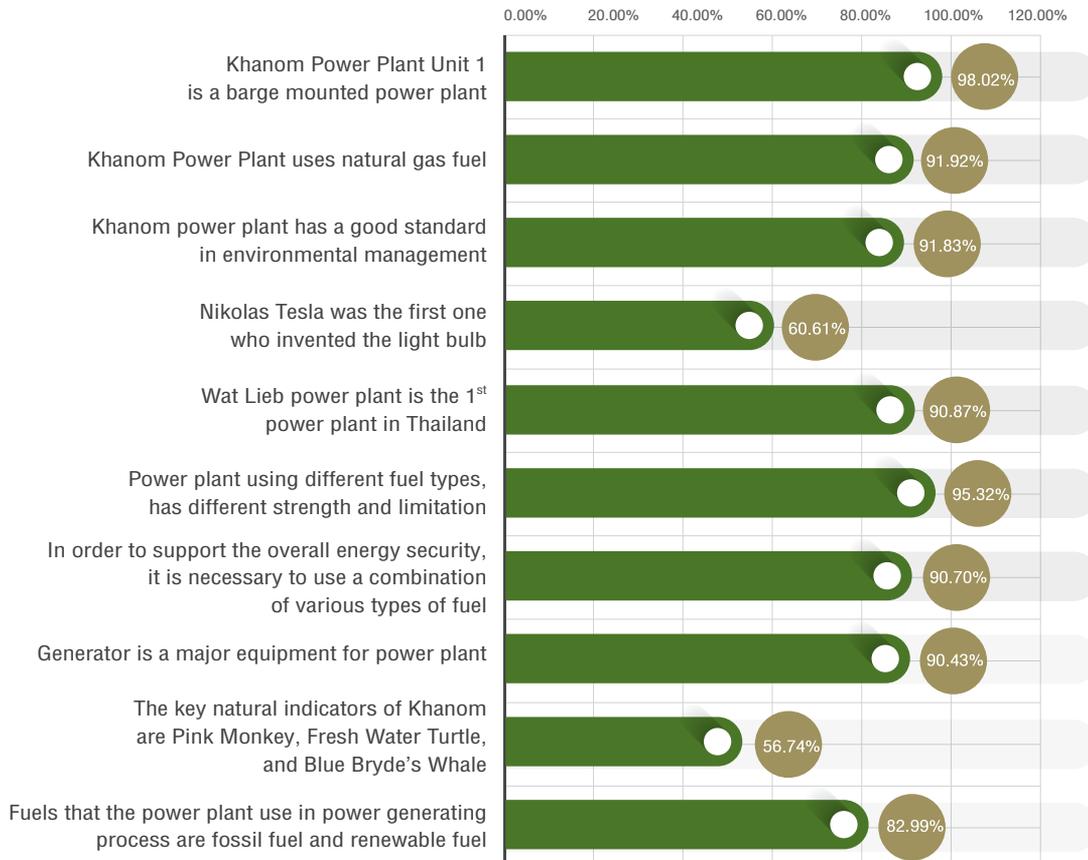
### Satisfaction Rate

95% achieved highest level of satisfaction with an average score over 4.5 out of 5



### Understanding Rate

85% of the visitors understood and remembered key messages





**Theethat Dumrongwut (Kit), Wat Khao Wan Kru (1958) School**

"The most interesting one for me is the exhibition in the 1<sup>st</sup> zone "Discoveries changed the world" because we got to know many important scientists for example who discovered the "electricity", who discovered the theory for electricity generation, the hands-on stations exhibitions are very impressed, the power generating station that I can have direct experience and play a power generating game with friends was very fun and I've learned a lot as well."



"The 2<sup>nd</sup> zone, history of Khanom power plant Unit 1, barge-mounted power plant, presentation is spectaculars, I was so excited when the graphic character of senior engineer, who was once working here, popped up on screen to tell the story and brought us back to the day that this barge power plant arrived at Khanom, and how the barge power plant cruised to Thailand." **Ornkamol Gerdsuwan (Orn), Klong Wang School** expressed her impression.



**Chatthida Meesawang (Numfon), Baan Tha Moug School** shared her experience in participated in the special event during the science week that she was quite amazed to see the daily works the power plant's team, the mechanism of how the huge stream turbine generates the power. Moreover, the stimulation of "Black out Day" has impressed her a lot, knowing how the power plant operates and how hard working the power plants' staff have to be. They must be very well prepared and take spontaneous responses to keep the power plant going. These experiences made her realized the value of electricity which is involved in her daily life, and she is now being aware that we all should use the electricity efficiently, as best as we can.



"Apart from the knowledgeable from other exhibition zones, the history of Khanom community presented in Zone 6 makes me feel very proud of my birthplace community. Back in the time before I was born, the authentic way of how Khanom people lived in the past, the history of the Bangpang Bridge, the original wooden one I want to revisit and want to take my parents, my family, and my friends in Khanom here at least" said **Thannapom Masa (Prouw), Baan Tha Moug School**.



**A note from a group visit from Surat International School, sharing their impression in visiting the Khanom Learning Center**

"The staffs are very nice, gave us a warm welcome, and well equipped in how they conduct the exhibition touring to pass on the knowledge to us, we were very enjoyed visiting here. It is a good learning center, a good place to visit, very well delivering knowledge on energy, power generating process, environmental management, and as well as the history of local community....the overall experience of visiting here truly inspired us that we will take the knowledge back with us and help conserve the energy that we use in daily lives."

The third year of the special project “Rong Fai Fha Phee, Rong Rien Nong” (2017 - 2021) Youth Development project was developed to mark the company’s 25<sup>th</sup> anniversary. The company commits to participate in developing the potential of youth in EGCO Group power plants’ surrounding areas. The project focuses on using the company’s core competencies in generating electricity, using both the power plant itself and the volunteering employees’ expertise. The project blends local community collaboration to help develop youth. The project’s 5-year budget is 74.54 million Thai Baht. In 2019, the following key activities were conducted:

- EGCO and its power plant employees volunteered 2,400 hours in the project to develop youth in the communities.



#### Vocational Scholarships (3<sup>rd</sup> batch) to develop personnel in the power plant industry

EGCO Group provided continuous scholarships at the secondary school – higher education level for five batches, with twenty-five scholarships per cohort. The scholarships do not require any obligations to the company, to provide an opportunity for youth in the power plants’ 49 surrounding schools. These students have good grades but lack the resources to continue their vocational education. The scholarships include six fields of study that are related to the electricity industry, which are **mechanics, machine tool technology, electrical technology, electronics, maintenance techniques, and mechatronics**. Each secondary school scholarship is worth 60,000 Thai Baht per year, and the higher education scholarship is worth 70,000 Thai Baht per year. In 2019, 25 students from 12 power plant areas passed the assessment to receive the scholarship.

### EGCO Ranger On-tour

is an activity that publish the knowledge regarding power and electricity generation from various fuels. In total, there were 1,961 primary school students participated, with 60 percent being extremely satisfied. Overall, 56 percent of students gained a better understanding of the contents.



- Developing and publishing educational media related to energy, for students from the primary school level onwards.

EGCO Ranger Comic Book covers content regarding various types of fuels, including exercises at the end of each chapter to ensure understanding. The book contains eight chapters, with 8,250 published copies.



### Energy and Environmental Conservation Youth Camp (Third Year)

is committed to advancing knowledge and readiness for youth in 21 schools surrounding EGCO Group's power plants. The content is geared towards a "low-carbon society" through learning about the "carbon footprint" from daily activities. A lecturer from the Thailand Environment Institute provided theoretical knowledge, and Mr. Vichai Ummaralikit, the Mayor of Phanat Nikhom municipality, was a guest speaker on "Phanat Nikhom, Low Carbon City". In addition, a workshop was also conducted to support 21<sup>st</sup>- century skills with various tools and processes, such as issue analysis using carbon mapping, visual thinking, and project concepts in designing power and environmental projects for the schools under the concept "Preparation towards a low-carbon society". Over 70 teachers and students from 21 schools in 12 power plant areas participated.



To further instill a conscious mindset and promote student behavior, the project invited schools to submit energy and environmental conservation projects to help reduce the schools' carbon footprint. The projects underwent an evaluation to receive funding. The plan is to submit the projects' reduction in carbon footprint to the "LESS" program, by the Thailand Greenhouse Gas Management Organization (TGO), from 2020 onwards. Eighty percent of schools who participated in the youth camp submitted their projects for consideration. Projects consist of reduction of energy use (80 percent), waste separation (21 percent), organic fertilizer production from bio-waste (26 percent), and green space management project (21 percent), where the initial funds amounted to 193,000 Thai Baht.



**Kwanrudee Hongsa (Poompui), Grade 9, Kosi Narai school, Ratchaburi province**

"I've learned a lot from the camp such as energy consumption, greenhouse gas & global warming, carbon footprint and environment conservation, and the best thing was that we got a chance to do the carbon mapping, exploring surrounding environment and figured out which are the sources of carbon emission and which are the carbon sink. Learning what and how we can help to stop the global warming...tree planting helps increasing the carbon sink while using energy efficiently helps decreasing carbon emissions...etc."



**Kittipak Thortheuk (Dumper), Grade 8, Roi-Et Wittayalai school, Roi-Et province**

"I've learned many new ideas, knowledge and best practices, such as showcases from site visit session, visited Panat Nikhom municipal school, a primary school, old one, which was very interesting on how the students can effectively help managing the different types of waste in school, and how we can help reduce wastes. The "Panat Nikhom Low Carbon City" presented by the Mayor, was also very inspiring. I will bring back the waste separation project in my school, I want to create more effective ways to handle waste. Another thing that I've learned and can be applied in my school is the green areas in school, I want to develop the abandoned areas into green areas, planting organic vegetables and planting trees and so on."



**Kamolluck Suwanwong, science teacher from Horwang school, Pathum Thani province**

"What interested me most is how we can smoothly combine the science and environmental aspect together, the carbon footprint concept is a new knowledge to the students. They got to know how the world's carbon footprint has been increased, including the impact on our daily activities. The site visit to Panat Nikhom City is another inspiring case of what we can do at in our school and we can truly contribute to the world we live in."

**“Watershed Forest” Natural Resource Conservation by the Thai Rak Pa Foundation (Thai Forest Conservation)**

EGCO Group founded the conservation project in 2002, with the intention to support the environment, forest and watershed conservation that is important to Thailand, according to the intention of His Majesty King Bhumibol Adulyadej and Her Majesty Queen Sirikit the Queen Mother. Natural resource conservation benefits the population in a sustainable manner, and is a foundation in which agriculture depends upon, which is at the heart of Thai people. Furthermore, the project helps to protect against natural disasters, which may harmful to the environment. At present, the foundation is operating under a five-year strategic plan (2017-2021) to conserve watershed forests in three provinces, which are Chiang Mai, Chayaphum, and Nakhon Si Thammarat. The following key operations were conducted in 2019:

A 5-year target of 1,300 rai of forest restoration was set (2017-2021): 1,000 rai in Mae Jam district, Chiang Mai province, and 300 rai in Phu Khiao district, Chaiyaphum province. In 2019, the following operations were conducted:



Mae Jam district, Chiang Mai province, with a 2019 target of 750 rai, the project achieved 755 rai.



Phu Khiao district, Chaiyaphum province, with a 2019 target of 160 rai, the project achieved 82 rai. The target was not achieved due to changing climate conditions, which caused a prolonged drought that affected seed nutrition and the survival of the planted seedlings.



The Thai Rak Pa foundation partnered with Doi Inthanon National Park to renovate and improve walkways, in order to reduce the impacts and restore the richness of the **Kew Mae Pan nature trails at Doi Inthanon National Park, Chiang Mai province**. Ground cover in the nature trails had decreased, which exposed the roots of large trees, causing a risk of tree fall. The informational signage throughout the trail were also renovated to be ready for service to visitors. The renovation was completed in November 2019, and an official ceremony to hand over the trail is scheduled for Q1 2020.



The youth network in Chiang Mai province, under the Thai Rak Pa Foundation of EGCO Group founded and has supported the country’s watershed forest conservation since 2017. The network received the Low Emission Support Scheme (LESS) certificate by Thailand Green House Gas Management Organization (Public Organization), from Mr.Thanetpol Thanabunyawat, the Secretary to Minister of Natural Resources and Environment at the 2019 “Joining Together to Fight Global Warming” event.

## Performance Summary 2016-2019

## Economic Dimension

GRI 201-1: Direct Economic Value Generated and Distributed					
Performance	Units	2016	2017	2018	2019
Sales and Service Income	Baht	24,680,818,146	30,223,559,318	38,174,192,131	41,055,022,317
Operating costs (Excluding Employee Remunerations)	Baht	15,876,601,114	20,512,962,193	29,966,151,852	29,663,640,885
Employee wages and benefits	Baht	2,014,486,286	1,954,105,893	2,115,617,704	2,257,494,077
Dividends paid to shareholders	Baht	3,421,988,612	3,553,622,137	5,000,975,850	3,553,463,021
Investment and financial expenses for lenders	Baht	3,188,272,093	3,805,853,260	4,023,693,045	3,981,212,498
Tax paid to government and local authorities	Baht	1,365,513,689	1,201,179,751	1,089,771,424	1,575,796,528
Payment for the Power Development Fund	Baht	68,189,754	84,352,714	103,313,215	100,257,302
Philanthropic contributions	Baht				
Charitable donations	Baht	511,000,000	472,000,000	16,181,570	8,799,731
Community investments	Baht			218,948,407	113,652,675
Commercial initiatives	Baht	N/A	N/A	N/A	46,546,854

GRI 205-2: Communication and Training about Anti-corruption Policies and Procedures					
Performance	Units	2016	2017	2018	2019
Governance body members that the organization's anti-corruption policies and procedures have been communicated to.	Persons	15	15	15	15
	%	100	100	100	100
Governance body members that have received training on anti-corruption	Persons	N/A	N/A	1	1
	%	N/A	N/A	7	7
Business partner that anti-corruption policies and procedures have been communicated to	%	100	100	100	100
Employees that anti-corruption policies and procedures have been communicated to	Persons	200	187	187	171
	%	31	20	17	21
Employees that have received training on anti-corruption	Persons	2	78	150	191
	%	0	4	13	22

**GRI 205-3: Confirmed Incidents of Corruption and Actions Taken**

Performance	Units	2016	2017	2018	2019
Confirmed incidents of corruption and bribery	Cases	0	0	0	0

**GRI 206-1: Legal Actions for Anti-Competitive Behavior, Anti-Trust, and Monopoly Practices**

Performance	Units	2016	2017	2018	2019
Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes	Case	0	0	0	0

**GRI 405-1: Diversity of Governance Bodies and Employees**

Performance	Units	2016		2017		2018		2019	
		Male	Female	Male	Female	Male	Female	Male	Female
Number of governance bodies by age group									
- Under 30 years	Persons	0	0	0	0	0	0	0	0
	Percentage	0		0		0		0	
- 30 – 50 years	Persons	3	0	2	0	1	0	1	0
	Percentage	20		13		7		7	
- Over 50 years	Persons	10	2	11	2	12	2	12	2
	Percentage	80		87		93		93	

**Supply Chain Management**

**GRI 308-1: New suppliers that were screened using environmental criteria**

Performance	Units	2016	2017	2018	2019
Percentage of new suppliers that were screened using environmental criteria	%	30.76	30.23	41.37	100

**GRI 414-1: New Suppliers that were screened using social criteria**

Performance	Units	2016	2017	2018	2019
Percentage of new suppliers that were screened using social criteria	%	30.76	30.23	41.37	100

## Reliable Power Supply

## G4-PR5: Customer Satisfaction Survey Results Reported for Organization

Performance	Units	2016	2017	2018	2019
Target	%	90.00	90.00	90.00	90.00
Customer Satisfaction Survey	%	90.79	92.21	93.30	92.42
Data Coverage	% of Revenue	41	54	63	87

## G4-EU1: Install Capacity by Production Primary Energy Source

Performance	Units	2016	2017	2018	2019
Coal	%	28	27	22	22
Nuclear	%	0	0	0	0
Natural Gas	%	60	57	65	65
Oil	%	0	0	0	0
Hydro (> 10 MW)	%	0	0	0	0
Wind	%	7	11	9	9
Other Renewable	%	5	5	4	4
Installed Capacity	MW	1,807	1,887	2,265	2,265
Net Energy Capacity	GJ	38,551,151	39,616,917	47,604,028	50,839,169
Transmission Loss as a % of total Energy	%	N/A (transmission of electricity is beyond EGCO's operations)			

## G4-EU 30: Average Plant Availability Factor

Coal	%	89.50	82.54	80.00	89.96
Natural Gas	%	95.90	95.94	92.32	97.05

## IF-EU-550a.1.: Number of incidents of non-compliance with physical and/or cybersecurity standards or regulations

Performance	Units	2016	2017	2018	2019
Number of incidents of non-compliance with physical and/or cybersecurity standards or regulations	Number of incidents	0	0	0	0

## G4-EU11: Average Plant Efficiency

Thermal Plants	Units	Installed Capacity (MW)	Average Efficiency (%)	Main Fuel Source
KEGCO	2	970	51.45	Gas
EGCO Cogen	1	117	44.48	Gas
KLU	1	122	42.11	Gas
BPU	2	256	43.85	Gas
Quezon	1	502.5	34.96	Coal
RG	1	9.9	19.90	Biomass

Social Performance

GRI 102-8: Information on Employees and Other Workers													
Performance	Unit	2016			2017			2018			2019		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Total employee by employee type													
Total Employees	Person	693	302	995	966	362	1,328	1,046	315	1,361	1,112	311	1,423
- Permanent Employee	Person	473	180	653	727	227	954	858	259	1,117	926	271	1,197
- Outsource	Person	64	27	91	217	132	349	161	52	213	129	34	163
- Staff under O&M Agreement and/or Service Agreement	Person	156	95	251	22	3	25	27	4	31	57	6	63
Total employee by area													
- Thailand	Person	319	157	476	561	200	761	668	222	890	650	219	926
- Oversea	Person	154	23	177	166	27	193	190	37	227	276	52	271

GRI 401-1: New Employee Hires and Employee Turnover													
Performance	Unit	2016			2017			2018			2019		
		Male	Female	Total									
New Employee hired by age group													
Total New Hire	Person	14	8	22	57	17	74	43	25	68	88	23	111
- Below 30 years old	Person	8	8	16	45	12	57	17	22	39	47	18	65
- 30 -50 years old	Person	6	0	6	10	5	15	23	2	25	40	5	45
- Over 50 years old	Person	0	0	0	2	0	2	3	1	4	1	0	1
Total New Hire Rate	%	2.96	4.44	3.37	7.84	7.49	7.76	5.01	9.65	6.09	9.50	8.49	9.27
Turnover of permanent employee by age group													
Total permanent employee turnover	Person	12	6	18	31	10	41	19	13	32	39	20	59
- Below 30 years old	Person	2	2	4	14	7	21	6	7	13	12	9	21
- 30 -50 years old	Person	3	4	7	14	3	17	9	6	15	13	2	15
- Over 50 years old	Person	7	0	7	3	0	3	4	0	4	14	9	23
Total employee turnover rate	%	2.54	3.33	2.76	4.26	4.41	4.30	2.21	5.02	2.86	4.21	7.38	4.93
Voluntary employee turnover rate	%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.84	2.58	2.01

**GRI 401-3: Parental Leave**

Performance	Unit	2016			2017			2018			2019		
		Male	Female	Total									
Employee taken parental leave	Person	6	1	7	4	2	6	8	3	11	17	2	19
Employee returned to work after parental leave	Person	6	1	7	4	2	6	10	4	14	17	2	19

**GRI 404-1: Average hours of Training per year per Employee**

Performance	2016			2017			2018			2019		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Training by Employee Type												
- Executive	1,520	419	1,939	836	339	1,175	734	147	881	971	527	1,498
- Middle Management	5,081	1,525	6,606	5,882	2,066	7,947	1,632	1,318	2,950	3,929	1,866	5,794
- First-Level Management	9,213	1,704	10,917	11,485	1,986	13,471	3,078	2,323	5,401	3,818	2,181	5,998
- Employee (Non-Management)	56,815	7,364	64,179	69,937	9,115	79,051	18,692	6,026	24,717	17,148	6,463	23,611
Total Training Hours	72,628	11,012	83,641	88,139	13,505	101,644	24,135	9,814	33,949	25,865	11,036	36,901
Training by Topics												
- Environment, Health and Safety	24,829	2,077	26,906	22,622	2,309	24,931	8,561	1,637	10,197	6,119	1,317	7,436
- Code of Conduct			-			-	65	3	68	0	51	51
- Others	47,800	8,935	56,735	65,518	11,196	76,713	15,703	8,049	23,752	19,746	9,669	29,415
Total Training Hours by Topics	72,628	11,012	83,641	88,139	13,505	101,644	24,328	9,689	34,017	25,865	11,036	36,901
Average Training Hours by Employee Types (Hour /person /year)												
- Executive	46.81	36.80	44.43	26.00	42.20	29.68	40.78	24.50	36.71	60.69	105.30	71.31
- Middle Management	31.82	35.22	32.89	53.07	77.20	59.20	34.72	57.30	42.14	95.82	84.80	91.97
- First-Level Management	24.68	27.95	25.84	36.88	34.88	36.14	36.21	41.48	38.30	42.42	38.94	41.08
- Employee (Non-Management)	28.35	24.11	27.27	22.06	23.23	22.31	26.40	34.63	28.02	22.01	34.38	24.42
Total Average Training Hours	28.71	26.41	28.07	25.68	29.63	26.62	28.28	37.40	30.39	27.93	40.72	30.83

**GRI 404-1: Average hours of Training per year per Employee**

Performance	2016			2017			2018			2019		
	Male	Female	Total									
Average Training Hours by Topic												
- Environment, Health and Safety	16.56	5.97	14.57	13.52	5.70	12.00	9.98	6.32	9.13	6.61	4.86	6.21
- Others	31.89	25.68	30.72	39.16	27.64	36.92	18.30	31.08	21.26	21.32	35.87	24.62
Total Average training hours	48.45	31.64	45.28	52.68	33.34	48.91	28.35	37.41	30.45	27.93	40.72	30.83

**GRI 404-3: Percentage of employees receiving regular performance and career development reviews**

Performance	2016			2017			2018			2019		
	M	F	Total									
- Executive	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
- Middle Management	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
- First-Level Management	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
- Employee (Non-Management)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

**GRI 405-1: Diversity of Employees (Permanent Employees Only)**

Performance	Unit	2016			2017			2018			2019		
		Male	Female	Total									
Total employee by employee category													
- Executive	Person	16	5	21	17	5	22	18	6	24	16	5	21
	%	76	24	100	77	23	100	75	25	100	76	24	100
- Middle Management	Person	39	18	57	44	15	59	47	23	70	41	22	63
	%	68	32	100	75	25	100	67	33	100	65	35	100
- First-Level Management	Person	71	39	110	81	47	128	85	56	141	90	56	146
	%	65	35	100	63	37	100	60	40	100	62	38	100
- Employee (Non-management level)	Person	347	118	465	585	160	745	708	174	882	779	188	967
	%	75	25	100	79	21	100	80	20	100	81	19	100

## Labor Practices

Performance	Unit	2016			2017			2018			2019		
		Male	Female	Total									
Employees represented by an independent trade union	Person	-	-	-	-	-	-	113	21	134	113	21	134
- Labor Union	Person	-	-	-	-	-	-	109	15	124	109	15	124
- Welfare Committee	Person	-	-	-	-	-	-	4	6	10	4	6	10
Percentage of employee under supervision of the welfare committee/ Labor union	%			100			100			100			100

## Occupational Health and Safety Performance

### GRI 403-9: Work-Related Injuries

Performance	Units	2016	2017	2018	2019
<b>Fatality</b>					
- Employees	Cases	0	0	0	0
- Contractors	Cases	0	0	0	0
Rate of fatality	Cases/Million hours	0	0	0	0
<b>High-consequence work-related Injury</b>					
- Employees	Cases	0	0	0	0
- Contractors	Cases	0	0	0	0
Rate of high-consequence work-related injury	Cases/ Million hours	0	0	0	0
<b>Recordable work-related injury</b>					
- Employees	Cases	1	0	0	1
- Contractors	Cases	13	0	1	1
Rate of recordable work-related injury	Cases/Million hours	3.24	0	0.16	0.33
<b>Lost Time Injury Frequency Rate (LTIFR)</b>					
- Employees	Cases/Million hours	0.00	0.00	0.00	0.00
- Contractors	Cases/Million hours	0.30	0.00	0.25	0.00
<b>Injury Frequency Rate (IFR)</b>					
- Employees	Cases/Million hours	1.01	0.00	0.00	0.45
- Contractors	Cases/Million hours	3.89	0.00	0.25	0.26

## Environmental Performance

## GRI 302-1: Energy Consumption within the Organization

Performance	Units	2016	2017	2018	2019
A: Non-renewable fuel consumed	GJ	80,282,618	80,348,846	93,704,051	99,664,666
- Coal	GJ	30,286,907	29,769,911	25,215,135	28,548,751
- Gas	GJ	49,802,582	50,362,998	68,266,718	70,936,554
- Other: Diesel oil, Gasoline	GJ	193,128	215,937	222,198	179,361
B: Renewable Fuel consumed: Biomass	GJ	1,090,244	1,236,642	1,118,660	1,226,128
C: Electricity, heating, cooling and steam purchased for consumption	GJ	27,672	41,873	47,407	38,962
D: Electricity, heating, cooling and steam sold	GJ	38,551,151	39,616,917	47,604,028	50,839,169
- Electricity	GJ	38,445,508	39,465,028	45,440,073	48,997,505
- Steam	GJ	105,642	151,889	2,163,955	1,841,663
Total energy consumption (A+B+C-D)	GJ	42,849,384	42,010,445	47,266,090	50,090,587
Generation					
Total electricity and steam generation	MWh	10,708,653	11,004,699	13,223,341	14,121,991

## GRI 302-3: Energy Intensity

Performance	Units	2016	2017	2018	2019
Energy intensity within organization	GJ/MWh	4.00	3.82	3.57	3.55

## GRI 305: Greenhouse Gas Emissions (GHGs)

Performance	Units	2016	2017	2018	2019
GRI 305-1: Direct (Scope 1) GHG emissions	ton CO <sub>2</sub> e	6,247,557	5,828,891	6,664,845	6,794,414
GRI 305-2: Energy indirect (Scope 2) GHG emissions	ton CO <sub>2</sub> e	4,409	6,762	8,670	7,137
GRI 305-4: GHG emissions intensity (Scope 1)	ton CO <sub>2</sub> e/MWh	0.58	0.53	0.50	0.48

**GRI 303-3: Water Withdrawal**

Performance	Units	2016	2017	2018	2019
Total water withdrawal from all areas	m <sup>3</sup>	1,353,601,698	1,203,249,635	1,132,021,128	1,214,665,915
- Surface water (Incl. Water from rivers, lakes)	m <sup>3</sup>	1,353,561,456	1,203,223,412	4,884,040	4,816,148
- Fresh water (≤1,000 mg/L TDS)	m <sup>3</sup>	N/A	N/A	4,884,040	4,816,148
- Other water (>1,000 mg/l TDS)	m <sup>3</sup>	N/A	N/A	0	0
- Ground Water	m <sup>3</sup>	39,213	25,230	34,980	31,083
- Fresh water (≤1,000 mg/L TDS)	m <sup>3</sup>	N/A	N/A	N/A	N/A
- Other water (>1,000 mg/l TDS)	m <sup>3</sup>	N/A	N/A	N/A	N/A
- Seawater	m <sup>3</sup>	N/A	N/A	1,126,110,005	1,208,701,639
- Fresh water (≤1,000 mg/L TDS)	m <sup>3</sup>	N/A	N/A	0	0
- Other water (>1,000 mg/l TDS)	m <sup>3</sup>	N/A	N/A	1,126,110,005	1,208,701,639
- Third-party water: Municipal water suppliers or other water utilities	m <sup>3</sup>	1,029	993	992,103	1,117,044
- Fresh water (≤1,000 mg/L TDS)	m <sup>3</sup>	1,029	993	992,103	1,117,044
- Other water (>1,000 mg/l TDS)	m <sup>3</sup>	0	0	0	0
Total water withdrawal from water stress areas	m <sup>3</sup>	0	0	0	0
Recycled water	m <sup>3</sup>	68,016	148,653	157,382	146,698

**GRI 303-4: Water Discharge**

Performance	Units	2016	2017	2018	2019
Total water discharge to all areas	m <sup>3</sup>	1,351,550,556	1,201,914,919	1,127,330,967	1,209,635,966
- Surface water	m <sup>3</sup>	N/A	N/A	806,253	574,629
- Ground water	m <sup>3</sup>	N/A	N/A	22,569	20,037
- Seawater	m <sup>3</sup>	N/A	N/A	1,126,502,145	1,209,041,300
Total water discharge by					
- Fresh water (≤1,000 mg/L TDS)	m <sup>3</sup>	N/A	N/A	N/A	N/A
- Other water (>1,000 mg/l TDS)	m <sup>3</sup>	N/A	N/A	N/A	N/A

**GRI 303-5: Water Consumption**

Performance	Units	2016	2017	2018	2019
Water consumption (Water withdrawal - Water Discharge)	m <sup>3</sup>	2,051,142	1,334,717	4,690,161	5,029,949

**GRI 305-7: Nitrogen Oxides (NO<sub>x</sub>), sulfur oxides (SO<sub>x</sub>), and other significant air emissions**

Performance	Units	2016	2017	2018	2019
- NO <sub>x</sub> emissions	Tons	6,041	6,385	6,746	7,469
- SO <sub>x</sub> emissions	Tons	5,386	4,047	5,945	6,661
- TSP	Tons	581	782	524	584
- Mercury emissions	Tons	0.0159	0.0197	0.0072	0.0087
- SF <sub>6</sub> emissions	Tons	0.0002	0.0422	0.1000	0.0000

**GRI 306-2: Waste by type and disposal methods**

Performance	Units	2016	2017	2018	2019
<b>Hazardous waste</b>					
Total hazardous waste	Tons	128	221	180	116
- Landfill	Tons	100	161	65	16
- Reuse	Tons	-	-	-	-
- Recycling	Tons	5	42	93	24
- Recovery	Tons	16	14	19	16
- Incineration	Tons	-	-	-	25
- On-site storage	Tons	-	-	3	24
- Other	Tons	8	3	-	11
<b>Non-hazardous waste</b>					
Total non-hazardous waste (excluding ash)	Tons	13,998	2,741	1,571	2,481
- Landfill	Tons	8,900	943	910	986
- Reuse	Tons	-	-	-	-
- Recycling	Tons	-	-	604	1,347
- Recovery	Tons	3,953	606	-	3
- Incineration	Tons	-	-	-	-
- On-site storage	Tons	-	-	-	-
- Composting	Tons	-	-	57	74
- Other	Tons	1,144	1,193	-	71
<b>Non-hazardous waste (ash only)</b>					
Ash	Tons	56,911	45,772	44,696	44,667
- Landfill	Tons	22,410	17,151	14,189	13,561
- Recycling	Tons	34,500	28,620	29,840	31,106
- Other (Donated)	Tons	1	0	667	0

**GRI 306-3: Significant Spills**

Performance	Units	2016	2017	2018	2019
Number of significant spills	Number	0	0	0	0
Total volume of significant spills	Litres	0	0	0	0

**GRI 307-1: Non-Compliance with Environmental Laws and Regulations**

Performance	Units	2016	2017	2018	2019
Total number of violations of legal obligations/ regulations	Case	0	0	0	0
- Significant fines	Baht	0	0	0	0
- Non-monetary sanctions	Case	0	0	0	0
- Case brought through dispute resolution mechanisms	Case	0	0	0	0

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Global Reporting Initiative: Core Standards

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GRI 102-9	Supply chain	8-10	
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<b>GRI 303-3 (2018)</b>	Water Withdrawal	70 - 71, 140	✓ (303-3a)
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# LR Independent Assurance Statement

## Relating to Electricity Generating Public Company Limited's Environmental and Social Disclosures within the Sustainability Report for the calendar year 2019

This Assurance Statement has been prepared for Electricity Generating Public Company Limited in accordance with our contract but is intended for the readers of this Report.

### Terms of engagement

Lloyd's Register Quality Assurance Limited (LR) was commissioned by Electricity Generating Public Company Limited's (EGCO) to provide independent assurance on the environmental and social disclosures within its Sustainability Report 2019 ("the Report") against the assurance criteria below to a limited level of assurance and at the materiality of the professional judgement using LR's verification procedure. LR's verification procedure is based on current best practice, is in accordance with ISAE 3000 and uses the following principles of - inclusivity, materiality, responsiveness and reliability of performance data.

Our assurance engagement covered fourteen of EGCO's operations and activities in Thailand, Australia and Philippines and three subsidiary companies in Thailand and Philippines and specifically the following requirements:

- Reviewing whether the selected indicators have taken account of GRI Sustainability Reporting Standards (2018)
- Evaluating the accuracy and reliability of data and information for only the selected indicators listed below:<sup>1</sup>
  - *Environmental:*
    - GRI 302-1 Energy consumption within the organization
    - GRI 302-3 Energy intensity
    - GRI 303-1 Interactions with water as a shared resource
    - GRI 303-3 water withdrawal
    - GRI 303-4 water discharge
    - GRI 303-5 water consumption
    - GRI 305-1 Direct (scope 1) GHG emissions
    - GRI 305-2 Energy indirect (scope 2) GHG emissions
    - GRI 305-7 Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions
    - GRI 306-1 Water discharge by quality and destination
    - GRI 306-2 Waste by type and disposal method
    - GRI 306-3 Significant spills
  - *Social:*
    - GRI 403-9 Work-related injuries

Our assurance engagement excluded EGCO's operations and activities outside Thailand except only for Quezon Power (Philippines) Limited Co. and Boco Rock Wind Farm Pty Ltd. It also excluded the data and information of EGCO's suppliers, contractors and any third-parties mentioned in the report.

LR's responsibility is only to EGCO. LR disclaims any liability or responsibility to others as explained in the end footnote. EGCO's responsibility is for collecting, aggregating, analysing and presenting all the data and information within the report and for maintaining effective internal controls over the systems from which the report is derived. Ultimately, the report has been approved by, and remains the responsibility of EGCO.

### LR's Opinion

Based on LR's approach nothing has come to our attention that would cause us to believe that EGCO has not, in all material respects:

<sup>1</sup> GHG quantification is subject to inherent uncertainty.



- Met the requirements above
- Disclosed accurate and reliable performance data and information as no errors or omissions were detected
- Covered all the issues that are important to the stakeholders and readers of this report.

The opinion expressed is formed on the basis of a limited level of assurance and at the materiality of the professional judgement of the verifier.

**Note:** The extent of evidence-gathering for a limited assurance engagement is less than for a reasonable assurance engagement. Limited assurance engagements focus on aggregated data rather than physically checking source data at sites. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

### LR's approach

LR's assurance engagements are carried out in accordance with our verification procedure. The following tasks though were undertaken as part of the evidence gathering process for this assurance engagement:

- Assessing EGCO's approach to stakeholder engagement to confirm that issues raised by stakeholders were captured correctly. We did this through reviewing documents and associated records.
- Reviewing EGCO's process for identifying and determining material issues to confirm that the right issues were included in their Report. We did this by benchmarking reports written by EGCO and its peers to ensure that sector specific issues were included for comparability. We also tested the filters used in determining material issues to evaluate whether EGCO makes informed business decisions that may create opportunities that contribute towards sustainable development.
- Auditing EGCO's data management systems to confirm that there were no significant errors, omissions or mis-statements in the report. We did this by reviewing the effectiveness of data handling procedures, instructions and systems, including those for internal verification. We also spoke with those key people responsible for compiling the data and drafting the report.
- Visiting EGCO's sites (Head office, KEGCO, EGCO COGEN, SPP2 power plant) to confirm the accuracy and reliability of the data and information for the selected disclosures.

### Observations

Further observations and findings, made during the assurance engagement, are:

- **Stakeholder inclusivity:**  
EGCO has continued improving its stakeholder engagement process and we are not aware of any key stakeholder groups that have been excluded. For the next reporting period, we believe that EGCO should collect the views and expectations of overseas stakeholders to better demonstrate regional context.
- **Materiality:**  
We are not aware of any material issues concerning EGCO's environmental and social performance that have been excluded from the report. EGCO's materiality assessment is part of their high-level business process which sets the strategy for improving sustainability performance.  
EGCO has demonstrated their sustainability commitment, by putting in place policies and procedures to address global issues and the ensuing impacts. For example: to tackle climate change, EGCO will increase its electricity generation mix from renewable fuel to 30% over the next seven years.
- **Responsiveness:**  
Although EGCO's report provides stakeholders with sustainability performance data and information, we believe that EGCO should have a set of criteria for determining what specifically will be reported. This will increase the relevance of disclosure/context and ensure that future reports are tailored to the concerns of stakeholders as well as the level of risk associated with that material issue.



- **Reliability:**

As part of its function, head office aggregates all the data and information from EGCO's operations and subsidiary companies. However, to improve the accuracy of these totalised datasets, we still believe EGCO should require each site to carry out their own internal verification of their source data.

**LR's standards, competence and independence**

LR ensures the selection of appropriately qualified individuals based on their qualifications, training and experience. The outcome of all verification and certification assessments is then internally reviewed by senior management to ensure that the approach applied is rigorous and transparent.

The verification is the only work undertaken by LR for EGCO and as such does not compromise our independence or impartiality.

A handwritten signature in black ink, appearing to read 'Nit Tanasuthiseri'.

Nit Tanasuthiseri  
LR Lead Verifier

Dated: 9 March 2020

On behalf of Lloyd's Register International (Thailand) Limited  
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