

## Emerging Risks

### 1. Coronavirus Disease 2019 (COVID-19) Impact Risk

Category of Risk: Environmental and Societal Risks (Operational Risk)

Source of Risk: Natural Risk (Epidemic Disease Risk)

#### Impact to EGCO Group and Scenario Analysis

Time Frame of Impact: 3-5 years (Year 2019-2023)

Type of Impact: Significant Negative Impact

The COVID-19 crisis affects EGCO's short-term operations, such as fewer electricity generation dispatch orders (which decrease with the decrease in electricity demand) and the postponement of maintenance plans for some power plants due to travel and transportation restrictions. However, the EGCO Group is still generally able to operate its business continuously and efficiently throughout the business chain according to the Business Continuity Plan (BCP), which has been prepared for both headquarters and power plants in the EGCO Group. The BCP plan is reviewed for each situation. Presently, the EGCO Group's 28 power plants in both domestic and overseas operations continue to smoothly operate and distribute electricity to the power system. Additionally, there is a slight delay in the progress of construction projects and new investment projects, but the construction and project development risk has been well-managed, and the projects are expected to be completed as scheduled.

#### Mitigation and Opportunities

The EGCO Group mitigated risk by preparing and following strict COVID-19 preventive measures for office working processes and power plant operations, as stipulated in the BCP plan for office worker mitigations. For office workers, these measures include working from home, measuring body temperature, wearing a face mask, and holding meetings online. For power plant operators, mitigation measures include area restrictions, full lockdown measures, limitations on the number of operators in a control room per shift, and isolated shift operations.

## 2. Government Policy, Legislative Change and Compliance Risk Due to Climate Change

Category of Risk: Environmental and Geopolitical Risks (Strategic and Compliance Risks)

Source of Risk: Natural and Geopolitical Risks

### Impact to EGCO Group and Scenario Analysis

Time Frame of Impact: more than 10 years (Year 2018-2030)

Type of Impact: Moderate Negative and Positive Impact

Due to the ongoing extreme global weather conditions, the 23<sup>rd</sup> United Nations Framework Convention on Climate Change, which was held from November 6 through November 17 in 2018, approved a new resolution aimed to fight climate change by reducing GHG emissions. Thailand not only participated and signed the agreement, which aimed to reduce GHG emissions from 20% to 25% by 2030—compared to the based year 2015—in this conference, but also committed to review and participate in climate change solutions every five years. Because of this regular five-year revision, Thailand's government can consider additional relevant laws and regulations that are related to GHG emissions within three to five years. Also, the Thailand Power Development Plan (PDP) could be revised so it can be aligned with the agreement.

### Mitigation and Opportunities

To mitigate such a risk, EGCO Group not only closely monitors and analyzes the impacts, but also set long-term investment target to decrease its coal energy portfolio to 20-21% and increase its renewable energy and smart energy portfolio to achieve 25% by 2030 from both domestic and overseas operations. In 2020, our renewable energy portfolio was 19.21% of our total electricity generating capacity which could reduce approximately 492,000 tons of carbon dioxide equivalents to the per-year emission rate (14 EGCO subsidiaries) in alignment with the government's policy. Furthermore, EGCO Group will invest in environment-friendly technology for future investments, promote energy conservation within our organization, and reduce GHG emissions indirectly by conducting business with eco-friendly partners.

### 3. Emerging / Disruptive Technology Risk

Category of Risk: Technological Risk (Strategic and Operational Risks)

Source of Risk: Macroeconomics Risk (Technological and Innovation Risks)

#### Impact to EGCO Group and Scenario Analysis

Time Frame of Impact: more than 10 years (Year 2016-2030)

Type of Impact: Minor Negative and Positive Impact

In accordance with the rapid technological advancements from micro grid systems, renewable energy systems, energy storage systems, and big data systems, the government aims to develop and launch its Commercial Smart Grid by 2021. Regarding the Thailand Smart Grid Development Master Plan 2016–2021, the Ministry of Energy has been assigned to take primary accountability through these three pillars: (1) Demand Response and Energy Management System, (2) Renewable Energy Forecast, and (3) Micro Grid and Energy Storage System. This Government policy will gradually change user behaviors from consumer to “prosumer” and peer to peer. Furthermore, the smart grid could reasonably be expected to influence the industries due to its production cost and energy trading scheme that may impact not only government authorities that includes the Electricity Generating Authority of Thailand, Metropolitan Electricity Authority, and Provincial Electricity Authority, but also the independent power plants.

#### Mitigation and Opportunities

On the other hand, this transformation may provide an opportunity to create value to the organization. To alleviate such a risk, EGCO Group closely monitors technological changes while developing new businesses by running the “Innovation Team Challenge” contest. This event aims to improve teamwork, employee creativity, and employee competency which will then provide sustainable business growth to the organization.

#### 4. Cybersecurity and Data Privacy Protection Risk

Category of Risk: Technological Risk (Operational and Compliance Risks)

Source of Risk: Macroeconomics Risk (Technological and Regulatory Risks)

##### Impact to EGCO Group and Scenario Analysis

Time Frame of Impact: 3 years (Year 2019-2021)

Type of Impact: Minor Negative and Positive Impact

Information technology (IT) systems are the crucial fundamental infrastructure that increases a business operation's efficiency, its efficient control of electricity generation, and its operating cost management. IT allows for a business to successfully compete in both domestic and overseas markets where EGCO Group invests and plans to invest; IT plays its role more importantly in business operations respectively.

In 2019, the *Royal Thai Government Gazette* announced the Cyber Security Act B.E. 2562 (2019), which came into effect on May 28, 2019, and the Personal Data Protection Act B.E. 2562 (2019), which is going to take effect on June 1, 2021.

According to the Cyber Security Act B.E. 2562 (2019), a system administrator that provides computer-related services must build confidence and strengthen computer cyber security, computer data, computer systems, or other information related to computer systems in order to prevent, confront, and reduce the risk of cyber threats in a timely manner. EGCO Group has to establish an IT security policy, which includes a policy for creating an IT emergency plan as well as an IT risk management policy.

According to the Personal Data Protection Act B.E. 2562 (2019), which stipulates that in regard to the control of personal and business partner information, to collect, use or disclose any data has to comply with such law. EGCO Group established a policy and measures to prevent the leakage of confidential information along with the development of information security and stability systems and the protection of personal information by collecting, storing, using, or disseminating

the personal data of employees, partners, or contacts in the form of electronic data in order to prevent the violation of personal data.

### Mitigation and Opportunities

In this regard, EGCO Group has organized staff training to raise awareness and spread knowledge and understanding to employees regarding the Cyber Security Act B.E. 2562 (2019) and the Personal Data Protection Act B.E. 2562 (2019). Furthermore, EGCO has improved distributed denial-of-service (DDoS) to ensure the functionality and enhance the security of the corporate network infrastructure, while also preventing DDoS application-level, web-based, and DNS attacks from botnets or scripts.

The Information Technology Department is currently developing a data security certification system according to the international standard of ISO/IEC 27001 for data center rooms. To date, the company has not had any incidents or negative impacts from cyber threats or misuse of personal information.

Issuing Department: Risk Assessment Division

Date of Issuance: 10 May 2021