2022

SUSTAINABILITY REPORT

Taiwan Cogeneration Corporation

TCC

Dedicating Energy to a Sustainable Tomorrow

Table of Content

About this Report

Report Preparation

Taiwan Cogeneration Corporation (hereinafter referred to as "TCC" or "the Company") prepares a sustainability report every year. In order to fully demonstrate the quality and transparency of the report, the content structure of this report is prepared in accordance with the core option of the GRI Standards issued by the Global Reporting Initiative (GRI). In addition, standards were formulated to disclose information in the environmental (E), social (S) and governance (G) aspects in accordance with the "Rules Governing the Preparation and Filing of Sustainability Reports by TWSE Listed Companies", and the Sustainability Accounting Standards Board (SASB) Standards.

Reporting Period and Scope

The information disclosure period of this report is between January 1, 2022 and December 31, 2022, and the scope of disclosure is mainly related to the operation of the Company's head office in Taiwan and Guan Tian Plant. Depending on the completeness and importance of the information, relevant data of subsidiaries including Star Energy Corporation (hereinafter referred to as Star Energy), TCC Green Energy Corporation (hereinafter referred to as TCC Green Energy), as well as major invested independent power producers (IPPs) including Chang Bin Gas-Fired Power Plant of Star Energy Power Corporation (hereinafter referred to as Star Energy Power), Fong Der Gas-Fired Power Plant of Sun Ba Power Corporation (hereinafter referred to as Sun Ba Power), Star Buck Gas-Fired Power Plant of Star Buck Power Corporation (hereinafter referred to as Star Buck Power), and Kuo Kuang Gas-Fired Power Plant of Kuo Kuang Power Co., Ltd. (hereinafter referred to as Kuo Kuang Power) is appropriately disclosed. In addition, basic information of subsidiary companies in the consolidated financial statements is also disclosed. The financial data is disclosed in accordance with the financial statements of the International Financial Reporting Standards (IFRS) and presented in New Taiwan Dollars (NTD), and the corresponding audit report is issued by Deloitte Taiwan.

Report Management

The information and data in this report are provided by various departments, subsidiaries, Guan Tian Plant of TCC, as well as the three invested independent power producers (Chang Bin Gas-Fired Power Plant of Star Energy Power, Star Buck Gas-Fired Power Plant of Star Buck Power, Fong Der Gas-Fired Power Plant of Sun Ba Power), compiled by the Planning & Investment Management Dept. of TCC, and checked by the heads of each units for compliance with the purpose of this report.

Report Assurance

The Company entrusted Ernst & Young to carry out limited assurance in accordance with the TWSAE 3000 "Assurance Engagements Other than Audits or Reviews of Historical Financial Information" (with reference to the International Standard on Assurance Engagements 3000 (ISAE3000)) issued by the Accounting Research and Development Foundation, confirming the compliance with the disclosure principles of GRI Standards. The limited assurance report of the independent auditor is detailed in the Appendix of this report.

Issuance Time and Frequency

The Company's sustainability report is issued on an annual basis. The electronic file of the report can be downloaded from the Company's official website.
Issue time of current report: June 2023
Issue time of next report: expected to be released in June 2024

Contact Information

We value your feedback on this report. If you have any suggestion or advice, please feel free to contact us. The contact information is as follows:

Planning & Investment Management Dept., Taiwan Cogeneration Corporation
• Address : 6F, No.392, Ruiguang Road, Neihu, Taipei 11492, Taiwan (R.O.C.) • Tel : (02)8798-2000 Ext. 605
• Email : csr@cogen.com.tw • Official website : https://www.cogen.com.tw/eng/ • Report download link : https://www.cogen.com.tw/eng/csr/csr_report

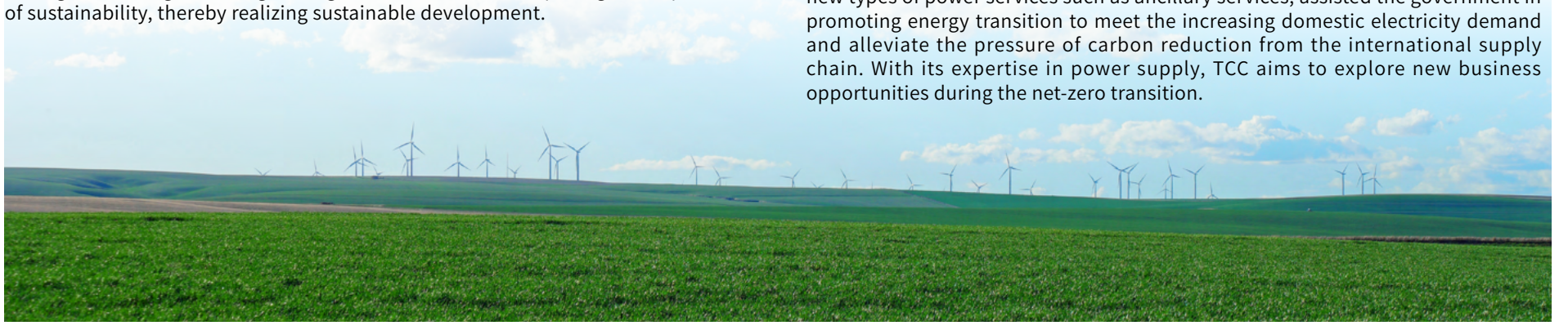
Message from the Chairman

New Thinking of Resilient Enterprise

The intensifying effects of global warming and climate change are sounding the alarm for the survival of our planet. They have not only impacted and disrupted the ecological environment but also posed significant risks to human existence and civilization. According to the Global Risk Report 2023 published by the World Economic Forum, the climate action failure is identified as the greatest risk in the next decade. Compared to previous years, environmental risks have seen a dramatic increase in both their frequency and severity. Facing both "physical" and "transition" risks associated with climate change, businesses need to identify relevant risks and opportunities, while appropriate "mitigation" and "adaptation" strategies should be adopted in advance. TCC follows the recommended framework of the Task Force on Climate-Related Financial Disclosures (TCFD) to disclose climate-related financial information based on four core elements: "Governance", "Strategy", "Risk Management", and "Metrics and Targets." Through a steady and proactive approach, this aligns the Company's sustainability issues with the United Nations' Sustainable Development Goals (SDGs) and enhances our decision-making by integrating environmental (E), social (S), and governance (G) into our strategies and targets, strengthening our resilience and deepening the implication of sustainability, thereby realizing sustainable development.

Net-zero Transition: A New Opportunity

In response to climate change and the global trend of decarbonizing supply chains, achieving net-zero emissions has become a critical global issue. The government of Taiwan has also declared the national goal of "2050 Net-Zero Emissions" and amended the former "Greenhouse Gas Reduction and Management Act" to the "Climate Change Response Act" on February 15, 2023. This amendment is a just transition approach that incorporates the net-zero target into the law and implements carbon pricing in stages. The goal is to guide businesses when addressing climate risks, strengthening their governance capabilities, and enhancing resilience based on scientific principles. In addition, the European Union has announced the Carbon Border Adjustment Mechanism (CBAM), which is expected to be implemented three years after a transition period starting in 2023. In the future, facing international carbon tariffs and green supply chain requirements, local industries will have to pay more attention to the net-zero agenda, focusing on carbon reduction policies and net-zero targets. In recent years, TCC has been developing green energy, investing in renewable energy businesses such as solar photovoltaic, wind power, geothermal power, and electricity retailing. The Company commits to promotion of cogeneration and circular economy practices, as well as the development of private-owned gas-fired power plants as core businesses. Furthermore, TCC is involved in the establishment of joint booster stations that address the capacity issues in grid connection for solar photovoltaic hot zones. The Company has also participated in new types of power services such as ancillary services, assisted the government in promoting energy transition to meet the increasing domestic electricity demand and alleviate the pressure of carbon reduction from the international supply chain. With its expertise in power supply, TCC aims to explore new business opportunities during the net-zero transition.



S Cultivate Cross-disciplinary and Diverse Talents

Under the global ESG trend, more and more companies consider employee well-being and social inclusion as part of their business responsibilities. They advocate for a new management philosophy of Diversity, Equity, and Inclusion (DEI), promoting a diverse, equal, and inclusive work environment where everyone is treated fairly. Embracing a culture of social inclusion is crucial for companies to enhance their competitiveness. TCC is committed to upholding the "United Nations Universal Declaration of Human Rights" and has formulated a human rights policy, which is integrated into its corporate management system. In 2022, the Company participated in a human rights conference jointly organized by the Ministry of Economic Affairs and the European Chamber of Commerce Taiwan (ECCT), pledging to abide by international human rights conventions. TCC places great importance on talent management and aims to focus on talent cultivation and development. Comprehensive training plans are designed and implemented to align with the Company's future business strategies and meet the employee career development needs. As a responsible corporate citizen, TCC recognizes the importance of talent development in the power utility industry. In order for Taiwan's power and energy sector to achieve sustainable development, it is essential to attract talents with cross-disciplinary expertise in power engineering, manufacturing, and management. With this in mind, TCC actively participates in the Electric Grid Talent Alliance initiated by the Industrial Technology Research Institute (ITRI) and collaborates with the Metal Industries Research & Development Centre and vocational schools. Through cooperation between industries, the government, research institutes and academia, the Company helps cultivate talents in the energy industry, strengthen the technical capabilities of workers in the power sector, and promote sustainable development of talents and social well-being.

G Integrity Management and Sustainable Governance

A well-developed corporate governance is the cornerstone of any business operation. To align corporate governance in Taiwan with international development trends, the Financial Supervisory Commission (FSC) devised the "Corporate Governance 3.0 - Sustainable Development Roadmap". In March 2023, FSC further released the "Corporate Governance 4.0 – Sustainable Development Action Plans for TWSE- and TPEx-Listed Companies" to strengthen the implementation of corporate governance through the empowerment of the Board of Directors. TCC has been in the top 20% of listed companies for corporate governance evaluation since 2016, ranked in the top 5% for four years, and has held a spot in the top 10% of non-financial electronic companies with a market value of over NT$10 billion. We uphold the principles of integrity-based operations and are committed to enhance corporate governance, strengthen information disclosure and engage with stakeholders. In 2022, we received "Top 100 Sustainability Exemplary Awards" and "Sustainability Report Gold Award" of the Taiwan Corporate Sustainability Awards (TCSA), as well as "Excellence in Corporate Social Responsibility – Medium-sized Enterprises" of the CommonWealth Magazine. TCC continued to promote green procurement and supplier management for our commitment towards sustainable supply chain. In 2022, we were once again honored with the "Green Procurement Award" and received the"Outstanding Performance in Green Procurement" recognition from the Environmental Protection Administration, Executive Yuan. We aim to lead the industry by fulfilling ESG development together and become the benchmark enterprise for sustainable governance.

In today's business environment, ESG strategies are the driving factors of competitiveness and social impact. TCC adheres to the principles of "Integrity, Attentiveness, Efficiency, Professionalism, and Enthusiasm". Starting from our core business, we adopt a steady and innovative approach to develop strategies that are inclusive, adaptable, and responsive to the ever-changing external challenges and opportunities. The year 2022 marked the 30th anniversary of TCC's establishment. Since its inception, TCC has been driven by the initial goal of enhancing energy efficiency. Over the years, TCC has been actively involved in promoting energy transition, expanding renewable energy deployment, and enhancing energy diversification and self-reliance. With a mission to foster sustainability together with the green energy industry, TCC is gradually progressing towards a net-zero transition and sustainable development.

2022 Sustainability Performance Highlights

Environmental

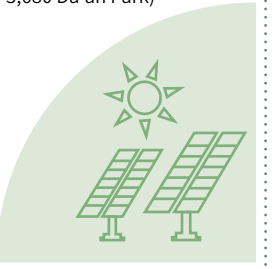
Renewable Energy Retailing

- The retailing of renewable energy amounted to **174 GWh** in 2022

Solar Photovoltaic Power

- Wushantou Reservoir's **13.7 MW** floating solar photovoltaic project
- Fishery and electricity symbiosis projects
- Estimated electricity saving rate for the Guan Tian Plant in 2022 was **0.83%**

- Cleared **28,260** metric tons of scrap tires
- Replacement performance of using scrap tire rubber as alternative fuel was **26.9%**
- The 3 invested IPPs reduced approximately **1.43 million** metric tons of CO_2e (Equivalent to the carbon reduction of approximately 3,680 Da'an Park)



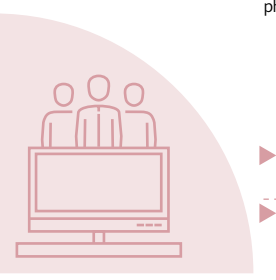
Social

Talent Cultivation

Learning hours of employees for digital and physical courses reached: **53** hours/person

Learning hours of middle and senior management for digital and physical courses reached: **33** hours/person

- Promoted a three-year **English proficiency improvement program**
- Established the **Talent Cultivation and Development Advisory Committee**



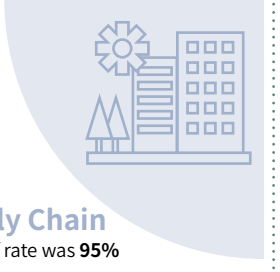
- **No occupational accident** in the Guan Tian Plant since its establishment
- 3 days of volunteer leave per year

Social Participation Activities

- Eat Vegan for the Earth Day
- Vegan Day once a month
- Co-organized Taya Marathon
- Sponsored Tianzhong Marathon
- Joined the Power School and Talent Development Alliance

Governance

- Earnings per share (EPS) reached NT$**1.54**
- Strengthened **risk management**
- Improve **information security**
- Customer Satisfaction of Guan Tian Plant had a score of **92.13**
- Received the "**2022 Green Procurement Award**"



Sustainable Supply Chain

- CSR Commitment sign-off rate was **95%**
- Self-Assessment Questionnaire sign-off rate **89.9%**

Awards

- Ranked top **6~20%** of listed companies in the 9th corporate governance evaluation

Taiwan Corporate Sustainability Awards (TCSA)

- Sustainability Report Gold Award
- Top 100 Sustainability Exemplary Awards

Excellence in Corporate Social Responsibility Award of the CommonWealth Magazine

- Ranked **12th** in the Medium-sized Enterprise category

Business Strategy and Value Chain of TCC

Business Strategy

Improve Operation Performance

Actively Expand Business

Innovate Business Model

Promote Digital Transformation

Strengthen Sustainable Operation

Resources Invested

Finance Capital

Capital of TCC: NT$5.89 billion
Operating costs in 2022: NT$4,040,655,000

Equipment Investment

1 cogeneration plant (Guan Tian Plant)
Installed capacity: 48 MW

4 invested power plants

(TCC is the largest shareholder of Star Energy Power, Sun Ba Power, Star Buck Power and the second largest shareholder of Kuo Kuang Power)

Total installed capacity: 2,491 MW

Total renewable energy installed capacity: approx. 97 MW

Natural Resources

Coal: 119,744 metric tons
Gas: 2,021,091,000 m^3
Fuel oil: 276 kL
Scrap tire: 28,260 metric tons
SRF: 459 metric tons
Guan Tian Plant's environmental protection expenditure: NT$69.87 million

Human Resources

Total employees of TCC: 130
Full-time employee: 128
Contract employee: 2

Total employees of Star Energy: 214
Full-time employee: 146
Contract employee: 68

Number of clients: 9 (including Taipower)
Community investment: NT$1,557,000

External Cost and Income

TCC

Financial Performance

Net profit after tax (parent company only): NT$906,774,000
Investment income: NT$791,123,000
Electricity sold: 225 GWh
Customer satisfaction score: 92.1
Renewable energy sold: 174 GWh

Air Pollution Emission

GHG emissions: 346,190 metric tons of CO_2e
Nitrogen oxide (NOx): 191,940 kg
Sulfur oxide (SOx): 193,820 kg
Particulate matter (PM): 10,648 kg

Team Overview

New employees of TCC: 12
Education and training hour: 6,835 hours
Number of employee occupational accident: 0
Employee injury rate: 0

New employees of Star Energy: 81
Education and training hour: 2,197 hours
Number of employee occupational accident: 0
Employee injury rate: 0

Participated in more than 40 **local charitable and academic events**

Invested Power Plants (only 3 companies with TCC as the largest shareholder are counted)

Total electricity sold: 10,853 GWh

Total GHG emissions: 4,188,933 metric tons of CO_2e
Total Air Pollution Emission
Nitrogen oxide (NOx): 1,156,257 kg
Sulfur oxide (SOx): 17,173 kg
Particulate matter (PM): 42,905 kg

Value Creation

Supply Stable and Efficient Energy

- High-efficiency, low-pollution power generation, providing customers with stable and reliable power and steam, becoming a regional energy integration center
- Strengthen the quality of power supply and steam supply to improve customer satisfaction
- Reduce abnormality occurrence rate and improve operation reliability

Fulfill the Idea of Corporate Sustainability

- Strengthen corporate governance and refine rules and regulations of the Company
- Improve the transparency of information disclosure and strengthen communication with stakeholders
- Develop power and renewable energy related businesses at home and abroad, and expand the scale of operations
- Committed to energy conservation and carbon reduction, reducing the impact of climate change

Improve Talent Development and Occupational Safety and Health Policies

- Strengthen human resources training and core technology inheritance to enhance the competitiveness of employees and the Company
- Improve employee career development planning and talent management system
- Improve employees' foreign language skills and promote international business development
- Improve the occupational safety and health management system, strengthen the management of occupational safety

Strengthen Corporate Social Responsibility

- Set up TCC Volunteer Team to fulfill the idea of social participation
- Actively give back to community activities, participate in disadvantaged care and cultural & educational activities, and fulfill corporate social responsibility
- Focus on the cultivation energy related professionals, and promote the development of the power industry through collaboration between industries, government and academia

Sustainability Column

Celebrating 30th Anniversary of TCC, Dedicating Energy to a Sustainable Tomorrow

Implementing Circular Economy Based on Cogeneration

Established in 1992, TCC's main business was to assist industries in constructing cogeneration systems and enhance energy and resources efficiency in the region. Cogeneration is a technology that enables the reutilization of energy in industrial processes. Primarily, it involves the reuse of heat and applying it to industrial manufacturing or reutilizing the waste heat from industrial processes to generate electricity, achieving optimal benefits from combined heat and power. This technology is commonly applied in industries with moderate-temperature processes such as papermaking, food processing, textile manufacturing, as well as high-temperature processes such as cement production and steel refining. The development of cogeneration systems in Taiwan had been prosperous since 1988, due to economic expansion that greatly increased the domestic power demand. In response, the government actively promoted the establishment of cogeneration systems, resulting in a rapid growth from 1988 to 2002. However, with the gradual relocation of traditional cogeneration manufacturers overseas and the revision of the "Enforcement Regulations of Cogeneration Systems", which canceled the peak hour electricity rate, the establishment of new units gradually declined. After two decades of promoting cogeneration systems, as of the end of 2022, the total installed capacity nationwide had reached 7,950 MW, accounting for approximately 12.8% of the country's total installed capacity[1]. Therefore, cogeneration still plays an important role in Taiwan's power generation system.

To enhance the energy efficiency in the Guantian Industrial Park in Tainan, TCC constructed the Guan Tian Cogeneration Plant and adopted the circulating fluidized bed (CFB) boiler design in 1998. Although it is a coal-fired power plant, its design allows for the use of rubber from scrap tires as auxiliary fuels. It can effectively dispose of nearly 40,000 metric tons of scrap tires at most annually, accounting for approximately one-third of the total scrap tire volume in the country, thereby solving the environmental pollution problem derived from scrap tires. In addition, to reduce pollution and minimize wastes, the Guan Tian Plant continues to improve its equipment. Through project applications and case-specific reutilization, it is able to achieve 100% recovery and utilization of coal ash generated during the combustion process. The coal ash is processed into Controlled Low Strength Material (CLSM), which can be used as a backfill material in construction projects. As the concept of circular economy began to emerge two decades ago, TCC had already embraced this idea by adopting CFB boilers that allowed for the co-firing of scrap tire rubber to be the alternative fuel of coal, recycling 100% of fly/bottom ash. Not only it was a method of zero process waste generation, it also fulfilled the concept of circular economy.

TCC's Guan Tian Cogeneration Plant

Note 1 : As of 2022, the total installed capacity of power systems nationwide was 61,940 MW (Source: Statistical data from the Bureau of Energy).

Gas-Fired Independent Power Plants and Low-Carbon Power Generation Transition

As domestic economy expanded and power demand increased in 1990s, the concept of environmental awareness grew as well. As a result, the power development plans of Taiwan Power Company (Taipower) faced delays in construction schedules due to public protests. However, power rationing caused by insufficient power supply would have made significant impacts on people's livelihoods and economic development. To ensure an adequate power supply and promote private investment, the Ministry of Economic Affairs opened up the establishment of independent power plants in 1995, marking the beginning of the privatization of electricity enterprises in Taiwan. TCC then cooperated with government policies by investing in constructing and gas-fired power plants, including Star Energy Power, Sun Ba Power, and Star Buck Power. We also invested in Kuo Kuang Power through equity acquisitions. Currently, these four gas-fired independent power plants have a total installed capacity of 2,491 MW, accounting for approximately 30% of the total installed capacity of independent power plants in the country and around 5% of the total installed capacity nationwide[2], which plays an important role in ensuring stable power supply domestically (see Table 1 for details). Caused by the Great East Japan Earthquake on March 11, 2011, the Fukushima nuclear disaster raised significant concerns about energy security among the public. In response, the government of Taiwan proposed the "Nuclear-Free Homeland" policy in 2016 and set a target energy ratio by 2025. This target aims for an energy structure of 50% in gas-fired power generation, 30% in coal-fired power generation and other sources, and 20% in renewable energy. This commitment solidifies the government's efforts to promote energy transition and progress towards the development of low-carbon/zero-carbon energy sources.

Company/Name of Power Plant	Fuel	Total Capital (NT$ 100 million)	Installed Capacity (10 MW)	Year When the Plant Started Commercial Operation
Mai-Liao Power/ Mai-Liao Power Plant	Coal	306	180	1999/2000
Ho-Ping Power/Ho-Ping Power Plant	Coal	200	130	2002
Hsin Tao Power/ Hsintao Thermal Power Plant	Natural gas	50	60	2002
Star Buck Power/ Star Buck Gas-Fired Power Plant	Natural gas	33	49	2009
Sun Ba Power/ Fong Der Gas-Fired Power Plant	Natural gas	120	101	2004
Star Energy/ Chang Bin Gas-Fired Power Plant	Natural gas	30	50	2004
Kuo Kuang Power/ Kuo Kuang Gas-Fired Power Plant	Natural gas	34	48	2003
Ever Power IPP/Hai-Fu Power Plant	Natural gas	51	90	2000/2001
Chiahui Power/Chiahui Power Plant	Natural gas	60	121	2003/2021

Table 1 : Basic information of private thermal power plants (Source: Bureau of Energy, Ministry of Economic Affairs, 2023)

To promote energy transition and address environmental concerns, the government has set clean energy development as a guiding principle based on "promote green energy, increase natural gas, reduce coal-fired, and achieve nuclear-free". The aim is to ensure stable power supply while simultaneously reducing air pollution and carbon emission. In 2017, the Executive Yuan passed amendments to the Electricity Act to facilitate electricity enterprise reform, gradually liberalizing the energy market, promoting green energy, and initiating national energy transition. In recent years, the government has actively promoted the development of renewable energy. However, with a significant increase in grid-connected solar photovoltaic and wind power generation, the intermittency of renewable energy generation poses challenges to grid stability. To address this, low-carbon gas-fired power generation units, which have the advantage of rapid start-up and shutdown, play a crucial role in stabilizing grid frequency and providing power dispatching capabilities. According to "Taiwan's Pathway to Net-Zero Emissions in 2050", the future share of renewable energy will increase to 60%. The country is also actively developing hydrogen energy, as well as carbon capture, utilization, and storage (CCUS) technologies to promote the transformation of gas-fired power plants. These efforts aim not only to reduce energy import dependency but to enhance energy self-sufficiency as well. By doing so, the resilience of the power grid can be strengthened, while stable and affordable energy can be provided, leading to a sustainable future.

Note 2 : As of 2022, the total installed capacity of independent power plants was 8,328 MW, and the total installed capacity of Taipower's systems was 53,736 MW (Source: Taipower's website).

Increasing renewable energy development to expand the share of green energy

In response to climate change and the global trend towards decarbonization, countries worldwide are actively developing low-carbon/zero-carbon energy sources. In recent years, TCC has been actively promoting renewable energy businesses that comply with government policies as well. In terms of solar photovoltaic system, TCC has invested in and developed various types of projects, including rooftop, floating, and ground-mounted photovoltaic systems. In 2022, the Wushantou Reservoir's 13.7 MW Floating Photovoltaic Power Plant was completed, making it the largest floating photovoltaic installation on a reservoir in the country. This project generates approximately 17 GWh of green electricity annually. In 2019, TCC also completed the contract for Taipower's 100 MW Changbin Photovoltaic Power Plant. Furthermore, in 2020, TCC completed the largest photovoltaic power plant in Taiwan, the Taipower 150 MW Tainan Qigu Photovoltaic Power Plant, capable of providing approximately 200 GWh of green electricity per year.

As for onshore wind power, in addition to the equity acquisition of the Miaoli Wind Co., Ltd. (Miaoli Wind) with an installed capacity of 49.8 MW, TCC has also invested in the Star Wind Corporation (Star Wind) with an installed capacity of 10.35 MW, resulting in a total investment of 60.15 MW. Furthermore, TCC is also responsible for the operation and maintenance (O&M) of 116 onshore wind turbines, reaching a nationwide market share of 30%. For offshore wind power, TCC has undertaken various EPC projects related to the onshore substation and transmission systems for the Phase I and II of the Ørsted's Greater Changhua Offshore Wind Farm, as well as the Taipower Offshore Wind Farm Phase I and II. Furthermore, TCC has constructed the country's first Renewable Energy O&M Center in Changhua Coastal Industrial Park. Apart from coordinating the renewable energy operations and maintenance within the Group, TCC also aims to seize opportunities in offshore wind power and large-scale photovoltaic power O&M services in the future. For geothermal power generation, Taiwan possesses abundant geothermal resources, which is considered a renewable energy source that can serve as a baseload power supply. When compared to other renewable energy sources, geothermal power is also a more reliable choice for stable energy supply. TCC has collaborated with the government of Yilan County to develop the 4.2 MW Chingshuei Geothermal Power Plant through a BOT (Build-Operate-Transfer) contract. The plant was completed and has started commercial operation near the end of 2021. It is currently the largest MW-scale geothermal project in the country and serves as a significant milestone for the development of geothermal energy in Taiwan.

Innovative Business Model Extending the Value Chain of Green Energy

In response to the amendment of the Electricity Act that granted the domestic market for renewable energy retailing, TCC obtained the second renewable energy retailer license in the country in 2019 and it has officially started renewable energy retailing since October 2020. By the end of 2022, TCC has sold more than 320 GWh of renewable energy, making it the largest renewable energy retailer company in Taiwan. With over 30 years of expertise in power engineering, TCC possesses excellent project construction experiences and O&M teams. This enables TCC to effectively understand the power generation characteristics of various types of projects. TCC can tailor green energy solutions to the specific needs of customers, maximizing the value of green electricity and extending the value chain of the green energy industry. In addition, to meet the increasing domestic power demand and encourage private electricity enterprises to participate in the electric power market, Taipower launched the Energy Trading Platform (ETP) in October 2021. TCC has actively engaged in this new electric business model, sending employees to take "Energy Trading Platform Professional Qualification Test" by Taipower. TCC obtained the qualification for energy trading after passing the Energy Trading Platform capability test in March 2022, completed the trial run of a cogeneration unit's supplementary service (21.9 MW), making TCC the first cogeneration plant in Taiwan that participated directly in the Energy Trading Platform. In the future, the development of ancillary services will focus on cogeneration system and energy storage system. TCC aims to consolidate internal and external cogeneration resources within the Group to maximize the value of cogeneration units as backup power sources. Following Taipower's "Project for Enhancing Power Grid Resilience", TCC will continue to evaluate its participation in ancillary services based on the energy storage system, which is set to reach 1.5 GW by 2025, and strategically position itself in the new electric power market to expand its domain in the green energy business.

TCC's 30th Anniversary:Supporting the Government's Policy to Achieve Sustainability and Net-zero Emissions

Over the past 30 years, TCC has undergone a development trajectory that mirrors Taiwan's electric industry. From cogeneration, low-carbon and high efficiency gas-fired power generation, to the development of renewable energy, TCC Group has established a strong and extensive presence in the electric industry, undergoing multiple transformations and becoming the first power company in the country to have a comprehensive experience in investment, development, engineering contracting, and O&M. We are capable of providing a wide range of services, including renewable energy retailing, ancillary services, and energy storage. In response to global climate change and the decarbonization of international supply chains, there is an urgent need to accelerate energy transition both domestically and internationally. The share of electricity in global energy consumption is expected to continuously increase, and the government has already declared a national goal of achieving NZE by 2050; However, Taiwan relies on imports for 98% of its energy. As an islanding power system without backup power sources, it is crucial to enhance the self-sufficiency and the diversification of energy, which means that the maximization of renewable energy is essential to reduce emissions while ensuring a stable power supply. As an electricity enterprise, TCC is committed to monitor domestic and international energy trends, enhance power plant efficiency, ensure a stable power supply domestically, and make contribution to the development of sustainable, reliable, and affordable energy sources. We support the government's efforts in energy transition and drive the development of the green energy industry. Together, we strive for sustainability and net-zero emission.

Sustainable Development

Sustainable Governance and Supervision

TCC's "Principles of Sustainable Development" have been approved by the Board of Directors as the highest guiding principles for promoting sustainable development. Considering the relevance between domestic, international sustainability issues and to the Company's core business, as well as the potential impact that TCC and its subsidiaries' operations might have on our stakeholders, the Company has formulated sustainable development policies, systems, management guidelines, and specific implementation plans, with the analysis of material topics and the structure of the sustainability report are submitted to the Board of Directors. Senior management is authorized by the Board of Directors to handle economic, environmental, and social issues arising from operational activities, any progress is then reported back to the Board. If shareholder-related proposals are involved, their inclusion is based upon the Board's decision, ensuring that sustainability issues are supervised and managed by the highest governance body.

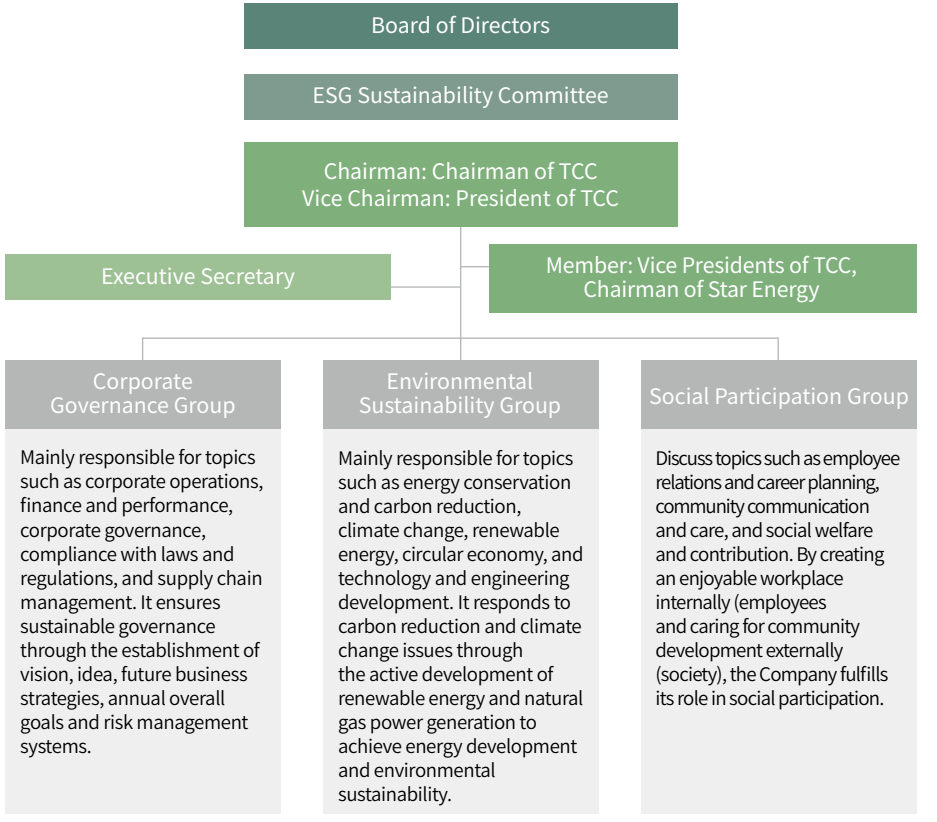
ESG Sustainability Committee

ESG Sustainability Committee is established to review, examine, and revise the Company's sustainable development policies. It also oversees the annual work plans, implementation, review, and improvement of various working groups. The Committee is required to convene at least one meeting per year and report the implementation status to the Board of Directors regularly (the implementation status for 2022 was reported at the Board meeting in December), deepening the Company's commitment to sustainable development.

Note : TCC established the "Corporate Social Responsibility Promotion Committee" in 2017 and renamed it to the "ESG Sustainability Committee" in 2021.

The Committee consists of Corporate Governance, Environmental Sustainability, and Social Participation Group. From time to time, each group would hold meetings based on the needs of the agenda and the implementation status. Furthermore, an Executive Secretary is appointed to coordinate the overall operation of the TCC Group's promotional work in sustainable development. As these groups execute sustainability-related projects according to resolutions from the Committee, they would formulate and submit ESG-related indicators to the Committee annually for deliberation. Once approved, these indicators will serve as the reference for setting annual KPIs for the Company and each department.

Organizational Structure for Promoting Sustainability



Promotion of ESG-related Work in 2022

The implementation status of the ESG Sustainability Committee's main tasks in 2022 is as follows:

Date	Work Item	Highlights
2022/05	Field audit for the 2021 Sustainability Report assurance	Carried out the assurance work for the Report and obtained the third-party assurance in the following month.
2022/06	Issuance of the 2021 Sustainability Report	The Company's 2021 Sustainability Report received Sustainability Report Gold Award from the Taiwan Corporate Sustainability Awards (TCSA).
2022/11	1. 2021 Sustainability Report closing meeting 2. 2022 ESG sustainable development promotion meeting	1. Carried out the closing presentation for the 2021 Sustainability Report project. 2. Reviewed the implementation of ESG-related work in 2022 and discussed highlights of 2022 Sustainability Report.
2022/12	Kick-off meeting for the 2022 ESG Sustainability Committee and Sustainability Report Project	1.Resolved matters for discussion proposed by the working groups. 2.Set the focuses and plans for ESG promotion in 2023. 3.Planned the schedule of the 2022 Sustainability Report. 4.Defined 21 ESG-related indicators and incorporated them into departmental key performance indicators (KPIs).

Communication with Stakeholders

TCC attaches great importance to communication with stakeholders. To ensure that the material topics concerned by stakeholders are included in the Company's sustainable development policy, and to establish smooth communication channels as well as a transparent response mechanism, TCC refers to AA1000 Stakeholder Engagement Standard (SES) 2015, and the experience of domestic/international benchmarking peer groups to identify stakeholders who are relevant to TCC's business activities. Finally, based on their status, five types of stakeholders were categorized, from government, shareholders, customers/electricity users, employees to suppliers/contractors/subcontractors. In addition, a questionnaire on the degree of internal/external impact is issued to stakeholders, material topics are then evaluated and identified according to the following five aspects: the degree of dependence, impact, degree of concern, responsibility, and diverse viewpoints on TCC.

Identification of Stakeholders

We define "internal and external groups or individuals who have an impact on or are affected by the Company", and identify a total of 5 stakeholders related to TCC, including government agencies, shareholders, customers/electricity users, employees, and suppliers/contractors/subcontractors.

Comprehend Sustainability Topics

To focus on the sustainability issues related to the operation of TCC, we use considerations from GRI Standards, industry-related material topics issued by the Sustainability Accounting Standards Board (SASB), the characteristics of TCC's business and concerned issues chosen by peer groups at home and abroad. In the end, 22 sustainable topics for TCC are identified.

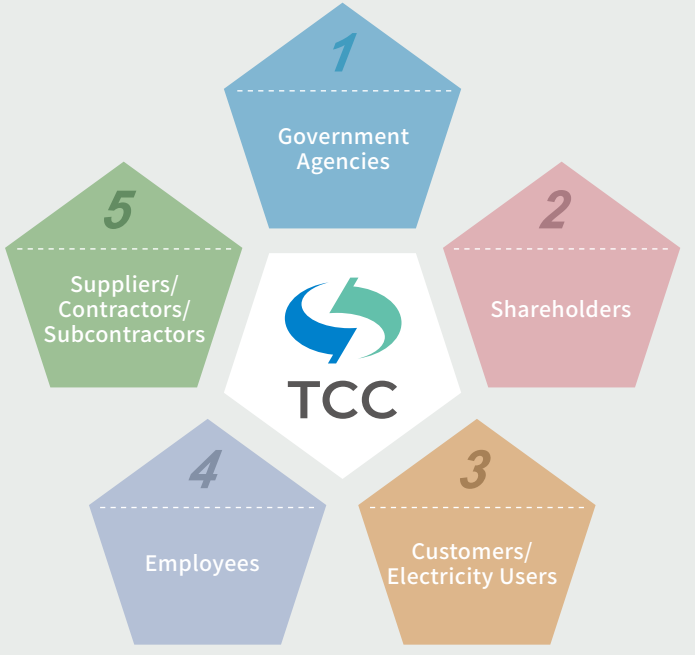
Analysis of Material Topics

Reviews and adjustments are carried out based on major global sustainability trends, material topics of benchmarking peer groups, business characteristics of TCC and important news events. Questionnaires that include external survey on the degree of concern are distributed to important stakeholders to confirm their degree of concern on sustainability issues. Furthermore, questionnaires are also distributed to internal senior management to confirm the impact of sustainability issues on the economy, environment, and society. A total of 178 valid questionnaires are collected internally and externally, and a materiality matrix is generated after analysis. The results of this analysis are reviewed by the ESG Sustainability Committee and approved by senior management; In the end, we have determined 11 key material topics.

Comprehend Sustainability Topics

In response to the material topics, the key points of communication between TCC and stakeholders are summarized and explained in the corresponding sections of this Report.

Result of Stakeholder Identification



Topics concerned by these five major stakeholders share a certain degree of impact on TCC's sustainable development. As a corporate citizen, TCC designates exclusive communication channel for each stakeholder. Adopting substantive analysis, the most important topics for stakeholders and TCC are identified. Subsequently, necessary measures are implemented to strengthen the content of information disclosure, serving as the basis for sustainable development.

Stakeholder Communication Channels

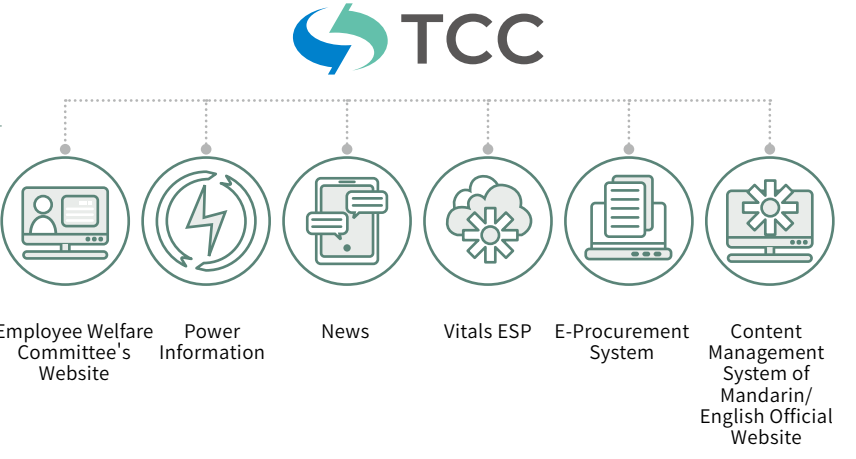
▲ Regularly (weekly/monthly/quarterly/annually) ◆ Irregularly

Stakeholder	Relevance to TCC	Communication Method and Frequency	Concerned Topics	Engagement Results	Corresponding Section
Government Agencies	The energy industry is supervised by the competent authority. In response to government policies, market development and related development activities are subject to inspections by the competent authority.	● Seminars, forums, public hearings, training courses, informal mutual visits of various policies and regulations ◆ ● Attend symposiums, seminars, evaluation and audit activities organized by the competent authority ◆ ● Official documents and letters/ emails ▲	● Integrity management and legal compliance ● Evaluation and response to policies regarding electricity ● Renewable energy development ● Energy management and circular economy ● Economic Performance	By actively participating in public hearings and symposiums organized by the government, TCC discusses with the competent authorities on issues related to renewable energy and the purchase rate of surplus electricity from cogeneration.	● 1.2 Corporate Governance and Integrity Management ● 2.1 A New Direction of Energy Transition ● 2.2 Reliable Green Electricity Expert ● 2.3 High Quality Customer Service ● 3.2 Circular Economy and Environmental Protection
Shareholders	It is TCC's mission to protect shareholders' rights and interests, as well as to create value for shareholders	● Investor conferences, direct communication between senior managers and investors ▲ ● Issuance of annual financial report ▲ ● A designated section on the Company's website for investors ▲ ● Shareholders' meeting ▲	● Economic performance ● Supply stability and reliability ● Corporate governance and sustainability strategy ● Renewable energy development ● Integrity management and legal compliance ● Occupational safety and health ● Information security management	Explain the current business situation to shareholders through various means. In 2022, 4 investor conferences were held to disclose financial and business status. We answered shareholders' questions on improving TCC's business operations and corporate governance. There is a designated section on the Company's website for investors, which contains contact information, serving as a communication channel for investors to make inquiries and provide feedback in real-time.	● Sustainable Development ● Vision and Strategy for Sustainable Development ● 1.1 About TCC ● 1.2 Corporate Governance and Integrity Management ● 1.3 Risk Management ● 2.2 Reliable Green Electricity Expert ● 2.3 High Quality Customer Service ● 3.1 Climate Change and Energy Management ● 4.1 Employee Structure ● 4.4 Employee Welfare

Stakeholder	Relevance to TCC	Communication Method and Frequency	Concerned Topics	Engagement Results	Corresponding Section
Customers/ Electricity Users	Customer support is of great significance to TCC; therefore, our core spirit is to provide professional services to our customers.	● Customer satisfaction survey ▲ ● Visits and discussion through meetings ◆ ● Telephone and mail/email ◆	● Supply stability and reliability ● Customer relations ● Technology R&D and innovation ● Air pollution control ● Water management ● Waste management	Meet customer needs and improve customer service through online or in-person communication, customer satisfaction surveys and visits, etc. In 2022, the customer satisfaction survey from 8 customers reached a score of 92.13.	● 1.1 About TCC ● 1.2 Corporate Governance and Integrity Management ● 2.3 High Quality Customer Service ● 3.2 Circular Economy and Environmental Protection ● 4.3 Healthy Workplace with Zero Work Injuries
Employee	Employees as well as high-quality professional and technical teams are important to TCC.	● Education and training ◆ ● Employee grievance procedure ◆ ● Various labor-management meetings ◆ ● Telephone and mail/email ◆ ● Announcement of the Company ◆	● Labor relations and benefits ● Talent management and development ● Occupational safety and health ● Equality of human rights ● Economic performance	There is adequate communication and feedback between TCC and its employees, as labor-management meetings are held on a quarterly basis. In 2022, no employee complaint (including human rights issues) were reported through formal grievance procedure.	● Sustainable Development ● Vision and Strategy of Sustainable Development ● 1.1 About TCC ● 1.2 Corporate Governance and Integrity Management ● 2.2 Reliable Green Electricity Expert ● 4.1 Employee Structure ● 4.2 Talent Development ● 4.3 Healthy Workplace with Zero Work Injuries ● 4.4 Employee Welfare
Suppliers/ Contractors/ Subcontractors	Suppliers have stable collaboration with TCC as we aim to benefit both sides.	● Supplier audit activities ◆ ● Supplier discussion meeting ◆ ● Telephone and mail/email ◆ ● Integrity management related education and training ◆	● Integrity management and legal compliance ● Corporate governance and sustainability strategy ● Economic performance ● Supply stability and reliability ● Supply chain management ● Technology R&D and innovation	In 2022, the sign-off rate of the CSR Commitment for Suppliers reached 95%, and the sign-off rate of the CSR Commitment Self-Assessment Questionnaire reached 89.9%. In addition, field audits were conducted to improve suppliers' implementation and management of sustainability and ESG.	● Sustainable Development ● Vision and Strategy of Sustainable Development ● 1.1 About TCC ● 1.2 Corporate Governance and Integrity Management ● 2.2 Reliable Green Electricity Expert ● 2.3 High Quality Customer Service ● 2.4 Sustainable Supply Chain

TCC values communication and engagement with each stakeholders. In addition to the aforementioned communication channels, the Company also maintains diverse feedback and communication channels on its official website, Facebook, YouTube, and other platforms. These channels are utilized to address stakeholders' concerns and provide relevant information that stakeholders value.

Employee Welfare Committee's web page, the knowledge management (KM) platform, the document management system, as well as the e-procurement system are all integrated into the Company's intranet, which includes immediate announcement of regulations, rules and the latest news.



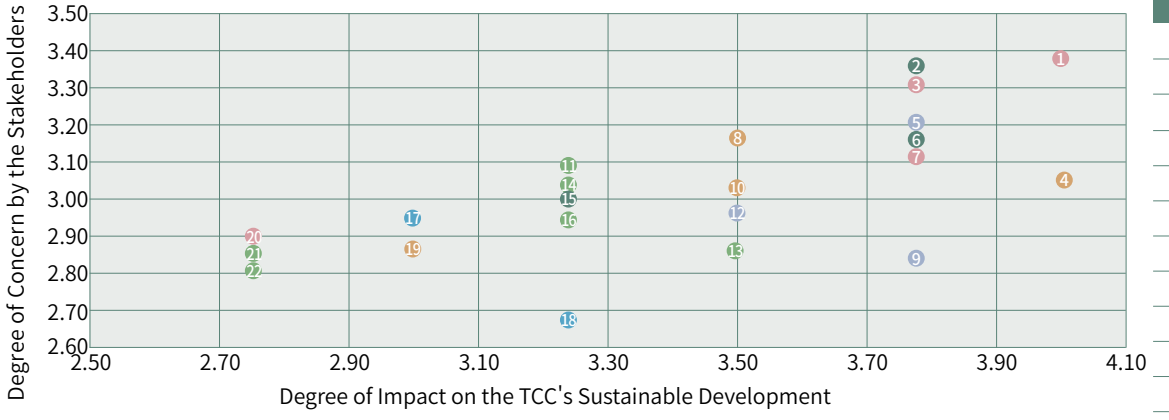
Analysis of Material Topics

Based on GRI Standards and GRI Electric Utilities Sector Disclosures, with references to ESG and sustainability-related topics that are concerned by peer groups at home and abroad, as well as international sustainable development trends, a total of 22 sustainability topics related to the operations of TCC were identified. External stakeholder questionnaires were distributed, and 178 valid questionnaires were collected to determine issues about TCC that concern our external stakeholders. In addition, an internal impact survey that ranked the impact of the 22 sustainability topics in respect to the economy, environment, and society was conducted by members of the senior management including the Chairman, President and Vice Presidents. Finally, a materiality matrix was produced through statistical analysis, and a total of 11 material topics were identified by the ESG Sustainability Committee and the senior management. The scope of disclosure was confirmed through internal analysis and discussion, serving as the basis for the disclosure of information in this Report. The analysis results on the material topics were reported to the Board of Directors.

In addition to the 11 material topics, TCC discloses its sustainability performance and action points that are not regarded as material topics voluntarily, including issues such as air pollution control, customer relations, and relevant information that echo the concerns of stakeholders or follow major sustainability trend. We continue to set management policies on material topics, disclose the management policies for specific issues in each section, and track target achievement to ensure the implementation of sustainable development practices.

Operation and Governance	Economic Topics	Environmental Topics	Social Topics	Labor Topics	Product Liability Topics
④ Corporate Governance and Sustainability Strategy Strategy Sustainability Strategy	① Renewable Energy Development	⑪ Energy Management and Circular Economy	⑰ Equality of Human Rights	⑤ Occupational Safety and Health	② Supply Stability and Reliability
⑧ Integrity Management and Legal Compliance	③ Economic Performance	⑬ Environmental and Ecological Protection	⑱ Community Engagement and Social Care	⑨ Talent Management and Development	⑥ Technology R&D and Innovation
⑩ Risk Management/ Control	⑦ Electricity Policy Evaluation and Response	⑭ Air Quality		⑫ Labor Relations and Benefits	⑮ Customer Relations
⑲ Information Security Management	⑳ Supply Chain Management	⑯ Water Management			
		㉑ Waste Management			
		㉒ Climate Change Response			

Materiality Matrix



Material Topics for 2022	
1	Economic Performance
2	Supply Stability and Reliability
3	Renewable Energy Development
4	Corporate Governance and Sustainability Strategy
5	Occupational Safety and Health
6	Technology R&D and Innovation
7	Electricity Policy Evaluation and Response
8	Talent Management and Development
9	Integrity Management and Legal Compliance
10	Risk Management/Control
11	Energy Management and Circular Economy

Material Topics and Boundaries

Material topic boundaries describe each topic and its corresponding scope of impact. TCC mainly analyzes the content and major targets related to material topics through internal/external impact questionnaires and internal discussions.

Material Topics	Topics Corresponding to GRI Standards	Internal Impact			External Impact				Topic Explanation	Major Impact	Response of TCC	Page No.
		TCC Group	IPPs	Employees	Shareholders	Customers	Suppliers/ Contractors	Government Agencies				
Renewable Energy Development	Custom Topic	V			V	V		V	In response to international energy development trends and national energy policies, TCC has strengthened the investment, engineering and technical services related to the development of renewable energy.	The development of renewable energy will affect the impact on the environment and the goals of policy implementation. Moreover, the Company's business development focus will be altered, which will further affect shareholders' rights and interests.	2.1 A New Direction of Energy Transition 2.2 Reliable Green Electricity Expert	056 058
Economic Performance	Economic Performance	V	V	V	V			V	The impact of TCC's operating performance, such as investment profit/ loss, financial information, operating costs, market development, and the electricity purchasing/ retailing prices on the operation of the Company.	The economic performance will directly affect the operation strategies of TCC and the IPPs, which will in turn affect the rights and interests of shareholders and employees.	1.1.2 Economic Performance	039
Corporate Governance and Sustainability Strategy	General Disclosures	V	V	V	V		V	V	TCC's medium- and long-term sustainable development strategy, innovative business model, information transparency, governance structure, economic performance, environmental/social practices, as well as specific measures and actions for implementing corporate sustainable development.	Corporate governance and sustainability strategies will impact the medium- and long term operation management of TCC Group and the invested IPPs, affecting the rights and interests of shareholders and employees. For customers and suppliers, there will be indirect impacts through business relationships, such as increasing the sustainability requirements of suppliers and reducing the energy carbon intensity of customers. In addition, they will also affect the implementation of regulations and governmental policies indirectly.	Sustainable Development Vision and Strategy for Sustainable Development 1.2 Corporate Governance and Integrity Management	010 033 041

Material Topics	Topics Corresponding to GRI Standards	Internal Impact			External Impact				Topic Explanation	Major Impact	Response of TCC	Page No.
		TCC Group	IPPs	Employees	Shareholders	Customers	Suppliers/ Contractors	Government Agencies				
Supply Stability and Reliability	Custom Topic	V	V		V	V	V	V	Measures of improvement and control mechanisms implemented by TCC to ensure service quality, power supply stability, power generation efficiency improvement or engineering/power supply security.	The stability and reliability of energy supply will not only affect the operational performance of TCC and its invested IPPs, but also affect the energy use of customers, which in turn will affect the domestic energy structure and related policies.	2.3.1 Stable Power Supply	063
Integrity Management and Legal Compliance	Socioeconomic Compliance	V	V	V	V	V	V	V	The practices and awareness campaigns conducted by TCC for legal compliance, integrity management, prevention of insider trading, as well as the involvement in associations, policies, and domestic/ international initiatives.	Failure to comply with legal norms and the principle of business integrity will lead to lawsuits or government penalties that affect the Company's reputation or the suspension of its operations, impacting both internal and external stakeholders.	1.2 Corporate Governance and Integrity Management	041
Electricity Policy Evaluation and Response	Custom Topic	V	V					V	TCC's impact assessment and corresponding measures on the impact of domestic electricity policies such as energy transition, carbon emission factor restrictions, renewable energy targets, the reasonability of feed-in tariff, etc.	Response to the government's electricity policy will directly affect the operation direction and performance of TCC and the invested IPPs, creating impact as the policy gets implemented. Furthermore, the response will also affect how customers' energy is supplied.	2.1 A New Direction of Energy Transition	056
Occupational Safety and Health	Occupational Safety and Health	V	V	V			V		TCC's measure and policies on occupational safety and health management include workplace safety protection, construction and operation safety, occupational accident risk management, employee health management plans and health inspections.	The health and safety of employees will affect their ability to keep TCC and the invested IPPs in operation. The implementation of appropriate systems and measures can reduce the impact that hazardous labor has on the safety and health of employees and contractors.	4.3 Healthy Workplace with Zero Work Injuries	103

Material Topics	Topics Corresponding to GRI Standards	Internal Impact			External Impact				Topic Explanation	Major Impact	Response of TCC	Page No.
		TCC Group	IPPs	Employees	Shareholders	Customers	Suppliers/ Contractors	Government Agencies				
Risk Management/ Control	General Disclosures	V	V						The ability of TCC to identify and manage risks that may be encountered during operations, including the assessment and management mechanisms of business development, as well as operational risk identification, prevention, control, and crisis management.	The effectiveness of risk control and management will not only affect the operation of TCC and the invested power plants directly, but also affect the rights and interests of shareholders. On the other hand, it will also cause certain degree of indirect impact on customer energy supply and government energy policies.	1.3 Risk Management	049
Talent Management and Development	Training and Education	V	V	V					TCC's management mechanisms such as talent recruitment, cultivation, and performance evaluation, our plans and practices to assist employees in their career development, as well as the passing on of the organization's experience.	Design training courses for employees and supervisors will improve the work efficiency and core technology management of individuals and departments within the Company, thereby affecting the overall operational performance of the Company.	4.2 Talent Development	099
Energy Management and Circular Economy	Emissions	V	V		V			V	In order to mitigate the impact of climate change, TCC continues to improve unit efficiency, renew environmental protection equipment, recycle energy/ resources,implement energy-saving, and carbon-reduction plans as well as a circular economy production model.	Carbon emissions and the use of energy/ and resources are closely related to climate change. Being a major factor on environmental impact, governmental policies and regulations are affected by global trends. The Company may increase relevant operationaling costs in response to regulatory revisions.	3.1 Climate Change and Energy Management 3.2 Circular Economy and Environmental Protection	075 084
Technology R&D and innovation	Custom Topic	V	V		V				To ensure stable power supply and improve construction quality, TCC has implemented measures such as investment in the refurbishment, upgrading, and adoption of emerging technologies for power plant units.	Failure to invest in new technologies and update of power plant units in time may reduce the quality and efficiency of our operation. This could weaken the Company's competitiveness in the market causing potential decline in operational performance and increase the operating costs.	2.1 A New Direction of Energy Transition 3.2 Circular Economy and Environmental Protection	056 084

Achievements of Materials Topics in 2022

Material Topics	2022 Goals/Important Milestones	Achievements	Corresponding Section
Renewable Energy Development	1. Complete the Wushantou Reservoir floating solar photovoltaic project and the Renewable Energy O&M Center second renovation, electromechanical and system furniture projects.	1. The Wushantou Reservoir floating solar photovoltaic project was completed, connected to the grid and began generation in May 2022.	2.2 Reliable Green Electricity Expert
	2. Obtain O&M contracts for large-scale offshore wind power, onshore wind power and solar photovoltaic power plant.	2. Actively participated in the bidding process for Taipower's onshore wind farm O&M contracts, large-scale solar photovoltaic power plant O&M contracts, and Ørsted's onshore substation O&M contracts.	
	3. Obtain the approval for the establishment of a 40 MW fishery and electricity symbiosis electricity enterprise.	3. In December 2022, the Company passed the selection for the fishery and electricity symbiosis zone announced by the Bureau of Energy. Currently, it is undergoing the application process for the establishment of a fishery and electricity symbiosis enterprise.	
	4. Obtain the approval for the development and use of 66 MW of photovoltaic land.	4. Originally, the planned solar photovoltaic development projects in Miaoli and Changhua have been temporarily postponed due to changes in land policy, environmental concerns related to fishery and electricity symbiosis, and insufficient economies of scale. The focus will now shift towards public tender projects and other priority zones for solar photovoltaic development.	
	5. Obtain the approval for the establishment of a 25 MW onshore wind power electricity enterprise.	5. The application for the establishment of a 42 MW onshore wind power enterprise was completed.	
	6. Renewable energy retailing reaches 185 GWh.	6. Due to factors such as weather conditions, line maintenance and water situations, the retailing of renewable energy amounted to 174 GWh.	
Economic Performance	1. Obtain EPC and O&M projects for large-scale offshore wind power, onshore wind power and solar photovoltaic power plants.	1. Obtained the EPC contracts for the onshore substation of a large-scale offshore wind power project in Changhua, the substation for a solar photovoltaic plant in Yunlin, and the waste-to-energy power generation equipment project in Hsinchu. Currently, the Company is participating in the bidding process of the O&M project for Taiwan Power Company's onshore wind farm, large-scale solar photovoltaic power plant, and Ørsted's onshore substation.	2.2 Reliable Green Electricity Expert
	2. Register as a qualified trader on the Energy Trading Platform to bid in ancillary services, and obtain 15 MW of qualified resources to participate in the bidding process.	2. Obtained the qualification as an ancillary service trader for the Energy Trading Platform and officially participated in the bidding process, contributing a resource capacity of 21.9 MW.	

Material Topics	2022 Goals/Important Milestones	Achievements	Corresponding Section
Corporate Governance and Sustainability Strategy	1. Strengthen the competencies of the Board of Directors and functional committees.	1. Established the "Guidelines for the Continuing Education of Directors" and amended the " Regulations for the Performance Evaluation of the Board of Directors" to enhance the competencies of the Board of Directors.	2022 Sustainability Performance Highlights Sustainable Development 1.2 Corporate Governance and Integrity Management
	2. Improve the Company's systems and regulations, and consider compliance with corporate governance an important goal.	2. Amended the "Corporate Governance Principles"; abolished the original "Risk Management Policy" and established the "Risk Management Policy and Procedures".	
	3. Continue to improve corporate governance and aim to rank in the top 5% of corporate governance evaluation.	3. The goal has not been reached. Ranked 6~20% of listed companies in the 9th corporate governance evaluation (2022).	
	4. The ESG Sustainability Committee meeting is held annually to supervise issues related to sustainable development and review ESG-related indicators.	4. The goal was reached.	
	5. The Company's annual KPIs are set to cover the performance of the current year and the indicators of future development. Moreover, the implementation results are linked to employee performance.	5. The goal was reached.	
Supply Stability and Reliability	Operation reliability should be ≥ 99.21%.	The goal has not been reached. The annual operation reliability was 95.95% (With 3 instances of equipment failure and shut down for maintenance. Measures have been taken to address this, such as preventive maintenance activities and conducting on-site operational safety assessments, to prevent similar abnormalities from recurring.)	2.3 High-Quality Customer Service
Legal Compliance and Integrity Management	1. Complete the report on the Company's Ethical Corporate Management Principles to the Board of Directors before the end of March.	1. The goal was reached. The report on the Company's Ethical Corporate Management Principles to the Board of Directors was completed on 2022/3/16.	1.2 Corporate Governance and Integrity Management
	2. Organize more than 2 sessions of education and training on integrity management, and continue to promote integrity management.	2. The goal was reached. A total of 2 integrity management-related education and training sessions were conducted, and continuous efforts were made to promote integrity management.	
	3. Organize 1 session of legal-related education and training for employees.	3. The goal was reached. One legal-related employee education and training session was conducted.	
Electricity Policy Evaluation and Response	1. Formulate the future business strategy for 2023-2027, and review the implementation strategy on a rolling basis in accordance with the electricity policy.	1. The goal was reached.	2.1 A New Direction for Energy Transition
	2. Complete the energy policy tracking and analysis report.	2. The goal was reached.	

Material Topics	2022 Goals/Important Milestones	Achievements	Corresponding Section
Occupational Safety and Health	1. Complete the renewal of ISO 45001:2018 and CNS 45001:2018 management systems for the Guan Tian Plant. Improve and optimize environmental safety in the Plant; complete at least 5 important improvement projects.	1. The goal was reached.	4.3 Healthy Workplace with Zero Work Injuries
	2. Formulate and implement the "Disaster Reduction and Risk Management Guidelines" of Star Energy.	2. The goal was reached.	
	3. Star Energy has no major occupational safety violation and environmental protection violation within a single fine of more than NT$50,000.	3. The goal was reached. There was no single major occupational safety violation and environmental protection violation with a fine of more than NT$50,000 in 2022.	
	4. Implement general occupational safety and health education and training for new and current employees.	4. The goal was reached.	
	5. Conduct worker health examination regularly.	5. The goal was reached.	
Risk Management/ Control	1. Based on the established risk management system and the "Risk Management Implementation Plan", through the steps of risk identification/analysis/ assessment, risk handling, communication and negotiation, supervision and review, which are operated on a rolling basis, and according to the TCFD (Task Force on Climate-Related Financial Disclosures) framework, the risks and opportunities related to climate change are taken into account in the analysis.	1. The goal was reached. Climate change-related risks and opportunities were taken into account in the analysis.	1.3 Risk Management
	2. Implement internal control system to manage corporate risks more effectively.	2. The goal was reached.	

Material Topics	2022 Goals/Important Milestones	Achievements	Corresponding Section
Talent Management and Development	1. Increase collaboration with talent hunting consultants.	1. The goal was reached.	4.2 Talent Development
	2. Collaborate with units that have potential talents to increase recruitment channels.	2. The goal has not been reached. The planned activities could not be carried out as scheduled due to the impact of the pandemic.	
	3. Promote the English Proficiency Program: number of employees with TOEIC score of above 600 is increased by 10.	3. 9 individuals achieved a score of 600 or above in the TOEIC test.	
	4. Middle and senior management training program: each middle and senior manager has more than 22 hours of training	4. Each middle and senior manager attended training for a minimum of 33 hours.	
	5. Employee training hours reach more than 16 hours per person.	5. The training hours for each employee reached a minimum of 53 hours.	
	6. Promote job rotation for employees.	6. Ongoing implementation of job rotations for middle-and entry level managers, management and finance staff, and procurement personnel. This allows individuals to expand their expertise and gain experience in different areas, and the organization also forms groups based on functional areas to facilitate systematic rotations and enhance personnel's comprehensive perspectives.	
Energy Conservation, Carbon Reduction & Circular Economy	1. Carry out the overhaul of steam turbines/maintenance of generators to improve operation efficiency and ensure the reliability of system operation, achieving an electricity saving rate of greater than 1% in 2022.	1. The estimated electricity saving rate for 2022 was 0.83%, with an average electricity saving rate of 1.36% from 2015 to 2022. (The energy-saving measures implemented this year included major overhauls of steam turbines to reduce coal consumption and primarily decrease CO_2 emissions.)	3.1 Climate Change and Energy Management 3.2 Circular Economy and Environmental Protection
	2. Continue to burn scrap tire, and add SRF (Solid Recovered Fuel) as an alternative fuel before the end of the year, which is included in the annual KPI of the Guan Tian Plant.	2. The goal was reached. The trial burning of Solid Recovered Fuel (SRF) was completed before the end of 2022.	
	3. Continue to collaborate with suppliers to apply for joint reuse and recycle all the coal ash.	3. The goal was reached.	
	4. Complete the GHG emissions inventories and verification report.	4. The goal was reached.	

Material Topics Management Approach

To effectively manage the material topics of TCC, meet the expectations of stakeholders and reduce potential negative impact on the economy, environment, and society, the management policies for material topics are summarized in the following table.

Material Topics	Policy	Commitment and Goals			Specific Actions in 2022	Achievements	Responsibilities and Resources	Evaluation Management Mechanism	Grievance or Communication Channel
		Short-term Commitment and Goals of 2023 Set for Material Topics (Quantitative Indicators or Major Milestones)	Mid-term Commitment and Goals Set for Material Topics	Long-term Commitment and Goals Set for Material Topics					
Economic Performance	Enhance the operational efficiency of existing power plants and engineering contracts, reduce operating costs, strengthen core technical capabilities, and actively expand electric power project development. Invest in the development of low-carbon transition power generation technologies and renewable energy-related businesses to maintain long-term stable profitability.	1. Renewable energy retailing reached 191 GWh. 2. Expand ancillary service trading business, introducing external projects or energy storage systems. 3. Obtain EPC and O&M projects for large-scale offshore wind power, onshore wind power and solar photovoltaic power plant.	Plan the expansion direction, business challenges, and strategies for renewable energy and low-carbon energy business to strengthen technical manpower at the core and establish annual overall goals.	In response to the future development of net-zero carbon electricity, we plan strategies for low-carbon, zero-carbon, and carbon neutrality, and cultivate technical manpower.	1. Continued to follow up on the development strategies of renewable energy and promote the implementation of relevant investment projects. 2. Actively participated in Energy Trading Platform and engaged in the trading services for various products. 3. Completed the EPC projects of the onshore substation for the Changhua offshore wind power, as well as the substations for solar photovoltaic power in Yunlin and Tainan. Continued to carry out O&M work for 116 onshore wind turbines and approximately 40 solar photovoltaic power projects.	1. Total renewable energy wheeled exceeded 300 GWh. 2. Officially participated in the ancillary service market for supplement reserve bidding, utilizing the Guan Tian Plant as an operation resource to dispatch approximately 6.81 GWh of electricity.	● Mainresponsible department: Finance Dept. ● Operation of the existing cogeneration plant: Guan Tian Plant ● Management of the invested power plants: Planning & Investment Management Dept. ● Power plant development and investment, and contracting of projects: Project Development Dept., Engineering & Construction Dept., and Star Energy	1. Depending on to the level and scope of the report, businesses are tracked and reviewed on a weekly, monthly and quarterly basis. 2. Review the progress of the Company's annual KPIs on a quarterly basis. 3. Report operating performance to the Board of Directors on a regular basis.	1. Investor service: 02-87982000 ext.546 2. Email: csr@cogen.com.tw 3. Website: https://www.cogen.com.tw/eng/news/contact

Material Topics	Policy	Commitment and Goals			Specific Actions in 2022	Achievements	Responsibilities and Resources	Evaluation Management Mechanism	Grievance or Communication Channel
		Short-term Commitment and Goals of 2023 Set for Material Topics (Quantitative Indicators or Major Milestones)	Mid-term Commitment and Goals Set for Material Topics	Long-term Commitment and Goals Set for Material Topics					
Supply Stability and Reliability	Supply stable and reliable steam and electricity to customers with high-efficiency and low-polluting power generation methods.	Operation reliability of Guan Tian Plant should be ≥ 98.09%.	Achieve operational reliability of 100% and maintain a stable and reliable supply of steam and electricity to customers.	There is no abnormalities and accidents due to equipment or human errors throughout the year.	1. Kept in touch with customers by phone, kept abreast of customer needs, and obtained customers' understanding of any accidents. 2. Conducted customer satisfaction survey annually. 3. Carried out annual overhaul thoroughly. 4. Arranged the training and assessment for operators every month. 5. Submitted monthly operational reports for the invested businesses.	1. The annual reliability in 2022 reached 95.95%. (Due to equipment failure, the unit was shut down for maintenance. The issue was fixed, and preventive measures were implemented to avoid similar incidents from occurring.) 2. The 2022 customer satisfaction survey had a score of 92.13. 3. No abnormal trip due to operation error by personnel.	● Operation of the cogeneration plant: Guan Tian Plant ● Management of the invested power plants: Planning & Investment Management Dept.	1. Check operation-related data daily. 2. Monitor the operational status of invested power plants on a monthly basis. 3. Track the operational reliability of the Guan Tian Plant on a quarterly basis. 4. Conduct an annual customer satisfaction survey for the Guan Tian Plant and include operational reliability as part of the annual review of KPIs for the Guan Tian Plant/invested power plants.	1. Investor service: 02-87982000 ext.546 2. Email: csr@cogen.com.tw 3. Website: https://www.cogen.com.tw/eng/news/contact

Material Topics	Policy	Commitment and Goals			Specific Actions in 2022	Achievements	Responsibilities and Resources	Evaluation Management Mechanism	Grievance or Communication Channel
		Short-term Commitment and Goals of 2023 Set for Material Topics (Quantitative Indicators or Major Milestones)	Mid-term Commitment and Goals Set for Material Topics	Long-term Commitment and Goals Set for Material Topics					
Renewable Energy Development	In alignment with the government's energy transition goals and the "2050 Net-Zero Emissions" target, We will continue to invest in renewable energy development, undertake EPC projects, and engage in O&M work. We will actively expand our business in solar photovoltaic power, wind power, and other related sectors.	1. Obtain permit for the establishment of a 31.8 MW fishery and electricity symbiosis electricity enterprise and apply for construction permit. 2. Secure the bid for the phase II Wushantou Reservoir floating solar photovoltaic project. 3. Acquire a lease agreement for an approximately 20 MW solar photovoltaic power project. 4. Obtain permit for the establishment of a 42 MW onshore wind power electricity enterprise. 5. Complete EPC projects for a 180 MW common substation for solar photovoltaic power in Qigu, Tainan, and a 12 MW indoor fishery and electricity symbiosis power plant in Kaohsiung/Yunlin.	In 2024, the cumulative installed capacity of renewable energy will reach more than 177 MW.	In 2026, the cumulative installed capacity of renewable energy will reach more than 326 MW.	1. Actively invested in the development of renewable energy projects, such as fishery and electricity symbiosis, solar power, and onshore wind power, and made an effort to pursue renewable energy related EPC and O&M projects. 2. Actively expanded the business of green energy trading, and integrated internal as well as external resources of the Group to improve the renewable energy retailing performance. 3. Actively engaged in and continued to carry out EPC projects and O&M work for onshore substations for offshore wind power, solar photovoltaic power, and onshore wind power.	1. Passed the selection for the fishery and electricity symbiosis zone announced by the Bureau of Energy, 39.78 hectares and 31.8 MW of solar photovoltaic power have been approved for installation. 2. Total renewable energy retailing reached 174 GWh. 3. The Renewable Energy O&M Center was officially launched. 4. Obtained the EPC contracts for the onshore substation of an offshore wind power project in Changhua, the substation for a solar photovoltaic plant in Yunlin, and the waste-to-energy power generation equipment project in Hsinchu.	● Feasibility and investment assessment of the renewable energy business, acquiring the business investment approval by the Board of Directors, and the corresponding development until commercial operation: Project Development Dept. ● Renewable energy retailing business: TCC Green Energy ● Renewable energy construction projects: Star Energy	1. Establish project organization for significant investment and development projects. 2. Regularly convene project meetings to track the progress of various renewable energy projects.	1. Investor service: 02-87982000 ext.546 2. Email: csr@cogen.com.tw 3. Website: https://www.cogen.com.tw/eng/news/contact

Material Topics	Policy	Commitment and Goals			Specific Actions in 2022	Achievements	Responsibilities and Resources	Evaluation Management Mechanism	Grievance or Communication Channel
		Short-term Commitment and Goals of 2023 Set for Material Topics (Quantitative Indicators or Major Milestones)	Mid-term Commitment and Goals Set for Material Topics	Long-term Commitment and Goals Set for Material Topics					
Corporate Governance and Sustainability Strategy	The Company conducts annual reviews on a rolling basis to formulate future business strategies, establish the ESG Sustainability Committee to continuously strengthen the competencies of the Board of Directors and functional committees, refine the Company's systems and regulations, improve information disclosure, and reduce operational risks to fulfill corporate sustainable development.	1. Strengthen the competencies of the Board of Directors and functional committee. Improve the Company's systems and regulations. 2. Continue to improve corporate governance and aim to rank in the top 5% of corporate governance evaluation.	Continue to improve the Company's regulations, strengthen the competencies of the Board of Directors, and improve information disclosure, with the goal of becoming a corporate governance benchmark enterprise for listed companies.	Enhance communication and trust with stakeholders, fulfill corporate social responsibilities, and implement sustainable development strategies and goals.	1. Revised the "Regulations for the Performance Evaluation of the Board of Directors", the "Corporate Governance Principles", and established regulations such as the "Guidelines for the Continuing Education of Directors" and the "Risk Management Policies and Procedures". 2. Formulated the business strategy for the next 5 years, and completed the setting of the overall goal, its implementation and achievement review. 3. Convened ESG Sustainability Committee meetings and work promotion meetings, and provide an annual report on the progress of sustainable development to the Board in December.	1. The average number of training hours per director in 2022 was 7.3 hours. 2. In 2022, the attendance rate of Directors of the Board of TCC was 94.23%, while the attendance rates of members of the Audit Committee, the Remuneration Committee and the Nomination Committee were all 100%. 3. Ranked in the top 6~20% of the 9th (2022) Corporate Governance Evaluation. 4. Won the "Top 100 Sustainability Exemplary Awards" and the "Sustainability Report Gold Award" of the Taiwan Corporate Sustainability Awards (TCSA). 5. Ranked 12th in the "2022 Excellence in Corporate Social Responsibility – Medium-sized Enterprise Category" of the CommonWealth Magazine.	● Sustainable development strategy: ESG Sustainability Committee ● Coordinating the implementation of ESG-related work: Planning & Investment Management Dept. ● Formulation and review of future business strategies and annual KPIs: Planning & Investment Management Dept. ● Designated unit of corporate governance: Secretariat of the Board (Director of the Secretariat of the Board is the chief corporate governance officer)	1. The head of each department reports the implementation of the company's KPIs every month. Every quarter, the head reports the implementation status of the company KPIs to the management. The implementation results are reviewed at the end of the year, and is linked with employee performance. 2. Provide weekly and monthly reports on the progress of sustainable development initiatives, and report at least once a year to the Board of Directors on the planning and execution of sustainable development initiatives. 3. Formulate and review future business strategies every year, and report to the management as well as the Board of Directors.	1. Investor service: 02-87982000 ext.546 2. Email: csr@cogen.com.tw 3. Website: https://www.cogen.com.tw/eng/news/contact

Material Topics	Policy	Commitment and Goals			Specific Actions in 2022	Achievements	Responsibilities and Resources	Evaluation Management Mechanism	Grievance or Communication Channel
		Short-term Commitment and Goals of 2023 Set for Material Topics (Quantitative Indicators or Major Milestones)	Mid-term Commitment and Goals Set for Material Topics	Long-term Commitment and Goals Set for Material Topics					
Occupational Safety and Health	The Company strictly abides by relevant laws and regulations, conducts pollution prevention, implements EHS (environment, health & safety) policies and guidelines of full participation and continuous improvement, attaches great importance to risk management, and enhances the safety awareness of the Company and its suppliers to achieve the goal of no major occupational accidents in the workplace.	1. Complete ISO 45001:2018 management system renewal audit. 2. Improve and optimize EHS for the Guan Tian Plant; complete at least 5 important improvement projects. 3. Formulate and implement the "Disaster Reduction and Risk Management Guidelines". 4. Star Energy has no major occupational safety violation and environmental protection violation within a single fine of more than NT$50,000. 5. Implement general occupational safety and health education and training for new and current employees. 6. Ensure the safety of the work environment and equipment. 7. Conduct worker health examination regularly.	1. Make good use of ISO 45001 Occupational Health and Safety Management System, strengthen the Guan Tian Plant' s hazard identification and risk assessment, and take appropriate preventive measures to avoid the occurrence of various hazards. 2. Run the "HSE APP" for each project of Star Energy. 3. Care for the psychological needs of employees, assist in reducing and adapting to mental stress, provide psychological counseling services, and ensure the physical and mental health and safety of employees. 4. Provide employees with a safe, high-quality, and comfortable working environment to enhance work quality. 5. Arrange contracted medical personnel to provide on site occupational health services to workers.	1. Achieve the goal of zero major occupational accidents. 2. Based on ISO 45001 Occupational Health and Safety Management System, continuously review and improve in-plant safety facilities and management to enhance the effectiveness of environment, safety and health management and achieve the goal of "zero accident for employees". 3. By establishing the "Plan for Preventing Ergonomic Hazards" and the "Plan for Preventing Abnormal Workload- triggered Disorders" measures such as violence prevention, musculoskeletal disorder prevention, and disease prevention are implemented to strive for the goal of zero occupational accidents.	1. We served as the core enterprise of Tainan's cogeneration safety and health family, assisting the government in promoting various safety and health promotions, on-site guidance and visits. In addition to conducting education and training, we also assisted family members in carrying out good occupational safety management. 2. Completed 8 environmental safety improvements and optimizations for the plant. 3. "Hazard Notification and Toolbox Meeting" was conducted with contracted workers by each project site before starting work each day. 4. Monthly statistical analysis of risk probability in hazard identification was conducted as the focus for occupational safety and disaster mitigation. 5. The "Prevention Plan for Avoiding Illicit Acts against Taipei Office of TCC" has been established and implemented. 6. The "Human Rights Policy and Management Regulations" had been formulated to provide a safe and healthy working environment. 7. Employee health seminars and training courses related to hazard risk assessment were conducted.	1. Won the Outstanding Performance Award of the safety and health family for three consecutive years. 2. Received the "2022 Five-Star Workplace Certification" from Tainan City Government. 3. Invited by the Bureau of Labor Affairs, Tainan City Government, the Guan Tian Plant organized the 2022 Confined Space Operation Hazard Prevention and Disaster Response Training. 4. The occupational safety supervisor of the Guan Tian Plant received the "Outstanding Individual Award" in the 2022 National Industrial Park Occupational Safety and Health Promotion Program. 5. Star Energy had no major occupational safety violation and environmental protection violation within a single fine of more than NT$50,000. 6. New employees completed 3 hours of occupational safety and health education training, while current employees received 3 hours of general occupational safety and health education training annually. 7. Conducted 4 sessions of hazard prevention and communication skills training.	Occupational safety and health work: Taipei Office – Administration Dept.; Guan Tian Plant - Safety & Environmental Protection Section is responsible for planning and promotion. Each section performs hazard identification and risk assessment according to their powers and responsibilities; Star Energy - Safety, Health and Environment Management Office.	1. Implement ISO 45001 and undergo annual on-site inspections by third-party verification companies. Conduct regulatory compliance assessments on a quarterly basis, and track related matters in monthly occupational safety meetings. 2. Count the number of work-related injuries per project at the end of each month. The Safety, Health and Environment Management Office regularly conducts walking inspections and audits. 3. Reports on occupational safety, health and environmental performance are submitted to the "Occupational Safety and Health and Environmental Protection Committee" every quarter.	1. Human rights protection hotline 02-87982000 EXT.515 2. Email: hr@cogen.com.tw 3. Website: https://www.cogen.com.tw/csr/boon

Material Topics	Policy	Commitment and Goals			Specific Actions in 2022	Achievements	Responsibilities and Resources	Evaluation Management Mechanism	Grievance or Communication Channel
		Short-term Commitment and Goals of 2023 Set for Material Topics (Quantitative Indicators or Major Milestones)	Mid-term Commitment and Goals Set for Material Topics	Long-term Commitment and Goals Set for Material Topics					
Technology R&D and Innovation	The Company is committed to providing efficient and low-pollution energy services. We continuously update and upgrade our power generation units and invest in the application of new technologies and equipment to enhance the power generation efficiency and construction quality of our power plants and renewable energy sites.	1. Compared to the average annual total power generation of rooftop solar photovoltaic installations in the first three years, a 10% improvement in power generation efficiency is achieved. 2. Review the improvement plan with the boiler design manufacturer, adopting the implementation after finalizing methods.	1. After achieving significant improvement in power generation efficiency in rooftop solar photovoltaic installations, the pivot analysis method will be introduced to floating solar photovoltaic installations and fishery and electricity symbiosis. 2. Award the bidding of the SNCR system improvement project.	1. Enhance the overall power generation efficiency of renewable energy sites. 2. Complete the SNCR system improvement project, achieving a reduction in NOx emissions from boilers to the standard of 60 ppm during low load operation.	1. Integrated various parameters of rooftop solar photovoltaic installations into a pivot analysis program for classification and organization, and performed calculations based on different combinations. 2. Reviewed the improvement plan with the boiler design manufacturer to reduce NOx emission concentrations.	1. Utilized drones for O&M and conducted preventive inspection to ensure the stable operation of the units. 2. The data acquisition system in compliance with the latest "Management Regulations of Continuous Emission Monitoring System for Stationary Source Air Pollutants" was officially launched in 2022.	● Equipment upgrades at Guan Tian Plant: Guan Tian Plant Maintenance Section. ● Enhancing power generation efficiency at the solar photovoltaic power site: Star Energy Renewable Energy O&M Dept. - Photovoltaic Maintenance Team.	1. The power plant holds monthly operational meetings and technical meetings to review the efficiency of the units and periodically assess the need for upgrading outdated equipment to enhance performance. 2. In the solar photovoltaic power site, dedicated personnel inspect various algorithmic information daily to promptly identify any issues and arrange maintenance operations.	1. Investor service: 02-87982000 ext.546 2. Email: csr@cogen.com.tw 3. Website: https://www.cogen.com.tw/eng/news/contact

Material Topics	Policy	Commitment and Goals			Specific Actions in 2022	Achievements	Responsibilities and Resources	Evaluation Management Mechanism	Grievance or Communication Channel
		Short-term Commitment and Goals of 2023 Set for Material Topics (Quantitative Indicators or Major Milestones)	Mid-term Commitment and Goals Set for Material Topics	Long-term Commitment and Goals Set for Material Topics					
Electricity Policy Evaluation and Response	In response to the global decarbonization trend and Taiwan's goal of achieving "Net-Zero Emissions by 2050", the company has incorporated energy transition and net-zero transformation as important business priorities. The main strategies include promoting green energy collaboration, harnessing wind and solar power, and implementing underground transmission lines.	1. Formulate the business strategy for the next 5 years, and review the implementation strategy on a rolling basis in accordance with the electricity policy. 2. Complete the energy policy tracking and analysis report	Continuously monitor government energy policies and international energy development trends to formulate our development strategies. Collaborate with stakeholders to address issues such as electricity consumption by major users and national renewable energy promotion goals.	In response to the government's net-zero transition goals, we will continue to expand our investments and developments in renewable energy, as well as engage in engineering contracting, O&M, renewable energy retailing, and ancillary services. Additionally, we will be actively involved in the investment and development of gas-fired power plants.	1. Invested in solar photovoltaic and wind power projects in line with energy policies, and promoted the establishment of common substations to facilitate green energy collaboration. 2. Strove for renewable energy EPC, O&M projects, and renewable energy retailing businesses. Engaged in ancillary service market to expand our business in emerging energy sectors	1. Completed the Energy Policy Tracking and Analysis Report. 2. Completed the formulation of future business strategies for a period of 5 years.	● Electricity policy evaluation and response strategy: Planning & Investment Management Dept. ● Development projects related to renewable energy and private gas-fired power plants in response to the energy transition: Project Development Dept., Engineering & Construction Dept., and Star Energy.	1. Review future business strategies every year on a rolling basis, and formulate the implementation strategies in response to changes in electricity policies. 2. For the Company's various investment and development businesses as well the contracted projects, set the annual KPIs for the Company, which are reviewed and tracked by the responsible department and the organizing unit on a monthly and quarterly basis.	1. Investor service: 02-87982000 ext.546 2. Email: csr@cogen.com.tw 3. Website: https://www.cogen.com.tw/eng/news/contact

Material Topics	Policy	Commitment and Goals			Specific Actions in 2022	Achievements	Responsibilities and Resources	Evaluation Management Mechanism	Grievance or Communication Channel
		Short-term Commitment and Goals of 2023 Set for Material Topics (Quantitative Indicators or Major Milestones)	Mid-term Commitment and Goals Set for Material Topics	Long-term Commitment and Goals Set for Material Topics					
Talent Management and Development	Link human resources plan with the Company's business strategy as well as future business development. With the goal of cultivating international professional talents, actively develop different recruitment channels. Assist employees in career development planning, offer appropriate job rotation and promotion opportunities, and provide diversified training programs as well as competitive compensation and benefits to build a complete talent cultivation and retention structure.	1. Promote the English proficiency enhancement program, including conversational courses for a minimum of 150 people. Additionally, provide a 6-month business English training program specifically for selected managers. 2. Continuously implement a new employee care program. 3. Convene the Talent Cultivation and Development Advisory Committee meeting regularly. 4. Middle and senior management training program: On average, each middle and senior manager (including Chief and above) has more than 23 hours of training. 5. Average employee training hours reach more than 26 hours per person. 6. Promote job rotation for employees.	Implement the Professional Competency Project (2023-2025): In accordance with the organization's future development goals, conducting an inventory of departmental functions in each department, selecting key professional competencies, and planning talent cultivation and development programs for key personnel in each department.	Become a benchmark company in the industry for professional technical expertise and talent development, attracting talented individuals to enter the Company, and offering the most competitive compensation and benefits in the industry.	1. Developed a flexible (variable) compensation and benefits program to retain key talents. 2. Implemented a new employee care program. 3. Established a Talent Cultivation and Development Advisory Committee to formulate various talent development programs. 4. Carried out rotations for middle- and entry level supervisors and managerial finance and procurement personnel.	1. Middle and senior level executives had an average learning time of 33 hours for digital and physical courses. 2. Employees have an average learning time of 53 hours for digital and physical courses. 3. In 2022, a total of 9 individuals achieved 600 or above in the TOEIC test.	Strategies for talent recruitment and cultivation: Administration Dept.	Regularly convene the Talent Cultivation and Development Advisory Committee. Quantitative goals will be included in annual KPIs, and they will be tracked in supervisor meetings on a monthly basis.	1. Contact number: 02-87982000 (Human Resources) 2. Email: hr@cogen.com.tw 3. Website: www.cogen.com.tw/csr/boon

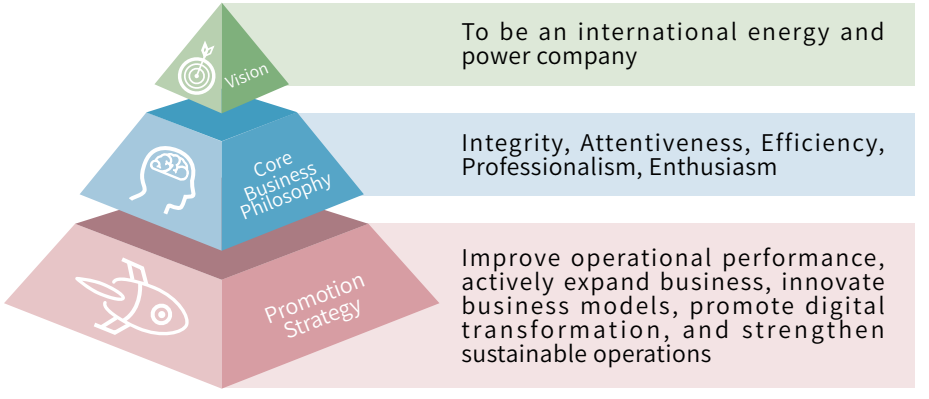
Material Topics	Policy	Commitment and Goals			Specific Actions in 2022	Achievements	Responsibilities and Resources	Evaluation Management Mechanism	Grievance or Communication Channel
		Short-term Commitment and Goals of 2023 Set for Material Topics (Quantitative Indicators or Major Milestones)	Mid-term Commitment and Goals Set for Material Topics	Long-term Commitment and Goals Set for Material Topics					
Integrity Management and Legal Compliance	The Company strictly abides by relevant laws and regulations. Based on the concept of integrity, transparency and responsibility, the Company requires its employees to uphold ethics and integrity standards in all business activities, and implement a self- supervision mechanism.	1. Complete the report on the Company's Ethical Corporate Management Principles to the Board of Directors before the end of March. 2. Organize more than 2 sessions of education and training on integrity management and continue to promote integrity management. 3. Organize 1 session of legal-related education and training for employees.	Continue to improve and practice the integrity management supervision mechanism to ensure the effectiveness of the mechanism.	Continue to improve and practice the integrity management supervision mechanism to ensure the effectiveness of the mechanism.	1. The implementation status of the Ethical Corporate Management Principles for the previous year was reported to the Board of Directors on March 16, 2022. 2. During the monthly reporting of equity changes by insiders, reminded directors and supervisors of the important regulations outlined in the Legal Compliance Handbook for Insiders.	1. Conducted two integrity management-related education and promotion activities in 2022. 2. In 2022, one session of legal education and training was held. 3. All departments completed the 2022 internal control self-assessment, which was reviewed by the Internal Audit Office.	● Dedicated unit for supervising the integrity management of the Company: Legal Affairs Office ● Consulting services on laws and regulations: Legal Affairs Office ● Internal audit: Internal Audit Office (Internal control self-assessment is conducted by each department and reviewed by the Internal Audit Office.)	1. Report to the Board of Directors on the implementation of integrity management and the results every year. 2. At least once a year, conduct education and training or awareness campaign on integrity management to Directors, Managers and employees. 3. Carry out internal control self-assessment and regular audit plan every year, and conduct ad hoc and irregular audits depending on the needs.	1. Investor service: 02-87982000 ext.626 2. Email: whistle@cogen.com.tw 3. Website: https://www.cogen.com.tw/eng/news/contact

Material Topics	Policy	Commitment and Goals			Specific Actions in 2022	Achievements	Responsibilities and Resources	Evaluation Management Mechanism	Grievance or Communication Channel
		Short-term Commitment and Goals of 2023 Set for Material Topics (Quantitative Indicators or Major Milestones)	Mid-term Commitment and Goals Set for Material Topics	Long-term Commitment and Goals Set for Material Topics					
Risk Management/ Control	Establish risk management system to effectively reduce the occurrence of risks, minimize or avoid the impact of risks, and incorporate risk management into business strategy planning and daily business practices, promoting risk awareness for all employees to shape a risk management culture.	1. Complete the risk management plan and incorporate climate change-related risks and opportunities into analysis consideration. 2. Implement internal control system to manage corporate risks more effectively.	1. Strengthen the internal control system and maintain the effectiveness of internal control. 2. Introduce and prepare the climate change-related financial disclosures (TCFD) report.	Based on the changes in the external environment, continue to improve the existing risk management system and structure to effectively reduce risks related to operation management and climate change.	1. Reviewed the implementation of risk management in the first half and the entire year of 2022. 2. Completed the 2022 risk map and related control measures. 3. Established the "Risk Management Policy and Procedures" and obtain approval from the Board of Directors on December 23, 2022. 4. Strengthened information security risk management by implementing measures such as conducting device security check-ups, and providing education and training. 5. Implemented self-assessment of internal control.	1. Completed the review of the implementation of risk management, and implemented the risk management mechanism. 2. Established and implemented the 2022 risk image and related control measures. 3. There were no major internal control faults in 2022.	● Governance and oversight: The Board of Directors and the Audit Committee supervise the operation of the risk management mechanism and ensure the effectiveness of risk management. ● Operation and execution of Risk management: The Risk Management Committee (led by the Planning & Investment Management Dept. as the promoting unit, with execution by various units).	1. Annual risk management project is reviewed and tracked every six months. 2. In case of sudden increase of risk scenarios or sudden increase of risk events, relevant departments shall report and take control measures as needed, and submit them to the Risk Management Committee for deliberation when necessary.	1. Investor service: 02-87982000 ext.546 2. Email: csr@cogen.com.tw 3. Website: https://www.cogen.com.tw/eng/news/contact

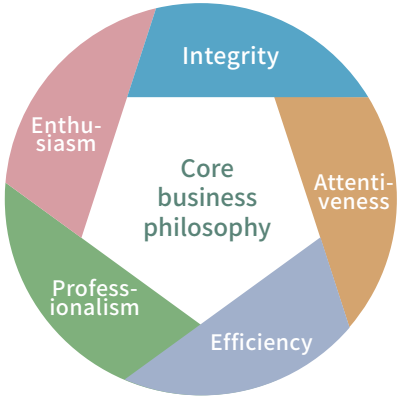
Material Topics	Policy	Commitment and Goals			Specific Actions in 2022	Achievements	Responsibilities and Resources	Evaluation Management Mechanism	Grievance or Communication Channel
		Short-term Commitment and Goals of 2023 Set for Material Topics (Quantitative Indicators or Major Milestones)	Mid-term Commitment and Goals Set for Material Topics	Long-term Commitment and Goals Set for Material Topics					
Energy Management and Circular Economy	The Company complies with environmental protection regulations, attaches great importance to sustainable development of the environment, and promotes continuously unit efficiency improvement, environmental protection equipment renewal, waste recycling as well as energy/ resource recycling to achieve energy conservation and carbon reduction, fulfilling the idea of circular economy.	1. Fuel substitution rate (SRF and rubber) ≥ 30%. 2. Complete the internal inventory mechanism for greenhouse gases. 3. Continue to collaborate with suppliers to apply for joint reuse and recycle all the coal ash.	1. From 2022 to 2024, the average annual electricity saving rate reaches more than 1% to meet the government's energy -saving policy, achieving the goal of energy conservation and carbon reduction. 2. Promote GHG management.	1. By increasing SRF as an alternative fuel, coal usage is reduced to lower greenhouse gas emissions. 2. Complete the GHG inventory of subsidiaries in consolidated statements.	1. Completed the feasibility and risk assessment report for SRF and completed modifications and new installation to the SRF feeding system. 2. Implemented waste recycling and reuse in accordance with existing circular economy policies. 3. Equipment maintenance and upgrades to reduce coal and electricity consumption.	1. The average electricity saving rate from 2015 to 2022 was 1.36% (the estimated annual electricity saving rate in 2022 was 0.83%). 2. In 2022, 28,260 metric tons of scrap tire rubber were burned, which reduced the coal consumption by approximately 46,006 metric tons. 3. In 2022, the amount of coal ash generated was 21,551 metric tons, and 100% of them were recycled and converted into CLSM (Controlled-Low-Strength-Materials). 4. Completed the GHG emissions inventories and verification report.	● Planning and implementing energy-saving and carbon-reduction projects; coordinating the supply and burning of scrap tires, and adjusting SRF combustion; maintaining SRF conveying equipment; coal ash reuse and permit maintenance for new SRF alternative fuels: Guan Tian Plant ● GHG inventory and verification planning of the Group: Planning & Investment Management Dept.	1. The implementation performance is evaluated on an annual basis, while the scheduled implementation projects for the next year are planned. 2. Based on the boiler's original design, the heating value ratio of 30% for scrap tire burning is used as the benchmark, and the co-combustion is adjusted according to the boiler's operating conditions.	1. Investor service: 02-87982000 ext.546 2. Email: csr@cogen.com.tw 3. Website: https://www.cogen.com.tw/eng/news/contact

Vision and Strategy for Sustainable Development

The United Nations released the Sustainable Development Goals (SDGs) in 2015, leading the government and enterprises to recognize and take action on sustainable topics. The energy industry, to which TCC belongs, is closely intertwined and interconnected with various aspects of sustainable development issues. Therefore, with the vision of "becoming an international power and energy company", TCC adheres to our core business philosophy, follows important sustainable trends, and considers environmental, policy changes internally and externally. The company proposes sustainable promotion strategies in environmental, social and governance aspects, adjusts our operational direction in a timely manner. TCC will continue to respond to the United Nations sustainable development goals with concrete actions that fulfill corporate sustainable operation.



TCC's long-term goal is to become an international enterprise that offers comprehensive services in power and energy-related investment, project contracting, O&M, renewable energy retailing and energy storage.



Integrity

Integrity and act with transparency

Originated from the philosophy of integrity, transparency, and responsibility, we establish a trusting relationship between the Company and stakeholders to achieve sustainable operation and development for the Company.

Attentiveness

Be responsible and strive to do better.

Put effort in each and every job we do, review it at any time, reach the highest quality, and pursue/maintain the satisfaction of customers and partners as our definitive practices to demonstrate responsibility.

Efficiency

Quickness, keep the schedule in mind and complete tasks in time

Complete the work as scheduled with the highest quality to maximize the invested resources. Emphasize on work efficiency, expand overall performance, improve business results, and achieve corporate goals.

Professionalism

Quality, thorough and comprehensive professional services

TCC has the capability to develop and execute a full range of energy-related plans, including development preparation, project planning, financing, project management, procurement and contracting, construction supervision, operation and maintenance, to provide customers and partners with the best service.

Enthusiasm

Challenge, achievement is always the greatest reward

The Company's development vision is linked to the career planning of its employees, with enthusiasm and the courage to serve, we strive to achieve a shared future of common good for the Company and employees.

In recent years, influenced by the constantly changing international situation, business operations have become filled with uncertainty and complexity. To adapt to the rapid changes of business environment, TCC formulates strategies and action plans based on its vision, business philosophy, and major short- to mid-term issues. These include considering internal and external environments, significant government policies, and the Company's human resources and finances. A five-year future business strategy is developed and reviewed annually to promptly understand changes in the internal and external environments and adjust the Company's overall strategy and business direction accordingly. This ensures the implementation of sustainable business practices and progress towards the Sustainable Development Goals (SDGs).

Direction of Sustainability Strategy			Mid- and Long-Term Goals
E	▶ Actively expand business ▶ Innovate business model ▶ Strengthen sustainable management	▶ Expand the development of green energy business ▶ Strengthen environmental management and pollution prevention ▶ Implement environmental sustainability ▶ Establish a green circular economy model	● Actively develop renewable energy projects and enhance competitiveness in engineering contracting and O&M capabilities ● Strengthen renewable energy retailing, ancillary services and energy storage businesses ● Continue to promote the establishment of environmental and energy-related management Systems, update power plant units and pollution prevention equipment, and strengthen the energy efficiency of units ● Establish GHG management mechanism, target for the percentage of renewable energy use ● Fulfill the idea of regional resource integration and circular economy
S	▶ Promote digital transformation ▶ Strengthen sustainable management	▶ Establish a complete talent management and training mechanism ▶ Create a happy and healthy workplace ▶ Implement social participation and contribution	● Improve the human resources recruitment system, talent rotation system and internal mentor system, and strengthen the internal rotation mechanism ● Strengthen employee performance evaluation and management structure and link with the strategy, core values and vision of the Company ● Maintain zero occupational injury, strengthen employee health management, and create a good working environment ● Improve supplier/contractor sustainability commitment ● Actively integrate the focus of social participation activities with the Company's businesses and encourage employees to participate
G	▶ Improve operational performance ▶ Actively expand business ▶ Innovate business model ▶ Promote digital transformation ▶ Strengthen sustainable management	▶ Improve corporate governance and competency of the Board ▶ Improve the transparency and timeliness of information disclosure ▶ Build risk response capabilities ▶ Build a sustainable supply chain ▶ Improve service quality ▶ Expand existing businesses and develop innovative business model	● Develop vertically integrated electricity enterprise projects and enhance competitiveness ● Improve operational performance and strengthen management of investment businesses ● Improve corporate governance rules and regulations ● Continuously strengthen the operations of the ESG Sustainability Committee, and enhance the completeness, quality, and timeliness of information disclosure ● Enhance diversified channels of interaction and communication with stakeholders ● Strengthen corporate risk culture and improve internal control system

● Environmental aspect
● Social aspect
● Governance aspect

01

Corporate Integrity and Sustainable Governance

Chapter Highlights

EPS NT$1.54

Received the Taiwan Corporate Sustainability Awards (TCSA) and the "Excellence in Corporate Social Responsibility Award" of the CommonWealth Magazine in 2022

1.1 About TCC

1.1.1 About TCC Group

TCC, a leading private electric power group in Taiwan, was established in 1992 and listed on the market in 2003, with a paid-in capital of NT$ 5.89 billion.

At the beginning of its establishment, the Company aimed to provide cogeneration technology and assist industries in building cogeneration systems. In addition to investing in the establishment of Ta-Yuan Cogen Co., Ltd. through joint venture, TCC has successively built a number of diesel engine cogeneration power plants based on the BOT (Build–Operate–Transfer) model. The Company independently established the Guan Tian Cogeneration Plant, providing regional energy integration services for the Guantian Industrial Park.

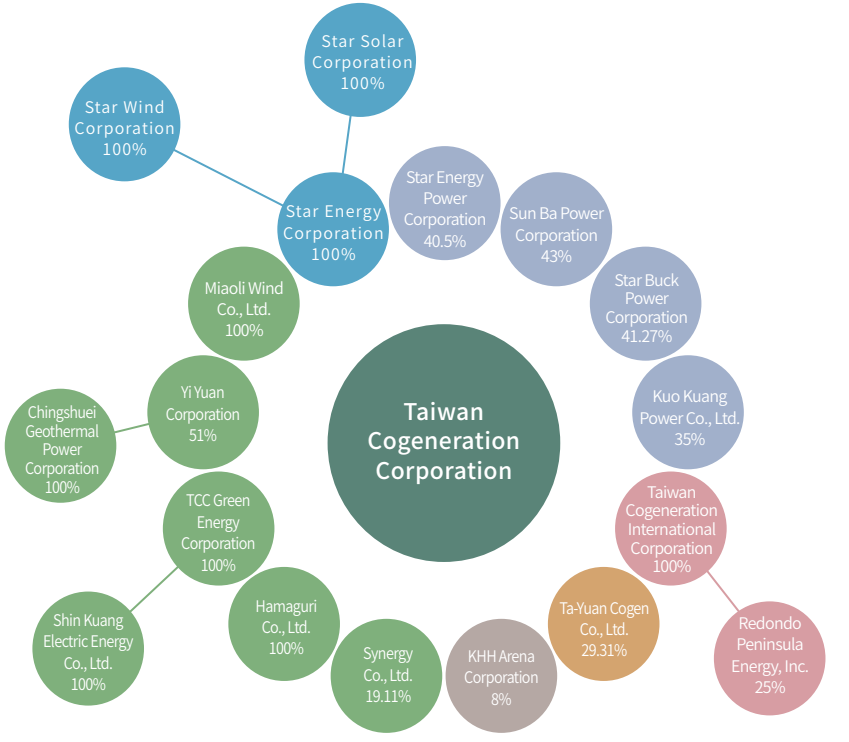
To coincide with the government's energy policy, TCC engaged in the investment, construction and operation of independent gas-fired power plants including Star Energy Power, Sun Ba Power, and Star Buck Power. It also invested in Kuo Kuang Power through equity acquisition. Currently, the four independent gas-fired power plants account for about 30% of the total installed capacity of domestic independent power plants and nearly 5% of the total installed capacity in Taiwan, playing an important role in domestic power supply[1] . As for the overseas business, Taiwan Cogeneration International Corporation, a subsidiary of TCC, has invested in Redondo Peninsula Energy, Inc. in the Philippines.

In recent years, TCC has been aligning with regulations related to energy transition and climate change adaptation. It also responds to domestic and international sustainability trends by fully developing businesses related to renewable energy. The subsidiary, Star Energy, is a well-known professional engineering company in Taiwan. In addition to the acquirement of various solar power, wind power, substations and transmission lines EPC projects, it also invests in the development of its own projects for solar power and onshore wind power.

Furthermore, the subsidiary, TCC Green Energy, is currently the largest green electricity retailer in Taiwan, demonstrating outstanding performance in the green electricity retailing business. TCC Group has become the first professional enterprise in Taiwan that can provide a full range of renewable energy related services including investment and development, construction, O&M, green electricity retailing, and energy storage.

Over the past 30 years, TCC has continuously practiced its core principles, fostering innovative growth while maintaining stability. In the future, we will continue to enhance our core expertise and competitive advantages, striving to realize our vision of sustainable business operations.

TCC Invested Companies and Shareholding Percentage



Note 1 : The total installed capacity of four independent power plants invested by TCC is 2,491 MW. As of 2022, the total installed capacity of independent power plants was 8,328 MW, and the total installed capacity of Taipower's systems was 53,736 MW.

Businesses of TCC Group

Investment and Development
Invest in cogeneration plants through sole proprietorship, joint venture or BOT, and sell the steam and electricity produced by the cogeneration plants to partner companies or neighboring users.

Vertical Integration
Investment, construction, O&M of thermal power plants, cogeneration plants and renewable energy power plants.

Comprehensive Services
Comprehensive and vertically integrated services including planning, design, procurement, installation, construction management and financial planning, environmental protection and O&M of thermal power plants, cogeneration plants, renewable energy power plants, transmission lines, substations, and related projects.

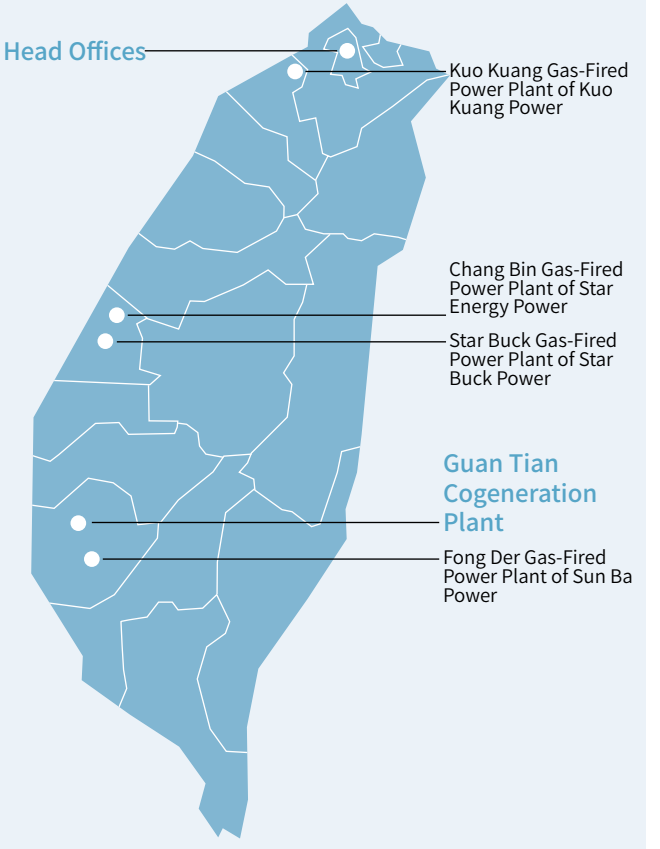
Engineering, Procurement and Construction (EPC)
Engineering, procurement, construction, technical support and consulting services for thermal power plants, cogeneration plants, renewable power plants, transmission lines, substations, and related projects.

Renewable Energy O&M
Renewable Energy O&M Center to carry out O&M for large-scale solar photovoltaic power plants and onshore wind farms, integrating local offshore O&M teams.

New Energy Services
Renewable energy retailing, ancillary services, energy storage system planning and construction.

Geographical Location of Operating Bases

The head offices of TCC and Star Energy are located in Taipei City, and their operating bases also include the Guan Tian Cogeneration Plant in Tainan City. The independent power producers (IPPs) invested by TCC are located in Changhua County, Tainan City and Taoyuan City.



Category	Invested Company	Major Businesses and Characteristics
Gas-Fired Power Plant	Star Energy Power Corporation	Operation of Chang Bin Gas-Fired Power Plant with an installed capacity of 507 MW
	Sun Ba Power Corporation	Operation of Fong Der Gas-Fired Power Plant with an installed capacity of 1,014 MW
	Star Buck Power Corporation	Operation of Star Buck Gas-Fired Power Plant with an installed capacity of 490 MW ● The EPC project built by TCC, which is the first company in Taiwan with the EPC project experience for gas-fired combined cycle power plant
	Kuo Kuang Power Co., Ltd.	Operation of Kuo Kuang Gas-Fired Power Plant with an installed capacity of 480 MW ● Invested by TCC through mergers and acquisitions of overseas equity
Cogeneration Plant	Ta-Yuan Cogen Co., Ltd.	Operation of Ta-Yuan Cogeneration Plant (82 MW) and the plant in the Taoyuan Environmental Science & Technology Park ● A TPEx listed company ● Dayuan Industrial Park energy and resource integration services
Construction Engineering (Electricity Professional)	Star Energy Corporation	Design, planning, procurement, contracting, construction, and O&M of power plants, transmission lines and renewable energy related projects ● Contracted Taipower's 150 MW solar PV project in Tainan ● Built Taiwan's first Renewable Energy O&M Center
Overseas Power Business Investment	Taiwan Cogeneration International Corporation	Overseas investment business
	Redondo Peninsula Energy Inc.	Development of Subic Bay Coal-Fired Power Plant in the Philippines
Renewable Energy Development	Yi Yuan Corporation	The main businesses include geothermal energy technology services, investment management consulting and international trade ● Collaborated with the Yilan County Government to conduct Chingshuei geothermal development through BOT
	Chingshuei Geothermal Power Corporation	Construction and operation of Chingshuei Geothermal Power Plant with an installed capacity of 4.2 MW ● Taiwan's largest geothermal power plant, which began its commercial operation in 2021
	TCC Green Energy Corporation	Green energy investment and development, renewable energy retailing and ancillary services ● In 2019, it obtained the second renewable energy retailer license in Taiwan ● The first kWh of renewable electricity was sold in October 2020, and the cumulative electricity sold by the end of 2022 exceeded 300 GWh
	Hamaguri Co., Ltd.	Fishery and electricity symbiosis project investment and development
	Shin Kuang Electric energy Co., Ltd.	Operation of the Shin Kuang Photovoltaic Power Plant ● The largest RC rooftop 5 MW photovoltaic power plant in the northern Taiwan, which began commercial operation in 2019
	Star Wind Corporation	Onshore wind power investment, development, construction, and operation ● Star Wind's 10.35 MW wind farm, which began commercial operation in 2020
	Star Solar Corporation	Solar photovoltaic investment, development, construction, and operation ● Wushantou Reservoir floating photovoltaic power plant with an installed capacity of 13.7 MW
	Miaoli Wind Co., Ltd.	Operation of the Dapeng and Zhunan onshore wind farms, with a total installed capacity of 49.8 MW
	Synergy Co., Ltd.	Renewable energy projects development and O&M
Others	KHH Arena Corporation	Operation and management of Kaohsiung Arena and its ancillary facilities

1.1.2 Economic Performance

Financial Performance

Creating value for investors is an important responsibility of TCC. In recent years, TCC has been steady and well-performing. The consolidated net profit after tax in 2022 was NT$ 917,015,000. For more financial information, please refer to the Annual Report.

Unit: NT$ 1,000

	Direct Economic Value Generated	Economic Value Distributed (Expenditure)						Economic Value Retained
Year	(Revenue)	Operating Costs	Employee Salary and Benefits	Interest on Debts/Loans	Tax	Fee	Community Investments	Net Profit for the Current Period
2020	10,014,512	8,592,737	423,058	48,945	50,541	846	3,848	1,070,583
2021	7,107,172	5,630,497	451,938	66,981	121,012	919	2,323	905,389
2022	5,527,513	4,040,655	480,784	86,457	88,863	12,623	1,557	917,015

Major Business Income

Unit: NT$ 1,000

Major Business Income	Amount	Percentage (%)
Sales Revenue	1,690,298	36%
Construction, O&M and Consulting Service Revenue	2,978,583	64%
Total	4,668,881	100%

Net Profit after Tax and EPS

Unit: NT$

	2020	2021	2022
Net Profit after Tax (Parent company only)	1,068,547,000	897,884,000	906,774,000
EPS	1.81	1.52	1.54

Operating Revenue

Unit: NT$ 1,000

	2020	2021	2022	Reason for Change
Sales Revenue	1,047,141	1,311,137	1,690,298	● An increase in revenue in 2021 compared to 2020: mainly due to the revenue from sales of electricity of Miaoli Wind (subsidiary), Star Wind (sub-subsidiary) and Chingshuei Geothermal Power (sub-subsidiary), after deducting the net impact of the reduction in electricity retailing at the Guan Tian Plant and the adjustment of the contract price of steam customers. ● An increase in revenue in 2022 compared to 2021: mainly due to the higher electricity prices and the increased purchase prices by Taipower for the Guan Tian Plant. In addition, the sales of electricity of Miaoli Wind (subsidiary), Star Wind (sub-subsidiary) and Chingshuei Geothermal Power (sub-subsidiary) also played a significant role in driving the growth of revenue.
Construction, O&M and Consulting Service Revenue	8,266,583	5,095,859	2,978,583	● A decrease in revenue in 2021 compared to 2020: mainly due to the fact that some construction projects recognized of Star Energy (subsidiary) and Chingshuei Geothermal Power (sub- subsidiary) have been successively completed, resulting in a decrease in project revenue. ● A decrease in revenue in 2022 compared to 2021: mainly due to the fact that some construction projects were completed succcessively, resulting in a decrease in project revenue.
Total	9,313,724	6,406,996	4,668,881	

Non-Operating Revenue and Expenses

Unit: NT$ 1,000

	2020	2021	2022	Reason for Change
Investment Income	658,916	631,227	791,123	● A decrease in income in 2021 compared to 2020: mainly due to the net impact of the decrease in profit from the fire accident in Star Buck Gas-Fired Power Plant, which is still under repair, and the increase in the dispatch of other IPPs by Taipower. ● An increase in income in 2022 compared to 2021: mainly due to the rise in natural gas prices, which increased dispatch and guaranteed operating hours by Taipower for the IPPs, after deducting the net impact of the recognized fines from the Fair Trade Commission.
Others	(7,077)	(45,051)	(21,110)	● An increase in loss in 2021 compared to 2020: mainly due to foreign currency exchange losses and increase in financial costs. ● A decrease in loss in 2022 compared to 2021: mainly due to an increase in the recognition of foreign currency exchange gains.
Total	651,839	586,176	770,013	

Net Defined Benefit Liabilities

Unit: NT$ 1,000

	2020	2021	2022
Net Defined Benefit Liabilities	126,425	124,387	112,088

Note: Net defined benefit liabilities are the employee pension provided in accordance with the Labor Standards Act.

Earning Distribution

The dividend distribution and shareholders' return on investment in the last three years are as follows:

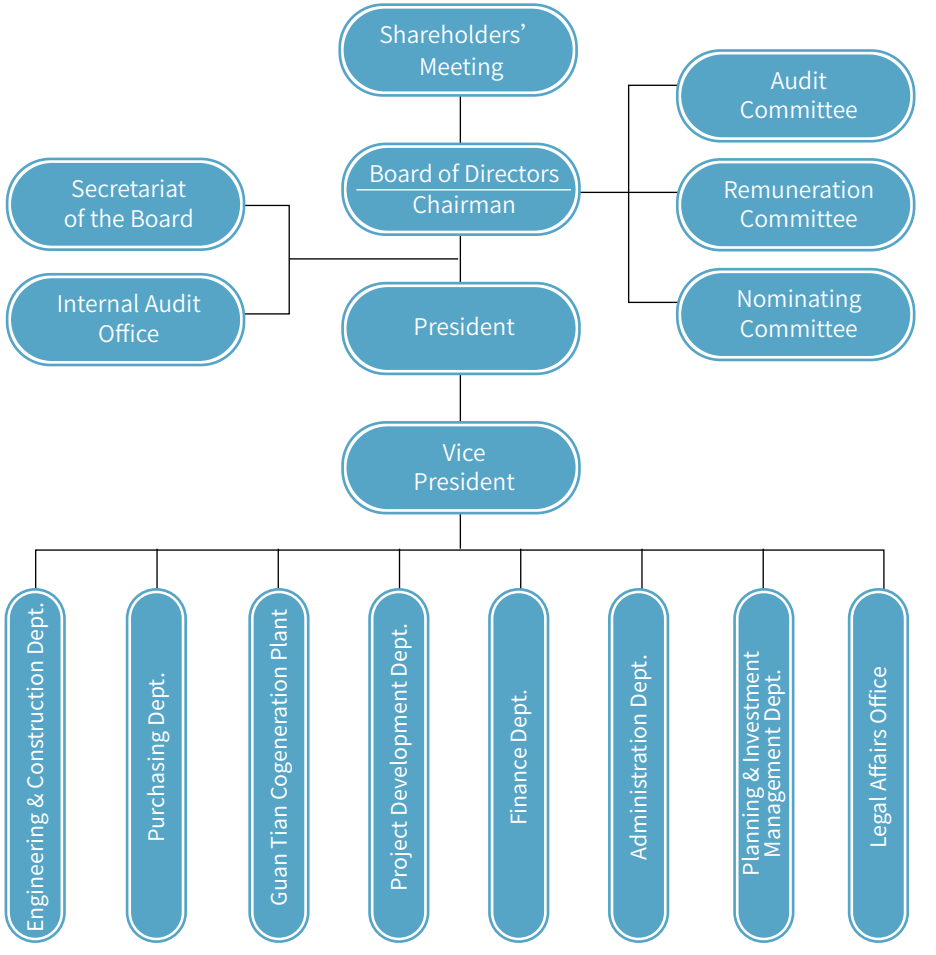
Unit: NT$ 1,000 (NT$ for dividend per share)

	2020	2021	2022
Net Profit after Tax (Parent company only)	1,068,547	897,884	906,774
EPS (Earnings Per share)	1.81	1.52	1.54
Add: Adjustment Item (Note1)	0.13	0.39	0.38
Earnings Per Share Available for Distribution	1.94	1.91	1.92
Cash Dividends Per Share	1.90	1.75	1.05
Stock Dividends Per Share	-	-	0.7
Dividend Distribution Ratio (Note2)	109%	102%	101%

Note 1: The effect of independent power plant IFRS adjustment is added
Note 2: The ratio after deducting the legal reserve of 10%

1.2 Corporate Governance and Integrity Management

1.2.1 Corporate Governance



Diversification of the Board and Continuing Education Hours

The Shareholders' Meeting of TCC is the highest decision-making body of the Company. Directors are appointed by the Shareholders' Meeting to carry out the Company's operations in accordance with the law. According to the Company's Articles of Incorporation, the election of directors follows a candidates nomination system, where candidates are nominated by shareholders holding more than 1% of the shares and the Board of Directors. The nominations are then reviewed by the Nominating Committee and approved by the Board of Directors. The Board consists of 13 directors, including 3 independent directors, for a term of 3 years. To improve the structure of the Board of Directors, the basic conditions, such as gender and age, of the Board members are diverse. They also have diverse backgrounds, including different professional backgrounds in academics, work experience, and industries. The current Board of Directors has 3 members with the age in between 30 and 50, 10 members with the age of over 50. Efforts will be made to further increase the number of female Board members in the future. The Board members of the Company engage in continuous education, with an average of 7.3 hours of continuing education per person. The range of courses includes subjects such as finance, business, commerce, accounting, law, risk management, internal control, and sustainable development.

The QR code for downloading TCC's "Regulations for the Performance Evaluation of the Board":

Regulations for the Performance Evaluation of the Board of Directors

To implement corporate governance and improve the competency of the Board of Directors, TCC has established the "Rules for Performance Evaluation of the Board", which clearly stipulates that an internal performance evaluation of the Board should be carried out every year, including the performance evaluation of the entire board, individual directors and functional committees. Furthermore, evaluation shall be conducted by an external independent professional institution or a panel of external experts and scholars at least once every three years. The items of evaluation include participation in the operation of the Company, election and continuing education of the directors, alignment of the goals and missions of the Company, and management of internal relationship and communication. Evaluation is carried out based on the operation of the Board of Directors and functional committees, as well as the involvement of the Directors and committee members. The results are reported to the Nominating Committee and the Board of Directors, and improvement measures are proposed if necessary. In addition, the Board of Directors serves as the highest governing body to promote sustainable development. Apart from reviewing and approving the Company's "Sustainable Development Principles", the Board also provides recommendations for the future ESG-related initiatives and business strategies of the Company. The Board's participation in the operation and the quality of the board of directors' decision making are taken into consideration during board performance evaluations. These performance evaluations serve as reference for selecting or nominating directors, and the individual performance assessment results are used as the basis for individual salary and compensation. The internal performance evaluations of the Board of Directors, Audit Committee, Remuneration Committee, and Nominating Committee for the year 2022 all indicate a "good" rating. Combining questionnaires and on-site visits, an external, professional independent organization conducted an evaluation of the Board of Directors' performance for 2022, and the results were submitted to the Board of Directors on December 23, 2022.

The Internal Audit Office is subordinated to the Board of Directors, which is responsible for the internal audit of various operating activities, ensuring the continuous and effective implementation of the internal control system, and assisting the Audit Committee in fulfilling its supervisory responsibilities. Also, Secretariat of the Board with a designated chief governance officer is responsible for matters relating to the shareholders' meeting, the Board of Directors, functional committees and corporate governance. In 2022, several regulations were amended to strengthen corporate governance. Additionally, to avoid conflicts of interest, according to the "Rules of Procedure for Board of Directors Meeting" and the organizational charters of each committee, individuals with vested interests in the agenda items are to be abstained and prohibited from participating in discussions and voting.

For the operation of the Board of Directors in 2022, please refer to page 26-30 of the annual report, and for important resolutions, please refer to page 27-29.

Please see the following table for members of the Board of Directors as of 2022/12/31:

Title	Name	Gender	Major Experience (Education)
Director	Taiwan Power Company Representative Shun-I Huang (Chairman)	Male	MS, Electrical Engineering, Cornell University, NY, USA Director, Department of Business, Taipower Chairman, Taiwan Electric Research & Testing Center
	Representative Jenn-Yeong Wang	Male	MS, Department of Civil Engineering, National Chiao Tung University EMBA, Accounting and Management Decision-Making Division, National Taiwan University Director, Department of Power Development, Taipower Vice President, Taipower
	Representative Tsao-Hua Hsu	Male	PhD, Civil Engineering, National Chung Hsing University Director, Department of Corporate Planning, Taipower Vice President, Taipower
	Representative Ming-Teh Chiang	Male	MS, Refrigerating Air-Conditioning Engineering, National Taipei University of Technology Director, Department of Nuclear and Fossil Power Project, Taipower Vice President, Taipower
	Representative Tien-Ho Kuo	Male	Graduate Institute of Electrical Engineering, National Cheng Kung University Plant Manager of Datan Power Plant, Plant Manager of Dalin Power Plant, Director of Department of Generation, Taipower Vice President, Taipower
	Representative Yuh-Ming Lee	Male	PhD, Geography and Environmental Engineering, Johns Hopkins University, USA Professor, Graduate Institute of Natural Resource Management, National Taipei University
Director	TaYa Electric Wire & Cable Representative Wen-Bing Lee	Male	MBA, National Chengchi University General Manager, NIC Business Group, Ta Ya Electric Wire & Cable Co., Ltd
Director	Orijuin Investment Representative Sen-Chun Wan	Male	MA, Department of Management, Boston University, USA Chairman, Orijuin Investment Ltd.
Director	Jian-Sheng Investment Representative Fu-Chin Hong	Male	MA, Department of Law, Central Police University MA, John Jay College of Criminal Justice, City University of New York, USA Director, Department of Public Affairs Office, Taiwan Provincial Government
Director	BJ Investment Representative I-Hsien Chen	Male	BA, Department of International Business, Tunghai University Chairman, BJ Investment Co.
Independent Director	Yao-Wen Lin	Male	MA, Executive Master of Public Policy Program (EMPP), National Sun Yat-Sen University Director-general, Information Department, Kaohsiung City Government Chief, Premier's Office Chairperson, New Culture Foundation
Independent Director	Han-Shen Li	Male	BA, Department of Business Administration, Tamkang University President, Taipower Chairman, Power Company Retirees Association ROC
Independent Director	Ji-Sheng Yeh	Male	LLB, Department of Law, National Taiwan University Responsible Person, JSY Law Firm

Note: Directors do not hold cross-shareholdings with suppliers or other stakeholders.

Audit Committee

- The Audit Committee consists of 3 independent directors.
- The Audit Committee held 8 meetings in 2022. Independent directors had no unqualified or qualified opinions. All members of the Committee attended 8 of the meetings and the attendance rate was 100%. For more information on the attendance, please refer to page 33 of the Annual Report.

Remuneration Committee

- The Remuneration Committee has 5 members, including 3 independent directors, and 2 seats held by relevant experts.
- The Remuneration Committee evaluates and establishes the compensation of directors and executives regularly.
- A total of 4 Remuneration Committee meetings were held in 2022. All members of the Committee attended 4 of the meetings, and the attendance rate was 100%. For more information on the attendance, please refer to page 42 of the Annual Report.

Nominating Committee

- On December 20, 2019, the Nominating Committee Charter was formulated, and the first-term Nominating Committee was established.
- The Nominating Committee has 5 members, including 3 independent directors.
- A total of 2 Nominating Committee meetings were held in 2022, with an average attendance rate of 100%. For more information on the attendance, please refer to page 45 of the Annual Report.

Link to the organization and operation of the Company's functional committee:

1.2.2 Integrity Management and Corporate Governance

QR code for downloading TCC's integrity management norms:

TCC established the Ethical Corporate Management Principles based on "integrity, transparency, and accountability". Operating on the foundation of ethics and integrity, it has long adhered to the integrity norms to engage in all business activities, follows guidelines such as avoidance of interests, confidentiality of information, non-discrimination and exclusion, not accepting illegitimate benefits, operating with integrity, and is committed to establish a good corporate culture of integrity.

Integrity Management

- Ethical Corporate Management Principles
- Procedures for Ethical Management and Guidelines for Conduct
- Codes of Ethical Conduct
- Regulations for the Reporting of Integrity Violation
- Regulations for the Prevention of Insider Trading

Responsible unit:
The Legal Affairs Office is responsible for supervising the implementation of integrity management and reporting to the Board of Directors at least once a year.

1. Provide supervision and assistance for incorporating integrity and ethical values into the Company's business strategy, and formulate malpractice prevention measures.
2. Supervise the development guidelines for conduct.
3. Supervise the planning of organization as well as the related responsibilities, and configure a supervision and checking mechanism for high-risk business activities.

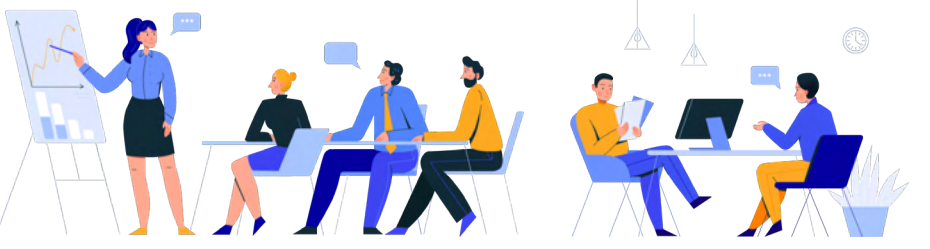
4. Supervise the promotion and coordination of integrity policy awareness campaign and training.
5. Supervise the planning of reporting system to ensure the effectiveness of implementation.
6. Report to and assist the Board and managers in reviewing and evaluating the effectiveness of preventive measures on a regular basis.

Promotion of Integrity Management in 2022

Promotion work	Explanation
1 Report to the Board of Directors	On March 16, 2022, the Legal Affairs Office reported to the Board of Directors on the promotion of integrity management, including policy implementation, system establishment, training activities, and reporting channels. All policies were operated and implemented in accordance with the Ethical Corporate Management Principles with no discrepancies.
2 Education and Training	(1) On September 6, 2022, we held a training course titled "Latest Developments and Corporate Countermeasures in Insider Trading Practices in Taiwan". Mr. Kuo-Ming Huang who is a managing partner from Formosan Brothers, was invited as the main speaker. The course had 50 participants and a duration of 2 hours. (2) On December 23, 2022, we held a course titled "Practical Guidelines and Case Studies on Integrity Management, Corporate Governance, and Sustainable Development". An external expert, Mr. Ming-Wei Lo, was invited as the main speaker. The course had 21 participants and a duration of 3 hours. Education and training were held to prevent violation of integrity management. Participants included the Company's directors, supervisors, employees, representatives of subsidiary board members, and suppliers.
3 External Disclosure and Reporting	The Company's Sustainability Report and website all disclose/promote the Company's integrity management policies and related reporting channels. The sustainability report issued in June 2022 received the Sustainability Report Gold Award from the Taiwan Corporate Sustainability Awards (TCSA), showing that the Company has maintained a good communication channel with stakeholders.
4 External Recognition	In addition to winning the honor of he "Top 100 Sustainability Exemplary Awards" of the Taiwan Corporate Sustainability Awards (TCSA), and the "Excellence in Corporate Social Responsibility Award" of the CommonWealth Magazine, we were also ranked in the top 5% of listed companies for four years, showing that the Company's performance in corporate governance and integrity management has been recognition.
	**Whistle-blowing Channel** Reporting email: whistle@cogen.com.tw Reporting hotline: (02)8798-2000 Ext.626

Regulation Compliance

TCC operates with honesty and integrity, abides by laws and regulations, actively strengthens improvement measures for violation incidents, and implements the required advocacy and management. In 2022, there were no violations and penalties.



Litigation Regarding Fair Commission

In March 2013, the independent power producers TCC invests (including Star Energy Power, Sun Ba Power, Star Buck Power and Kuo Kuang Power, collectively referred to as the "IPP Companies") were fined by the Fair Trade Commission for violating Paragraph 1, Article 14 of the Fair Trade Act while they actually did not engage in any concerted actions and then filed litigations of revocation with the administrative court in November 2013. As of the end of 2022, those cases were still in trial. The related details are as follows:

Date	Litigation Status
November, 2013	After discussing with lawyers, TCC was convinced that there were no concerted actions among the IPP Companies, therefore, the IPP Companies filed litigations of revocation with the Taipei High Administrative Court.
October, 2014	The Taipei High Administrative Court ruled in favor of the IPP Companies and revoked the administrative disposition of concerted actions which was made by the Fair Trade Commission.
June, 2015	The Fair Trade Commission filed an appeal with the Supreme Administrative Court. Afterwards, the Supreme Administrative Court remanded for a new trial to the Taipei High Administrative Court.
May, 2017	The Taipei High Administrative Court ruled in favor of the IPP Companies and revoked the administrative disposition of concerted actions which was made by the Fair Trade Commission.
September, 2018	The Fair Trade Commission filed an appeal with the Supreme Administrative Court. Afterwards, the Supreme Administrative Court remanded for another trial to the Taipei High Administrative Court.
May, 2020	The Taipei High Administrative Court ruled in favor of the IPP Companies and revoked the administrative disposition of concerted actions which was made by the Fair Trade Commission.
June, 2022	After the Fair Trade Commission filed an appeal with the Supreme Administrative Court, the court handed down judgments between June and August 2022 to enter judgment on the litigation on its own after reversing the original judgment.
July, 2022	The IPP Companies filed applications for retrial with the Supreme Administrative Court between July and September 2022.

The fines imposed by the Fair Trade Commission in the above-mentioned litigations have been paid in installments for the time being. Please refer to the following table for more information:

Company	No. of Cases	Incident	Amount (NT$ 100 million)	Basis of Laws and Regulations	Competent Authority
Sun Ba Power	1	The Fair Trade Commission considered that the IPP Companies had violated the Fair Trade Act on account of concerted actions.	4.89	Paragraph 1, Article 14 of the Fair Trade Act	Fair Trade Commission
Star Energy Power	1		3.92		
Star Buck Power	1		1.00		
Kuo Kuang Power	1		3.71		

In addition, Taipower also filed actions for monetary damages against the IPP Companies based on the aforementioned violation of the Fair Trade Act. For more information, please refer to the following table:

Unit: NT$100 million

	The Amount of Damages Claimed by Taipower in Civil Action 1	The Amount of Damages Claimed by Taipower in Civil Action 2	Total Amount
Sun Ba Power	42.57	86.60	129.17
Star Energy Power	24.89	49.90	74.79
Star Buck Power	3.07	6.23	9.30
Kuo Kuang Power	24.90	48.90	73.80

Note: The above-mentioned "Civil Action 1" were lawsuits filed by Taipower with the Taipei District Court. Taipower has reduced the damages it claimed against Sun Ba Power to about NT$ 1.416 billion, the damages it claimed against Star Energy Power to about NT$ 829 million, the damages it claimed against Kuo Kuang Power to about NT$ 829 million, and the damages it claimed against Star Buck Power to about NT$ 102 million. The cases involving Sun Ba Power, Star Energy Power, and Kuo Kuang Power are currently pending in the Supreme Court. In addition, regarding the case involving Star Buck Power, the Taiwan High Court also ruled on December 28, 2022, to reject Taipower's appeal and additional claims. The above-mentioned "Civil Action 2" were originally filed by Taipower with the High Administrative Court and then transferred to the Taipei District Court. However, Taipower has withdrawn the Civil Action 2 during June to July 2020 and therefore "Civil Action 2" were deemed to have never been initiated.

1.2.3 External Collaboration

TCC actively engages in external organizations, participating in mutual exchanges with related industries. It also actively participates in events organized by various associations to gain insights into industry developments and future trends. These efforts help the Company seek potential cooperation opportunities and contribute to its stable development. In addition, TCC actively participates in activities organized by the Taiwan Cogeneration Association. Apart from having senior managers serving as past presidents or secretaries of the association, the Company also assists in organizing academic and technical seminars, publishing the "Cogeneration Journal," and arranging visits for domestic power plants, cogeneration plants, and related energy facilities. These activities facilitate the exchange of operational and technical experiences. Furthermore, in 2022, TCC participated in the "Taiwan-Europe Joint Conference on Business and Human Rights" and signed the "Letter of Support for Taiwan's Promotion of Business and Human Rights", demonstrating the Company's commitment to creating a friendly human rights environment.

Participating Units	Participated Associations	Method of Participation
TCC	Taiwan Cogeneration Association	Chairman /Group Leader
	Chinese Association for Energy Economics (CAEE)	Director/Member
	Taiwan Institute for Sustainable Energy (TAISE) / Center for Corporate Sustainability (CCS)	Director/Member
	Taiwan Electric Power Association (TEPA)	Director/Member
	The Taiwan Electrical Contractors Association (TTECA)	Member
	Taiwan Association of Energy Service Companies	Member
	Taiwan Wind Energy Association	Member
	Taiwan Photovoltaic Industry Association (TPVIA)	Member
	Chinese Petroleum Institute	Member
	Taipei Neihu Technology Park Development Association	Member
	Taiwan Power and Energy Engineering Association	Member
	Solar PV Generation System Association (PVGSA)	Member
	Taiwan Association for Climate Change and Energy Sustainability	Member
	Taiwan Industry-Academia Technology Alliance for Energy Digital Transformation (TAEDT)	Member
	Taiwan Electric Power Development Association (TEPDA)	Member
	The Institute of Internal Auditors, R.O.C.	Member

Participating Units	Participated Associations	Method of Participation
Star Energy	Taiwan Cogeneration Association	Member
	Taiwan Regional Engineering Contractors Association (TRECA)	Member
	Taiwan Wind Energy Association	Member
	Taiwan Wind Industry Association (TWIA)	Member
	Taiwan Electric Power Association (TEPA)	Member
	Taiwan Refrigeration & Air-conditioning Engineering Association of R.O.C.	Member
	Taiwan Water Pipe Engineering Association (Taipei Office)	Member
	The Taiwan Electrical Contractors Association (TTECA)	Member
	Taiwan Electrical and Electronic Manufacturers' Association (TEEMA)	Sponsor Member
	Solar PV Generation System Association (PVGSA)	Member
	Taiwan Photovoltaic Industry System Association (TPISA)	Member
	Water Industry Development & Promotion Association (WIDPA)	Member
	Taiwan Photovoltaic Industry System Association (TPISA)	Member
	Electric Power Research Institute (EPRI)	Member

1.3 Risk Management

Risk Management Policy and System

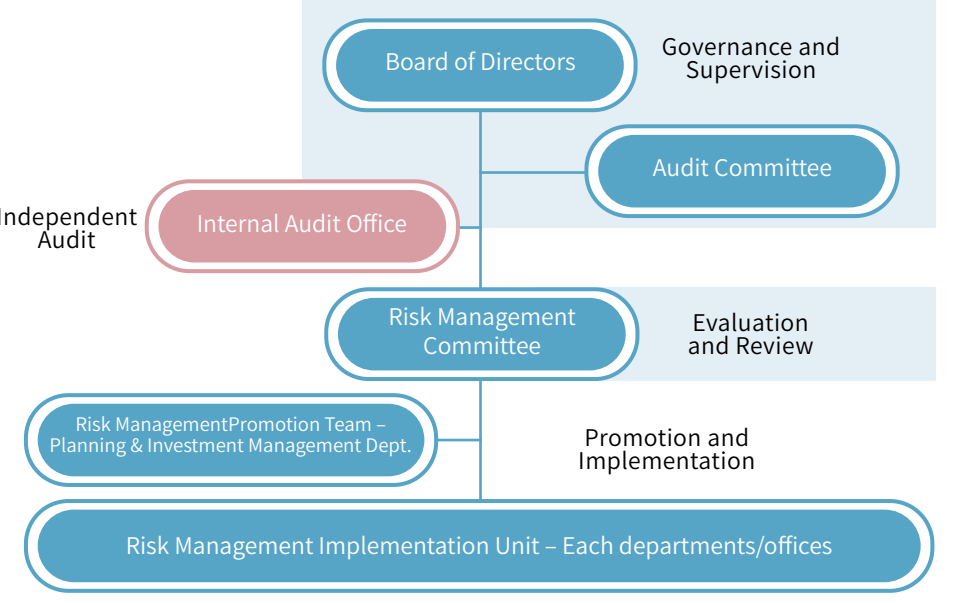
TCC has established a risk management mechanism. Through the attention and commitment of the top management, it guides and promotes employees' risk awareness from top to bottom, and conducts reviews and revisions of the annual risk management plan on a rolling basis every year to effectively reduce the occurrence of risk and the impact on the Company, ensuring the sustainable operation of the Company and improving the Company's operating performance.

To implement the risk management system of the Company smoothly and comprehensively, we have formulated the "Risk Management Policy and Procedures" and the "Risk Management Implementation Plan" to include risks associated with investment, operation, management, climate change, and dishonest behavior into the scope of management and control. We hope that through risk identification, analysis, evaluation, processing and monitoring, risk management can be incorporated into various operating plans, business operations and daily management. In addition, through education and training, risk management knowledge and tools can be developed to shape a risk management culture.

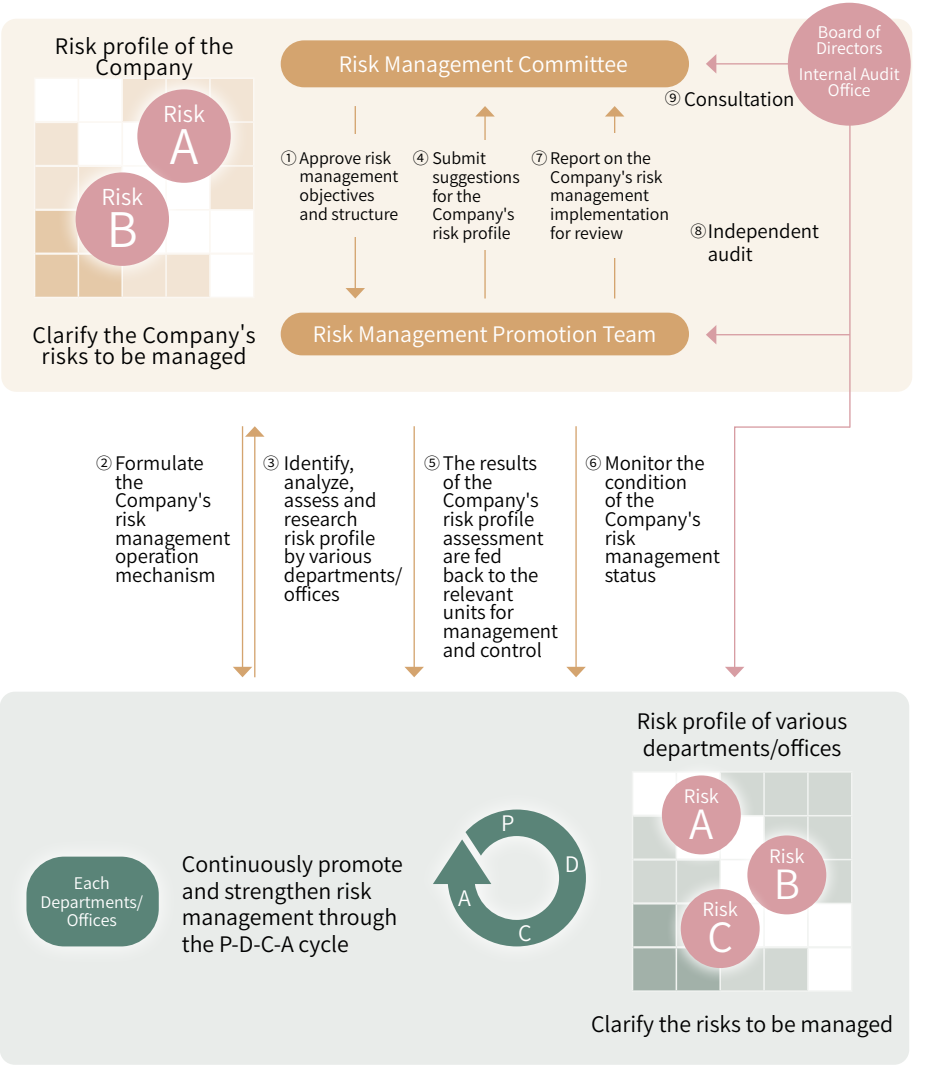
Organizational Structure of Risk Management

The Company has established a comprehensive risk governance and management framework that includes the Board of Directors, Audit Committee, and senior management. This ensures the alignment of risk management with the Company's strategies and objectives. By doing so, we identify and prioritize major risk areas, enhancing the comprehensiveness, foresight, and integrity of our risk identification process. We then develop corresponding risk control measures and response strategies to ensure the achievement of the Company's strategic objectives. The Board of Directors serves as the highest governing body for risk management in the Company, supervising the risk management mechanism and ensuring its effectiveness. The Risk Management Committee is chaired by the Chairman of TCC, with other members such as the President and Vice President of TCC. The committee is responsible for reviewing and monitoring the implementation of the Company's risk management plans and operation mechanisms. The Committee reports annually to the Board and the Audit Committee on the execution and operation of risk management.

A Risk Management Promotion Team is set up under the Risk Management Committee, which involves departments in conducting risk assessment and control activities. The Planning & Investment Management Dept. is responsible to ensure the effective implementation of the risk management mechanisms and procedures. To enhance information security, an Information Security Promotion Team is established within the Risk Management Promotion Team. This team is responsible for controlling risks related to information security, reviewing the implementation of information security risk management measures regularly, and reporting the effectiveness of information security risk management to the Board of Directors. Additionally, the Internal Audit Office formulates audit plans and conducts independent audits of risk management matters, while reporting to the Board of Directors at least once a year.



Risk Management Operation Process



Risk Management Promotion

Date	Work Item	Specific Results
2022/01	Risk management meeting	Compiled the risk profiles of various departments to create the company-level risk profile.
2022/02	Risk Management Committee	Examined the company-level risk profile, which consists of four major aspects.
2022/03	Completed the risk management plan	1. The risk management plan for 2022 was completed, and control measures were implemented according to the plan. 2. Reported on the implementation status of risk management for the entire year at the Board meeting on March 16, 2022.
2022/07	Reviewed the implementation of risk management measures	Reviewed the implementation of risk management measures for the first half of 2022.
2022/12	Established the “Risk Management Policy and Procedures”	The "Risk Management Policy and Procedures" were established based on the "Risk Management Best Practice Principles of TWSE/TPEx Listed Companies" announced by the Financial Supervisory Commission (FSC) and implemented after being approved by the Board of Directors on December 23, 2022.
2023/01	Reviewed the implementation of risk management measures	Confirmed that all risk management measures in 2022 were implemented in accordance with the predetermined plan, the actual risk profile was consistent with the predetermined plan, and the management measures were effective.
2023/02	Risk Management Committee	Examined the implementation status of risk control measures for the year 2022, and confirmed that both the risk management plan and the risk management operational mechanism of the Company are effective.

Risk Items and Countermeasures

Category	Item	Countermeasures/Controls
Investment	1. Project Development Investment	Formulate countermeasures for the risks of different projects such as renewable energy, IPPs, overseas investment and green electricity retailing: ● Establish a project team to regularly review, track, and report on progress. ● Gather information on government policies and legislation development schedules, and maintain continuous communication and negotiation with government agencies to stay informed about any changes or developments. ● Strengthen communication and coordination with environmental groups and local communities to minimize ecological impact and gain local acceptance. ● Stay updated on external environmental changes and assess investment benefits in a timely manner. ● Develop measures to mitigate losses and minimize financial impacts. ● Meet the green energy demands of energy-heavy industries through diverse approaches.
Operation	2. Engineering Project Contracting	Formulate countermeasures for the risk of delay in the contracting of power engineering projects: ● Ensure the execution of various tasks according to the planned construction schedule and hold regular project meetings to review the progress of control measures. ● Strengthen the implementation of COVID-19 epidemic control measures and occupational safety regulations. In addition to the daily TBM-KY (Tool Box Meeting-Kiken Yochi) and management by walking around, enhance the prevention of key hazards and strictly enforce penalties for violations. ● Regularly gather weather forecast data to adjust work procedures and prevent the impact of extreme weather conditions on progress.
	3.Operation of the Guan Tian Plant	Formulate countermeasures for the risks of operation, skill sharing, environmental protection laws, and material sources that may arise in the operation of the Guan Tian Cogeneration Plant: ● Strengthen operational technology and environmental quality management standardization systems and improve pollution prevention equipment. ● Recruit new employees and pass on technical expertise and experience through the Group's KM (knowledge management) platform, mentorship programs, and core technical training plans. ● Stay updated on the dynamics and changes in the coal and rubber (scrap tire) markets and fully utilize the rubber for combustion in compliance with regulations and safety standards. Explore the use of solid recovered fuel (SRF) and control expenditure costs to enhance operational flexibility.
Management	4.Management of Investment Business	Formulate countermeasures for the risks that may be encountered in the investment business: ● Actively participate in briefings or seminars to stay informed about changes in laws and regulations and take timely measures accordingly. ● Establish key performance indicators (KPIs) for subsidiary companies to ensure operational performance. ● Assist the invested IPPs in seeking insurance claims and facilitate the establishment of a recovery project team to minimize losses. ● Ensure compliance with epidemic prevention rules and implement appropriate measures in investment businesses. ● In response to interest rate hikes, request the assessment of additional sources of funding in investment businesses to reduce interest expenses.

Note: TCC also identified related risks in response to climate change. For details, please refer to 3.1 Climate Change and Energy Management.

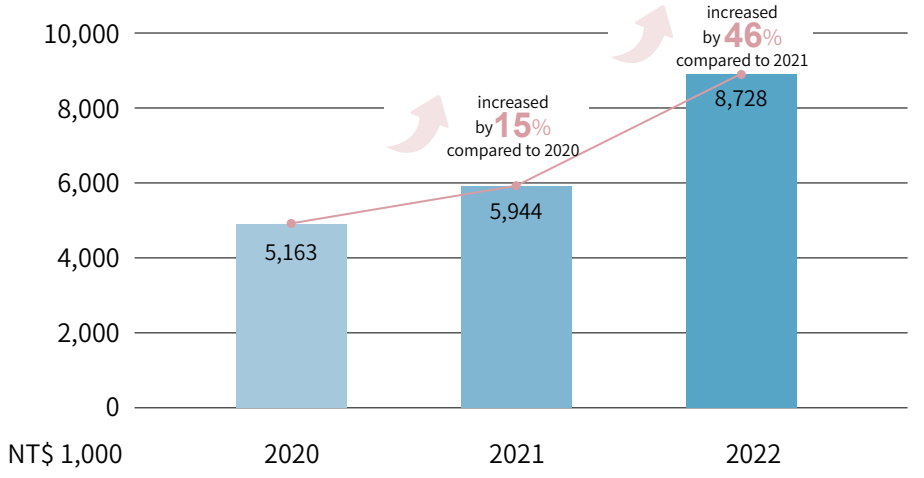
Information Security Enhancement

The Company has referenced the information security management system (ISO/IEC 27001) and its related guidelines to formulate the "Information Security Policy", "Information Security Management Mechanism", "Information Audit Plan", and establish the "Information Security Promotion Team." Following the "Information Security Education and Training Plan," the Company strengthens employees' awareness of information security, promotes and advocates the importance of information security protection annually. Additionally, designated information personnel are assigned to obtain ISO/IEC 27001 auditor certification and ISO 22301:2019 (Business Continuity Management System) auditor certification. Through management, system, and technical norms, the Company continuously builds a robust information security management system to enhance information security management goals.

Information Security Promotion Team and Investment of Resources

The Company places great importance on information security management. With upper management's support, the Company has established an Information Security Promotion Team responsible for information security management, planning, and implementation. Over the past three years, there has been a gradual increase in investment in equipment and resources related to information security management. From 2020 to 2021, the investment grew by approximately 15%, and it further increased by 46% in 2022.

Information Security-related expenditure in the Past Three Years



Information Security Policy

To ensure the confidentiality, integrity, availability and legality of the Company's information assets and key information infrastructure, we implement information security risk control and contingency plans, strengthen the employees' awareness of information security, while the information security policy of the Company is established.

QR code for downloading the information security policy and management mechanism of TCC :

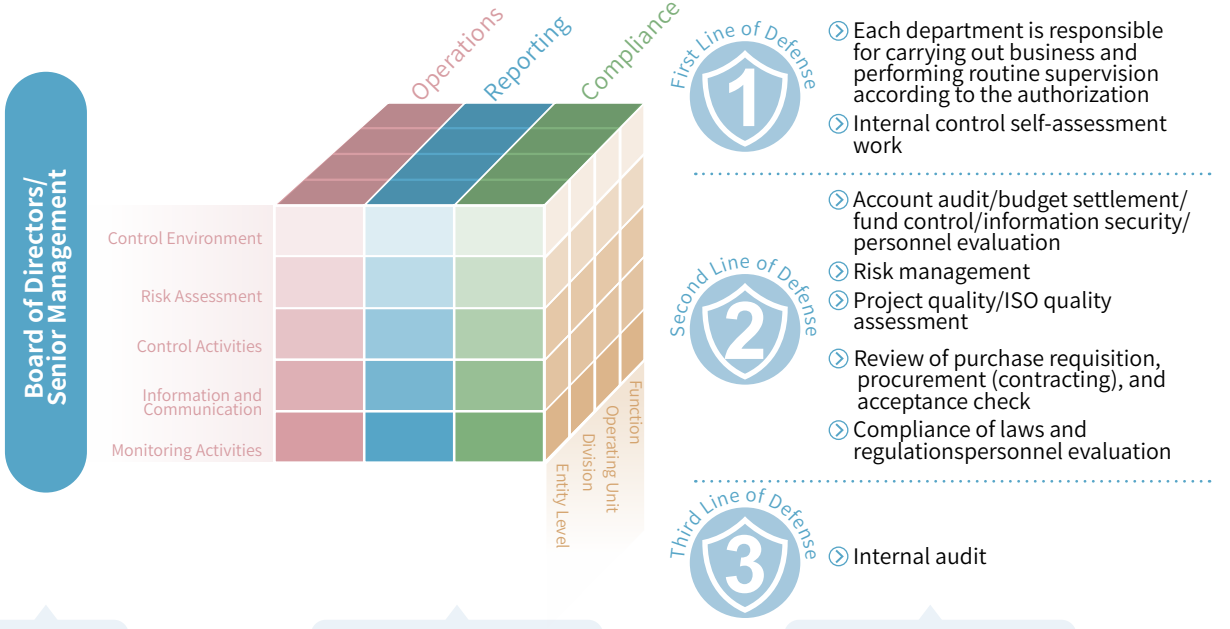
Information Security Management Plan

- Formulate an internal information audit plan and information security audit items within the Company. Establish the "Information Security Promotion Team" to conduct self-assessment of information security internal controls and undertake other improvement measures.
- Supervise the implementation of information security monitoring services in each invested IPP. Since 2019, participate in the "On-site Interview for Information Asset Risk Assessment and Guidance for Private Power Companies" organized by the Energy Bureau of Energy, Ministry of Economic Affairs every year. Engage information security experts and consultants commissioned by the project to conduct on-site interviews, assist in information asset inventory and risk (re)assessment, and enhance asset inventory and risk assessment capabilities. In 2022, Star Buck Power underwent the interview, and the implementation of relevant follow-up improvement measures was deemed effective after the assessment.
- Develop an "Information Security Education and Training Plan" annually. In 2022, the plan includes courses on "Information Security Trend Analysis and Introduction to Cyber Security Management Act" and "Personal Information Security Protection and Secure Use of Mobile Devices".
- Conduct two random e-mail social engineering security testing exercises for all employees annually. Following the exercises, conduct awareness campaigns on "Social Engineering and E-mail Security" to enhance employees' awareness of social engineering and information security.
- Outsource the SOC (Security Operations Center) for information security monitoring and establish an information security endpoint detection mechanism and response service.
- Conduct annual information equipment security check-ups, information system penetration testing, and vulnerability scanning operations.

Risk Control

Three Lines of Defense for Internal Control

In order to enable the internal control system to effectively manage risks and achieve the Company's general goals, we refer to the research report of "Leveraging COSO Across - The Three Lines of Defense" released by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in July 2015, while each department would implement various control operations according to its responsibilities to form the first and second lines of defense. The internal audit would evaluate the implementation of the first and second lines of defense to form a third line of defense.



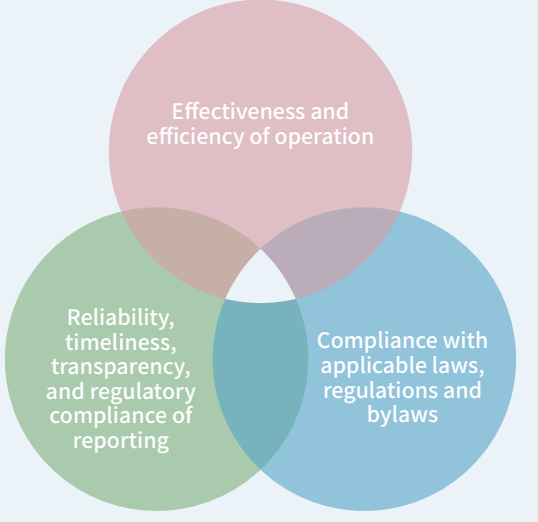
Set the overall and operation-level of the Company

The Company's overall framework for managing risks and implementing controls to achieve overall goals

The organizational structure within the Company responsible for the execution of risk management and control operations

Design and Implement Internal Control System

To promote the integrity operation of the Company, the management department has completed the establishment of an internal control system suitable for the Company, in accordance with the "Regulations Governing Establishment of Internal Control Systems by Public Companies" and TCC's industrial characteristics, covering the five major elements such as control environment, risk assessment, control activities, information and communication, as well as monitoring activities. In addition, internal audit implementation rules and internal control self-assessment procedures are incorporated to ensure that the following three goals are achieved:



Regularly Revise the Internal Control System of the Company and Its Subsidiaries

To implement a mechanism of self-supervision and promptly respond to environmental changes, the Internal Audit Office of the Company initiated the revision of the internal control system in the middle of the year. The management department revised the control operation items based on the necessary modifications identified in the previous year's internal control self-assessment report, and made additions or modifications to relevant regulations and rules, taking into account new directives issued by the competent authorities. Additionally, the impact of the COVID-19 pandemic on various operational control mechanisms, the transition to electronic procurement processes, and the implementation of material and document management systems were considered. Through a comprehensive review and revision of the internal control system, a total of eight operation items were revised, and one new item was added (preparation and validation of sustainability report). By internalizing corporate governance and incorporating social responsibility into our culture through the internal control system, we aim to achieve sustainable management.

Subsidiaries including Star Energy and Miaoli Wind, have established their comprehensive internal control systems that contain the five key elements and have conducted internal control self-assessment activities. Additionally, TCC Green Energy, Star Wind, Star Solar, and Shin Kuang Electric Energy have also completed the establishment of their internal control systems during 2022. Other subsidiaries that have yet to establish their internal control systems are planning to do so by 2023.

Implement Internal Control Self-Assessment

Every year, the Company initiates the annual self-assessment of internal control system in November. Each department will evaluate the effectiveness of the system's design and implementation according to each of its operating procedures. The status of the operation would be recorded, with required supporting materials attached. The result of the self-assessment and the department-level internal control declarations are then submitted to the Internal Auditing Office for review. Based on the results, each department would review and reflect upon itself based on the self-assessment, and revise the internal control system accordingly. Based on the result of the Company's internal control self-assessment for 2022, no major faults were found.

Since 2019, in order to motivate all departments to continuously improve their internal control self-assessment, the department with the best result of self-assessment would be selected and given substantial rewards. Currently, the evaluation indicators include "detailed description (including data, improvement of faults, etc.)", "data supporting materials", "whether there is division of work within the department", and "supervisor's score", encouraging employees to put forward the benefits of implementing and executing internal controls, as well as to self-identify shortcomings and provide improvement suggestions.

Perform Internal Audits

The Internal Audit Office of the Company carries out regular and special audits to assist the Board of Directors and Managers in inspecting and reviewing defects in the internal control systems, as well as measuring operational effectiveness and efficiency. The Internal Audit Office shall also make timely recommendations to improve and sustain the effectiveness of the systems, providing an important basis for review and correction.

The Internal Audit Office conducts a comprehensive risk assessment with reference to the Company's annual risk management plan, projects concerned by the competent authorities, directors and senior management, the feedback in handling audit operations, and projects that have not been audited for a long period of time. The Office formulates an audit plan for the following year, which is then submitted to the Audit Committee for review. After the approval from the Board of Directors, regular audits are then carried out, and project-based audits are also conducted according to actual needs.

Each audit report has been reported to the Independent Directors for review in accordance with the regulations, with no major internal control defects were found this year. Recommendation for improvements have been monitored regularly until they have been solved by the responsible department. The actual improvements are summarized and submitted to the Audit Committee and the Board of Directors for review in May and November of each year. The tracking for improvement shall be dismissed afterward.

Approved by the Board of Directors, the integrity and ethical value audits for the Company and its subsidiaries are conducted anonymously via a questionnaire survey that contains important provisions such as the Company's "Ethical Corporate Management Principles", "Regulations for the Reporting of Integrity Violation", and "Procedures for Ethical Management and Guidelines for Conduct". The overall results in 2022 indicated a slight decline in performance compared to the previous year. The dedicated unit responsible for promoting ethical business practices will strengthen advocacy and improvement efforts accordingly.

02

Stable and Reliable Green Electricity Partner

Chapter Highlights

The renewable energy sold in 2022 exceeded 170 GWh

3 invested gas-fired power plants sold 10,850 GWh of electricity

Green procurement exceeded NT$ 300 million

2.1 A New Direction for Energy Transition

Domestic Policies and Markets

In March 2022, Taiwan officially announced the "Taiwan's Pathway to Net-Zero Emissions in 2050", which outlines four major transition strategies: energy, industry, lifestyle, and society. In terms of energy transition strategy, the short-term goal is to achieve "low carbon" by increasing the use of natural gas to reduce coal consumption. Priority is also given to the promotion of mature technologies such as solar photovoltaic and wind power generation, along with the research and development (R&D) of renewable energy. In the long term, the plan aims to maximize the deployment of renewable energy, utilize high-efficiency solar photovoltaic and wind power technologies, to explore emerging technologies such as carbon capture and utilization, hydrogen energy generation, and to propel the domestic energy industry toward the goal of "zero carbon".

In response to the energy transition policies, independent gas-fired power plants continue to play an important role in the electric market. Taiwan Power Company (Taipower) has announced its power procurement plan for commercial operation of gas-fired units in 2025 and 2026. As of the end of 2022, a total capacity of 1.22 GW has been awarded. There is an ongoing need for an additional capacity of 1.75 GW, which will continue to be tendered publicly. It is expected that there will be investment and development opportunities for both the expansion of existing power plants and the establishment of new power plants in the future.

In the renewable energy sector, after the government opened up the green energy trading market, the "Regulations for the Management of Setting up Renewable Energy Power Generation Equipment of Power Users above a Certain Contract Capacity" were implemented in 2021. These regulations stipulate the obligation for energy-heavy industries to install renewable energy generation facilities. Furthermore, driven by global sustainability issues and the goal of achieving net-zero emissions, there has been a significant increase in demand for renewable energy by businesses. This has led to a thriving development of renewable energy-related businesses, including investment and development, engineering contracts, operation and maintenance (O&M), and the retailing of renewable energy. As of the end of December 2022, the cumulative wheeling of green electricity has exceeded 1,600 GWh, which is 2.5 times more than the amount wheeled in the previous year. Furthermore, due to the intermittent and uncertain nature of renewable energy, energy storage systems will play a crucial role in effectively managing the differences in peak and off-peak electricity demand when a large amount of renewable energy is integrated into the grid. Additionally, as the Energy Trading Platform (ETP) gradually open up the trading items and the demand for ancillary services increases, the energy storage market will become one of the investment trends, benefitting the expansion of related businesses.

Advantages/Disadvantages of TCC's Development and Countermeasures

Advantages	Disadvantages
The promotion of the Energy Trading Platform and the reduction of unit energy storage costs are favorable for participating in ancillary services and demand response businesses.	The delays in the LNG (liquefied petroleum gas) import terminals and the priority connection of renewable energy to the grid are affecting the operation and development of the Company's gas-fired power plants.
Increase in domestic electricity demand will increase dispatch opportunities.	
The government's green energy policy and global carbon reduction will benefit the Company to develop its renewable energy business.	Dropping of international fuel prices will affect the revenue of the invested independent power plants.
The technical entry barrier of substantial project is high; the Company has the advantage due to its expertise in electric power.	The increasing strictness of environmental protection regulations and the direction of governmental policy constrict the operation of existing cogeneration plants and increase investment in environmental protection equipment.
The increasing demand for offshore wind power O&M, and the government's policy to promote the localization of domestic wind industry will benefit the development of O&M business.	
Combine AI technology with professional O&M techniques to improve the efficiency of renewable energy O&M and reduce costs.	Growing competition due to leading domestic and international companies entering the renewable energy industry.

Countermeasures:

1. Actively develop new steam users, reduce the wholesale of surplus electricity, and improve the renewal of environmental protection as well as power plant equipment to meet the discharge standards of environmental protection regulations and improve units' efficiency.
2. Complied with the revision of the Electricity Act and energy transition, we actively develop cogeneration, power generation from independent power plant, and renewable energy businesses to expand our scale of business.
3. Pay close attention to the price fluctuations in the foreign exchange and energy market, to avoid and minimize potential risks.
4. Operate with the backing of our solid financial foundation and carry out risk management.

Technological Innovation in O&M: AI Technology and Data Analytics Application

With the continuous advancements in AI technology in recent years, the business models of O&M have gradually evolved. Traditional labor-based O&M are not only time-consuming, but also lacking reliability in maintaining operations. With the assistance of AI, work efficiency can be significantly improved, and labor costs can be reduced.

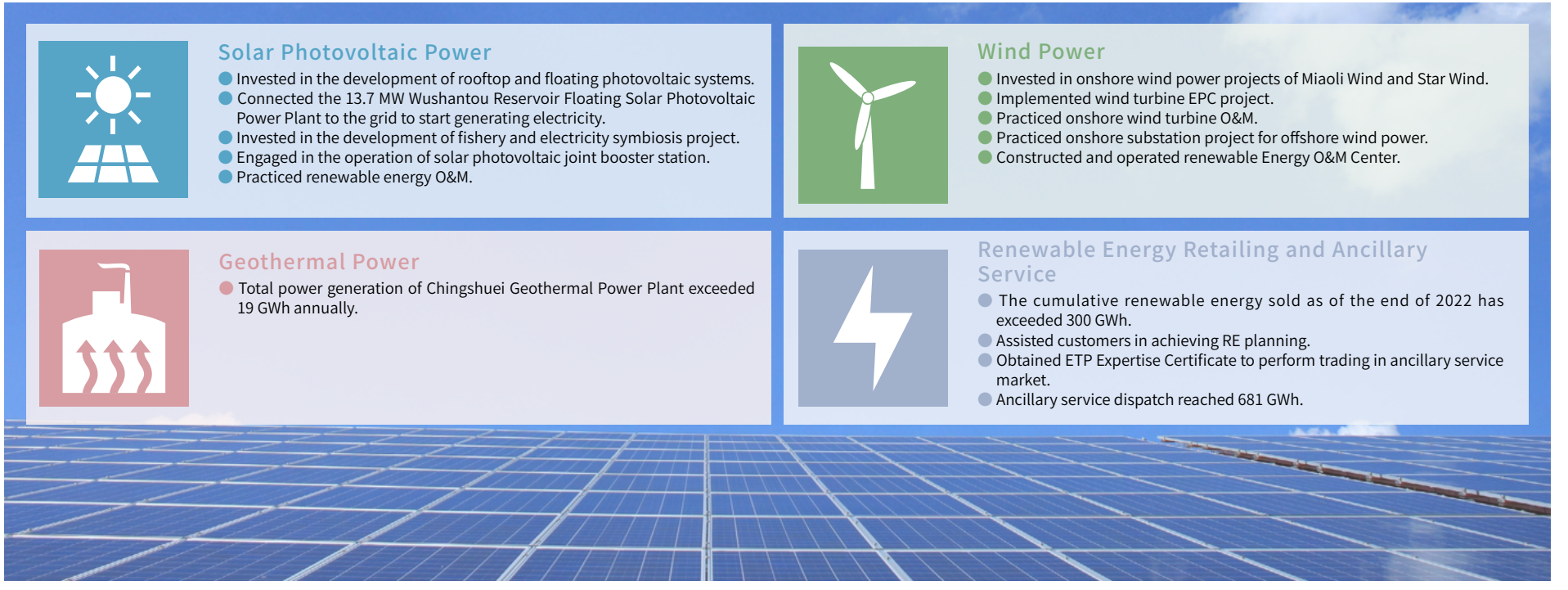
The Company's photovoltaic sites currently utilize drone technology to assist in performing O&M work. Drones equipped with visible light cameras and infrared thermography are deployed to conduct aerial inspections of the photovoltaic modules. This allows for the early detection of module damage or abnormal thermal patterns. The O&M personnel can then review the captured images in real-time, identify the cause of the anomaly, and proceed with the necessary repair operation. By implementing this approach, the time required for manual inspections is significantly reduced, mitigating the risk of occupational accidents. In addition, various photovoltaic sites have also introduced Real-Time Kinematic (RTK) positioning systems, which offer positioning accuracy within 10 centimeters. Combined with automated trajectory flight systems, we can pinpoint the locations of abnormal modules, significantly reducing the time and manpower required for inspections.

In the case of wind power sites, drones equipped with high-resolution cameras are used to capture images of equipment such as blades and nacelles, which are difficult for personnel to access. These images are used to monitor the operational status of the equipment and determine if any maintenance work is required. This proactive approach to maintenance helps prevent potential issues and ensures the stable operation of the wind turbines.

On the other hand, by the application of a monitoring platform, real-time power generation and turbine status in solar photovoltaic and wind power sites can be effectively monitored. The data recorded by the monitoring center serves as a valuable tool for the performing of routine maintenance tasks. In the future, when combined with environmental and meteorological data, such information can also serve as a crucial reference for predicting power generation and power dispatching. TCC continues to enhance the depth and breadth of data management, developing data utilization models that encompass both vertical and horizontal dimensions. This effectively improves operational efficiency and effectiveness.

2.2 Reliable Green Electricity Expert

Energy development serves as a vital foundation for national economic growth and social development. With the global emphasis on "net-zero" and "sustainability," energy conservation and carbon reduction are no longer just advocacy issues, but critical actions implemented internationally. Renewable energy has become a focal point for energy development in countries worldwide. Under the government's promotion, Taiwan is actively developing renewable energy, and TCC is committed to the principles of environmental protection, sustainability, and energy conservation in the development of renewable energy. It is the first domestic company that possesses a complete track record and professional expertise in renewable energy investment and development, engineering project contracting, and O&M, while providing comprehensive services in green electricity retailing and energy storage. In terms of investment and development, TCC is fully committed to the development of solar photovoltaic, wind power, and geothermal power. In terms of engineering project contracting, its subsidiary Star Energy is actively involved in solar photovoltaic and wind power EPC projects, and strives to secure the EPC projects of offshore wind power transmission and transformation, solar photovoltaic ultra-high-voltage substation, and ultra-high-voltage equipment and lines for energy storage. In terms of operation and maintenance, TCC continues to cultivate its expertise in renewable energy O&M through O&M experiences by its subsidiary, Star Energy. Furthermore, our subsidiary company TCC Green Energy, which started selling green energy in 2020, had sold over 320 GWh of green energy as of the end of 2022, which is equivalent to 320,000 renewable energy certificates.



Solar Photovoltaic Power

- Invested in the development of rooftop and floating photovoltaic systems.
- Connected the 13.7 MW Wushantou Reservoir Floating Solar Photovoltaic Power Plant to the grid to start generating electricity.
- Invested in the development of fishery and electricity symbiosis project.
- Engaged in the operation of solar photovoltaic joint booster station.
- Practiced renewable energy O&M.

Wind Power

- Invested in onshore wind power projects of Miaoli Wind and Star Wind.
- Implemented wind turbine EPC project.
- Practiced onshore wind turbine O&M.
- Practiced onshore substation project for offshore wind power.
- Constructed and operated renewable Energy O&M Center.

Geothermal Power

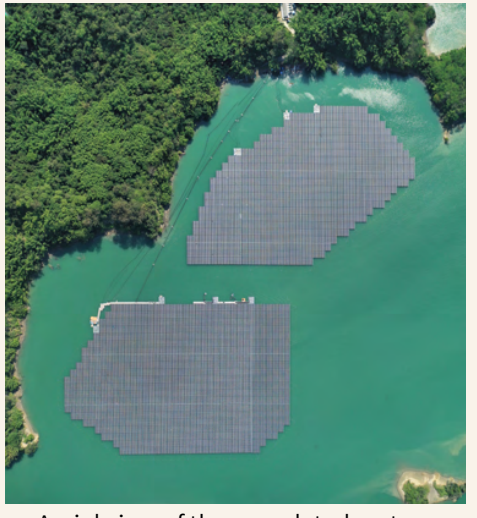
- Total power generation of Chingshuei Geothermal Power Plant exceeded 19 GWh annually.

Renewable Energy Retailing and Ancillary Service

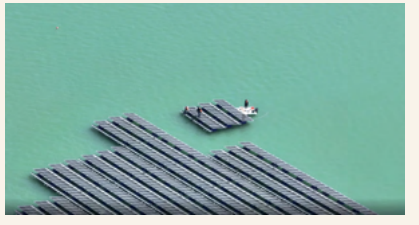
- The cumulative renewable energy sold as of the end of 2022 has exceeded 300 GWh.
- Assisted customers in achieving RE planning.
- Obtained ETP Expertise Certificate to perform trading in ancillary service market.
- Ancillary service dispatch reached 681 GWh.

2.2.1 Solar Photovoltaic Power

With regard to the investment and development of solar photovoltaic power, TCC has the professional capability to perform vertical integration, from preparation, planning, construction, installation, to O&M. We have engaged in various types of solar photovoltaic projects including rooftop photovoltaic, floating photovoltaic and ground-mounted photovoltaic projects. The TCC Group has developed and constructed the Wushantou Reservoir floating photovoltaic power plant with a capacity of 13.7 MW, 17 GWh of annual generation, as well as approximate 8,906 metric tons of annual carbon reduction. It is currently the largest reservoir-based floating photovoltaic power plant in Taiwan. Construction of the Wushantou Solar Photovoltaic Power Plant began in January 2021, and was completed in May 2022 for power generation. The peak monthly electricity generation once reached 1.8 GWh. Upon grid integration, the Wushantou Solar Photovoltaic Power Plant was equipped with professional maintenance team. Through real-time monitoring systems and operational analysis, a comprehensive inspection and patrol mechanism was established. Additionally, preventive maintenance were implemented to prevent unexpected power loss. These measures ensure the overall stable and safe operation of the plant, thus enhance the system's power generation efficiency.



Aerial view of the completed system



Modules being moved to their positions

Aerial view of the module assembly area

Aerial view of the fishponds

In addition, TCC's subsidiary, Hamaguri Co., Ltd., responded to the government's aquavoltaic (fishery and electricity symbiosis) policy and has been engaged in the development of fishery and electricity symbiosis in fishponds within the 86-hectare designated area in Fangyuan Township, Changhua County. Following the verification process by the Environmental and Social Impact Assessment of the Bureau of Energy, Hamaguri Co., Ltd. successfully obtained an approved land area of 39.8 hectares in December 2022. The total installed capacity is estimated to reach approximately 32 MW. With 30 years of expertise in the power industry, the TCC Group collaborated with professional aquaculture teams, making it a well-experienced team that possesses both power industry knowledge and expertise in aquaculture. Through careful layout design and construction scheduling, the Group aims to minimize the impact of solar modules on the ecological environment. The goal is to create a win-win situation that promotes local development, green electricity, aquaculture, and ecological conservation simultaneously.

Furthermore, to address the issue of insufficient feeder capacity in solar photovoltaic grid-connected hot zones in Taiwan, the TCC Group actively involved in the establishment of solar photovoltaic joint booster stations in alignment with national policies. Since March 2022, the Group has been promoting the installation of a 240 MW solar photovoltaic joint booster station in Qigu District, Tainan City. The station was integrated into the grid and undergo commercial operation in June 2023. This initiative aims to resolve the challenges in the solar photovoltaic grid-connected hot zones, providing significant support for the development of renewable energy in Taiwan.

2.2.2 Wind Power

In terms of onshore wind power, the Company has invested in Miaoli Wind, which includes the Zhunan Wind Farm and the Dapeng Wind Farm. The total installed capacity of onshore wind turbines is 49.8 MW, with an annual power generation exceeding 100 GWh. Considering that the wind turbines have been in operation for over 16 years, we are initiating the environmental impact assessment review process for a wind turbine renovation and reconstruction project to improve their operational efficiency and competently utilize the excellent wind resources in Miaoli. Star Wind has set up onshore wind turbines with a total installed capacity of 10.35 MW in Fangyuan, Changhua. Through TCC Green Energy, long-term renewable energy purchase agreement was signed with domestic companies to wheel approximately 28.5 GWh of green electricity annually. Considering the favorable wind conditions in the area, Star Wind has also planned to build 9 additional wind turbines with a total installed capacity of approximately 37.8 MW. These new turbines are expected to be connected to the grid in 2024, with an annual power generation of approximately 100 GWh of green electricity, providing clean energy for the domestic market.

Moreover, Star Energy, a subsidiary of TCC, has outstanding performance in both EPC contracting and O&M businesses, undertaking a total of 61 wind turbines in 7 wind farms of Taipower, as well as 2 onshore wind turbines (7.2 MW) from Taiwan Cement Corporation Green Energy's EPC project. It is responsible for the O&M of 116 wind turbines in Taiwan, serving as a wind turbine O&M company with the most experience and expertise in Taiwan. Whether it is O&M expertise or enthusiastic service, Star Energy is widely recognized by its customers.

In addition, in line with the government's promotion of renewable energy policies and the plan to participate in the future O&M of offshore wind farm, the Company has undertaken the construction of the onshore substation for the Ørsted Offshore Wind Farm Phase II project, and established a Renewable Energy O&M Center in the Changhua Coastal Industrial Park as well, which was inaugurated in 2022. The center can provide more comprehensive renewable energy O&M services, ensuring the localization of O&M technologies and expanding business opportunities in this sector.

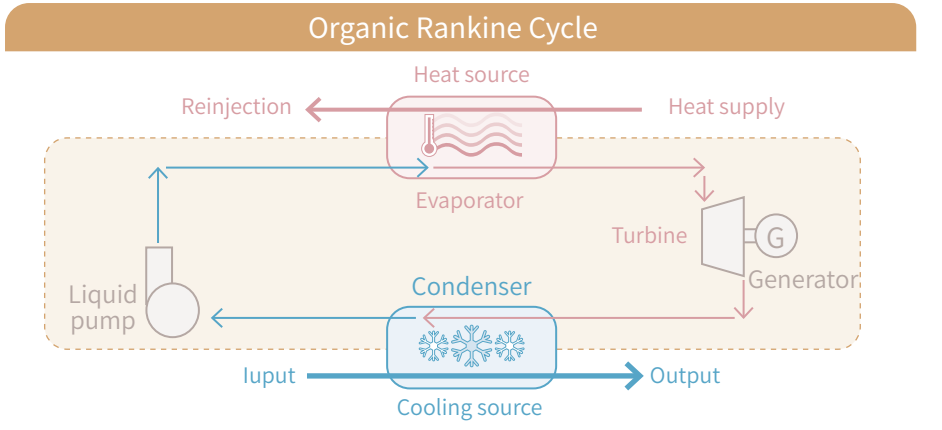
Wind turbines of Star Wind

Wind turbines of Miaoli Wind

2.2.3 Geothermal Power

The Company signed a Build-Operate-Transfer (BOT) contract with the Yilan County Government in 2017 through its subsidiary, Yi Yuan, for the establishment of the Chingshuei Geothermal Power Plant. Since its launch in 2021, the total installed capacity of the plant is 4.2 MW, making it the largest geothermal power plant in Taiwan.

The Chingshuei Geothermal Power Plant utilizes high-temperature geothermal fluids extracted from deep underground, ranging from 900 meters to 3,000 meters. The power generation is based on the principle of Organic Rankine Cycle heat exchange. After the power generation process, a portion of the geothermal brine (tail water) is used for the hot springs in the park, while the remaining brine is transported through pipelines to reinjection wells and pumped back underground. The entire power generation process operates with a "heat extraction without water extraction" approach, resulting in minimal water consumption during the operation. Prior to the expansion of capacity through drilling new wells, the power plant will continue to maintain the geothermal field and specifically focus on finding solutions to eliminate the issue of pipeline scaling that leads to less energy production. This effort is aimed to ensure the sustainable operation of the power plant.



In addition, the Chingshuei Geothermal Project will combine local sightseeing, guided tours and environmental experience facilities in the future. Besides setting up hot spring resorts, the Project also proposes a geothermal education center and a historical park to promote and introduce knowledge related to geothermal energy, which is significant to the development of geothermal power in Taiwan. Through the construction and operation of a geothermal power plant, coexistence and co-prosperity with the local community can be achieved, bringing positive benefits to local residents.

The Chingshuei Geothermal Power Plant effectively utilizes the clean and pollution-free geothermal energy in the Yilan area to generate electricity. Since commercially operated, it has produced approximately 60,000 kWh of electricity per day, which is sold to Taipower. This power supply serves around 10,000 households in the nearby Sanxing Township, providing a stable and reliable source of electricity.

Furthermore, the power plant also opens its doors for educational groups and businesses in Taiwan to visit and exchange knowledge. In 2022, a total of 31 visits and exchanges were organized, contributing to domestic geothermal academic research and the promotion of geothermal energy for the future.

Practices from Chingshuei Geothermal Power Plant to Achieve Co-prosperity with Local Community

Localization of Talent

The power plant prioritizes recruiting local talents from Yilan to increase local employment. As of the end of 2022, the plant has employed 12 operational staff, with 11 of them being residents of Yilan, achieving talent localization ratio of over 90%.

Localization of Industry

Yilan is an important area with significant geothermal resources. Since the power plant commercially operated in 2021, it has continuously enhanced the development, technology, and competitiveness of the power and renewable energy industries in Yilan, making a significant contribution to the localization of the industry in the area.

Localization of Benefits

(1) Public Benefit Contribution: Inviting public welfare or disadvantaged groups in Yilan, as well as residents from Datong and Sanxing Townships, to visit the geothermal power plant and geothermal education center free of charge.

(2) Friendly Neighborhood: After the commercial operation, the power plant will allocate sponsorship funds to support local activities.

(3) Academic Collaboration and Exchange: Adopting a two-way cooperation model, engaging in exchanges with local academic institutions or groups in Yilan. This includes training renewable energy seed instructors through industry-academia cooperation to teach general courses on renewable energy at various levels of schools.

2.2.4 Integration of Renewable Energy Value Chain

Combining the Group's electricity expertise and the sensitivity that we have developed through long-term experience in the energy market, TCC analyzes the energy consumption patterns of different customers, and provides the most appropriate green electricity plan to maximize profits. Currently, renewable energy customers range from semiconductor industry, financial industry, foundations, communication industry, consulting service industry, electronics industry to clothing retail industry.

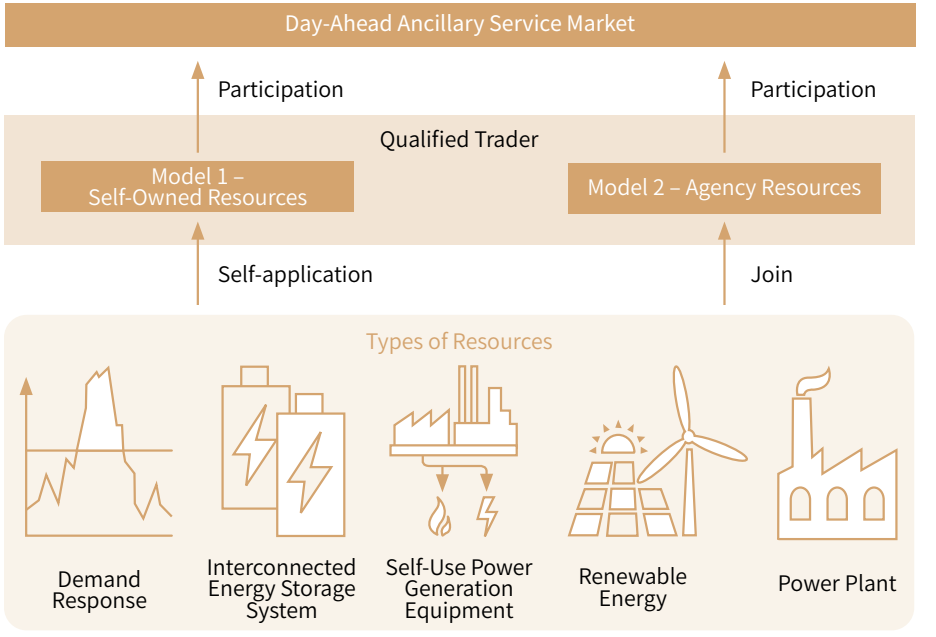
Renewable Energy Retailing Service

Renewable Energy Power Generation (Facilities) → Wheeling (Power Transmission and Distribution) → TCC Green Energy → Wheeling (Power Transmission and Distribution) → Power Users

- Analysis of electricity purchasing/retailing supply and demand
- Green energy target optimization
- Wheeling/surplus electricity purchasing/retailing application
- Renewable Energy Certificate (REC) application/transfer
- Change of proxy for electricity use
- Renewable energy development planning (RE100)

In recent years, Taipower actively encourages various electricity enterprises and independent power plants to participate in ancillary services in order to maintain safe and stable operation of the power system, or to restore the system to normal after an accident. Taipower has set up an Energy Trading Platform (ETP) for private enterprises that is open for bidding. In view of this, TCC has obtained 9 ETP Expertise Certificates for the Energy Trading Platform. In December 2021, the cloud management and operating mechanism system for qualified traders to participate in ETP was introduced. In April 2022, TCC utilized its Guan Tian Plant as an operating resource and officially participated in the ancillary service market for supplementary reserve bidding. TCC reviewed pricing strategies with its consultant team on a regular basis, to improve the bidding success rate and dispatch execution rate. The actual bidding success rate exceeded 95%, with a total dispatched electricity volume of approximately 6.81 GWh.

In addition to utilize internal resources and facilities within the Group, we are also working on the introduction of external resources (such as self-use power generation equipment, qualified cogeneration plants, energy storage systems, and more). This initiative aims to strengthen the expansion of the Group's future renewable energy value chain.



2.3 High Quality Customer Service

Attentiveness, Diligence, Professional Team, Enthusiastic Service

To realize its commitment to quality, TCC adheres to the quality policy of "Attentiveness, Diligence, Professional Team, and Enthusiastic Service", and strictly requires its employees to follow the quality management system, improves the quality of products and project services, and constantly strives for excellence. Externally, the Company understands customers' demands, strengthens communication with customers, and provides customers with the highest service quality.

TCC's main products and services are steam and electricity from cogeneration plant, electric power development, investment planning as well as electric power-related engineering services, all of which follow the P-D-C-A (Plan → Do → Check → Action) cycle for improvement of product quality, engineering services, customer trust and customer satisfaction. To demonstrate our commitment to product and service quality, TCC Taipei office, Guan Tian Plant and Star Energy have obtained ISO9001:2015 quality management system certification.

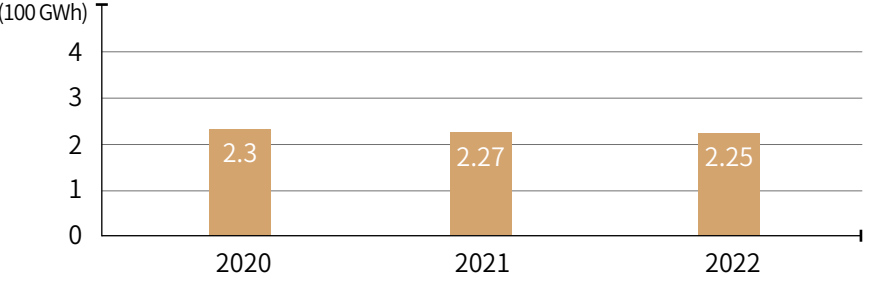
2.3.1 Stable Power Supply

In terms of domestic power supply and demand, there were 75 days in 2022 when the percentage of operating reserve was less than 10%, and 2 days in 2022 that fell below 6%. The operating reserve fluctuated significantly, but the overall power supply remained stable. On the demand side, the system's peak load reached a historic high of 40.748 million kilowatts on July 22, 2022. Domestic electricity demand continues to grow, estimated to be driven by factors such as returning of businesses, semiconductor industry expansion, electric vehicle development, and extreme weather conditions leading to hot weather in various regions. Furthermore, with the increase in the percentage of renewable energy generation, the demand for ancillary services in the electricity market has also increased.

Therefore, independent power plants, cogeneration plants, and energy storage systems still play crucial roles in assisting power supply balance and grid stability.

TCC's Guan Tian Plant was invested in, constructed, and maintained by TCC. It underwent commercial operation successfully in 2000 and has been providing stable power supply for over 20 years. The plant serves eight customers in the Guantian Industrial Park and continues to develop new customers. In addition to improving energy efficiency in the area, the plant also helps alleviate regional power supply loads.

Amount of Electricity Sold by the Guan Tian Plant



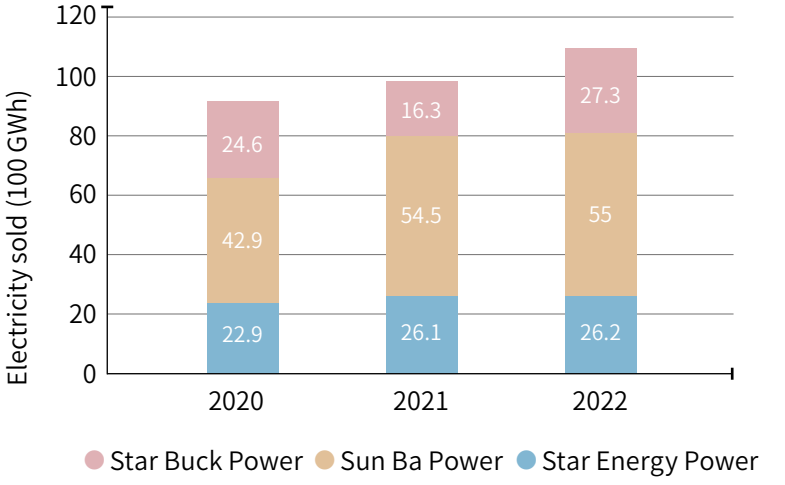
Note:In the early 2022, due to high coal prices and low electricity purchase prices, the power plant operated at a low capacity, resulted in lower electricity sales. However, starting from August 2022, the plant began to participate in Taipower's "Qualified Cogeneration Power Purchase Program," which led to an increase in electricity sales. Therefore, the overall electricity sales for the year did not differ significantly from 2021.

Utilizing high-efficiency and low-pollution power generation methods to provide stable power supply and serve electricity users" has been the intention and mission of TCC since its establishment. The following list shows the cogeneration plants and independent power plants invested by TCC, or with TCC as its largest shareholder.

Name	Installed Capacity	Type
Guan Tian Cogeneration Plant	48MW	Coal-fired circulating fluidized bed boiler and steam turbine generator unit
Chang Bin Gas-Fired Power Plant of Star Energy Power	506.9MW	1 unit of gas-fired multi-shaft combined cycle generator
Fong Der Gas-Fired Power Plant of Sun Ba Power	1,013.7MW	2 units of gas-fired multi-shaft combined cycle generator
Star Buck Gas-Fired Power Plant of Star Buck Power	490MW	1 unit of gas-fired multi-shaft combined cycle generator

In 2022, three independent power plants invested by TCC has sold a total of approximately 10,850 GWh of electricity to Taipower. The amount of electricity sold has increased and reached new heights every year. The partial replacement of some coal-fired power generation units by gas-fired power generation units can reduce total domestic air pollution emissions, demonstrating the efforts and achievements of TCC Group to stabilize domestic power supply and provide low-carbon energy.

Electricity Sold by 3 Invested Independent Power Plants



Operational Reliability

Stable operation is the primary concern of power plants. Reported incidents of power supply shortage in the past were often caused by failures of boiler tube or unit malfunctions in the power plant that led to emergency stop, resulting in the reduction of estimated percent operating reserve by 2~3%, causing the power supply status to fall from yellow to orange, or even further down to the red light for power shortage warning. This indicated that under the condition of a tight power supply, the operation status of any unit may affect the overall power supply in Taiwan.

To maintain stable power and steam supply for customers, the Guan Tian Plant has a management mechanism based on the following three aspects: maintenance, emergency response, as well as operation and system design. All aspects have detailed work procedures and standardized quality manuals. Employee education, training, drills and other activities are carried out regularly to ensure that all personnel in the plant are familiar with and follow relevant procedures.

Guan Tian Plant Operation Reliability Management Mechanism	
Management Mechanism	
Equipment Maintenance	Daily Maintenance
	Annual Overhaul
Equipment Failure Emergency Response	Equipment Failure Emergency Response
	Accident Emergency Response
Operation and System Reliability	Daily Operation
	Dou-loop Power Supply Design

In 2022, TCC's Guan Tian Plant experienced a shutdown for repair due to equipment failure, resulting in a slight decrease in its operating reliability to 95.95% and the actual operating hours throughout the year had reached 7,815.78 hours. Since the start of its commercial operation in December 2000, the cumulative operating time is about 180,000 hours (as of December 2022), and the average annual normal operating time is more than 8,180 hours (after the deduction of a 20 days of annual overhaul). Moreover, there has been zero accident and no equipment failure for past several years, demonstrating excellent operational technology and overall stability of the units.

Average Duration of Power Outage

A power supplier must be able to provide continuous and uninterrupted power upon demand. If a trip or failure does occur, it should be able to deal with the problem quickly and restore the power supply. The average duration of power outage in the form refers to the average duration of service outage experienced by users of each power plant.

2022					
	TCC (Guan Tian Plant)	Star Energy Power	Sun Ba Power	Star Buck Power	Total
Number of Users	4	1	1	1	7
Total Duration of Power Outage From All Users (min)	0	0	19	127,201	127,220
Average Duration of Power Outage per User (min)	0	0	19	127,201	18,174
2021					
	TCC (Guan Tian Plant)	Star Energy Power	Sun Ba Power	Star Buck Power	Total
Number of Users	4	1	1	1	7
Total Duration of Power Outage From All Users (min)	27	0	105	315,508	315,640
Average Duration of Power Outage per User (min)	6.75	0	105	315,508	45,091
2020					
	TCC (Guan Tian Plant)	Star Energy Power	Sun Ba Power	Star Buck Power	Total
Number of users	5	1	1	1	8
Total Duration of Power Outage From All Users (min)	0	170	0	14,717	14,887
Average Duration of Power Outage per User (min)	0	170	0	14,717	1,861

Frequency of Power Outage

Whether the electricity can be supplied stably and continuously is also one of the indicators that measures the operationality of an electricity supplier. The average power outage frequency here refers to the average number of service outages experienced by users of each power plant.

2022					
	TCC (Guan Tian Plant)	Star Energy Power	Sun Ba Power	Star Buck Power	Total
Number of Users	4	1	1	1	7
Total Number of Power Outage Events From All Users (No. of times)	0	0	4	5	9
Average Power Outage Frequency per User (No. of times/user)	0	0	4	5	1
2021					
	TCC (Guan Tian Plant)	Star Energy Power	Sun Ba Power	Star Buck Power	Total
Number of Users	4	1	1	1	7
Total Number of Power Outage Events From All Users (No. of times)	3	0	1	3	7
Average Power Outage Frequency per User (No. of times/user)	1	0	1	3	1
2020					
	TCC (Guan Tian Plant)	Star Energy Power	Sun Ba Power	Star Buck Power	Total
Number of Users	5	1	1	1	8
Total Number of Power Outage Events From All Users (No. of times)	0	1	0	4	5
Average Power Outage Frequency per User (No. of times/user)	0	1	0	4	1

Note: The average power outage frequency per user is the total number of power outage events from all users divided by the number of users, rounded to the nearest whole number.

2022				
	TCC (Guan Tian Plant)	Star Energy Power	Sun Ba Power	Star Buck Power
System Average Interruption Duration Index (SAIDI)	0	0	19	127,201
Average Interruption Frequency Index (SAIFI)	0	0	1	1
Customer Average Interruption Duration Index (CAIDI)	-	-	19	127,201

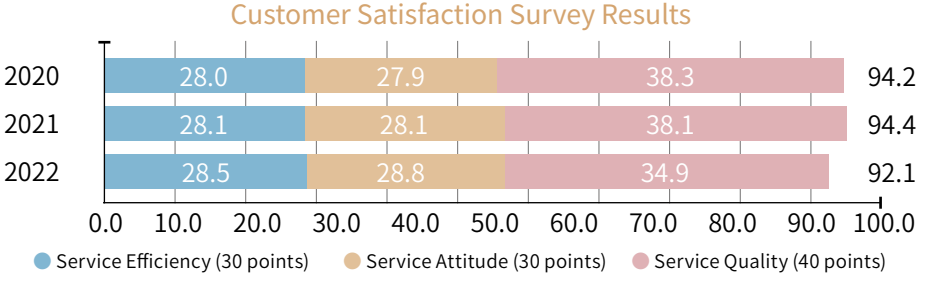
2.3.2 Meeting Customer Needs

Meeting customer needs and continuous improvement have always been the core values of TCC's operations. The Company's operational objective is to create maximum customer value, making customer demands and satisfaction the key performance indicators that we monitor actively.

Customer Satisfaction

TCC has formulated an operating procedure for customer satisfaction survey, which includes an annual "satisfaction survey". This survey serves multiple purposes. First, it allows for the review and improvement of customer feedback, providing valuable insights for the Company's operational guidelines. Second, it helps understand customers' actual needs while facilitates the enhancement and elevation of service quality effectively. Based on the results in the past few years, our customers' satisfaction always meets the benchmark.

The results of Guan Tian Plant's customer satisfaction survey in the past three years are shown in graph:



Note: The data above shows the average score of customer satisfaction surveys from eight customers.

In 2022, Star Energy's outstanding performance in engineering technology and wind farm O&M was recognized by customers in aspects such as engineering quality, communication and coordination, and service attitude. In particular, we provide high quality services to the maintenance of projects such as Taipower's 86 onshore wind turbines, the Gangshan P/S construction project, the offshore wind farm phase II, and the onshore substation project of Ørsted's offshore wind farm. We attach great importance to the trust and commitment that we share with customers, and follow the contract for customer data and privacy protection.

The results of Star Energy's customer satisfaction survey in the past three years are shown in graph:

	2020	2021	2022
Communication and Coordination (10 points)	9	9	9
Project Progress (30 points)	27	25	25
Project Quality (30 points)	26	26	26
Environment, Health and Safety (30 points)	25	25	26
Total (100 points)	87	85	86

Note:The data above represents the average score of customer satisfaction surveys from six customers in 2020 and 2021, and the average score of customer satisfaction surveys from nine customers in 2022.

Looking forward, the installation of large-scale ground-mounted and floating solar photovoltaic systems, the construction and maintenance of onshore wind turbines, as well as the onshore substations for offshore wind farms are starting off one after another. With a strong management team and a positive, diligent service attitude, TCC is committed to provide customers with the highest standard of engineering quality, achieving our 3 objectives, customer satisfaction, environment protection and corporate sustainability.

Customer Privacy and Complaint Handling

TCC values customers'opinions and conducts satisfaction survey every year. It has established a "Customer Complaint Handling Procedure" which states detailed procedures of receiving and analyzing customer complaints, devising strategies, and providing customers with feedback by designated department. This ensures that customer opinions are effectively communicated and properly addressed, ultimately enhancing customer satisfaction.

As we enhance our customer services, we also attach great importance to intellectual property rights and the privacy of customer information. All personnel of related businesses should follow the rules of confidentiality. As a result, there was no violation of customer privacy rights, damages to customer rights due to data loss, nor customer complaints in 2022.

2.4 Sustainable Supply Chain

To build a sustainable supply chain, TCC maintains close collaborative relationships with its suppliers, aiming for mutual growth and creating win-win situations. Since 2016, the Company has implemented new management practices annually, leveraging its influence to encourage suppliers to prioritize corporate social responsibility, implement green procurement initiatives, align with international sustainability trends, and drive virtuous cycle within the supply chain to create a green supply chain ecosystem. Furthermore, TCC adopts a supply chain management approach that emphasizes quality and risk control. We carefully select partners, uphold the principles of integrity, honesty, commitment, and responsibility, and establish a comprehensive "Supplier Management Evaluation Mechanism".

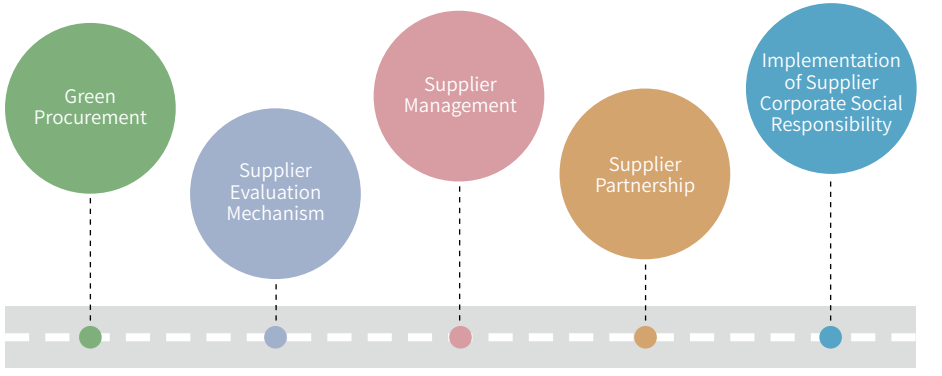
New Achievements in 2022

1.The amount of green procurement in 2022 reached NT$300 million.

2.The Group's procurement and material management systems were effectively streamlined to enhance operational efficiency.

3.Integrity management courses for suppliers were conducted, with 11 suppliers participating this year.

Focuses of TCC's Supply Chain Management

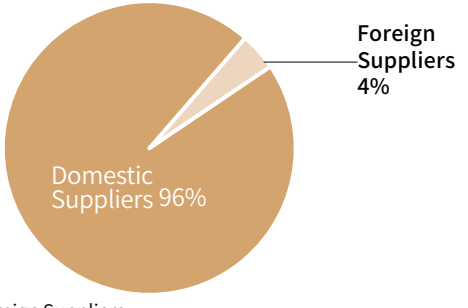


2.4.1 Good Supply Chain Partnership

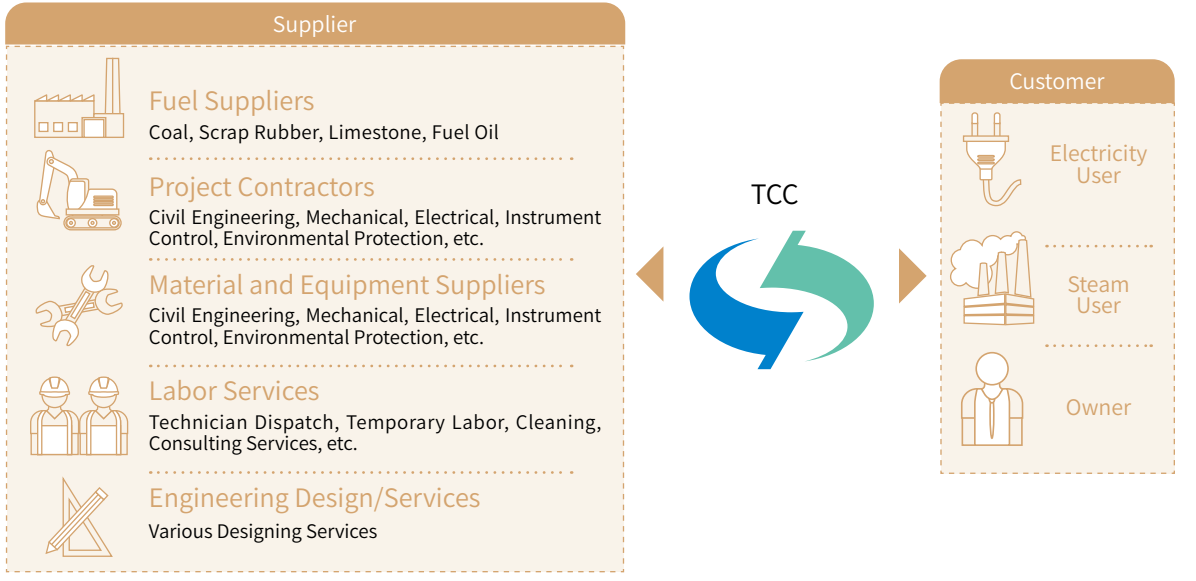
TCC is well-aware that establishing partnerships with suppliers is an important basis to reduce operation costs, improve power generation efficiency and ensure stable supply of fuel. Such partnership is essential to TCC's sustainable development; therefore TCC continues its effort to establish a sustainable and competitive supply chain ecosystem, and is committed to maintain long-term, good partnerships with high-quality suppliers around the globe, jointly creating a stable supply chain.

As of the end of 2022, there were 2,813 suppliers registered in TCC Group's supplier database, of which 2,698 (account for 96%) were domestic suppliers, with an increase of 51 compared to that of 2021. These suppliers mainly provide services such as fuel procurement, project contracting, materials and spare parts procurement, labor services and engineering design/services. There were 115 international suppliers in 2022 (account for about 4%), most of them provide maintenance and spare parts for foreign equipment. In recent years, renewable energy has been rapidly developing in Taiwan, leading to an increasing number of domestic suppliers and businesses in the industry. TCC recognizes its responsibility to stimulate the industrial economy in Taiwan and actively contributes to this endeavor.

Percentage of Suppliers

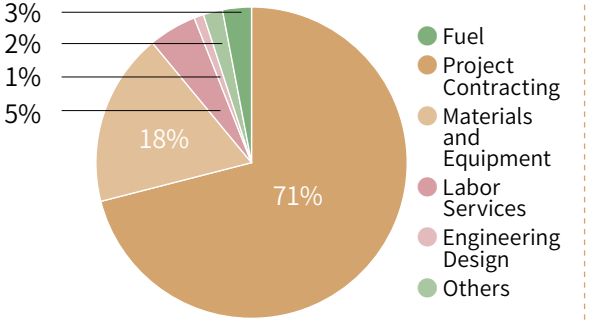


The Company's suppliers can be divided into five categories: fuel suppliers, project contractors, material and equipment suppliers, labor services and engineering design/services.

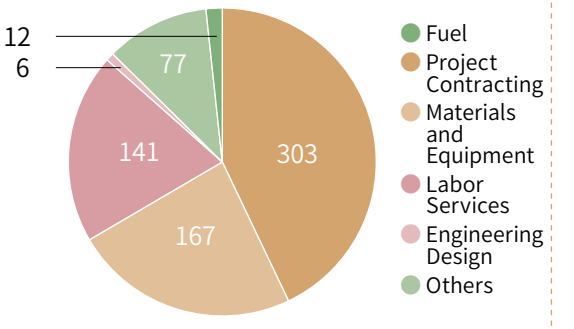


Number of suppliers by category and the corresponding percentage of procurement amount in 2022 are as follows:

Percentage of Procurement Amount by Category of Procurement in 2022

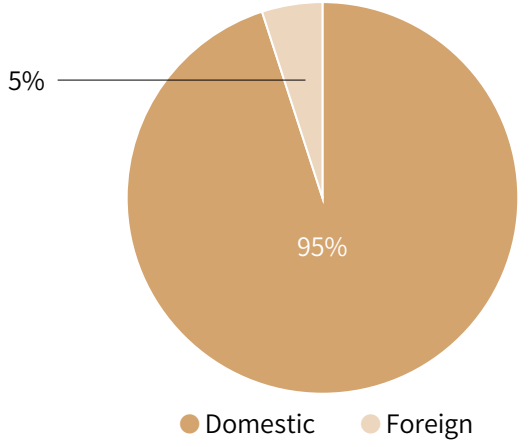


Number of Suppliers by Category of Procurement in 2022

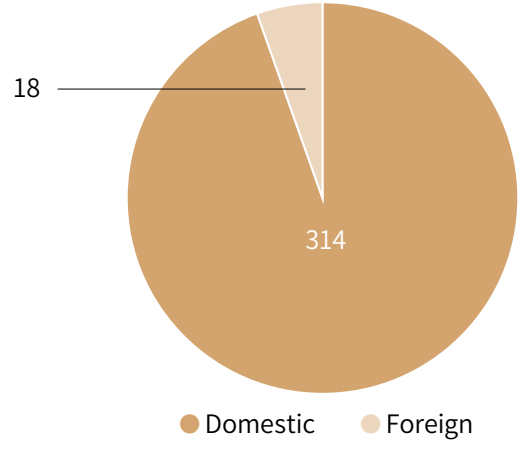


Number of domestic/foreign suppliers and the corresponding percentage of procurement amount in 2022 are as follows:

Percentage of Procurement Amount from Domestic/Foreign Suppliers in 2022

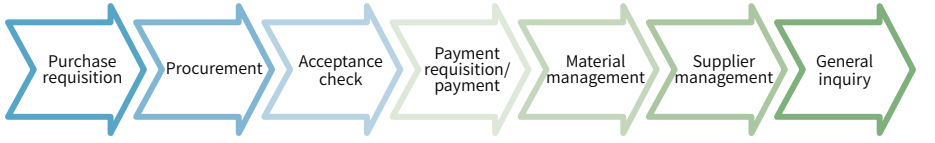


Number of Domestic/Foreign Suppliers of Procurement in 2022



2.4.2 Systematic Procurement Management and Material Management

The Group has implemented an electronic system for procurement, payment, and material management. This system integrates functions such as purchase requisition, procurement, acceptance check, payment requisition/payment, and material management, facilitating real-time information transmission and data consolidation. Through electronic connectivity, it streamlines various operational processes and incorporates electronic approval procedures based on authorized levels. The introduction of this system further deepens and enhances traditional management practices, reducing manual processes, optimizing workflow, and integrating various data elements. As a result, it lowers operating costs, enhances the internal data utilization value, and promotes transparency in management systems. This contributes to improving overall operational efficiency within the Group.

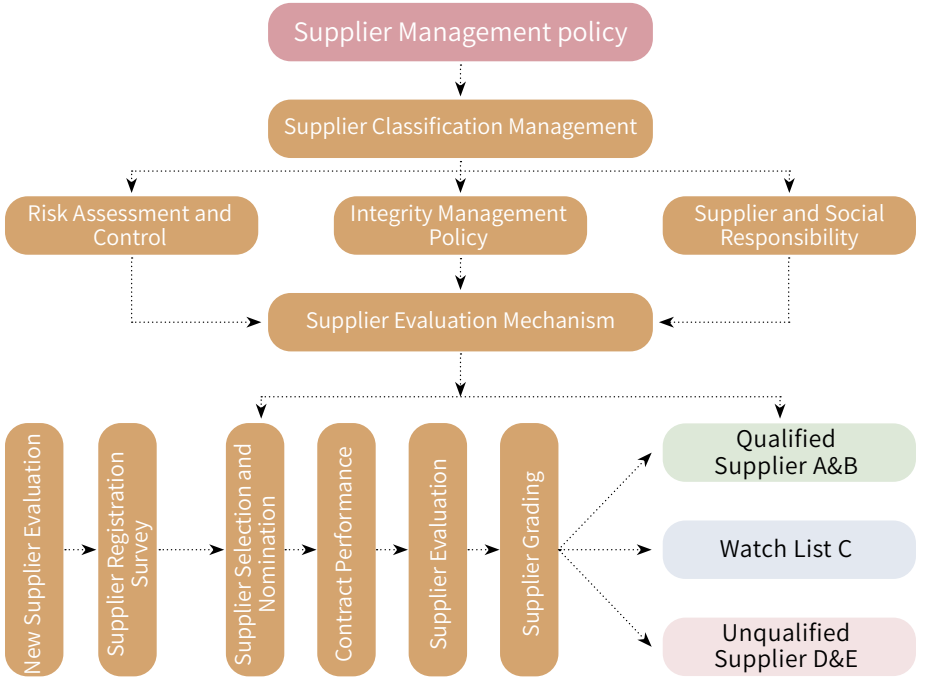


2.4.3 Comprehensive Supplier Management

For the procurement of equipment and materials, as well as the outsourcing of various projects, TCC carefully selects suppliers who demonstrate excellent performance in terms of cooperation, product quality, environmental considerations, workplace safety and cost-effectiveness. This ensures a stable supply for each power plant and meets operational requirements. All related procurement processes adhere to the provisions of ISO 9001 and are verified by third-party organizations. The Company upholds the principles of fairness and reasonableness in making procurement decisions.

TCC establishes clear provisions and terms within the procurement and engineering contracts it has signed with its suppliers, covering aspects such as product quality, delivery schedules, payment methods, penalties for delays, performance, and warranty responsibilities. The Company aims to establish a win-win model by fostering mutual assistance and growth with its suppliers.

Supplier Management Structure



To ensure that suppliers are well qualified, capable of completing projects on time and fulfilling their corporate social responsibilities, the purchasing unit would issue "New Supplier Review and Evaluation Form" and conduct evaluation on suppliers who are participating in the procurement or outsourcing for the first time. The items of evaluation include financial status, contract performance capability, project (delivery) experience, corporate integrity, professional skills, "ISO 9001, 14001, 45001 verification", corporate social responsibility commitment, environmental protection, as well as occupational safety and health. Only those with a score of 70 and above could participate in the procurement and outsourcing of TCC. In addition, to implement the human rights protection for migrant workers, the Company has added management regulations and evaluation for migrant workers to "New Supplier Review and Evaluation" and "Corporate Social Responsibility Commitment".

Implement Integrity Management Policy

In order to establish and implement integrity as a part of our corporate culture, prevent dishonesty, improper conducts or acceptance of improper benefits, TCC has established the following terms in the contract:

1. In the event of dishonest behavior, the contract may be terminated or rescinded unconditionally at any time.
2. If one has received commissions, rebates or other illegitimate benefits, he/she should immediately and truthfully report the action, provide relevant evidence and cooperate with related parties for investigation.
3. If the Company suffers damage from such improper action, it may request compensation for damages.
4. Grievance Mechanism - whistleblowing procedure and channels are available.

Continuously enhancing supply chain sustainability value

The Company adheres to the implementation of integrity management policy and ideology as well as the enhancement of the supply chain's overall sustainability value, offering supplier integrity management courses since 2018. In 2022, we organized and invited a total of 11 suppliers to participate in the integrity management education and training- "Latest Practices in the Development of Insider Trading in Taiwan and Corporate Measures for Prevention and Response". Due to the pandemic, the education and training was conducted online.

Supplier Evaluation Mechanism

To ensure quality and effective management, the purchasing unit and the procurement application unit will conduct supplier evaluation after the completion of project and services, as well as "Supplier Evaluation Form" or "Construction Contractor Evaluation Form", which contains evaluation on reliability, price, quality and delivery. Each Supplier should also complete a Corporate Social Responsibility Commitment as a reference.

The result of supplier evaluation is classified into five grades. Based on the score of the supplier evaluation, the suppliers are graded with A, B, C, D or E. The criteria for the grading are describe as follows:

Grade A	Grade B	Grade C	Grade D	Grade E
Score of 85 or above	Score of 70~84	Score of 60~69	Score of 51~59	Score of 50 or below
Regarded as qualified suppliers; given priority to participate in price negotiation	Regarded as qualified suppliers	On the watch list and will be re-evaluated after improvement; the period for evaluation is one year	Regarded as unqualified suppliers; not allowed to participate in the Company's procurement and contracting for three years	Regarded as unqualified suppliers; not allowed to participate in the Company's procurement and contracting for five years

The evaluation results for 2022 are as follows:

There are 499 qualified suppliers and 0 unqualified supplier. As of 2022, 11 suppliers were suspended due to dishonesty and breach of contract.

Name	Number of Qualified Suppliers	Number of Unqualified Suppliers	Number of Suspended Suppliers as of the End of 2022
TCC (including the Guan Tian Plant and Miaoli Wind)	92	0	11
Star Energy	54	0	
Chang Bin Gas-fired Power Plant of Star Energy Power	44	0	
Star Buck Gas-fired Power Plant of Star Buck Power	145	0	
Fong Der Gas-fired Power Plant of Sun Ba Power	164	0	

The supplier evaluation of TCC focuses on the constant strengthening of supplier management. There is still a relatively small number of suppliers that are listed as unqualified suppliers. If faults are found during the performance of the contract, suppliers are immediately required to carry out remediation, propose appropriate solutions, and provide clear goals and schedule for the improvement. If suppliers are unwilling to cooperate, the breach of contract mechanism will be activated immediately. Deduction of progress payment, balance payment, performance bond or the suspension of rights will be carried out to protect the Company's greatest rights and interests.

Key Items of Supplier Social Responsibility Assessment

Fuel supplier (coal and scrap rubber)

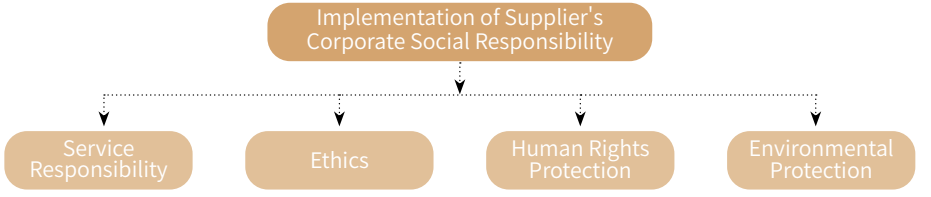
- To commit to the practice of sustainable development, suppliers of coal and scrap rubber must sign relevant specifications including compliance with ethics, environmental protection, labor practices and social perspective.
- In addition, suppliers of scrap rubber are required to comply with the scrap tire recycling policy of the Environmental Protection Administration.

Project contractors, materials and equipment, engineering design/ services, labor services and other suppliers

- Suppliers shall comply with relevant specifications of ethics, environmental protection, labor practices and social aspects in accordance with the provisions of procurement specifications, bidding instructions, engineering specifications, drawings, technical documents, business terms or contractors' work safety and health management rules.
- Procurement or project contracts clearly states that the supplier's employment of workers must comply with relevant government laws and regulations, including "Labor Standards Act", "Occupational Safety and Health Law", "Labor Inspection Act", "Hazardous Work Place Review and Inspection Regulations" and their corresponding enforcements. "Regulations on Safety and Health Requirements for Commencing Operations of Contracted Projects" stipulate that contractors must submit relevant insurance documents and information for employer's liability insurance with a minimum coverage of NT$ 8 million for on-site operators during the contracting period before they can commence operations on-site.

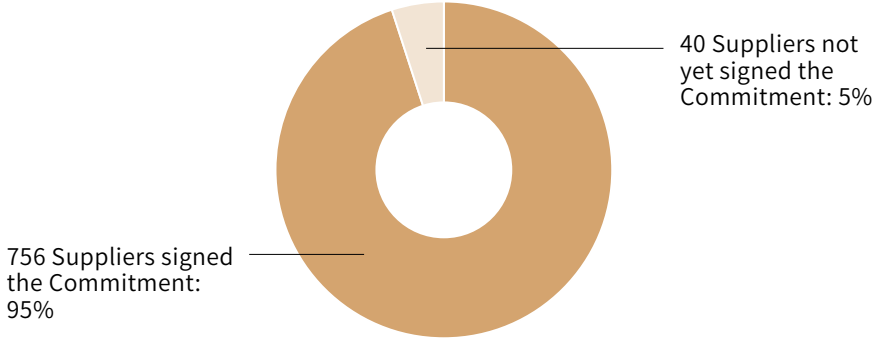
Supplier's Corporate Social Responsibility Commitment

TCC is committed to protecting the environment and prioritizes social responsibility, labor rights, workplace safety and health, and promoting sustainable development in the supply chain. When implementing supplier management, the Company not only complies with relevant laws and regulations but also urges its suppliers to adhere to related codes of conduct. For example, strict measures are in place to prohibit the employment of child labor or any violation of human rights by the suppliers.



Since 2017, TCC has requested contracted suppliers to sign the "Corporate Social Responsibility (CSR) Commitment". At the end of 2022, 756 of our 796 contracted suppliers have signed the Corporate Social Responsibility Commitment, reaching the set target of 95%.

Percentage of Suppliers Signing CSR Commitment in 2022



Looking into to 2023, TCC aims to achieve a signing rate of over 95% for supplier's CSR Commitment. We will adopt a more proactive approach and work collaboratively with our suppliers to contribute to environmental sustainability.

Summary of "Corporate Social Responsibility Commitment"

Service Responsibility

- The procurement, project contracting business and services provided by suppliers shall comply with laws and international standards.
- If there is any violation, TCC has the right to request for improvements or terminate the contract in accordance with the contract requirements.

Human Rights Protection

- Suppliers must comply with labor laws and protect the human rights as well as the rights of their employees, including temporary workers, migrant workers, part-time employees, contract workers, and any other type of workers
- Suppliers shall comply with international labor rights, such as guaranteeing freedom of association and the rights of collective bargaining, caring for vulnerable groups, prohibiting child labor, ending all forms of forced labor, and eliminating employment discrimination, etc., and ensure that human resources policy does not create differential treatment in gender, race, socioeconomic class, age, marital and family status, etc.
- Sppliers shall provide a safe and healthy working environment in accordance with local laws and regulations.

Ethics

- Suppliers shall abide by the principle of business integrity and shall not request, promise, deliver or accept any form of gifts, entertainment, kickbacks, bribes or other improper benefits for profit.
- Suppliers shall ensure that they do not disclose any confidential information of TCC and its affiliated companies.

Environmental Protection

- To protect public health and safety and environmental sustainability, suppliers shall comply with relevant laws and international standards, and operate in an environmentally trustworthy manner.

Supplier Sustainability Performance Self-Assessment

Since 2019, TCC has required suppliers to provide self-assessment questionnaires regarding their corporate social responsibility commitments. The purpose is to gain in-depth understanding of the suppliers' implementation of commitments in various aspects such as economy, society, human rights, and environment. The results of the self-assessment questionnaires serve as the basis for strengthening supplier management in the future. In 2022, the response rate for the self-assessment questionnaires reached a high of 89.9%. Moving forward, the Company will take a more proactive approach to fulfill corporate social responsibility in collaboration with suppliers, aiming to enhance the effectiveness of sustainable supply chain management.

On-Site Audit of Supplier Sustainability Performance

Since 2019, TCC has been conducting on-site visits from time to time to important suppliers to verify the implementation status of their ESG (Environmental, Social, and Governance) practices. The assessment criteria are divided into four levels: "Compliance Items", "Items Requiring Observation","Minor Non-compliance Items", and "Serious Non-compliance Items". A score of 70 or above in the on-site audit is considered qualified. If there are "Items Requiring Observation" or "Minor Non-compliance Items", follow-up monitoring of the improvement results is conducted regularly. In the case of "Serious Non-compliance Items", the supplier is required to develop an improvement plan to address the deficiencies. TCC not only sets deadlines for suppliers to make improvements and submit improvement reports, but also conducts periodic audits on suppliers with non-compliance items to mitigate operational risks. In 2022, all three audited suppliers met the requirements of the Corporate Social Responsibility Commitment.

Supplier On-Site Audit

2.4.4 Actively Promote Green Procurement

With the idea of saving resources, lowering pollution, promoting recyclability and implementing corporate sustainable development, TCC Group is paying attention to issues such as global warming, environmental pollution and climate change. The Company is an active promoter of "green procurement", aiming to establish the image of an outstanding corporate to gain competitive advantages. The total amount of green procurement in 2021 exceeded NT$200 million, and was recognized by the Environmental Protection Administration. In 2022, the total amount of green procurement even exceeded NT$300 million. On December 15, 2022, the Company was invited by the Department of Environmental Protection of the Taipei City Government to attend the "Taipei Green Procurement Outstanding Enterprises and Groups Commendation". Commendation by the Environmental Protection Administration will happen in mid-to-late 2023. Since 2018, TCC has continuously increased the amount of green procurement. We adhere to the belief of loving the Earth and prioritizing environmental protection, striving to reduce resource waste, mitigate environmental impacts, and improve environmental quality through the creation of a green supply chain.

Environmental Protection Administration's Awards and Certificates of Appreciation

03

Protect the Environment to Build a Green Homeland

Chapter Highlights

Fly ash and bottom ash in Guan Tian Plant were 100% recycled

The electricity saving rate of Guan Tian Plant in 2022 reached 0.83%

The energy-saving and carbon-reduction plans have reduced 3,635 metric tons of CO_2e

3.1 Climate Change and Energy Management

3.1.1 Response Strategy and Environmental Management

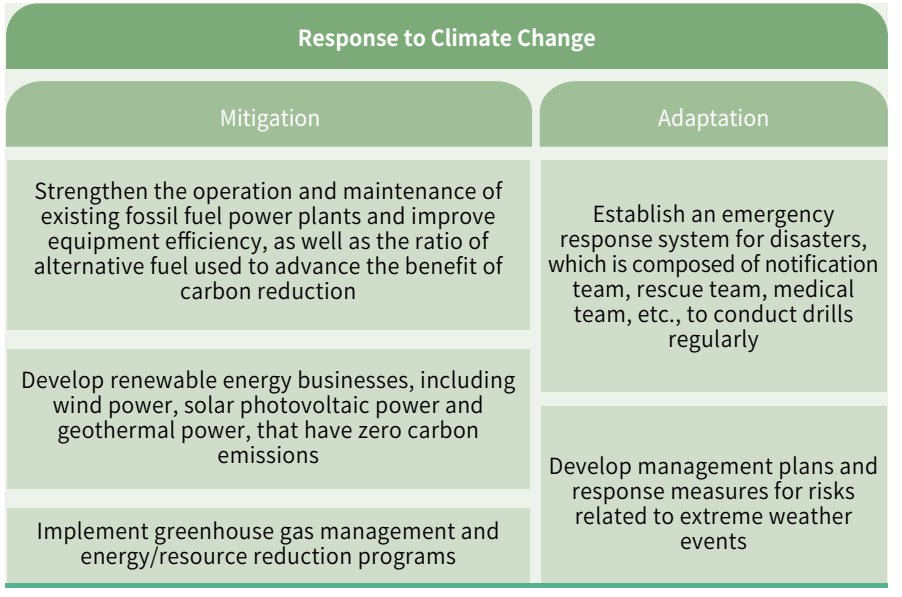
Global warming has become more severe and caused more climate-related risks than before. To mitigate the impact of climate change, COP26 adopted the "Glasgow Climate Pact" in 2021, aiming to limit the global temperature increase to within 1.5°C, and urged countries to propose their own carbon reduction timetables and pathways. The international community has responded to the initiative and announced the "net-zero carbon emission" goals, driving positive responses from domestic and foreign corporates.

TCC pays close attention to global climate change as well as the market flow. To mitigate the direct or indirect impact of climate change and response to government policies, we followed the four core elements of the Task Force on Climate-related Financial Disclosures (TCFD) framework: "governance", "strategy", "risk management", and "metrics and targets". Furthermore, we have identified potential climate-related risks and opportunities, and developed response measures based on TCFD 11 recommended disclosures.

Aspect	Management Action	Corresponding Section
Governance	● The Board of Directors is the highest governance body for risk management. ● We established the Risk Management Committee, consisting of the Chairman, the President, and the Vice President of the Company. The committee is responsible for reviewing the Company's annual risk management plan and risk control measures on a regular basis. The committee reports regularly to the Board of Directors and the Audit Committee on implementation status.	1.3 Risk Management
Strategy	● We studied global trends, policies, regulations and norms, and formulated response strategies for short, medium and long-term climate-related risks and opportunities, reducing the impact on operations and seizing potential opportunities. ● We adopted a dual approach of "mitigation" and "adaptation", taking into account of different scenarios from the IPCC and NGFS. We evaluate potential climate-related risks and opportunities, and take corresponding measures. (1)Transition risks are mainly associated with the assessment and measures for the impact of regulations and technologies such as renewable energy, fuel and energy tax on TCC. (2)Physical risks are mainly associated with the increase in frequency of extreme weather events including storms and floods, resulting in risks such as project delays. (3)Opportunities mainly include corporates'growing interests on topics such as renewable energy and energy integration due to the trend of sustainability both domestically and internationally, leading to the expansion of TCC's businesses.	3.1 Climate Change and Energy Management
Risk Management	● After researching on relevant topics, we complied those that might impact the Company and formulated corresponding strategies for further management. ● The Company continues to adopt ISO 14001 and 14064 Standards, plan emission reduction measures, and check greenhouse gas emissions annually. ● Implement transition risk management along with suppliers, reducing the impact of climate change on the supply chain through measures such as the supplier corporate sustainability commitment, and the on-site audit of sustainability performance. ● Incorporate climate-related risks and opportunities into scopes of risk management policies and risk management plans, review and update on a rolling basis, and hold task force meetings and Risk Management Committee meetings to discuss and identify relevant risks across departments.	2.4 Sustainable Supply Chain 3.2 Circular Economy and Environmental Protection
Metrics and Targets	● According to topics associated with the impact of climate change risks and opportunities have on the Company, KPIs related to energy conservation and carbon reduction, as well as short, medium and long-term goals are set to reduce the impact of climate change. ● Conduct inventory and disclose Scope 1 and 2 greenhouse gas emission data periodically. Assess relevant transition risks and measures. ● Continue to carry out energy saving and carbon reduction-related measures to improve business performance and reduce energy consumption, including process improvement, power saving, etc.	Material Topics Management Approach 3.1 Climate Change and Energy Management

Aspect	Category	Item	Operational and Financial Impacts on TCC	Response Strategy
Climate-Related Risk : Transition Risk	Policies and Regulations	Renewable Energy, Fuel/ Energy Tax and Regulations	● Loss of investment due to changes in policies or regulations ● Change of regulations leads to increased operation costs of existing power plants	● Promptly gather information on government policies and legislation implementation schedules, and carry out assessment on impact and scheme measures in advance ● Provide suggestions to official authorities in a timely manner, and carry out external engagement
		Cap and Trade	● The cap on total greenhouse gas emissions increases operation costs ● Governmental regulations on carbon pricing leads to increased operational costs	● Reduce internal energy consumption and carbon emissions ● Greenhouse gas inventory management and power plant energy audit system ● Conduct maintenance regularly, replace old equipment to reduce energy consumption and carbon emissions ● Increase the ratio of alternative fuel used in cogeneration plants to reduce fossil fuel consumption
Climate-Related Risk: Physical Risk	Short-Term	Extreme Weather Events	● The occurrence of extreme weather events such as typhoon, rainfall or flooding, heatwave and drought have increased, resulting in project delays or operation losses	● Purchase relevant insurance to avoid huge losses from natural disaster ● Review the project schedules weekly, and provide immediate responses to emergencies. ● Establish an emergency response system for disasters and conduct drills periodically ● Develop management plans and response measures for risks related to extreme weather events
	Long-Term	Changes of Climate Patterns	● Long-term changes in rainfall patterns may lead to an increase in drought periods, which would affect operations and reduce revenue	
Climate-Related Opportunity	Market	Domestic and International Trends	● The rise of international environmental initiatives such as RE100, SBTi and green supply chain promote trades in the green energy market ● The regulations for energy-heavy industries have increased the demands for renewable energy purchase and installation	● Actively expand renewable energy retailing business ● Seek collaboration with renewable energy power plants outside of the Group
	Resource Efficiency	Energy and Resource Integration	● Expand regional energy integration, improve energy efficiency, and reduce environmental impact	● Consolidate electricity and steam demand in the region to improve energy and resource efficiency
	Products and Services	Development of Renewable Energy	● In response to the renewable energy promotion policies, domestic demand for applications related to renewable energy has increased	● Expand the development of renewable energy and energy storage business ● Undertake domestic, large-scale renewable energy projects ● Establish various renewable energy O&M teams

In addition, TCC adopted two major strategies, "mitigation" and "adaptation", reducing the impact of climate change has on the Company's operations.
"Mitigation" refers to improving the efficiency of existing fossil fuel power plants, reducing usage of fossil fuels, implementing energy resource reduction plans, and developing renewable energy to achieve energy saving and carbon reduction. "Adaptation" involves establishing a mechanism for managing extreme weather-related risks, as well as setting up a disaster emergency response system. Through the emergency commanding system, appropriate measures are taken to address possible natural disasters (such as floods, droughts, typhoons, earthquakes, etc.) due to climate change.



3.1.2 Energy Saving and Carbon Reduction Measures and Results

Greenhouse Gas Emissions

Due to excessive emission of greenhouse gases, global warming and climate change are now environmental topics faced by the international community. It is necessary to take economical and proactive measures to effectively reduce greenhouse gas emissions and minimize their impact on the environment.

As a member of global citizens, the Guan Tian Plant has received guidance and begun voluntary inventory since 2005 to conduct greenhouse gas inventory and registration annually. Since 2014, third-party verification has been conducted to ensure data accuracy and to keep track of the emission status, as we continue to promote effective control based on the results of the inventory. In the future, the Company will continue to carry out related work such as unit efficiency improvement, environmental protection equipment upgrades and waste recycling, fulfilling our energy-saving and carbon-reduction plans.

TCC's operating locations include the headquarters office in Taipei and Guan Tian Cogeneration Plant in Tainan. The headquarters office conducts its own assessment of Scope 2 indirect greenhouse gas emissions, as shown in the table below.

Carbon Dioxide Equivalent (metric tons of CO_2e)				
Region	Scope	2020	2021	2022
Taipei Office	Scope 2	390	428	369

Note: 1. 0.502 kgCO_2e/kWh for 2020, and 0.509 kgCO_2e/kWh for 2021. The national electricity emission factor in 2022 has not been announced; therefore, the emission factor in 2021 was used for estimating the emissions in 2022.
2.The types of gases for Scope 2 mentioned above include: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride.
3.The basic data for 2021 has been corrected to 428. The reason is that instead of using the national electricity emission factor from 2020, the emission factor from 2021 was used.

Direct Greenhouse Gas Emissions

The direct greenhouse gas emissions (Scope 1)of Guan Tian Plant mainly originate from the boiler during the power generation process, while the rest comes from septic tanks, refrigerant leakage, maintenance operation and transportation vehicles such as company cars and stackers.

Carbon Dioxide Equivalent (metric tons of CO_2e)				
Region	Scope	2020	2021	2022
Guan Tian Plant	Scope 1	369,209.4	378,796	339,722.18
	Scope 2	3,574.4	3,151.8	6,098.4
	Total	372,783.8	381,947.8	345,820.58
	Emission Intensity (Steam) (metric ton/metric ton)	0.335	0.340	0.376
	Emission Intensity (Electricity) (metric ton/kWh)	0.000974	0.000989	0.001091

Note: 1.The calculation of greenhouse gas emissions for Guan Tian Plant is mainly based on the global warming potential value announced in the Second Assessment Report in 1995, adopting the "emission factor approach". While others have adopted the mass balance approach for calculation. The emission factor approach is mainly based on the Greenhouse Gas Emission Factor Table and the electricity emission factor announced by the Bureau of Energy, Ministry of Economic Affairs.
2.The data in 2022 comes from the preliminary internal inventory.
3.The types of gases for Scope 1 and Scope 2 mentioned above include: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride.

The greenhouse gas emission and emission intensity of the three gas-fired power plants (IPPs) invested by the Company are shown in the table below. The average emission intensity of the three gas-fired power plants in 2022 was 0.377 kgCO_2e/kWh, which is 0.132 kgCO_2e/kWh lower than the national electricity emission factor (2021). If the calculation is based on the amount of electricity sold by the three gas-fired power plants in 2022 (compared to the national average carbon emission factor), the annual carbon emission reduction is approximately 1.43 million metric tons of CO_2e, which is equivalent to the carbon absorbed by 3,680 Da'an Parks. (Note: assuming one Da'an Park can absorb approximately 389 metric tons of carbon per year)

Carbon Dioxide Equivalent (metric tons of CO_2e)				
Region	Scope	2020	2021	2022
3 IPPs	Scope 1	3,469,842.95	3,740,451.23	4,181,143
	Scope 2	15,142.12	9,482.27	7 ,790.06
	Scope 3	3,484,985.07	3,749,933.50	4,188,933.07
	Emission Intensity (metric ton/kWh)	0.000377	0.000378	0.000377

Note: 1.The data in 2022 comes from the preliminary internal inventory.
2.The types of gases for Scope 1 and Scope 2 mentioned above include: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride.
3. After the external audit performed by a third-party verification body, the Scope 1, total, and emission intensity for 2021 were revised.

Verification Criteria and Data Quality

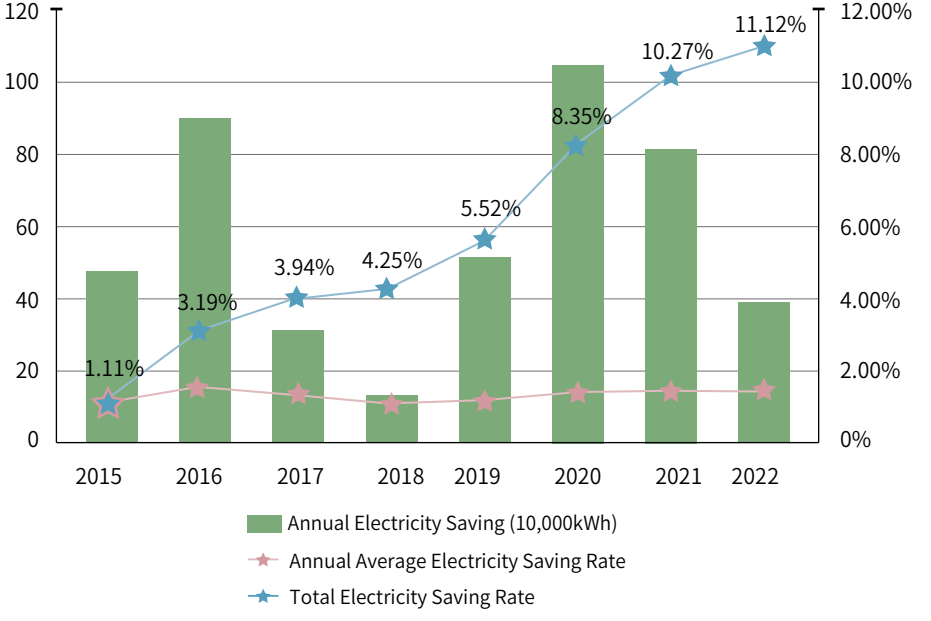
From 2005 to 2014, Guan Tian Plant conducted greenhouse gas inventory voluntarily. Since Guan Tian Plant was under (the first group) the Management Regulations of Greenhouse Gas Emission Reporting stipulated by the Environmental Protection Administration, Executive Yuan, its reporting has been done in accordance with governmental regulations since 2014.

To ensure the quality and reliability of the Guan Tian Plant's greenhouse gas inventory information and reports, as well as those of the 3 invested gas-fired power plants, the results of these facilities are audited by an external third-party verification body in accordance with ISO 14064-1 and 14064-3.

Energy Consumption within the Organization

TCC's headquarters office, Guan Tian Plant and the invested IPPs continue to conduct investigation and analysis, implementing measures to reduce energy consumption. Hoping to make a contribution to the environment, Guan Tian Plant has formulated various measures and is committed to energy saving and carbon reduction. The estimated electricity saving rate in 2022 was 0.83%. From 2015 to 2022, the total electricity saving rate was approximately 11.12%, and the average annual electricity saving rate was approximately 1.36%, which met the requirement of the government's energy saving policy, which the average annual electricity saving rate must be greater than 1%.

In response to the draft amendment announced by the Bureau of Energy, Ministry of Economic Affairs on October 30, 2019 (Ching-Shou-Neng-Tzu No. 10805015880), which extended the period of the energy saving target from "2015-2019" to "2015-2024", Guan Tian Plant will continue to make improvement in energy conservation in order to meet regulatory requirements.



In terms of purchased electricity, the energy consumption of TCC's headquarters office in 2022 decreased by over 10% when compared to 2021. In addition, the energy intensity of TCC's Guan Tian Plant and the three invested power plants are detailed in the tables below.

Headquarters Office Energy Consumption (All non-renewable energy sources)

	2020	2021	2022
Purchased Electricity (GWh)	0.8	0.8	0.7

Note: The purchased electricity was calculated based on the electricity bill of Taipower and the share of public electricity of the building.

In 2022, due to the high prices of international coal and an increase in number of companies using scrap tires as an auxiliary fuel, both the amount of coal and acquire scrap tires used at Guan Tian Plant decreased when compared to 2021, leading to a reduction in greenhouse gas emissions. Regarding the cost of operation (fuel), the amount of steam sold and total energy consumed reduced significantly, resulting in an increase of total energy consumed within the organization when compared to 2021.

Unit: GJ			2020	2021	2022
Guan Tian Plant	Energy Consumption (Non-Renewable Energy)	Purchased Electricity	25,298	22,585	43,736
		Coal	2,679,747	3,172,743	2,795,665
		Low Sulfur Fuel Oil	5,997	5,121	11,094
		Scrap Tire	1,210,631	998,584	909,325
		SRF	-	-	9,317
		Gasoline	54	82	101
		Diesel	61	15	99
		Liquefied Petroleum Gas (LPG)	4	6	6
	Energy Sold	Electricity	828,403	816,653	808,492
		Steam	946,604	1,004,213	478,130
	Total Energy Consumption within the Organization		2,146,785	2,378,270	2,482,721
	Steam Energy Intensity (GJ/metric ton)		3.53	3.74	4.10
	Electricity Energy Intensity (MJ/kWh)		10.24	10.87	11.89

Note: 1.The calculation for the purchased electricity:
(in-plant electricity consumption + electricity sold) –amount of energy generated by Guan Tian Plant. Therefore, in addition to in-plant electricity consumption, electricity sold will also affect the energy consumption of purchased electricity.
2.The heating value conversion coefficients of various fuels: coal represents actual data, the conversion coefficient of scrap tire is based on value from the US EPA's 2013 Climate Leaders GHG Inventory Protocol (7,685Kcal/kg), and the rest is based on the coefficients announced by the Bureau of Energy (version 6.0.3), while SRF is based on data provided by suppliers.

Unit: GJ			2020	2021	2022
3 IPPs	Energy Consumption (Non-Renewable Energy)	Purchased Electricity	107,093	64,886	58,133
		Natural Gas	55,973,489	60,435,309	67,698,476
		Gasoline	770	684	670
		Diesel	194	137	176
		Liquefied Petroleum Gas (LPG)	174	166	155
	Energy Consumption (Non-Renewable Energy)	Purchased Green Electricity	0	0	0
	Energy Sold	Electricity	32,722,487	34,894,502	39,071,040
	Total Energy Consumption within the Organization		22,359,234	25,606,681	28,686,570
	Gross Power Generation Energy Intensity (MJ/kWh)		6.06	6.09	6.10

Note: The heating value conversion coefficients of various fuels are based on the coefficients announced by the Bureau of Energy (version 6.0.3)

Energy Saving and Carbon Reduction Measures and Results

With the mission of achieving environmental sustainability, TCC continues to enhance business performance by carrying out measures related to energy saving and carbon reduction, including process improvement and power conservation.

Guan Tian Cogeneration Plant is based on a cogeneration system, which is an energy integration system that produces electricity, steam, and heat simultaneously. Generally, the energy efficiency of the system could be greater than 50%, which is much higher than that of the conventional power generation. The major benefits are as follows:

1. It is a distributed power supply. In addition to provide a balanced power supply for the region, it effectively reduces the loss of power transmission and distribution while provides dual power supply protection for regional users, which is of great help to the stability of the power supply system.
2. It effectively consolidates the electrical and thermal energy demand in the region, reduces the usage of small boilers, improves energy efficiency, and minimizes air pollution caused by small boilers with inadequate air pollution control equipment, serving as an important tool in promoting regional energy integration.
3. Reducing the risk of power shortage: it can reduce peak loads for Taipower's system during peak hours. In addition, the surplus electricity can be sold to Taipower, improves Taipower systems' peak-hour power supply capacity, thereby reduces the power generation cost of Taipower for operating high-cost units.
4. It has high energy efficiency, which can effectively save energy and reduce the emission of polluting gases, especially the emission of CO_2.

Guan Tian Plant has been operating for more than 20 years. Over the years, it continues to upgrade its equipment for higher operating efficiency. It is expected that the degree of improvement in the future will be relatively small; however, Guan Tian Plant will adhere to the attitude and spirit of continuous improvement, offering strategies and plans as follows:

Strategy	Specific Plans	Description
Increase the Volume of Steam Sold and Expand Regional Energy Consolidation	● Continue to visit potential customers in the industrial park and search for new customers proactively	● Increase the volume of steam sold, which can greatly improve the overall thermal efficiency
Conduct Monitoring and Adjustment to Maintain Unit Efficiency	● Carry out efficiency review through monthly plant management meeting and technical meeting ● Through analysis and discussion, adjust combustion conditions to improve unit efficiency	● Analyze the unburned coal, and monitor/adjust combustion air volume constantly to maintain unit efficiency ● Analyze and review the rationality of various data
Conserve In-plant Electricity	● Check whether the electricity consumption of various systems in the plant is normal through energy audit system ● Implement annual overhaul to reduce energy consumption ● Perform evaluation to appropriately replace outdated equipment, and purchase high-efficiency equipment	● Replacement of boiler feed water pump (BFP) Unit-A ● 69 kV switch yard power equipment upgrade (update 1 set of gas circuit breaker (GCB) 750) ● 69 kV switch yard power equipment upgrade (grid busbar potential transformer (PT)) ● Replacement of HP Blower Unit-A with a new one due to its decreased efficiency ● Overhaul maintenance for the main air compressor ● Overhaul maintenance for the auxiliary air compressor ● Inspection and maintenance of the steam turbines

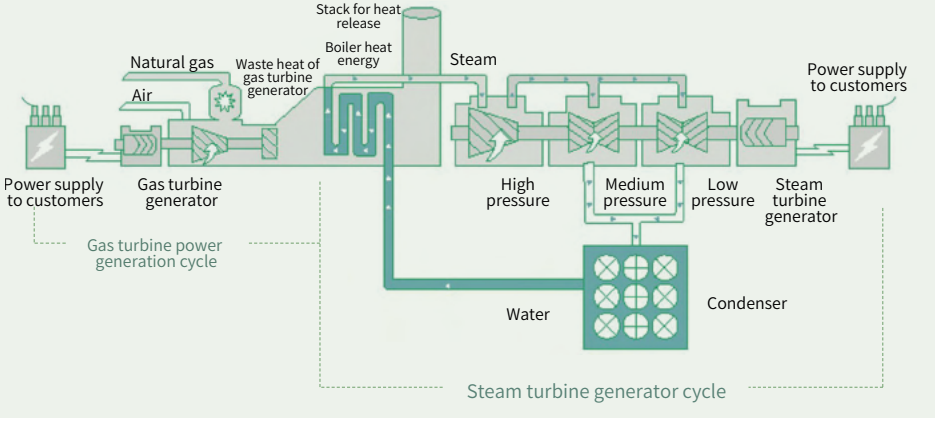
In terms of actual plans as well as benefits of energy-saving and carbon reduction, Guan Tian Plant has implemented related projects in 2022, saving 162,000 kWh of electricity and 980 metric tons of coal, with a carbon reduction of 2,098.6 metric tons of CO_2e. The list of the energy-saving measures is as follows:

Plant	Energy Saving/Carbon Reduction Plan	Energy Type	Energy Saved(kWh)	Carbon Reduction(metric tons of CO_2e)	Period
Guan Tian Plant	Replacement of boiler feed water pump (BFP) Unit-A	Electricity	64,834	33.00	Jan. ~ Feb.
	69 kV switch yard power equipment upgrade (grid busbar potential transformer (PT))	Electricity	2,092	1.06	Jan. ~ Apr.
	69 kV switch yard power equipment upgrade (update 1 set of gas circuit breaker (GCB) 750)	Electricity	3,922	2.00	Jan.~ Oct.
	Replacement of HP Blower Unit-A with a new one due to its decreased efficiency	Electricity	9,928	5.05	Mar. ~ Dec.
	Overhaul maintenance for the main air compressor	Electricity	48,850	24.86	Mar. ~ Dec.
	Overhaul maintenance for the auxiliary air compressor	Electricity	32,567	16.58	Mar. ~ Dec.
	Inspection and maintenance of steam turbines	Coal	980 (metric tons)	2,016.07	Mar. ~ Dec.
Total		Electricity	162,191	2,098.63	
		Coal	980 (metric tons)		

Note: 1. The electric energy saving estimation is based on the 2022 Energy-Conservation Measures and Energy-Saving Amount reported to the Bureau of Energy.
2. The carbon reduction from electricity (Scope 2) saving is calculated by using the national electricity emission factor of 0.509 kgCO_2e/kWh in 2021. The types of gases include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride.

In terms of the IPPs invested by TCC, Star Energy Power, Sun Ba Power, and Star Buck Power are all gas-fired combined cycle plants. A combined cycle plant uses gas turbines to generate power and recovers waste heat from the turbine exhaust to generate steam, driving a steam turbine generator to provide supplementary electricity. Combining the two thermodynamic cycles can improve the overall power generation efficiency.

The power generation efficiency of gas-fired combined cycle plant is over 50%, which is much higher than that of conventional coal-fired power plant (typically less than 40%). Therefore, less fuel energy consumption for each kilowatt-hour of electricity generated, resulting in less greenhouse gas emissions and environmental impact. Under the circumstance that most types of renewable energy power generation are relatively unstable, gas-fired combined recycle plant will offer a power supply option that takes into account both greenhouse gas emission reduction and power supply stability.



Star Energy Power, Sun Ba Power, and Star Buck Power continue to carry out process improvement and electricity conservation measures. Several energy-saving projects were conducted in 2022, which saved an additional 3.03 GWh of electricity that is equivalent to a reduction of 1,536.7 metric tons of CO_2e. Major energy-saving projects conducted in 2022 are as follows:

Plant	Energy-Saving/Carbon-Reduction Plan	Energy Type	Energy Saved (kWh)	Carbon Reduction (metric tons of CO_2e)	Period
Chang Bin Gas-Fired Power Plant of Star Energy Power	Replacing mercury lamps in the power plant with LED lamps (rated at 120W per lamp compared to the original 500W per lamp)	Electricity	429,415	218.57	Jan. ~ Dec.
	The auxiliary boiler is activated to build pressure and then stopped before the unit shuts down; it restarts when shut down order commanded to save 1 hour of natural gas usage	Electricity	224,079	114.06	Jan. ~ Dec.
	The power consumption of the gas-cooled condenser cooling fan has been reduced after maintenance and updates	Electricity	285,285	145.21	Jan. ~ Dec.
Star Buck Gas-Fired Power Plant of Star Buck Power	Installing new first-stage blade for the No. 1 gas turbine generator (GT-1)	Electricity	231,014	117.59	Jan. ~ Dec.
	Conducting Hot Gas Path Inspection (HGPI) for No. 2 gas turbine generator (GT-2)	Electricity	400,988	204.10	Jan. ~ Dec.
	Replacing a total of 103 projection lamps (150W lamps) in the boiler common pipe rack area, walkway platform, and water pump with high efficiency 50W LED projection lamps	Electricity	33,083	16.84	Jan. ~ Dec.
Fong Der Gas-Fired Power Plant of Sun Ba Power	Replacing office lighting fixtures	Electricity	6,074	3.06	May ~ Dec.
	Replacing the air conditioning systems in the BLK-2 sampling room and GIS RELAY/MCC ROOM	Electricity	19,062	9.61	Sept. ~ Dec.
	Replacing old lighting fixtures in NGC factory buildings	Electricity	29,200	14.72	Mar. ~ Dec.
	Improving lighting in the ST 2F power substation and GIS switchgear room	Electricity	18,834	9.49	Jan. ~ Jun.
	Improving vacuum efficiency by cleaning the fins of the ACC in BLK-2	Electricity	1,206,000	607.82	Jan. ~ Jun.
	Improving vacuum efficiency by cleaning the fins of the ACC in BLK-1	Electricity	150,000	75.60	Dec.
Total		Electricity	3,033,034	1,536.67	

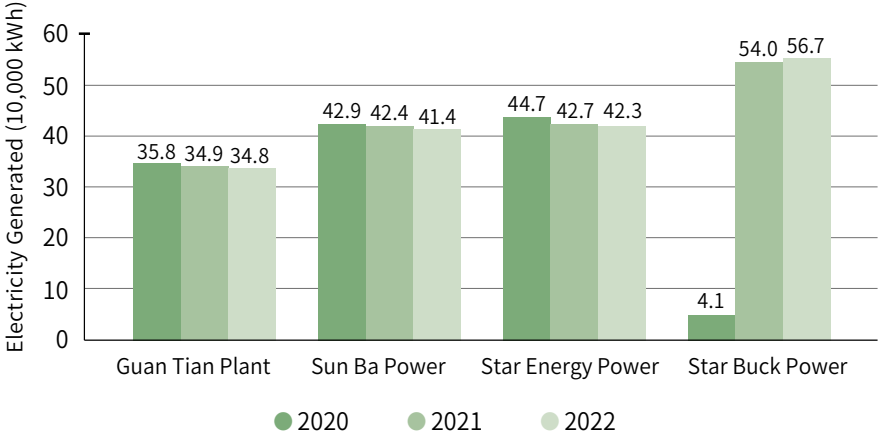
Note: 1. The electric energy saving is estimated based on the 2022 Energy-Conservation Measures and Energy-Saving Amount reported to the Bureau of Energy.
2. The energy saving calculated above is an estimation.
3. The carbon reduction from electricity (Scope 2) saving is calculated by using the national electricity emission factor of 0.509 kg CO_2e/kWh in 2021. The types of gases include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride.

Solar Photovoltaic Facilities of Power Plants

TCC Group's current strategy is focusing on the development and construction of renewable energy projects to directly promote the use of renewable energy. In 2020, TCC started to sell green electricity. In the future, it will gradually develop its renewable energy retailing business to maximize the utilization efficiency of renewable energy.

Currently, Guan Tian Plant has a rooftop PV system with an installed capacity of 304 kW. In 2022, it generated 348,000 kWh of electricity, which was sold to Taipower. The business is operated and maintained by Star Energy. In addition, Fong Der Gas-Fired Power Plant of Sun Ba Power has a rooftop PV system with an installed capacity of 335 kW. In 2022, it generated a total of 413,500 kWh of electricity. Chang Bin Gas-Fired Power Plant of Star Energy Power has a ground-mounted PV system with an installed capacity of 3.97 kW, and a rooftop PV system with an installed capacity of 304.7 kW, providing a total annual power generation capacity of 423,000 kWh. Star Buck Gas-Fired Power Plant of Star Buck Power has a rooftop PV system with an installed capacity of 435.84 kW, provides a total annual power generation capacity of 567,000 kWh. All the electricity power generated has been sold to Taipower with FIT.

Electricity Generated by Solar PV Systems of Power Plants Owned/Invested by TCC (10,000 kWh)



3.2 Circular Economy and Environmental Protection

At the beginning of its establishment, TCC mainly provided cogeneration technology services and assistance in the consolidation of regional energy resources to effectively improve energy efficiency and reduce environmental impact. In 2000, the self-built Guan Tian Cogeneration Plant provided high-efficiency and low-polluting steam and electricity to users in the Guantian Industrial Park.

To fulfill TCC Group's corporate social responsibility and commitment to environmental sustainability, while reducing wastes and improving the efficiency of resource usage in power plants, Guan Tian Plant obtained ISO 14001 Environmental Management System certification in 2017. Star Energy also obtained ISO 14001 certification in 2018, expanded the application of environmental management system to construction engineering. Through this system, identification of environmental aspect is conducted throughout the product life cycle, such as production, construction and waste disposal. TCC Group is then able to identify potential environmental problems, make amendments, and reduce environmental impact, fulfilling its goals for environmental conservation and sustainable operation.

Environmental Policy

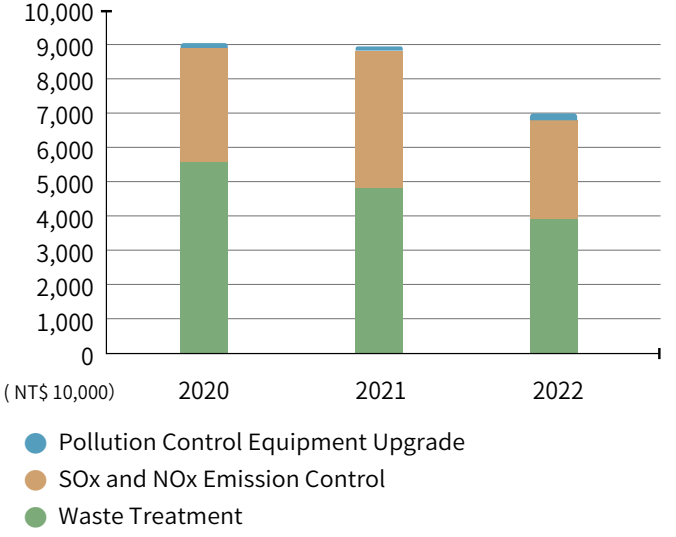
Compliance with Laws and Regulations
Abide by environmental protection laws and regulations, attach importance to international conventions.

Pollution Prevention
Reduce the impact that pollutants have on the environment.

Full Participation of Employees
Implement environmental awareness in the work.

Continuous Improvement
Ensure sustainable operation.

To fulfill the Company's commitment to environmental protection, Guan Tian Plant invests annually in pollution control equipment and waste reduction/treatment. In the past three years, the total investment in environmental protection was approximately NT$250 million, with an average annual investment of NT$80 million, accounting for approximately 10% of Guan Tian Plant's production cost.



3.2.1 Circular Economy of Waste Resources

Ideas, Goals and Measures of Resource Recycling

To achieve our commitment to environmental sustainability, Guan Tian Plant uses circulating fluidized bed (CFB) boiler that accepts a wide range of auxiliary fuels. The main fuel of Guan Tian Plant is coal; while in consideration of economic efficiency and corporate social responsibility, treated scrap tires are used as alternative fuels to effectively improve the utilization of resources, which can further reduce environmental pollution caused by the disposal of tires and prevent the spread of dengue fever. The unit heating value of scrap tires is higher than that of coal, and the co-firing volume can reach 30% of the total fuel heat when considering the safe loading of the boiler. After Guan Tian Plant's application was approved by the Environmental Protection Bureau of Tainan City Government in 2018, the annual permitted volume of scrap tires for burning has increased 30%, from 41,310 metric tons/year to 53,703 metric tons/year. This allows higher usage of scrap tires in response to the policy of the Environmental Protection Administration, as we make every effort to contribute to the society and the environment.

Due to the impact of the COVID-19 pandemic and an increase in number of companies using scrap tires as auxiliary fuel, Guan Tian Plant has lowered its purchase of scrap tires. In addition, co-firing ratio of scrap tires in 2019 and 2020 was higher than the value designed by manufacturers (30%), resulting in severe ash deposition. Therefore, co-firing ratio was slightly reduced to maintain the stable operation of the boiler. The volume of scrap tires burned in 2022 was 28,260 metric tons, and the co-firing ratio was 26.9%.

To cope with high global prices of coal and the government's coal reduction policy, Guan Tian Plant has increased the use of SRF (solid recovered fuel) as an alternative fuel in 2022. Currently, the main types of SRF in the market are made from waste plastics, waste textiles, and waste wood. The Guan Tian Plant has completed a trial burn project in November 2022 and obtained the combustion permit in 2023, the burning of SRF then began afterward. It is estimated that approximately 15,000 tons of SRF will be used in 2023, with a co-firing ratio of approximately 9%.

The list of major raw materials used by Guan Tian Plant is as follows (all are non-renewable raw materials):

Unit: metric tons, except fuel oil (kL)

Plant	Name of Raw Material	2020	2021	2022
Guan Tian Plant	Coal	114,779	135,895	119,744
	Scrap Tire	37,624	31,034	28,260
	SRF	-	-	459
	Fuel Oil	149	127.4	276
	Silica Sand	427	177.72	176.44
	Limestone	25,731	23,734.22	16,142.7

Recycling of Energy and Resources- 100% Recycling of Scrap Tire Ashes

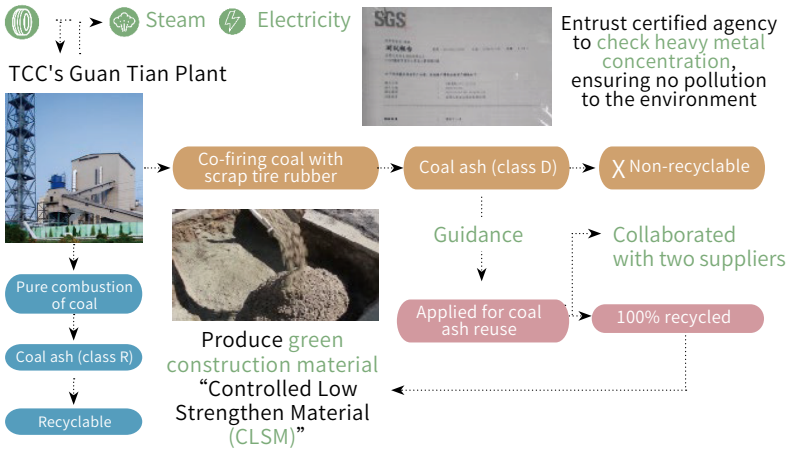
In general, coal ash (including fly ash and bottom ash) that purely comes from the combustion of coal is a general industrial waste that is recognized to be reusable and has low treatment costs. It is favored by ready-mix concrete manufacturers, who regard it as a valuable resource. However, the ash produced from the co-firing of scrap tire rubber and coal would exhibit black color due to the carbon black in the rubber and can only be reused as mixing material for low-quality concrete, limiting its utilization efficiency. Furthermore, the cost for its treatment prior to reuse is unavoidable.

In July 2010, the Industrial Development Bureau determined that due to the co-firing with scrap tire rubber, the coal ash produced by the boiler of Guan Tian Plant must be classified as general industrial wastes with high treatment cost. Moreover, the handling of the waste should be conducted by a qualified Class B waste treatment facility. Due to the high cost in its treatment, the economic benefit of burning scrap tire rubber was reduced.

Apart from compliance with regulations, TCC strives to be an environmentally friendly company, as it aims to achieve the goal of 100% reuse and recycle. To overcome the challenge, Guan Tian Plant collaborates with its suppliers to submit an application for the reuse of coal ash. All coal ash produced during the combustion process is transported to the concrete plant. Coal ash is then mixed with raw materials from cement in a certain ratio to create Controlled Low Strength Materials (CLSM). Since CLSM is a self-leveling and self-compacting material, it does not require compressing. It is an alternative replacement for soil backfill and is suitable for small or inaccessible places, such as the backfill for large pipeline openings, narrow trenches, and holes under pavement or buildings.

Guan Tian Plant entrusts an agency approved by the Environmental Protection Administration to test the concentration of leaching heavy metals in coal ash every year in accordance with regulations, ensuring that it will not cause environmental pollution. In addition, with no waste being derived from the recycling process, we fulfill our commitment to protect the environment.

Implementation Procedure



Circular Economy and Environmentally Sustainable Production Model - Bottom Ash Recycling System

Guan Tian Plant has been operating for more than 20 years. The unit equipment and operation technology have been constantly tested and upgraded. On the premise of ensuring stable operation, TCC has implemented circular economy with an efficient and eco-friendly production process.

Guan Tian Plant uses CFB boiler with silica sand as its medium for fluidization in the boiler, as its main function is to effectively control the boiler bed temperature and reduce the high erosion rate of the hearth caused by bed materials' high impurity. In recent years, due to the increase in the price of silica sand and the cost of treatment for bottom ash, the boiler manufacturer has suggested for the recovery of the existing bottom ash. After particle size screening, the recycled bottom ash not only reduces the amount of unusable ash as well as the need to purchase new silica sand, the recycled bottom ash has smoother surface and can reduce the boiler erosion cause by the relatively uneven surface of new silica sand. Guan Tian Plant had planned to build a bottom ash recovery system in 2017, which was officially put into operation in 2018. In 2020, during a major overhaul, the bottom ash transportation system was replaced, and it has been functioning well since then.

Taking the amount of silica sand used as an example, the annual usage was 590.56 metric tons before the installation of the bottom ash recovery system in 2017. By 2022, it has been reduced to 176 metric tons, achieving the goal of reducing the amount of silica sand used.

The quantity of bottom ash from Guan Tian Plant is mainly related to the composition and sulfur content of coal. When there are more impurities in coal, it is necessary to increase the discharge of silica sand to maintain the quality of bed materials as well as the temperature of the hearth. Consequently, more bottom ash will be produced. The treatment volume of bottom ash in 2022 was 3,735 metric tons. All the bottom ash collected was 100% recycled to make Controlled Low Strength Materials (CLSM).

Amount of coal ash produced by Guan Tian Plan in the past three years:

Unit: metric tons

Coal Ash Output		Remark
2022	21,551	All the ash collected was 100% recycled and made into Controlled Low Strength Materials (CLSM).
2021	26,501	
2020	26,333	

Major raw materials of the three invested IPPs are as follows:

Unit: 1,000 m^3

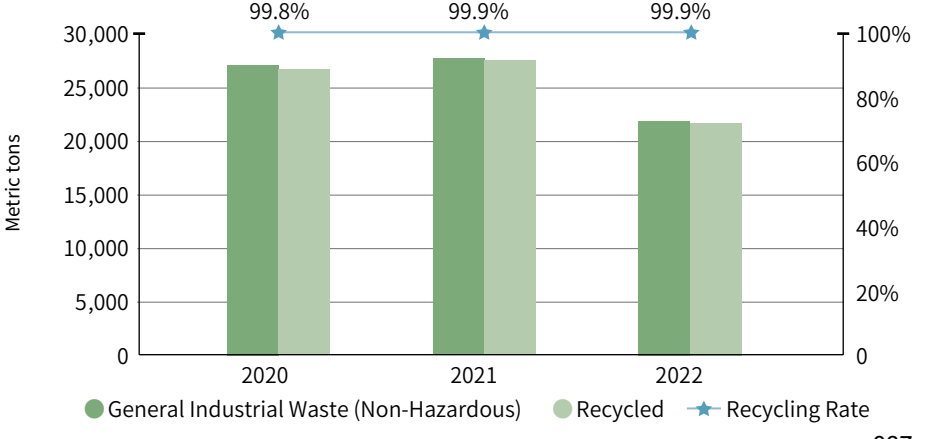
Plant	Raw material	2020	2021	2022
3 IPPs	Natural gas	1,671,050	1,804,255	2,021,091

Methods of Waste Disposal

Wastes produced by Guan Tian Plant are non-hazardous wastes, including inorganic sludge, domestic waste, coal ash, wasted thermal insulation materials and wasted refractory materials. Guan Tian Plant recycles any recyclable waste such as coal ash, with a recycling rate exceeding 99.8%, while the unrecyclable waste is handled by qualified operators in accordance with relevant regulations of the Waste Disposal Act.

The list of waste treatment methods adopted by Guan Tian Plant in 2022 is as follows (all are non-hazardous waste):

Waste		Weight (metric tons)		
Treatment Method	Item	2020	2021	2022
Recycling for reuse	Class R, Class D fly ash and bottom ash	26,332.5	26,501.02	21,550.54
Incineration (Massive Combustion)	Domestic Waste	11.75	3.5	1.5
Other (Landfill + Thermal Treatment)	Sludge	18.62	19.46	17.67
Other (Thermal Treatment)	Wasted thermal insulation and refractory materials	31.84	6.9	7.16
Total Weight		26,394.71	26,530.88	21,576.87



3.2.2 Water Resource Management

Taiwan's water resources are scarce, but water is also an essential resource for steam turbines during the power generation process. Thus, TCC attaches great importance to the use of water resources and enhances the efficiency of water usage through effective management, reducing consumption and unnecessary wasting of water resources.

Raw Water Source

The main source of water for Guan Tian Plant is tap water from the Taiwan Water Corporation. Tap water accounts for approximately 60~70%, while the water from the Wushantou Reservoir accounts for approximately 22~30%. The remaining portion of the water comes from the recycled water within the plant, as well as the condensed water after selling steam to customers. The total intake water of Guan Tian Plant in 2022 was 761,373 m^3.

Unit: m^3

Plant	Water Source	2020	2021	2022	Calculation Method
Guan Tian Plant	Raw Water (Reservoir)	271,066	305,977	290,094	Meter data recorded daily by the Operation Department
	Tap Water	566,770	546,934	471,279	Meter data recorded daily by the Operation Department
	Wastewater from Other Organizations (Reservoir)	95,010	97,616	41,206	Meter data recorded daily by the Operation Department
	Process Wastewater Recycled	8,043	11,725	7,458	Meter data recorded daily by the Operation Department
	Other Recycled Water	2,672	1,128	1,411	Water meter (Wastewater recycled)
	Water Discharge	74,795	66,921	64,132	Wastewater discharge + Water purchased by customers

Unit: m^3

Plant	Water Source	2020	2021	2022	Calculation Method
Guan Tian Plant	Water Consumption	763,041	785,990	697,241	
	Total	943,561	963,380	811,448	
	Recycled Rater	10,715	12,853	8,869	
	Percentage of Recycled Water to Water Used	1.14%	1.33%	1.09%	This percentage does not include internal recycling of boiler water and cooling water

Note:
1. There is no independent water meter in the headquarters office of TCC, and the water bill is only apportioned by the area. Hence, there is no exact water consumption data for reference.
2. The water sources of the Company's main operating bases are tap water and/or raw water (reservoir). In the case of Guan Tian Plant, its raw water is taken from Wushantou Reservoir, which is not a biodiversity or national protected area, and the amount of water used is much less than 5% of the actual water supply of the reservoir (0.16~0.2%). Hence, there is no significant impact on local water sources.
3. Guan Tian Plant is not located in a high/extremely high water stress area.

Water resource data of the three IPPs invested by the Company, Star Energy Power Corporation, Sun Ba Power Corporation and Star Buck Power Corporation, is shown in the following table.

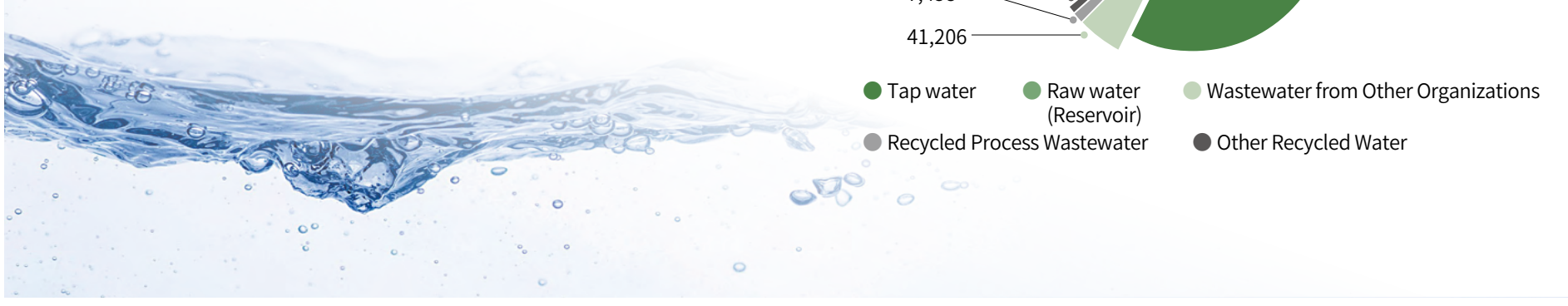
Unit: m^3

Plant	Water Source	2020	2021	2022	Calculation Method
3 IPPs	Tap Water	158,190	146,830	168,464	According to water bill or water meter data
	Total Water Intake	158,190	146,830	168,464	
	Water Discharge	20,040	25,417	27,823	
	Water Consumption	138,150	121,413	140,641	
	Process Water Recycled	14,130	11,592	12,112	The estimated annual recycled volume after on-site measurement
	Other Recycled Water	101,806	93,377	106,392	Flow meter data
	Recycled Water	115,936	104,969	118,504	
	Percentage of Recycled Water to Water Used	42.29%	41.69%	41.30%	

Water Resource Utilization Cycle in Cogeneration Plant

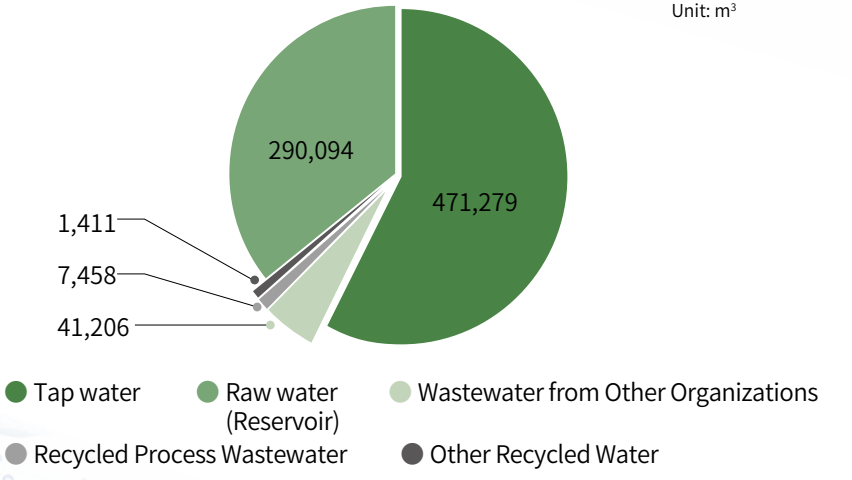
For regular boilers in cogeneration plant, the high-pressure steam created by the boilers will first generate electricity through the power generation process. The remaining steam is then re-heated and divided into high-pressure, medium-pressure, and low-pressure steam according to the in-plant process and users' demands. Subsequently, it is supplied to high-pressure feedwater heaters, low-pressure feedwater heaters, deaerators, heavy oil heaters, and sold to customers in industrial areas for higher energy efficiency. The steam consumption of equipment in the plant is approximately 25% of the steam produced by the boiler. Except for some losses through fugitive emission, the remaining steam can be condensed and recycled.

TCC attaches great importance to the management of water resources, adhering to the principle of no waste policy, while strengthening the recycling of water resources. Under the circumstance of no sales, nearly 99% of the steam in Guan Tian Plant can be fully condensed and recycled without wasting any water resources. When selling steam to customers, depending on the process conditions of the steam customer and the water quality of the condensation, the condensed water after the process is recycled and used in the cooling water tower. Since the quality of condensate is better than that of raw water, it not only improves cooling tower's water quality, it also reduces the usage of raw water by 60,000 metric tons each year. In the past two years, the reduction in raw water has even reached more than 90,000 metric tons. In addition, the continuous discharge of wastewater from boilers is approximately 8,000~10,000 metric tons. The heat energy is recovered by the heat exchanger and then discharged into the cooling water tower, which can also improve the water quality of the cooling water tower and reduce the discharge of wastewater indirectly.



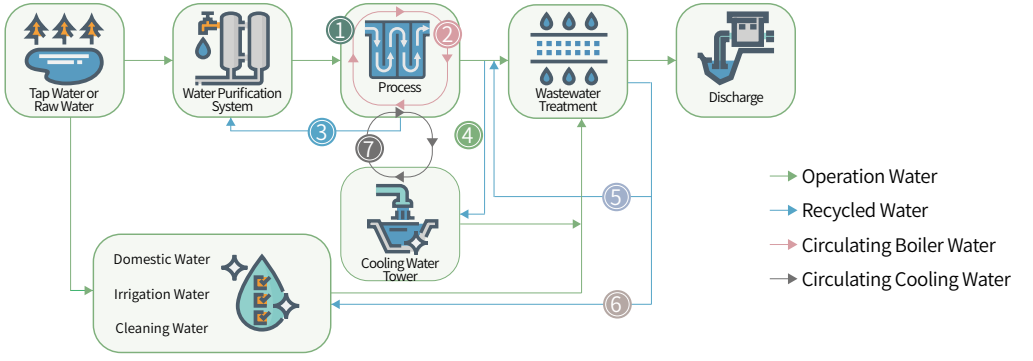
Since Guan Tian Plant is located in the Guantian Industrial Park and its production process is power generation, according to regulations, all wastewater generated must be discharged to the Wastewater Treatment Plant in the Guantian Industrial for centralized treatment. The wastewater generated by Guan Tian Plant can easily meet the Effluent Standards by using simple pretreatment process. Therefore, in 2017, a recycling water pipeline has been added to the discharge water pipeline. In 2022, the amount of recycling water was 1,411 metric tons, reducing intake water. The total amount of water recycled in 2022 was 8,869 metric tons, accounting for approximately 1.09% of the total annual water consumption (810,000 metric tons).

In 2022, approximately 71% of the water in Guan Tian Plant was used as cooling water, 21% was sold as uncondensed steam, and only 7% was treated and discharged to the Wastewater Treatment Plant in the Industrial Park, bringing every single drop of water to its fullest potential.



Water-Saving and Water-Recycling Measures

Guan Tian Plant and the invested Star Energy Power, Sun Ba Power, and Star Buck Power all attach great importance to the use of water resources, as each plant continues to invest in water-saving and water-recycling measures. For cogeneration plants or natural gas combined recycle plants, the main water-saving and water-recycling measures are as follows.



Water-Saving and Water-Recycling Measures

1 Saving Process Water	Reduce process water consumption through unit adjustment, such as modifying the flushing/draining water tank discharge piping system of heat recovery boiler, adding shut-off valves and control systems to reduce cooling water demand, preventing steam from entering the water tank for heating accidentally.
2 Increasing Boiler Water Circulation	Pure water in the boiler is continuously circulated and boiled, which is prone to scaling due to high temperature. It is necessary to replace the circulating water through continuous discharge to maintain the water quality in the boiler. Chemicals can also be added to maintain boiler water quality, increase the number of cycles and remove sludge, increasing boiler efficiency and reducing boiler water discharge.
3 Recycling Sampling Water	A boiler sampling water recycling system is added to recover the sampling water of the boiler water and the pure water used for flushing the instruments in the sampling room. The recycled sampling water is used as boiler water after being filtered by the ion exchange resin in the water purification system.
4 Recycling Continuous Discharge Water	Since the quality of boiler condensation and continuous discharge water is better than that of raw water, they are directed into the cooling water tower for reuse once their heat energy has been recovered by the heat exchanger. This can improve the water quality of the cooling water tower and reduce the discharge of wastewater.
5 Recycling Wastewater for Flushing Cooling	The water source of flush cooling for the auxiliary boiler and the waste heat boiler has changed; the cooling water originally supplied by raw water tank is replaced by the recycled water from the wastewater system, reducing the consumption of raw water for flush cooling.
6 Recycling Wastewater After Treatment	Part of the effluent in the wastewater treatment facility is recycled after its treatment, serving as irrigation for green spaces within the plant, cleaning coal yard/suppressing dust, etc.
7 Increasing Cooling Water Circulation	When the cooling water tower is in operation, the water will reduce due to evaporation and scattering. Moreover, impurities in the water will accumulate, resulting in scaling that affects the operation. Therefore, it is necessary to drain the water frequently to maintain the water quality. Chemicals can be added to adjust the water quality, minimize the scaling, increase the concentration ratio, and reduce the discharge of cooling water.

Water Risk Management and Measures

Currently, the maximum effective water storage capacity in Guan Tian Plant is approximately 5,500 tons (all tanks, pools and cooling towers). Guan Tian Plant's maximum water consumption under normal operation and steam supply is approximately 2,500 tons per day. The water source of Guan Tian Plant is mainly from the Taiwan Water Corporation, partly from the Wushantou Reservoir which is provided by other water supply companies. According to the Water Risk Assessment Tool of the World Resources Institute (WRI), Guan Tian Plant is located in low water risk area. However, considering the changes in global climate and rainfall patterns, Guan Tian Plant designs measures to cope with potential water risks in advance. In the event of water restrictions, the water supply company can only provide 1,200 tons of water per day, and based on the maximum water storage and water consumption of Guan Tian Plant, the units can operate normally for approximately four days. If the water supply companies stop providing raw water, Guan Tian Plant could maintain normal operation for 2 days. When the Taiwan Water Corporation implements water rationing measures for industrial-use water, the responses of Guan Tian Plant are as follows.

Water supply companies stop providing water (maintain continuous operation for a maximum of 2 days)

1st day after water outage	Operation of units are unchanged
2nd day after water outage	The boiler is operated with reduced load, the wholesale of surplus electricity to Taipower is stopped, and the supply of process steam is stopped. According to the terms for natural disaster in the contract, notifies the user for the consideration of shutdown.

Water supply companies can provide more than 1,200 tons of water per day to the Guan Tian Plant

1st day after water outage	Operation of units are unchanged
2nd day after water outage	Depending on the stability of the water supply company, the boiler load will be reduced if necessary to reduce the wholesale of surplus electricity to Taipower.
3rd day after water outage	Depending on the stability of the water supply company, if necessary, the boiler load will be reduced, and the steam supply of the whole process will be reduced.
4th day after water outage	Depending on the stability of the water supply company, the wholesale of surplus electricity to Taipower will be stopped, and the supply of process steam will be stopped.
5th day after water outage	In response to the shortage of water due to droughts, according to the terms of natural disaster in the contract, notifies the users for the consideration of shutdown.

In addition to saving and recycling water during the process of power generation, Guan Tian Plant and the three invested IPPs also implement various water-saving measures for domestic water usage.

The results of water-saving and water-recycling measures implemented by each plant are as follows.

	Water Saving	Recycling
Guan Tian Plant	Add Chemical to control water quality ● Cooling water reduced by 1,100 metric tons/day ● Boiler water discharge reduced by 1%	Change for water pollution prevention ● Boiler wastewater recycling: 25 metric tons/day ● Effluent recycling: 5 metric tons/day ● Wheel-washing pool wastewater recycling: 3 metric tons/day
Star Energy Power	Unit adjustment/recycle sampling water ● Process water saving: 19 metric tons/day	Recycling flushing cooling water from wastewater treatment facility /hot wastewater ● Wastewater recycling: 90-120 metric tons/day
Sun Ba Power	Modify the boiler flushing and draining pipe system ● Process cooling water saving: 110 metric tons/day	Recycling discharged wastewater from treatment facility / hot wastewater ● Wastewater recycling: 100 metric tons/day
Star Buck Power	Unit adjustment/recycle sampling water ● Process water saving: 25~30 metric tons/day	Recycling flushing cooling wastewater from treatment facility/ hot wastewater ● Wastewater recycling: 80-100 metric tons/day

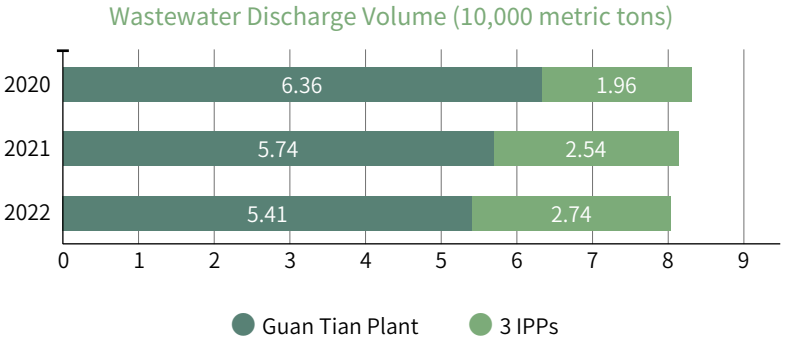
Wastewater Treatment

Since wastewater from Guan Tian Plant is mainly used during power generation, the quality of the wastewater is good. However, to reduce environmental pollution risks, the plant's wastewater is treated properly through on-site treatment facilities before being discharged to the Wastewater Treatment Plant of the Guantian Industrial Park. Therefore, the collected wastewater meets the discharge standards and is considered an excellent discharge source for the wastewater treatment plant.

Star Energy Power, Sun Ba Power, and Star Buck Power all have in-plant wastewater treatment facilities. After the wastewater generated from the plant has been treated to meet the standards, most of them are recycled for irrigation, and the remaining is released or discharged to the Wastewater Treatment Plant in the Industrial Park for management according to the EIA (Environmental Impact Assessment) requirements.

Through a number of water-saving and water-recycling measures, the wastewater discharge of Guan Tian Plant and the three invested gas-fired power plants has reduced year by year. The discharge of wastewater in 2022 and the discharge volume over the years are summarized as follows.

Plant	Guan Tian Plant	3 IPPs
Wastewater Source	Process Wastewater	Process Wastewater/ Domestic Wastewater
Discharge Destination	Wastewater Treatment Plant of the Guantian Industrial Park	Industrial Park Sewer/ Wastewater Treatment Plant/Streams
Treatment Method	Wastewater Pre-Treatment	Chemical Coagulation Sedimentation/ Biological Treatment
Whether it is Used by Other Organizations	Wastewater Treatment Plant of the Guantian Industrial Park for centralized management	Wastewater Treatment Plant of the Guantian Industrial Park for centralized management /No
Water Volume Estimation Method	Water Meter	According to Flow Meter/ Water Meter
Wastewater Discharge Volume (10,000 metric tons)	5.41	2.74
BOD（mg/L）	1.1	3.47
COD（mg/L）	45.6	14.22
SS（mg/L）	23.6	3.82



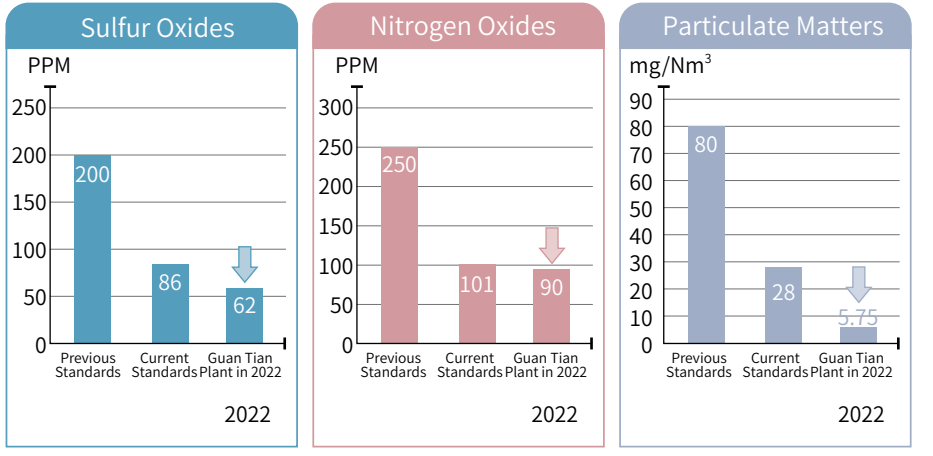
3.2.3 Air Pollution Prevention and Control

TCC's Guan Tian Plant is a coal and scrap tire-rubber co-firing cogeneration plant, with the main air pollutants being nitrogen oxides (NOx), sulfur oxides (SOx), and particulate matter (PM). Since December 1, 2016, the emission standards for the above three pollutants have been more stringent. To comply with the emission standards, Guan Tian Plant is committed to improve its equipment. For example, in order to reduce the PM emission, Guan Tian Plant has invested in electrostatic precipitator improvement projects from early 2016 to 2019, enhancing the precipitator's efficiency and stability, resulting in a significant reduction of the opacity rate to 6.12%.

In 2020 and 2021, in response to the revision of "Management Regulations of Continuous Emission Monitoring System for Stationary Source Air Pollutants", relevant software and hardware updates were carried out, including the update of opacity analyzer and CEMS data acquisition system. In 2022, the data acquisition system that complies with the latest "Management Regulations of Continuous Emission Monitoring System for Stationary Source Air Pollutants" was officially launched.

Changes in emission standards related to regulations and the average emission values of Guan Tian Plant are as follows:

More stringent emission standards for power facilities since Dec. 1, 2016



In 2022, the average emission values of sulfur oxides (SOx), nitrogen oxides (NOx), and particulate matter (PM) were 61.89 ppm, 90.41 ppm, and 5.75 mg/Nm³, respectively.

Unit: kg

Guan Tian Plant	2020	2021	2022	Calculation Method and Coefficient Source
Nitrogen Oxides (NOx)	241,595	265,993	191,940	Based on the formula for air pollution fee and the declared amount
Sulfur Oxides (SOx)	230,305	250,029	193,820	
Particulate Matters (PM)	12,016	9,466	10,648	Since 2018, the air pollution fee for particulate matter has been levied; therefore, it was calculated based on the formula for air pollution fee and the declared amount
Total	483,916	525,488	396,408	

Unit: kg

3 IPPs	2020	2021	2022	Calculation Method and Coefficient Source
Nitrogen Oxides (NOx)	1,333,793	1,289,981	1,156,257	Based on the formula for air pollution fee and the declared amount
Sulfur Oxides (SOx)	7,671	31,245	17,143	
Particulate Matters (PM)	54,648	39,112	42,905	Since 2018, the air pollution fee for particulate matter has been levied; therefore, it was calculated based on the formula for air pollution fee and the declared amount
Total	1,396,112	1,360,338	1,216,305	

04

Talent Cultivation, Friendly Workplace

Chapter Highlights

Guan Tian Plant achieved zero work injuries for more than 900,000 hours since its establishment

Average training hours: 53 hours/person for employees, 33 hours/person for middle and senior managers

4.1 Employee Structure

4.1.1Human Resources Policy

Attach Importance to Employee Rights

- Shaping an integrity management-oriented corporate culture
- Providing a working environment in which employees can fully develop their talents
- Providing employees with the right to have parental leave without pay
- Ensuring gender equality at work
- Prohibiting gender discrimination during recruitment, appointment, performance evaluation and promotion, education and training, benefits, compensation for the same work or value, etc.
- Committing to comply with international human rights conventions, including the "United Nations Universal Declaration of Human Rights", the "United Nations Guiding Principles on Business and Human Rights", the "International Covenant on Civil and Political Rights", and the "International Covenant on Economic, Social and Cultural Rights"

Abide by the Laws and Regulations

- Hiring people with disabilities in compliance with relevant labor laws and regulations
- Establishing a "Codes of Ethical Conduct", which states that employees of the Company shall not engage in any form of discrimination and exclusion based on social status or identity such as gender, race, religious belief, party affiliation, sexual orientation, rank and age
- Formulating the "Personal Data Protection and Management Regulations"
- Protecting the collection, processing and utilization of employees' personal data, avoiding infringement of personality rights, and using personal data appropriately
- Formulating the "Regulations for Sexual Harassment Prevention, Reporting and Punishment"
- Providing employees and job applicants with a work and service environment that is free from sexual harassment, while taking appropriate preventive, corrective, disciplinary, handling measures as well as grievance procedures

Fair Treatment, Equal Opportunity

- The employment policy is based on the principle of fairness and justice
- No differential treatment of employees in terms of appointment, compensation and benefits, performance evaluation, promotion and training opportunities due to factors such as race, nationality, skin color, age, gender, gender orientation, religious belief, political stance, disability, pregnancy or marital status
- Formulating the "Human Resources Management Regulations", the "Employee Compensation Regulations", the "Work Assessment Implementation Guidelines", the "Promotion and Selection Regulations", the "Regulations for Human Resources Arbitration Committee" and the "Regulations for Sexual Harassment Prevention, Reporting and Punishment" to strengthen human resources management

Diverse Channels, Harmonious Communication

- Committing to create and maintain harmonious labor relations
- Establishing smooth communication channels and protecting the human rights, labor rights of employees
- Calling a labor-management meeting quarterly to discuss issues related to labor-management relations, labor conditions, and labor welfare
- In 2019, according to the Act for Implementation of J.Y. Interpretation No. 748:
  1. The implication of the Act was announced in the labor-management meeting and all employees were informed that same-sex marriage is entitled to the same benefits provided by the Company
  2. Making announcements on the prohibition of sexual harassment and in the Company's philosophy of no discrimination toward sexual orientation, promotion of harmonious labor-management relationship and the growth of the Company

The Human Rights Policy Declaration and Specific Management Plans for Human Rights Concerns of the Company：
https://www.cogen.com.tw/csr/boon

Human Rights Policy and Specific Management Plan

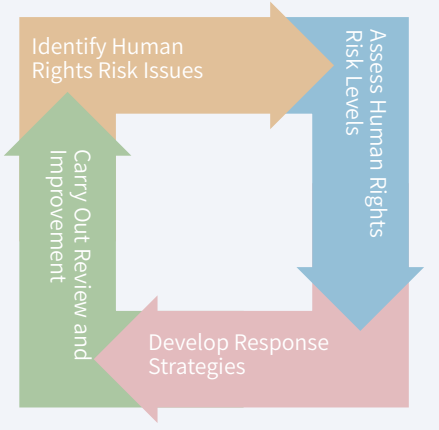
TCC has formulated various management systems with reference to labor laws and regulations, and is committed to comply with international human rights conventions, including the "United Nations Universal Declaration of Human

Rights", the "United Nations Guiding Principles on Business and Human Rights", the "International Covenant on Civil and Political Rights", and the "International Covenant on Economic, Social and Cultural Rights" to protect the rights and interests of employees.

The Company incorporates human rights policies into various management systems and has established the "Human Rights Policy and Management Procedures" to actively demonstrate our commitment to respecting and protecting human rights. We have also formulated the "Specific Management Plans for Human Rights Concerns" that include all managers, employees, and job applicants as subjects of risk management. Based on identifiable human rights concerns, specific goals and actions are set, and measures for mitigating, remedying, providing education and training, and establishing complaint channels are outlined in the management plans.

In addition, the Company identifies human rights risk issues in accordance with international human rights conventions and the "Human Rights Policy and Management Procedures." We assess the relevant risk levels through questionnaires and develop response strategies to proactively prevent potential human rights risks from occurring.

Results of human rights risk analysis, mitigation measures, and their effectiveness



Reporting channels:

Reporting hotline : 02-8798-2000 #515

Reporting email : hr@cogen.com.tw

Note: In 2022, the labor contracts of 2 employment confirmation were terminated, with 1 dispute of bonus calculation still in court. Since they are regarded as special cases, they do not affect the overall relationship between the employees and the management.

4.1.2 Employee Composition

Organizational Profile

As of the end of 2022, TCC had a total of 130 employees, with 128 regular and 2 contract employees. There were 41 female and 89 male employees. Among the supervisors of various departments and offices, there were 1 female and 10 male supervisors, which added up to a total of 11, accounting for approximately 8.5% of all employees. The Company belongs to the electric power investment and development, as well as power generation industry. Its technology-oriented characteristic led to a slight difference in the percentage of male and female employees, especially Guan Tian Cogeneration Plant, which had higher percentage of male than female employees.

Employee Structure – Number of Employees by Employment Contract and Type

TCC	Employment Contract			Employment Type		
	Regular	Contract	Total	Full Time	Part Time	Contractor (Supplier Worker)
Male	88	1	89	89	0	15
Female	40	1	41	41	0	2
Total	128	2	130	130	0	17

Star Energy	Employment Contract			Employment Type		
	Regular	Contract	Total	Full Time	Part Time	Contractor (Supplier Worker)
Male	111	56	167	167	0	285
Female	35	12	47	47	0	32
Total	146	68	214	214	0	317

Note: Both TCC and Star Energy have not employed part-time workers or recruited volunteers.

The average age of TCC's employees is approximately 45 years old, with an average working experience of 12 years. Employees over 30 years old account for 88%, and those with college degree or above account for 94% of all employees. Most employees have college degrees in their expertise, are well-certificated, and have years of

experience within the electricity and engineering industry. We uphold the spirit of "Integrity, Attentiveness, Diligence, Professionalism, and Enthusiasm" and continue to innovate and make progress to provide efficient, enthusiastic and professional power services.

Employee Structure – Number of Employees by Age, Position, Education for Different Genders

TCC	Age				
	Under 30 Years Old	31-40 Years Old	41-50 Years Old	Above 51 Years Old	Total
Male	9	19	29	32	89
Female	6	13	11	11	41
Total	15	32	40	43	130

Star Energy	Age				
	Under 30 Years Old	31-40 Years Old	41-50 Years Old	Above 51 Years Old	Total
Male	16	53	51	47	167
Female	12	16	15	4	47
Total	28	69	66	51	214

By Region	Taiwan	Other Regions
TCC	130	0
Star Energy	211	3

TCC	Position			Star Energy	Position		
	Supervisor	Non-supervisor	Total		Supervisor	Non-supervisor	Total
Male	10	79	89	Male	11	156	167
Female	1	40	41	Female	0	47	47
Total	11	119	130	Total	11	203	214

TCC	Education				
	High School or Below	University/ Junior College	Master	PhD	Total
Male	7	59	22	1	89
Female	1	35	5	0	41
Total	8	94	27	1	130

Star Energy	Education				
	High School or Below	University/ Junior College	Master	PhD	Total
Male	4	119	42	2	167
Female	3	40	4	0	47
Total	7	159	46	2	214

New and Resigned Employees

There are two sources of talent recruitment in TCC, one being internal mobility which acquire talents through internal promotions, transfers and job announcements, with the other that relies on external channels, including employee referral, human resources advertisements (including the Internet), as well as public/private employment service agencies (including human resources agency). Priority is given to local candidates during the recruitment of external personnel. The selection, appointment, and development of employees are based on their capability, knowledge, experience, ethics, and work attitude. In 2022, 12 new employees were hired in TCC.

TCC	Age				Total
	Under 30 Years Old	31-40 Years Old	41-50 Years Old	Above 51 Years Old	
New Male Employee	1	2	3	0	6
New Female Employee	5	1	0	0	6
Percentage of New Male Employee	0.77%	1.54%	2.31%	0%	4.62%
Percentage of New Female Employee	3.85%	0.77%	0%	0%	4.62%

Star Energy	Age				Total
	Under 30 Years Old	31-40 Years Old	41-50 Years Old	Above 51 Years Old	
New Male Employee	8	23	21	13	65
New Female Employee	5	6	4	1	16
Percentage of New Male Employee	3.74%	10.75%	9.81%	6.07%	30.37%
Percentage of New Female Employee	2.34%	2.80%	1.87%	0.47%	7.48%

TCC has a wide range of diverse welfare policies and a comfortable, friendly working environment to properly take care of employees' needs. The labor-management relationship is amicable, with high employee retention rate. In 2022, a total of 10 employees resigned (including retirement and transfer to other companies within the Group), with a turnover rate of 7.7%.

TCC	Age				Total
	Under 30 Years Old	31-40 Years Old	41-50 Years Old	Above 51 Years Old	
Resigned Male Employees	0	1	3	4	8
Resigned Female Employees	1	0	1	0	2
Male Turnover Rate	0%	0.77%	2.31%	3.08%	6.15%
Female Turnover Rate	0.77%	0%	0.77%	0%	1.54%
Total Number of Employees Resigned					10
Overall Employee Turnover Rate					7.69%

Star energy	Age				Total
	Under 30 Years Old	31-40 Years Old	41-50 Years Old	Above 51 Years Old	
Resigned Male Employees	5	10	12	8	35
Resigned Female Employees	0	4	1	0	5
Male Turnover Rate	2.34%	4.67%	5.61%	3.74%	16.36%
Female Turnover Rate	0%	1.87%	0.47%	0%	2.34%
Total Number of Employees Resigned					40
Overall Employee Turnover Rate					18.69%

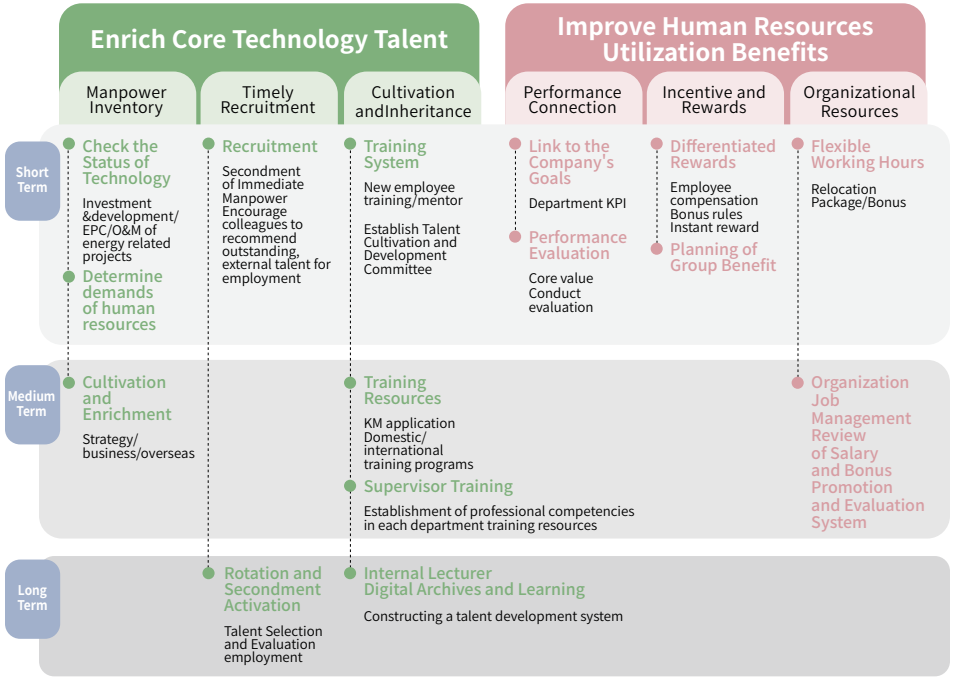
Note: The turnover rates of TCC (including retirement and transfer to other companies of the Group) for 2020, 2021 and 2022 were 8.8%, 10.9%, and 7.7%, respectively.

4.2 Talent Development

Human Resource Planning

TCC upholds the belief that employees are the most valuable asset of the Company. Through alignment with the Company's future business strategy, TCC systematically promotes the enhancement of its human resources plan and training programs. The Company strengthens its human resources strategic planning while implements short, medium, and long-term plans as shown in the following diagram.

Strengthen Human Resources Strategy



Highlights of Human Resource Enhancement in 2022

Strengthening talent cultivation and development

To enhance organizational performance and design a comprehensive plan for talent cultivation and development, the Company established the "Talent Cultivation and Development Advisory Committee" in 2022. Meetings are held regularly to oversee the completion of initiatives such as key talent cultivation and development, plans of management training as well as their assessments. Through a wide range of methods, we aim to create values in the organization's talent pool.

In response to business expansion and the need for enhanced English proficiency among our core workforce, TCC has been implementing a three-year program called "Enhancing English Language Skills" since 2020. Furthermore, we have launched a development program for mid to senior-level managers that focuses on team management, with courses that are taught through both digital and physical formats. Additionally, the Company has established partnerships with online digital learning platforms and set learning objectives for employees to improve their professional competencies.

Improving recruitment, elimination & mentoring mechanisms

In response to future business prospects, the need for professional talent in various large-scale projects of our investment companies as well as the increasing share of domestic renewable energy have led to the development of our recruitment channels. For example, we utilize job recruitment platforms, collaborate with mid to senior-level head hunters, and encourage colleagues within the Company to refer outstanding talent for employment.

To enhance the overall competitiveness of the Company, we continue to implement the "Refinement of Elimination and Mentoring Mechanism". According to the "Employee Performance Evaluation Regulations", employees who do not meet the performance standards are provided with improvement plans, and their progress is regularly monitored to track the effectiveness of the improvement.

Implementing training and care mechanisms for new employees

In addition to improving manpower recruitment, retaining talent is also an important issue. To assist new employees in adapting to the work environment, each department develops training plans for new hires, setting learning objectives and enhancing job skills. Furthermore, within the first six months of employment, the Human Resources Department regularly examine employees' physical and mental well-being to enhance their professional capabilities and reduce employee turnover rate.

Enhancing employees'professional capabilities

Adhering to the philosophy of valuing and cherishing talent, our subsidiary company, Star Energy, encourages employees to obtain relevant professional certifications. We provide training subsidies and offer monetary rewards for obtaining certifications as an incentive for self-investment by employees. This initiative aims to foster a culture of continuous learning, promote personal growth, and enhance employees' skills and competitiveness.

Awarding certification incentive bonuses

Human Resources Training Structure

The training hours completed by supervisors and employees in 2022 are as follows:

TCC	Male			Female		
Training Hours (hr)	Total Hours	Total Number of People	Average Training Hours/Person	Total Hours	Total Number of People	Average Training Hours/Person
Supervisor	194.5	10	19.5	35.5	1	35.5
Non-Supervisor	4,272.5	79	54.1	2,332	40	58.3
Total	4,467	89	50.2	2,368	41	57.7

Star Energy	Male			Female		
Training Hours (hr)	Total Hours	Total Number of People	Average Training Hours/Person	Total Hours	Total Number of People	Average Training Hours/Person
Supervisor	132	11	12.0	0	0	0.0
Non-Supervisor	1,350	156	8.7	715	47	15.2
Total	1,482	167	8.9	715	47	15.2

Types of Competency Training Program and Results

Types of Training (TCC)	Total Number of People			Total Hours
	Male	Female	Total	
Management Skill Training for Middle and Senior Management	27	9	36	590
Professional Competency Training	39	24	63	855
General Education Training	82	37	119	410.5
Information Security Training	75	36	111	314
Management Skill Training	36	34	70	210
Online Learning	58	24	82	4,386
License Re-Training	7	1	8	69

Types of Training (Star Energy)	Total Number of People			Total Hours
	Male	Female	Total	
Management Skill Training for Middle and Senior Management	9	1	10	187.5
Professional Competency Training	24	10	34	266
General Education Training	17	13	30	98.5
Information Security Training	107	30	137	255
License Re-Training	40	11	51	1,390

Cultivation and Sharing - Knowledge Management (KM) Platform

The TCC Group's Knowledge Management (KM) platform was first introduced in 2017 during phase one, and was further expanded in 2018 in phase two. By the end of 2022, the platform were accessed by over 60,000 individuals, and the documents were read over 140,000 times. Since its implementation, the utilization of the KM platform has significantly increased, indicating that our employees have internalized its use and knowledge sharing as part of their daily business activities. Continuous sharing, retention, mutual exchange and discussions of expertise in cogeneration, natural gas power generation, renewable energy engineering, as well as power plant operation, maintenance, and operational experiences have been facilitated within the Group.

To meet the needs of new employees and seed training, we invited consultants from the Galaxy Software Services Corporation to conduct education and training on the knowledge management (KM) platform in September 2022. Through video conferencing, colleagues from the three invested independent power plants (IPPs) and the Guan Tian Plant were invited. The training focused on practical exercises on various platform functionalities, aiming to enhance colleagues' proficiency in system operation. To enhance the utilization of the platform, the TCC Group set the main theme of 2022 as "Occupational Safety and Health", which will be changed on an annual basis. In addition to provide channels for different units in the Company to exchange information, this initiative aims to improve the overall management performance of the Group in the field of occupational safety and health. Furthermore, a KM platform promotion workshop was held at the end of December 2022 to discuss platform usage recommendations, plans and the main theme for the upcoming year. The objective to improve user experience and the management of knowledge assets was achieved.

Performance Evaluation

The performance evaluation of employees consists of regular evaluation and annual evaluation. For regular evaluation, each supervisor will conduct evaluation on employees' performances once every six months. Those who have major merits and deficiencies should be recorded, and an appraisal interview may be conducted when needed, serving as an important basis for the annual evaluation.

Every year, the Company incorporates sustainability-related goals into its overall objectives and departmental goals. The performance of senior managers is linked to the Company's overall objectives. For the evaluations of managers, KPIs are established based on the Company's annual goals for each department. The evaluation is then conducted based on the achievement of departments' KPIs. For general employees, evaluations are based on their individual performance for the year. Individual performance is linked to performance bonuses, employee rewards, and salary adjustments to ensure the alignment of individual performance with organizational performance. Employees who receive a total score below 70 points in their annual performance evaluation will not be eligible for performance bonuses or salary adjustments. The performance evaluation of individuals not only serves the purpose of salary distribution but also serves as the basis for promotion, transfer, and training in human resource management. In the future, employee performance will continue to be assessed based on the linkage of corporate annual goals, departmental performance, and individual job performance. The percentage of departmental performance will increased to strengthen its alignment with the Company's objectives. Additionally, there will be a continuous focus on reviewing and improving mechanisms for underperforming employees to assist them in enhancing their competitiveness in the workplace. This is to ensure mutual growth for both employees and the Company, and to achieve the goal of sustainable development in business operations.

Employee Performance Evaluation Results in 2021

Set Performance Targets	Each year, the department KPIs are determined according to the Company's annual KPIs. The status of achievement is then used as the basis for the evaluation of employees and managers.
Year-End Performance Evaluation	Perform year-end review on the achievement of goals. Managers and individual performance are connected with performance bonuses, employee compensation and salary adjustments to achieve the effect of linking individual and organizational performance.
Employee Performance Evaluation	Employee evaluation is divided into semi-annual regular evaluation and annual evaluation, which will be assessed by the department head according to the employee's work performance and used as the basis for promotion, transfer and training of human resources.

TCC	Male			Female		
Employee Performance Evaluation	Number of People Receiving Performance Evaluation	Total Number of People	Percentage of People Receiving Performance Evaluation	Number of People Receiving Performance Evaluation	Total Number of People	Percentage of People Receiving Performance Evaluation
Supervisor	10	10	100%	1	1	100%
Non-supervisor	80	79	101.27%	38	40	95%
Total	90	89	101.12%	39	41	95.12%

Note: This table includes periodic contract employees. The number of people receiving performance evaluation includes those who have resigned on December 31, 2022, but were still eligible for evaluation and bonuses. The number of people not receiving performance evaluation includes those who were still on the job on December 31, 2022, but did not require or were not eligible for evaluation. Therefore, the number of people who were subject to performance evaluation may be more than the number of employees who were still on the job at the end of the year.

Star Energy	Male			Female		
Employee Performance Evaluation	Number of People Receiving Performance Evaluation	Total Number of People	Percentage of People Receiving Performance Evaluation	Number of People Receiving Performance Evaluation	Total Number of People	Percentage of People Receiving Performance Evaluation
Supervisor	12	12	100%	0	0	-
Non-supervisor	137	144	95.14%	43	43	100%
Total	149	156	95.51%	43	43	100%

Note: 1. This table includes periodic contract employees. The number of people receiving evaluation includes those who have resigned on December 31, 2022, but were still eligible for evaluation and bonuses. The number of people not receiving performance evaluation includes those who were still on the job on December 31, 2022, but did not require or were not eligible for evaluation.

2. Some periodic contract employees (such as employees of power plant O&M projects) were not eligible for evaluation; therefore, they were not included in the total number of people receiving the evaluation.

Average Employee Salary Adjustment in 2022

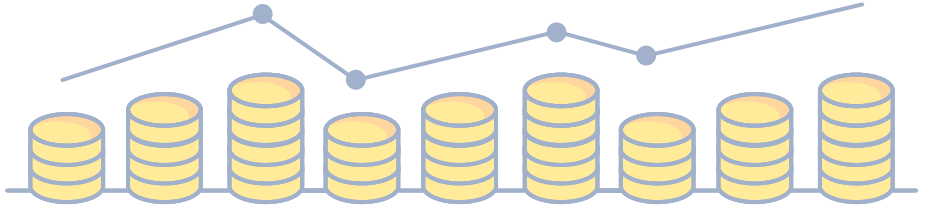
The raise of salary for the Company's employees is mainly based on the promotion of position or ranking, supplemented by regular salary adjustment. The promotion of position motivates employees to create greater value and accepts more responsibilities by providing them with a substantial increase in salary, while the promotion of ranking is reviewed and carried out annually, depending on the Company's profitability and changes in factors such as salaries in the labor market and overall economic indicators. The Company adjusts the salary regularly based on the difference in employees' performances. A better range of adjustment is given out to motivate outstanding, entry-level employees. The average salary adjustment for 2022 was about 7.29%.

7.43%	5.89%	7.29%
Salary Adjustment of Non-Managerial Staff (%)	Salary Adjustment of Non-Managerial Staff (%)	Salary Adjustment of Non-Managerial Staff (%)

Note: Managerial staff in the above table include president, vice presidents, and manager of the Finance Department of TCC

Average and Median Salaries of Non-Supervisory Employees for 2022

TCC	Non-Supervisor Employees		
	2020	2021	2022
Total Salary of Non-Supervisory Full-Time Employees (A) (NT$ 1,000)	133,434	141,890	151,241
Number of Non-Supervisory Full-Time Employees (B)	113	119	122
"Average Salary" of Non-Supervisory Full-Time Employees (A/B) (NT$ 1,000)	1,181	1,192	1,240
"Median Salary" of Non-Supervisory Full-Time Employees (NT$ 1,000)	1,003	1,029	1,046



4.3 Healthy Workplace with Zero Work Injuries

Employees are the most important asset of an enterprise. To care for the physical and mental health of employees, TCC provides free health examination at a frequency and scope that is better than those required by the Labor Standards Act. Moreover, personal health consultation and guidance are provided by health examination- specialized institutions. For their conveniences, employees are free to choose from a total of 10 medical institutes in Northern, Central and Southern Taiwan, whichever are closer to where they are, accompanied with several different examination procedures. Besides, employees are also allowed to choose their own medical institute for maximum flexibility. Affected by the COVID-19 pandemic in 2021, to avoid the risk of disease cluster during the health examination, the benefit and compensation for employees' health examination can be retained until 2022.

In addition to the regular health examinations that are better than those required by laws and regulations, the safety and health-related measures provided by the TCC's Headquarters Office are as follows:

TCC's Headquarters Office - Equipment and Environmental Safety Inspection

- Every 2 years, a professional public safety company is entrusted to carry out public safety inspections, and reports shall be made in accordance with regulations.
- A fire safety inspection is conducted once a year, and one related drill is scheduled.
- Building carpet cleaning as well as building disinfection is organized twice a year. The frequency of cleaning and disinfection will increase if necessary.
- Conduct two work environment monitoring operations per year.
- Perform environmental safety inspections for equipment annually.
- Fire equipment self-inspection is carried out quarterly and declared through the verification of a fire safety engineer.
- Carry out cleaning and garbage collection (recycling) daily for each floor of the office as well as the public areas.
- Improve the office environment from time to time based on the needs, such as adding toner filters.
- Air filters are installed in each area to protect the health of employees.

TCC's Headquarters Office - Health Consultation and Health Promotion Activities

- A health management center is set up on the first floor of the building. Nursing staffs as well as on-site physicians are arranged to provide consultation services for employees.
- Activities such as healthy living sessions are organized in the building on an occasional basis for employees to sign up.
- In 2022, an external consulting psychologist was invited to deliver "Education and Training on Interpersonal Relationships and Communication Skills".

COVID-19 Pandemic Prevention and Contingency Plan

The Company has implemented preventive measures against the COVID-19 pandemic and formulated the"COVID-19 Pandemic Prevention and Contingency Plan"to ensure the physical and mental well-being of our employees, as well as the smooth operation of our business plans.

Epidemic Notification Mechanism

For employees or their family members who have contracted COVID-19, home isolation or quarantine shall report to the department supervisor and the Administration Department.

Epidemic Prevention Measures

Implement personnel entry and exit control, environmental sanitation management, personal protection measures, and use communication devices (telephone or video calls) for business activities as much as possible.

Strengthen Epidemic Prevention Campaign

Responding to the development of the pandemic, we strengthen the dissemination of emergency response, epidemic prevention measures, and make immediate announcements.

Emergency Response Measures

First Stage	To reduce the risk of infection by colleagues while working in the same environment, each department/office is divided into two groups (A and B), which take turns to work remotely.
Second Stage	When a confirmed case occurs in the office of a building, the building must be evacuated for sanitation. Plans for all employees to work from home are formulated to maintain the regular operation of the Company.

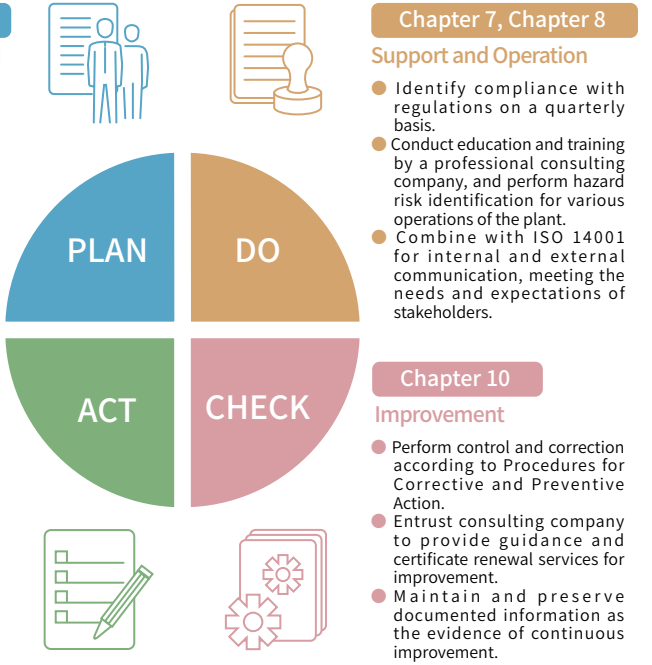
In addition, the Company has completed the preparations for fee collection, payment and payroll through online banking, in order to protect the health of employees and ensure its regular operation.

Completing the Implementation and Verification of ISO 45001 and CNS 45001: 2018 Occupational Safety and Health Management Systems

Guan Tian Plant attaches great importance to the occupational safety and health of workers. In addition to the establishment of ISO 9001 Quality Management System and ISO 14001:2015 Environmental Management System, in order to effectively manage workplace safety and health, and implement the policy of "Respect for Life, Work Safety First, and Care for Health and the Environment", ISO 45001 and CNS 45001:2018 Occupational Safety and Health Management Systems were further established in 2019, creating high-quality, environmentally friendly and safe products with complete quality, environment, as well as occupational safety and health management. To promote ISO 45001 and CNS 45001:2018 Occupational Health and Safety Management Systems, the Guan Tian Plant organized courses on Hazard Risk Assessment and Target Management Plan in June and July 2022. In July 2022, internal auditors' training courses for ISO 14001:2015 and ISO 45001:2018 (CNS 45001) were conducted, focusing on audit planning, audit records, audit report writing, and audit team practical exercises. The recertification audit was completed at the end of August 2022.

Guan Tian Plant's occupational safety and health management system includes but is not limited to employees of the Plant, contractors, individual or self-employed workers, dispatch workers, suppliers, customers, or other business partners. Furthermore, Guan Tian Plant uses the hazard identification risk assessment method to identify occupational hazards with serious occupational injury risks. Based on the description and procedure of each operation, possible causes/ activities and types of hazards, we identify the severity, occurrence and operation frequency to calculate the risk value, and to identify the risk level for hierarchical control. Finally, risk control is then used to eliminate other occupational hazards and minimize the risk.

Implementation of ISO 45001 Occupational Safety and Health Management System

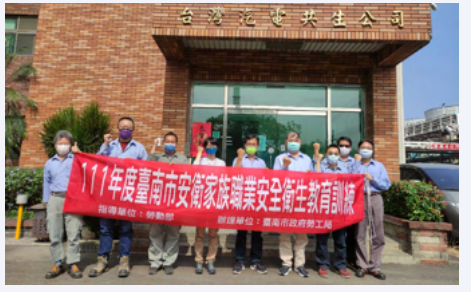


1998-2022
— Achievement —
Zero Work Injuries

TCC's Guan Tian Plant holds monthly occupational safety and health meetings to review and promote safety-related matters from the previous month and develop future work plans. In addition, TCC has set zero work injuries as an annual key performance indicator and makes every effort to achieve it. Since the establishment of the Guan Tian Plant in 1998, there has been no work-related injuries. As of December 2022, there have been 962,619 consecutive hours of zero work-related injuries since the online record of occupational accidents was officially launched in November 2016, and we will continue to strive for the milestone of 1 million hours of zero work-related injuries.

Regarding the construction safety of contractors in Guan Tian Plan, the "Operation Management Guidelines for Contractors Entering Guan Tian Plant", the "Confined Space (Oxygen Deficiency) Operation Guidelines for Guan Tian Plant" and the "Fire Operation Guidelines for Guan Tian Plant" were established to ensure the safety of all personnel working in the Guan Tian Plant. An occupational safety and health meeting between the joint operational coordinating organization and contractors is held prior to the annual overhaul, while hazard notification education and training for contractors performing annual overhaul would be conducted before entering the plant. Furthermore, contractors and relevant units are required to hold a pre-operation industrial safety meeting, and apply for fire operation approval. For works in confined spaces, in addition to application beforehand, the concentration of oxygen, hydrogen sulfide and other harmful gases on site must be constantly measured before and during the operation, and ventilation and respiratory protection must be properly implemented as well.

In collaboration with the Labor Affairs Bureau of Tainan City Government, the Cogeneration Safety and Health Family was established in January 2019. The Guan Tian Plant serves as the core enterprise, working together with other businesses within the Guantian Industrial Park to take on a leadership role in occupational safety and health. The efforts include conducting safety education and training, providing on-site safety guidance to members of the CSHF, facilitating information exchange, and sharing resources. The goal is to collectively create a work environment with zero accidents. Since its establishment, the number of family members has increased from 20 in 2019 to 26 companies in 2022, primarily consist of small and medium-sized enterprises in the Guantian Industrial Park. Through education and training, advisors of the Labor Affairs Bureau and on-site visits by the occupatioal safety personnel of the Company would provide guidance and suggestions to enhance the working environment for the family members. In 2022, one education and training session was held online due to the COVID-19 pandemic. In addition, a total of seven occupational safety visits were conducted by the Cogeneration Safety and Health Family, assisting 25 family members in improving their factories. For three consecutive years, the Company has received the Outstanding Award in Safety and Health Family performance rating. Furthermore, in collaboration with the Labor Affairs Bureau of Tainan City Government, the Company participated in the 2022 Confined Space Operation Hazard Prevention Training and was presented with a letter of appreciation.



Excellent Unit in Occupational Safety and Health

Guan Tian Plant has been committed to promoting occupational safety and health work with excellent results all year round. By establishing the "Occupational Accident-Free Incentive Mechanism", employees are encouraged to improve occupational safety in the workplace. In 2021, the Company participated in the "National Occupational Safety and Health Award" and received the Small-Medium Enterprise Special Award.

In addition, since 2021,Guan Tian Plant has been implementing the "On-site Occupational Health Service" that exceeded the requirement of the Occupational Safety and Health Act. Professional nursing staff and physicians are hired for on-site services, with a frequency of monthly and yearly visits. This service provides employees with health consultation and management. In 2022, the plant received the "2022 Five-Star Workplace Certification" from Tainan City Government.

Environmental Safety and Health Management

TCC attaches great importance to the safety and health of employees' working environment. In addition to compliance with occupational safety and health standards, the Company also formulates the "Industrial Safety Management Operation Regulations", the "Health Examination Management Operation Regulations", and the "Dangerous Equipment and Machinery Regular Inspection Management Operation Regulations" to protect the safety and health of its employees.

Relevant measures of TCC's Guan Tian Plant are as follows:

TCC's Guan Tian Plant - Equipment and Environmental Safety Inspection

- Every year, professional institutions are entrusted to inspect and report buildings public safety.
- Entrust professional institutions to carry out operation environment monitoring semiannually, including: measurement of sulfuric acid tanks, dust measurement, noise dose measurement, and general noise measurement.
- Fire and disaster simulation drills are conducted twice a year.
- Carry out monthly self-inspection of security and monitor operation for public hazardous substances, and report to the local fire department. We continuous to review and improve the on-site environment to ensure workers'safety.

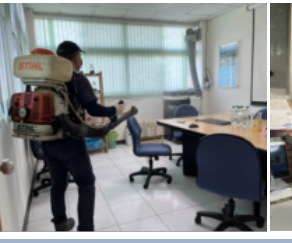
TCC's Guan Tian Plant - Health Examination and Management Plan

- Provide employees with sufficient health information by signing with medical personnel to offer on-site health services, provide health care information from medical institutions, formulate annual health service plans, as well as plan for the setting and management of first-aid kits.
- Implement health management system that classifies abnormalities that are detected during health check-ups, and arrange for further assessment, health education, and work adjustment if necessary.



- Organized the Tainan City 2022 Leisure Walking Activities for Workers:"Occupational Accident Prevention, Safe Walk in Anping" and"Achieving Industrial Safety to Ensure Safe and Sound"to promote workplace safety and encourage employees to engage in leisure activities, encouraging the habit of exercising to enhance their physical and mental well-being.

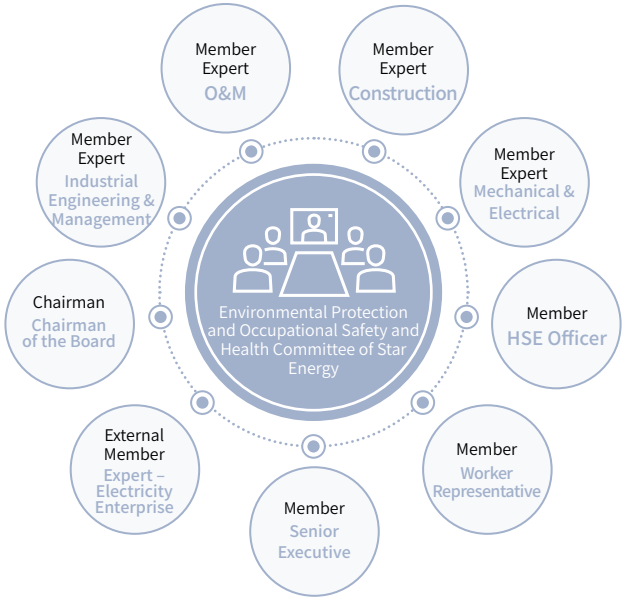
- Workplace Epidemic Prevention:Prevent COVID-19, exterminate indoor/outdoor mosquitoes and pathogens effectively; prevent cross-infection, maintain the hygiene of indoor environment, and conduct cleaning and disinfection for the entire plant area.
- According to Guan Tian Plant's contingency plan of the COVID-19 Pandemic, individuals entering the premises will have their body temperature taken and will be required to fill out the"COVID-19 Prevention Survey Form."Additionally, rapid antigen tests for the COVID-19 will be provided to employees for screening purposes.


Star Energy Passing the Verification for CNS 45001 and TOSHMS (Taiwan Occupational Safety and Health Management System)

Star Energy established the "Health, Safety and Environment (HSE) Management Office" in 2020. Since then, the "Environmental Protection and Occupational Safety and Health Committee" is gathered once every three months to discuss issues related to environmental protection, safety and health proposals, plans for occupational safety and health, as well as the prevention of occupational injuries and occupational diseases. As a result, the overall occupational safety performance of the Company has significantly improved.

To implement the policy of "respecting life, industrial safety first, caring for health, and environmental protection"and enhance the quality and effectiveness of environmental safety and health management, Star Energy has utilized a mobile app for on-site management and encouraged the reporting of near-miss incidents to prevent potential accidents. Furthermore, it has organized ISO management system auditor courses and other relevant safety, health, environmental education and training programs to raise awareness among employees for a positive culture within the company. In addition, to promote health and well-being, Star Energy continues to have a dedicated team of healthcare professionals monitoring the health of employees on a weekly basis. It organizes campaigns for smoking cessation as well as weight management activities, while being certified as a Healthy Workplace with the "Health Promotion Mark" recognition.



In 2022, Star Energy initiated a series of training courses related to occupational safety, health, and environmental protection, including training programs for occupational safety and health personnel, air pollution prevention, wastewater and waste management personnel, training of Global Wind Organization (GWO), internal audits for ISO 14001 and ISO 45001, as well as various drills and awareness campaigns. The Company ensures the active participation of all employees and implements a culture of continuous improvement in the field of occupational safety and health.

Introduction and Implementation of Star Energy's Zero Occupational Accident Management

From a construction management perspective, providing a safe working environment is crucial to ensure the smooth progress of a project. Through collaborating with foreign companies, it has discovered that the key to achieving zero occupational accidents lies in "implementation".

Star Energy consistently implements various measures for hazard and risk prevention, including Risk Assessment and Method Statement (RAMS) before and during operations. It also conducts short-period toolbox meetings and pre-task briefings (TBM-KY: Tool Box Meeting - Kiken Yochi) before daily work to enhance safety awareness. In addition, it prioritizes site organization and housekeeping to create a safe working environment. By adopting preventive measures and integrating them into daily management practices, Star Energy effectively prevents accidents and significantly improves work efficiency and project progress.

Statistics on Occupational Accidents and Absence Rate

Employees		TCC's Taipei Office	Guan Tian Plant	Star Energy
Total Working Hours	Male	93,608	87,376	251,272
	Female	66,448	6,096	63,216
	Total	160,056	93,472	314,488
Work-Related Fatality Rate	Male	0	0	0
	Female	0	0	0
	Total	0	0	0
High-Consequence Work-Related Injury Rate	Male	0	0	0
	Female	0	0	0
	Total	0	0	0
Total Recordable Incident Rate (TRIR)	Male	0	0	0
	Female	0	0	0
	Total	0	0	0
Lost Day Rate (LDR)	Male	0	0	0
	Female	0	0	0
	Total	0	0	0
Absence Rate (AR)	Male	0.37%	0	0.76%
	Female	0.81%	0	1.14%
Number of Near-Miss Incidents	Male	0	0	16
	Female	0	0	5
	Total	0	0	21
Near Miss Frequency Rate (NMFR)	Male	0	0	12.74
	Female	0	0	15.82
	Total	0	0	13.36

Other Workers (Contractors/Suppliers)		TCC's Taipei Office	Guan Tian Plant	Star Energy
Total Working Hours	Male	2,000	59,698	306,480
	Female	-	7,845	43,496
	Total	2,000	67,543	349,976
Work-Related Fatality Rate	Male	0	0	0
	Female	-	0	0
	Total	0	0	0
High-Consequence Work-Related Injury Rate	Male	0	0	0
	Female	-	0	0
	Total	0	0	0
Total Recordable Incident Rate (TRIR)	Male	0	0	0
	Female	-	0	0
	Total	0	0	0
Lost Day Rate (LDR)	Male	0	0	0
	Female	-	0	0
	Total	0	0	0
Number of Near-Miss Incidents	Male	0	0	0
	Female	-	0	0
	Total	0	0	0
Near Miss Frequency Rate (NMFR)	Male	0	0	0
	Female	-	0	0
	Total	0	0	0

Note:
1. Work-related fatality rate = the number of fatalities as a result of work-related injury/total working hours x 200,000
2. High-consequence work-related injury rate = number of high-consequence work-related injuries (excluding fatalities)/total working hours x 200,000
3. Total Recordable Incident Rate (TRIR) = number of recordable work-related injuries/total working hours x 200,000
4. Absence Rate (AR) = (Number of days on work injury leave + sick leave + menstrual leave + days of absence due to injury or illness resulting in loss of work capacity) /total working days x 100%
5. Lost day rate (LDR) = Lost days due to work-related injury/total working hours x 200,000
6. Near miss frequency rate (NMFR) = number of near-miss incidents/total working hours x 200,000
7. In 2022, Star Energy had 3 accidents due to commuting, which were not included in the calculation of the work injury rate in the above table.
8. The subsidiary company, Star Energy, had a typographical error in reporting the near miss frequency rate (NMFR) for employees in 2021. The correct values should be "Male 1.56, Total 1.15". The NMFR for other workers of Star Energy in 2021 should be “Male 3.64, Female 1.47, Total 3.41”.

4.4 Employee Welfare

TCC believes that talents are the Company's most valuable asset. For more than 20 years, the Company continues to establish updatedreasonable working conditions and employee welfares, hoping that employees are happy to join TCC and can feel the warm, harmonious working atmosphere. In addition to year-end bonuses and performance bonuses for achieving the targets, the Company also offers a profit-sharing employee remuneration system and a welfare system that meet the needs of employees and their families. Nevertheless, bonds and cohesiveness between employees and teams are strengthened through the year-end dinner party, social club activities and occasional family events.

The Company provides free health check-ups for employees and has increased the health examination quota since 2020. Due to the impact of the COVID-19 pandemic in 2021, we decided to retain the eligibility and coverage for employee health check-ups until 2022. Considering that the average age of our employees is approximately 40 years old, the previous policy of health check-ups has been adjusted to allow employees aged 40 and above to have an annual health examination. Additionally, all employees are entitled to free group insurance, which covers various insurance categories such as accidents, medical expenses, cancer, and life insurance. Moreover, family members can also participate in health check-ups and group insurance at their own expense, providing dual protection for employees and their families.

TCC has also established an Employee Welfare Committee, which is managed by the employees to hold relevant activities from time to time.

Visiting Mt. Hongdan in Keelung

Visiting the Ōgon Shrine, Geopark and Seaside Scenic Trail in Jinguashi

Visiting Mt. Luobang Nature Trail in Matsu

Employee Benefits and Care			
Item	Content		
Grant and Subsidy	 Maternity Subsidy	 Marriage Grant	 Funeral Grant
Insurance/Health Examination	 Free Group Insurance for Employees	 Group Insurance for Family Members with Discount	 Free Health Examination
Activity Subsidy	 Social Club Activities	 Domestic Travel Subsidy	 International Travel Subsidy
Bonus/Cash Gift	 Year-End Bonus	 Performance Bonus	 Birthday and Three-Festival Cash Gifts
Educational Subsidy	 Study Grant	 Book Allowance	
Condolences/Relief	 Work Injury Consolation	 Emergency Assistance Grant	

TCC	Benefits Provided	Number of People Eligible for the Benefit	Coverage Percentage
1	Group Insurance (Life, Medical, Disability Insurance)	130	100%
2	Retirement/Severance Pay System	130	100%
3	Three Chinese Festival Grants Paying	130	100%
4	Birthday Cash Gift	130	100%
5	Study Grant	130	100%
6	Travel Subsidy	130	100%
7	Marriage Grant	130	100%
8	Maternity Subsidy	130	100%
9	General Injury Consolation	130	100%
10	Work Injury Consolation	130	100%
11	Disaster Assistant Grant	130	100%
12	Funeral Grant	130	100%

Star Energy	Benefits Provided	Number of People Eligible for the Benefit	Coverage Percentage
1	Group Insurance (Life, Medical, Disability Insurance)	214	100%
2	Retirement/Severance Pay System	214	100%
3	Three Chinese Festival Grants Paying	214	100%
4	Birthday Cash Gift	214	100%
5	Study Grant	214	100%

Star Energy	Benefits Provided	Number of People Eligible for the Benefit	Coverage Percentage
6	Travel Subsidy	214	100%
7	Marriage Grant	214	100%
8	Maternity Subsidy	214	100%
9	General Injury Consolation	214	100%
10	Work Injury Consolation	214	100%
11	Disaster Assistant Grant	214	100%
12	Funeral Grant	214	100%

Work-Life Balance

Our welfare system includes menstruation leave, tocolysis leave, pregnancy checkup leave, maternity leave, paternity leave for male employees, family care leave and unpaid parental leave. We also encourage those at the end of their parental leave to apply for reinstatement. In 2022, the number of TCC's employee applied for unpaid parental leave was zero.

Item	Male	Female	Total
Total number of TCC's employees eligible for unpaid parental leave in 2022	89	41	130
A：Total number of employees applied for parental leave in 2022	0	0	0
B：Number of employees applied for reinstatement in 2022	0	0	0
C：Actual number of employees reinstated in 2022	0	0	0
D：Number of employees who should be reinstated in 2022, but applied for extension	0	0	0
E：Number of employees who have continued to work for one year after reinstatement from parental leave in 2021	0	0	0
F：Number of employees who have been reinstated from parental leave in 2021	0	0	0
Reinstatement rate %= C/ (B-D)	-	-	-
Retention rate %= E / F	-	-	-

Note: After the employees have served for half a year, they can apply for unpaid parental leave before their children turn three years old. Therefore, this table only lists the number of employees who have served for more than half of a year until Dec. 31, 2022.

Item	Male	Female	Total
Total number of Star Energy's employees eligible for unpaid parental leave in 2022	167	47	214
A：Total number of employees applied for parental leave in 2022	1	0	1
B：Number of employees applied for reinstatement in 2022	1	1	2
C：Actual number of employees reinstated in 2022	1	1	2
D：Number of employees who should be reinstated in 2022, but applied for extension	0	0	0
E：Number of employees who have continued to work for one year after reinstatement from parental leave in 2021	0	0	0
F：Number of employees who have been reinstated from parental leave in 2021	0	0	0
Reinstatement rate %= C/ (B-D)	100%	100%	100%
Retention rate %= E / F	-	-	-

Note: After the employees have served for half a year, they can apply for unpaid parental leave before their children turn three years old. Therefore, this table only lists the number of employees who have served for more than half of a year until Dec. 31, 2022.

Flexible Retirement System

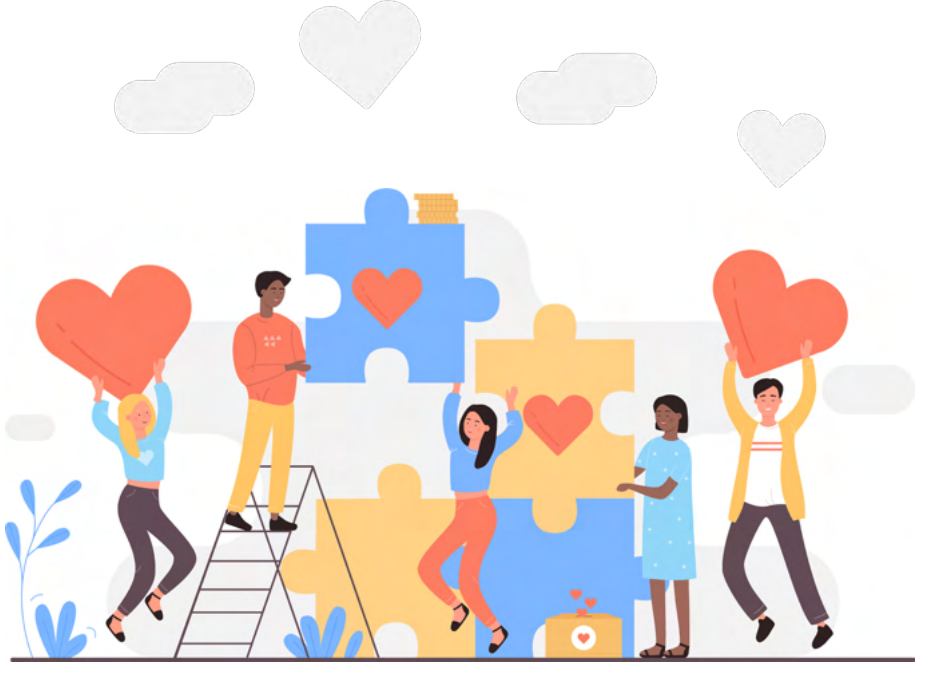
In terms of the retirement system, in addition to those who meet the qualifications specified in Article 53 of the Labor Standards Act, employees of can apply for retirement if they "have worked in the Company for more than ten years and the sum of their work experience (in years) and age has exceeded 70". Such flexible retirement system is beneficial to our employees' career planning.

Retirement System

	Work Experience & Age	Applicable	Allocation System
Retirement conditions according to Article 53 of the Labour Standards Act	Worked for more than 15 years, at least 55 years old	☑	Applicable to the previous pension system under the Labor Standards Act: (1) 6.5% of the employee's total salary is allocated to the retirement fund every month, and deposited into a special bank account in the name of the Company's Worker Retirement Reserve Supervision Committee. (2) Entrust an external professional actuarial company to review the pension reserve account every year to ensure that it is sufficient to meet the fund requirements for pension payments. For details, please refer to the previous year's financial report of the Company.
	Worked for more than 25 years	☑	
	Worked for more than 10 years, at least 60 years old	☑	
TCC has formulated flexible retirement conditions that are better than those stipulated by the Labor Standards Act	Worked for more than 10 years and the sum of work experience (in years) and age has exceeded 70	☑	Applicable to the new pension system under the Labor Standards Act: The Company attributes 6% of the employee's total salary to the individual's pension account established by the Bureau of Labor Insurance on a monthly basis according to the labor pension level, and withholds a certain amount based on the employee's voluntary contribution rate and deposits it to the individual's pension account.

Volunteer Leave System

To encourage employees to participate in social welfare activities, the Company provides 3 days (a total of 24 hours) of paid volunteer leave each year. If employees of TCC and Star Energy participate in volunteer activities organized by the Company on"non-working days", they will be given a corresponding number of hours of volunteer leave based on the duration of the activity. For volunteer activities held on"working days", the part of the working time will be count as volunteer leave on that day, and employees will be paid when they take the volunteer leave. The annual calculation of volunteer leave is from January 1 to December 31 each year, and volunteer leave must be used within 3 months following the time the activity occurs.



05

Social Care, Giving Back to Local Community

Chapter Highlights

Community investment has exceeded NT$1.55 million

5.1 Education Investment for New Generation

TCC pays close attention to the development of education for the energy industry. In response to the government's energy policies and the promotion of renewable energy localization, TCC recognizes the lack of domestic technical expertise and talent in related fields. To cultivate domestic professionals in these areas, TCC not only offers scholarships but also conducts professional scholarship evaluations. TCC is dedicated to nurturing talents in the power industry and providing diverse employment opportunities.

While climate change, energy conservation, carbon reduction, and green energy have become important trends both domestically and internationally, countries around the world are actively building low-carbon/zero-carbon energy systems, bringing new business opportunities to the domestic power industry. In early 2019, in response to the increasing demand for energy transition, renewable energy development as well as talents in the power and grid sectors, the Industrial Technology Research Institute (ITRI) established the "Power School and Talent Development Alliance", aiming to connect institutions and professionals, cultivate emerging talents in the power grid field, and gather outstanding power professionals from all sectors.

To cultivate elites in the power field, the "Power School" was established to provide digital and physical professional training courses, while the "Power School and Talent Development Alliance Scholarship" was created to attract applications from students with outstanding performances in related fields of expertise. More than NT$1 million of scholarships are awarded each year to encourage outstanding talents from the energy industry to conduct research, while students and professionals are also welcome to join the energy sector, thereby boosting the development of Taiwan's energy industry.

TCC has long been concerned about the cultivation of professionals in the energy sector. Since joining the "Power School and Talent Development Alliance" in 2019, it has continued to sponsor NT$100,000 every year and sent experts in related fields from the Company to participate in the scholarship review committee and take part as the judge of a competition. TCC assists domestic electric power industry in upgrading its technologies, promotes the industry-academia exchange, and increases the opportunities for recruiting electric power professionals.

Moreover, TCC has sponsored the "Liu Shu-sheng Memorial Award" of the Taiwan Power and Energy Engineering Association for two consecutive years. The Award recognizes outstanding electric power talents under the age of 35 who have worked in the domestic electric power-related industry within the past 5 years, thereby promoting the growth of the industry and encouraging more young people to engage in jobs that are related to electric and energy engineering.

In 2022, internship opportunities were significantly affected by the pandemic. Universities' internship programs were either unable to proceed as planned or suspended. However, once the situation improves and the pandemic subsides, efforts will continue to be made to carry out various programs to cultivate talents in different fields.

5.2 Social Care and Participation

TCC has been operating power plants for a long time, with the principle of ensuring stable power supply as well as coexistence and co-prosperity with society. In addition to reduce the environmental impact of its operations, TCC actively integrates itself into local communities and assists in community development. It fulfills its corporate social responsibility by being actively involved in caring for disadvantaged groups, sports, cultural, and educational activities.

The highlights of TCC Group’ s social participation (including TCC, Guan Tian Plant, Star Energy and 3 invested independent power plants) for 2022 are summarized as follows:

Sponsored more than **30** sessions of local activities

Participated in **8** sessions of charitable and volunteering activities

Sponsored **4** sessions of academic conferences

TCC has always adhered to the idea of "taken from the society, giving back to the society", and participates in social welfare to fulfill its corporate social responsibility. In addition to the establishment of a volunteer team, the Company also provides 3 days of paid volunteer leave per year to encourage employees to participate in the Company's volunteer activities. TCC was still affected by the pandemic in 2022, leading to temporary suspension of some planned activities; however, TCC was still seeking up alternative activities to ensure its participation in various aspects of society.

2022

TAYA Marathon

Due to the Pandemic, the TAYA Marathon was postponed to 2022. Guan Tian Plant has been operating in Tainan for over 20 years, and the Wushantou Photovoltaic Project (grid-connected in 2022) also locates in Tainan, where the marathon was held. With the philosophy of local participation, TCC co-organized the TAYA Marathon on March 27, 2022, encouraging its employees to participate and promoting the idea of sportsmanship.

Vegan Activity on the Earth Day

TCC has been holding the well-received vegan activity monthly since May 2020, calling employees to join in eating more vegetarian meals to reduce carbon emissions. In addition to vegan activities, TCC also expanded the event on Earth Day in 2022. The goal was to remind employees to cherish food and adopt a low-carbon and environmentally friendly mindset: making small choices in our daily lives can achieve a more earth-friendly lifestyle.

Tianzhong Marathon

The Tianzhong Marathon, which was changed to an online race the previous year due to the pandemic, returned as a physical event in 2022. TCC also sponsored and supported this grand event—the most hospitable and passionate marathon in Taiwan for participants to experience.

5.3 Giving Back to Local Communities

TCC's headquarters, Guan Tian Cogeneration Plant, and the three invested independent power plants are located in Taipei, Tainan, and Changhua respectively. Being in operation for more than a decade, the power plants have been actively participating in and sponsoring community activities, therefore we have established good relationships with the local communities as well as the neighboring townships. Star Energy has undertaken a number of renewable energy EPC projects in the Changhua area in recent years, it also actively participates in local activities, offering assistance to local construction and development, and giving back to the society with practical actions.

Guan Tian Plant

Guan Tian Plant cares for its local development by actively participates neighbor-friendly activities. With the commitment to give back to the community and fulfill its social responsibility, Guan Tian Plan continues to sponsor the environmental maintenance of the Erzhen Park since its establishment in Guantian District in 2019, providing a clean space for leisure, and creating a more comfortable living environment for the local residents.

Star Energy Power

Chang Bin Gas-Fired Power Plant upholds the belief of maintaining friendly relationships with the local and neighboring communities, and enthusiastically participates in various local cultures and festivals.

In 2022, the plant participated and sponsored various local cultural activities in the neighboring towns of Xianxi and Lukang, including Lantern Festival celebration, singing competition for the elderly, environmental volunteer cleanup and epidemic prevention, beach cleanup activities, tree planting, Kite Festival and Small Town Light Festival. It is our corporate social responsibility to care for our local culture and development.

Xianxi - Lantern Festival Celebration and Promotion of Energy Saving/Carbon Reduction

Lukang - Environmental Volunteer Cleanup

Lukang - Epidemic Prevention Disinfection

Lukang - Beach Cleaning Activity

Lukang - Kite Festival

Lukang - Small Town Light Festival

Sun Ba Power

A company is like a small society. However, within the larger social environment, it not only plays the role of an economic driver and provides stable job opportunities for employees, but also needs to act as a positive force in supporting social growth at different levels. By growing together with society and contributing to its progress, a company can achieve the goal of sustainable business operations.

Fong Der Gas-Fired Power Plant is located in Shanshang District, Tainan City. Adhering to the philosophy of "taken from the society, giving back to the society", the plant not only strives for sustainable development but also gives back to the local community. Every year, funds are allocated for construction projects and activities in the nearby areas. Additionally, the plant sponsors local schools and assists disadvantaged residents by preparing lunch every day for elders who live alone. These efforts have made the plant a trusting neighbor for the community, who supports the construction the Company's power plan, fostering a mutual and harmonious relationship within Shanshang District.

2022 was a challenging year for businesses due to the COVID-19 pandemic, especially for farmers who primarily engage in agriculture in the area nearby the power plant. In collaboration with the municipal government, Sun Ba Power showed its support of local farmers by purchasing their renowned agricultural products, such as pineapples, guavas, and mangoes. Sun Ba Power also participated in the "Press Conference for Supporting Pineapple Businesses in Shanshang", assisting farmers in overcoming the difficulties by buying their products and donate them to school and disadvantaged groups across the nation.

Star Buck Power

To strengthen the relationship with neighboring communities, enhance the well-being of surrounding residents, promote local harmony, contribute to the local prosperity, and build the Company's reputation, Star Buck Gas-Fired Power Plant participated in community events in 2022. These events included but were not limited to New Year's Day and Lantern Festival celebrations organized by nearby towns, sponsorship of streetlights for local infrastructure development, attending graduation ceremonies of township kindergartens, supporting power development and energy conservation activities, as well as participating in cultural and economic surveys of the southern region. Star Buck Power also cooperated with the government's policies by sponsoring its promotional activities for energy conservation. Furthermore, Star Buck Power demonstrated care for community development and assisted in the preservation of local festivals and cultural traditions, making its heartfelt contributions known to locals.

Hiking and Campaigns for Energy Saving & Carbon Reduction

Xianxi Community Development Association Lantern Festival Event

Recognition of the Sponsorship of Local Infrastructure Development

Star Energy

Star Energy fulfills its corporate social responsibility by actively participating in community activities. In 2022, to promote residential fire safety and protect people's lives and properties, it donated 100 sets of residential fire alarms to the Fire Bureau of Changhua County. By upholding the idea of integrating into local livelihood and giving back to the community, it also sponsored and participated in temple festivals and hiking event in Tainan. Furthermore, one of Star Energy’ s project managers was appointed as an advisor for the Fangyuan Branch of the Friends of the Police Association in Changhua County, working together to maintain local public safety and uphold the concept of coexistence and mutual benefit with the community.


感謝狀
星能股份有限公司
（代表人：楊榮和）
捐贈住宅用火災警報器共100組
對消防工作貢獻良多殊堪嘉佩
特頒此狀 以申謝忱
彰化縣消防局
局長 施順仁

Letter of Appreciation from the Fire Bureau of Changhua County


聘書
茲敬聘
徐德聖 先生
為彰化縣警察之友會芳苑辦事處
顧問
此聘
彰化縣警察之友會芳苑辦事處
主任 [illegible]

Letter of Appointment from the Friends of the Police Association

Miaoli Wind

To strengthen local connections and establish harmonious relationships within the community, Miaoli Wind sponsored and participated in the Mid-Autumn Festival celebration and the Elderly Caring event organized by the Community Development Association. It aims to foster diverse interactions and establish a strong partnership with the community, thereby implementing the concept of corporate social responsibility and giving back to society.

06

Appendix

Sustainability Disclosure Indicators for the Oil, Electricity and Gas Industry

No	Indicator	Disclosure	Remark
1	The number of oil refineries in densely populated areas	The Company does not have oil refinery.	
2	Total water withdrawal and total water consumption	The total water withdrawal of the Guan Tian Plant is 761,373 m^3, and the total water consumption is 697,421 m^3. There is no independent water meter in the headquarters office of TCC, and the water bill is only apportioned by the area. Hence, there is no exact water consumption data for reference.	Please refer to section 3.2.2
3	The weight of hazardous waste generated and the percentage of waste recycled	The waste produced by TCC's Guan Tian Plant is non-hazardous waste.	Please refer to section 3.2.1
4	Explanation of the number and rate of occupational accidents	TCC did not experience any occupational injury incidents in 2022.	Please refer to section 4.3
5	Risk management policies for significant events	TCC has formulated "Risk Management Policy and Procedures" and "Risk Management Implementation Plan" to incorporate and control various risks related to investment, operations, management, climate change, and unethical behavior. The Company reviews risk management measures regularly, and reports the implementation and operation of these measures to the Board of Directors and the Audit Committee at least once a year.	Please refer to section 1.3 and 3.1.1
6	Production volume of main products by product category	The Company's main product is electricity, and the electricity sold by Guan Tian Plant in 2022 was 225 GWh.	Please refer to section 2.3.1

Risks and Opportunities of Climate Change to the Company and Our Corresponding Measures

Item	Corresponding Section and Implementation Status
1.Explain the oversight and governance of climate-related risks and opportunities by the Board of Directors and management.	1.Please refer to section 3.1.1

Item	Corresponding Section and Implementation Status
2.Describe how the identified climate risks and opportunities impact the company's business, strategy, and financial planning (short-term, medium-term, long-term).	2.Please refer to section 3.1.1. Changes in regulations and occurrences of natural disasters may lead to increased operating costs and investment misalignment in the short term. However, in response to domestic and international trends and policy initiatives, there is an increased demand for the Company's renewable energy-related businesses. In the medium to long term, due to the likelihood of extreme weather events and significant policy changes, the Company will adjust its response measures and future business strategies accordingly.
3.Discuss the financial impact of extreme weather events and transition actions.	3.Please refer to section 3.1.1
4.Explain how the process of identifying, assessing, and managing climate-related risks is integrated into the overall risk management.	4.Please refer to section 1.3 and 3.1.1
5.If scenario analysis is used to assess resilience to climate-related risks, provide information on the scenarios, parameters, assumptions, analysis factors, and key financial impacts.	5.The Company takes into account different scenarios from the Intergovernmental Panel on Climate Change (IPCC) and the Network for Greening the Financial System (NGFS), as well as the evaluation and analysis reports from the Taiwan Climate Change Projection Information and Adaptation Knowledge Platform (TCCIP), to assess potential climate-related risks and opportunities. However, further estimation of the financial impact of climate change risks has not yet been conducted based on the assumptions and parameters of each scenario.
6.If there is a transformation plan to manage climate-related risks, describe the content of the plan and the indicators and targets used to identify and manage physical risks and transition risks.	6.Please refer to Chapter 3
7.If internal carbon pricing is used as a planning tool, explain the basis for price determination.	7.The Company's main business is related to electricity, and currently, we do not have an internal carbon pricing plan in place.
8.If climate-related targets are set, provide information on the activities covered, scope of greenhouse gas emissions, planning timeframe, annual progress, and if carbon offsets or renewable energy certificates (RECs) are used to achieve the targets, explain the sources and quantities of offset emissions or the number of RECs.	8.Referring to the "Energy Management and Circular Economy" section in the Material Topics Management Approach and section 3.1.1, the Company has established relevant key performance indicators (KPIs) for energy conservation and carbon reduction based on the climate-related risks and opportunities that might impact the Company. These KPIs include energy efficiency, water conservation, fossil fuel substitution rate, and greenhouse gas management. In addition to developing renewable energy, our subsidiary TCC Green Energy has provided green electricity retailing services to businesses and offered renewable energy certificate acquiring services.
9.Greenhouse gas inventory and verification status.	9.Please refer to section 3.1.2. The results of TCC's Guan Tian Plant's greenhouse gas inventory have been verified by an external third-party auditing organization. The verification process follows standards such as ISO 14064-1 and ISO 14064-3. TCC's Taipei office and subsidiaries have also completed greenhouse gas inventory and verification planning in accordance with the "Sustainable Development Roadmap for TWSE/TPEx Listed Companies".

GRI Standards Content Index

Disclosure Number	Title of Disclosure	Corresponding Section of Disclosure	Page Number	Remark
2-1	Organizational details	About this Report 1.1.1 About TCC Group	001 036	
2-2	Entities included in the organization's sustainability reporting	About this Report 1.1.1 About TCC Group 1.1.2 Economic Performance (Link to annual report)	001 036 039	
2-3	Reporting period, frequency and contact point	About this Report	001	
2-4	Restatements of information	2.4.4 Actively Promote Green Procurement 4.3 Healthy Workplace with Zero Work Injuries (Compare 2021&2022)	073 103	
2-5	External Assurance	About this Report Independent Assurance Opinion Statement	001 129	
2-6	Activities, value chain and other business relationships	1.1.1 About TCC Group 2.4.1 Good Supply Chain Partnership (Compare2021&2022)	036 068	
2-7	Employees	1.1.1 About TCC Group 4.1.2 Employee Composition	036 097	
2-8	Workers who are not employees	4.1.2 Employee Composition	097	
2-9	Governance structure and composition	1.2.1 Corporate Governance	041	
2-10	Nomination and selection of the highest governance body	1.2.1 Corporate Governance	041	
2-11	Chair of the highest governance body	1.2.1 Corporate Governance	041	
2-12	Role of the highest governance body in overseeing the management of impacts	Sustainable Development (ESG Sustainability Committee) Communication with Stakeholders 1.3 Risk Management	010 011 049	
2-13	Delegation of responsibility for managing impacts	Sustainable Development (ESG Sustainability Committee)	010	
2-14	Role of the highest governance body in sustainability reporting	Sustainable Development (ESG Sustainability Committee)	010	
2-15	Conflicts of interest	1.1.1 About TCC Group	036	
2-16	Communication of critical concerns	Sustainable Development (ESG Sustainability Committee)	010	
2-17	Collective knowledge of the highest governance body	1.2.1 Corporate Governance	041	
2-18	Evaluation of the performance of the highest governance body	1.2.1 Corporate Governance	041	
2-19	Remuneration policies	4.2 Talent Development	099	
2-20	Process to determine remuneration	1.2.1 Corporate Governance	041	
2-21	Annual total compensation ratio	Omission	-	Information of the highest paid individual is confidential
2-22	Statement on sustainable development strategy	Message from the Chairman	002	
2-23	Policy commitments	Material Topics Management Approach Vision and Strategy for Sustainable Development 1.2.1 Corporate Governance 1.3 Risk Management 2.4.3 Comprehensive Supplier Management 4.1.1 Human Resources Policy	022 033 041 049 069 096	
2-24	Embedding policy commitments	1.2.1 Corporate Governance 2.4.3 Comprehensive Supplier Management 4.1.1 Human Resources Policy 4.2 Talent Development	041 069 096 099	

Disclosure Number	Title of Disclosure	Corresponding Section of Disclosure	Page Number	Remark
2-25	Processes to remediate negative impacts	Material Topics and Boundaries Material Topics Management Approach 4.1.1 Human Resources Policy	015 022 096	
2-26	Mechanisms for seeking advice and raising concerns	1.2.2 Regulation Compliance and Integrity Management 1.3 Risk Management	044 049	
2-27	Compliance with laws and regulations	1.2.2 Regulation Compliance and Integrity Management	044	
2-28	Membership associations	1.2.3 External Collaboration	047	
2-29	Approach to stakeholder engagement	Communication with Stakeholders	011	
2-30	Collective bargaining agreements	As the company does not have a labor union, we hold quarterly labor-management meetings to ensure effective communication with our employees.	-	
Topic Disclosure				
GRI 201: Economic Performance 2016				
201-1	Direct economic value generated and distributed	1.1.2 Economic Performance	039	
201-2	Financial implications and other risks and opportunities due to climate change	3.1.1 Response Strategy and Environmental Management	075	
201-3	Defined benefit plan obligations and other retirement plans	4.4 Employee Welfare	109	
GRI 204: Procurement Practices 2016				
204-1	Proportion of spending on local suppliers	2.4.1 Good Supply Chain Partnership	068	
GRI 205: Anti-corruption 2016				
205-3	Confirmed incidents of corruption and actions taken	1.2.2 Regulation Compliance and Integrity Management	044	No such incident in 2022

Disclosure Number	Title of Disclosure	Corresponding Section of Disclosure	Page Number	Remark
GRI 206: Anti-competitive Behavior 2016				
206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	1.2.2 Regulation Compliance and Integrity Management	044	
GRI 301: Materials 2016				
301-1	Materials used by weight or volume	3.2.1 Circular Economy of Waste Resources	085	
GRI 302: Energy 2016				
302-1	Energy consumption within the organization	3.1.2 Energy Saving and Carbon Reduction Measures and Results	077	
302-3	Energy intensity	3.1.2 Energy Saving and Carbon Reduction Measures and Results	077	
302-4	Reduction of energy consumption	3.1.2 Energy Saving and Carbon Reduction Measures and Results	077	
302-5	Reductions in energy requirements of products and services	3.1.2 Energy Saving and Carbon Reduction Measures and Results	077	
GRI 303: Water and Effluents 2018				
303-1	Interactions with water as a shared resource	3.2.2 Water Resource Management	088	No water sources that are significantly affected by water withdrawal
303-3	Water withdrawal	3.2.2 Water Resource Management	088	
303-4	Water discharge	3.2.2 Water Resource Management	088	
303-5	Water consumption	3.2.2 Water Resource Management	088	
GRI 305: Emissions 2016				
305-1	Direct (Scope 1) GHG emissions	3.1.2 Energy Saving and Carbon Reduction Measures and Results	077	

Disclosure Number	Title of Disclosure	Corresponding Section of Disclosure	Page Number	Remark
305-2	Energy indirect (Scope 2) GHG emissions	3.1.2 Energy Saving and Carbon Reduction Measures and Results	077	
305-4	GHG emissions intensity	3.1.2 Energy Saving and Carbon Reduction Measures and Results	077	
305-5	Reduction of GHG emissions	3.1.2 Energy Saving and Carbon Reduction Measures and Results	077	
305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	3.2.3 Air Pollution Prevention and Control	093	
GRI 306: Waste 2020				
306-1	Waste generation and significant waste-related impacts	3.2.1 Circular Economy of Waste Resources	085	
306-2	Management of significant waste-related impacts	3.2.1 Circular Economy of Waste Resources	085	
306-3	Waste generated	3.2.1 Circular Economy of Waste Resources	085	
306-4	Waste diverted from disposal	3.2.1 Circular Economy of Waste Resources	085	
306-5	Waste directed to disposal	3.2.1 Circular Economy of Waste Resources	085	
GRI 308: Supplier Environmental Assessment 2016				
308-1	New suppliers that were screened using environmental criteria	2.4.3 Comprehensive Supplier Management	069	
GRI 401: Employment 2016				
401-1	New employee hires and employee turnover	4.1.2 Employee Composition	097	
401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	4.4 Employee Welfare	109	
401-3	Parental leave	4.4 Employee Welfare	109	
GRI 403: Occupational Health and Safety 2018				
403-1	Occupational health and safety management system	4.3 Healthy Workplace with Zero Work Injuries	103	
403-2	Hazard identification, risk assessment, and incident investigation	4.3 Healthy Workplace with Zero Work Injuries	103	
403-3	Occupational health services	4.3 Healthy Workplace with Zero Work Injuries	103	
403-4	Worker participation, consultation, and communication on occupational health and safety	4.3 Healthy Workplace with Zero Work Injuries	103	
403-5	Worker training on occupational health and safety	4.3 Healthy Workplace with Zero Work Injuries	103	
403-6	Promotion of worker health	4.3 Healthy Workplace with Zero Work Injuries	103	
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	4.3 Healthy Workplace with Zero Work Injuries	103	
403-8	Workers covered by an occupational health and safety management system	4.3 Healthy Workplace with Zero Work Injuries	103	
403-9	Work-related injuries	4.3 Healthy Workplace with Zero Work Injuries	103	
403-10	Work-related ill health	4.3 Healthy Workplace with Zero Work Injuries	103	

Disclosure Number	Title of Disclosure	Corresponding Section of Disclosure	Page Number	Remark
GRI 404: Training and Education 2016				
404-1	Average hours of training per year per employee	4.2 Talent Development	099	
404-2	Programs for upgrading employee skills and transition assistance programs	4.2 Talent Development	099	
404-3	Percentage of employees receiving regular performance and career development reviews	4.2 Talent Development	099	
GRI 406: Non-Discrimination 2016				
406-1	Incidents of discrimination and corrective actions taken	4.1.1 Human Resources Policy	096	No such incident in 2022
GRI 408：Child Labor 2016				
408-1	Operations and suppliers at significant risk for incidents of child labor	2.4.3 Comprehensive Supplier Management 4.1.1 Human Resources Policy	069 096	
GRI 409: Forced or Compulsory Labor 2016				
409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	2.4.3 Comprehensive Supplier Management 4.1.1 Human Resources Policy	069 096	
GRI 411: Rights of Indigenous Peoples 2016				
411-1	Incidents of violations involving rights of indigenous peoples	4.1.1 Human Resources Policy	096	No such incident in 2022
GRI 414: Supplier Social Assessment 2016				
414-1	New suppliers that were screened using social criteria	2.4.3 Comprehensive Supplier Management 4.1.1 Human Resources Policy	069 096	

Disclosure Number	Title of Disclosure	Corresponding Section of Disclosure	Page Number	Remark
GRI 416: Customer Health and Safety 2016				
416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	1.2.2 Regulation Compliance and Integrity Management 2.3.2 Quality Services	044 066	No such incident in 2022
GRI 417: Marketing and Labeling 2016				
417-2	Incidents of non-compliance concerning product and service information and labeling	1.2.2 Regulation Compliance and Integrity Management 2.3.2 Quality Services	044 066	No such incident in 2022
GRI 418: Customer Privacy 2016				
418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	1.2.2 Regulation Compliance and Integrity Management 2.3.2 Quality Services	044 066	No such incident in 2022
Others (Refer to GRI G4 Supplementary Indicators for the Electric Utility Sector)				
EU-10	Planned capacity against projected electricity demand over the long term, broken down by energy source and regulatory regime (Megawatt)	2.3.1 Stable Power Supply	063	
EU-11	Average generation efficiency of thermal plants by energy source and by regulatory regime	3.1.2 Energy Saving and Carbon Reduction Measures and Results	077	
EU-28	Power outage frequency	2.3.1 Stable Power Supply	063	
EU-29	Average power outage duration	2.3.1 Stable Power Supply	063	

SASB Index

Topic	Code	SASB Disclosure	Report Content	Corresponding Section	Page Number
Greenhouse Gas Emissions & Energy Resource Planning	IF-EU-110a.1	(1) Gross global Scope 1 emissions, percentage covered under (2) emissions-limiting regulations, and (3) emissions-reporting regulations	The greenhouse gas Scope 1 emissions of Guan Tian Plant in 2022 was 339,722.18 metric tons of CO_2e. Currently, there are no emissions-limiting and emissions-reporting regulations in Taiwan.	3.1.2 Energy Saving and Carbon Reduction Measures and Results	077
	IF-EU-110a.2	Greenhouse gas (GHG) emissions associated with power deliveries	Guan Tian Plant is a cogeneration plant. Its greenhouse gas Scope 1 and Scope 2 emissions in 2022 was 345,820.58 metric tons of CO_2e.	3.1.2 Energy Saving and Carbon Reduction Measures and Results	077
	IF-EU-110a.3	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	TCC's Guan Tian Plant conducts GHG inventory, which is verified by an independent third-party institution every year to keep track of GHG emissions and develop the GHG emission reduction strategy. In 2022, the Guan Tian Plant implemented energy-saving and carbon reduction projects, resulting in a reduction of approximately 2,098.6 metric tons of CO_2e. Furthermore, greenhouse gas inventories and verification planning have been completed for TCC and its subsidiaries.	3.1.2 Energy Saving and Carbon Reduction Measures and Results	077
	IF-EU-110a.4	(1) Number of customers served in markets subject to renewable portfolio standards (RPS), and (2) Percentage fulfilment of RPS target by market	Since Taiwan's renewable energy is connected to the grid and mixed with other power sources, it is impossible to distinguish renewable energy users individually.	N/A	
Air Quality	IF-EU-120a.1	Air emissions of the following pollutants: (1) NOx, (2) SOx, (3) PM10, (4) Pb, and (5) Hg; percentage of each in or near areas of dense population	(1)NOx：191.9 metric tons, (2)SOx：193.8 metric tons, (3)PM：10.6 metric tons Percentage of emissions in or near area of dense population: 100%	3.2.3 Air Pollution Prevention and Control	093
Water Management	IF-EU-140a.1	Total water (1) withdrawn and (2) consumed, and percentage of each in regions with"high" or "extremely high" water stress	In 2022, TCC's Guan Tian Plant withdrew 761,373m^3 of water, consumed 697,241m^3 of water, and discharged 64,132m^3 of water. The Plant is not located in a high/extremely high water stress area.	3.2.2 Water Resource Management	088
	IF-EU-140a.2	Number of incidents of non-compliance associated with water quantity and/or quality permits, standards, and regulations	Guan Tian Plant properly handles the discharged wastewater, and all discharged wastewater passes the relevant standards.	3.2.2 Water Resource Management	088
	IF-EU-140a.3	Description of water management risks and discussion of strategies and practices to mitigate those risks	Please refer to Water Risk Management and Measures for details.	3.2.2 Water Resource Management	088

Topic	Code	SASB Disclosure	Report Content	Corresponding Section	Page Number
Coal Ash Management	IF-EU-150a.1	Amount of coal combustion residuals (CCR) generated and percentage recycled	The total coal ash produced in 2022 was 21,551 metric tons, and the recycling rate was 100%.	3.2.1 Circular Economy of Waste Resources	085
	IF-EU-150a.2	Total number of coal combustion residual (CCR)impoundments, broken down by hazard potential classification and structural integrity assessment	Coal ash was not used as a CCR impoundment. 100% coal ash and bottom ash were recycled to make controlled low strength materials (CLSM).	3.2.1 Circular Economy of Waste Resources	085
Energy Affordability	IF-EU-240a.1	Average retail electric rate for (1) residential customers, (2) commercial customers, (3) industrial customers	TCC's retail electric rate is based on Time-of-Use (TOU) rates and Feed-in Tariffs (FIT) rates.	N/A	
	IF-EU-240a.2	Typical monthly electric bill for residential customers for (1) 500 kWh of electricity delivered per month, and (2) 1,000 kWh of electricity delivered per month	TCC does not supply power to residential users.	N/A	
	IF-EU-240a.3	Number of residential customer electric disconnections for non-payment and percentage reconnected within 30 days	TCC does not supply power to residential users.	N/A	
	IF-EU-240a.4	Discussion of impact of external factors on customer affordability of electricity, including the economic conditions of the service territory	Changes in fuel prices, the trend of tightening regulations, the impact of the pandemic and the changes in renewable energy market affect the affordability of electricity for users.	2.1 A New Direction for Energy Transition	056
Workforce Health & Safety	IF-EU-320a.1	(1) Total recordable incident rate (TRIR), (2) Fatality rate, and (3) Near miss frequency rate (NMFR)	(1) Total recordable incident rate (TRIR): 0%, (2) Occupational injury death rate: 0%, and (3) Near miss frequency rate: 0%	4.3 Healthy Workplace with Zero Work Injuries	103
End Use Efficiency & Demand	IF-EU-420a.1	Percentage of electric utility revenues from rate structures that (1) are decoupled, and (2) contain a lost revenue adjustment mechanism (LRAM)	Not applicable (LRAM is a profit calculation mechanism used by the U.S. electric utility sector)	N/A	
	IF-EU-420a.2	Percentage of electric load served by smart grid technology	No smart grid available	N/A	
	IF-EU-420a.3	Customer electricity savings from efficiency measures, by market	In 2022, a total of 162,000 kWh of electricity was saved.	3.1.2 Energy-Saving and Carbon-Reduction Actions and Results	077

Topic	Code	SASB Disclosure	Report Content	Corresponding Section	Page Number
Nuclear Safety & Emergency Management	IF-EU-540a.1	Total number of nuclear power units, broken down by U.S. Nuclear Regulatory Commission (NRC) Action Matrix Column	TCC does not own or operate nuclear power plant.	N/A	
	IF-EU-540a.2	Description of efforts to manage nuclear safety and emergency preparedness	TCC does not own or operate nuclear power plant.	N/A	
Grid Resiliency	IF-EU-550a.1	Number of incidents of non-compliance with physical and/or cybersecurity standards or regulations	Not applicable. Taiwan has not set CIP measures such as NERC in the U.S.; however, TCC has taken measures against information security and physical risks.	1.3 Risk Management	049
	IF-EU-550a.2	(1)System Average Interruption Duration Index (SAIDI) (2)System Average Interruption Frequency Index (SAIFI) (3)Customer Average Interruption Duration Index (CAIDI)	SAIDI: 0 SAIFI: 0 CAIDI: 0	2.3.1 Stable Power Supply	063
Activity Metrics	IF-EU-000.A	Number of: (1) residential customers, (2) commercial customers, (3) industrial customers, and other customers served	Total number of users (including the data of Guan Tian Plant and TCC Green Energy): (1) Residential electricity: N/A (2) Commercial electricity: 5 users (3) Industrial electricity: 8 users (4) Others: 2 users	N/A	
	IF-EU-000.B	Total electricity delivered to: (1) residential customers, (2) commercial customers, (3) industrial customers, (4) all other retail customers, and (5) wholesale customers	Power supply for users (including the data of Guan Tian Plant and TCC Green Energy): (1) Residential: N/A (2) Commercial: 15 GWh (3) Industrial: 266 GWh (4) Others: 117 GWh	N/A	
	IF-EU-000.C	Length of transmission and distribution lines	Not applicable	N/A	
	IF-EU-000.D	Total electricity generated, percentage by major energy source, percentage in regulated markets	The total electricity generation of the Guan Tian Plant and renewable energy projects was 4.53 GWh. Among them, thermal power generation accounted for 52%, solar power accounted for 8%, wind power accounted for 36%, and geothermal power accounted for 5%. The power generation of the TCC Group is regulated by the Electricity Act.	2.3.1 Stable Power Supply	063
	IF-EU-000.E	Total wholesale electricity purchased	The purchased electricity of TCC is 12.89 GWh. Not applicable; The main businesses of TCC are power generation and investing in power plants. It does not conduct the re-selling of electricity from wholesale.	3.1.2 Energy Saving and Carbon Reduction Measures and Results	077

Independent Assurance Opinion Statement

EY 安永 Building a better working world

安永聯合會計師事務所
11012 台北市基隆路一段333號9樓
9F, No. 333, Sec. 1, Keelung Road
Taipei City, Taiwan, R.O.C.
Tel: 886 2 2757 8888
Fax: 886 2 2757 6050
www.ey.com/tw

會計師有限確信報告

台灣汽電共生股份有限公司　公鑒

確信範圍

本會計師接受台灣汽電共生股份有限公司以下簡稱（台汽電）之委任，對 2022 年度永續報告書中所選定之永續績效資訊（以下稱「標的資訊」），執行財團法人中華民國會計研究發展基金會所發布之確信準則所定義之「有限確信案件」並出具報告。

標的資訊及其適用基準

有關台汽電之標的資訊及其適用基準詳列於附件一。

管理階層之責任

台汽電管理階之責任係依據臺灣證券交易所「上市公司編製與申報永續報告書作業辦法」之規定，以及依據適當之基準編製 2022 年度企業永續報告書，包括參考由全球永續性標準理事會(Global Sustainability Standards Board, GSSB) 所發布之 2021 年 GRI 準則（GRI Standards），台汽電管理階層應選擇所適用之基準，並對標的資訊在所有重大方面是否依據該適用基準報導負責，此責任包括建立及維持與標的資訊編製有關之內部控制、維持適當之記錄並作成相關之估計，以確保標的資訊未存有導因於舞弊或錯誤之重大不實表達。

本會計師之責任

本會計師之責任係依據所取得之證據對標的資訊作成結論。

本會計師依照財團法人中華民國會計研究發展基金會所發布之確信準則 3000 號「非屬歷史性財務資訊查核或核閱之確信案件」之要求規劃並執行有限確信工作，以對標的資訊是否存有重大不實表達出具有限確信報告。本會計師依據專業判斷，包括對導因於舞弊或錯誤之重大不實表達風險之評估，以決定確信程序之性質、時間及範圍。

本會計師相信已獲取足夠及適切之證據，以作為表示有限確信結論之基礎。

會計師之獨立性及品質管理

本會計師及所隸屬組織遵循會計師職業道德規範中有關獨立性及其他道德規範之規定，該規範之基本原則為正直、公正客觀、專業能力及專業上應有之注意、保密及專業行為。

本事務所遵循品質管理準則 1 號「會計師事務所之品質管理」，該品質管理準則規定組織設計、付諸實行及執行品質管理制度，包含與遵循職業道德規範、專業準則及適用之法令規範相關之政策或程序。

所執行程序之說明

有限確信案件中執行程序之性質及時間與適用於合理確信案件不同，其範圍亦較小，因此，有限確信案件中取得之確信程度明顯低於合理確信案件中取得者。本會計師所設計之程序係為取得有限確信並據此作成結論，並不提供合理確信必要之所有證據。

儘管本會計師於決定確信程序之性質及範圍時曾考量台汽電內部控制之有效性，但本確信案件並非對台汽電內部控制之有效性表示意見。本會計師所執行之程序不包括測試控制或執行與檢查資訊科技（IT）系統內資料之彙總或計算相關的程序。

有限確信案件包括進行查詢，主要係向負責編製標的資訊及相關資訊的人員進行查詢，並應用分析及其他適當程序。

本會計師執行的程序包括：

- 與台汽電之管理階層及員工進行訪談，以瞭解台汽電履行企業社會責任/永續發展之整體情況，以及報導流程；
- 透過訪談、檢查相關文件，以瞭解台汽電之主要利害關係人及利害關係人之期望與需求、雙方具體之溝通管道，以及台汽電如何回應該等期望與需求；
- 針對報告中所選定之永續績效資訊進行分析性程序；蒐集並評估其他支持證據資料及所取得之管理階層聲明；如必要時，則抽選樣本進行測試；
- 閱讀台汽電之企業永續報告書，確認其與本事務所取得關於企業永續整體履行情況之瞭解一致。

先天限制

因永續報告中所包含之非財務資訊受到衡量不確定性之影響，選擇不同的衡量方式，可能導致績效衡量上之重大差異，且由於確信工作係採抽樣方式進行，任何內部控制均受有先天限制，故未必能查出所有業已存在之重大不實表達，無論是導因於舞弊或錯誤。

結論

依據所執行之程序及所取得之證據，本會計師未發現標的資訊有未依照適用基準編製而須作重大修正之情事。

安永聯合會計師事務所

會計師：張志銘

民國一一二年五月二十六日

EY安永 Building a better working world

附件一：

編號	章節	內文標題	標的資訊	適用基準	其他說明
1	4.3	零工傷的健康職場	工作總時數：男 87,376（員工）/ 59,698（其他工作者（承包商/供應商））；女 6,096 / 7,845；合計 93,472 / 67,543 職業傷害死亡比率：男 0 / 0；女 0 / 0；合計 0 / 0 嚴重職業傷害比率：男 0 / 0；女 0 / 0；合計 0 / 0 可記錄之職業傷害比率：男 0 / 0；女 0 / 0；合計 0 / 0 損工日數率(LDR)：男 0 / 0；女 0 / 0；合計 0 / 0 缺勤率(AR)：男 0 / 0；女 0 / 0；合計 0 / 0 虛驚事故量：男 0 / 0；女 0 / 0；合計 0 / 0 虛驚事故率(NMFR)：男 0 / 0；女 0 / 0；合計 0 / 0	2022 年 01 月 01 日至 2022 年 12 月 31 日，台汽電官田廠依性別、工作者類型區分之職業災害與缺勤率統計。	無
2	4.1.2	員工組成	台汽電 年齡：30 歲以下 / 31-40 歲 / 41-50 歲 / 51 歲以上 / 總計 新進男性員工：1 / 2 / 3 / 0 / 6 新進女性員工：5 / 1 / 0 / 0 / 6 新進男性員工占比：0.77% / 1.54% / 2.31% / 0.00% / 4.62% 新進女性員工占比：3.85% / 0.77% / 0.00% / 0.00% / 4.62% 台汽電 年齡：30 歲以下 / 31-40 歲 / 41-50 歲 / 51 歲以上 / 總計 男性員工離職人數：0 / 1 / 3 / 4 / 8 女性員工離職人數：1 / 0 / 1 / 0 / 2 男性員工離職率：0.00% / 0.77% / 2.31% / 3.08% / 6.15% 女性員工離職率：0.77% / 0.00% / 0.77% / 0.00% / 1.54% 整體員工離職人數：10 整體員工離職率：7.69%	2022 年 01 月 01 日至 2022 年 12 月 31 日間，台汽電（含母公司及官田廠）依性別統計新進及離職員工人數、占比與比率。	無
3	1.2.2	法規遵循與誠信經營	2022 年未發生任何違規裁罰事件。	2022 年 01 月 01 日至 2022 年 12 月 31 日間，台汽電官田廠因違反環境法律或法規受裁處情形。	無

EY安永 Building a better working world

編號	章節	內文標題	標的資訊	適用基準	其他說明
4	3.2.1	廢棄資源循環經濟	廢棄物 / 2022 年重量（公噸） R 類、D 類飛灰及底灰：21,550.54 生活垃圾：1.5 污泥：17.67 廢保溫材、廢耐火材：7.16 總重量：21,576.87	2022 年 01 月 01 日至 2022 年 12 月 31 日間，台汽電官田廠按廢棄物類別統計之廢棄物產生量。	無
5	3.2.2	水資源管理	廠區 / 用水來源 / 2022 年 (m³) / 計算方式說明 官田廠：原水(水庫) 290,094 運轉課每日抄錄之數據 官田廠：自來水 471,279 運轉課每日抄錄之數據 官田廠：排水量 64,132 廢水排放量+客戶買水量 官田廠：耗水量 697,241	2022 年 01 月 01 日至 2022 年 12 月 31 日間，台汽電官田廠取水量、排水量及耗水量。	無

Taiwan Cogeneration Corporation
6F, No. 392, Ruiguang Road, Neihu, Taipei114,
Taiwan (R. O. C.)
Tel: 02-8798-2000
Official Website: www.cogen.com.tw

TCC