



2022



Sustainability Report





TABLE OF CONTENTS

Foreword	About this report	3	
	Message from the Management	5	
	2021 Sustainable Accomplishments	7	
	Sustainable steps of CPC	CPC's Sustainable vision	9
		CPC Practice for the SDGs	11
Annual Sustainability Materiality Topic		15	
	Communication with stakeholders	18	
Chapter 1 Transparent CPC ▪ Ethical Governance	1.1 Our CPC	24	
	1.2 Sustainable Governance	32	
	1.3 Ethical Management	39	
Chapter 2 Ethical CPC ▪ Acclaimed Spirit	2.1 Supreme Quality	54	
	2.2 Superb Services	65	
	2.3 Selfless Contribution	69	
	【Featured Topic】 World Toilet Day: Experiencing the soothing convenience in CPC	75	

Depending on your status, the recommended reading orders are:

Shareholder (MOEA)

- 1 [Transparent CPC ▪ Ethical Governance](#)
- 3 [Net-Zero CPC ▪ Green Guardian](#)
- 2 [Ethical CPC ▪ Acclaimed Spirit](#)
- 4 [Benevolent CPC ▪ Caring Engagement](#)

Public Representatives

- 3 [Net-Zero CPC ▪ Green Guardian](#)
- 1 [Transparent CPC ▪ Ethical Governance](#)
- 4 [Benevolent CPC ▪ Caring Engagement](#)
- 2 [Ethical CPC ▪ Acclaimed Spirit](#)

NPOs/NGOs

- 1 [Transparent CPC ▪ Ethical Governance](#)
- 4 [Benevolent CPC ▪ Caring Engagement](#)
- 2 [Ethical CPC ▪ Acclaimed Spirit](#)
- 3 [Net-Zero CPC ▪ Green Guardian](#)

Business Partners

- 4 [Benevolent CPC ▪ Caring Engagement](#)
- 3 [Net-Zero CPC ▪ Green Guardian](#)
- 1 [Transparent CPC ▪ Ethical Governance](#)
- 2 [Ethical CPC ▪ Acclaimed Spirit](#)

Communities

- 4 [Benevolent CPC ▪ Caring Engagement](#)
- 3 [Net-Zero CPC ▪ Green Guardian](#)
- 1 [Transparent CPC ▪ Ethical Governance](#)
- 2 [Ethical CPC ▪ Acclaimed Spirit](#)



Chapter 3 Net-Zero CPC ▪ Green Guardian	3.1 Climate Change Adaptation	80
	3.2 Green and Circular Transformation under energy and resources management	94
	3.3 Pollution Prevention	113
	3.4 Ecological and Environment Protection	120
Chapter 4 Benevolent CPC ▪ Caring Engagement	4.1 Workplace Safety	127
	4.2 Friendly Workplace	131
	4.3 Talent Recruitment and Development	140
	4.4 Promotion of Social Inclusion	148
	4.5 Industry-Academic Cooperation	161
	【Featured Topic】 How numbers depict the story of Taiwan Oil Field Exhibition Hall's social impact	165
	【Featured Topic】 Sustainable path that walked far and wide by CPC's Staffs	167
Appendices	GRI Standards Index	169
	SASB Index	173
	BSI Certification (AA1000 AS v3)	176
	CPA Assurance (ISAE 3000)	178

Customers

- ④ [Benevolent CPC ▪ Caring Engagement](#)
- ③ [Net-Zero CPC ▪ Green Guardian](#)
- ② [Ethical CPC ▪ Acclaimed Spirit](#)
- ① [Transparent CPC ▪ Ethical Governance](#)

Government

- ④ [Benevolent CPC ▪ Caring Engagement](#)
- ① [Transparent CPC ▪ Ethical Governance](#)
- ② [Ethical CPC ▪ Acclaimed Spirit](#)
- ③ [Net-Zero CPC ▪ Green Guardian](#)

Employees

- ④ [Benevolent CPC ▪ Caring Engagement](#)
- ③ [Net-Zero CPC ▪ Green Guardian](#)
- ① [Transparent CPC ▪ Ethical Governance](#)
- ② [Ethical CPC ▪ Acclaimed Spirit](#)

The media

- ④ [Benevolent CPC ▪ Caring Engagement](#)
- ② [Ethical CPC ▪ Acclaimed Spirit](#)
- ① [Transparent CPC ▪ Ethical Governance](#)
- ③ [Net-Zero CPC ▪ Green Guardian](#)

About this Report

CPC Corporation, Taiwan (hereafter abbreviated as CPC) values stakeholders' opinions as propositions to enhance its business operations. Since 2007, CPC has voluntarily published its annual sustainability reports for 14 years. The reports not only disclose CPC's sustainable development goals, strategies, and accomplishments, but also actively respond to corporate social responsibility (CSR) issues that are voiced by the stakeholders.

Reporting Period and Scope

The reporting period is from January 1, 2021 to December 31, 2021 (contents include historical data to ensure information integrity and continuity), while previous report was published in June 2021. None of the information is re-edited for this report, and there is no difference in reporting boundaries between these two years. This report provides information regarding the activities of CPC headquarters and affiliates. For the environmental aspects, the reporting boundaries mainly cover the operations of the Taoyuan Refinery Plant, Dalin Refinery Plant, and Linyuan Petrochemical Plant. For matters and data not disclosed in this report, kindly visit our corporate website (<https://www.cpc.com.tw/>).

Reporting Guidelines and Principles

This report is compiled according to the GRI standards of the Global Reporting Initiative (GRI) for global sustainability reports to disclose CPC domestic and international Corporate Social Responsibility (CSR) activities and new developments. In 2021, CPC further incorporated major international sustainable indices and initiatives, such as Sustainability Accounting Standards Board (SASB) index and the Task Force on Climate-related Financial Disclosures (TCFD) to disclose the CSR engagements in a more comprehensive manner.

AA1000 AccountAbility
Principles

The UN Global Compact

ISO 26000 Guidance on
Social Responsibility

The UN Sustainable
Development Goals (SDGs)

Sustainability Accounting
Standards Board (SASB)

Task Force on Climate-related
Financial Disclosures (TCFD)

Report Quality Control Workflow and Data Calculation Basis



Report Content Review

After consolidating and editing of the report, DoP sent the first draft to panel members to review the contents in relation to their functions and duties. After third-party external verification, DoP revised the draft with respect to the verification comments before finalization. Lastly, DoP submitted this report for approval according to the administrative procedure prior to publication.



Report Editing



CPC established the “2022 Sustainability Report Editing Panel” , with the Vice President of the Department of Planning (DoP) as the convener. The DoP is the executive secretary and members of all business divisions, research units, and staffing offices.



External Assurance of CSR Report



This report has been verified and assured by the British Standards Institution (BSI) and KPMG Taiwan to comply with the following:

- BSI: GRI Standards - Core Option and AA1000 Assurance Standard v3 - Moderate Level of Assurance
- KPMG: ISAE3000 Assurance (Three SASB indicators)

Data Calculation

All financial data were based on CPC's CPA-certified financial statements and expressed in New Taiwan Dollars. Some statistics were quoted from open information of government agencies (e.g., EPA). ISO 14064-1, ISO14001, and ISO45001 are certified by third-party certification bodies.

Contact Information

For any questions or comments about the report contents or activities, please contact CPC at:

Ms. Hwei-Yu Sie, Department of Planning, CPC Corporation, Taiwan

➔ No. 3, Songren Road, Xinyi District, Taipei City, Taiwan 11010 (R.O.C.)

➔ Tel: (02) 8725-8257

➔ Fax: (02) 8789-9018

➔ E-mail: 209708@cpc.com.tw

➔ Website: <https://www.cpc.com.tw/>

Message from the Management

Looking back to 2021, the world was still under the severe situation amid COVID-19 pandemic. In July, the European Union announced the “European Green Deal” bill and development pathway, and the 26th United Nations Climate Summit (COP26) at the end of the year focused again on the issue of climate change. Taiwan also incorporated the 2050 net-zero emissions plan into the law to lead future medium and long-term actions to address climate impacts. The National Development Council also proposed the "2050 Net-Zero Emissions Policy Roadmap" in March 2022.

Despite the increasingly severe challenges posed by the internal and external business environment for corporate operations, CPC has always been mindful of its stakeholders and has never hesitated in its commitment to sustainable development. With the concerted efforts of all the staff, we have achieved fruitful results in all aspects:

➔ Contribution to national treasury and stabilization of energy and consumer prices

CPC has long been a stable supplier of oil and gas energy to the domestic market, contributing to the national treasury and making significant contributions to the national treasury. In 2021, in the face of global monetary easing policy, inflation of raw materials, soaring international oil and gas prices as well as the pandemic, CPC abode by its role as the foundation of all industries and a state-owned enterprise, implementing measures such as oil and gas price freeze, provision of the lowest price in Asia and oil and gas relief, and bearing huge policy costs so as to ensure stable energy and consumer prices and alleviate inflationary pressure. With the efforts of all staff, we have been given the highest recognition of AAA (tw) by Fitch Ratings for 16 consecutive years, and no policy loss has affected our long-term rating and outlook.

➔ Insisting on the philosophy of superb and customer-oriented services

CPC is committed to energy transformation and continues to build "smart & green e-stations" and expand the marketing and application of digital payment to provide customers with a variety of new clean energy options and technological services. During the Level 3 alert period of the pandemic outbreak in Taiwan, the gas station and public toilet services had not been closed, insisting on opening a convenient door for the people who had been running around for a living. In 2021, CPC was recognized as “Trusted Brand Platinum” for 21 consecutive years by Reader's Digest, and the

“95 Unleaded” won the first prize for the most popular brand in the 17th National Brand Yushan Award. All 606 public toilets of directly operated gas stations received super-excellent rank. Regardless of market share or consumers’ preference, CPC is people's first choice.

➔ Pursuing supply chain sustainability and joining hands with franchised stations for sustainable operation

CPC aims to establish long-term partnership with suppliers, dealers, and franchises. Extending from CPC's own operations, products, and services with management mechanisms of training, evaluation, assessment and counseling, CPC strives to create positive influence together with 1,300 franchises on four aspects: proper governance, business identification, product and service, and operation management for sustainable operation. In 2021, in response to the United Nations’ World Public Toilet Day, CPC mobilized 1,899 self-operated gas stations and franchises across Taiwan to clean the public toilets at gas stations, enabling partners to work together to convey the concept of sustainable management in the supply chain.

➔ Commitment to climate action practices to accelerate greenhouse gas reduction

CPC plans its transformation path with the three strategies of "High-value Petrochemical", "Low-Carbon Emission" and "Lean-Renewable Energy". CPC has continued to reduce greenhouse gas emissions and energy consumption, and has even become a pioneer in importing carbon-

neutral products and carbon-neutral gas stations, helping the industry to accelerate the achievement of carbon neutrality and writing a new page in history from low carbon to zero carbon. In 2021, when Taiwan was suffering from the worst drought in a century, CPC sent a professional drilling team to drill 3 groundwater wells for drought relief, injecting 15,000 tons of water for use per day.

➔ Supplying low-carbon clean energy to fulfill the ecological conservation mission

“Low-carbon, clean, and energy-efficient” has become the trend for energy industry. In addition to the gradual transformation from oil supply to hydrogen supply in 2021, we continued to build a natural gas transmission and storage network for supply and backup in the north, central and south, and built the third LNG receiving terminal to expand the use of low-carbon energy. In addition to promoting low-carbon energy infrastructure, CPC devoted itself to the algal reefs ecological restoration, and created a habitat for little terns at Guantang, so as to move towards a bright future where ecology, life and production are integrated.

➔ Creating a happy and friendly workplace, and cultivating professional and united employees

CPC creates a friendly workplace, implements selection, training, employment and retention, establishes and facilitates promotion channels, takes care of employees' health and carries out gender equality. CPC has made occupational safety a prerequisite for all operations. In 2021, all unit were introduced and passed the “Taiwan Occupational Safety and Health Management System (TOSHMS)” and ISO45001 certification. CPC will continue to introduce emerging digital technology applications such as AIoT and Big Data analysis to strengthen the overall safety management network.

➔ Giving back to the community for public welfare development and cultivating environmental energy education

CPC has long been concerned with public welfare and education development, and has built six special exhibition halls throughout Taiwan to promote environmental education and continue to facilitate industry-academia cooperation. We built Kind Gas Stations to create training and employment opportunities to protect disadvantage

group's developments. CPC also supported the development of sports in Taiwan with the spirit of “the strongest backing for the glory of Taiwan”, and has nurtured the best athletes for them to shine in the “2020 Tokyo Olympics”. In addition to expanding our overseas operations, we have been contributing to the international community by assisting in the construction of roads and drilling of donated water wells in mining areas.

➔ Taking on the challenge of energy transformation to create a net-zero sustainable future

“Transformation or Fade away.” In the face of rapid and uncontrollable changes in the environment and ecology, the only way to develop sustainably is to commence transformation. In line with the government's net-zero path, CPC has internally invited cross-generational employees to participate in activating transformation, and to jointly depict a vision and development energy for the future; externally, CPC has initiated stakeholder dialogues to exchange and cooperate with different industries to achieve the goal of net-zero emissions. CPC will build on the solid foundation we have built in the past and accelerate energy transformation to move together towards a new generation of net zero sustainability.



Chairman

Lee, Shun-chin

President

Fang, Jeng-Zen

2021 Sustainable Accomplishments



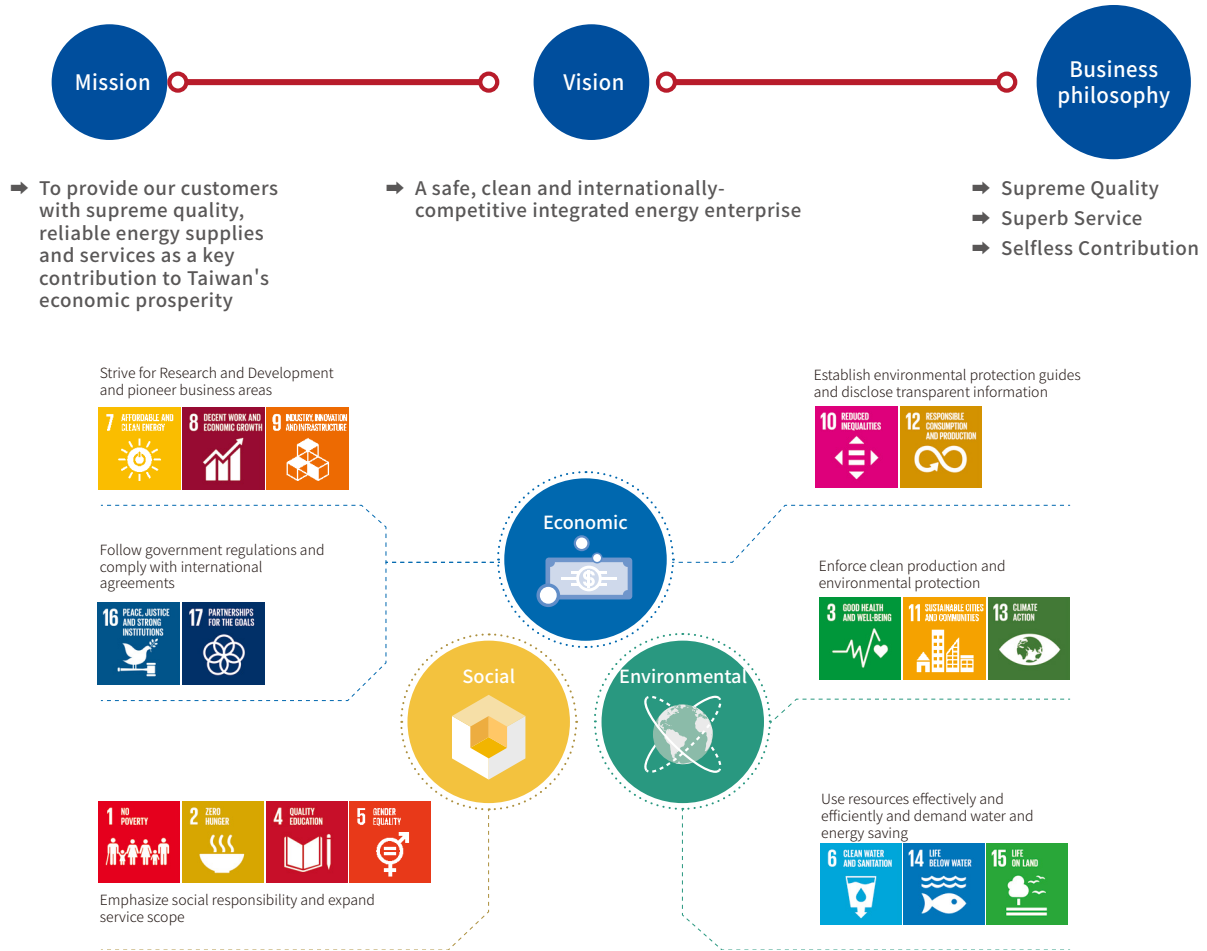
- ➔ CPC won the "Asia Corporate Excellence & Sustainability Awards for 2021" - "Top Sustainability Advocates in Asia" and "Outstanding Leaders in Asia"
- ➔ CPC was granted the "Asia Responsible Enterprise Awards (AREA) for 2021" - "Social Empowerment Award" and "Green Leadership Award"
- ➔ Granted the "2021 Taiwan Corporate Sustainability Awards (TCSA)" – "Comprehensive Performance Award - Top 50 Corporate Sustainability Awards", "Corporate Sustainability Report - Platinum Award in the Energy Industry", and other 7 Excellent Case Awards including the "Social Inclusion Award", the "People Development Award", the "Growth through Innovation Award", the "Creative Communication Leadership Award", the "Circular Economy Leadership Award", the "Water Management Leadership Award" and the "Gender Equality Award"
- ➔ Granted the "2021 TSAA Taiwan Sustainability Action Award" - "Gold: Slow - Flying Angel Cultivation by CPC", "Silver: CPC Carbon Neutralization Pioneer", and "Silver: Resource Cycle Co-Creation Diamond Value"
- ➔ Awarded "Excellence in Sustainable Resilience" by the British Standards Institution (BSI)
- ➔ Voted as one of the "Best Consumer Brands" from the customer service survey conducted by the Management Magazine for 16 consecutive years
- ➔ Awarded by Readers' Digest the "Trusted Brand Platinum Award in the Gas Station category" for 21 consecutive years and the "Trusted Brand Gold Award in the Lubricant subcategory under the Automobile and Related Products category" for 3 consecutive years
- ➔ Received 8 main awards from the 18th National Brand Yushan Awards, including the "National First Award for Best Popular Brand", the "National First Award for Best Product", "Best Popular Brand Award", and 5 of the "Best Product Award"
- ➔ Received a national long-term rating of "AAA (tw)" from Fitch Ratings, Inc. for 16 consecutive years
- ➔ Passed Taiwan Intellectual Property Management System - TIPS (Level A) in 2021
- ➔ Global Information Website was honored by with Accessibility Web Regulations AA Mark (V2.0) for 3 consecutive years
- ➔ Won the 18th National Innovation Award - the "Innovation Advancement Award" - "Algae' finds Health - Development of Native Large Algae Raw Materials" and "Bio-transformation Production of N-Acetylglucosamine for 3 consecutive years"; "Enterprise Innovation Award"-"Development of High-Security Fast-Charging Lithium Titanate Energy Storage Material Technology"
- ➔ Won one "Platinum Medal Awards", one "Gold Medal Awards" and one "Silver Medal Award" and one "Copper Medal Awards" in the Invention Patent Competition hosted by the Taiwan Innotech Expo in 2021
- ➔ Honored by the Harvard Business Review with the "Digital Transformation Reform Award" - "Operational Excellence Model Award"

2021 Sustainable Accomplishments



- ➔ Received the "Silver Award" at the 3rd National Enterprise Environmental Protection Awards held by the Environmental Protection Administration, Executive Yuan
- ➔ Granted the "Green Chemicals Application and Innovation Award" by the Environmental Protection Administration, Executive Yuan
- ➔ Received "Energy Conservation Leadership Special Award" in the Industry and Commerce Group A (Office) category at the Taipei Energy Conservation Leadership Awards
- ➔ Honored by the Environmental Protection Bureau of Kaohsiung with the "Outstanding Certified Enterprise in Air Purification" - "Dalin Oil Refinery" for 6 consecutive years
- ➔ Honored by the Environmental Protection Bureau of Taoyuan with the "Private Enterprises and Groups Green Procurement Performance Award" and the "Excellent Enterprise in River Maintenance"
- ➔ Granted by the Environmental Protection Bureau of Kaohsiung the "Excellent Construction Site Award in Environmental Protection" - "50,000-Kiloliter Oil Tank EPC Project located in Area 1, Block 6, Dalin Petroleum Oil Storage Center"
- ➔ Totally, more than 230 solar photovoltaic stations have been built, and 19 self-built solar photovoltaic systems have been certified as renewable energy stations
- ➔ A total of 67 petrol stations have been certified as green buildings, of which 11 diamond-class certifications
- ➔ Granted the "Public Works Quality Award" - "Facilities Engineering Category" - "New Construction Works including three 5,000KL Storage Tanks at Hsinchu Air Force Base" by the Ministry of Economics Affairs
- ➔ Granted the "the Excellent Designated Performance Organization in the National Key Infrastructure Protection" by the Executive Yuan
- ➔ Honored by the Ministry of Labor with the "Excellent Organization Award in Promoting Occupational Safety and Health"
- ➔ Honored by the Health Promotion Administration, Ministry of Health and Welfare with the "Good Health Workplace" - "Health Management Award"
- ➔ Granted the "Assessment and Incentive Plan for Gender Equality Business Guidance conducted by the Executive Yuan" - "Gender Equality Promotion Award"
- ➔ Received the Silver Award by Taiwan Training Quality System (TTQS) by Ministry of Labor
- ➔ Honored by the Sports Administration, Ministry of Education with the "Sports Promotion Award" - Gold Award in Sponsor Category for 4 consecutive years
- ➔ Granted the Arts & Business Awards- Gold Award by the Ministry of Culture for 2 consecutive years

CPC's Sustainable Vision



Sustainable Development Strategy and Goals

It has been 75 years since the establishment of CPC. In addition to its responsibility to stabilize oil and gas prices as a state-owned business, CPC also strives to adequately supply domestic oil and gas products, assist the development of petrochemical midstream and downstream industries. In addition, CPC is committed to improving environmental quality, fulfilling corporate social responsibility, and harmonizing social relations. In response to the global trend and in line with the international trend of environmental protection, CPC has formulated the following sustainability management policy since the end of 2003.

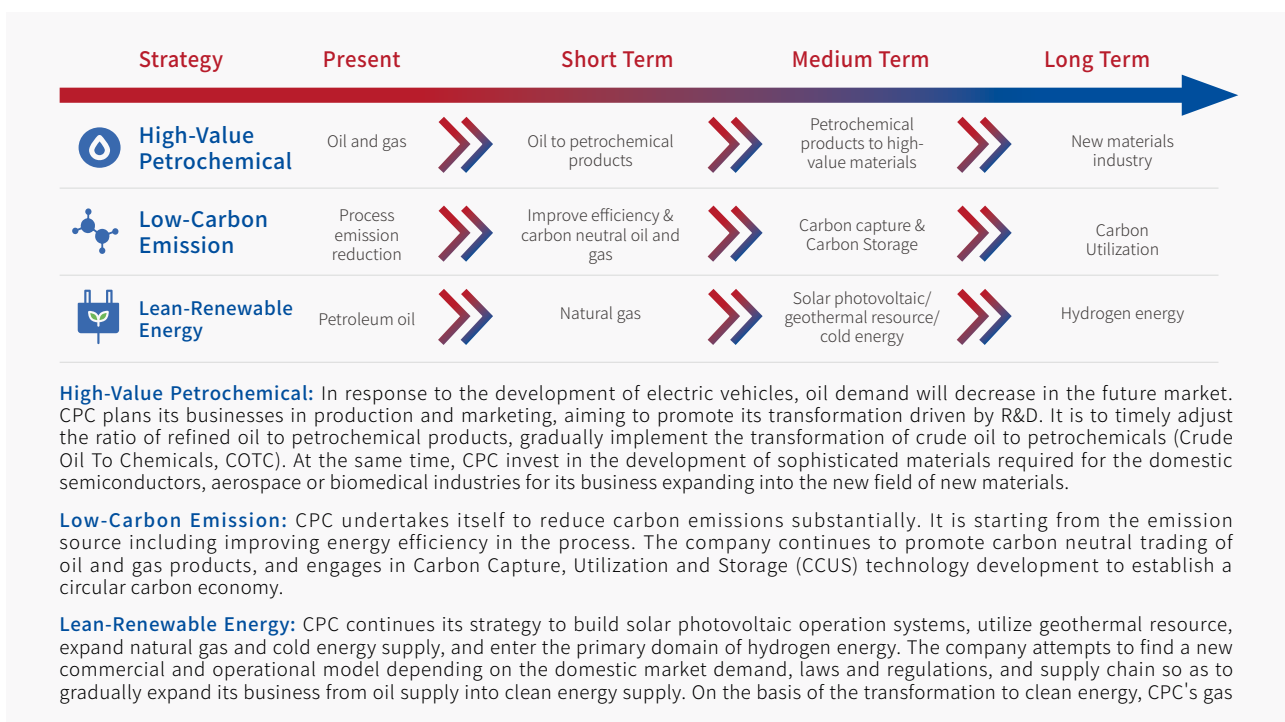
Sustainability Management Policy

Policy Guidelines	Explanation	Corresponding to chapter
Follow government regulations and comply with international agreement	Compliance with government regulations is the fundamental requirement for respective unit of CPC with its aim of further actively participating in the promotion of domestic and international environmental protection conventions to expand business vision and respond to the trend of corporate globalization as early as possible.	CH1 · CH2
Enforce clean production and environmental protection	CPC makes good use of the environmental management system for pollution prevention, continuous improvement, waste reduction and source improvement. CPC also handles waste properly, conducts product life-cycle analysis, and realizes comprehensive clean production to protect the ecological environment.	CH3

Policy Guidelines	Explanation	Corresponding to chapter
Use resources effectively and efficiently and demand water and energy saving	Energy efficiency, water conservation, and energy saving are implemented to create company benefits with minimum costs to reduce various pollutants, wastes, and greenhouse gas emissions.	CH3
Emphasize social responsibility and expand service scope	To fulfill the responsibility of a good corporate citizen in the concept of environmental protection, promoting the enhancement in social humanity; to expand the scope of CPC's services, so that business partners are willing to apply CPC's services for joint benefits, thereby enhancing corporate competitiveness.	CH4
Establish environmental protection guides and disclose transparent information	Establish environmental efficiency indicators, continue to produce and publish performance regularly, and strive to improve the transparency of operating information to promote sustainable operations.	CH1 · CH3
Strive for Research and Development and pioneer business areas	Facing various new energy application technologies, CPC's vision as an energy company in Taiwan will apply innovation and R&D as an opportunity for the company to operate in new areas.	CH3

Advance Deployment to Accelerate Net Zero Transformation: Toward Sustainable Operation

Extreme weather risks have intensified in recent years. By May 2021, more than 130 countries in the world have announced that they will achieve net zero emissions by 2050. Following the global trend, Taiwan has also committed to the goal of net zero emission in 2050. In July 2021, after the European Green Deal (EGD) was launched, the EU introduces the "Fit for 55 Package 2030", which sets a goal of 55% reduction in greenhouse gas (GHG) emissions by 2030 compared with 1990. In conformity with the net zero emissions trend, each country strengthens carbon reduction consciousness, which drives a change in energy demand structure. Worldwide enterprises are responding to this carbon reduction trend in a synchronous manner. They define the roadmap of their operations, products or supply chains towards zero carbon emissions. With the trend, the energy and petrochemical industries also launch a wave of transformation. Ranking at the first place in the state-owned petrochemical and energy corporation, CPC has formulated its business transformation in three aspects, "High-Value Petrochemical", "Low-Carbon Emission" and "Lean-Renewable Energy. CPC continues to follow the low-carbon trend by promoting the business of carbon reduction and excellent oil, developing renewable energy and negative carbon emission technologies, and working with all stakeholders to expand the business scope into a new era of net zero emissions and sustainable



CPC 's Practice for the SDGs

SDG	Significance to CPC	Contributions of CPC	Corresponding Chapter
 <p>Objective 1 Poverty eradication</p>	CPC supports the underprivileged people at domestic and international mining sites, in hopes of utilizing CPC's global influence	<ul style="list-style-type: none"> CPC supports vulnerable groups and the development in various industries by providing care activities with relief packages (e.g. rent deferment, rent reduction, and oil product subsidies), helping them cope with the COVID-19 crisis CPC formulates a specific budget for local community development and organizes charity events in developing countries' mining sites each year. CPC also provides local job opportunities, skills training, and proper education for children to help alleviate poverty 	1.1 Our CPC 4.4 Promotion of Social Inclusion [Featured Topic] Sustainable path that walked far and wide by CPC staffs
 <p>Objective 2 Zero Hunger</p>	CPC ensures the basic nutrition needs of the poor and underprivileged as well as the availability of basic nutrition to support the needs in their daily life	<ul style="list-style-type: none"> CPC donates daily necessities and nutritious foods such as dried milk to the local community in Chad. CPC also provide school supplies and constructs school buildings for local students. 	[Featured Topic] Sustainable path that walked far and wide by CPC staffs
 <p>Objective 3 Good Health and Well-being</p>	Ensuring employees' health and safety is CPC's responsibility	<ul style="list-style-type: none"> Employees are provided with complete medical examination and occupational safety protection. CPC clinics have been established in Taoyuan, Miaoli, Kaohsiung and Taipei to serve employees and local communities. 	4.1 Workplace Safety 4.2 Friendly Workplace
 <p>Objective 4 Quality education</p>	CPC promotes energy education in daily lives and its sustainability philosophy via publicities, exhibitions, events, and environmental educations and conveys to children, teenagers, and the general public. It creates an exclusive mechanism in Taiwan to nourish slow-flying angles	<ul style="list-style-type: none"> CPC actively participates in MAKER PARTY, which is an energy education program that teaches elementary school student with handcrafts and learning games to enhance energy education CPC's Kaohsiung Refinery Environmental Education Park and Taiwan Oil Field Exhibition Hall have been granted the Environmental Education Facility Certification. CPC Petroleum Discovery Museum adopts digital and virtual reality technologies to demonstrate interactively the elusive energy-related knowledge so as to connect daily life with energy and to enhance visitors' learning intent and effectiveness. To assist local residents and help children learn and grows, CPC promotes the dissemination of cultural and educational knowledge in the community, sponsors livelihood equipment, donates refurbished computers, and provides assistance to sports teams in rural areas. CPC develops an original counselor mechanism to cultivate slow-flying angels to build skills. 	4.4 Promotion of Social Inclusion [Featured Topic] How numbers depict the story of Taiwan Oil Field Exhibition Hall's Social Impact

SDG	Significance to CPC	Contributions of CPC	Corresponding Chapter
 <p>Objective 5 Gender Equality</p>	<p>CPC sees all genders as equals. Salaries and promotions are not distinguished by gender in any way</p>	<ul style="list-style-type: none"> Female employees account for 15.31% of the overall staff, of which 23.32% are senior executives Until 2021, three female vice presidents have been appointed, making CPC ahead of all state-owned enterprises in Taiwan 34% of male employees are provided with parental leave, while the reinstatement and retention rates for both genders are 100% 	<p>4.2 Friendly Workplace 4.3 Talent Recruitment and Cultivation</p>
 <p>Objective 6 Clean water and sanitation</p>	<p>CPC places great emphasis on water stewardship, infrastructure improvement in developing countries, and clean water supply. CPC implements various water conservation measures, while improving water usage efficiency.</p>	<ul style="list-style-type: none"> From 2018 to 2021, all three refinery plants had recycled about 98% of the water consumptions CPC donates groundwater wells at mining sites in developing countries to improve local water usage. In addition, CPC also brings in voluntary medical services to improve the health and sanitation environment locally In 2021, all the public toilets of CPC's 606 directly-operated gas stations have been awarded the super-excellent rank, and since 2019, they have responded to the Environmental Protection Administration's adoption of public toilet promotion plan for three consecutive years. In which these toilets reduced the discharge of sewage and waste gas, and increased the recycling and safe reuse rate 	<p>3.2 Green and Circular Economy Transformation under energy and resources management [Featured Topic] World Toilet Day-Experiencing the soothing convenience in CPC [Featured Topic] Sustainable path that walked far and wide by CPC staffs</p>
 <p>Objective 7 Affordable and Clean Energy</p>	<p>CPC maintains the stability of energy supply and its market price. CPC also promotes the installation of solar power systems at gas stations as well as sponsors research and development of green energy</p>	<ul style="list-style-type: none"> Set 2030 carbon reduction goal and 2050 Net Zero Emission as a continuously working target. By the end of 2021, 230 rooftop solar photovoltaic stations were installed with a total energy capacity of 11.417MW An assessment on the risks of climate change is completed for 24 energy supply plants and a total of 1,451 operational facilities were checked and assessed in 2021 	<p>1.1 Our CPC 3.1 Climate Change Adaptation 3.2 Green and Circular Economy Transformation under energy and resources management</p>
 <p>Objective 8 Decent Work and Economic Growth</p>	<p>CPC offers appealing employment opportunities, provides friendly working environment, and strives to maintain strong operating performance</p>	<ul style="list-style-type: none"> CPC has set up global operations in 4 continents and 16 countries, while improving local employment rate and economic growth at mining sites in developing countries CPC hired 811 people with disability (including interns), representing 4.71% of total employees (including contract employees and interns). CPC employed and trained 559 slow-flying angles In 2021, to enhance the competitiveness of employees, the average training hours of employees is 41.05. CPC obtained Talent Quality-Management System (TTQS) Silver Award certification. 	<p>1.1 Our CPC 4.2 Friendly Workplace 4.3 Talent Recruitment and Cultivation</p>

SDG	Significance to CPC	Contributions of CPC	Corresponding Chapter
 <p>Objective 9 Industry, Innovation and Infrastructure</p>	CPC continuously promotes circular economy, energy/resource efficiency enhancement, and innovative R&D projects as the means to maintain competitiveness, sustainability, and resilience in the industry	<ul style="list-style-type: none"> Continuous enhancements on LNG transportation infrastructure, LNG storage, and pipeline capacity to improve gas supply with a robust gas supply network 67 gas stations were certified as green buildings, and 11 of which were granted diamond-grade certification 4 Smart & Green Demo e-Stations have been built across Taiwan, with each located in northern, central, southern, and eastern Taiwan 	3.1 Climate Change Adaptation 3.2 Green and Circular Economy Transformation under energy and resources management
 <p>Objective 10 Reduced Inequalities</p>	CPC ensures that every employee is entitled to equal recruitment, treatment, and promotion opportunities	<ul style="list-style-type: none"> Pays attention to employees' opinions and encourages employees to provide feedback. 1 collective negotiation meetings and 20 labor-relations meetings were convened in 2021. CPC signed a collective agreement with its employees 41 years after the last such agreement In recent years, the female employees in CPC and the female engineers in refined production department have increased year by year CPC pioneered to hire female at gas stations and unemployed females for car washing so as to improve women's employability Sets up an employee appeal committee, a sexual harassment prevention committee, as well as a reward and disciplinary committee 	Sustainable steps of CPC 4.2 Friendly Workplace 4.3 Talent Recruitment and Cultivation
 <p>Objective 11 Sustainable Cities and Communities</p>	CPC has gas stations all over Taiwan. Being one of the most highly used public spaces, it is important that we offer safety, inclusiveness and convenience to all women, children and people with disabilities	<ul style="list-style-type: none"> CPC has gas stations established in offshore islands and rural areas, regardless of benefits or losses CPC's 606 directly-owned gas stations' public toilets won the local evaluation super-excellent rank and 914 franchised gas stations' public toilets with excellent grade or above in 2021 67 gas stations were certified as green buildings, 11 of which received diamond-grade certifications 	2.3 Greatest Contribution 3.2 Green and Circular Economy Transformation under energy and resources management
 <p>Objective 12 Responsible consumption and production</p>	CPC undertakes innovative R&D to provide environment-friendly and sustainable energy solutions to fulfill its duties as a responsible producer	<ul style="list-style-type: none"> All products are in compliance with CNS Information and safety data sheet (SDS) of key products and services have been disclosed on CPC's website Progress of sustainable operation is publicly disclosed 	1.1 Our CPC 2.1 Supreme Quality
 <p>Objective 13 Climate Action</p>	CPC responds to the risks and opportunities of climate change, while addressing them through mitigation and adaption measures	<ul style="list-style-type: none"> CPC has set a phased and long-term goal of reducing emission of greenhouse gas by 49.5% in 2030, with a 2005 base year Complete climate change risk assessment for 7 plant sites. A total of 1,451 operational facilities were counted. All major investment projects have been assessed in terms of environmental impact 	3.1 Climate Change Adaptation

SDG	Significance to CPC	Contributions of CPC	Corresponding Chapter
 <p>Objective 14 Life Below Water</p>	<p>Part of CPC's operations take place near harbor areas. Thus, CPC invests resources into marine conservation and adopts the duty to reduce impacts to the ocean ecosystem</p>	<ul style="list-style-type: none"> CPC continues to adopt the approach of avoiding algal reefs during the construction of the third LNG Receiving Terminal. CPC carries out undersea ecological monitoring at gas receiving terminals to minimize the impact on the environment CPC maintains Taoyuan Algae Reef Ecology, and implements the environmental protection strategy for the Guantang Sea with a total of TWD 61.5 million investment CPC provides LNG cold water drainage for local communities at Yong'an Plant to enhance aquaculture efficiency CPC constantly implements ecological and environmental education, while engaging in the protection of corals (<i>Polycyathus chaishanensis</i>) in the Guantang Industrial Park, resulting in an increase of 25 coral clusters in 2021 compared to 2018 	<p>1.3 Ethical Management 3.2 Green and Circular Economy Transformation under energy and resources management 3.3 Pollution Prevention 3.4 Ecological and Environmental Conservation</p>
 <p>Objective 15 Life on Land</p>	<p>CPC is dedicated to preserve biodiversity at all operating sites, and embraces its responsibility and mission to facilitate sustainability of the ecosystem. That is its responsibility</p>	<ul style="list-style-type: none"> Pollution removal, protection and habitat restoration efforts are being carried out at various locations. For example, 19 flora sample areas surveys and 12 fauna surveys have been completed for the ecological evaluation at the Suao Oil Supply Service Center According to observations in the wild bird habitat and breeding program, the little terns' breeding success rate has increased to 72% in 2021 	<p>3.4 Ecological and Environmental Conservation</p>
 <p>Objective 16 Peace, Justice and Strong Institution</p>	<p>CPC upholds business integrity and has management systems in place to prevent fraud or corruption and to protect consumers' best interests</p>	<ul style="list-style-type: none"> CPC has been given a rating of AAA (tw) by Fitch Ratings for 16 consecutive years An occupational ethics supervision division has been set to constantly perform integrity risk assessments according to the cases that took place The board performance was given a score of 89.42 in self-assessment by directors and supervisors CPC undergoes MOEA's corporate governance evaluation on a yearly basis 	<p>1.1 Our CPC 1.2 Sustainable Governance 1.3 Ethical Management</p>
 <p>Objective 17 Global Partnerships</p>	<p>CPC continues to focus on advancing operations and giving back to the Earth. Through alignment with international sustainability trends and a series of development strategies (e. g. low-carbon transformation, technology R&D, and sustainable governance), CPC develops international perspectives among global enterprises</p>	<ul style="list-style-type: none"> CPC continues to import carbon neutral natural gas in partnership with Shell and Eni in order to achieve product carbon neutrality through carbon credits CPC participates in exchanges with international organizations from time to time. From 2003 to 2021, CPC has attended the Conference of the Parties (COP) to the UN Framework Convention on Climate Change 14 times to learn about the impact of climate change and ways to reduce carbon emissions 	<p>1.1 Our CPC 2.3 Selfless Contribution 3.1 Climate Change Adaptation 3.2 Green and Circular Economy Transformation under energy and resources management</p>

Annual Sustainability Materiality Topic

As a state-owned enterprise, CPC exercises significant influence as an industry leader. Its products, services and operations are constantly under public scrutiny; therefore, it is of utmost priority to meet expectations and address the interests of all the stakeholders. In order to have a better understanding of stakeholders on the direction of CPC's sustainable management, we use a systematic identification process of materiality to analyze the issues that are of greater concern to stakeholders or have an impact on CPC's sustainable management in the sustainability report. The identification procedures of stakeholders and major issues that are important to CPC are as follows:

Identification of Stakeholders

9 Stakeholder Groups

Through reference to the stakeholder groups identified by domestic and foreign energy industry, and referring to the attributes of stakeholders as specified in AA1000SES 2015 (Stakeholder Engagement Standards): dependency, responsibility, tension, influence, and diverse perspectives, CPC identified nine stakeholder groups: shareholder (MOEA), the government, public representatives, employees, customers, partners, communities, non-profit organizations (NPOs) and non-governmental organizations (NGOs), and the media.

Collection of Major Issues of Sustainability

20 Issues

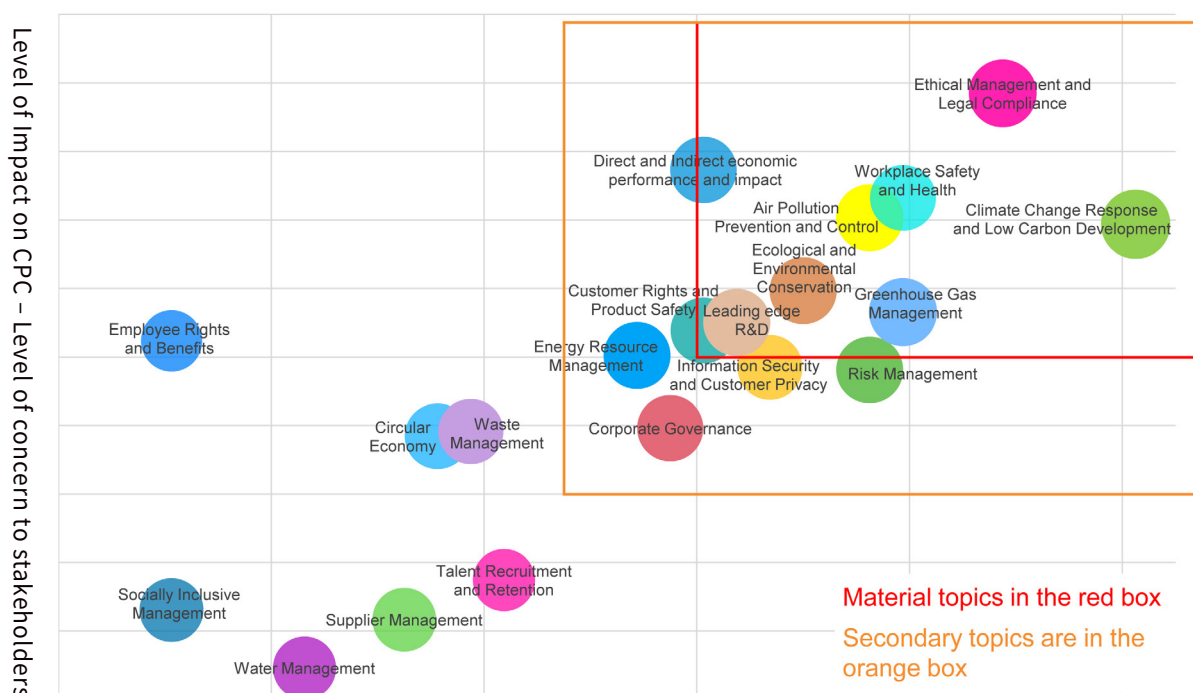
After identifying the stakeholders of CPC, issues concerning global, national and industry trends are taken into consideration to create a "Stakeholder Concern Questionnaire" and "Stakeholder Impact Questionnaire" with 20 questions covering environmental, social, economic and corporate governance aspects.

Analysis and discussion on the order of significance of sustainability issues

796 questionnaires

32 internal directors

A total of 796 questionnaires were collected through a survey in which nine categories of stakeholders were asked to fill out external stakeholder concern questionnaires. A total of 32 internal management participated in a stakeholder impact questionnaire survey to identify the impact of sustainability issues in the context of economic, environmental and social impacts. After thorough analysis and prioritization, CPC has analyzed our 2021 sustainability issues as follows. The further an issue is positioned in the top-right corner of the matrix, the higher its impact is on CPC and the higher concern it is to stakeholders.



Confirmation of material topics on sustainability

9 material topics

According to the results of the analysis, the top 9 issues were chosen for CPC's 2022 sustainability report as material topics to be communicated with stakeholders in this report. For each of the topics identified, CPC has disclosed its performance highlights, management approach and actions for the year to address stakeholders' concern. At the same time, the other secondary 4 issues were chosen to disclose the corresponding and specific actions to echo CPC's emphasis on sustainability.

Review

Continue to collect the concerns of various stakeholders, review the differences in material topics and response actions of the previous reporting cycle, and provide information on material topics in the future to respond to the needs and expectations of stakeholders.

Confirmation of material topics on sustainability

According to the results of the analysis, significant issues and their impact for the year are tabulated below which can be found in the corresponding sections for further information.

Dimension	Prioritization	Material Topic	Within the organization	Outside Organization	Corresponding to chapter or subchapter	Corresponding GRI disclosure
Governance	1	Ethical Management and Legal Compliance	CPC	Shareholder, the Government, Public Representatives, the Media, Business Partners	1.2.1 Foundation of Sustainable Governance 1.3.1 Legal compliance	103 Management Approach, 102-16, 205-1, 307-1, 419-1
Environment	2	Climate Change Response and Low Carbon Development	CPC	the Government, Public Representatives, Communities, Customers	3.1.2 Climate Change Risk Management 3.1.3 Climate Change Strategies 3.1.4 Climate Change Goals and Indicator Management Achievement	103 Management Approach, 102-18, 102-20, 201-1, 201-2
Society	3	Workplace Safety and Health	CPC	the Government, Employees, Public Representatives	4.1.1 Workplace Safety Management 4.1.2 Workplace Safety and Protection	103 Management Approach, 403-1~10(2018)
Environment	4	Air Pollution Prevention and Control	CPC	the Government, Public Representatives, NPOs/NGOs, the Media	3.3.2 Air pollution emissions and management	103 Management Approach, 305-7
Governance	5	Direct and Indirect economic performance and impact	CPC	Shareholders, Public Representatives, the Media	1.1.2 Operational performance 3.2.1 Low Carbon Green Energy Transformation and Circular Economy	103 Management Approach, 201-1, 201-2, 203-1, 203-2
Environment	6	Greenhouse Gas Management	CPC	Shareholder, the Government, Public Representatives, NPOs/NGOs, the Media	3.1.3 Climate Change Strategies 3.1.4 Climate Change Goals and Indicator Management Achievement	103 Management Approach, 305-1, 305-2, 305-5
Environment	7	Ecological and Environmental Conservation	CPC	the Government, Public Representatives, Communities, NPOs/NGOs, the Media	3.4.1 Ecological Protection	103 Management Approach, 304-1, 304-2, 304-3
Governance	8	Leading edge R&D	CPC	Business partners, Customers	2.3.1 Technology Innovation 3.2.1 Low Carbon Green Energy Transformation and Circular Economy	103 Management Approach, 203-1
Society	9	Customer Rights and Product Safety	CPC	Business partners, Customers, the Media, Public Representatives	2.1.1 Diversified Arrangement 2.2.1 Satisfied Customer	103 Management Approach, 416-2, 417-1

The statistics results of this year's report are divided into three levels for the 20 materiality issues due to the similarity of the scores: The first is the major material topic, the second is the secondary topic, and the third is the basic topic. The key topics identified this time are the key projects that CPC has been working on in the past, and 9 major material topics have been extracted, which are ethical management and legal compliance, climate change response and low carbon development, workplace safety and health, air pollution prevention and control, direct and indirect economic performance and impact, greenhouse gas management, ecological and environmental conservation, leading edge R&D, customer rights and product

safety. Four materiality secondary topics are identified, namely, energy resources management, corporate governance, information security and customer privacy, and risk management. As well as a total of seven basic topics, namely, circular economy, human resources recruitment and retention, human rights and employee rights and benefits, supplier management, water management, socially inclusive management, and waste management.

Key Issue Difference Analysis



By collecting and analyzing the viewpoints of 9 categories of stakeholders, the key issues for the year 2021 of the CPC have been filtered for a more balanced focus on governance, environment, and society. With regards to the analysis of new material topics, in terms of environmental aspects, "climate change response and low carbon development" is the original topic of "climate change response" to integrate related carbon reduction action as a new key issue; in terms of governance aspects, "direct and indirect economic performance and impact" is a key issue that combines the original "economic performance and results" and "indirect economic impact" to comprehensively discuss economic performance.




Through the analysis and understanding of key topics, CPC has been able to strengthen its business foundation by upholding the spirit of ethical corporate management and eliminating corruption; while developing its business, CPC can better meet the needs of international industrial trends through leading edge R&D technologies, not only towards carbon reduction, but also towards ecological protection and reduction of air pollution emissions. At the same time, CPC has been building a friendly workplace environment internally and safeguarding customer rights and product quality externally. In the future, CPC hopes to listen to diversified opinions and improve itself to become a benchmark in the energy and petrochemical industry.




Topic ranking	2020	2021
	Name of Topic	Name of Topic
1	Emergency Prevention and Handling	Ethical Management and Legal Compliance
2	Environmental Compliance	Climate Change Response and Low Carbon Development
3	Leading edge R&D	Workplace Safety and Health
4	Customer Rights and Product Safety	Air Pollution Prevention and Control
5	Ethical Management and Legal Compliance	Direct and Indirect Economic Performance and Impact
6	Workplace Health and Safety	Greenhouse Gas Management
7	Information security and customer privacy	Ecological and Environmental Conservation
8	Air pollution prevention and control	Leading Edge R&D
9	Corporate Governance	Customer Rights and Product Safety
10	Talent Recruitment and Retention	-
11	Greenhouse Gas Management	-
12	Climate Change Response	-
13	Ecological and Environmental Protection	-
14	Waste Management	-
15	Energy Resource Management	-


Communication with Stakeholders

The ways, performance, and outcomes of communication with stakeholders are as follows:

Stakeholders	Significance for CPC	Topics of interest in 2021	Ways and frequency of communication in 2021	Achievements and highlighted outcomes from communication in 2021
 <p>Shareholders (MOEA)</p>	<p>CPC is a state-owned enterprise (SOE) which is owned by the Ministry of Economic Affairs (MOEA). Our commitment and mission are integrity and sustainable operation</p>	<ul style="list-style-type: none"> ▪ Direct and indirect economic performance and impact ▪ Corporate governance ▪ Ethical management and legal compliance 	<ol style="list-style-type: none"> 1. CSR questionnaire (once per year) 2. Shareholders' meeting, extraordinary shareholders' meeting (currently replaced by the board of directors meeting) (at least once a month) 3. Public policy meetings (at least 24 times per year) 4. Official correspondences (at least 3,000 times per year) 5. Annual Report of the Shareholders' Meeting (once a year) 6. Market Observation Post System (MOPS) (at least once a month) 	<p>➔ Performance</p> <ul style="list-style-type: none"> ▪ Questionnaire: 1 ▪ Board of Directors meetings: 13 ▪ Procurement Review Group, Business Plan Review Group, Exploration Review Group, Senior Nominees Review Group, and Project Meeting: 27-times Frequent visits and exchanges ▪ Opinion exchange in written ▪ Annual report of the shareholders' meeting: 1 ▪ Market Observation Post System (MOPS) is regularly updated on a monthly basis <p>➔ Outcomes</p> <ul style="list-style-type: none"> ▪ The directors and the supervisors attended the "CPC's 75-year innovation Concert", the "Ceremony of Collective Agreement Execution between the company and the Taiwan Petroleum Trade Union", the "CPC's Six -Hall Joint Exhibition", the "2021 Research and Development Results Release Conference by Research Institution", and the meetings and special lectures of Senior executives. ▪ The directors and the supervisors inspected the "Engineering Progress of Dalin Petroleum Storage Center Phase II for Intercontinental Cargo Container in Kaohsiung" and "the Third LNG Receiving terminal Engineering Progress and Algae Reef Protection and Conservation Situation in Guantang, Taoyuan County", heard from the "Green Energy R&D Institute about Important Research Results", and visited Guoguang Electric Power Company owned by the Taoyuan Refinery and the company to understand the status of business promotion.
 <p>Business Partners</p>	<p>CPC and business partners (including contractors, suppliers and distributors) create value and stabilize the energy supply in Taiwan to build a sustainable value chain</p>	<ul style="list-style-type: none"> ▪ Air pollution prevention and control ▪ Climate change response and low carbon development ▪ Workplace safety and health 	<ol style="list-style-type: none"> 1. CSR questionnaire (once per year) 2. Contractors' meetings (at least 10,000 times per year) 3. Education & training/ drills/ exercises (at least 450 times per year) 4. Distributor Appraisal/ Meetings (periodically/ at least once per year) 5. Franchised station counseling service visit and oil quality management (once a month as the principle) 6. Supplier appraisal/ meeting (periodically/ at least once a year) 7. Publicity activities (at least 220,000 graded reviews per division per year) 8. Assessment/ Email/ Phone (periodically) 	<p>➔ Performance</p> <ul style="list-style-type: none"> ▪ 100 questionnaires ▪ Conducted 344 disaster prevention and rescue drills, including 4 extended emergency response drills ▪ Held 4 large-scale corporate integrity advocacy events <p>➔ Outcomes</p> <ul style="list-style-type: none"> ▪ Added contractors' equipment dismantling and high-altitude equipment operation training; more than 1,000 trained staff were judged qualified 97.27% green outsourcing in 2021, far better than EPA target ▪ Concluded a carbon-neutral LNG cooperative agreement with the Italian energy giant, Eni Group; and further researched and completed the world's first carbon-neutral ethylene project in cooperation with the Taiwan Marubeni Chamber of Commerce; CPC thus works with international supply partners to achieve net zero carbon emissions

Stakeholders	Significance for CPC	Topics of interest in 2021	Ways and frequency of communication in 2021	Achievements and highlighted outcomes from communication in 2021
 <p>Public Representatives</p>	<p>CPC engages public representatives in active communication in order to learn the opinions of residents, so that projects and works can be carried out in conformity with the public's needs and expectations</p>	<ul style="list-style-type: none"> ▪ Ethical management and legal compliance ▪ Air pollution prevention and control ▪ Workplace safety and health 	<ol style="list-style-type: none"> 1. CSR questionnaire (once per year) 2. Project reports (36 in total) 3. On-site survey (16 in total) 4. Coordination meetings (158 in total) 5. In-person visits (at least 150 times per year) 6. Exchange of official correspondences (at least 200 times per year) 7. Opinion exchange meetings (Others: at least 500 times per year) 	<p>➔ Performance</p> <ul style="list-style-type: none"> ▪ 22 questionnaires ▪ Replies to the Legislative Yuan written or oral inquiries, or related documents: 53 ▪ Replies to the concerns from the members of the Legislative Yuan, including incoming letters, coordinative matters, representations and personnel related: 636 <p>➔ Outcomes</p> <ul style="list-style-type: none"> ▪ Communicated with elected representatives at various meetings and invite them to project meetings for reporting on the progress of projects, in order to ensure smooth and good communication ▪ Granted the champions of both the group and the individual among the stated-owned enterprises at the 3rd Session of the 10th Congress Appraisal
 <p>Communities</p>	<p>In addition to gas stations, CPC has refineries and petrochemical plants. Therefore, to maintain good relations with local communities and their living conditions are our commitments</p>	<ul style="list-style-type: none"> ▪ Air pollution prevention and control ▪ Climate change response and low carbon development ▪ Workplace safety and health 	<ol style="list-style-type: none"> 1. CSR questionnaire (once a year) 2. Neighborhood-oriented Activities (periodically) 3. Meetings for communication with communities (periodically) 4. Public welfare activities (more than 200 times per year) 	<p>➔ Performance</p> <ul style="list-style-type: none"> ▪ 84 questionnaires ▪ 12 Neighborhood relation promotion review meetings and 3 temporary meetings were held ▪ 4 on-site visits to assist and support local branches in promoting good-neighborliness ▪ Provided fund and support for local educational and cultural activities, scholarships, emergency relief, low-income households, welfare for the elderly and the physically and mentally challenged, local folk festivals, local sports and cultural activities, villagers' activities, etc., totaling 5,745 pieces and NT\$ 464 million <p>➔ Outcomes</p> <ul style="list-style-type: none"> ▪ Good communication with the neighbors and villagers, participated in public construction and helping the neighborhood to promote cultural and educational undertakings, health guidance, caring for the elderly, and energy-saving and carbon reduction activities ▪ Neighborhood relation promotion activities, including donations to the neighborhood development associations for festivals such as the Dragon Boat Festival and the Mid-Autumn Festival, emergency relief donations to neighboring residents and poor children, coordinating the reduction of land rent, etc. ▪ Production and broadcast of the [Natural and Good] Podcast series to spread the concept of clean energy and the efforts CPC made for the environment ▪ Hosted "Taiwan Takes efforts · Vitality Forever — CPC's Garden Party with Its Neighbors", and invited 100 local featured vendors to the garden party, and set up a clean governance promotion booth for announcing CPC's focus on incorrupt governance
 <p>NPOs/NGOs</p>	<p>CPC kept close discussion and communication with NPO/NGO (including the Petrochemical Energy Industry Association) to be aware of external needs and comments</p>	<ul style="list-style-type: none"> ▪ Ethical management and legal compliance ▪ Air pollution prevention and control ▪ Workplace safety and health 	<ol style="list-style-type: none"> 1. CSR questionnaire (once per year) 2. CPC's Global Information Network and CPC's facebook (real-time communication) 3. Commissioned the Taoyuan Wild Bird Society to conduct a little tern ecological survey (periodical meetings) 4. Commissioned the Algal Reef Ecological Investigation Team, National Taiwan Marine University (at least 9 times) 	<p>➔ Performance</p> <ul style="list-style-type: none"> ▪ 10 questionnaires ▪ CPC's Global Information Network and its Facebook account were updated on a real time basis ▪ Participated the seminars and events hosted by industrial associations to share the latest technologies in the industry <p>➔ Outcomes</p> <ul style="list-style-type: none"> ▪ Since 2019, CPC and Taoyuan Wild Bird Society have been committed to the habitat construction and breeding monitoring for small swallows. In 2021, from the monitoring on the Taoyuan Coast it was found that total 125 nests of small swallows were successfully born with a breeding success rate of 72%. The breeding success rate increased by 2.4 times in three year.

Stakeholders	Significance for CPC	Topics of interest in 2021	Ways and frequency of communication in 2021	Achievements and highlighted outcomes from communication in 2021
 Customers	Based on the management philosophy "Supreme Quality, Best Service and Selfless Contribution" we engage with customers and pave our way for sustainable management and generating profit	<ul style="list-style-type: none"> ▪ Air pollution prevention and control ▪ Climate change response and low carbon development ▪ Workplace safety and health 	<ol style="list-style-type: none"> 1. CSR questionnaire (once per year) 2. Customer satisfaction survey (at least once a quarter) 3. Complaint/Opinion Box (periodically) 4. Education and training (periodically) 5. Customer service hotline (periodically) 6. Visits/exchanges (periodically) 7. Website Information (periodically) 	<p>➔ Performance</p> <ul style="list-style-type: none"> ▪ 78 Questionnaires ▪ In the survey on customer satisfaction, the major products and services ratings in 2021 reached 91.9 or above ▪ CEM customer experience management score of 94.8 in 2021 <p>➔ Outcomes</p> <ul style="list-style-type: none"> ▪ Honored with "the ideal brand in the minds of consumers" for 16 consecutive years ▪ 212,984 customer service cases were received in 2021, 95.1% of which were successfully dealt with in time ▪ Won the "Trusted Brand Platinum Award in Gas Station Category" for 21 consecutive years ▪ Promoted the conversion by industrial users of from fuel oil to natural gas in response to the global trend to carbon emission reduction. In 2021, persuaded 25 customers who used fuel oil to utilize natural gas
 Government	As a state-owned enterprise, CPC continues to support government policies and contribute to sustainable development in Taiwan	<ul style="list-style-type: none"> ▪ Air pollution prevention and control ▪ Climate change response and low carbon development ▪ Workplace safety and health 	<ol style="list-style-type: none"> 1. CSR questionnaire (once per year) 2. Training courses for competent authorities (at least 12 shifts per year) 3. Public benefit activities (periodically) 4. Labor inspections (at least 100 times per year) 5. Email/ Phone (periodically) 6. Official correspondences (at least 3,000 times per year) 	<p>➔ Performance</p> <ul style="list-style-type: none"> ▪ 52 questionnaires ▪ 167 inspections have been conducted on laboring items, and CPC has followed up the results until they are corrected completely <p>➔ Outcomes</p> <ul style="list-style-type: none"> ▪ Endeavored to follow the national policies, such as energy transformation, stable energy supply, COVID-19 crisis relief ▪ Contribution to government tax revenue of TWD 101.8 billion in 2021 ▪ CPC conducted a joint inspection with the Industry Development Bureau, Ministry of Economics Affairs. Hosted the "Meeting of Senior Officials in charge of Safety and Health" in cooperation with the Labor Bureau, Kaohsiung Municipal Government, and invited total 58 senior officials and the senior management of suppliers to this meeting ▪ CPC commissioned the Institute for Information Industry (III) that was introduced by Industry Development Bureau to assist in optimizing and establishing an intelligent property management system linked to the operational strategy. And it was granted the III's TIPS (Grade A) Certification in 2021 for the first time
 Employees	CPC set up a friendly and happy workplace for employees, established a competitive human resource policy, and cultivated its employees in all respects so as to ensure the quality of employees' work and life	<ul style="list-style-type: none"> ▪ Air pollution prevention and control ▪ Climate change and low carbon development ▪ Workplace safety and health 	<ol style="list-style-type: none"> 1. CSR questionnaire (once per year) 2. Complaints (Employees make complaints as per actual situation) 3. Internal meetings: appointed the director in charge of labor relations (1 meeting per month) 4. Internal Meetings: Labor relation meetings (1 per month as a rule) 5. External Meetings: collective agreement consultation meeting (on demand) 6. Oil newsletter (monthly) 7. Labor education lecture (1 lecture per month as a principle) 8. Educational & Training/ Exercise/drill (periodically) 	<p>➔ Performance</p> <ul style="list-style-type: none"> ▪ 435 questionnaires ▪ Held one meeting for settling the complaints from staff; dealt with one case ▪ Convened 20 labor relation meetings ▪ Convened 1 collective agreement consultation meeting ▪ Issued 12 pieces of Oil Newsletter ▪ Hosted 3 sessions of labor education lectures ▪ Approximately NT\$ 142 million of training budget was invested for training with an average physical training time of 41.05 hours <p>➔ Outcomes</p> <ul style="list-style-type: none"> ▪ Upon 12 consultation meetings, a collective agreement was executed, including 9 chapters and 55 articles ▪ 3,014 classes of physical education and Invested about NT\$ 142 million in training funds with approximately 86,000 trainees ▪ In response to the COVID-19 pandemic, created more diverse training methods. Launched online courses through CPC-Live and CPC's E-Academy, and organized online tests by using QR-code. In total, 337 new recruits completed the training

Stakeholders	Significance for CPC	Topics of interest in 2021	Ways and frequency of communication in 2021	Achievements and highlighted outcomes from communication in 2021
 Media	<p>CPC regards the media as an important partner for external communication, and strives to maintain relationship through information sharing, seminar etc. so that CPC's mission, philosophy and performance can be properly conveyed to the public</p>	<ul style="list-style-type: none"> ▪ Ethical management and legal compliance ▪ Climate change response and low carbon development ▪ Workplace safety and health 	<ol style="list-style-type: none"> 1. CSR questionnaire (once per year) 2. Press releases (immediate reply) 3. Press conferences (periodically) 4. Visits (at least 500 times per year) 	<p>→ Performance</p> <ul style="list-style-type: none"> ▪ 14 questionnaire ▪ Held press conferences for 10 times; press release: 155 pcs ▪ field visits for 7 times, special interviews for 19 times and exchange activities for 65 times so as to have the media deep understand CPC's business <p>→ Outcomes</p> <ul style="list-style-type: none"> ▪ Invited the media to CPC's Advanced Catalyst Center Founding Ceremony, the World Toilet Day's event, the opening of the Fulin Charging Station and other events. CPC was reported in a positive manner, showing good corporate image

Internal and external stakeholder communication channels and methods

▪ Communication with Internal stakeholder

CPC addresses employees' grievances in honest, open, immediate and direct manner with the Employee Grievance Policy. Employees may raise grievances when there are objections to rewards punishments or employee misconduct. The following is a brief description of the grievance channels and operations Below is a brief description of the complaining ways and how they work, with the detailed achievements and highlights.



Employee Grievance Committee

CPC has established the Employee Grievance Committee with seven to nine seats held by the representatives of related departments and offices, and the Chairman and representatives of the trade union.



Labor-management meetings

Had at least one labor relation conference every 3 months in accordance with the Labor Relation Conference Implementation Measures; disclosed the minutes of each labor relation conference on the intranet site; therefore, the communication between the employees and the employer is transparent and friendly and labor-related disputes and resulting losses were avoided.



Collective Bargaining Agreement

Since July 26, 2019, CPC has been engaged in a collective agreement negotiation with the Taiwan Petroleum Trade Union. After 12 consultation meetings, on December 3, 2021, CPC concluded and executed a collective agreement with the Union. This agreement contains 9 chapters and 55 articles, specifying the rights and obligations of both parties, and creating labor relations and labor conditions suitable for both parties to promote the company development and the employees' welfare. It can bring the company with benefits and sustainable operation.

▪ Communication with external stakeholder

Extensive and creative communication channel via Internet

CPC maintains communication with the external parties, and actively gathers and responds to queries or suggestions through corporate website, department website, service mailbox, official Facebook, CPC PAY APP, various meetings, events, media, unions, and the 24-hour customer service hotline "1912"

Diverse communication and grievance channels →



CPC's
Facebook



CPC PAY APP



Feedback mailbox
and Supervisor's
mailbox



service hotline
"1912"



Global
Information
Website

Innovative communication with internet videos →



CPC's Golden Flame Award:
Encourage employees to shoot
"first-line videos" from a "CPC's
staff's perspective"



CPC's Studios: Set up image
promotion, business introduction,
CSR media and other online videos

Communication with communities and local partners

CPC engages with the public in active communication and has established Neighborhood Engagement Guidelines and Neighborhood Engagement Review Committee in place to govern engagements of operational sites' local city/county governments, schools, organizations and communities. Through active communication, visits, monthly or ad-hoc review meetings to discuss local neighborhoods, CPC has worked with local groups and communities to create a sustainable culture of business and community

Consultation between the Board of Directors and the Stakeholders

For the matters negotiated between the Board and Stakeholder in 2021, please refer to [Section 1.2.1: Foundation of sustainable governance.](#)

01

Transparent CPC · Ethical Governance

Chapter Summary

Facing the challenges of COVID-19 pandemic and the surge of international oil and gas price due to the Russia-Ukraine war, CPC has supported the government's policies of pandemic prevention, and adjusted production capacity to supply materials of masks. Moreover, CPC absorbed the cost of oil and gas imports to maintain stable oil price. This chapter illustrates the operational basic information of CPC, including operating locations, facilities and equipment. Furthermore, the chapter discloses the annual operating results and the significant direct and indirect economic impacts from the external environment.



Corresponding SDGs



Recommended Audiences

1 Shareholder (MOEA)	3 Public Representatives	5 Government	7 Media
2 Business Partners	4 Customers	6 Employees	8 NPOs/NGOs

1.1 Our CPC

CPC has contributed to the local community for more than 75 years, providing the lifeline of energy to support the development and transformation of Taiwan's industries. Following the national policies, CPC takes the responsibility of stabilizing the society and economy. By adhering to the principles of ethical management and legal compliance, CPC is committed to maximizing the interests of stakeholders. CPC prudently assessing and managing operational risk and incorporating sustainable governance into CPC's corporate DNA with the missions to provide stable energy supplies and diversified services as well as to pursue sustainable development. There were no significant changes to the organization and the supply chain in 2021, including changes in the location of operations, operational or capital structure, the location of suppliers, or the structure of the supply chain. All entities included in the consolidated financial statements or equivalent documents are in the scope of the report without any omissions or any entities not included.

1.1.1 Company Profile

CPC's business covers upstream import of petrochemical raw materials to downstream supply of consumer oil products. CPC has developed the production and sales models of different oil products. In addition, CPC also set up different departments to enhance the overall operation and corporate governance. CPC has operation sites and sales offices throughout Taiwan, and has also entered international major oil products development markets. CPC, as a vertically integrated omnibus energy supplier is the running kinetic energy that our country depends on from infrastructure construction to social livelihood.

Company Data

Company Name	CPC Corporation, Taiwan
Date of Incorporation	June 1, 1946
Ownership	State-owned Enterprise (MOEA 100%)
Capital Value	NT\$130.1 billion
Sales (2021)	NT\$ 903.8 billion (certified)
Chairman	Shun-chin Lee
President	Zhen-ren Fang
Number of Employees (Dec 31, 2021)	16,293 (including contracted employees)
Headquarters Address	No. 2, Tso-Nan Road, Nan-Tzu District, Kaohsiung City, Taiwan 811 (R.O.C)
Credit Rating	"AAA (tw)" by Fitch Ratings
Major Businesses	<ul style="list-style-type: none"> ▪ Exploration, mining, and operation of oil, natural gas, geothermal (steam) and other related energy or minerals ▪ Establishment and refinement manufacturing plants for oil and related hydrocarbons ▪ Importation, storage, transportation and sales of crude oil, natural gas, steam, high temperature water, petroleum products and related services

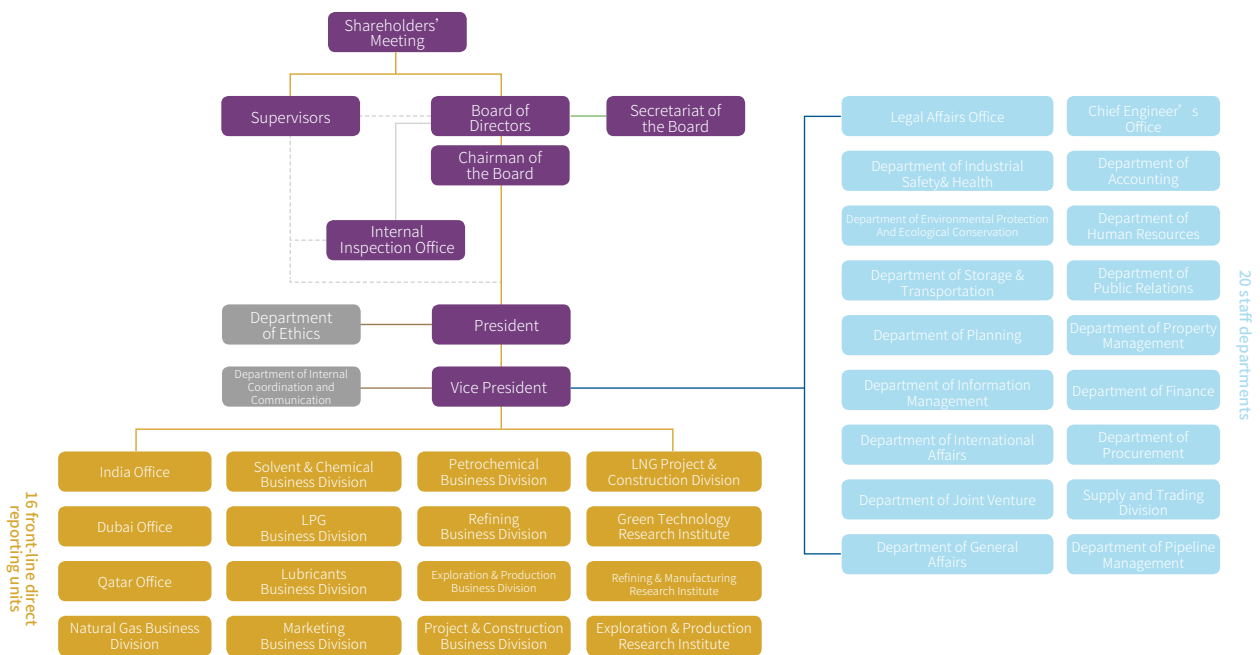
Organization Structure

CPC has 20 staff departments and 16 front-line direct reporting units. For details regarding to the organization structure, please refer to our website: <https://www.cpc.com.tw/>

Our CPC

Sustainable Governance

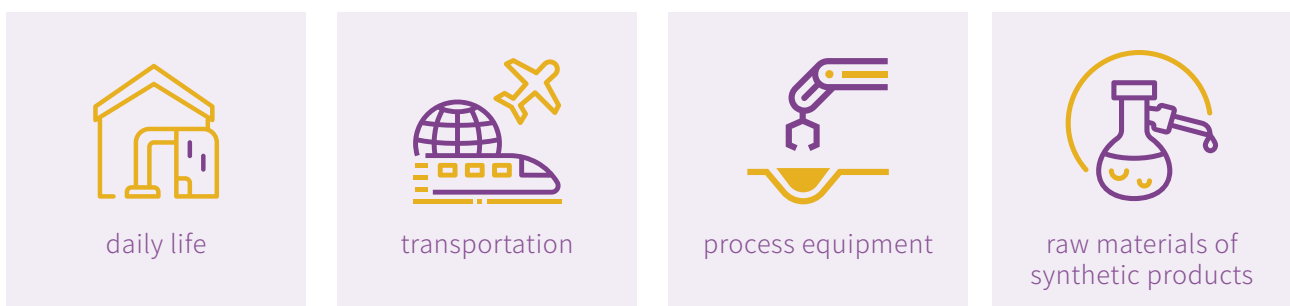
Honest and Ethical Management

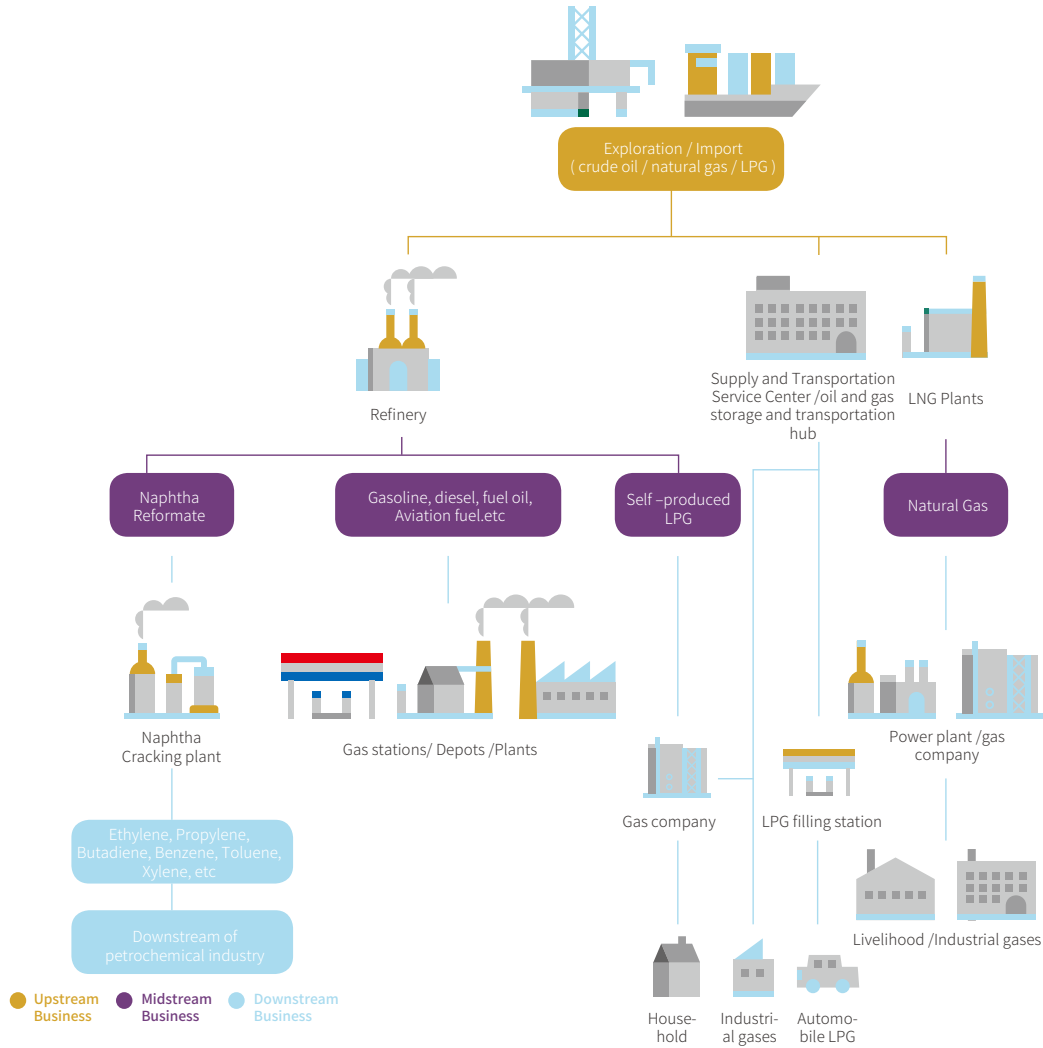


Our Service

The petrochemical industry has a prominent position in people's life. Its upstream and midstream industries include petrochemical raw materials, chemical fertilizers, artificial fibers, synthetic resins and plastics. Its downstream manufacturers cover the paint, cleaning products, synthetic textile, knitting, rubber products, and other industries that are closely related to people's daily life. CPC obtains crude oil from the upstream and refines naphtha, gasoline, diesel and other oil products such as petrochemical olefins. In the midstream, it produces plastics, chemical fibers, rubber, chemicals and other materials through polymerization, oxidation and synthesis with “petrochemical primary raw materials.” Finally, downstream includes manufactured products include plastic, textile, rubber and other chemicals. Petrochemical products are not only widely used in daily life, transportation, process equipment and raw materials of synthetic products, but also the key factors of improving the quality of life and the transformation of industrial development. From the perspective of the value chain, different products and services all have an impact in ESG aspects (i.e. environment, social, and governance). Therefore, by reviewing its efforts for sustainable development, CPC not only examines its positive and negative impacts but also captures the key factors to sustainable development in value chain. Therefore, CPC maximizes the positive impact and minimizes the negative impact through establishment of sustainable value chain.

Petrochemical products are widely used:



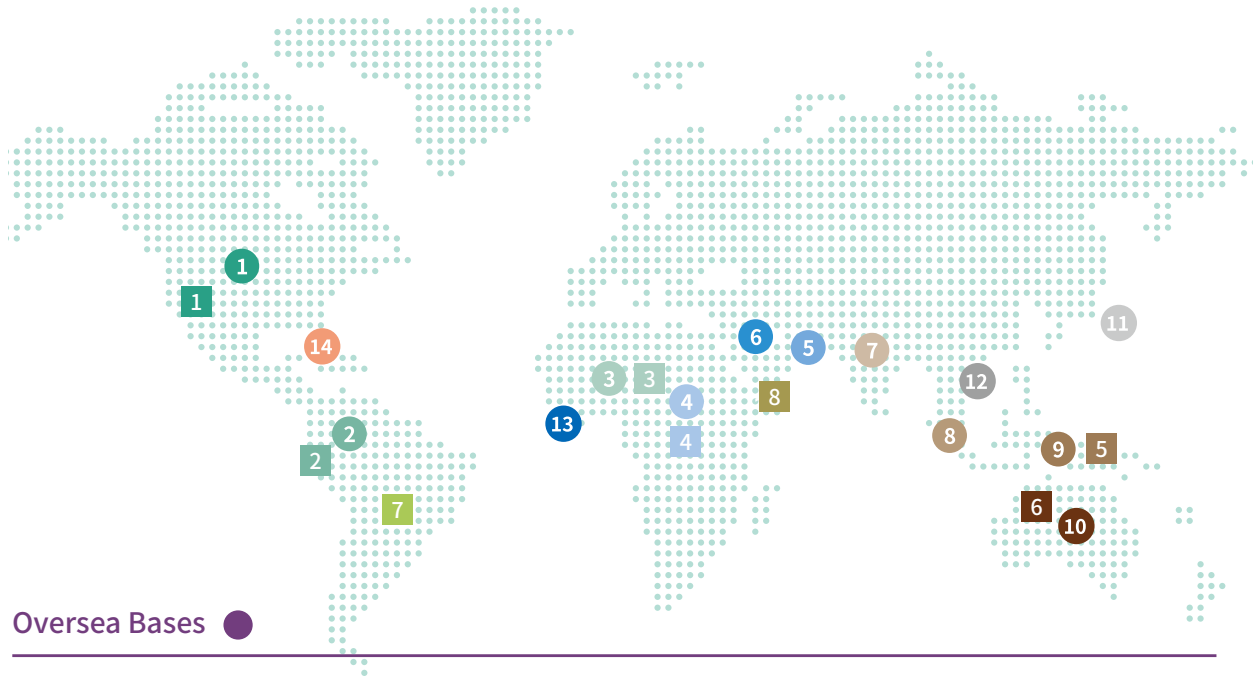


Major Domestic Location

Refineries 2 (Taoyuan · Dalin)	Fuel distribution center 13	LNG receiving terminal 2 (Taichung · Yongan)	Business division 8
Petrochemical plant 1 (Linyuan)	Oil business offices 10	LNG supply centers 8	Research institutes 3
Supply and transportation service center 1	Direct, franchised and collaborative gas station in Taiwan, 1,915	Natural gas transportation center 1	Project and construction division 2
Oil and gas storage and transportation hub 1		LNG service centers 4	Human resource training center 1

Global operations

2021 exports about 8.741 million kL of petrol-products to Singapore, Japan, Mexico, Australia, Malaysia, Korea, and The United States. CPC's global locations have been widely spread through 4 continents and 16 countries.



Overseas Bases

1 USA

Opicoil America, Inc., OAI
Opicoil Houston, Inc., OHI
2 Ecuador
Ecuador Branch, OPIC
3 Niger
OPIC Niger S.A.R.L.

4 Chad

OPIC Africa Corp.
5 Dubai
Dubai Office
6 Qatar
Qatar Office
7 India
India Office
8 Singapore
CPC International Trading Pte. Ltd.

9 Indonesia

Indonesia Branch, OPIC
OPIC East Seram Corp.
10 Australia
OPIC Australia Pty. Ltd
OPIC Ichthys Pty. Ltd
OPIC LNG Holding Pty. Ltd.

Investees

6 Qatar

Qatar Fuel Additives Company Limited (QAFAC)
10 Australia
Ichthys LNG Pty Ltd. (ILPL)

11 Taiwan

China American Petrochemical Co.Ltd. (CAPCO)
CPC Shell Lubricants Company Ltd.
Kuokuang Power Co., Ltd. (KKPC)
Chun Pin Enterprise Co., Ltd. (CPEC)
Global Energy Maritime Co. (GEMCO)
Taiwan Stock Exchange Corporation (TWSE)
China Ship Building Co., Ltd. (CSBC)
Overseas Investment & Development Corp.

12 Vietnam

Dai Hai Petroleum Corp. (DHP)
Maxihub Company Limited (MAXIHUB)

13 Liberia

Faraway Maritime Shipping Co. (FMSC)

14 Cayman Islands

NiMic Ship Holding Co., Ltd. (NSHC)
NiMic Ship Management Co., Ltd. (NSMC)

Overseas Concession

1 USA

Guardfish Concession
2 Ecuador
No.16 & No.17 Concession
3 Niger
Agadam Concession

4 Chad

Oyrx Concession
5 Indonesia
East Seram Concession
6 Australia
Ichthys Concession
Prelude Concession

7 Paraguay

Pirity Concession
8 Somaliland
SL 10B/13 Concession

1.1.2 Operational performance

Direct economic impacts and Operational performance

Since the day CPC was founded, it has been entrusted with the mission to stabilize oil and gas market for the growth of the national economy. In 2021, CPC generated NT\$903.8 billion in revenues and contributed NT\$101.8 billion of taxes to the national treasury. Detailed financial information can be found in CPC's consolidated financial statements and QR code: [2021 CPC Shareholders' Meeting Annual Report](#)



Unit: NT\$100 million

Items		Year		
		2019	2020	2021
Direct Economics Value	Operating Revenue (IFRS)	10,141	7,217	9,038
	Operating Costs	9,779	7,324	9,331
Economics Value-Allocated	Employee wages and benefits	228	208	237
	Payments to providers of capital	278	26	20
	Payments to government	1,501	1,083	1,018
	Community investments	4.50	6.13	6.20
Others	Earning Before Tax	333	-77	-471
	Earning After Tax	324	-73	-393
	Total Assets	8,019	7,373	8,423

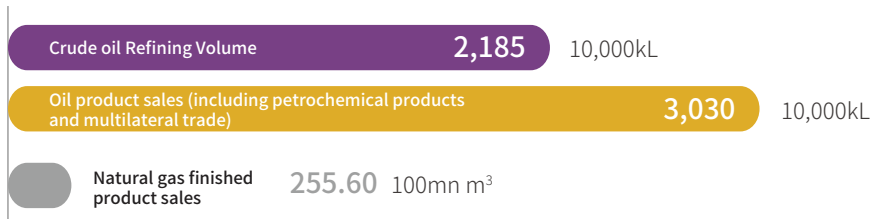
Note: 2019, 2020 and 2021 figures were certified

Overview of the operation in 2021

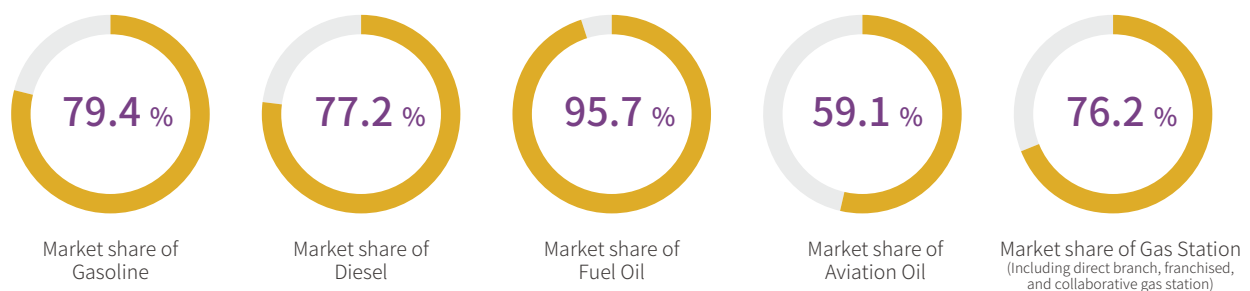
CPC's main products are oil, petrochemicals and natural gas, of which the domestic supply of natural gas is an exclusive market that extends to power generation, natural gas utilities and industrial users and about 80% of customers utilize natural gas for power generation.

Main products	Other diverse products and services		
Product Type Note (includes multilateral trade)	Products for daily life	Quality service	Mid-stream and upstream products
<ul style="list-style-type: none"> ▪ Natural gas product ▪ Gasoline ▪ Diesel Fuel ▪ Aviation Turbine Fuel (ATF) ▪ Fuel oil ▪ Olefins ▪ Others 	<ul style="list-style-type: none"> ▪ Biotech products ▪ Festive gifts ▪ Agricultural Products ▪ Vehicle fuel 	<ul style="list-style-type: none"> ▪ Car Service and Tire Centers ▪ Carwash service ▪ Compound stores and public toilets ▪ Cup & Go drive-thru coffee shop ▪ Battery Charging & Swapping points 	<ul style="list-style-type: none"> ▪ Refinery and supply of petrochemical products

2021 Production and sales volume of oil and gas products



2021 Market share of major oil products



Revenue and proportion of main products

Product Category (including multilateral trade)	Percentage of 2020	Percentage of 2021
Natural gas finished product	27.05%	23.49%
Gasoline	23.77%	23.23%
Diesel	12.78%	12.48%
Aviation Oil	2.65%	2.31%
Fuel Oil	4.36%	6.6%
Olefins	6.21%	7.26%
Others	23.18%	24.63%

Indirect economic impacts

CPC continued to accelerate the development of major infrastructure in 2021. Through intellectualization, low carbonization, energy efficiency improvement and energy resource integration, coupled with various control systems in managing energy production, energy utilization and energy storage, CPC is able to dedicate to liquefaction of gas, pressure energy-based power generation, and diamond water aquaculture. In alignment with government's electric transportation planning and green energy policy, CPC is engaged in establishing the integrated power system to upgrade its energy supply capability. For the relevant construction and development in detail, please refer to the section of [3.2 Green and Circular Transformation under Energy and Resource Management](#).

CPC COVID-19 prevention measures

The world is still in the midst of COVID-19 pandemic, and CPC is committed to implementing relevant measures to prevent and contain the pandemic. In addition to internal efforts to promote the precautions of pandemic to ensure the health of employees, CPC has also working with Ministry of Health and Welfare to share CPC's business continuity planning. CPC has rolled out a series of oil and gas price relief measures to help the public go through the downturn, making contribution to the economy. Below is the summary of CPC's internal pandemic prevention and control measures, as well as its cooperation with external public and private sectors to control the pandemic with relief measures.

① Epidemic Prevention Highlights

CPC drew up the “The COVID-19 Epidemic Business Continuity Plan” in March 2020. During the pandemic, all operations and production units, especially the first-level national critical infrastructure (CI), were implemented in accordance with the plan to maintain normal operations and ensure stable supplies of oil and gas. After the 2021 COVID-19 variant, CPC held the first video conference on epidemic prevention on May 13. In addition, the risk management team of all direct business units implemented management control at different levels (please refer to section [1.3.3 for risk management](#) in details). CPC also established the "COVID-19 Pandemic Prevention" section to regularly disclose information related to pandemic prevention, such as the system of report of pandemic prevention materials from each unit and educational materials related to understanding of the COVID-19.

The Four Main Pillars of CPC's Internal Prevention Measures:

Pandemic control and prevention

- The CPC Building has implemented various epidemic prevention measures, including: temperature measurement and name registration for entering and exiting, partitions in restaurants and conference room seats, alcohol sprayers and hand sanitizer in each floor, and comprehensive environmental disinfection.
- Access control: Each building is equipped with the access control system to prohibit non-employees from entering the offices.
- Strengthen the entrance control of contractors and ship docking, issue work permits outdoors, and provide mobile toilets to avoid entering indoors.

Establishment of internal notification mechanism

- Ongoing health promotion and tracking of high-risk groups.
- Establish CPC Pandemic Prevention LINE group to facilitate timely release of the pandemic prevention related information, notification of pandemic investigation results, and liaison among various units for suggestions or assistance.
- Convene pandemic prevention meetings from time to time to continuously adjust the pandemic prevention measures.
- Formulate “Communicable Disease Control Guideline” to set up reporting form for infectious disease incident and related handling procedures.
- Checked employees’ foreign travel history and contact history with relatives and friends abroad on a regular basis.

Avoid group contact

- Adjust the way of dining in in-house restaurants according to the severity of the pandemic.
- Strengthen the disinfection of the office area, and restrict the number of passengers for elevator and plan the queuing line.
- Meetings and trainings are conducted online or digitally combined with the instructor-led courses in the physical classroom. Moreover, pre-recorded courses are available at CPC e-Academy to provide diversified training methods.
- The critical infrastructure plant re-designed the scheduling method, increased the spare shift manpower, and changed the way of shift handover, using handover log to replace face to face discussion.

Establishment of inventory of materials

- Maintain adequate supplies of masks, forehead thermometers, protective clothing, disinfectant alcohol, bleach, etc., and distribute masks to colleagues for use in a timely manner. Establish the company’s reporting area for pandemic prevention materials to facilitate mutual support in case of emergency.
- CPC Building maintained a sufficient stock of 20,000 medical masks and distributed anti-pandemic masks for colleagues to perform their duties; in addition, a sufficient stock of 300 liters of disinfectant alcohol is maintained. CPC regularly check the stock of rapid antigen tests and assess the demand for colleagues to use.

2 External Prevention Measures Highlights:



Oil and Gas Relief Program

- ➔ Natural gas: CPC established the "Interim Guidelines to Assist Natural Gas Industrial Users in Stable Operation in Response to the COVID-19", according to which the reduction in natural gas fee had an accumulative impact of NT\$ 220.36 thousands. Moreover, the selling price of natural gas complies with the government's relief policy and CPC temporarily absorbed the increase of the cost of imported gas source. Therefore, CPC just slightly increased or adjusted the price of electrical users month by month and led to the net loss of natural gas business in 2021.
- ➔ Liquefied petroleum gas: Cooperating to the policy, CPC implemented the measures of LPG prices freezing and absorbed the costs which should reflect on prices that had an accumulative impact of NT\$ 8.146 billions.
- ➔ Taxi fuel subsidy program: CPC prepared the special taxi discount card with the total subsidy NT\$ 15.76 millions.
- ➔ Rental Relief Measures : In 2021, CPC provided a total of NT\$62.34 million in rent reductions for 1,373 cases of tenants and 1 rent deferrals.



Donations of anti-pandemic supplies:

- ➔ CPC had been supplying 413,726 metric ton of propylene, and about 170 metric ton had been used to produce medical-grade masks in 2021.
- ➔ 606 directly operated gas stations have contributed to sell medical-grade masks with 2.3 million pieces of masks have been sold.
- ➔ Donated protective masks, goggles, masks and disinfectant sprays to the Environmental Protection Bureau of Kaohsiung City Government.
- ➔ Provide CUP&GO coffee to the hard-working medical staff and police officers on the front line to thank them for their efforts, which accumulated 12 times, 12.6 thousands cups of coffee and 14 agencies, including Linkou Chang Gung Memorial Hospital, Kaohsiung City Police Department and fifth precinct of Tainan City Police Department.



Assist in community environment sanitization

Devote to National Pandemic Defense

- ➔ At the end of May 2021, there were confirmed cases in the Dalinpu area. CPC and the Environmental Protection Bureau of Kaohsiung City Government worked together on the front line to actively assist the community in disinfection operations, expecting to provide a safe environment for the residents at the earliest and serve as a gatekeeper for people's health.



Quarantine and vaccination station

- ➔ Undertaking the works of establishing quarantine stations for government, CPC increased power for national pandemic prevention works. CPC cooperated with the medical staff of the quarantine station to respond increasing confirmed cases in Taipei and two dormitory buildings of CPC Human Resources Training Center were requisitioned as quarantine stations with over hundred en-suit.
- ➔ 6 company sites were provided (the lobby of the CPC Headquarters Building, the Zhongshan Hall of the Human Resources Department Training Center, the Zhonglun Stadium of the Oil Marketing Business Division, the Ziyuan Auditorium of the Exploration and Production Business Division, Refining Business Division's Zhongshan Hall and Hongnan Training Classroom) to serve as the government's COVID-19 vaccination stations, and CPC has provided full administrative support to assist front-line medical staff in completing their tasks.



During Level 3 alert period, 24/7 gas station's public toilet services



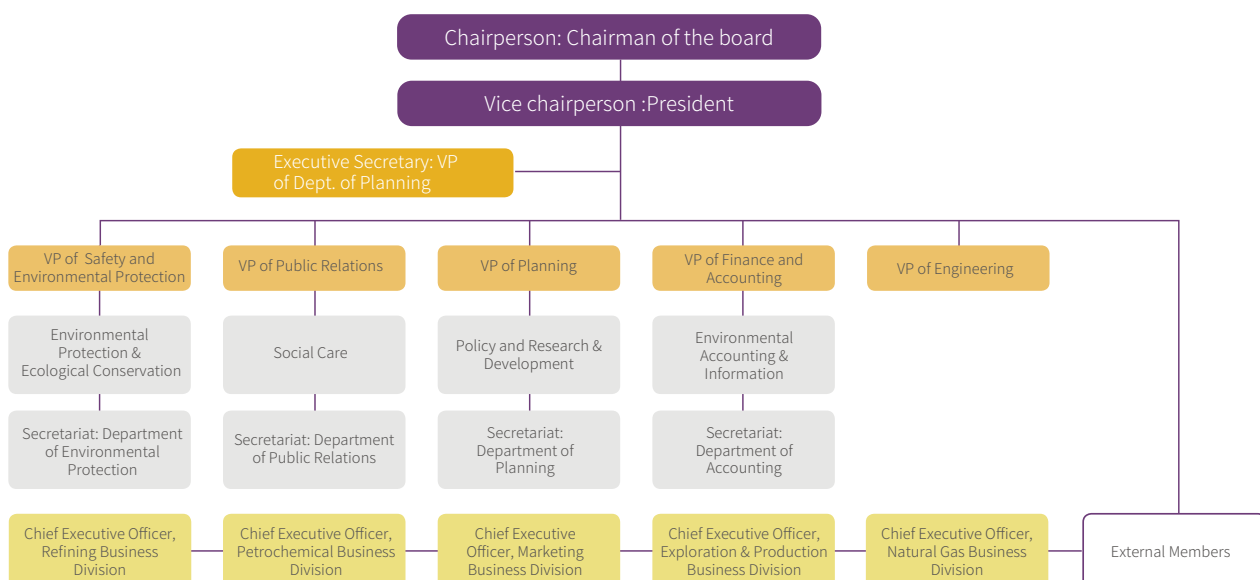
1.2 Sustainable Governance

1.2.1 Foundation of Sustainable Governance

CPC's "Sustainable Operations Promotion Committee" was established in 2005. The committee oversees sustainability in four major aspects: "Environmental Protection And Ecological Conservation," "Social Care," "Policy and R&D" and "Environmental Accounting and Information"; it pays constant attention to domestic and foreign sustainability trends, contributes expertise on both strategic and operational levels, and promotes sustainability of the organization as well as the society. In order to fully implement corporate governance, CPC has established the "Corporate Governance Best Practice Principles", "CPC Code of Ethical Conduct" and "Rules of Procedure for Meetings of Board of Directors", and complied with the "Act on Recusal of Public Servants Due to Conflicts of Interest" and "Integrity and Ethics Principles for Employees of the Ministry of Economic Affairs" to uphold integrity in all corporate activities. In which, CPC strictly prohibit any form of corruption, bribery and exploitation of position for the benefit of others or oneself, in order to continuously enhance board and supervisor functions. We also set up a corporate governance section and a business announcement section on CPC Global Information Website to regularly disclose financial and nonfinancial information to protect the rights of shareholders and stakeholders through the enhancement of information transparency.

The Sustainable Operations Promotion Committee

With the objective to promote sustainable governance, enhance corporate governance and develop a culture of social responsibility, the Sustainable Operations Promotion Committee is chaired by the Chairman of the Board and the President serves as the Vice Chairman of the Committee. Apart from the Chairman and Vice Chairman, the Committee consists of the Vice President of Department of Planning, who is also serving as the Executive Secretary of the Committee, other Vice Presidents, Spokesperson, and the CEOs of the five business divisions as Committee Members. In 2021, the Sustainable Operations Promotion Committee held three meetings. The Chairman and President supervise the Committee's sustainability efforts on behalf of the Board to discuss various proposals. The Board directors are invited to participate in the Committee from time to time and the President also reports to the Board of Directors on sustainability related issues as necessary. In addition, each department reports to the Board of Directors regarding the impact of various economic, environmental and social issues on the Company and how to respond to them through ad hoc reports.



Composition of the Board

CPC is a 100%-owned SOE of MOEA. The highest governance unit is the board of directors, which exercises authority on behalf of the shareholder. There are 13 directors and 3 supervisors in the board, all are assigned by MOEA, including 2 independent directors. The chairman and the president are executive directors. For details on directors' and supervisors' academic/career background, salary composition and education background, please refer to [2021 CPC Shareholders' Meeting Annual Report](#)

Information of 33rd CPC board

Composition of directors (including independent directors) and supervisors	Aged 29 (29 and under)		Aged 30~50 (inclusive)		Aged 51 and above	
	persons	Proportion (%)	persons	Proportion (%)	persons	Proportion (%)
	0 人	0%	2 人	12.5%	11 人	68.75%
	0 人	0%	2 人	12.5%	1 人	6.25%

Average age ¹	59.15
Average tenure for serving as directors and supervisors ¹	36.64 months

Note 1: The above data is based on the current (33rd) board of directors (til the end of April, 2022)

Operations of the Board

CPC holds board meetings on a monthly basis to review the major business strategies of each department, review the operating reports and implementation progress, and evaluate the business performance of the management team to maintain the company's sustainable growth and meet the market demand. In addition the minutes of monthly board meetings are made available on the CPC global information website.

The board of directors of CPC has established various review teams for strategic planning, exploration business, recurrent procurement and the selection and appointment of high-level personnel of CPC. The board of directors has set up review teams on "Business Plan", "Exploration", "Procurement" and "High-level Personnel Nomination" to fully discuss the resolutions before the board meetings and submit the review results to the board as the reference of making decisions to save the time of the board meetings and enhance the efficiency of the proceedings. A total of 48 resolutions were discussed in 2021.

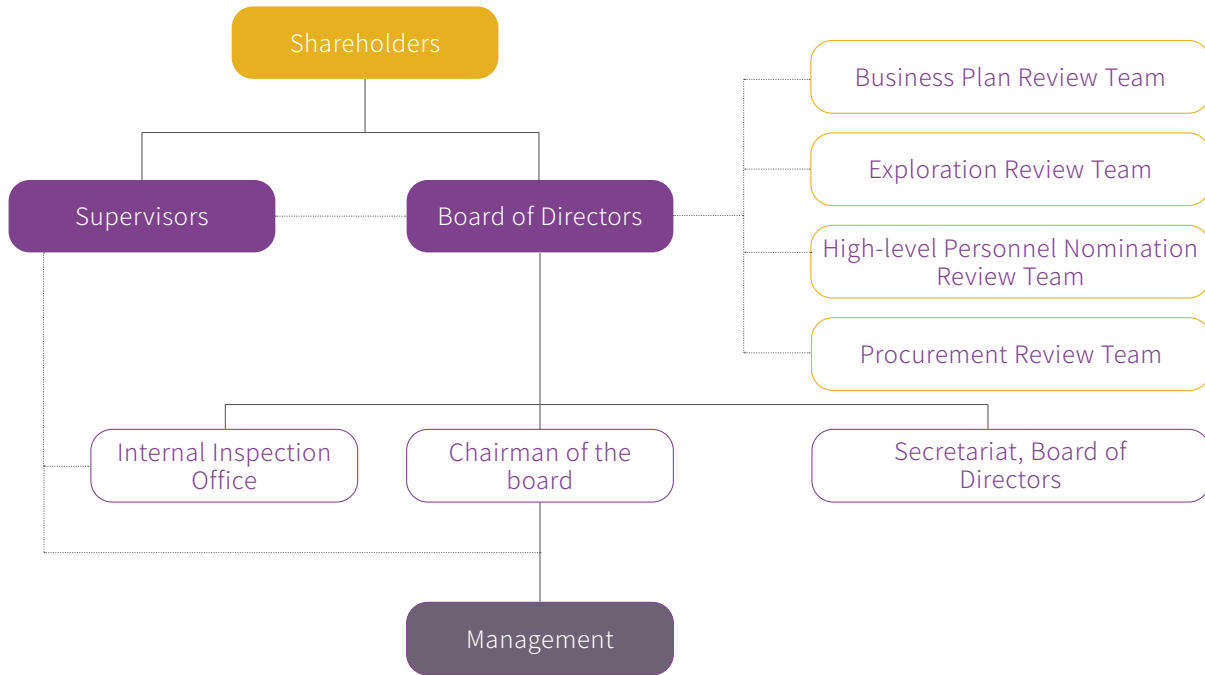
In order to assist the Board of Directors in fulfilling its supervisory duties, CPC arranges onsite visits for Directors and Supervisors to various units and investee companies to enhance their understanding of the company's business and meet their supervisory responsibilities. In addition, to assist the Board of Directors in carrying out its duties and complying with laws and regulations, a new position of corporate governance officer was set up in 2021 to provide the Board of Directors with the necessary support.

2021 Overview of Board Operations

Held **13** meetings
(including interim and regular board meetings)

Average attendance rate reached **94.7%** of directors and supervisors

140 proposals passed



Highlights:



Diversification of directors' education program - On-site educational courses for directors and supervisors

In order to focalize on internal and external issues such as economic, environmental and social issues related to the company's business, we have arranged training courses for Directors and Supervisors. The courses were presided by the Chairman and President. Senior executives of the company were invited to join the courses to discuss with external professional lecturers, Directors and Supervisors on economic, environmental and social issues related to operations, and to establish a mutual interactive channel for communication and discussion in daily operations and decision-making. In 2021, in response to business trends and changes in regulations, 3 sessions of on-site training courses for Directors and Supervisors were held on the topics of "Climate-related and Energy Transition Risks and Opportunities" and "Net Zero Emissions". Due to the pandemic, the training courses were conducted via video conference, and some sessions were open for mid-level executives to attend, with a total of 101 participants.





Board and Stakeholder Communication

In accordance with the “Corporate Governance Best Practice Principles” and “Rules of Procedure for Meetings of Board of Directors”, it is stipulated that directors who have an interest in the matters of the meeting with themselves or the legal entity they represent should explain the important contents of their interest at the current board meeting and should not join the discussion and vote if it is detrimental to the interests of the company. They should recuse themselves from the discussion and vote and should not exercise their voting rights on behalf of other directors. In addition, if the case submitted to the Board of Directors involves related party transactions and is related to a Board member, it is required to make a note in the proposal to remind the Board of Directors to avoid conflict of interest. There were a total of 2 cases of recusal of Directors' interests for the 2021 Board of Directors, which can be found in [2021 CPC Shareholders' Meeting Annual Report](#)

Major communication events approved by the Board of Directors in 2021

- 1 In order to expedite the completion of the improvement of the soil and groundwater contamination site at the company's Kaohsiung oil refinery plant, approval was obtained to sign an administrative contract with Public Works Bureau of Kaohsiung City Government for the outsourcing of remediation of the contamination.
- 2 Approved the proposal to lease part of 7 pieces of lands (land serial no. 160, 173, 174, 175-1, 176, 178 and 179 located in the oil plant section in Nanzih District, Kaohsiung City) managed by the Refining Business Division to Kaohsiung City Government. Total area of these 7 pieces of lands was approximately 6.10 hectares, of which around 3.24 hectares were proposed to be leased to Kaohsiung City Government for the construction of industry gas plant.
- 3 Approved the modification of urban plans handled by Kaohsiung City Government and leasing to Kaohsiung City Government as Nanzih Industrial Park for part of 44 pieces of lands. (land serial no. 116, 125, 126, 129-160, and 166-174 located in the oil plant section in Nanzih District, Kaohsiung City) managed by the Refining Business Division.

Performance of the Board of Directors

CPC has implemented a set of “Directives for Performance Assessment of the Board of Directors” based on “Corporate Governance Best-Practice Principles for TWSE/TPEX Listed Companies” that introduces a self-assessment approach for evaluating board performance. Furthermore, individual directors are required to conduct self-assessments in line with “Notes on Appointment of Directors, Supervisors and Key Staff in State-owned Enterprises, Private Businesses and Non-profit Organizations by Ministry of Economic Affairs and Subordinates” and “Notes on Implementation of Independent Director System by Ministry of Economic Affairs and Subordinates” and set performance targets accordingly to enhance board efficiency. In addition, CPC has established the "Performance Evaluation Form for the Review Team", which is used by the board members to evaluate the implementation of meetings held by the High-level Personnel Nomination, Business plan, Procurement and Exploration review teams. The results of the 2021 Board of Directors' performance evaluation, which are available on the Corporate Governance section of CPC's global information website, were generally good.

Performance Evaluation of the Board in 2021

Indicator	Level of participation, decision quality, board composition, directors' ongoing education, internal control, etc.
Evaluation Description	Individual directors make suggestions for improvement in various aspects of the directors' operations and submit the evaluation results to the board of directors in the form of a report at the end of each year; among which, the results of individual directors' performance evaluation are submitted to the Ministry of Economic Affairs for re-evaluation after the completion of the preliminary self-evaluation.

Evaluation Results	The total average score of performance evaluation was 89.42
Performance Evaluation of the Functional Review Group in 2021	
Indicator	Level of participation, decision quality, composition of review teams, scope of proposals, etc.
Evaluation Description	In October of each year, the directors and supervisors conduct an evaluation of the implementation of meetings held by the High-level Personnel Nomination, Business plan, Procurement and Exploration review teams for the past year, the results of which are available on the Corporate Governance section.
Evaluation Results	The total average score of performance evaluation was 87.81

1.2.2 Corporate Governance Evaluation

In order to continuously improve the corporate governance system, in addition to performance evaluation of the board of directors conducted by CPC, the State-owned Enterprise Commission, Ministry of Economic Affairs also conducts corporate governance evaluation through document review and on-site visit every year. The Chairman, independent directors, workers' director, supervisors, audit supervisors and finance and accounting supervisors were interviewed individually while corporate governance and board practices were investigated in great depth. According to the results of the last year's evaluation, the specific highlights of CPC in 2021 are as follows:

The 2021 outcome of strengthening corporate governance

Recommendations for Corporate Governance Evaluation

It is recommended to plan the arrangement and training of the auditing office manpower as early as possible to facilitate smooth takeover of the auditing work.

The current manpower is showing an M-shaped fault. CPC is required to continue to make a budget for the implementation of talent training, hoping to effectively achieve the goal of talent integration.

The company should comprehensively evaluate the cause, evidence and subsequent effects of the lawsuit, and adopt a dispute resolution mechanism suitable for the case.

Achievement of strengthening corporate governance

- Through job rotation, CPC appoints qualified employees to take on the auditing job according to its business needs. CPC also continues to conduct core competence training and carry out mentorship system to enhance business succession and experience sharing.
- Each division of CPC establishes a focal point to promote core auditing practices to implement auditing management at different levels.

- CPC has set up the training courses for company transformation and future forward-looking development. In 2018, CPC has formulated the "short, medium and long-term talent development plan", to strengthen the training mechanism for recruits, conduct core competency training and develop high-level talents.

- CPC continues to publicize the dispute resolution mechanism in case of legal disputes. When handling litigation cases, each agency should follow relevant regulations such as the matters to note in CPC legal operations, the key points of appointing lawyers, and the detailed list of roles and responsibilities. Based on detailed information on the reasons, evidence, subsequent effects and social perceptions of each case, taking into account advice from court, Public Construction Commission or mediation committee, each agency should consult with Legal office or appointed attorneys to adopt appropriate dispute resolution mechanism to effectively resolve disputes and reduce the pressure on employees for dealing with lawsuits.

Recommendations for Corporate Governance Evaluation

Please review the reasons for the corruption cases and propose appropriate approach.

The company should consider how to enhance control mechanism to reduce labor disputes with contractors.

Achievement of strengthening corporate governance

- CPC has established an annual employee law of integrity promotion plan, which has been conducted in a diversified advocacy approach.
- If there is any employee who may potentially involve in violation or illegality, Ethics Office can discuss with the business unit head to adjust the duties for that employee or take relevant precautionary actions. In 2021, a total of 19 cases were reported and recommendations for improvement will be prepared and submitted to the business unit to follow up.
- CPC has activated the corruption prevention mechanism for those cases that have been prosecuted or adjudicated in the unit, reviewed relevant reform proposals, and assisted business unit in formulating corruption prevention measures to prevent the recurrence of similar cases. In 2021, a total of 3 special cases on anti-corruption were reported, and rectification proposals will be submitted.
- CPC has revised the "Gas Station Refueling (Store and Car Wash) Labor Service Instructions". If an employee is dismissed, severance pay and notification of severance must be done in accordance with the labor laws and regulations.
- Starting from 2020, all sales offices of the Marketing Business Division of CPC are required to conduct regular random visits to the working conditions of laborers at gas stations every six months, and fill in the random visit records. In 2021, the frequency of random visits has been changed from "every six months" to "quarterly", in order to detect problems early and reduce labor disputes.

The 2021 corporate governance evaluation score was 91 points, and the CPC's advantages are as follows:

Adopted online and physical class strategies for multi-participation courses, and expand the on-site certification courses for Directors and Supervisors to invite senior executives and members of the Sustainable Operations Promotion Committee to participate. Moreover, CPC increases the communication and exchange of opinions between Board members and departments.

CPC's performance in sustainable development deserves recognition. In addition to obtaining external certification and multiple awards, CPC has comprehensive policies and plans for future sustainability policies and cooperation with national development.

CPC's risk assessment, audit plan and audit project arrangement are comprehensive and extensive in scope, which is worthy of recognition.

In 2021, CPC applied for and obtained the level A certification of Taiwan Intellectual Property Management System (TIPS).

In order to continuously strengthen the corporate governance system, CPC will also propose a follow-up reinforcing governance plan based on the review opinions of the previous year's corporate governance evaluation in 2022, and continue to improve to achieve the vision of sustainable CPC.

2022 Improvement Plan for Corporate Governance

→ Achieve the policy goal of no less than one-third of Board seats for either gender.

CPC has written to its shareholder (MOE) requesting to take into account the policy goal of having no less than 1/3 for either gender when approving the appointment of BoDs.

→ Enhance the establishment of functional committees and strengthen the terms and conditions required for the appointment of the convener

CPC has sent a letter to the Ministry of Economic Affairs regarding the Independent Director's proposal to establish an audit committee under the Board of Directors along with the proposal of designate of the 34th Directors. The establishment of the functional committee and the requirements for the convener will be revisited after the Ministry of Economic Affairs approves the appointment.

→ Improve Board Meetings communication and the understanding of meeting materials

As a result of CPC's transformation needs, the amount of materials submitted to the Board of Directors for approval has been increasing recently. The concerned department will be required to explain to the Board members ahead the Board meeting, and CPC will hold briefing sessions on the transformation business from time to time, or provide project reports, or invite for site visit so that the Board of Directors can better understand the content of the proposal.

→ Reinforce dual oversight by Independent Directors and Supervisors

Depending on business needs, the Board of Directors holds supervisory meetings from time to time, and invites independent directors to attend to review CPC's financial statements and examine the business plan and execution, so as to achieve the effect of dual supervision by Independent Directors and Supervisors. In the future, the Board of Directors will actively invite Supervisors to attend the relevant meetings, or provide written comments to enhance the effectiveness of supervision.

→ Improve corporate governance related training courses for Directors and Supervisors and invite middle-level and senior executives to join.

Provide corporate governance related training courses for the Board of Directors in a timely manner and invite middle-level and senior executives to join.



Highlights: CPC implemented TIPS and was awarded TIPS Level A certification, which was highly recognized by all sectors.

In order to and strengthen the supervision function of the Board of Directors, CPC has established a TIPS management standard promotion working group with the director of the Legal Affairs Office as the executive secretary. In April 2021, CPC successfully obtained the counseling opportunity from the Institute for Information Industry entrusted by the Industry Development Bureau, and started to working on related tasks in May. During the half-year period, CPC has completed the inventory of the organizational objectives and annual operating goals of each unit, and determine the risks and opportunities according to the relevant stakeholders to confirm the internal and external issues. In line with the planning of the intellectual property management system and its corresponding policies and objectives, CPC improves the existing intellectual property management related systems (including patent and trademark early and subsequent independent maintenance and evaluation operation standards, personnel management and procurement operations of intellectual property risk prevention mechanisms, etc.). In addition, CPC provides various education and training, establishes an intellectual property management system linked to operational strategies, and improves the intellectual property risk protection capabilities. In 2021, CPC held 2 training sessions on the intellectual property management system with a total of 1,115 employees attending. On December 15, 2021, the Institute for Information Industry informed that CPC has passed TIPS_A certification, which was reported to the Board of Directors. By the end of 2021, the intellectual property management plan and implementation progress will be disclosed on the CPC Global Information Website.



1.3 Ethical Management

Ethical Management and Legal Compliance

Short-term

- Avoid corruption incidents and pursue a high standard of ethical code
- No major violations against social, environmental, or economic laws and regulations

Medium to long-term

Ensure the appropriateness and effectiveness of the internal control system, and establish a corporate culture of integrity and honesty

1.3.1 Legal Compliance

As the public offering state-owned enterprise, CPC attaches great importance to the relationship with its stakeholders and has established the “CPC Code of Ethical Conduct” with respect to the “Guidelines for the Adoption of Codes of Ethical Conduct for TWSE/TPEX Listed Companies”, as well as complied with the “Act on Recusal of Public Servants Due to Conflicts of Interest”, and “Integrity and Ethics Principles for Employees of the Ministry of Economic Affairs” and other regulations to constrain business conduct of employees (including board members, management, and general employees). CPC also upholds the principle of integrity in the execution of all business activities, and strictly prohibits any corruption, bribery and any form of fraudulent behavior such as using one’s position to benefit others or oneself to ensure a sustainable and honest corporate culture.

At the same time, CPC continues to pay attention to the conventions and policies that have potential impact on the company under international trends, in order to optimize various regulations and procedures. In addition, there are rules and procedures in place to ensure that employees conduct their business accordingly. In 2021, there were no violations of laws and regulations in the social and economic fields, and no anti-competitive, antitrust and monopolistic practices or related legal actions.

Corporate Governance and Ethical Management Principles

Corporate Governance Structure	Performance and Results
Reasonableness of state ownership	<ul style="list-style-type: none"> ▪ The special responsibilities and obligations of the company to achieve social and public policy objectives are authorized and promoted in accordance with the law or the instructions of the competent authorities.
Government as the owner	<ul style="list-style-type: none"> ▪ The company is 100% owned by the government and the board of directors is appointed by the Ministry of Economic Affairs to participate in the shareholders’ meetings (the powers and functions of the shareholders’ meetings are exercised by the board of directors) and exercise voting rights. ▪ The company provides monthly reports on its operations and performance review to the State-owned Enterprise Commission of the Ministry of Economic Affairs, and annually submits performance and related review reports to the Executive Yuan in accordance with the relevant regulations.
The role of state-owned enterprises in the market and fair competition	<ul style="list-style-type: none"> ▪ CPC is committed to providing convenience for all people to acquire oil (including setting up unprofitable gas stations in the remote areas and mountains). ▪ The oil products sold are in competition with Formosa Plastics Corporation. The wholesale prices of oil products are set weekly according to the floating oil price adjustment mechanism approved by the government, while private gas station operators can set their own retail prices to maintain healthy competition in the market. ▪ CPC is responsible for policy and plays an important role in stabilizing domestic oil prices.
Fair treatment of shareholders and other investors	<ul style="list-style-type: none"> ▪ CPC has established and disclosed relevant self-regulatory regulations to prohibit insiders from using inside information for profit. ▪ CPC has regulations regarding the acquisition or disposal of assets, the lending of funds or the endorsement of guarantees.




Corporate Governance Structure	Performance and Results
Stakeholder relationships and responsible business	<ul style="list-style-type: none"> ▪ The company actively promotes its CSR policy. ▪ The fairness of employment, welfare and retirement system, working environment and safety of employees are implemented in accordance with the law and are properly disclosed. There are proper regulations and mechanisms for employee's violation of laws and business misconduct, as well as for employee's complaints. ▪ The company conducts monthly review and improvement of environmental protection penalties and formulates specific policies to reduce the negative effects of environmental pollution. ▪ There is a “1912” toll-free customer service hotline, which is available 24 hours a day (and the whole process is recorded), all year round. When the customer service center is unable to handle customer's request immediately, or customers send mails to CPC Global Information Website service mailbox or via other channels (e.g. mailbox of the head of the unit, calling hotline or visiting the head office in person, supervisor mailbox, etc.), these cases will be filed in CPC's delivery system, which will in turn pass these cases on to the relevant units for processing and reply.
Information transparency and disclosure	<ul style="list-style-type: none"> ▪ CPC regularly discloses “Sustainability Report” and important information in the Social Corporate Responsibility section on the global information website. ▪ The company discloses its financial reports within the prescribed period, and the annual report of the shareholders' meeting also discloses the duties, experience, part-time positions, operation profile and remuneration of directors, supervisors and senior managers, as well as the amount and nature of the fees of the CPAs. ▪ CPC regularly discloses corporate governance regulations and important information, such as information on meetings of directors and supervisors, in the Corporate Governance section on the global information website.
Responsibilities of the board of directors of state-owned enterprises	<ul style="list-style-type: none"> ▪ There are a total of 13 members of the board of directors of CPC, including 2 female directors, with diverse expertise in chemical, mechanical engineering, law, finance, and business management. There are also three supervisors, including 1 female supervisor with expertise in accounting and finance. ▪ The directors and supervisors participated in further education courses conducted by the Taiwan Corporate Governance Association, Taiwan Institute for Sustainable Energy and Financial Examination Bureau in 2021. ▪ The average attendance rate of all directors and supervisors is 94.7% in 2021.
Accounting system	<ul style="list-style-type: none"> ▪ CPC evaluates the independence and appropriateness of the CPA appointed by CPC every year and submits the appointment of the CPA to the board of directors for approval. ▪ The CPA regularly communicate with the supervisors on the financial statement audit planning and audit opinions and attend the meetings of the board of directors and supervisors to answer questions from the independent directors and supervisors regarding the results of the audit reports.

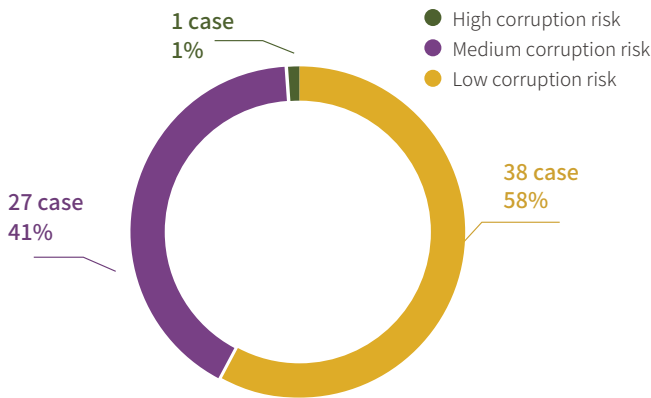
Anticorruption

In anticorruption work, CPC begins with corruption prevention. By establishing business reform and anticorruption measures and the “Principles of Co-Supervision of CPC's Ethics Officials” and the “Platform for Reporting Procurement Anomalies to Ethics Department,” CPC hopes to prevent procurement corruption and ensure open, impartial, and transparent competition. In addition to enhancing the awareness of related integrity laws and regulations through employee training and announcement in the meetings, CPC also discusses these issues with its contractors with business relationship and requests them to abide by the ethics code of conduct. According to the standard provisions of CPC's contracts, the suppliers shall not demand, promise, accept or give bribes, commissions, proportional payments, brokerage fees, gratuities, kickbacks, gifts, entertainment, or other improper benefits to any person in connection with this procurement contract. The same regulations apply to subcontractors. If the contract is breached, CPC may terminate or cancel the contract and deduct 2 times the amount of improper benefits from the contract price. If the deduction can't be made, CPC will notify the supplier to pay before the due date. If the counterparty in the contract is involved in corruption, the business unit shall terminate or cancel the contract in accordance with the provisions of the contract and shall also withhold 2 times the amount of improper benefits.

All units which have a government ethics department are included in the corruption risk assessment. In 2021, each unit implemented corruption risk assessment and reported 66 probable “corruption risk events” as follows. CPC has taken actions, such as administrative responsibility investigations, recovery of funds, or legal actions for criminal offences. Those involved in criminal responsibility will continue to search for information and send letters to the investigation office in accordance with the law and will also fully cooperate with the investigation.

2021 Corruption risk events

Corruption risk levels	Type
 <p>Low corruption risk</p>	Improper words and deeds and violate work disciplines, improper use of corporate vehicle and violation of the “Ethics Guidelines for CPC Employees”
 <p>Medium corruption risk</p>	Staffs falsely claim for payment of works, abnormalities in gas station billing operations, illegal bid-rigging by vendors and violation of procurement contracts by vendors
 <p>High corruption risk</p>	Against the rules of CPC attendance management points



CPC has several channels in place to receive misconduct reports (Informing mailbox of official website, postal mailbox, direct line). In 2021, CPC received a total of 14 investigation results of previous cases, including 3 prosecution, 5 suspended prosecutions, 6 verdicts and 1 corruption, the rest of cases are criminal cases (Offenses of Criminal Conversion). Furthermore, violations are compiled into case studies and conveyed to employees on a regular basis in order to strengthen the concept of integrity of employees.

Procedures for reporting misconduct behaviors



➔ Internal corruption reporting channels

- Whistleblower Box of CPCs Ethics Unit: P.O. Box 128-36, Taipei Xinyi Post Office, Tel: (02)8725-8478, Fax: (02)8789-9007

➔ External reporting channels

- Procurement and Audit Team, Ministry of Economic Affairs: No. 15, Fuzhou St., Taipei City, Tel: (02) 2397-1592, Fax: (02) 2397-1593, e-mail:ps.unit@moea.gov.tw
- Address of the Central Procurement and Audit Team, Public Construction Commission, Executive Yuan: 9F., No. 3, Songren Rd., Taipei City, Tel: (02)8789-7548, Fax: (02)8789-7554
- Dedicated phone lines of Agency Against Corruption, Ministry of Justice: 0800-286-586; dedicated mailbox for reports: " P.O.BOX 153, Academia Historical 10099"; dedicated fax line: (02) 2381-1234; dedicated email address: gechief-p@mail.moj.gov.tw; address of the report center: No.166, Bo' ai Rd., Zhongzheng Dist., Taipei City.
- List of dedicated phone lines and mailbox information of the Ministry of Justice Investigation Bureau and its division (<http://www.mjib.gov.tw/EditPage/?PageID=68997624-Bae6dd97c5ca1f87>)

Every year, CPC develops employee integrity promotion plan. In 2021, CPC held a total of 184 thematic anticorruption educational programs with 11,641 participants and 29,129 person-time. The government ethic units of CPC conduct anti-corruption activities and education and training for employees, with investing 54 internal and external lecturers, and more than NT\$600,000 spending through education and training, keynote speech, seminar, supervisor's report, departmental meetings, internet and email etc. Because the workers working in shift and the office locations were scattered, some units had difficulties promoting concentratedly. Therefore, to promote to all employees and increase the proportion of publicity, the government ethic units carried out walk-through propaganda of integrity by business characteristics.

Total number and percentage of departmental staff who have received anticorruption training and communication regarding anticorruption policies and procedures (Employees By Division)

Employees		2021		
Department	Employees level	Total Number of Employees	Number of Employees Trained	percentage
HQ	Supervisors	159	159	100%
	Non-supervisors	792	792	100%
Marketing Business Division	Supervisors	252	252	100%
	Non-supervisors	4,731	4,731	100%
Exploration & Production Research Institute	Supervisors	12	12	100%
	Non-supervisors	213	213	100%
Solvent & Chemical Business Division	Supervisors	15	15	100%
	Non-supervisors	224	145	65%
Project & Construction Division	Supervisors	26	26	100%
	Non-supervisors	173	173	100%
LPG Business Division	Supervisors	15	15	100%
	Non-supervisors	119	27	23%
Refining Business Division	Supervisors	228	222	97.3%
	Non-supervisors	4,051	1,335	32.9%

Employees		2021		
Department	Employees level	Total Number of Employees	Number of Employees Trained	percentage
Natural Gas Business Division	Supervisors	97	97	100%
	Non-supervisors	1,581	1,012	64.5%
LNG Project & Construction Division	Supervisors	21	21	100%
	Non-supervisors	145	47	32%
Lubricants Business Division	Supervisors	20	20	100%
	Non-supervisors	130	36	27%
Exploration & Production Business Division	Supervisors	101	101	100%
	Non-supervisors	1,264	1,264	100%
Petrochemical Business Division	Supervisors	90	90	100%
	Non-supervisors	1,433	698	48%
Refining & Manufacturing Research Institute	Supervisors	15	15	100%
	Non-supervisors	346	123	36%

With a total of 11,641 participating employees

1,045

10,596

The number of publicity reached 29,129.

● Supervisors

● non-supervisors

Highlights: Promotion of Citizen Judge



Citizen Judge Timeline



In order to let colleagues understand the structure, operation and trial proceedings of the judicial organ after the implementation of Citizen Judges Act and at the same time introduce the formation, duties, rights and obligations of the citizen judges system through dialogue and communication, CPC teamed up with Kaohsiung District Court to launch a campaign called “Go Around the Court Together” on April 21, 2021. There were 60 employees of CPC participated in this campaign.

CPC has been actively promoting the citizen judges system within the group, and has completed various




publicity campaigns. In addition to sending relevant regulatory information to all employees by email on a quarterly basis, CPC also distributed posters and folded leaflets and at CPC directly-operated gas stations with LED panel (78 stations in total), the related information was displayed every day. In August, 2021, online training of the citizen judges system was held, with a total of 71 trainees. Through internal and external visit, CPC hopes to make colleagues understand the Citizen Judges Act, which will help to enhance colleagues' awareness of integrity and discipline and foster a mindset of abiding by laws and regulations.

Transparency of Price Information of Major Products

CPC has been implementing a price stabilization system for oil, Liquefied Petroleum Gas, and natural gas in line with the government's price stabilization policies since 2007. CPC had no legal actions caused by oil and gas price inflation or manipulation related events in 2021, including 92 Unleaded, 95 Unleaded and 98 Unleaded, Ethanol gasoline and Super Diesel passed the program of "Petroleum Product Quality Inspection and Management". Therefore, its related monetary loss was NT\$0.

Price Adjusting System

The Performance in 2021

 <p>Gasoline and Diesel</p>	<p>Strategy: Every week, in accordance with the "Operating Principles of the Domestic Gasoline and Diesel Floating Oil Price Adjustment Mechanism" approved by the competent authority, CPC proposed a price adjustment plan, and the announcement will be implemented after the approval by administrative procedures.</p> <p>Pricing Basis: Weekly adjustments are made with the changes in international oil prices and the average exchange rate. The magnitude of the adjustment depends entirely on the calculation results of the oil price formula. After calculation according to the adjustment formula, the pre-tax wholesale prices of 92 unleaded gasoline and super diesel will be converted to the pre-tax wholesale prices and the upper limit price of adjustment will be the lowest price before tax in the current week in neighboring Asian countries (Japan, South Korea, Hong Kong, Singapore). The weekly price adjustment information is disclosed on the CPC Global Information Network and press releases.</p> <p>CPC's efforts: In order to reduce the burden on the public and reduce the impact on prices, the Ministry of Economic Affairs announced measures to stabilize oil prices in 2018, and set 3 slow-rising thresholds for 95 unleaded gasoline at NT\$30, NT\$30.25 and NT\$35 per liter. If the retail price rises over the part of the threshold, the government will absorb 25%, 50% and 75% respectively. 92, 98 unleaded and diesel per liter absorption amount according to 95 unleaded</p>
 <p>Natural Gas</p>	<p>Strategy: The calculation method of natural gas price was developed by Taiwan Institute of Economic Research, reviewed by the "Electricity and Natural Gas Price Consultation Committee" and the proposal of revision of supply cost in the calculation of natural gas price on September, 2020 approved by the Ministry of Economic Affairs in 2008 and with the effective date in 2021.</p> <p>Pricing Basis: In accordance with the natural gas price adjustment mechanism CPC's natural gas price fluctuation caps at 3% in a single month and 6% over 3 consecutive months. Adjustments above this cap must be reported to and approved by the Ministry of Economic Affairs before taking effect.</p> <p>CPC's efforts: Domestic natural gas sale prices should increase significantly in 2021 to reflect the rising cost of natural gas. However, the government only agreed to slightly increase the sale price of natural gas month by month or only adjust the sale prices of electricity users in order to mitigate the impact of the pandemic and stabilize prices. Part of the cost that has not been factored into the sale price was temporarily absorbed by CPC, resulting in a loss for natural gas products in 2021.</p>
 <p>Liquefied Petroleum Gas</p>	<p>Strategy: Oil prices are governed by a price adjustment mechanism by month; proclaim and implement after the work of price adjustment is verified through administrative process.</p> <p>Pricing Basis: The monthly domestic price adjustment information (including the wholesale price, international CP average price, exchange rate and Asian neighboring prices) is disclosed in the press release issued by CPC and on the global information website; information about CPC's price adjustment mechanism is also announced on CPC's global information website for public inquiries. The price of gas purchased by downstream and the public is set according to the market mechanism, CPC does not interfere with the terminal sales price</p> <p>CPC's efforts: Since CPC is a state-owned company, when the domestic and foreign market supply and demand or the competition changes sharply, CPC has to take into account the public's sentiment and make flexible adjustments under special circumstances. Following the government's instructions, measures to freeze price increases were taken to reduce the impact of excessive price fluctuations on people's living and spending. The unadjusted amount will be made up when the international price drops. The influence is considered short-term in nature. In the future, apart from making up the loss, the pricing will be determined based on the price adjustment mechanism in due course.</p>

1.3.2 Response to Incident

Corruption Incident in CPC Refining Division



Impact

On January 26, 2022, the office of the former CEO of Refining Business Division, Xu Han, found a remittance case involving NT\$ 27.1 million in unidentified cash. Since the employee is in a high-level position, he conducts many procurement cases. It is strictly forbidden to have too close of relations with the contractor, and the relevant behavior is regarded as a major violation of the code of conduct for employees of CPC.



Response and subsequent enhancement measures

On the day of the incident, CPC and relevant first-level units were called to jointly discuss how to strengthen internal anti-corruption control behaviors. Chairman Shun-chin Lee was shocked when he received the notice for the first time, and expressed that he was in deep distressed. The internal review mechanism was launched immediately. In addition to the procurement pricing mechanism, he immediately reported to the Ministry of Economic Affairs in person, and simultaneously reviewed the engineering side and the financial mechanism. The supervision and inspection procedures linked to the procurement mechanism prevent unscrupulous manufacturers from obtaining files by illegal bribery, which would endanger the quality of CPC's projects in Taiwan. The improvement measures are as follows:

- Invite the prosecutors of the District Prosecutor's Office to serve as a lecturer of the company's senior executives integrity training course, and strengthen the senior executives' concept of administration according to law.
- Add the "Integrity and Safety Section" on the homepage of the CPC's internal and external websites, which includes information such as anti-corruption promotion and anti-corruption reports.
- Monthly senior executive meeting, select cases to promote, so that employees and middle and senior executives can learn from it.
- In response to major procurement integrity incidents, we have handled special investigations such as "Assessment of High Risk and Major Procurement Cases" and "Assessment of Major and People's Livelihood Projects Procurement Cases".
- Plan to establish an "integrity platform", select major procurement cases with high risks or social attention, invite the Independent Commission Against Corruption, the District Prosecutor's Office, the Engineering Association, and related manufacturers, to establish a communication mechanism. For example, CPC discloses information and hold regular meetings to strengthen the supervision mechanism.

CPC Oil Guard Floating Pipeline Spill Around XiaoLiuqiu, Pingtung



Impact

On June 22, 2021, the Coast Guard reported that oil traces were found in the waters of Xiaoliuqiu, Pingtung. CPC immediately tracked the oil traces after the accident, and held an emergency response meeting on the same day to dispatch various materials and arrange various oil pollution inspections, removal works, and blocking works. The Ocean Conservation Administration drone aerial photos and satellite image tracking confirmed that the sea surface is free of oil pollution. After the third notary company completed the marine and shore-based cleanup and completed the notarization report, the local government finally agreed to end all decontamination work. The Kenting National Park Management Office, the Ocean Conservation Administration, and the Pingtung County Government conducted an assessment and analysis of the ecological impact of the sea area and passed water quality monitoring. All improvement and restoration work were completed on July 9.



Response and subsequent enhancement measures

1. Impact assessment of oil spill on surrounding biodiversity and subsequent water quality and ecological monitoring.

CPC completed an ecological investigation report of the sea area, and it was notarized by a third-party entity. After the cleanup was completed, it was confirmed that there was no negative impact on the local ecological environment. In addition, CPC cooperated with Kenting National Park Administration on "Investigation and assessment of the impact of oil pollution on corals in the west Hengchun Peninsula" and "Monitoring of seawater quality in the waters near Kenting during the oil spill of No. 2 buoy at CPC's Dalin Plant". CPC also cooperated with Pingtung County Marine and Fisheries Management Office on the "Investigation plan for the impact of the oil spill of the oil pipeline off the Dalin Refinery of CPC on the marine ecology of Liuqiu and the fishery industry of Hengchun Peninsula".



Response and subsequent enhancement measures

2. Indemnity and Compensation

Regarding the compensation for the residents and fishermen's losses of fishing catch and fishing gear as well as the restoration of the marine ecological environment, CPC has cooperated with the insurance company to actively communicate with the township mayor and the fisheries association. The mediation committee was set up to deal with the issues/disputes and has completed all the mediation cases.

3. Improvement actions

(1) Enhance maintenance of oil unloading facilities:

- The useful life of the floating pipeline is shortened from 8 years to 6 years and it is towed back to the shore for regular inspection and pressure test every year.
- Ensure all the spare parts of the floating pipeline are in place.
- In the long-run, CPC and Taiwan International Ports Corp. Ltd. will be working on the plan to incorporate the construction of the discharging facilities at the port into the Kaohsiung Intercontinental Container Terminal Project Phase II, so as to reduce the risk of offshore buoy unloading.

(2) Monitoring and prevention of oil leak:

- When unloading oil, additional vessels with decontamination capability will be dispatched to guard and patrol.
- The buoy or the stern tugboat is equipped with oil leakage detection equipment to spot the oil spill incident in the first place.
- Planning to purchase 2 multi-functional decontamination tugboats to enhance vigilance and emergency response capability during oil unloading.

(3) Reinforce the emergency response in the event of an oil spill as follows:

- Standby workboat should decontaminate the oil spill immediately to prevent the spread of oil pollution.
- Outsource tugboats to cope with the overhaul and emergency response needs of self-owned workboats.
- Reinforce the joint precaution effort to avoid marine pollution within CPC group, and enhance the cooperative response mechanism required by the government authority.
- Upgrade offshore and onshore (ecologically sensitive areas) contingency equipment and facilities, and establish a warehouse to store decontamination gears for emergency use.

Elaboration of financial loss for 2021



Impact

The global economic recovery in 2021, coupled with extreme climate and high temperatures in summer, has led to a sharp rise in the international prices of crude oil and natural gas. There were also factors such as insufficient natural gas stocks in Europe, coal reduction, and the severe cold weather in winter, which further pushed up the LNG spot price. As per CPC's self-prepared 2021 financials, total revenue was NT\$903.8 billion, of which a profit of NT\$44.3 billion was made from oil products and a profit of NT\$5.2 billion was made from petrochemicals. Nevertheless, CPC's after-tax loss reached NT\$39.3 billion in 2021 mainly because the global economic recover coupled with extreme climate and high temperature in summer resulting in a sharp rise in the international prices of crude oil and natural gas, and the lack of natural gas stocks in Europe, coal reduction and the expected cold weather this winter, etc.; further pushing up LNG spot prices. According to the natural gas price adjustment mechanism, domestic natural gas sale prices should increase significantly in 2021 to reflect the rising cost of natural gas. However, the government only agreed to slightly increase the sale price of natural gas month by month or only adjust the sale prices of electricity users in order to mitigate the impact of the pandemic and stabilize prices. Part of the cost that has not been factored into the sale price was temporarily absorbed by CPC, resulting in a loss of NT\$74.9 billion for natural gas products in 2021 and turning CPC's overall operating result into negative territory. The total amount of taxes (including sales tax) paid in 2021 was NT\$101.8 billion, which was still make a significant contribution to the national revenue.

Facing the skyrocketing prices in the energy market as a result of the Russia-Ukraine war in 2022 and the challenges and uncertainties of the future operating environment, CPC always keeps abreast of the changes in the international energy market, the pulse of the domestic market development and the impact of industrial transformation, and dynamically adjusts its business model accordingly :

- The company has been actively engaging with Japanese and Korean LNG importers and has strengthened regional cooperation such as emergency mutual cargo dispatch mechanism (e.g., exchange or resale) and market dynamics information sharing.
- Securing the gas supply, as well as depending on the supply and demand in the international LNG market, the procurement strategy will be adjusted flexibly, and LNG procurement will be increased in the short to medium term in a timely manner.
- CPC will also seize trade opportunities, reinforce risk management capabilities, closely monitor changes in market supply and demand, and secure import sources to increase export revenue.
- CPC will also seize trade opportunities, reinforce risk management capabilities, closely monitor changes in market supply and demand, and secure import sources to increase export revenue. CPC will continue to strengthen the development of core businesses including exploration, refining, petrochemicals, oil product marketing, and natural gas, provide stable local supply of oil, gas and petrochemical raw materials, enhance international competitiveness, explore overseas markets, expand the scope of investment, and ensure to achieve financial performance goals.



Response and subsequent enhancement measures

The construction of the third LNG Receiving Terminal, carry out “protecting algal reefs, reducing air pollution, and stabilizing power supply” commitment



Impact

In order to achieve the goal of 50% gas-fired power generation by 2025 as stipulated in government's energy transition policy, CPC continues to engage in new projects for natural gas storage tanks, pipelines and other transportation and storage facilities to meet the new demand for natural gas in the domestic market. Therefore, a third LNG receiving terminal is required to be built in the country. CPC plans to build the 3rd LNG receiving terminal in Guantang industrial zone, which is located on the northwest coast of Datan Power Plant to balance the gas demand of the North, Central and South part of Taiwan. It is to supply natural gas to the new gas-fired units of TPC's Datan Power Plant and meet the requirement of the northern plants for the conversion to natural gas.

At the end of 2020, a number of environmental groups initiated a joint petition, requesting that the Third LNG Receiving Terminal should be relocated away from Taoyuan Datan algal reefs coast and waters. The signing of the petition was completed in 2021 and became the 20th case of the referendum. The signing of the petition indicated that some people believed that CPC could do better to protect the ecology around the third receiving terminal and could make more efforts to deliver the results.



Response and subsequent enhancement measures

CPC communicated with environmental assessment members and environmental groups many times during the environmental assessment considerations and proposed the “Avoidance Solution” for algal reef friendly ecology. The development of the industrial area was reduced from the original 232 hectares to 23 hectares, and only the land already filled by Dongding company 18 years ago was used for the construction of tanks and other facilities required for the LNG receiving terminal. The Guantang intertidal algal reef area (G1 and G2) was preserved in its current state without affecting the algal reef ecology. In addition, after careful review and prudent evaluation of various feasibility, CPC proposed an “extension plan” for a more friendly algal reef ecology. The industrial port will be pushed out by 455 meters, and the impact on the intertidal algal reefs will be milder since it is further offshore. Moreover, because the water depth after pushing out is sufficient for ships to enter the port, no dredging or landfilling is required, and the seabed reefs are more protected. Although the gas supply schedule will be extended by 2.5 years and the project cost will also increase. CPC is willing to show the greatest goodwill to preserve the environment, and will do its best to provide the most complete information and explain it to the public in detail to gain people's support. With all these efforts, the people have regained confidence in CPC, and have voted against in the referendum, making the best decision for Taiwan, so that the country can move towards energy transition more steadily in the future.

As for some environmentalists' opinions and claims about algal reefs, CPC fully understands and respects them. Since the construction in 2019, CPC has continuously invested human and material resources to maintain the ecology of algal reefs. Various monitoring results indicate that the growth of *Polycyathus chaishanensis*, little terns, and crustose coralline algae is stable, which means that the extension of the third receiving terminal is able to strike a balance between development and conservation. In addition to the scientific investigation and research by scholars and experts, in order to enhance ecological conservation, CPC will work with local organizations for Datan coast in the future. CPC will continue to invest resources in conducting research and investigation, managing and maintaining the coast and waters of Datan, giving full play to the conservation of algal reefs and ecology. Furthermore, to lead by example, CPC plans to establish an ecological conservation trust fund to encourage ecological research and promote ecological conservation education.



photo of the third LNG terminal project



September 2020

Polycyathus chaishanensis that are bleached by the high temperature of seawater



March 2021

Polycyathus chaishanensis return to normal with no bleaching



December 2021

Coral algae in Datan

On March 2, 2022, EIA Conference approved the extension to third LNG receiving terminal project, which is an important infrastructure for the energy transition. During the construction period, CPC will protect the shores and seas around Datan to fulfill its commitment made in 2021 referendum and EIA review and establish a green bay aligning with the goals of protecting algal reefs, reducing air pollution, and stabilizing power supply.

For more information on the ecological conservation of CPC in Kwun Tong area, please refer to [chapter 3.4.1 Ecological conservation](#)

1.3.3 Risk Management

In order to promote the risk management policy and establish a crisis management mechanism, CPC makes effort to cultivate employees' awareness of risk management and crisis management. As to improve the efficiency of risk management and crisis management and achieve the company's goal of sustainability, CPC also realizes that risk management is a cyclical process of continuous improvement. Therefore, each unit should conduct risk identification, risk analysis, risk assessment, risk handling, communication and negotiation, supervision and review through the risk management operation system. After going through the comprehensive risk assessment, each unit should deal with the risks proactively.

Apart from establishing the “Principles for Risk Management and Crisis Handling Practices,” and “Overall Risk Measurement Principles” , a risk management system, and an internal audit system, we activate the Crisis Response Team at crisis outbreaks to maintain the effective operation of internal control to ensure steady business operations. We established four risk management policies as the guiding principles of organizational risk management.

1. Reduce business risks for corporate sustainability

2. Adopt comprehensive risk management and enforce operating procedures

3. Improve risk management capacity and shape a risk management culture

4. Enhance the communication with employees and stakeholders and enforce the risk management policy

Risk Management Goal

Short-term

Based on the risk management policy, each unit carries out its duties and functions with respect to its objectives and plans; implements routine operations; manages, prevents, and monitors risks and makes continual improvement; and establishes an effective emergency response and reporting system

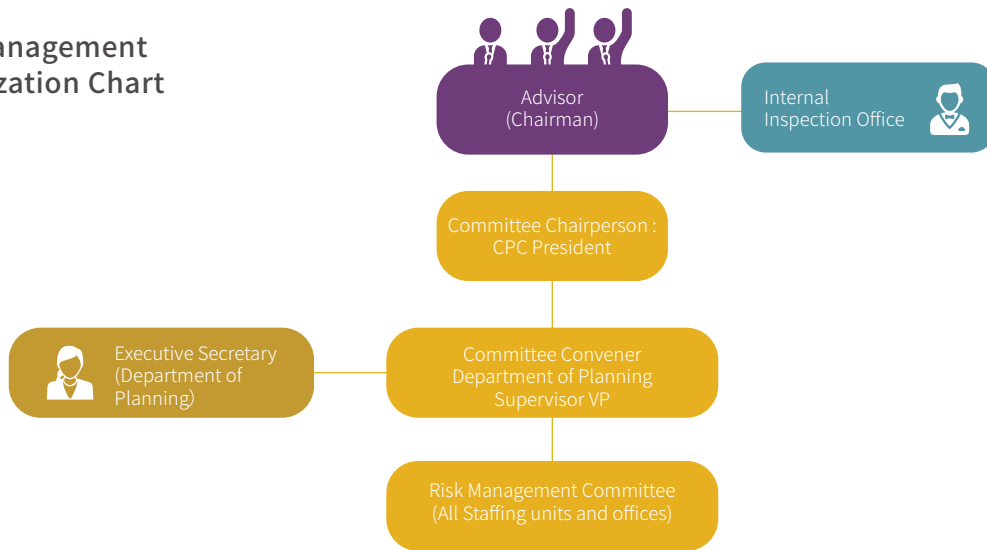
Medium/long-term

- Arrange appropriate training and education on risk management or organizational learning for employees of all levels for them to understand their responsibilities, develop the ability to carry out risk management tasks enforce the risk management mechanism, and reduce the operational risk of the CPC
- Equip employees with risk awareness and risk management ability, blend risk management into routine operations and decision operations; and improve corporate crisis handling capacity to achieve our medium-and long-term plans and sustainable management goals and protect the rights and interests of stakeholders

Risk Management Committee and Risk Management Operations

In order to implement the risk management system, CPC established the “Risk Management Committee” and respective unit's risk team in March 1998 to continuously implement CPC's risk management operation mechanism, use “Risk Image (Risk Metrix)” as an assessment tool, and set up the Enterprise Risk Management System (ERM) to systematically record, track and control the improvement of CPC's various risks.

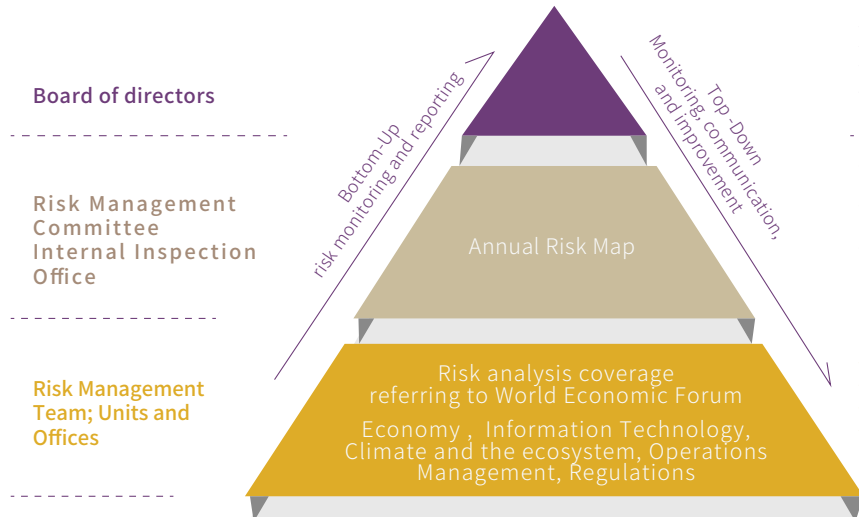
Risk Management Organization Chart



Operations of Risk Management

	Bottom-up risk management	<ul style="list-style-type: none"> Each unit establishes a Risk Management Standard Operating Procedures according to its business attributes, examines various factors of risk changes, lists annual risk items and images, proposes risk solutions, reviews and monitors the status of improvement periodically, and reports to the Risk Management Committee to follow up the effectiveness of handling.
	Top-down risk management	<ul style="list-style-type: none"> CPC holds daily morning reports and weekly business meetings, annual target announcement meetings, mid-year target review meetings, and regular risk management committee meetings to continuously review and control the implementation progress of various operational plans, new product introductions, and related risk issues. The Risk Management Committee holds regular meetings every year to review the effectiveness of risk management in each unit risk and changes on a rolling basis according to current events. Established the "Overall Risk Measurement Principles", according to which risk items and risk levels are proposed and divided into 7 major impact, including financial losses, personnel casualties, loss from business disruption, company reputation, public opinions, violation of laws and regulations, and human resources, components to measure the degree of impact. Prevent, handle and integrate related resources immediately in order to avoid the negative effects of risk events on the organization and minimize the impact of risk damage. Internal Inspection Office conducts annual on-site audits to examine the appropriateness and effectiveness of the risk management system of CPC.

level of authorization



Main responsibilities

- Monitor operational risks monthly
- Review internal onsite audit report monthly
- Establish risk management and emergency SOP
- Engage in overall risk screening of the corporation annually
- Lay out risk management policy and guidelines
- Monitor the risk management operation of units and offices
- Conduct onsite audit to confirm that the risk management procedures are well-maintained with efficacy and improvement
- Establish the annual risk map
- Execute the management of each operating level
- Track improvement progress
- Handle relevant training and emergency drills

Operational Results of Risk Management in 2021

The CPC Risk Management Committee has the chairman representing the board of directors serving as a steering committee member and supervising the conduct of the meeting. All board members participate in the company's annual overall risk project opinion survey and ranking and participate in high-level risk management seminars from time to time.

The Risk Management Committee of CPC conducts an overall review of the possible risks faced by the enterprise, develops various response plans, reviews the response methods, and monitors the results.

In 2021, we identified 12 risk items. After taking measures to make improvements, and keep monitoring the risk items, 6 of which remained the same; 6 of which decreased.

Identification of risks and opportunities	Risk Category	Effectiveness management
Stable oil and gas supply and security	Operations management	<ul style="list-style-type: none"> In 2021, the major sources of oil imports came from 11 countries, with a total of 15 types of crude oil. The percentage of future contracts was around 56.8%~74.7% to secure the supply quantity. Based on the information provided by the import, production, sales, transportation and storage units, the production and sales linear planning model is used to optimize the calculation. The production and sales planning and review meeting is held at the end of each month to forecast the production and sales volumes of major oil products for the next three months, taking into consideration of the operational scheduling of each unit. Enhance the negotiation with suppliers and cargo dispatching, invest in the LNG receiving capacity and storage tanks, and draw up the plans for backup gas pipeline management as well as dual gas supplies for key customer, in order to improve natural gas supply capacity and dispatch flexibility. Regularly track the status of pipeline security management and accelerate pipeline inspection progress to ensure the safety of oil and gas pipeline transportation.
Risk of information security attack	Information Technology	<ul style="list-style-type: none"> In June 2021, a dedicated information security department - Information Security Center was established to enhance the information security manpower and capacity of information and operational technology (IT/OT), and introduce an endpoint detection and responses mechanism, which is deployed at all endpoint devices throughout the CPC to expand the scope of monitoring. Continue to promote and implement the CPC's "Four No and Three Yes" information security regulations. Continuously improve information security awareness through email social engineering drills and USB flash drive security management. In 2021, a total of 3 social engineering drills, 2 alert drills, and 1 no-alert drill were conducted. Continuously review backup practices, implement daily differential backup as well as weekly and monthly full backup policies, improve backup recovery efficiency, and conduct comprehensive and regular inspections or audits. Complete the installation of an intelligent analysis system for network encrypted traffic, which can smartly analyze and filter traffic, enhance the visibility of network traffic, and improve the flexibility of network architecture and overall information security performance.
Impacts of green energy transformation	Regulations	<ul style="list-style-type: none"> In accordance with Public Construction Project of Industrial Development Bureau, CPC established 22 electric station sites, 194 electric motorcycle recharging stations by tenders, total 216 station sites in 2021. Improve structure and introduce new technologies, such as proper selection of suitable crude oil types and plant operation model in accordance with oil supply demand, as well as adjust the production ratio of gasoline, diesel and petrochemicals R&D of technology of energy saving and carbon reduction and the conversion of oil into high-value special chemicals or materials.
Impacts of ecological issues on major investment projects	Ecosystem	<ul style="list-style-type: none"> Actively communicate and coordinate with the Ocean Conservation Administration and Taoyuan City Government on the conservation of algal reefs in Taoyuan. Moreover, provide engineering, ecology and other related information to reduce the public's doubts about the ecological impact of the third LNG receiving terminal project. Respond to the opinions of the group in a timely manner, publicize the ecological survey data on the website of the Ecology Zone of the third natural gas receiving station on the website, and conduct third LNG receiving terminal referendum publicity activities to let the public understand the company's ecological conservation activities. The implementation results of various EIA commitments were sent to the competent authority in accordance with regulations, and was handled in cooperation with the resolutions of the Kwun Tong Industrial Zone (harbor) Ecological Conservation Executive Committee.
Risk of talent fault and core technology succession gap and overall outsourcing risk	Operations management	<ul style="list-style-type: none"> Provide pre-employment training, core competence training and business license training for new recruits; Promote the mentoring mechanism to facilitate new recruits to familiarize themselves with the business Establish the training mechanism of the "short, medium and long-term manpower development plan", conduct core competency training and develop high-level talents. Based on the demand for talents in the future, CPC provides the training to cultivate employees' professional core competencies every year and continues to make budget for staff training and set up staff training program. Utilize platforms such as CPC e-Academy and Corporate University to conduct workshops on marketing, management and engineering. Build relevant cases and coaching on the knowledge management platform (KM) to facilitate knowledge sharing. At the same time, experts from external organization or cross-unit talents are invited to exchange technology information to improve the professional advanced skills of colleagues.

Identification of risks and opportunities	Risk Category	Effectiveness management
Leakage of long distance oil and gas pipelines	Operations management	<ul style="list-style-type: none"> When excavating pipelines, it is required to measure the coordinate points of the pipeline and update them in the pipeline management information system to maintain accurate map data. In order to ensure the protection and safety of pipelines, CPC conducts cathodic corrosion protection for pipelines, and tight potential and intelligent PIG (IP) testing. Relevant testing is conducted every year, and CPC completed 33 pipeline IP testing in 2021. The pipeline is equipped with monitoring system, along with pressure, flow rate upper and lower limit alarm devices, if there is any abnormality, an alarm will be send out and it is required to deal with the issue immediately. So far, it is functioning satisfactorily. At present, 10 leakage monitoring systems have been completed, and 5 are under construction. CPC has prioritized the installation of leakage monitoring systems for the rest of the industrial pipelines.
Construction or operation risk due to failure to implement the OHS SOP (including contractors)	Operations management	<ul style="list-style-type: none"> Enhance the promotion, training, implementation and auditing of the compliance of standard operating procedures (SOP) by personnel (including contractors). Request contractors to conduct hazard identification, risk assessment and job safety analysis (JSA), and carry out work safety classification inspections, site patrols, morning report meetings, and work permit checking and sign-offs. In 2021, CPC conducted 40 audits for engineering, refining, exploration & production, and marketing, as well as 19 audits for the implementation of mechanical integrity (MI) coaching plan, management of changes (MOC) auditing plan, and process safety management (PSM) coaching plan, and continued to follow up on improvement measures and the progress of enhancement.
Risks of unplanned incidents	Operations management	<ul style="list-style-type: none"> Continue to emphasize the importance of the Company's spokesperson system. Without authorization, colleagues are not allowed to make comments about the Company's business in order to avoid misunderstanding from the public. In case of emergencies or media visits to the unit without notice, each unit should immediately report the situation by filling out the "Hazards and Emergency Report Form". Each unit should enhance the training on the staff quick reporting system and the deadline requirement, implement emergency response management. Each unit should let the colleagues get familiar with quick reporting procedure and conduct regular or unwarned drills to strengthen colleagues' ability to respond to emergencies and report them in a timely manner to avoid the expansion of disasters.
Risk of critical equipment maintenance	Operations management	<ul style="list-style-type: none"> Conduct the pre-construction risk assessment before the maintenance or replacement of key equipment, and draw up the plan for improvement measures or protective mechanisms based on the assessment results to reduce possible impacts. Hold a pre-work safety meeting before working on critical construction to confirm the process and corresponding safety measures, conduct on-site checking if necessary, and make a precaution briefing to the contractor's staff on the day of commencing construction. Continue to revise the standard operating procedures (SOP) for key equipment maintenance and interfacing between old and new equipment, and regularly promote and require that SOP must be followed. When performing critical work, the supervisor and personnel of the construction supervision should be on-site to oversee the progress, and the contractor's manager in charge of the construction site and the safety personnel are required to be on duty at the site.
Oil price fluctuation risk	Economy	<ul style="list-style-type: none"> Call the oil price hedging strategy meeting to discuss the international economic situation, study and forecast the price movement trend, formulate the hedging strategy and review the strategy on a monthly basis. Based on the trend of oil prices and refining spread, CPC properly adjusts the heavy oil conversion (RFCC/ROC) and the export volume of gasoline, diesel, aviation fuel, and other oil products, and also develops the export market to explore business opportunities and increase profitability. In addition to complying with the government's safety stock requirements, the inventory is maintained at an appropriate level with sufficient headroom in response to fluctuations in oil prices. Conduct economic benefit analysis on accounting book (short-term) and long-term cash flow for the mining site to facilitate decision-making and negotiation, aiming to reduce production costs and mitigate the seller risk arising from oil price fluctuations.
The impact of oil quality towards market share	Operations management	<ul style="list-style-type: none"> Schedule the agenda of quality reporting in the weekly meeting, provide alert when the trend of various quality control items is abnormal or close to the internal control threshold, and timely adjust refining operations and oil mix to reduce the risks. When the refinery ships out the oil products, and upon oil supply center's receipt of oil and transporting oil, it is required to pass the quality inspection before releasing the oil. gas stations (including franchised stations) should regularly carry out sampling inspection and monitoring of oil products, and regularly meet with the refining department to track and improve the quality of oil products. Execute the oil quality inspection plan, which includes regularly sampling the quality of finished products at the Company's refineries, oil supply centers and gas stations, and establish an oil sampling database to provide reference information and recommendations for improving the Company's oil quality. In 2021, CPC conducted 18,173 oil quality inspections at gas stations, oil supply centers and refineries, and the results of these inspections were satisfactory.
Impact of the COVID-19 on operations	Ecosystem	<ul style="list-style-type: none"> Engage in the epidemic prevention work in line with the Central Epidemic Command Center's announced epidemic alert level. Convene pandemic prevention meetings from time to time to continuously adjust the countermeasures and pandemic prevention actions. Pay close attention to the impact of the epidemic and the changes in international crude oil supply and demand; Adjust the balance of oil supply and demand in the domestic market in a timely manner and purchase crude oil and refined oil to meet the domestic needs.

Note: CPC also follows the framework of "TCFD Climate Change Related Financial Disclosure Recommendations (TCFD)" to identify potential risks and opportunities of climate change. Please refer to [3.1 Climate Change Adaptation](#).

Internal Audit and External supervision

In order to strengthen the internal control and audit system, CPC has established an internal inspection office in the board of directors, which consists of a chief auditor and auditors. CPC respects the professionalism and independence of the internal inspection office and internal auditors, and fully authorizes them to conduct regular project audits, and sets the following regulations for the audit system:

★ In terms of policies :

- ① In response to the internal and external business environment, changes in laws and regulations, organizational adjustments, and business changes, each unit is required to perform self-assessment and to compile and communicate the deficiencies of field audits to each unit for reference.
- ② The internal control documents are prepared by the management and approved by the board of directors, and the appropriateness and completeness of the internal control documents are reviewed regularly to improve the internal control system

★ In terms of implementation

- ① Regular annual internal control-related risk assessment and audit work plan for on-site audit operations. In 2021, CPC performed on-site inspections for a total of 23 units and a total of 21 units of headquarter offices
- ② CPC conducts annual internal control on-site audits of the units and offices within the company.
- ③ The management conducts self-assessment of internal control at least once a year. Internal control audit every year; CPC continues to implement a project audit plan each year for business items that are assessed to be high-risk or have repetitive deficiencies. In 2021, we performed a total of 3 project audits to check deficiencies and non-conformities and continues to track such issues until improvement is completed.



Internal audit

- The Internal Inspection Office reports directly to the board of directors, and devises internal audit plans for the following year based “Regulations Governing Establishment of Internal Control Systems by Public Companies” as well as CPC’s operational goals and control meeting outcome to draft the internal inspection (audit) work plan for the next year.
- Convene supervisors’ meetings every year to regularly check and review the deficiencies of the internal control system and measure the effectiveness and efficiency of the operation.
- Actively establish new auditing operation system to optimize the operation process and provide the management with suggestions for improvement of field checking deficiencies, continuing to follow up until complete improvement.
- Increase the plus and minus points of the total audit performance assessment, strengthen the connection between audit results and performance, and enhance the effectiveness of the audit.



External supervision

- CPA certification and FSC examinations every year
- Accept supervision of the State-owned Enterprise Commission, MOEA, and the National Audit Office, Control Yuan.

02

Ethical CPC · Acclaimed Spirit

Chapter summary

CPC has continuously improved its service process through a sound value chain construction and customer service mechanism, as well as a solid cooperation mechanism with customer feedback and supply chain partners. CPC hopes to continuously improve the operational efficiency and operational performance of its own value chain through a diversified operation and procurement mechanism, and actively combines the rigorous process of oil quality control and supply chain risk assessment to become a competitive and sustainable international energy company.



Corresponding SDGs



Recommended audiences

1 Shareholder (MOEA)	3 Public representatives	5 Government	7 NPOs/NGOs
2 Business Partners	4 Customers	6 The media	

Chapter Highlights



Scored over
96.1
for customer
satisfaction



Customer Service
Center's Customer
Suggestion and
Complaint Handling
Survey Results
Satisfaction as High
as **99.5%**



The public toilets of
the CPC-operated
gas stations were
100%
awarded
"Superior Class"



Average monthly
transactions using
CPC Pay reached
1.11 million
people

2.1 Supreme Quality

CPC takes the three concepts of "Supreme Quality, Superb Service, and Selfless Contribution" as the business goals. The intention is that every employee can realize the corporate image of CPC; in addition to continuously understanding customer needs, promoting customer rights and product safety management, in order to provide the most complete products and services. And continue to improve and reduce the failure rate, prevent problems, improve product quality and safety, safeguard customer rights and improve customer satisfaction.

Short-term

- Continue to introduce CEM program to all gas stations

Medium/long-term

- Avoid violation of regulations regarding products, services, customer privacy, and personal information.
- Enhance the customer satisfaction and practice the "Supreme Quality, Superb Service, and Selfless Contribution" business concepts.

2.1.1 Diversified Arrangement

CPC is the leader of the vertically integrated petrochemical manufacturer in Taiwan. Viewed from the perspective of the value chain, the diversified product and service provided have positive or negative impacts on the environment, society and governance. CPC often examines its potential of sustainable development to maximize the positive impact and minimize the negative impact. Please refer to [1.1.1 Company Profile](#) for CPC value chain's operation, and [1.1.2 Operational performance](#).

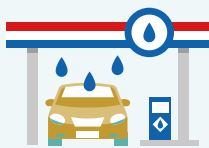
Quality requirements and inspection of products and services

CPC values how product safety affects customers. Ensuring compliance with CNS standards and all applicable laws and regulations, CPC implements quality management with respect to the ISO 9001 international standard and disclose the information and safety data sheet (SDS) of all products and services on the [corporate website](#) for the reference of stakeholders. CPC also provides instructions including ingredient identification information and hazard identification information, as well as historical records are available for all interested parties to inquire. Furthermore, CPC states that users should pay attention to the packaging of individual products, to ensure the usage safety. Refinery and research institute, refineries, oil supply centers and gas stations regularly conduct oil product sampling and monitoring, review products and services, as well as revise related procedures and operations as necessary. In addition, the inspection units commissioned by the Bureau of Energy implement the "Petroleum Product Quality Inspection and Management" program on a regular basis to ensure compliance with the national standard by spot checks. There was no report of non-compliance with consumer health and safety involving our product or service in 2021. In addition, CPC has no related incidents relate to consumer health and safety violations of products and services.

The results of the annual evaluation of the enterprises affiliated to the Ministry of Economic Affairs and the results of the implementation of the performance evaluation of the annual responsibility center system of CPC both include oil quality and customer satisfaction in the evaluation items. Moreover, it is set as year end review KPIs, and target achievement rate of each unit is reviewed in the middle of the year and the end of the year.

Diversified Services

In response to market changes and international market trends, other than the main business of selling oil products, CPC also develops diversified business projects to enhance the service value of gas stations and provide customers an one-stop diversified value-added services. Services include rapid vehicle maintenance, car washing, parking, convenient commodity services, advertising, collection buying, E-tag Refill, coffee, agricultural produce and other diversified services. CPC also offers customers points with promotions to promote customers to consume, and improves customer repurchase willingness and loyalty. At the same time, in line with the low-carbon trends, CPC has built electrical charging and swapping stations for the public, and continue to promote the transformation of gas stations into multi-energy and service supply stations.



Exquisite Car Washing:
CPC-Life Wash

- CPC offers the customers with quick and convenient car cleaning service, including manual car washing as well as the mix of manual and machinery car washing, and mark-up services such as oil film removal and automotive body coating.
- 262 stations with car washing service in total in 2021



Car Maintenance: CPC-
Life Express

- As an automotive doctor, CPC offers the customers with quick maintenance, tire changing service, car diagnostic to maintain the car quality. All the technicians on sites are professional with vehicle maintenance licenses authorized by the nation to ensure the safety of drivers.
- 67 stations with quick maintenance and tire changing services



Stores with diversified services: CPC-Life Shop

- CPC offers the customers with common goods, festival giftboxes, agricultural produce, self-owned brand goods and CUP & GO coffee shops
- 140 stations with stores and 58 CUP & GO coffee shops



Battery Charging & Swapping Service

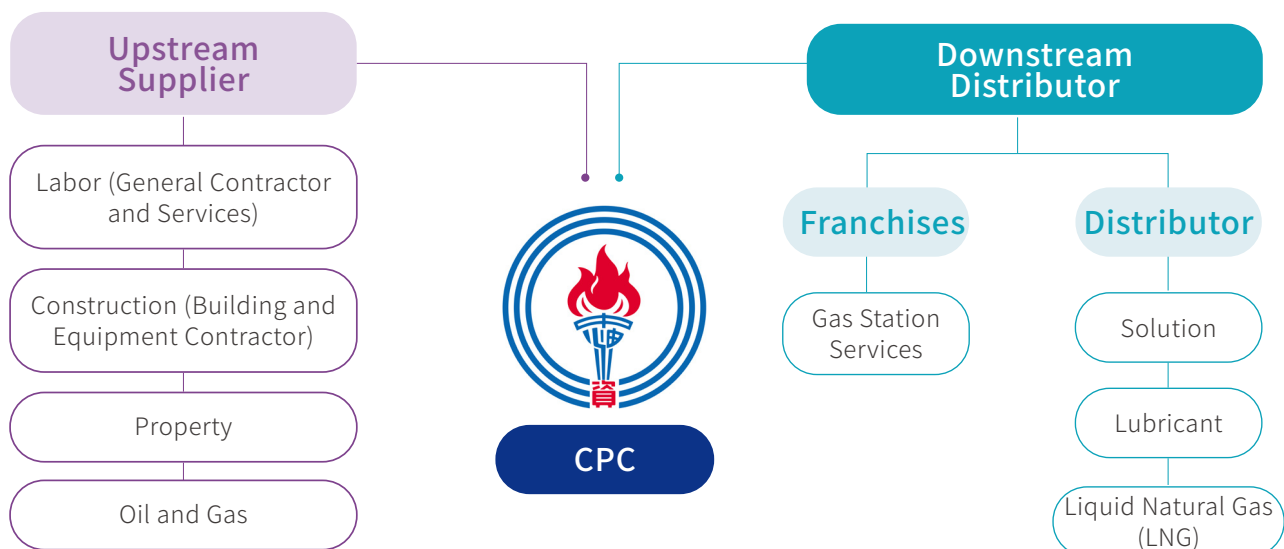
- CPC offers the public with battery charging & swapping service for scooters and cars in line with this electric vehicle and green energy trend
- 78 charging stations, 696 battery swapping stations and 4 smart & green e-stations

2.1.2 Supply Chain Collaboration

CPC Supply Chain

CPC values corporate sustainability development. In addition to self-committed to CSR responsibility, CPC also consider the supply chain as an important sustainability development partner. CPC exerted a positive influence and widespread the philosophy of sustainability management.

The supply chain system of CPC is as follows:



Sustainable Supply Chain Management

Sustainability Policy	Supply Chain accords to labor, environment, and human rights relevant sustainability requirements.
Risk Assessment	Promote supply chain sustainability questionnaire; establish supply chain risk and impact assessment
Skill development	Establish training mechanism and share training resource
Performance Review	Regularly reviewed supply chain's performance in quality, service, and health and safety
Continued Improvement	<ul style="list-style-type: none"> For all supplier that violated labor, environment, and human rights relevant sustainability requirements or CPC's policy, correction plan is created with follow-up assessments; Continued improvement based on CSR self-assessment questionnaire

Supply Chain Sustainability and Risk Evaluation

In 2021, CPC promoted the supply chain sustainability risk assessment and conducted a CSR assessment system by completing CSR self-assessment questionnaires, including the four major aspects of environment, labor practices, human rights, ethics and integrity. A total of 277 supply chain partners had completed CSR self-assessment questionnaires to identify the current status of suppliers' sustainability promotion, capture the risk points, and be able to respond to such risks in advance.

Phase	Explanation
Selection of Evaluation Subjects	The questionnaire is distributed to a total of 208 suppliers, franchised stations and distributors in the supply chain of CPC.
Design of Evaluation Questionnaires	The procurement unit focuses on the four major aspects of suppliers: environment protection, labor practices, human rights, ethics and integrity. A total of 55 items were investigated.
Analysis and Evaluation Results	There were 119 suppliers, 120 franchised stations and 38 distributors, with a total of 277 suppliers completing the self-assessment. The total score of the four major aspects exceeded 60 points, and the passing ratio reached 100%. The environmental protection and labor practices have a lower score.
Future Improvement	CPC adjusts the content of the questionnaire with reference to the self-assessment results and continues to promote the assessment with 4 major aspects. Furthermore, CPC strengthens the management of suppliers with lower self-assessment scores in order to improve the procurement system and enhance efficiency.

Supply Chain Scores



Supplier Management

As a state-owned enterprise, CPC's procurement activities are regulated by the Government Procurement Act. CPC is bound to exercise supply chain management in a fair, justice and open manner. The company treats all suppliers as key business partners and checks the tenderers of history using government database before establish business partnership. Suppliers are also required to submit tax return as proof of integrity. Furthermore, it is essential for suppliers to comply with labor, environmental and human rights criteria. Any violations must be responded with an improvement plan and followed up.

Policy and objectives of supplier management



- Achieve co-existence, co-prosperity and long-term partnership with suppliers
- Complied quality and competitive prices
- Supplier management is being carried out to make an impact on sustainability

Participation criteria for new suppliers



- Compliance with government Procurement Act and other related regulations: Suppliers must comply with fair trade principles, environmental protection laws, Labor Act, and occupational safety and health regulations
- Suppliers must hire people with disabilities and indigenous peoples according to the People with Disabilities Rights Protection Act, the Indigenous Peoples Employment Rights Protection Act, and the Government Procurement Act

Supplier Risk and Impact Assessment Mechanism

Risk Prevention



- Review the contractual capacity of suppliers
- Discuss material supply mechanisms with suppliers periodically and establish long-term strategic partnership with suppliers
- Determine safety the stock based on the department specific material preparation and lead-time to ensure unobstructed supply chain operations

Post-Disaster Damage Control



- Damage prevention based on emergency response mechanism
- Immediately gather information regarding the employee safety, plant equipment, feedstock supply, and finished product damage of suppliers after a disaster and submit the results to all units to understand and take actions
- Hold emergency rationing meetings based on the status of damage, adjust supplier rations, and depending on the assessments to include the possibility of backup supply of new suppliers as necessary

Ethical Management Promotion of Suppliers

In 2021, CPC held 4 large-scale "Corporate Ethics and Anticorruption Seminars" and invited representatives from suppliers to attend the seminars to establish the concept of ethical management and anticorruption through discussions. The achievements in these seminars in 2021 are as follows:



CPC held corporate integrity promotion activities, aiming at possible corruption procurement operations. CPC conducted two-way communication on issues encountered in purchasing integrity risks and breaches, built a high-quality purchasing environment, improved purchasing quality and efficiency.

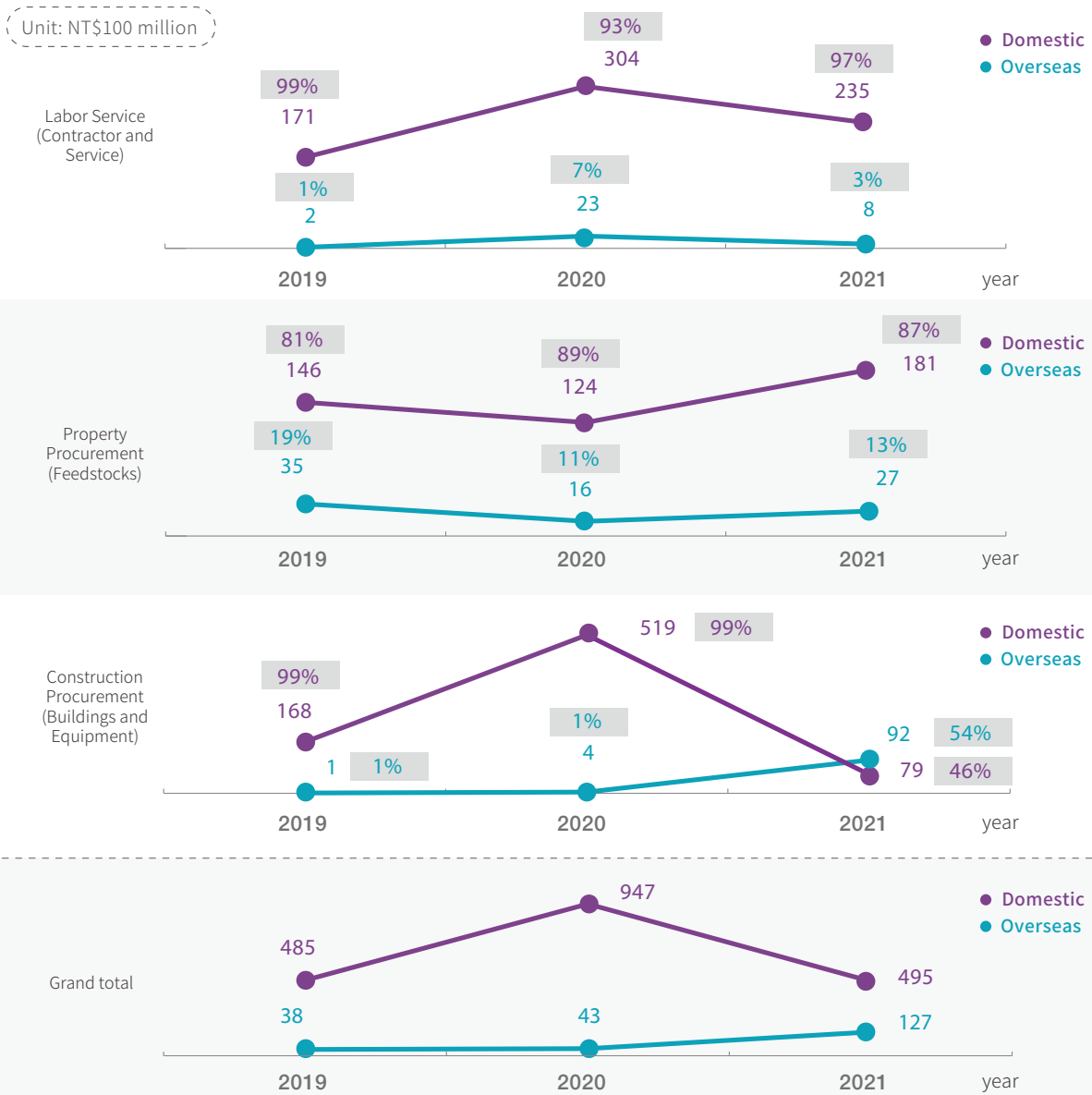


CPC co-organized the "2021 Corporate Governance and Corporate Integrity Seminar" with the Ministry of Economic Affairs. Delegates of the Ministry of Economic Affairs and Legal Affairs and the representatives of the industry were invited to give speeches. A total of 250 representatives from various fields such as relevant industries, government, academia, and research attended the meeting and business partners of CPC were also invited to participate. The public and private sectors worked together to build a network of integrity governance and anti-corruption consensus.

CPC Procurements

Procurement Amount (excluding crude oil and natural gas)

CPC procures labor service, property and construction service in accordance with the Government Procurement Act. Procurement amount and weight the proportion of domestic and foreign in the last three years are shown below:



Crude Oil Procurement

Over 90% of energy used in Taiwan is imported. Therefore, it is CPC's responsibility to ensure energy security. CPC's prime mission is to maintain stable energy supply. A crude oil procurement policy has been established based on the Government Procurement Act and internal policies.

The Middle East region accounted for the highest percentage (53%) of CPC's crude oil import in 2021, while America and Africa made up the rest.



Create Procurement Plan

Monthly planning based on domestic production needs in the next 3 months



Make Procurement Request

Sending request to qualified crude oil suppliers



Execute Administrative Procedures

Evaluating shipping schedule and price negotiation



Make Procurement Decision

The amount of crude oil needed for current month's production should be procured 3 months in advance

Management Method	<p>Ensure that suppliers comply with the following through the development of management requirements:</p> <ul style="list-style-type: none"> ▪ Fulfill the contract as scheduled and not affect the production and marketing plan of CPC ▪ Ensure stable supply to avoid any impact on Taiwan's energy security and damage to CPC's business reputation ▪ Suppliers are required to meet certain standards and understand their performance background and implementation status to ensure that they can perform as scheduled before they can become one of the qualified crude oil suppliers
Evaluation System	<p>Suppliers are required to meet certain standards and understand their performance background and implementation status to ensure that they can perform as scheduled before they can become one of the qualified crude oil suppliers</p> <p>New suppliers: Must provide written documents for review to ensure fulfillment of related requirements and standards</p> <p>Existing suppliers: Regular review system at least once a year, and review the cooperation with each supplier</p>
Quality Management of Crude Oil	<p>Evaluation of New Oil Source to ensure quality</p> <ul style="list-style-type: none"> ▪ Evaluate and test the quality of its crude oil in accordance with internal procedures ▪ Retain crude oil samples for testing as a basis for future verification and tracking

Natural Gas Procurement

CPC imported liquefied natural gas (LNG) from Middle East, Southeast Asia, Australia, Africa, Russia and the United States. CPC also has 45 Master Agreements that enable to purchase LNG within a short-term period to meet unexpected gas demand. In 2021, the source countries of purchasing LNG cargoes reached 14 countries (only 19 countries are exporting countries in the world), and the purchasing sources distributed all over the world, striving to achieve the goal of dispersing gas sources.

In 2021, CPC signed the "LNG Sale and Purchase Agreement" with Qatar Energy, the world's largest LNG supplier, to purchase 1.25 million metric tons of natural gas per year from Qatar for a period of 15 years. Maintaining a stable supply of domestic gas demand lays the foundation stone and also continues and strengthens the long-term cooperative relationship between CPC and Qatar National Oil Company.

Green Procurement

CPC gives priority to purchasing environmental protection products. The proportion of CPC's green procurement (category 1 environmental protection products) in the past three years has reached the annual target. The procurement amount, quantity and proportion are detailed in the table below:

Year	CPC's Green Procurement			Authorities Annual target ratio (%)
	Quantity	Amount (NT\$ thousand)	Proportion (%)	
2019	63,784	225,575.6	98.34	90
2020	60,566	266,880.7	99.76	95
2021	83,441	274,040.8	97.27	95

Contractor Management

CPC upholds the business philosophy of "Work Safety" as first priority and considers the contractors as the important business partners. Over the years, CPC has been committed to promoting a number of licensing counseling and training systems in the hope of exerting a positive influence, in addition to complying with the Occupational Safety and Health Law and related laws and regulations, and promoting various management mechanisms. CPC hopes to exert a positive influence and assist in the establishment of professional capabilities and systems.



Contractor Safety and Health Management Measures

- Specify the relevant specifications for the entry and operation safety control of contractors' personnel, machinery and equipment, vehicles, etc.
- Review the certificates and retraining certificates of occupational safety personnel and various operation supervisors before starting work.
- Implement pre-work education before the daily construction.
- Convene regular meetings of the joint operation agreement organization.



Contractor Skill Development

- The contractor should participate in the safety and health notification workshop before construction.
- Contractor skills training, including three-in-one construction frame training, equipment disassembly training, aerial work vehicle training, etc., to strengthen the professional skills of contractors in construction.



Contractor Violation Control System

- After the contractor completes the construction, colleagues will fill in the contractor evaluation form in the system, and all records of contractors' violations must be recorded on the network as deduction points.

Contractor Management Mechanisms and Implementation

Management Mechanisms	Operation Strategies and Performance
 <p>Regulations of Human Rights</p>	<ul style="list-style-type: none"> ▪ Contractors shall comply with occupational safety and health regulations and conduct regular health inspections of its employees. ▪ Contractors shall purchase valid labor insurance and health insurance for the employees. ▪ Contractors shall not employ foreign (mainland) workers who are stowaways, illegal immigrants, or who have not been approved by the Ministry of Labor. ▪ Contractors shall dismiss or transfer workers in accordance with the law.
 <p>Professional Skills Development</p>	<p>CPC continues to strengthen the license counseling and training system of contractors. The training situation in 2021 is as follows:</p> <ul style="list-style-type: none"> ▪ Training of 3-in-1 construction frame for contractors: 29 shifts, 613 participants and 600 passes. ▪ Equipment disassembly training of contractors: 13 shifts, 232 participants, 232 passes. ▪ Training of aerial work vehicle for contractors: 86 shifts, 827 participants and 826 passes.
 <p>Occupational Safety and Health Protection</p>	<ul style="list-style-type: none"> ▪ Specify safety and health management regulations to control the access and safety of contractors' personnel, machinery, equipment, vehicles, etc. ▪ Use high-tech operations, such as facial recognition, vein verification, and license plate recognition, to strengthen the management and protection of the contractors' workforce. ▪ Declare the qualified contractor site manager and occupational safety personnel before starting work. ▪ Convene a safety meeting before construction to inform the hazards. ▪ Grant daily work permits and implement pre-work education before the daily construction. ▪ Convene regular meetings of the joint operation agreement organization to coordinate site management.
 <p>Assessment and Evaluation</p>	<ul style="list-style-type: none"> ▪ Establishment of contractors' non-compliance control system: Compile statistics of contractor's non-compliance, further analyze the data, and evaluate contractors' overall safety and health management capability. ▪ Strengthen management and audit: After the completion of construction, colleagues shall fill out the evaluation form of the contractor in the system. The letter of improvement will be issued to contractor with the average score less than 6 (full score of 10) in order to strengthen management and audit supervision.

Franchise Management

CPC has a strict management and counseling mechanism for franchised stations from construction to operation. CPC's specific actions are as follows.

Management Mechanisms	Operation Strategies and Performance
 <p>Business Philosophy and Development of Basic Skills</p>	<p>Business objectives: Pursuing the four consistent goals of "Business Philosophy", "Corporate Identity", "Commodity Service" and "Operation Management"</p> <hr/> <p>Soft and Hard Skills: In accordance with gas station regulations, CPC provides assistance in preparing gas stations and obtaining business licenses. CPC also assists in the operation and management of franchised stations by setting up a "fuel tank supply connection system". CPC authorizes the use of an "automated information management system" and launch CPC PAY mobile payment services. CPC plans and promotes various multi-faceted products or service businesses into the CPC gas station chain management system to generate extra fuel revenues and strengthen brand services at franchised stations and fulfill the diversified service needs of consumers.</p> <hr/> <p>Authorization of Trademark Ensure the setup and use the CIS of the franchised stations and the self-operated stations of CPC are all approved and authorized by the CPC before they are set up. After that, CPC conducts monthly assessment at the franchised stations to ensure the cleanliness and integrity of the CIS.</p>
 <p>Enhancement of Professional Knowledge</p>	<p>CPC provides active counseling on various fueling SOPs, subsidies for environmental testing and education training at franchised stations, and environmental and industrial safety items in the contracts and perform assessments to urge franchised owners to implement them and take care of employee safety and health.</p> <hr/> <p>Annual education training for franchises: (1) Management training: about 1,300 participants per year (2) Mobile payment briefing: about 300 participants per year.</p> <hr/> <p>Domestic observation activities: about 1,400 participants per year.</p>
 <p>Quality Management Evaluation</p>	<p>Oil quality: (1) Oil products are tested and qualified at all stages before shipment. (2) CPC has regulations on oil quality sampling and testing at franchised stations: franchised center counselor (staff) take oil samples from franchised stations every month to ensure the quality of oil. (3) In 2021, the target of 23,130 oil product testing stations of each center has been reached. The actual performance of the testing stations is 30,591 with test achievement rate 132.26% and all samples meet the product specifications.</p> <ul style="list-style-type: none"> • Provide comprehensive counseling and point-of-sale 3S system integration for franchise stations. • Authorize the CIS. • Stipulate the service evaluation method in the contract. • Organize recognition activities for outstanding stations.
 <p>ESG, Sustainability and Co-Prosperity</p>	<ul style="list-style-type: none"> • CPC strengthens the environmental protection aspect of supply chain questionnaire with low scores, regularly performs VOC inspections at franchised stations, and provides partial subsidies for inspection fees and oil tank cleaning costs to assist franchised stations in their environmental protection inspection operations. • CPC actively promotes green energy smart gas stations and electric motorcycle charging stations, and launches its own CPC PAY mobile payment services to provide consumers with multiple service needs and assist franchised stations in improving operational efficiency. In 2021, a total of 137 franchised stations have installed charging and swapping stations. • Conduct public toilet improvement projects, include in the key appraisal items of each gas station and build a quality brand image. • Encourage joint arrangement of culture festivals, distribute spring couplets and red envelopes, and participate in social welfare activities such as tree planting and blood donation organized by CPC.

For more information, please refer to the special feature - "[Experiencing the soothing convenience in CPC](#)"

Distributor Management

CPC considers distributors as important partners. Through regular communication and strengthened management mechanism, CPC works together for brand management and sales enhancement to create a win-win situation. Affected by the epidemic in 2021, the number of physical meetings with distributors was reduced. CPC still adheres to the management mechanism and operation principles, and implements distributor management. CPC's specific actions are as follows.

Management Mechanisms	Operation Strategies and Performance
Contract Management	According to the market and changes in supply and demand, CPC reviews and revises the content of the distributor contract to regulate the rights and obligations of both parties in sales channels and brand management. After the actual negotiation with each distributor, the contract is executed according to the agreement of both parties.
Enhancement of Professional Knowledge	<ul style="list-style-type: none"> • Visit the market from time to time and keep abreast of the market and competitors' conditions to flexibly adjust our operation strategies. • Implement product promotion and after-sales technical services. • Arrange annual education and training courses for distributors to enhance their professional functions, oil management experience and technical service quality.
Incentive and Evaluation System	<ul style="list-style-type: none"> • Adopt obligation and incentive at the same time, offer a rebate incentive discount for achieving the performance target. • Evaluate high performing distributors and coach lagging distributors. • Conduct annual customer satisfaction surveys to collect and review satisfaction and feedback related to sales, logistics and technical services of distributors.
Continuous Feedback Improvement	<ul style="list-style-type: none"> • Organize distributor meetings to promote sales strategies and marketing concepts, collect business information and customer feedback, and maintain mutual trust and friendship between the two parties. • Adjust CPC's strategic planning for the next year based on the results of the satisfaction survey. • Commence in-depth interviews with distributors, feedback and review of the effectiveness of the current mechanism to adjust and revise sales targets, individual counseling, and consensus building among distributors to help achieve targets.

CPC maintains good communication with its distributors and held a partner conference on Guoguang Brand Lube Oil in 2021 to conduct business reports, exchange information and opinions with them, and discuss strategic planning for the next year.



2.2 Superb Service

2.2.1 Satisfied Customer

Aiming to serve society, CPC has taken it as its concept to understand the needs and opinions of customers, provide them with complete services, and consider customer complaint handling rate, customer satisfaction survey and performance appraisal as an internal evaluation mechanism. Moreover, CPC has established the “Operation Procedure of Satisfaction Survey”. The survey is conducted annually and continuous improvement is made based on the analysis results to achieve the goal of continuous improvement of service quality. The results of the survey are as follows:

(1) Customer satisfaction of main services and products

CPC will continually visit customers in person or by phone to review customer visit reports and customer satisfaction survey data, and proactively solve customer problems to improve customer satisfaction.

Year		2019	2020	2021
Natural Gas Supply Service		96.9	95.3	97.1
Product Sales Service	Solvent Business	92.2	92.8	91.9
	Lubricant Business	95.2	94.4	95.3
	LPG	90.7	92.5	92.0

(2) Gas station customer satisfaction survey

Every year, State-owned Enterprise Commission, Ministry of Economic Affairs outsources the customer satisfaction survey by interview or by phone of each business unit with customer-specific questionnaires to find the causes of dissatisfaction. The increase in satisfaction in 2021 compared to 2020 is due to the recognition of the staff at gas stations’ service attitude, appearance and voice service of the service center from customers. CPC will continue to improve its refined service to maintain high quality service standards.



(3) Customer Experience Management (CEM)

CPC focuses on consumer experience and opinions and makes continual improvement to the quality of gas station services. Through the continuous introduction of the "CEM" and customer satisfaction surveys, we understand the areas of service improvement at gas stations. We conduct outbound telephone surveys from our customer service centers for at least 125 gas stations each time, targeting VIP members who visit gas stations for refueling within 24 hours to carry out telephone survey concerning four aspects including the overall service, the service attitude, the filling behaviors, and the filling environment, to understand the customer's feedback of our gas station services, and make progressive improvement to optimize service quality.



Customer Complaint Mechanism

As part of its service to customers, CPC marketing staff pays regular visits to direct sales customers every month. CPC then further compiles and analyzes visitor reports, and develops feasible countermeasures according to customer suggestions and needs, so as to grasp customer dynamics and assist customers to solve problems and improve customer satisfaction. In addition, CPC has set up a Customer Service Center and filed individual cases for any complaints or suggestions. It took about 3-6 workdays for the responsible unit to response to each case. A case is deemed overdue when it remains unsolved after six working days.



In 2021, CPC paid customers a total of **3,184** visits and helped customers resolve **467** issues concerning product use in 2021.



In 2021, customer survey showed a high satisfaction rate of **99.5%**.

Customer complaints and suggestions in 2021



★ In 2021, CPC received a total of 212,984 cases, including 206,858 customer enquiries, 4,106 customer suggestions, 1,044 customer criticisms, 168 customer complaints, and 808 other cases (including affirmation and recognition). 95.1% of these cases was resolved by CPC Customer Service Center, and 4.9% (10,522 cases) were referred to related responsible units.

★ In 2021, there were 20 overdue cases, with an overdue rate of 0.01%. All 168 consumer disputes (customer complaints) were resolved in time.

Appeal Channels and Case Handling SOP

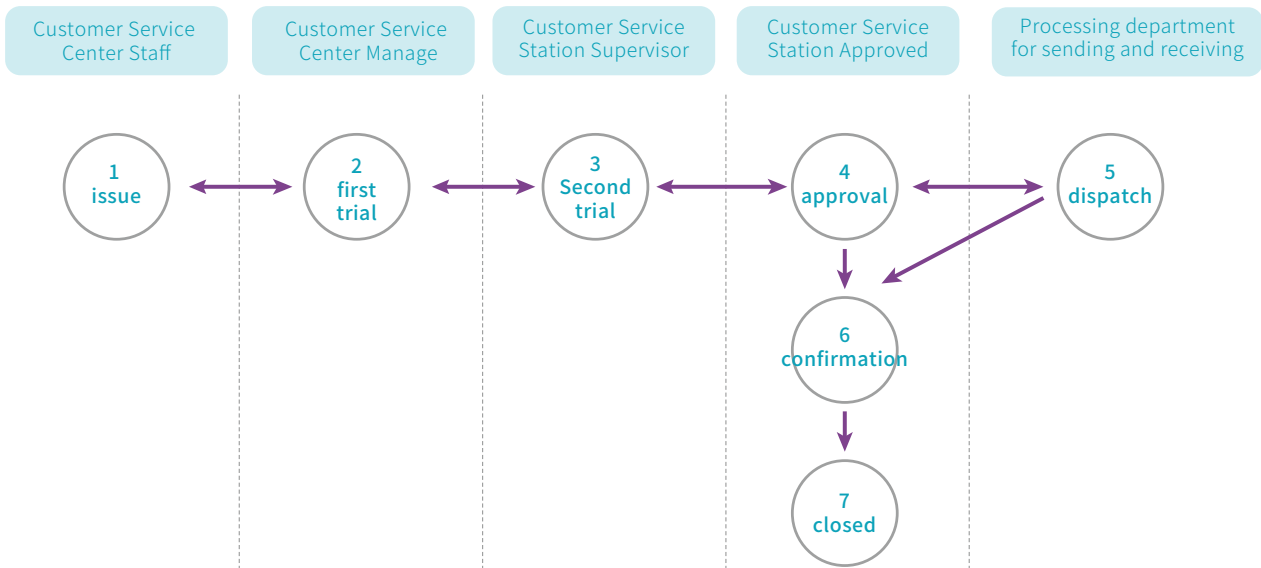


24-hour toll-free number 1912



The "Official Mailbox" of CPC Global Information Network

Customer Service Case Processing SOP



2.2.2 Information Security and Privacy

CPC Information Security Promotion Team and Policy

In June 2021, CPC has established Information Security Center and been responsible for implementing information security management and protection for CPC. It is responsible for the information security maintenance plan, and continue to promote information security in working fields.

According to the "Information Safety Responsibility Grading Method" and the "Information Safety Maintenance Plan", CPC allocates dedicated personnel for information communication safety. (A-level unit: 4 persons, B-level unit: 2 persons, C-level unit: 1 person). In which, the A and B-level Information security level units have passed the ISO 27001 international standard and acquired external verification. The above-mentioned third-level units are responsible for promoting, managing, and executing information security related operations within the business to ensure compliance with laws, regulations and information security protection requirements. The information security budget invested accounted for NT\$ 141 million, which represent 18.29% of CPC's information and communication budget.

The 2021 annual objectives reviewed by the CPC Information Security Team in Taiwan are as follows:

Quantitative Objective :::



- CPC Global Websites - Zero information security incident in which data has been breached.
- Be aware of the occurrence of Information security incidents, and complete various notification, response, and recovery operations within the specified time.
- The rates of opening emails and attachments during the email social engineering exercise were lower than 4% and 2.5%, respectively.

Qualitative Objective :::



- To ensure the confidentiality, integrity and availability of information related to CPC's business.
- To meet the requirements for the classification of information security responsibility levels, and reduce the threat of exposure to information security risks.
- To provide information security education and training to enhance personnel information security ability and awareness.
- Aligned with policies and regulations to strengthen the security protection capability of the information communication.
- Implement the management of the information communication system or outsourced services to meet the security requirements of the information communication.

Quantitative Achievement :::



- Zero information security incident, achieved the goal.
- All reports, response and recovery operations are completed in accordance with the regulations to achieve the goal.
- CPC's annual average e-mail opening rate was 3.25% in 2021, and the click-through rate was 2.62%, reaching the target set by the Ministry of Economic Affairs (8% opening rate and 5% click-through rate). The target is 4%, and the click rate is slightly higher than the company's self-defined target of 2.5%. CPC will continue to strengthen publicity.

Qualitative Achievement :::



CPC follows the relevant laws, regulations and the company's information security maintenance plan. CPC continues to strengthen the depth of information security protection and personnel information security management of training and outsourced services, etc. All of the goals set was achieved.

Customer Information Security Policy

Short-term

- Inventoried the internal management procedures for the collection, processing and utilization of personal data at least once a year.
- Awareness promotion and education training will be held at least twice a year.
- Complete the current year's auditing operation and produce the personal data protection audit report by the end of December each year.

Medium/long-term

- Continue to implement the protection and management of personal data

CPC has established "procedures for information security and personal information" management in its customer service centers regularly reviews the existing operation mechanism and strengthens information system security maintenance measures, and strengthens staff education and training on "privacy protection" and "information security" to ensure the preservation and protection of customers' information. In the event of a personal data file being destroyed by vandalism, inadvertent operation, or illegal intrusion such as hacker attack, resulting in a personal data leak, emergency response measures shall be taken and promptly reported to the personal data protection promotion and implementation team of CPC; if the personal data leak is an information security incident, it shall be handled in accordance with the relevant regulations of information security of CPC.

In response to the implementation of the Personal Information Protection Act, CPC convenes a personal information meeting at least once a year, with the Vice President of Legal Affairs office as the chairman. Colleagues from each unit handling personal information protection business attend the meeting to fully communicate and discuss personal information protection-related issues and exchange opinions. In order to strengthen the protection and management of personal information, CPC has built various software and hardware, provided the necessary funds, and established a personal information filing management system to conduct an annual personal information inventory to facilitate the control of personal information kept by CPC.

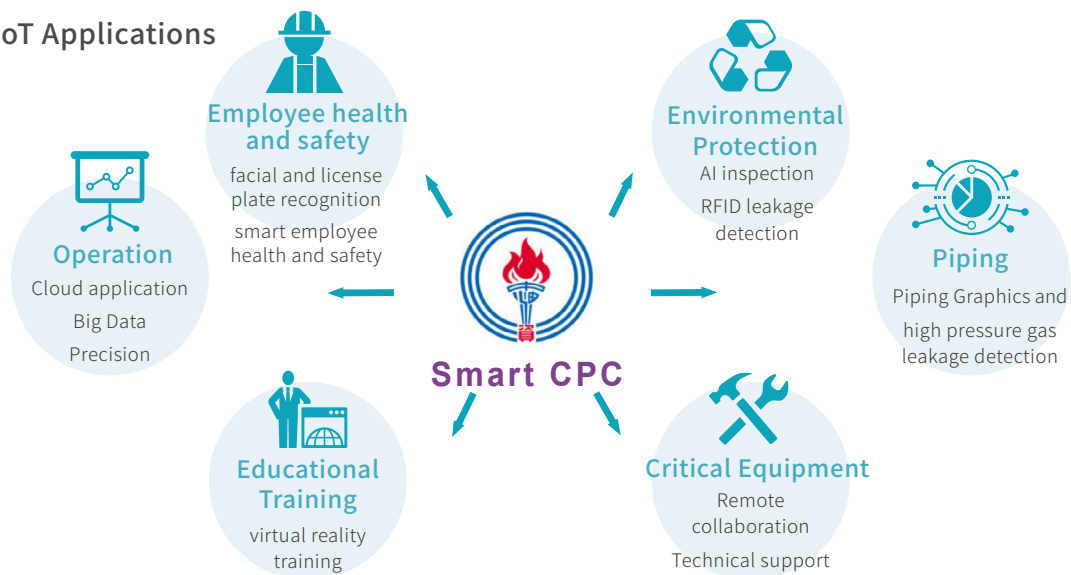
In order to prevent employees from being inadvertently caught by the law due to lack of understanding of the law and to enhance their awareness of personal information act, CPC holds two personal information law education training sessions each year to enhance the promotion of personal information act related regulations and practical insights, and holds two personal information seminars in 2021 to train and strengthen employees on personal information law practices and personal information system operation procedures and methods. There was no report of customer privacy invasion or leakage or theft of personal information in 2021. Please visit CPC's corporate website for more details about the information protection policy. <https://www.cpc.com.tw/>

2.3 Selfless Contribution

2.3.1 Technology Innovation

Under the rapid development of 5G AIoT in the world, the demand for digital technology applications such as artificial intelligence and the internet of things is taking off. CPC also keeps pace with the trend, continues to pursue industrial innovation, actively introduces new intelligent technology, and integrates digital technology with existing research and development strength to accelerate the transformation of the petrochemical industry. In order to effectively apply 5G AIoT technology to operations, CPC accelerated the integration and introduction of digital technologies through three major solutions, which are 5G AIoT application plans, talent training and smart transportation and logistics network applications. These are cooperation in between industry, school, research center and government to build a new industrial vision of sustainable transformation and smart production.

5G and AIoT Applications



In response to the national development policy, CPC has cooperated with the Export Processing Zone Administration Ministry of Economic Affairs to lease land for the expansion of the Kaohsiung Software Park in the vicinity of CPC's Cheng kung plant and to bring in outstanding investment teams with a budget proposal. The well-positioned economic and trade park, in conjunction with the Kaohsiung City Government's industrial development plan for the Asia New Bay Area will create new employment opportunities and enhance the industrial momentum. In addition, CPC plans the develop roadmap and symbiosis model of the future smart city, using different energy technologies including energy production, storage and utilization technology incorporate with big data intelligent services to build solar photovoltaic systems and electric motorcycle charging stations at gas stations throughout Taiwan. Gas stations are closely related to people's lives and promoting this smart transformation to all gas stations is an attempt to achieve the transformation goal, aiming to become the core of smart community and achieve the vision of sustainable management.

Highlights: Kaohsiung's Asia New Bay Area has established a 5G AIoT Promotion Project Office

In order to accelerate digital transformation and enhance industrial competitiveness, CPC is promoting the application of 5G AIoT technology and establish ties with Kaohsiung City Government's Asia New Bay Area Innovation Park. In March, 2021, the "CPC 5G AIoT Promotion Project Office" was established. In which it is responsible for the evaluation and communication of 5G and AIoT application technologies in between production, government, education and research center to create an AIoT demand and solution engagement platform. The office also has chosen Kaohsiung Qianzhen District Storage and Transportation Office as a smart application test site to accelerate the formation of the Asia New Bay Area 5G AIoT ecosystem.

CPC utilizes newest technology n all aspects such as production, storage and transportation, sales, industrial safety and environmental protection to develop towards an intelligent enterprise. Through the combination of information and communication technology and Internet of Things (IoT), it is applied to company to improve overall performance.

CPC cooperated with the Kaohsiung City Government to accelerate the development of new start-up teams through the "big corporation leads small corporation" approach and participated in the "Asia New Bay Area Innovation x New Start-up Big South" exhibition, showing the results of cooperation with 322 start-up manufacturers, to drive the development of smart technology and move towards the sustainable goal of a modern smart factory.



In November 2021, CPC 5G AIoT Promotion Project Office unveiled and intelligence application exhibition.

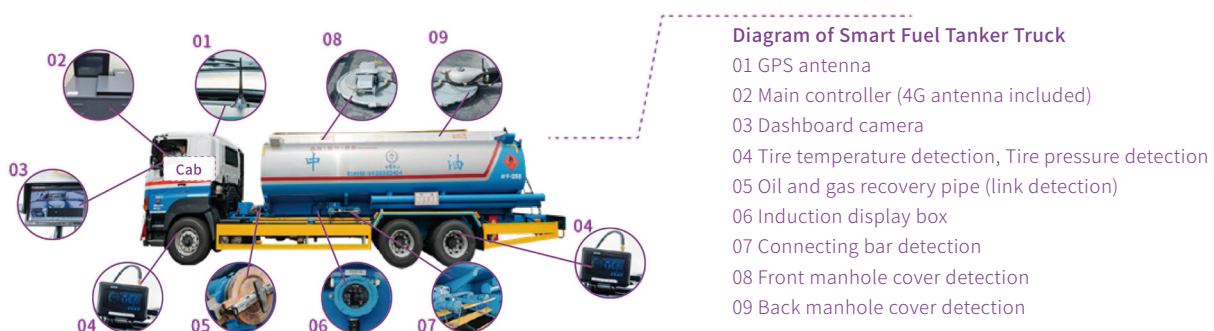
5G AIoT Personnel training

In addition to sending supervisors or senior engineers and other experts in various fields to Taiwan artificial intelligence schools and other professional institutions for training, CPC also provides internal training for senior executives, such as "Digital x Transformation x Innovation in CPC" series of keynote speeches. For technical personnel, CPC also planned a series of courses such as basic Python development technology and Azure cloud computing platform workshops and up to 130 colleagues participating in relevant courses to cultivate the company's internal AI talents and strengthen the company's technical strength in leading AI projects. In addition to building big data platforms and deep learning computing platforms within the organization, CPC actively enhances cloud computing platforms such as Microsoft Azure. The use of the application platform as a service (PaaS) public cloud platform makes good use of its scalability characteristics to meet the computing resources required for AI project promotion and education and training.

Smart Transportation and Logistics Network Application

Oil transportation is an important part of CPC's stable supply of oil business. In order to improve the safety of the oil tanker transportation process, and to effectively monitor and manage the quality and quantity of oil and prevent industrial safety accidents, CPC integrates its own developed and newly patented digital IoT management system for tank trucks, in which CPC incorporates various concepts, such as 5G, big data, AI, and IoT, into existing service technologies, with original transportation operations-related systems to perform full-process monitoring of tank trucks and real-time reporting, thereby optimizing oil filling, transportation, and unloading operations. In addition, this system is also integrated with the tire pressure and temperature monitoring system (TPTMS) to enable the smart operation of oil transportation vehicles to prevent industrial safety accidents.

CPC has fully established the "Tank Truck Electronic IoT Management System", and at the same time the system won the Best Product Award of the 17th National Brand Yushan Award in 2020, and won the its first Harvard Business Review on "Digital Transformation Reform Award" in 2021.



2.3.2 Organizations and Initiative Responses

Participation in External Initiatives and Awards

Participation in Overseas Awards



- ① Won the biggest awards "Sustainability Award - Top Sustainability Advocates in Asia" and "Leadership Award - Outstanding Leaders in Asia" at the 2021 Asia Corporate Excellence & Sustainability Awards, (ACES), becoming the first Taiwanese company to receive the Outstanding Leadership Award.
- ② Won the "Green Leadership Award" and "Social Empowerment Award" at the Asia Responsible Enterprise Awards (AREA), and was highly praised by the international jury.

Participation in External Forums

Environmental Sustainability and Innovative R&D:

① 2021 Taiwan Climate Action Expo:

CPC participated in the "2021 Taiwan Climate Action Expo" with the theme of "2050 Net Zero Plan from Now to the Future". Through this exhibition, CPC shared with the public the result of "Smart & Green e-Station", "Carbon Neutral Natural Gas Supply" and "Geothermal Energy Development". Combining with the interactive model of "Tainan Qianfeng Smart & Green Demo e-Station" to show the new type of gas station service, which was widely praised by people. CPC won two awards, "Best Creative Booth" and "Best Public Sector Action", as voted by the public.

② 2021 Taiwan Innovation Technology Expo:

Four awards in the invention patent competition, and CPC won the Platinum Medal Award for the precursor compositions and amorphous carbon materials. The research and development achievements in the field of "green power and renewable energy" are widely recognized and praised, including "high-safety lithium-ion" which can be applied to electric vehicles. CPC looks forward to presenting its R&D results concretely by participating in the exhibition, enhancing technical exchanges with value chain partners, and developing low-carbon new business opportunities.

③ 2021 TASS Asia Sustainable Supply + Circular Economy Exhibition:

Cooperating with each other, public sector and private sector look for more comprehensive solutions to net-zero emissions jointly. CPC participated in this exhibition with "net-zero emissions, renewable energy, and sustainable finance" as the three major transformation axes. CPC exhibited "Perovskite Solar Modules", "Elastic Textured Colorful Coatings" and "Multi-porous Carbon Materials Applied to Supercapacitors", "Introduction to the Application of Catalysts in Chemical Industry", "Carbon Dioxide Capture Demonstration" at the exhibition. The results perfectly combined renewable energy, carbon reduction and circular economy. With various exhibitions, CPC carried out technical exchanges and cross-field cooperation to jointly create a low-carbon and sustainable life.

Participation in External Forums

④ 2021 Taiwan Medical Technology Exhibition:

CPC participated in the exhibition and exhibited "CPC Nano Silver Antibacterial Solution and Its Application", "Physiological Function and Application of Large-scale Seaweed Raw Materials and Extracts", "Cosmetic and Skin Care Products Raw Materials Baisu Development" and various biotech products, showing CPC's R&D strength in the field of innovation.



2021 Taiwan Climate Action Expo



Taiwan Medical Technology Exhibition

Talent development:

① 2021 ATD International Conference & EXPO:

In addition to the physical conference held in Salt Lake City, Utah, the United States, CPC virtually participated in the online seminar. This seminar focused on resilience and agility, and provided more than 100 keynote speeches, inviting experts, scholars, writers and business leaders in the field of human resources from all over the world to share the challenges that leaders, trainers, HR personnel and employees would be faced in the post-epidemic era, and how to effectively evaluate and improve the effectiveness of video training courses.

② 2021 ATD Asia Pacific Conference & Exposition:

CPC focused on "digital transformation towards the future", and the chairman of CPC gave a special speech with the theme of "CPC Changes X Progress X Capabilities". He explained the changes and challenges of the operating environment of CPC Taiwan through vivid stories and shared the company's internal and human resources development trajectory and strategies.

Signed Cooperation Agreement

- ① The CPC Kaohsiung Refinery Environmental Education Park has signed an environmental education alliance and cooperation agreement with the Ministry of Economic Affairs' Export Processing Zone Administration Reclaimed Water Demonstration Park since 2020 and signed a memorandum of cooperation in environmental education with ASE Green Technology Education Center.
- ② Signed a "Memorandum of Understanding (MoU) for Natural Gas Carbon Neutrality Program Cooperation" with TSMC.
- ③ Taoyuan City, National Taiwan Ocean University, Taipower Corporation and CPC Signed Letter of Intent for the Construction and Operation of "Algal Reef and Marine Ecology Museum" to jointly promote algal reef ecology conservation, restoration and environmental education.

Participation in External Organizations

In order to align with domestic and international industry trends and to maintain the competitiveness and visibility of CPC, we participate in domestic and international industry organizations and public associations for exchange and cooperation. It expands multilateral relationships and exchange business experience and market information. The main external organizations and identities are listed as follows.

Type	Name of External Organization	Form of Participation	Important Discussions and Decisions or Performance in 2021
Industrial Exchange and Development	International Group of Liquefied Natural Gas Importers	Member, executive committee member	CPC continues to participate in the organization to promote the exchange of information and experience with LNG importers in order to improve the safety, reliability and efficiency of LNG imports.
	Chinese International Economic Cooperation Association	Group membership, member representatives: 5	CPC continues to participate in the CIECA member meetings to capture the international economic situation and investment opportunities
	Chinese Association for Energy Economics	Group membership, Managing Supervisor	CPC participates in management and supervisory meetings to capture the development opportunity of energy transformation and promote energy industry exchanges.
	Chinese Petroleum Institute	Group membership, Managing Supervisor	To capture the development opportunity of energy transformation, CPC invited the institute to select the "CPC Outstanding Paper Award" and publish the paper report in the quarterly journal of the institute to expand the influence.
	Petrochemical Industry Association of Taiwan	Group membership, member representatives: 6	CPC participates in the association according to Industrial Group Act. The association coordinates the domestic petrochemical industry to promote common interests and to plan the improvement and promotion of the industry to promote economic development.
	Taiwan Biotechnology Industry Alliance	Group membership, member representatives: 3	Continue to join the alliance to strengthen the cooperation between domestic biotechnology manufacturers and academic research units. Furthermore, integrating resources from industry, academic, and research units helps promote CPC's biotechnology product sales.
	Chinese Association of Museums	Group membership	Through using organization resources (e.g., global information website and periodicals), CPC strengthens the promotion of its own museum information and solicits professional consultation services from museums, thereby promoting inter-museum cooperation and mutual assistance for joint development.

Type	Name of External Organization	Form of Participation	Important Discussions and Decisions or Performance in 2021
Technological Innovation	National Association of Corrosion Engineers	Group membership, member representatives: 13	CPC continues to join the association as a corporate member to gain access to corrosion-related technical resources and benefits such as license renewal for members, and to continue to train corrosion-related professionals.
	Chinese Society of Structural Engineers	Group membership, member representatives: 1	CPC continues to participate in the engineering-related seminars organized by the institute, and regularly provides a quarterly newsletter for CPC colleagues to enhance their professional functions.
	The Corrosion Engineering Association of the Republic of China	Group membership, member representatives: 1	CPC continues to cooperate with the association to hold academic lectures on corrosion engineering, and from time to time entrusts the association to conduct corrosion engineering research and problem solving.
Corporate Governance	Institute of Internal Auditors, ROC (Taiwan)	Group membership, member representatives: 4	The auditors of CPC continue to attend audit-related courses offered by the institute to improve the theoretical and practical knowledge of internal auditing and to promote the sound development of CPC's internal audit system.
Sustainable Management and Environmental Protection	Taiwan Institute for Climate Change and Sustainable Energy	Group membership, member representatives: 3	CPC participates in corporate sustainability awards and provides information exchange on corporate sustainability reports and in professional training and certification for corporate sustainability managers.
	Taiwan Institute for Sustainable Energy	Group membership, directorship	CPC supports the promotion of sustainable business practices and the implementation of the United Nations Sustainable Development Goals (SDGs).
	ROC Business Council for Sustainable Development	Premium member; member representatives: 12	CPC assisted in the review of the translation of GRI 306: Waste (2020) into Chinese and participated in the sustainability-related training courses.
	Taiwan Association of Soil and Groundwater Environmental Protection	Group membership, member representatives: 1	CPC continues to participate in the association's seminars related to soil and water remediation and conducts technical exchanges with the association from time to time.
Industrial Safety Management	Industrial Safety and Health Association of the ROC	Group membership	CPC continues to participate in the occupational safety and health training activities promoted by the association with the aim of enhancing the knowledge and skills of employees and training various occupational safety and health professionals.
	Taiwan Safety Council	Group membership, member representatives: 3	CPC continues to participate in the association's seminars related to safety culture, safety leadership, and process safety management to conduct in-depth discussions, research, and improvement measures.



World Toilet Day- Experiencing the soothing convenience in CPC

Public toilets, the most inconspicuous place in the city, are the best indicator of social civilization. It is the most basic infrastructure of public convenience and urban construction, which not only improve the environmental hygiene and safety of living, but also reduce the possibility of disease transmission.

Over the past five decades, CPC has been investing in the establishment of public toilets along with the expansion of gas stations to provide the general public with convenient services. By providing safe and clean public toilets, CPC supports the people in need. Both long-distance drivers and people returning to their hometowns can find relief for their physiological needs at CPC's gas stations.

Responding to the United Nations Sustainable Development Goal of SDG 6.2 "End Open Defecation and Provide Access to Sanitation and Hygiene"

With the development of gender equality and diversity, CPC has expanded the proportion of female toilets to be higher than that of male toilets, and has also expanded the construction of parent-child toilets, diaper tables, gender-friendly public toilets and mixed public toilets to provide more space for women and children and establish childcare facilities. As well as providing friendly space for the elderly and the physically challenged through the installation of support facilities and handrails. All of these are part of CPC's customer services, which also demonstrate the values and sustainability beliefs that CPC upholds.



Fight against the Pandemic and Continuous Improvement in Services in 2021

At the time of the closure of public toilets during the Covid-19 Level 3 alert in Taiwan, CPC still opened the door for the convenience of people and insisted on the provision of services. CPC adjusted the inspection frequency of public toilets to conduct cleaning, disinfection and inspection every 30 minutes to prevent the spread of viruses. In 2021, CEM customer experience management scored 94.8 and public toilet cleaning satisfaction scored 92.6.

The United Nations Sustainable Development Goal of SDG 6.3 Improve Water Quality by Reducing Pollution

In 2021, all 606 public toilets at CPC's directly operated gas stations were rated as super-excellent rank and 914 public toilets at franchised stations were rated as super-excellent rank and good or above. CPC's public toilets provide hand sanitizer, toilet paper, hand towel, hand dryer, toilet seat paper, seat disinfectant, washlets, air purifier¹, etc., and are regularly cleaned and disinfected to effectively stopped the spread of bacteria and vectors. In addition to operating its own public toilets at gas stations, CPC has also responded to the Environmental Protection Administration's public toilet promotion and adoption program for three consecutive years since 2019, in line with the United Nations' SDGs, improving environmental hygiene, reducing the discharge of sewage and waste, and increasing recycling and safe reuse rates.

note1 Not available for general use due to the possibility of theft.



6.A In Line
Internati



6.2 Public Toilet
Affirmative
Action

Water Pu
and Hy



6.3 Waste and
Pollution
Reduction

... with the
... onal Trend

6
... rification
... ygiene



United Nations 75th Anniversary Declaration: Shaping our Future Together



This #WorldToiletDay, the CPC Corporation Taiwan, has mobilized totally 1,899 CPC gas stations, and more than 5,000 employees in public toilet cleaning.

In response to the United Nations' World Toilet Day in 2021, CPC became a member of the United Nations' 75th Anniversary Water Resources and Valuing Toilets initiative. Under the leadership of Chairman Shun-chin Lee, the management cleaned up CPC's public toilets, and also promoted a partnership to call for the participation of direct, franchised and distributed gas station partners of the CPC system, mobilizing over 5,000 employees and franchisees from 10 business

branches and 1,899 CPC gas stations across Taiwan to join the event, which received appeals from the heads of counties and cities across Taiwan. From internal to external partnerships, CPC has demonstrated the added-value of its business operations to society and the environment, and this is what CPC believes in as part of the sustainable development.



In addition to environmental sanitation, CPC has also spared no effort in mitigating climate change. In order to reduce the impact of public toilet buildings on the environment, CPC has taken the lead in introducing green building design principles for public toilet. In 2021, the public toilet at CPC's Zhuangwei Station was certified as a green building by the Ministry of the Interior.

The United Nations Sustainable Development Goal of SDG 11.7 Provide Universal Access to Green and Public Spaces for All

CPC promoted the "Sterilization, Planting, Standing and Sustaining " project to improve the barrier-free facilities required by different communities. The project also facilitated greening and planting in public toilets to improve the indoor and outdoor air quality. The project has been extended from CPC's directly-operated stations to franchised stations with regular evaluation and competition to improve the quality of public toilets in gas stations throughout Taiwan. In some communities, the environment of public toilets has been trans-



formed into community green cultural and creative art galleries by displaying school children's paintings.

03

Net Zero CPC · Green Citizenship

Chapter summary

CPC has long devoted its attention to environmental protection. In addition to continuous promotion of energy saving and carbon reduction projects to mitigate the impact of operational activities on the environment, CPC also applied ISO14001 environmental management system and other relevant international standards, integrated the TCFD management framework to take advance measures to deal with the risk of climate change and seek opportunities for the transformation to the circular economy. Meanwhile, the conservation of the algal reef ecosystem is being implemented at the third LNG Receiving Terminal. These efforts signify CPC's intention to simultaneously cater to economic.



Corresponding SDGs



Recommended audiences

1 Shareholder (MOEA)	3 Public representatives	5 Customers	7 Employees	9 NPOs/NGOs
2 Business Partners	4 Communities	6 Government	8 The media	

Chapter Highlights



The water recovery rate
is about

98%



Financial benefits of
forward-looking R&D:

4.707 billions



Establish a complete TCFD
framework to effectively
respond to potential impacts
from climate change



0.97%

reduction in energy
intensity



Water intensity
reduced by

1.61%

Award Highlights in 2021

CPC's environmental protection capabilities were recognized by various domestic awards

In order to meet the national policy goal of net zero carbon emissions, CPC has been implementing the low carbon transformation of the enterprise, expanding the field of forward-looking R&D, and continuing to strive for excellence in environmental issues to fulfill CPC's responsibility as a social citizen. In 2021, CPC achieved excellent results in major sustainability awards. **Its participation in the 2021 TCSA Taiwan Sustainability Awards, where CPC was granted the "Circular Economy Leadership Award" and the "Water Management Leadership Award", which highlighted our performance in the field of circular economy and water resources management. CPC participated in the 2021 TSAA Taiwan Sustainability Action Award and won two Silver Awards for the CPC Carbon Neutralization Pioneer and the Resource Cycle co-creation Diamond Value, recognizing CPC's performance in energy saving, carbon reduction and sustainable resource utilization.** In addition, CPC's innovation and R&D achievements were also obvious to all, winning the "Enterprise Innovation Award" and "New Innovation Award" in the 18th National Innovation Award, **and receiving 4 awards in the Invention Competition of the 2021 Taiwan Innotech Expo.** As a benchmark company in the petrochemical industry in Taiwan, CPC is committed to sustainable transformation and will continue to pay attention to environmental issues and jointly protect the earth.



Circular Economy Leadership
Award



Water Management
Leadership Award



Silver Awards for the CPC
Carbon Neutralization Pioneer



Silver Awards for the Resource
Cycle Co-Creation Diamond Value



Enterprise
Innovation Award



New Innovation Award

Climate Change Adaptation

Green and Circular Transformation under
energy and resources management

Pollution Prevention

Ecological and Environ-
ment Protection

Unit:Thousand dollars

Environmental protection expenses	2019	2020	2021
Company operating cost ¹	2,659,048	2,478,184	2,744,830
Upstream and downstream relevant costs of suppliers and customers ²	24,242	23,051	21,578
Management activity cost ³	252,823	260,518	246,365
R&D cost ⁴	101,801	127,306	146,138
Social activity cost ⁵	213,902	158,262	132,395
Loss and compensation cost ⁶	2,829	108,997	34,785
Fees and taxes ⁷	4,167,500	4,271,719	4,039,028
Total	7,422,145	7,428,037	7,365,119

Note 1: Expenditure on pollution prevention, global environmental protection, and resource recycling.

Note 2: Expenditure on green procurement, resource recovery and recycling, products and services from implementing environmental protection, and additional expenditures on packaging containers from reducing environmental impacts.

Note 3: Expenditure on environmental education and training, verification and certification, environmental monitoring and measurement, handling environmental impacts, insurance for environmental protection, air pollution, soil pollution, water pollution and other fees.

Note 4: Expenditure on environmental protection product research and development and expenditure on research to reduce environmental impacts on the products in the market, and expenditure on environmental impact assessment.

Note 5: Expenditure on nature conservation, afforestation, landscaping and other environmental improvements, expenditures on sponsoring community activities for environmental protection, environmental groups, announcements, environmental protection publicity, and other information.

Note 6: Expenditure on environmental issues, compensation, penalties and lawsuits, and maintenance of urban landscape and living environment quality.

Note 7: Fees regarding air pollution, soil pollution, water pollution and other fees imposed by the government.

Environmental performance indicators

	2019	2020	2021
Petrochemical feedstock input (kL) ¹ /petrochemical output (kL) ¹	0.089	0.092	0.090
Crude oil input (kL)/equivalent distillation capacity for refinery (kL) ²	0.207	0.202	0.204
Liquefied energy input (kL) ³ / (equivalent distillation capacity for refinery + petrochemical output) (kL)	0.001	0.001	0.001
Gasified energy input (km ³) ⁴ / (equivalent distillation capacity for refinery + petrochemical output) (kL)	0.015	0.018	0.017
Water consumption (km ³)/ (equivalent distillation capacity for refinery + petrochemical output) (kL)	0.180	0.186	0.183
Electricity consumption (kWh)/ (equivalent distillation capacity for refinery + petrochemical production)(kL)	10.904	12.345	11.634
Tons of carbon dioxide equivalent (tCO ₂ e)/ (equivalent distillation capacity for refinery + petrochemical production) (kL)	0.044	0.043	0.043
Waste (kg)/ (equivalent distillation capacity for refinery + petrochemical output) (kL)	0.554	0.589	0.761
Effluents (t)/ (equivalent distillation capacity for refinery + petrochemical output) (kL)	0.066	0.069	0.068
Total effluent pollutants (kg) ⁵ / (equivalent distillation capacity for refinery + petrochemical output) (kL)	0.003	0.003	0.004
VOC emissions (kg)/ (equivalent distillation capacity for refinery + petrochemical output) (kL)	0.021	0.022	0.020
Air pollutant emissions (kg) ⁶ /(equivalent distillation capacity for refinery + petrochemical output) (kL)	0.023	0.021	0.022

Note 1: Petrochemical feedstock input= (naphtha+ reformat+ xylene mixture) input, the petrochemical output is the output of ethylene, propane, butadiene and benzene converted into equivalent distillation capacity (EDC).

Note 2: EDC (Equivalent Distillation Capacity): Standardized amount for different refinery processes.

Note 3: Liquefied energy input= (gasoline + diesel + fuel oil) input.

Note 4: Gasified energy input= (NG+ fuel gas) input.

Note 5: Total effluent pollutants= total amount of (COD + SS + Oil) in effluents.

Note 6: Air pollutant emissions= total amount of (Sox + NOx+ TSP).

Note 7: In 2021, the change of the waste list of Linyuan Petrochemical Plant led to the disposal of industrial waste, and the amount of industrial waste increased significantly.

3.1 Climate Change Adaptation

Climate change has become a topic of global concern, and it is an unavoidable challenge for CPC. It will directly or indirectly affect energy supply and costs, cause changes in energy demand and cause investment losses. It is directly impacted by related infrastructures such as oil refining, transportation, distribution and storage and natural gas transportation, reception and transmission. For the above, in the "climate disaster vulnerability", CPC referred to the most extreme greenhouse gas emissions scenario RCP8.5 defined by the climate change scenarios: assessing the worst-case climate change readiness of CPC under a 4 °C global warming scenario released by the Intergovernmental Panel on Climate Change (IPCC) in 2014 in the IPCC Fifth Assessment Report: Climate Change 2014, AR5. At the same time, in the face of the global trend of net zero carbon emissions in 2050, assess the operational impact and transition risk that may be caused to CPC. According to the framework of the Task Force on Climate-related Financial Disclosures (TCFD) issued by the Financial Stability Board (FSB) in June 2017, we disclosed the information on climate risks and opportunities.

Governance



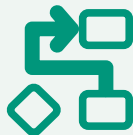
- The Board of Directors oversees climate change issues on an ongoing basis. Its terms of reference are to consider major capital investment cases, including forward-looking R&D and green energy investments, construction of natural gas infrastructure, etc. It also participates in the company's annual overall risk opinion survey, includes climate change impacts as a major risk for the company, implements controls through the corporate risk management mechanism, and establishes inter-departmental organizations to promote key tasks.
- In 2005, CPC established the Sustainable Operations Promotion Committee, with the Chairman of the Board as the chairperson, to integrate relevant resources across departments, discuss the vision and strategies related to climate change, promote specific actions, and report to the Board of Directors from time to time. In addition, a certification course for directors and supervisors was held, and senior executives discussed climate change risk issues with external members, directors and supervisors.

Risk management



The PDCA cycle is used to identify and manage climate and ecological risk items, and the TCFD framework will be incorporated into the operational risk management process of CPC from 2022 onward to establish a process for climate risk identification and assessment. Each department assesses the potential operational and financial impacts on CPC and based on the results of the climate risk identification and risk matrix ranking, establishes relevant response strategies to enhance organizational climate resilience.

Strategy



Through cross-departmental discussion and identification of short-, medium- and long-term climate risks and opportunities, report to the Risk Management Committee for material assessment, and set response strategies for major climate risks and opportunities and potential operational and financial impacts to CPC. Report the resolutions of the Risk Management Committee to the Board of Directors. In response to the risks of climate change, CPC is actively engaged in the low-carbon transformation of its operations. Although the investment cost has increased, it has prompted CPC to meet the trend of the future energy industry.

Goals and Indicators



Based on the results of risk identification, set management indicators related to climate change, and regularly review the progress of achieving goals and actual results. At the same time, according to ISO 14064-1, regular inventory of greenhouse gas emissions is carried out to examine the impact of operations and potential impacts.

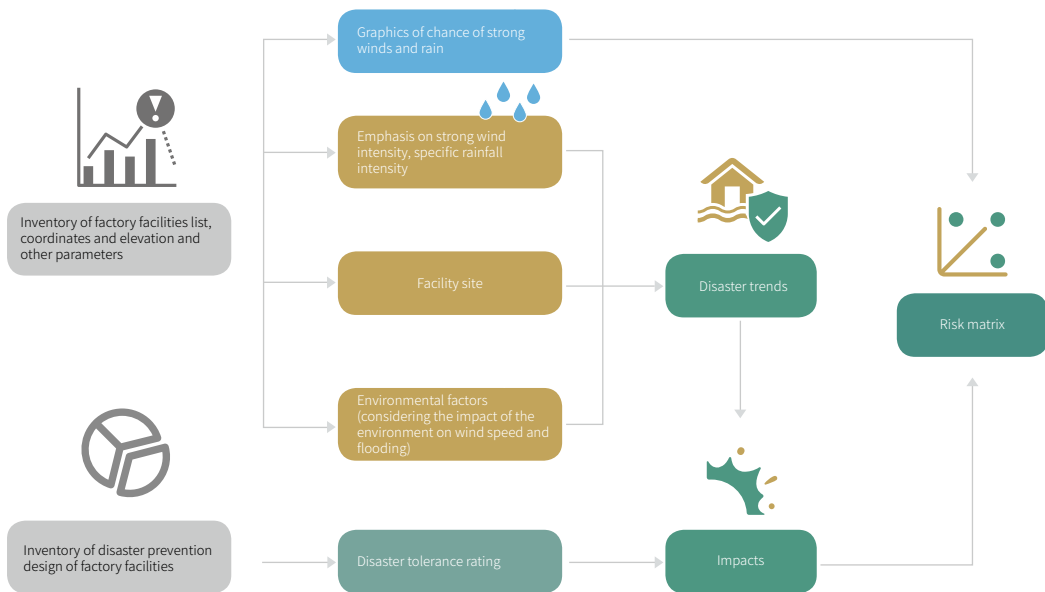
3.1.1 Climate Change Governance

Risk Scenario Analysis and Assessment

In view of the fact that the international carbon reduction has not yet achieved obvious results and the most conservative way of cautious assessment, CPC has participated in the Bureau of Energy's "Adaptation Strategy and Counseling Program for Energy Departments in Response to Climate Change" since 2018. Through inventorying parameters such as coordinates and elevation of plant facilities and understanding the disaster prevention design of plant facilities, CPC selected to conduct disaster potential and disaster resilience assessment using AR5 RCP8.5 high emission scenarios for risk factors such as strong wind and flooding and simulated the impacts in the event of extreme weather. Finally, the risk matrix was completed by combining the occurrence probability map and impact assessment results to identify the risk of climate change for CPC.

From 2018 to 2020, the climate risk inventory of 24 energy supply plants (covering refineries, LNG receiving terminals, oil supply centers, and gas supply centers) has been completed, and the methodologies and scenario maps used in each year have been continuously optimized. In order to make the assessment results of each plant consistent and comparable, and to capture the current situation and future risk level of each plant under the same conditions, six plants updated their climate change risk assessment reports in 2021, and one plant was added for climate change risk assessment. A total of 1,451 operational facilities were inventoried, 19 of which were rated as medium to high risk or higher. CPC will continue to update the climate change risk assessment report for each plant.

Climate Change Risk Assessment Procedures




Climate Change Risk Assessment Scenarios and Selection of Climograph

AR5 RCP8.5 High Emission Scenario

- ▶ Topography - wind speed additive simulation (eight directions)
- ▶ 10-minute average wind speed for 100-year return period with base period from 1981-2005
- ▶ 10-minute average wind speed for 100-year return period at the end of the century from 2075-2099


STRONG WIND



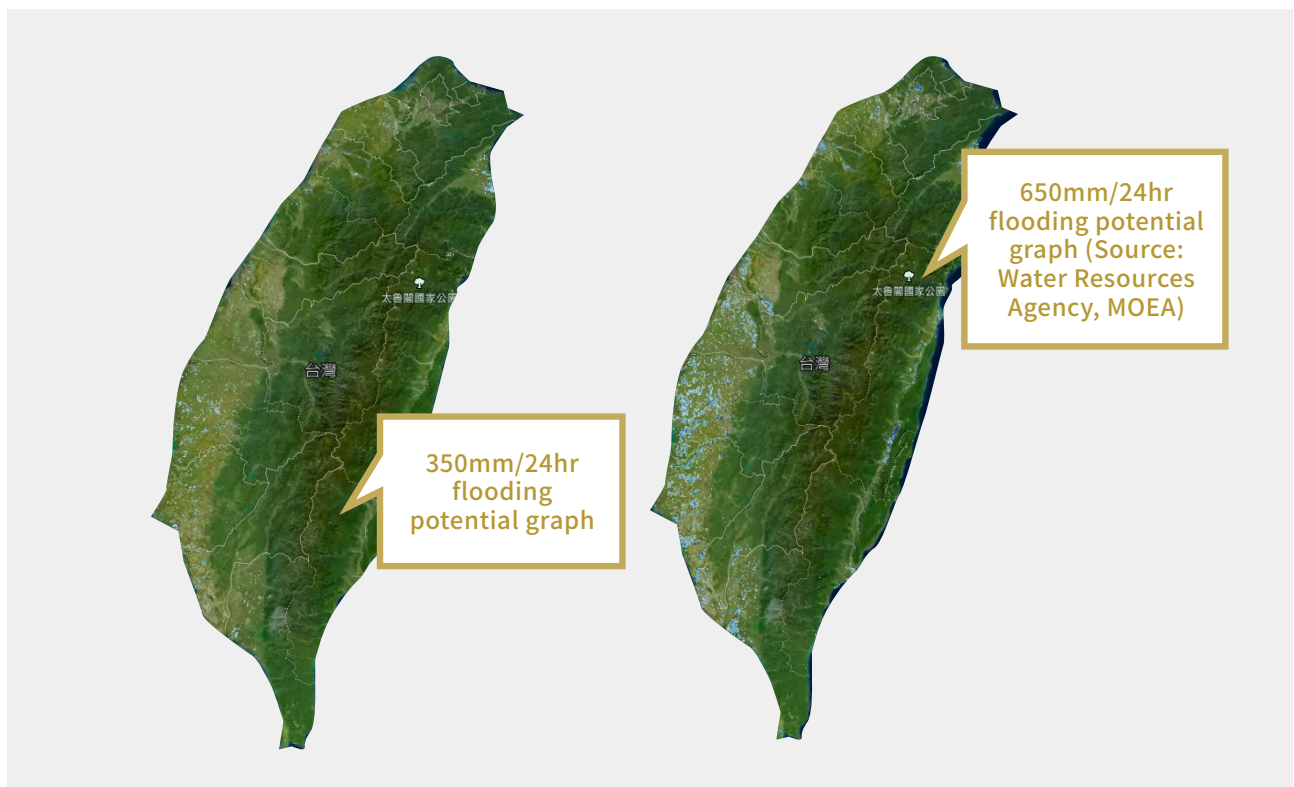
AR5 RCP8.5 High Emission Scenario

- ▶ 350mm/day rainfall rate Base period (1976-2005)
- ▶ 350mm/day rainfall rate Mid Century (2036-2065)
- ▶ 650mm/day rainfall rate Base period (1976-2005)
- ▶ 650mm/day rainfall rate Base period (2036-2065)
- ▶ 350mm/24hr flooding potential
- ▶ 650mm/24hr flooding potential

FLOODING

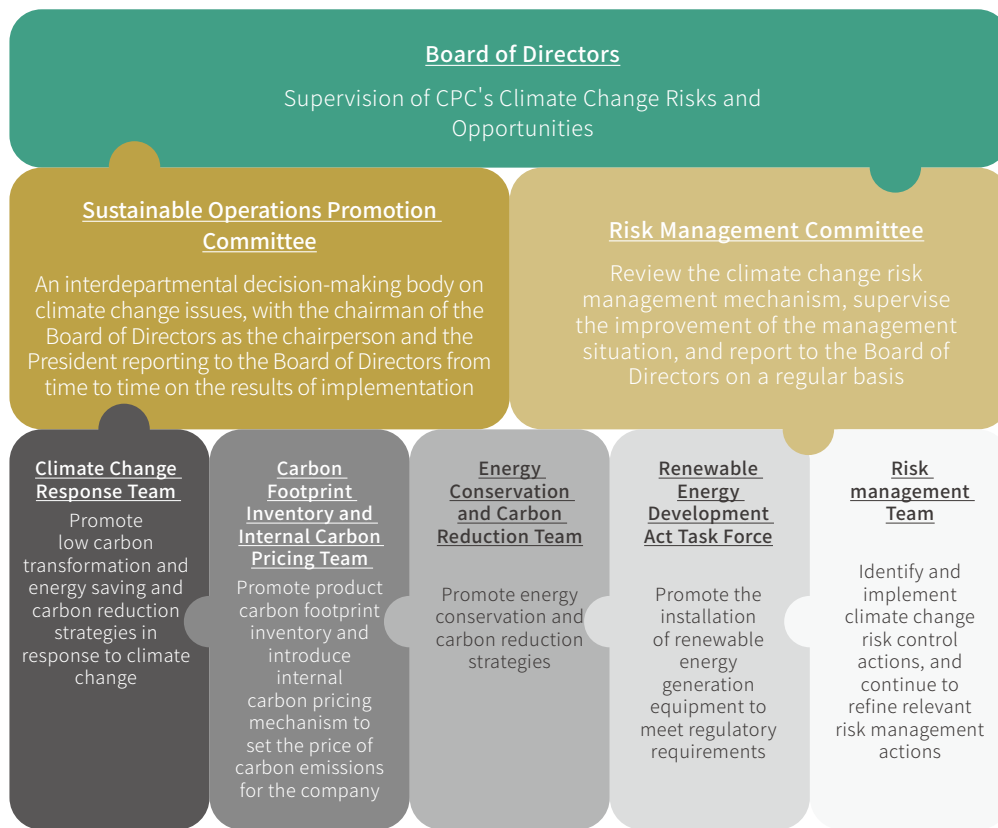


(Resource: Water Resources Agency, MOEA)



In 2021, CPC re-examined its focus on climate change risks and opportunities. The Board of Directors actively monitored the governance, while the risk management teams in each unit continued to refine the risk management in cooperation with the Sustainable Operations Promotion Committee and the Risk Management Committee in making decisions and audits, and consolidated CPC's climate response working groups, such as the Climate Change Response Team, the Energy Conservation and Carbon Reduction Team, the Renewable Energy Development Act Task Force and other departments to organize action plans, which once again demonstrated the completeness and depth of the overall governance and risk management of climate change of CPC.

Climate Change Governance and Risk Management Framework of CPC



CPC gradually incorporates climate change risk issues into its risk management system with reference to the TCFD framework. The Risk Management Team of each unit (department) assesses the potential operational and financial impact of "climate ecology" risk on the company based on its business attributes and establishes relevant response strategies based on the results of risk identification and risk matrix ranking. The "risk graph (risk matrix)" and risk management system (ERM) are systematically record, track and control each risk. The overall risks are reported to the Board of Directors and senior management for materiality assessment and are also reported to the Risk Management Committee annually for consideration at the committee meetings to carry out cross-departmental discussions in order to identify short, medium and long-term climate risks and opportunities. The committees consider the resolutions to be presented to the Board of Directors in order to enhance the resilience of each organization in response to the climate change. In addition, the internal Inspection Office conducts annual on-site audits to check the appropriateness and effectiveness of each unit (division) in promoting the risk management system. For details of the risk management organization structure and its operation, please refer to the chapter [1.3.3 Risk and Management](#).

3.1.2 Climate Change Risk Management

In response to the impact of climate change, CPC continues to pay attention to the latest international trends and information, and incorporates the Climate Related Financial Disclosure Recommendations (TCFD) into its management system and information disclosure. When analyzing physical climate risk, immediate and long-term physical risks are classified based on whether the hazard is a single event (e.g., storms, floods, droughts, etc.) or a long-term change (e.g., sea level rise, mean temperature rise, etc.), rather than a distinction between short, medium, and long-term impacts. In the face of the international trend of net zero carbon emissions, CPC also assesses the possible impact of low-carbon transition risks, is committed to various coping actions, and actively seeks to create opportunities.

CPC's Climate Change Risks and Opportunities

Risk Aspect		Risks	Financial and non-financial impact (-)	Actions / Derivative Opportunities (+)
Physical Risk	Immediate and long-term comprehensive consideration	Flooding	- Climate change has led to an increase in the probability and intensity of heavy rainfall (in the middle of the century), which may cause damage to some operating facilities and increase equipment maintenance costs.	+ After inventory of the vulnerability of the facilities, the assessment must be carried out with strategies such as elevated equipment and additional pumps, and an adjustment of strategy should be formulated through the guidance of the Industrial Technology Research Institute to strengthen operational resilience.
		Strong Winds	- Climate change has led to an increase in the intensity of typhoons (at the end of the century), which may cause damage to some operating facilities and increase equipment maintenance costs.	+ After inventory of the vulnerability of the facilities, CPC will evaluate strategies such as structural reinforcement and the establishment of a backup system, and formulate an adjustment strategy through the guidance of the Industrial Technology Research Institute to strengthen operational resilience.
		Prolonged drought without rain	- The water restrictions leads to a reduction in production or shutdown of the plant, resulting in production interruptions.	+ Recycled water is recycled through advanced wastewater treatment to improve water efficiency and enhance operational resilience. + Purchase of reclaimed water.
Transformation Risk	Policy and Regulation	Carbon Related Fees	- In response to the international trend of net zero carbon emission, it is expected that the proportion of carbon cost to total cost of products will increase in the future. - The proposed amendment to the Greenhouse Gas Control Act will include a carbon fee system, which will impose a greenhouse gas emission management fee, resulting in an increase in input operating costs. - In 2021, the Company's total greenhouse gas emissions were 7.686 million tons, with an annual carbon fee of NT\$100 to NT\$300 per ton. The annual carbon fee was estimated to be NT\$769 million to NT\$2.31 billion.	+ We will track the content and progress of the amendment to the Environmental Protection Administration and express our position in the process of the amendment to the law, and strive for the most favorable charging method and system for the Company. + We plan to implement product carbon footprint inventory and verification in 2022. + We will continue to promote energy saving and carbon reduction in manufacturing processes, improve energy utilization efficiency, and introduce net-zero emission related technologies and clean energy to develop low-carbon operation models and services.
		Amendments to renewable energy-related laws and regulations	- In response to the Renewable Energy Development Ordinance, which came into force in 2021, the operating costs increased. - In 2021, we invested NT\$71.24 million in R&D of solar power technology.	+ Cross-unit research company reaches a legal green power construction projection. As of 2021, the Company completed 11.417 MW of installation capacity and more than 230 PV sites; and has obtained 19 renewable energy site certifications and 2,394 renewable energy certificates for self-generation.
	Market	Changes in Consumer Preferences	- The rise of the electric vehicle industry has affected consumer demand and will affect the company's revenue.	+ CPC will achieve the smart green transformation of gas stations. In accordance with the "Smart Electric Vehicle Energy Replenishment Facilities Popularization Plan", the company completed the installation of 774 charging and switching stations and 4 smart & green e-stations to provide diversified services and create new green business opportunities. CPC generated revenue of NT\$21.21 million in 2021 from the charging and switching facilities and gas stations.

Risk Aspect	Risks	Financial and non-financial impact (-)	Actions / Derivative Opportunities (+)
Transformation Risk	Transformation Technology Low Carbon Alternatives to Original Products and Services	<ul style="list-style-type: none"> - The rising value of sustainable consumption leads consumers to purchase low-carbon energy-saving products or services, which has affected the company's traditional energy sales and revenue. - In line with the government's energy transformation policy to expand the supply of natural gas, we promoted the investment plan for the third LNG receiving terminal (adjusted in response to the extrapolation plan), the second phase of the Taichung LNG plant investment plan, the investment plan for the new land pipeline of natural gas from Taichung LNG plant to Tunghsiao station, the investment plan for the construction of additional storage tanks at the Yongan LNG Plant, and the third phase investment plan for the Taichung LNG Plant, with a total investment cost of approximately NT\$154.158 billion. 	<ul style="list-style-type: none"> + Utilizing the technology foundation and R&D capacity, CPC invests in the development of related technologies and market deployment, and plan a net-zero transformation strategy with three main pillars of quality oil, carbon reduction, and clean energy to expand our operations. + New (expanded) LNG receiving stations built to enhance natural gas import, storage and supply capacity to replace oil market demand and create a clean energy supply chain for CPC, increasing natural gas sales by 2.006 billion cubic meters in 2021 compared to that in 2020. Note 1.
	Transformation Technology Costly Low Carbon Transmission	<ul style="list-style-type: none"> - In order to reduce greenhouse gas emissions and meet the demand for low-carbon products and services, invest in energy-efficient equipment and R&D of new process technologies, CPC has promoted investment plans for refinery model and structure improvement, including the investment plan for gasoline benzene reduction and high quality at the Dalin Refinery, and the investment plan for increasing the production of 0.3wt% ultra-low sulfur fuel oil and modified asphalt production center at the Dalin Refinery, at a total investment cost of approximately NT\$14.597 billion. - The boilers were all converted to natural gas or fuel gas, and the refineries were promoted to convert to gas, including the purchase of new burners and accessories for the Dalin Refinery, the conversion of the Taoyuan Refinery to gas, and the investment plan to replace No. 1 boiler at the Taoyuan Refinery, with a total investment cost of approximately NT\$1.720 billion over the past five years. 	<ul style="list-style-type: none"> + Promote refining mode adjustment and structural improvement and high-value petrochemical, convert the active ingredients in cracked gasoline into livelihood materials, and make good use of by-product oil to turn low-value fuel into high-value materials. + Strengthen the export of fuel oil in response. + Refineries will be converted to gas-fired and boilers will be replaced with new ones.
	Reputation Corporate Reputation Impact	<ul style="list-style-type: none"> - In response to climate change and high carbon emission products, failure to meet stakeholder expectations will result in negative public opinion and reduced customer trust and satisfaction, affecting corporate reputation, loss of leadership position, and potential financial losses. 	<ul style="list-style-type: none"> + In response to international trends, regulatory changes, and market development trends, CPC adjusts internal management regulations, discloses transparently, and responds in a timely manner to enhance our low-carbon and green energy image. + Participate in relevant sustainability certification and evaluation of performance, and implement relevant actions and enhancements.





Note 1 : The international prices of crude oil and natural gas increased significantly in 2021. In order to prevent and alleviate the pandemic and stabilize prices, the natural gas sales price was not fully adjusted and was temporarily absorbed by CPC. To avoid bias in the calculation of revenue, some of the financial impacts were calculated in terms of sales volume.









3.1.3 Climate Change Strategies

The risk management policy of CPC has been integrated with the climate risk and opportunity framework proposed by TCFD, and the worst case scenario for CPC's "climate hazard vulnerability" adopted the most extreme greenhouse gas emission scenario defined by the climate change scenario RCP8.5 released by IPCC (Intergovernmental Panel on Climate Change) in the IPCC Fifth Assessment Report: Climate Change 2014, AR5 in 2014: impact on Taiwan's climate change scenario under global warming of 4° C taking into account frequent typhoon in Taiwan, and then included in Taiwan's geographical environment for assessment.

Under the 4° C warming, Taiwan will face fewer but stronger typhoons, limited reservoir capacity, flooding, collapse and earthflow under strong winds and rain, siltation and transient rainfall, and higher turbidity of reservoirs. At the same time, CPC is conducting an inventory of climate risks and opportunities in terms of policies, regulations, markets, immediate and long-term physical risks, and R&D of low-carbon products, and are formulating adaptation strategies based on national conditions and international climate trends.

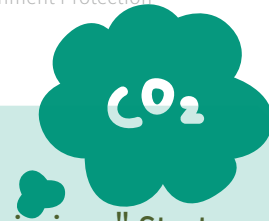
CPC Implementation Strategy for Climate Change

	Strategy	Key Measures and Effectiveness
	Establish an energy-saving organization	<ul style="list-style-type: none"> In 2019, a working group on energy conservation and carbon reduction was established and working group meetings were held regularly. The main tasks include: practical seminars on energy conservation and carbon reduction, introduction and promotion of energy-saving technologies, energy conservation and carbon reduction counseling at the factory, and energy conservation case compilation and experience inheritance. In 2021, CPC handled 2 working group meetings of the Natural Gas Processing Plant of the Exploration and Production Division and the Yongan LNG Plant.
	Strengthen the promotion of energy saving and carbon reduction and staff training	<ul style="list-style-type: none"> Strengthen employees' concept of energy saving, implement energy management such as factory energy consumption, and improve the energy saving effect and unit energy productivity of refinery plants. Organized energy-saving propaganda such as health inspection of automobiles and locomotives, fuel saving of vehicles, and timely turning off lighting and promoted tree planting and gifting of saplings and other activities. Promote the quality control circle method, improve the process to enhance energy efficiency, and implement the action of energy saving and carbon reduction in the factory. In 2021, a total of 2 shifts of climate change and greenhouse gas reduction management seminars and 1 shift of energy conservation practice seminars was held.
	Implement climate change adaptation plans	<ul style="list-style-type: none"> Carry out climate risk assessment for oil refineries, natural gas receiving stations, gas supply centers, and oil supply centers' production, transportation, storage, and industrial safety facilities. In 2021, seven plants, including Taoyuan Refinery, Taichung LNG Plant, Tainan Gas Supply Center, and Chiayi Supply Center, Taichung Oil Supply Center, Taichung Port Oil Supply Center and Kaohsiung Aviation Oil Center, and two plants, including Suao Oil Supply Center and Shimen Oil Supply Center, conducted climate change adaptation strategy research. Continue to conduct annual inventory of greenhouse gas emissions to reduce the impact.
	Improve refining structure and increase energy efficiency	<ul style="list-style-type: none"> Strengthen refining structure adjustment and obsolete renewal. Adopt Best Available Technology (BAT) to improve energy efficiency and reduce environmental impact. Actively promote the improvement of energy efficiency of refining and petrochemical plants, set energy saving and carbon reduction targets, and control unit energy and resource consumption. Energy-saving technologies such as introducing heat pipe heat recovery, heat exchanger network simulation, new furnace air preheater and installation of crude oil pre-flashing system, use variable frequency motor, stepless regulation system of reciprocating compressor, heating furnace coated with high radiation paint and replacement of high-efficiency blades for cooling tower fans, etc. Moreover, CPC strengthens the recycling of fuel gas, medium and low pressure steam and water resources. In 2021, the energy saving effect reaches 24,000 metric tons of oil equivalent, and the cumulative carbon reduction from 2005 to 2021 was 2.748 million metric tons.

	Strategy	Key Measures and Effectiveness
	Complementary integration of regional energy resources	<ul style="list-style-type: none"> ▪ Mutual support with industrial zones to promote waste heat energy recovery and purchase of reusable steam from China Steel's process to reduce energy use. ▪ In 2021, Dalin Refinery used 336,000 metric tons of steam that can be reused by China Steel for steelmaking, reducing the use of natural gas by 27,000 cubic meters, which is equivalent to a reduction of 54,000 metric tons of direct CO₂ emissions. ▪ Natural gas cold energy utilization. In 2021, the cold energy supplied to Far East and Blue Ocean Gas Company was 389,000 metric tons and 612,000 metric tons respectively.
	Promote and Implement Green Energy-related Technologies	<ul style="list-style-type: none"> ▪ Invest in technology research and development of biomass energy, energy storage materials, biomass materials, and high-value petrochemical investments. ▪ Construction of solar photovoltaic system, 11.417MW has been completed in 2021, and 19.56MW is expected to be completed in 2023. ▪ Promote smart& green e-stations, obtain gas station green building certification and renewable energy project certification, etc. ▪ In line with the plastic restriction policy and the trend of carbon reduction, we have developed the batch production technology of HMF, the precursor of biomass polyester material PEF, and established the continuous process and product-related analysis technology, and reduced the waste in the process. We will gradually conduct mass production verification tests and become an upstream raw material supplier of biomass.
	Communicate with international organizations from time to time	<ul style="list-style-type: none"> ▪ Participate in international COP meetings: from 2003 to 2021, CPC participated in a total of 14 times, learning the impact of climate change and carbon reduction methods and compiling carbon reduction plans. (Due to the impact of the COVID-19 pandemic in 2020 and 2021, no staff participated the meetings.)
	Increase natural gas transmission and storage capacity to expand low-carbon energy use	<ul style="list-style-type: none"> ▪ Expand of natural gas-related storage and transportation facilities in Yong'an and Taichung Port, and invest in the third LNG receiving terminal. In 2021, the natural gas supply capacity reached 16.5 million metric tons per year, and it is expected to increase to more than 22 million metric tons in 2025.
	Promote the expansion of the application of biomass fuel	<ul style="list-style-type: none"> ▪ Continue to cooperate with the government policy to supply and promote alcohol gasoline (E3) at 14 gas stations in Taipei and Kaohsiung. Devoted to R&D and standard specification verification of recycled oil products and biomass aviation fuel production technology.
	Carbon Neutral Product Certification	<ul style="list-style-type: none"> ▪ Continue to promote carbon neutrality of products. By April 2022, carbon neutral natural gas, carbon neutral ethylene, and carbon neutral gas stations have been launched.
	Research and development of clean energy technology	<ul style="list-style-type: none"> ▪ In 2021, a climate change response working group, an offshore wind power joint venture project group, and a hydrogen energy group were established.
	Develop carbon capture and storage 2021.	<ul style="list-style-type: none"> ▪ Carbon Capture, Utilization and Storage (CCUS) team was established in 2021.



Highlight: CPC Moves Towards the "Net Zero Carbon Emissions" Strategy



After the UN COP26 climate summit, which included the global goal of achieving net zero emissions by 2050 in the Glasgow climate agreement, carbon neutrality and net zero carbon emission issues have become a global corporate concern. In order to make stakeholders understand CPC's response to the international trend of net zero carbon emissions and the forecast revision of domestic regulations, a net zero carbon emission promotion area was established on the global information website. Internally, CPC has set a number of scheduled goals in its corporate carbon reduction efforts, and plans to conduct a carbon footprint inventory of its products to assess its own carbon risks and achieve various carbon reduction targets as another major milestone in response to its carbon reduction commitments. In 2021, CPC set up a climate change response team to promote the company's net-zero transformation strategy. In addition to the assessment of net zero emissions and the promotion of the corresponding actions, the progress and results of the relevant promotion areas are as follows:

1. Refining and Chemical Integration

The Refining and Chemical Transformation Group promoted refining and chemical integration, hydrogen selfproduction, process renewal, and utility system integration, etc. In response to the declining demand for gasoline in the electric vehicle market, CPC were promoting the gasoline benzene reduction project to reduce gasoline production and increase petrochemical production. The Dalin Refinery and ITRI collaborated to build a small-scale demonstration unit for CO₂ capture and methanol conversion at the second hydrogen plant. The project is now in the preliminary stage of land selection, confirmation of pipeline tiein points and related utility conditions, and basic design stage of the production process.

2. Carbon Capture, Utilization and Storage (CCUS)

In January 2021, CPC established the Carbon Capture, Utilization and Storage (CCUS) Group to help reduce carbon emissions at our major carbon emission plants. In terms of carbon capture, a suitable flue gas source was selected for the initial stage of the plant and introduced into the demonstration equipment. It would become one of the carbon reduction strategies in the CO₂ circular economy and is planned to complete the construction of the carbon capture and conversion pilot system by 2025 to conduct technology verification, catalyst development and process optimization research. In terms of carbon storage, a three-year research project on "CO₂ storage technology" will be launched in 2022, and a survey of carbon storage sites will be conducted in the western coast of Taiwan, including four site surveys and one site refinement survey, with design planning based on the survey results.

3. Investment in Offshore Wind Power

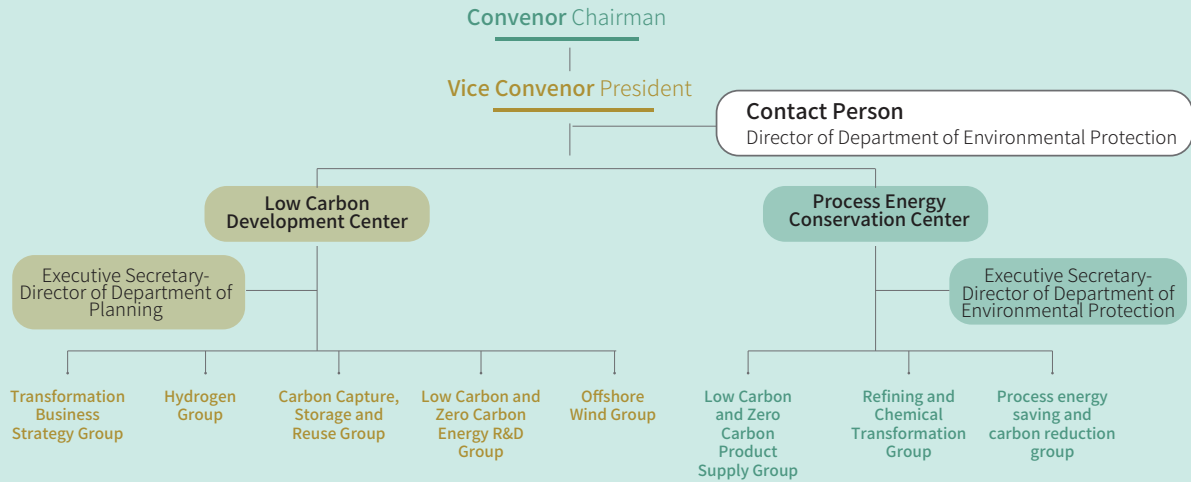
Considering that Taiwan is a small area with a dense population, there is limited space for land-based wind turbines, while the Taiwan Strait has an excellent wind farm environment, which is suitable for the development of offshore wind power. Therefore, in August 2021, the Offshore Wind Power Joint Venture Project Group contacted offshore wind power developers for joint participation in the development of the third phase of offshore wind power in Taiwan, which is expected to be in the form of joint venture.

4. Clean Energy - Hydrogen Energy Development

In March 2021, a hydrogen energy group was established to plan the development of hydrogen energy business and conduct research in three major directions: hydrogen energy measurement research, natural gas hydrogen doping and combustion research, and domestic and international hydrogen energy regulation research. Currently, CPC is working on a mobile hydrogen refueling station demonstration project and will continue to track the development of hydrogen energy in various countries to help Taiwan keep abreast with the international hydrogen energy market, with the hope of becoming a zero carbon emission clean energy supplier in the future.

In addition, CPC established a Carbon Footprint Inventory and Internal Carbon Pricing Working Group in December 2021. In 2022, CPC plans to conduct a product carbon footprint inventory and verification, and sets up corresponding teams in each business unit at the same time. CPC will ask each unit to review the production process and update the flow chart, so that CPC can define the boundary during the subsequent carbon footprint inventory.

CPC Climate Change Response Team Framework



Highlight: CPC Takes First Step Towards Carbon Neutral in Taiwan, Leading Industry Towards Net Zero Carbon Emissions

In recent years, CPC has attempted various carbon neutral transactions, demonstrating our determination to move towards net-zero sustainability and create a low-carbon green home.

· First Carbon Neutral LNG

Celebrated the 30th anniversary of natural gas imports to Taiwan in 2020, CPC demonstrated voluntary carbon reduction through a carbon neutral partnership with Shell for the first time, and further reached a carbon neutral partnership agreement with Italian energy giant Eni in 2021. Through this carbon neutral mechanism, the greenhouse gas emissions generated by LNG from production to use, including upstream production, pipeline, liquefaction, shipping, gasification, domestic pipeline and customer use, will be offset against the carbon rights that comply with the Voluntary Carbon Standard (VCS), Gold Standard, from Zambia, Indonesia's forest conservation program, Malawi's REDD+ International Forest Conservation Project, verified by Verra, an independent organization, in order to verify the amount of greenhouse gases offset, which shows the ambition of CPC to undergo energy transformation and also reveals carbon neutral product examples for industries with voluntary carbon reduction, and further commercializes carbon neutral products to assist industries to accelerate the achievement of net zero carbon emission demand.

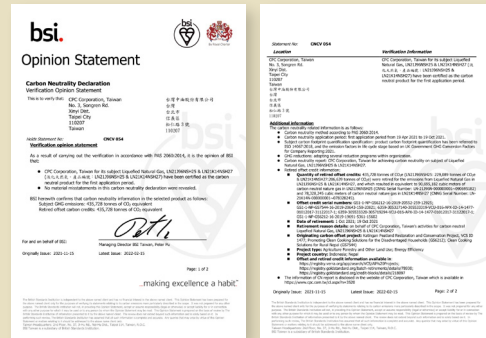


· Signing MOU with TSMC to Help Industry Reach Carbon Neutrality Milestone

CPC is committed to carbon neutrality to achieve net zero carbon emissions by actively expanding the commercialization of carbon-neutral oil and gas. In order to further deepen the common concept of corporate growth and green prosperity, CPC signed a “MOU regarding natural gas carbon neutral program” with TSMC on September 16, 2021, International Ozone Layer Day, to provide TSMC with natural gas that meets the requirements of third-party carbon neutral products, demonstrating the determination of both parties to reduce carbon emissions on the International Ozone Layer Protection Day, and raising public awareness of environmental protection. CPC also hopes to bring the green influence into the industry towards a sustainable supply chain, making concrete contributions to the industry, to the cooling of the earth and to climate change.



▲ Signing MOU with TSMC



▲ Third Party Certificate of Authentication for LNG Products

· The world's first carbon-neutral ethylene Refining and chemical integration and industry upgrade

In 2021, CPC and Marubeni Corporation in Japan launched the world's first carbon neutral cooperation case for imported ethylene. This was the first time for Taiwan and the world's first case of unloading and receiving carbon neutral ethylene. The "Carbon Credit" obtained was verified by an international third party and was equivalent to the carbon absorption of 50 Daan Forest Park for one year.



The amount of ethylene delivered by Marubeni Corporation was approximately 9,400 tons, and the amount of carbon dioxide equivalent generated from the extraction of shale gas fields in the U.S. to downstream users was approximately 20,000 metric tons, which was offset by the "Carbon Credit" obtained from Indonesia's international forest conservation program through a carbon neutral mechanism. The carbon credit was verified by an international third party to be in compliance with the “Voluntary Carbon Standard (VCS)” for carbon rights offset.

The European Union will introduce a carbon tariff in 2023 to control the carbon footprint of imported goods, and companies are bound to face a new operating model that calculates the carbon footprint generated by the life cycle of products and converts it into costs. In order to accelerate the competitiveness of the CPC oil industry system, CPC has taken the lead in testing carbon neutral ethylene imports, and has set the ultimate goal of promoting the integrated refining and chemical capacity upgrade program to control carbon emissions at the source and turn environmental sustainability into the competitiveness of Taiwan's petrochemical industry.

· National Carbon Neutral Gas Station and Carbon Neutral Crude Oil Pioneer Towards Net-Zero Green Living

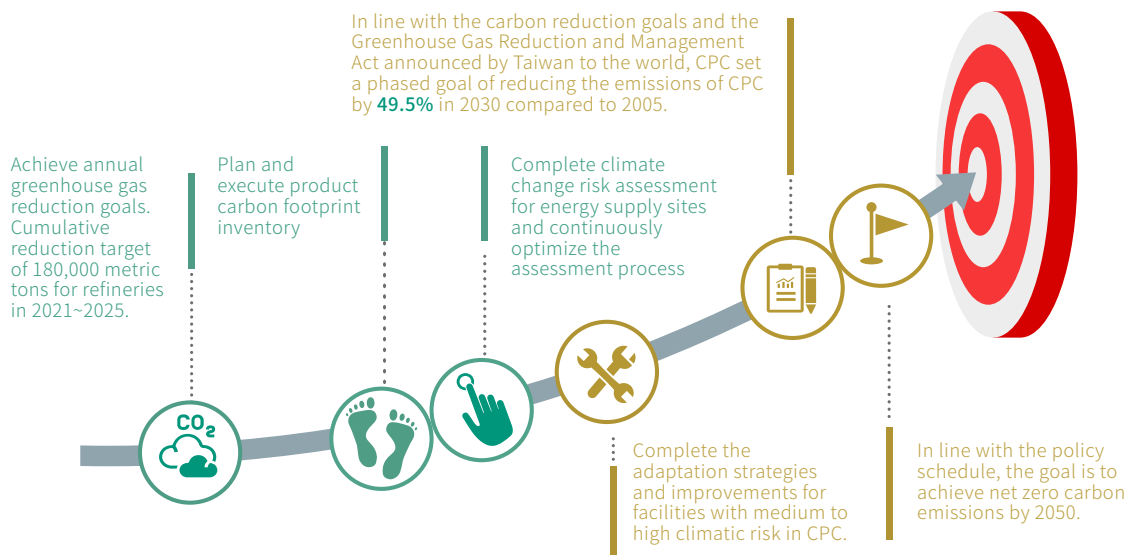
In 2021, CPC planned to start the greenhouse gas inventory and organizational carbon neutralization procedures at the Tainan Qianfeng Station, after using the ISO 14064-1 standard for greenhouse gas inventory and then offset its emissions through carbon reduction measures and carbon offsets. CPC purchased on-site carbon rights (Zhangbin Wind Power) through Gold Standard, an internationally credible "voluntary carbon offset management platform" to carry out local offset. Tainan Qianfeng Station is the first carbon neutral gas station in the country, and the first carbon neutral gas station that adopts the PAS 2060 specification and has been verified by a third party by BSI British Standards Institute. In the future, CPC expects to expand the introduction of carbon footprints at gas stations to specifically implement carbon reduction commitments and enhance product visibility and market competitiveness.

Meanwhile, in June 2020, CPC and the crude oil supplier Azerbaijan State Oil Company completed the carbon neutral cooperation case of importing 1.05 million barrels of crude oil. This is the first time Taiwan has unloaded carbon neutral crude oil. The carbon reduction plan has been certified by the international third-party Swiss climate neutral products and the carbon neutrality certification of the British Intertek notary company Cradle to Gate, and obtained the "greenhouse gas reduction quota", which can reach about 88 Daan Forest Parks to absorb carbon in one year. In the future, in addition to developing domestic carbon neutral business opportunities, CPC will continue to pay attention to the international carbon reduction trend and drive domestic enterprises to achieve net zero carbon by 2050.

3.1.4 Climate Change Goals and Indicator Management Achievement

In response to the national carbon reduction policy and the global response to climate risk trends, CPC has set phased carbon reduction targets for 2030, and aims to achieve net zero emissions by 2050 as its long-term goal, and continues to prudently assess the risks and opportunities of climate change. Based on the results of risk identification and international trends, CPC also planned relevant action plans in response to climate change, set performance management indicators, established short, medium and long-term goals for greenhouse gas management, energy resource management, water resources and pollution prevention management, and regularly reviewed the progress and effectiveness of achieving the targets. At the same time, according to the "GHG Protocol", the GHG emissions from direct emissions (Scope 1) and indirect emissions (Scope 2) were inventoried, and the impacts caused by operations and potential impacts faced by CPC were examined and verified by ISO 14064-1 GHG Inventory.

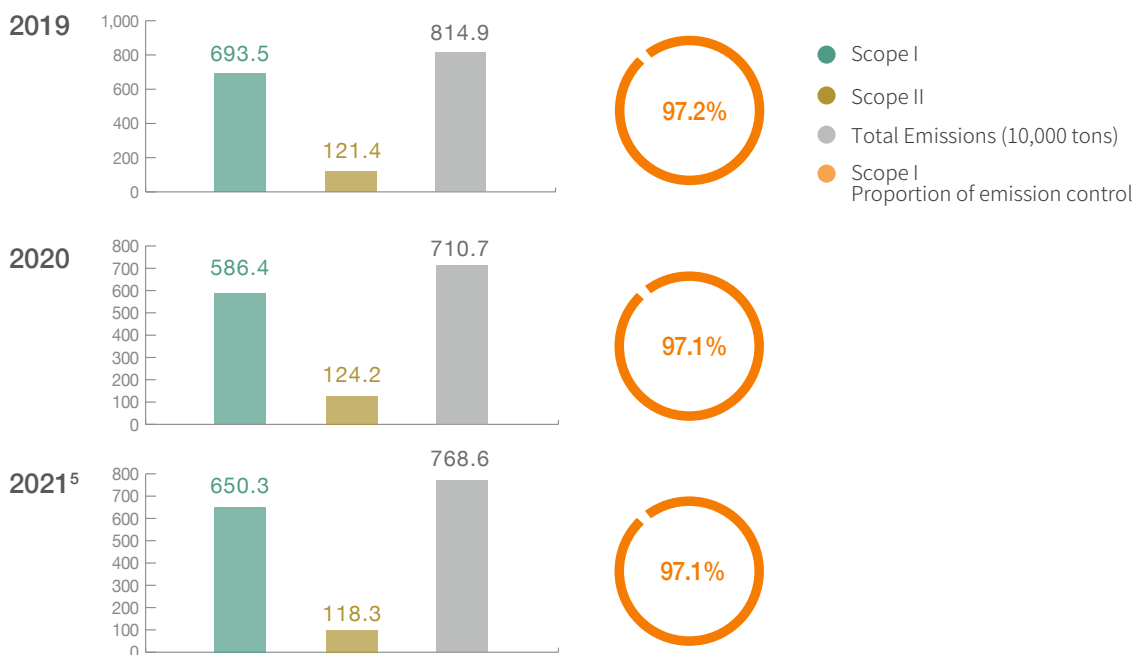
Goals Short-term ● Long-term ●



Indicators

In order to respond to the international climate change mitigation trend, achieve corporate carbon reduction goals, and enhance the competitiveness of the green economy, CPC sets greenhouse gas reduction goals in accordance with national policies and continuously tracks emissions through greenhouse gas inventory. In 2004, the ISO 14064-1 greenhouse gas inventory system was introduced, and annual greenhouse gas emissions inventory was conducted. The emissions of refineries were verified by a third-party agency certified by the Environmental Protection Agency. Based on this, CPC sets greenhouse gas reduction goals and promoted greenhouse gas management plan to reduce greenhouse gas emissions.

In line with the national carbon reduction targets set by the Greenhouse Gas Reduction and Management Act (referred to as the “Temperature Management Act”) announced by the Environmental Protection Agency, Executive Yuan, CPC took 2005 as the base year, and the annual greenhouse gas emissions were 11.58 million metric tons (CO₂ equivalent). CPC conducts an annual inventory of GHG emissions in Scope 1 and Scope 2. The calculation is based on the GHG emission coefficient management table announced by the Environmental Protection Agency. If there is an on-site (factory) coefficient, it will be used first, and the GWP value will be used according to EPA regulations. CPC's greenhouse gas inventory operation is carried out using the operation control method, and the results are expressed in carbon dioxide equivalents. Compared with 2020, the total greenhouse gas emissions in 2021 increased by 579,000 metric tons of carbon dioxide equivalent (CO₂ equivalent), mainly due to the limited economic activities in 2020 because of the impact of the COVID-19 pandemic. CPC adjusted its production strategy in a timely manner to meet market demand; since 2016, the greenhouse gas emission intensity has shown a downward trend for three consecutive years. Compared with 2020, the greenhouse gas emission intensity in 2021 dropped by 13.6%.⁵



Note 1 : CPC does not use biomass fuels

Note 2 : CPC's greenhouse gas inventory scope includes scope I and scope II. Greenhouse gas types include seven major types of greenhouse gases: carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF₆) and nitrogen trifluoride (NF₃).

Note 3: The base year for the reduction of greenhouse gas emissions target of CPC in Taiwan is 2005, with emissions of 11.58 million tons of CO₂e. Due to the large upstream and downstream supply chain businesses, it is difficult to check the supply chain, and the supply chain inventory is being conducted continuously. Therefore, the quantification and verification of scope III are not included in the emission calculation for the time being.

Note 4: According to EPA regulations, the global warming potential (GWP) is based on the IPCC's fourth assessment report in 2007.

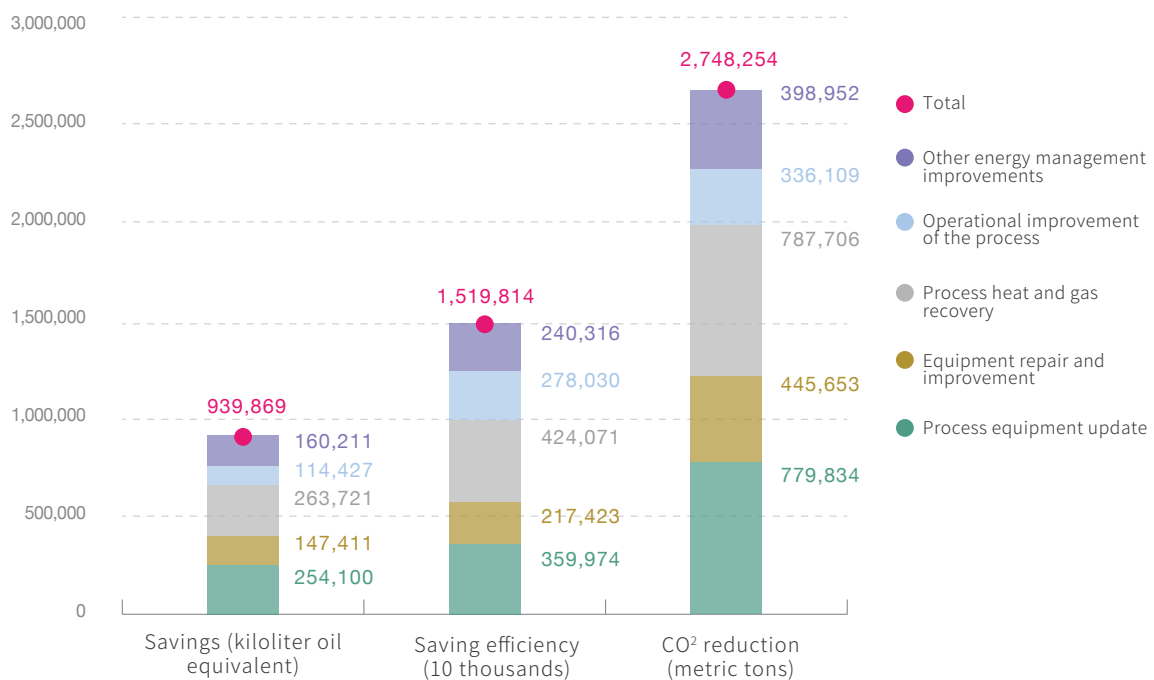
Note 5: CPC introduced ISO 14064-1 greenhouse gas inventory system in 2004. Greenhouse gas emissions inventory is conducted on an annual basis. Greenhouse gas inventory operations is carried out using the operation control right method. Greenhouse gas emissions intensity = annual greenhouse gas emissions / annual revenue (kg/NT\$).

Energy Conservation Performance and Results

In line with the energy conservation policy and the implementation of the greenhouse gas emission control action plan of the energy and manufacturing departments, CPC has been implementing a number of process improvement and energy management energy conservation cases since 2005, with a view to continuously reducing greenhouse gas emissions, and promoting 48 greenhouse gas reduction measures such as process operation optimization, equipment renewal and improvement, and waste heat recovery and utilization in 2021. The total investment was approximately NT\$1.1 billion and the total carbon reduction was 79,000 tons. The cumulative energy conservation effect from 2005 to 2021 had been 940,000 tons of oil equivalent, which was equivalent to a carbon reduction of 2.748 million tons. The unit energy consumption of major production plants also improved significantly.

The greenhouse gas management and energy saving effectiveness business is reviewed by the energy saving effectiveness meeting held every six months, chaired by the vice president of supervising environmental protection business. In 2021, internal and external experts were invited to the Exploration & Production Business Division's Injection and Storage Engineering Department and the Refining Business Division's Dalin Refinery for energy saving and carbon reduction counseling, to help review the operation of large equipment and energy use efficiency, as well as to provide improvement suggestions, which were included in the energy saving and carbon reduction effectiveness tracking meeting for continuous follow-up.

Performance of major energy-saving measures from 2005 to 2021



CPC continues to promote energy-saving plans such as energy-saving lighting and replacement of energy-saving equipment, with an average annual electricity saving rate of over 1%. At the same time, in response to the Greenhouse Gas Emission Control Action Plan (Phase II) of the energy sector and the manufacturing sector, the “Refinery Energy Efficiency Improvement Plan” and the “Petrochemical Plant Energy Efficiency Improvement Plan” were promoted aiming to reduce the cumulative greenhouse gas emissions of 180,000 metric tons of refineries in 2021-2025. CPC will continue to set the phased goal of reducing emissions by 49.5% in 2030 compared to 2005, and will continue to roll over and review to achieve the long-term goal of net zero emissions by 2050. Through the twice-a-year energy-saving and carbon-reduction effect tracking meeting to track the implementation situation, CPC moves towards net zero carbon emissions.

CPC's Phase II Action Plan

Project Name	Year	Expected Benefits	2021 Implementation Result
New (expansion) construction plans for Yongan, Taichung and Guantang natural gas receiving terminals	2021-2025	Natural gas unloading and receiving capacity of 22 million tons by 2025.	In 2021, the natural gas unloading and receiving capacity reached 16.5 million tons per year was planned.
Refinery Energy Efficiency Improvement Program		Promote various energy conservation measures to improve energy efficiency of oil refineries, expected to reduce carbon by 155,000 tons	In 2021, Dalin and Taoyuan refineries promoted a total of nine energy conservation and carbon reduction measures, resulting in a carbon reduction of 59,300 tons.
Assist industrial sector to use natural gas as fuel		Assist 10 industrial customers to build gas supply systems each year.	In 2021, we assisted 34 industrial customers to build gas supply systems.
Improve energy efficiency of petrochemical plants		Promote various energy conservation measures to improve energy efficiency of petrochemical plants, expected to reduce carbon by 26,000 tons.	In 2021, Linyuan Petrochemical Plant promoted a total of seven energy conservation and carbon reduction measures, resulting in a carbon reduction of 15,400 tons.

3.2 Green and Circular Transformation under energy and resources management

Short-term

- Promote the added value of petrochemical energy

Medium/long-term

- Address climate change challenges to achieve the sustainable supply of green energy
- Achieve smart green energy and energy transformation

3.2.1 Low Carbon Green Energy Transformation and Circular Economy

Leading edge R&D and Low Carbon Green Energy Transformation: To accommodate recent changes in the global economy, Taiwan 2050 Net Zero goal and the 5+2 industries project, CPC has continued to focus on its critical technology R&D capacity regarding three main areas: "High-Value Petrochemical", "Low-Carbon Emission" and "Lean-Renewable Energy". This enable the "R&D-driven transformation" mindset in order to continuously keep abreast with low-carbon trends and strengthen our product and technology development capabilities with technology integration and strategic alliances. In 2021, CPC invested a total of NT\$2.507 billion in leading edge R&D, with an overall financial benefit of NT\$4.707 billion, covering areas such as smart green energy, high-value materials, circular economy, and biomass oil products, in the hope of becoming a development hub for the high-value petrochemical and green energy industries.

	2019	2020	2021
Investment budget (NT\$100mn) ¹	18.96	21.30	25.07
Proportion of R&D expenses in net income ¹	0.19%	0.30%	0.28%
Financial benefits (in multiples of NT\$100 million)	38.58	40.56	47.07
Acquired patents	16	18	19
Published papers	199	208	202
Leading edge results	48	62	55




Note1: The R&D investment budget is based on actual R&D expenses (including capital expenditure)

Leading Edge R&D Directions and Results

R&D Fields	Item	R&D Outcomes
Assessment and research of domestic and overseas potential oil and gas	Research on Domestic Mining Sites	<ul style="list-style-type: none"> Establishing a geochemical database of source rocks in Taiwan. Exploration of high-potential oil and gas mining sites in southwest waters in Taiwan.
	Research on Foreign Mining Areas	<ul style="list-style-type: none"> Completed exploration and potential research of the Roebuck basin in northwest waters in Australia and updated the subsurface 3D map in Chad. Conducted exploration of North American shale oil and gas mining areas through digital exploration technology.
Development the use of renewable energy	Geothermal Energy Analysis	<ul style="list-style-type: none"> Establishment of completion well piping material screening technology in the Yangmingshan Matsao region, and collection of international strategies to combat acidic geothermal water.
	Solar Photovoltaic Technology Development	<ul style="list-style-type: none"> The solar energy maintenance and operation center was established to develop self-operating technology and actively assist in promoting the installation of solar power systems, with a total of over 230 sites and a total capacity of 11.417MW is installed.
	Mobile Hydrogen Refueling Station Construction	<ul style="list-style-type: none"> The evaluation of mobile hydrogen refueling stations installation was completed, and a mobile containerized hydrogen refueling station was planned to be built by 2023 to provide hydrogen refueling for vehicles.
Development of New Products and New Technology	Lithium Titanate (LTO) Material Development and Applications	<ul style="list-style-type: none"> Continued to build a kiloton class LTO demonstration plant. Successfully developed Taiwan's first domestic LTO electric bus with industry cooperation using our own LTO materials.
	Development of Super Capacitors Made of Biomass Material	<ul style="list-style-type: none"> Completed the development of 1200F supercapacitor (constantly providing 80% capacity efficiency of 20,000 turns for 1.35~2.7V@40A charge/discharge), and verified the application of 48V super capacitor module.
	Development of Environmentally Friendly High Performance Coating Materials	<ul style="list-style-type: none"> Developed polyol low-carbon polyurethane insulation coating for oil tank tops, which effectively reduced the VOC emission concentration from tank tops, lowered the average liquid temperature difference of oil in tanks, and achieved the used of biomass and reduced corrosion.

R&D Fields	Item	R&D Outcomes
Development of New Products and New Technology	High Frequency Substrate Resin Development, Trial Production and Verification	<ul style="list-style-type: none"> Developed the first generation of high frequency substrate resin production samples and tested by copper foil substrate factory to meet the performance standards of mass production in tons. We are developing the 1.5 generation high-frequency substrate resin with environmental protection process and will enter the market of the resin product in mass production in the future to become a technology supplier.
	High/Low Temperature Fuel Cell Demonstration	<ul style="list-style-type: none"> Continue to conduct demonstration of high-temperature and low-temperature fuel cell decentralized power generation sites and establish monitoring systems and large data databases for data collection, analysis, and application development.
	Carbon Dioxide (CO ₂) Capture and Storage Technology	<ul style="list-style-type: none"> Conducted pilot plant validation and began construction of a 20 kg/day CO₂ processing capacity methanol conversion demonstration plant.
	Smart & Green e-stations	<ul style="list-style-type: none"> A total of four demonstration sites of smart & green e- stations were built in the north, middle, south and east of Taiwan, providing a variety of services such as "energy production", "energy storage", "energy utilization" and "smart energy".
	Development of MiBlancSol, as Raw Material for Cosmetic and Skin Care Products	<ul style="list-style-type: none"> Developed MiBlancSol, which has the potential of whitening and antibacterial properties as well as medical applications, using rice bran as the material. We will continue to develop it as an auxiliary material for skin care products.
	AI Gasoline Performance Modeling	<ul style="list-style-type: none"> Established the relationship between vehicle fuel consumption and engine performance, provided an AI method to precisely estimate the parameters and probability distribution in the relationship and find the most cost-efficient formula for fuel consumption.
	Process Development of Biomass Plastic Raw Materials	<ul style="list-style-type: none"> In line with the national plastic restriction policy, we developed 5-HMF biomass refining process technology and completed the laboratory level continuous process pilot production equipment as well as solvent and catalyst testing.
Circular Economy	High-Value Heavy Oil - Soft Carbon Derived Energy Storage Material Development and Application	<ul style="list-style-type: none"> Continued to promote the establishment of demonstration soft carbon process plant. Developed long-life service of soft carbon cathode material and spherical activated carbon.
	Cold Energy Utilization - Algae Cultivation and Functional Material Development	<ul style="list-style-type: none"> The use of the cold seawater from the Yongan LNG plant for large scale algae cultivation, and further extracted the essence from the algae for functional material development, which helped the growth of hair follicle cells and could be applied to health care products such as hair follicle care in the future.
Environmental Security Technology and New Technology Development and Application	R&D of Rapid Soil's Oil Concentration Detection Technology to Establish a New Tool for Environmental Protection	<ul style="list-style-type: none"> With the R&D of rapid detection technology for total petroleum hydrocarbons in soil, we successfully developed the application of GC/FID with thermal desorption pre-treatment system to establish a rapid screening technology tool that could be moved to the field for site investigation, emergency response and excavation treatment, etc.
	AI Technology in Industrial Safety Applications	<ul style="list-style-type: none"> With big data analysis technology, we built an intelligent model for diagnosing the status of the on-site critical equipment and verified it in the field to assist the unmanned inspection system in the factory to issue early warning for equipment abnormalities.
	AOP Development and Application	<ul style="list-style-type: none"> The organic wastewater (high ammonia nitrogen, high concentration, waste alkaline) discharged from the plant was processed in the AOPs system to meet the environmental standards for wastewater improvement and recycled water recovery.
	Soft Carbon Pilot Mass Production and Post-Processing Automation	<ul style="list-style-type: none"> Completed soft carbon pilot mass production and post-processing automation technology to improve the productivity and capacity, and effectively suppressed the dust emission, so that the soft carbon produced could meet the target specification.

CPC's Low Carbon Green Energy Transformation and Outcomes

Major Transformation	Short-term	Medium-Term	Long-Term
 High-Value Petrochemical	Oil to Petrochemical Products	Petrochemicals to High-Value Materials	New Material Industry
	Highlight Result: <ul style="list-style-type: none"> ➔ Amorphous soft carbon cathode materials, LTO energy storage materials and battery system technology applications ➔ Application of dicyclopentadiene derivatives ➔ Established advanced catalyst center and organic materials R&D platform 		
 Low-Carbon Emission	Improve Efficiency And Carbon Neutral Oil and Gas	Carbon Capture and Carbon Storage	Carbon Utilization
	Highlight Result: <ul style="list-style-type: none"> ➔ First in Taiwan to trade carbon-neutral oil and gas products (natural gas, ethylene, crude oil) ➔ Pioneer of national carbon-neutral gas station ➔ Planning steel and chemical co-production strategy with China Steel Corporation. ➔ R&D of renewable fuels ➔ Energy and resource integration 		
 Lean-Renewable Energy	Natural Gas	Solar Photovoltaic/ Geothermal Resource/Cold Energy	Hydrogen Energy
	Highlight Result: <ul style="list-style-type: none"> ➔ Built solar power maintenance and management system ➔ Smart & green e-stations ➔ Evaluation of mobile hydrogen refueling station's construction ➔ Cold seawater drainage of algae and fish farm cultivation (diamond water) 		

▪ High-Value Petrochemical

In response to the sustainable transformation of the global energy market, CPC has been actively changing its production pattern by gradually adjusting its refining structure through the progressive Crude Oil To Chemicals (COTC) process to accelerate the development of petrochemical high-value materials. CPC also invested in fast-charging and long-life amorphous soft carbon cathode materials and developed of high-safety and fast-charging LTO energy storage material technology so as to batteries and other applications with CPC cathode materials. We also developed cutting-edge materials for domestic semiconductor and biomedical industries, while establishing the "Organic Materials R&D Platform" as well as the "Advanced Catalyst Center" and "Automotive Systems Composite Materials Center" in cooperation with the industry, academia, and research institutes to extend our business as a new materials business.

High-value Materials

In response to the demand for high frequency, high speed or high-power efficiency in 5G generation, CPC is committed to develop dicyclopentadiene derivatives for application and use the by-products of ethylene production to develop materials with high value and technicality. Currently, CPC has successfully developed two types of high-frequency substrate resin materials and the substrates made in cooperation with manufacturers can be applied to the future high-frequency circuit board material field. The risk of supply chain fluctuation can be avoided if the materials developed by CPC are introduced. This type of research and development is attractive for the sustainable development of the panel industry in Taiwan.

Another future star product developed by CPC is the water coating product for vehicles. After four different stages of R&D, such as testing and improvement, the product with good hydrophobicity, high gloss and high weather resistance was successfully developed. The product was tested in real vehicles with good results, and each performance was obviously better than other competitive products. Currently, the product has been actively promoted and sold at gas stations across the country.

Established Advanced Catalysis Center to Lead the Upgrading and Transformation of Domestic Industries and Create a Circular Economy

With the global energy-saving and carbon-reduction policies, the production of gasoline and diesel fuel will be reduced in the future. CPC is actively developing in the direction of refining structure upgrade, chemical value addition, and carbon capture and reuse. The “Advanced Catalysis Center” established in 2021 and CPC planned three stages of technological development milestones, including the establishment of basic research and development energy, the establishment of catalyst development and evaluation technology, the verification and mass production of its own catalyst performance, and the completion of the equipment construction plan of catalyst performance evaluation aiming to develop low-temperature denitrification catalysts. CPC invites important domestic and foreign companies to establish clusters in Taiwan in an attempt to reinforce the overall development of the circular industry and achieve the goal of catalyst nationalization. In addition, the Advanced Catalysis Center is positioned as a demonstration base for new generation of smart production, introducing digitalization and AI technology, and build a smart plant environment to realize the goal of "Industry 4.0" in petrochemical industry. The establishment of the Advanced Catalysis Center is a key step in the transformation of CPC. In the future, CPC will play a leading role in the domestic industry to create a circular economy and drive technological innovation and industrial upgrading.



Established Advanced Catalysis Center



Catalyst performance testing equipment



Highlight: LTO energy storage materials and battery system development

In response to global warming and the trend of energy saving and carbon reduction, CPC has been actively engaged in the development of new generation lithium titanate (LTO) energy storage materials since 2015. By introducing the LTO material modification method and automated low-cost continuous manufacturing process, the R&D team has successfully improved the material conductivity, increased the gram capacity, reduced the manufacturing cost, and developed a highly safety and fast charging LTO energy storage material. This R&D technology was recognized by the 18th National Innovation Award.

In line with the government's electric policy for buses and public transportation by 2030, CPC has been working with the Industrial Technology Research Institute (ITRI), Amita Technologies Inc., Chung Hsing Electric and Tong Ying Motor to jointly develop a number of core electric bus battery systems. This include fast-charging LTO batteries, LTO battery packs, high-voltage LTO battery systems and bus body triboelectric integration with its own LTO energy storage materials. All the research work was conducted by the domestic team. The first 12-meter-long LTO electric bus was successfully developed and passed the six performance tests of the electric bus at the vehicle testing center. In addition, CPC is building a LTO material production plant with an annual production capacity of 1,000 tons, which is expected to commence production in 2023. It is expected to play as the upstream niche battery material supply role to accelerate the development of the domestic energy storage industry. CPC will continue to develop a variety of high quality and price competitive energy storage material products to facilitate the development of Taiwan's green energy industry.



▪ Low-Carbon Emission

CPC has been making a positive impact on carbon reduction by introducing a greenhouse gas emission reduction plan from the source of product production and continuously promote process efficiency improvement; it has also made use of its technology and R&D capacity to actively invest in the development of negative carbon technologies such as carbon dioxide capture, storage and reuse; it has also developed carbon neutral oil and gas product to help achieve the goal of net-zero carbon emissions for a green low-carbon economy. Please refer to section [3.1 Climate Change Adaptation](#).

▪ Lean-Renewable Energy

CPC has continued to expand its clean energy business by building solar power maintenance systems, jointly developing geothermal resources with academic institutions, and strengthening R&D momentum. In addition to actively entering the battery and energy storage system market, CPC has also been actively involve in the hydrogen energy industry to gradually moving from oil supply towards renewable energy business in order to stand out in the clean energy market and create new development opportunities.

Highlight: Low-Carbon Green Energy Transformation of Gas Stations Toward a Smart Energy Service Center for Diversified Energy Supply

In response to the development of electric transportation vehicles and green energy policies, CPC has actively sought to transform its gas station business and promote various carbon reduction initiatives to inject new growth momentum. From 2018 to 2021, CPC had completed the construction of 774 electric motorcycle charging and switching stations (including 696 switching stations and 78 charging stations) in line with the government's public construction plan. At the same time, in 2021, we leased the parking lot of Fulin Station in Taipei City and cooperated with manufacturers to build the first electric vehicle composite charging station of CPC. In 2013, CPC began planning "green building gas stations", using carbon reduction or ecological methods. By 2021, 67 gas stations received the green building label. In addition, since 2019, traditional gas stations had been upgraded and transformed into smart & green e-stations, which integrated energy production, storage, and utilization, and provide electric vehicle charging and switching facilities. By 2021, we completed the installation of four demonstration sites of smart green energy gas stations, each with its own characteristics, fully demonstrating CPC's R&D momentum, and regulating the overall power consumption of gas stations through the energy management system. So far, the equipment of each demonstration site has reached the installation target. In 2021, it even won the first national award for "Best Product" in the National Brand Yushan Award for smart & green e-station. Currently, we plan to complete the construction of a smart green energy demonstration site at the Hsinchu Guangming Station by the end of 2022 and continue to promote green energy transformation.

Demonstration Site of Smart Green Energy Gas Stations

Taoyuan Jiadong Station: Test soft carbon energy storage system



mobile energy storage system provided local or remote rural areas with emergency power needs for disaster prevention.

⚡ 50 kWh smart mobile energy storage system

Chiayi Xinyi Road Station: Pursuing self-sufficiency in green power The average share of self-production capacity of 79.5%



Self-Production capacity ratio=79.5%

⚡ 500 kWh soft carbon storage system

Tainan Qianfeng Station: Pursuing diversified power characteristics The average share of self-production capacity of 21.5%



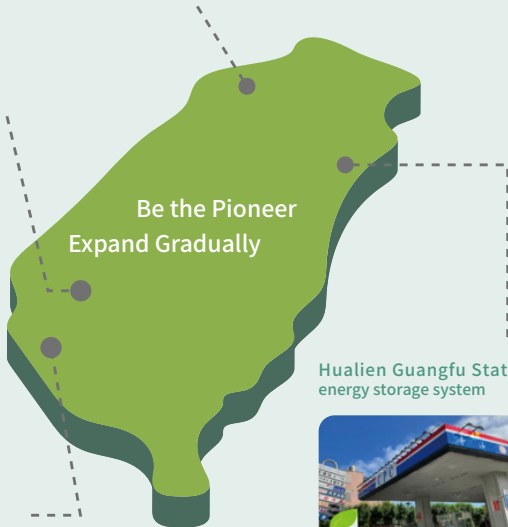
Self-Production capacity ratio=21.5%

⚡ 150 kWh LTO and vanadium liquid flow battery storage systems

Hualien Guangfu Station: verify mobile LTO energy storage system



⚡ 5kWh mobile energy storage system
⚡ 20kWh fixed energy storage system



Green energy transformation demonstration site	Characteristics of Sites	ESG benefits
Chiayi Xinyi Road Station	<p>Pursuing self-sufficiency in green power</p> <ul style="list-style-type: none"> Solar power generation is the main source of green power, and the overall grid is regulated through energy storage cabinets. Applied the intelligent energy management EMS system as the core of energy dispatching work. In 2021, we introduced AI prediction models and scheduling, analyzed historical meteorological data, historical solar power generation data and historical electricity consumption data, as well as optimized the scheduling results. In the future, the main goal will be to increase the ratio of green power usage to achieve self-sufficiency and reduce energy dependence. 	Self-production capacity ratio increased from 72.2% in 2019 to an average of 79.5% in 2021.
Tainan Qianfeng Station	<p>Diversified Power Supply</p> <ul style="list-style-type: none"> Solar energy and fuel cells were installed, and LTO and vanadium liquid flow battery storage systems were used for frequency regulation and peak-shaving to provide fast charging systems for gas stations and electric motorcycles. In the future, CPC hopes to combine the green energy station facilities to apply as the green energy education site, and introduce high temperature fuel cell system for long-term performance verification analysis and additional solar photovoltaic system to provide sufficient and stable renewable energy. 	<ul style="list-style-type: none"> » Average share of self-generated electricity is about 21.5% » The average monthly electric motorcycle charging frequency: approximately 250 times » Provision of approximately 2,950 charging services in 2021 » Conducted tours and implemented industrial-academic cooperation in 2021 to demonstrate the application of green energy R&D results. » In 2020, CPC won the Silver Award and Green Action Award of the 2nd National Environmental Protection Agency (NEPA) for our diversified power characteristics. In 2021, we once again won the Silver Award of the 3rd National Environmental Protection Agency (NEPA), demonstrating our excellent performance. » In October 2021, CPC started to plan the carbon footprint inventory and subsequent organization of carbon neutral work, and announced in April 2022 that Tainan Qianfeng Station was the first carbon neutral gas station in the country.
Taoyuan Jiadong Station/ Hualien Guangfu Station	<p>Building Mobile Energy Storage System</p> <ul style="list-style-type: none"> The Taoyuan Jiadong Station is equipped with a 50 kWh smart mobile energy storage system with 10 sets of small mobile lithium-iron storage battery modules that can be positioned by communication, among which 5 sets of batteries are made of graphite as the cathode material, while the other 5 sets are mixed with lithium-iron soft carbon with fast charging, long life and high safety features developed by CPC for 10 years, which can provide disaster prevention and emergency power backup for local residents. At the same time with the energy management system smart monitoring and scheduling, it is able to enhance the efficiency and safety of the energy storage system. The Hualien Guangfu Station is equipped with a mobile LTO energy storage system developed by CPC, which utilizes its high power, fast charging and discharging characteristics, and is equipped with GPS. It can be mechanically transported when demand is received through the power regulation and remote monitoring of the energy management system. In the future, we hope to implement our corporate social responsibility of safeguarding the community and creating a green city and township by focusing on smart & green e-stations. 	<ul style="list-style-type: none"> » In 2021, following the operation of the Taoyuan Jiadong Station for the whole year, energy storage accounted for 27% of the gas station's electricity consumption, effectively saving approximately NT\$0.6 per kWh of gas station electricity. » In 2021, the Hualien Guangfu Station completed the construction of a 25kWh mobile LTO energy storage system and energy management system (EMS), and also added an online checkpoint function for the energy storage system to enhance system safety management. » In the event of a power outage, the energy storage system can automatically switch to island operation mode to supply the gas station's electricity needs. » Provide emergency power needs for disaster prevention in local urban and rural areas and aboriginal areas.
Taipei City Fulin Station Parking Lot	CPC's first electric vehicle composite charging station	<ul style="list-style-type: none"> » The first site is equipped with six 250kw Tesla-specific charging guns (TPC and CCS2), which can be used for Tesla. » The second site is equipped with two 200kw double guns with CCS1 and CCS2 specifications, which can meet the charging needs of various types of electric vehicles at the same time.

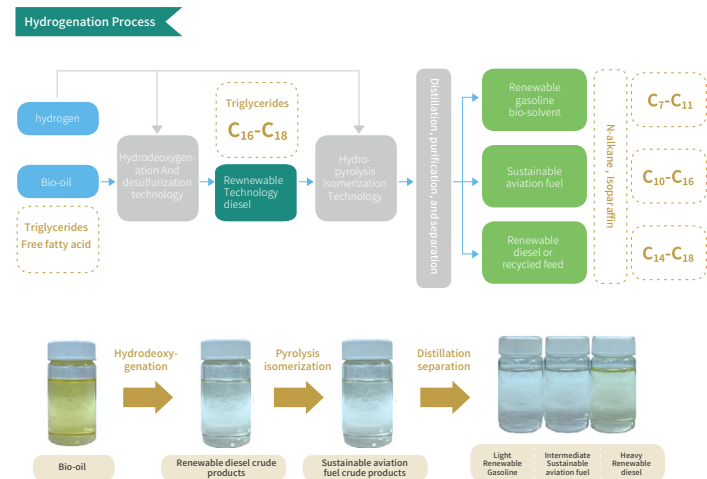
In order to expand the deployment of clean energy infrastructure, CPC has not only actively invested in geothermal exploration, but also established a hydrogen energy team to evaluate and plan the installation of hydrogen refueling stations for hydrogen-powered vehicles and buses. It is expected that the installation of mobile hydrogen refueling stations will be completed by 2023, and that we will work together with local governments to demonstrate the operation and evaluate the benefits in order to jointly promote the development of hydrogen energy industry. In the future, depending on international regulations and business development, the project will be adjusted on a rolling basis to serve as a reference for the future transformation of gas stations into "hydrogen refueling stations".

Circular Economy

In response to the government's 5+2 industry innovation plan, CPC has accelerated its investment in circular economy research and innovation, examined the circular economy opportunities in the value chain. CPC is transforming through Reduce, Reuse, Recycle and Renew to pursue the rational and effective use of resources, hoping to create new momentum for CPC's industry development through the promotion of circular economy practices.

R&D of Renewable Fuels

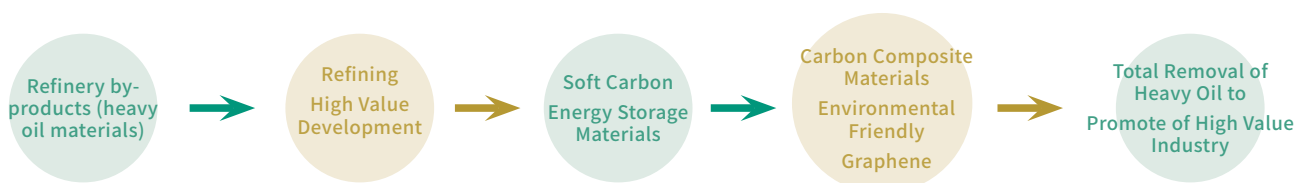
CPC has invested in the development of bio-oil hydrogenation process to convert biooil into renewable diesel and sustainable aviation fuel. At the same time, the oil quality analysis and specification of renewable fuels were conducted. For renewable diesel fuel, it could effectively improve the overall performance and reduce fuel consumption. In addition, it can effectively reduce air pollution emissions and benefits the environment. Through testing, biomass aviation fuel has the effect of reducing SO_x, NO_x, CO and CO₂.



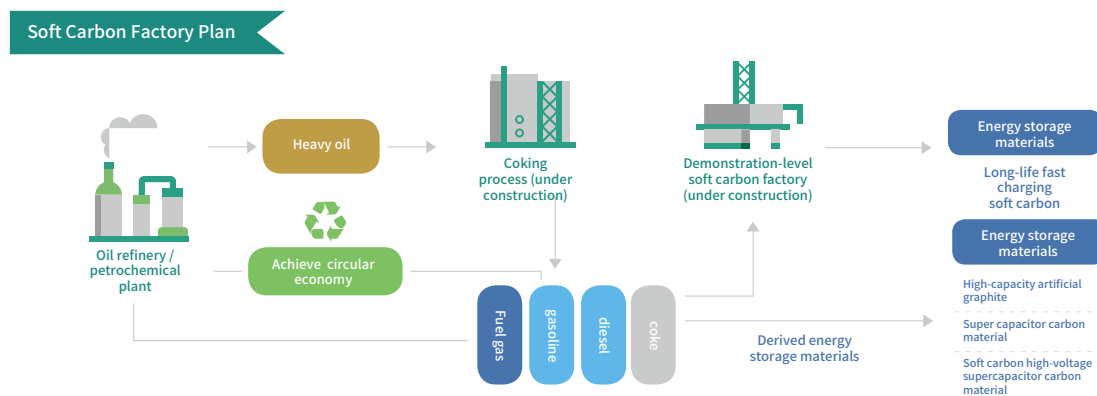
High-Value Heavy Oil

CPC has continued its research on petroleum refining and CPC has continued its research on petroleum refining. CPC has successfully developed the high-value energy storage soft carbon materials by using heavy oil that used to be used as fuel. Such energy storage soft carbon materials are suitable for use as "anode material for lithium battery" for electric motorcycles and was introduced to China Motor Corporation fast-charging motorcycle batteries for commercial applications in July 2020. Such R&D technology was awarded the "15th National Innovation Award - Enterprise Innovation Award" in 2018 and the highest honor "Platinum Award" in the Taiwan Innotech Expo Invention Competition in 2021. It has also been verified on site and is being used in Taoyuan's Jiadong smart & green e-station storage system. In the future, we will continue to develop our own soft carbon cathode material from the laboratory to commercial mass production, in order to meet the future demand of the power battery market and move towards green technology R&D.

CPC's R&D of high-value heavy oil material utilization technology has been successfully developed from soft carbon energy storage material and actively expanded towards the core technology of carbon composite material. In the future, we will continue to explore the fields of silicon-carbon composite cathode materials, advanced supercapacitance carbon materials, melt spinning of synthetic mesophase asphalt, asphalt-based spherical carbon materials, and porous carbon materials for hydrogen storage applications. CPC also hopes that by investing in high-value R&D projects, CPC will not only reverse the image of traditional petrochemical as high energy consumption and polluting enterprises, but also drive CPC's transformation into a high-value, high-tech industry and leading to the ultimate goal of becoming a high-value industry.



In order to actively plan for the commercial production of energy storage materials, CPC submitted an application to the Ministry of Economic Affairs for the establishment of a factory in 2020 and received approval for its establishment. In 2021, CPC actively deployed the basic design and procurement of the leading edge material precursor and the soft carbon processing plant. The demonstration soft carbon process plant is scheduled to be completed in 2024 and is expected to be in production in 2025.



In addition, CPC's application of high-value heavy oil material technology has recently successfully developed multi-pore carbon materials and conducted validation tests with downstream manufacturers. It has successfully trial-produce 1200F supercapacitor products. Supercapacitor has many advantages such as stable and high power discharge, high safety, long life service and fast charging, which can be applied to light rail, MRT and buses to enhance the performance of short-range fast charging and has great potential for industrial application in the future electric society.

Cold Energy Utilization Cold Drainage Recycling (Diamond Water)

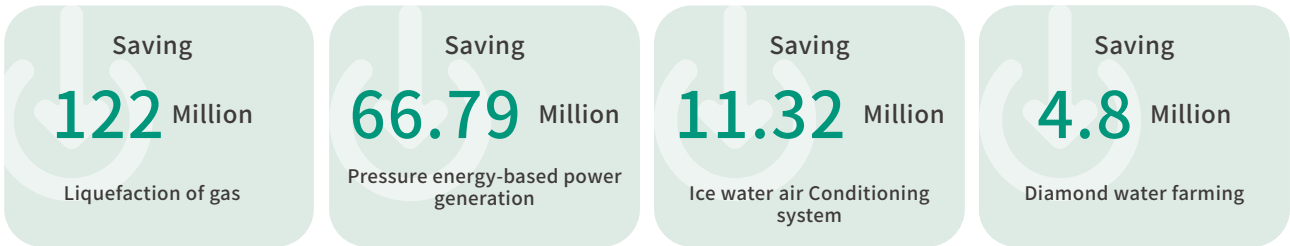
Large amounts of seawater must be used for heat exchange during the natural gasification process in order to prevent plankton attached to the equipment and reduce the effectiveness of the heat exchange. The seawater must first go through three filtering and cleaning steps before being electrolyzed to produce sodium hypochlorite and remove bacteria and algae. The process due to cold drainage is only used for cooling, so there is no process pollution. CPC's green energy technology research institute has established a large-scale algae cultivation pilot plant next to the channel by using the cold seawater with pure water quality and relatively stable temperature to cultivate sea fungus, and has successfully developed related products and raw material applications. The cultivation technology has been patented both domestically and internationally, and CPC will continue to test the economic feasibility of sea fungus cultivation in order to become an important supply center for algae and marine functional materials in Taiwan in the future to create new business. CPC is also actively introducing cold water species cultivation technology and is cooperating with the Fisheries Agency's "Taiwan Coastal Blue Economic Development" technology project and Taiwan Ocean University, National Taiwan University, Kaohsiung University of Science and Technology, and Pingtung University of Science and Technology to form a research team. It is in the hope that through the collaboration of industry and academia, we can successfully develop technologies for the cultivation of high-economy species.

Since 2005, CPC has undertaken to provide "cold drainage" for reuse in neighboring fish farms at no cost. The Fisheries Agency provided the project budget for the expansion of underground water diversion box culverts as the main project under the name of "Continuous Common Water Supply Project for Yonghua and Xingang Aquaculture Fishery Production Areas". The culverts can reduce the escape of cold energy during the transportation and expand the common water supply area in Yonggan District, which is a model of circular economy with the cooperation of the industry (CPC), the government (Fisheries Agency) and the people (associations and fishermen). For example, the "Yongan Grouper Festival", which has been held for several years in the neighboring communities of Yonggan Plant, has become a famous and grand event in the local area.

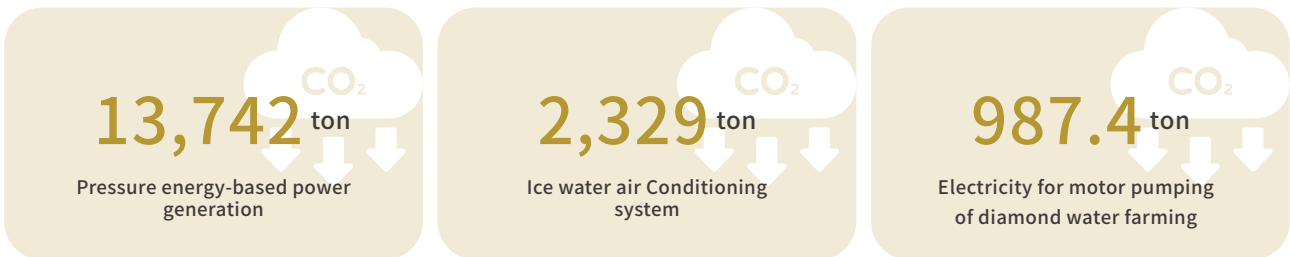


- ▲ The introduction of cold drainage from Yongan LNG Plant has become a unique source of water for aquaculture, creating the well-known Yongan Gentian grouper
- ◀ Prosperity around the community of Yongan Grouper

Economic benefits: cost savings or value creation



Environmental benefits: a reduction in CO₂ emissions



(Carbon reduction is the term used to describe how motor-pumped power reduces greenhouse gas emissions.)

Social benefits



Reduce the risk of ground subsidence by avoiding groundwater extraction by farmers



Development of a rural area with one characteristic, brighten up the town and rural areas



Assist in government and academic research promotion



Improve the chaotic scene of dense coastal pipelines, beautify the seascape and enhance the quality of tourism

Energy and Resource Integration

As the leader of Taiwan's petrochemical energy industries, CPC has also actively formed energy resource integration links with enterprises in industrial areas, so that raw materials, such as steam and hydrogen, can be obtained from other enterprises. CPC won't need to purchase or invest in energy resource production. Relatively, excess production, such as steam, can also be properly removed to meet the needs of other companies, rather than being discharged into the atmosphere as waste heat. In the fuel oil integration, the production of low-sulfur fuel oil can provide Taipower Company to reduce air pollution emissions from oil-fired boilers. At the same time, CPC also further improves and refines the efficiency of energy use in the manufacturing process. Overall, the cost and environmental burden of industrial areas can be reduced.



Highlight: Joint production alliance with China Steel Corporation to develop carbon reduction technology

CPC and China Steel Corporation jointly planned the steel and chemical co-production strategy. China Steel Corporation is one of the leading steel mills in Taiwan as well as the largest steel enterprise in Taiwan. In which, it uses a wide range of energy sources. CPC joined hands with China Steel Corporation to commence R&D on carbon reduction technology. A Memorandum of Understanding (MOU) was signed in 2021 between Shun-chin Lee, the Chairman of CPC, and Xi-qin Wang, the President of China Steel Corporation. Both parties cooperated to build a R&D platform in line with the national policy, including self-generated by-product energy, such as blast furnace gas, coke oven gas and converter gas, to maintain energy balance and achieve the most efficient use, while evaluating and implementing key low-carbon technologies. In the future, we hope to use CO₂ as a carbon source to produce green products, increase revenue and boost the economy. At the same time, we aimed to achieve the goal of net-zero carbon emissions, as a carbon-free and low-carbon energy provider.

3.2.2 Energy Use and Management

CPC consumes electricity, natural gas, steam, fuel gas, petroleum gas, and fuel oils. The total 2021 energy consumption was 108.1 million GJ, with the highest heating value from fuel gas. In addition, the 2021 renewal energy output of our PV systems totaled 10.849 million kWh and were sold to TPC. The 2021 output production was about 176.864 million kL, with energy intensity at 0.611 GJ/kL, about 0.97% lower than that of 2020 at 0.617 GJ/kL. According to data, after energy conservation and carbon reduction programs are implemented, the unit product energy consumption was stabilized.

In addition, in response to the international trend of low carbon transformation and in line with the government's declared goal of net-zero carbon emissions, CPC, as the largest oil and gas energy supplier in Taiwan, is actively implementing carbon reduction actions and has introduced carbon neutral LNG and other projects and measures to demonstrate CPC's efforts for environmental sustainability and sustainable corporate management.

Note: Energy intensity = total energy consumption / production of self-produced products

Use of energy source (heating value) by the three plants in 2019 ~ 2021

Unit: 10 million GJ
(GJ = 10⁹J)

Year		2019	2020	2021
Direct energy consumption	LNG	1.62	2.13	2.25
	Fuel gas	5.40	5.14	5.23
	Low BTU fuel gas	0.63	0.45	0.54
	LPG	0.15	0.03	0.0026
	Low sulfur fuel oil 0.5 %	0.62	0.55	0.63
	Carbon residue	1.69	1.23	1.48
	Total heating value	10.10	9.54	10.13
Indirect energy	Purchased Electricity	0.60	0.60	0.58
	Purchased steam	0.10	0.11	0.10
	Total heating value purchased	0.70	0.71	0.68
Total energy consumption		10.80	10.20	10.81

Note 1: Energy Consumption = Fuel Usage * Unit Heating Value.

Note 2: The unit heating value is: (1) natural gas of 8,900 Kkcal/KS, (2) fuel gas of 9,000 Kkcal/KS, (3) low BTU fuel gas of 6,000 Kkcal/KS, (4) LPG of 6,635 Kkcal/KL (5) NC bottom oil of 9,700 Kkcal/KL, (6) low sulfur fuel oil (0.5%) of 9,200 Kkcal/KL, (7) Carbon residue of 9,580 Kkcal/TON, (8) purchased electricity of 860 Kkcal/MWH and (9) purchased steam of 724Kkcal/TON.

In response to the Renewable Energy Development Act "Regulations for the Management of Setting up Renewable Energy Power Generation Equipment of Power Users Above a Certain Contract Capacity", there are a total of 6 business units to be regulated. The following table shows the obligation of setting up renewable energy power generation equipment in 2023 by each business unit. The total capacity of renewable energy should be installed by CPC is 19.56 MW. As of the end of 2021, 11.417 MW of rooftop solar power generation systems (excluding 709 kW for lease) had been installed; another 1.625 MW of energy storage systems had been installed or under planning.

The capacity of renewable energy equipment required to be set up at each business unit

Capacity Threshold	Business Unit	Electricity Users	Contracted Capacity (MW)	Equipment capacity required be set up in 2023 (8% of the contracted power capacity) (MW)
Above 5MW	Refining Business Division	Dalin Refinery	140	11.20
	Refining Business Division	Taoyuan Refinery	42	3.36
	Petrochemical Business Division	Linyuan Petrochemical Plant	20	1.60
	Natural Gas Business Division	Yongan LNG Plant	20	1.60
	Natural Gas Business Division	Taichung LNG Plant	14.50	1.16
	Refining Business Division	Kaohsiung Refinery	8	0.64
Total capacity should be set up				19.56

Note: With the purpose of "electricity users with a specified contractual capacity or above shall set up renewable energy power generation equipment management methods," CPC intends to demonstrate the capacity of the equipment by 2023. (20 % deduction).



Highlight: Solar Photovoltaic Power Technology Development

In 2021, CPC invested NT\$71,240,000 in R&D of solar power technology. CPC had more than 230 PV sites throughout Taiwan and the outlying islands. The installation includes gas station rooftops, oil supply centers, refinery and petrochemical plants, and office building rooftops. It is estimated that the installed capacity will reach 15.497 MW by the end of 2022. In addition, in order to comply with the "High Energy User Clause" of the Renewable Energy Development Act, CPC is actively evaluating potential sites for the installation of PV systems, with a total installed capacity of 19.56 MW by 2023. In 2021, CPC generated 10.849 million kWh of renewable energy from solar power stations, mainly for sale to TPC. CPC has obtained 19 renewable energy site certifications and 2,394 renewable energy certificates.

In order to unify the management of solar power generation, CPC has established a solar power maintenance center at the green energy technology research institute to develop its own operation management technology and assist CPC in building evaluation plans for solar power. CPC has built the "Cloud-based Solar Power Monitoring and Maintenance Management System" to monitor the power generation situation in real time, collect abnormal power generation events, improve the inspection and repair efficiency through the monitoring system, and establish a standard operation process for maintenance while training relevant maintenance personnel to reduce maintenance costs and maintain high power generation efficiency. CPC plans to establish maintenance bases in Northern, Central and Southern Taiwan, and train related maintenance personnel to reduce maintenance costs and ensure high power generation efficiency in the long run.



► 2021

- more than **230 PV sites**
- completed the installed capacity of **11.417 MW**

► 2022

- estimated the installed capacity will reach **15.497 MW**

► 2023

- estimated the installed capacity will reach **19.56 MW**



Highlight: Renewable energy development - geothermal power technology

In order to assist Taiwan in developing diversified renewable energy resources, CPC, as a member of the geothermal national team, signed a Letter of Intent with Taipower in March 2018 for "Jentse-Tuchang Geothermal Area Exploration and Power Generation Development and Operation in Yilan County" to commence a new era of geothermal energy exploration and power generation for CPC's renewable energy development and sustainable development.

In March 2021, CPC and the Industrial Technology Research Institute (ITRI) signed the "Letter of Intent for Cooperation on In-depth Technology and Information Exchange regarding Geothermal Exploration in Taiwan" to establish a channel for information exchange on geothermal-related technologies and promote the sharing of research information and results. In 2021, the exploration of geothermal resources began to show result. The results of the productivity test of geothermal wells No. 14 and No. 15 in Tuchang, Yilan County demonstrated 1.2MW of power generation potential. CPC plans to continue drilling geothermal wells No. 16, 17 and 18 in Tuchang in 2022 and use these five wells to build a 4MW geothermal power plant in 2023.

In the exploration and development of geothermal resources, CPC ensured great importance to the communication with stakeholders and strengthens the co-prosperity development of the community. In December 2021, CPC cooperated with the local township office to hold a tribal meeting of the Mao'an tribe "Yilan ground thermal power plant construction plan" before drilling the thermal well in Yilan. After consultation and coordination with local residents, the majority of the residents agreed with CPC for future development activities. Moreover, CPC also contributed to the employment of tribal residents and recruited 6 tribal residents to join the drilling team. In the future, the construction of geothermal power plants will combine the tribe's culture with the surrounding ecological landscape, increase job opportunities for local residents, activate local tourism, and inject living water into the local economy.



▲ Well No. 14 of CPC in Tuchang, Yilan County



▲ Signed "Letter of Intent for Cooperation on In-depth Technology and Information Exchange regarding Geothermal Exploration in Taiwan" with ITRI

3.2.3 Water Use and Management

In response to the impact on water resources due to climate change, CPC has established a comprehensive water resource management mechanism that focuses on both "water acquisition" and "wastewater recycling". Water use plans have been evaluated for water supply impacts, and the water withdrawals have not caused significant impacts on water sources.

In addition, in accordance with the requirements of the Environmental Protection Administration's Water Use Plan Audit Management Regulations, CPC plans and records the use of water resources, while the R&D team continues to invest in relevant research to optimize the recycling mechanism of process water with high-efficiency equipment. CPC will cooperate with the government's water reclamation plant strategy in the future to implement a diversified water utilization strategy and optimize water resource management, which the water obtained is fresh water from the Taiwan Water Corporation. In addition, according to the World Resources Institute (WRI) water stress zone index, CPC has zero water withdrawal from the water stress zone. Moreover, CPC has set up a wastewater treatment and recycling system and promoted the installation of rainwater recycling systems on the roofs of green buildings at gas stations.

There Were 2 violations of the Water Pollution Control Act in 2021, all of which were timely reviewed and corrected.

Violation unit	Reason for penalty	Fines and Penalties	Solution or Improvement
Marketing Business Division	Failure to report relevant information on schedule in accordance with the Regulations for the Installation of Facilities and Monitoring Equipment for the Prevention of Contamination of Groundwater by Storage Systems	NT\$6,000 and 1 hour of environmental training	<ol style="list-style-type: none"> 1. Strengthen the personnel's awareness of laws and regulations and horizontal communication ability. 2. Carry out improvement to avoid the recurrence of the same case.
Marketing Business Division	Effluent exceeding the legal standard	NT\$60,000 and 2 hours of environmental training	<ol style="list-style-type: none"> 1. Increase the frequency of equipment inspection, as well as conduct regular cleaning and maintenance. 2. Strengthen staff training to determine equipment abnormalities and report such incidents immediately.

Data on water acquisition and recycling in each plant area

Plant	Unit (m ³)		Year			
			2019 ¹	2020 ¹	2021	
Dalin Refinery	Total amount		606,192,511	643,525,355	613,410,723	
	Runoff (tap water, river water, Irrigation system water)	Water Withdrawal	8,973,939	8,861,979	8,098,122	
		Ratio	1.48%	1.38%	1.32%	
	Groundwater (well water)	Water Withdrawal	2,748,785	2,960,778	3,528,057	
		Ratio	0.45%	0.46%	0.58%	
	Reclaimed Water	Rain		35,501	116,974	51,181
		Process Wastewater (Reclaimed volume of effluent reclamation equipment)		1,182,166	796,130	1,248,322
		Others	Cooling water circulation	586,038,730	624,721,501	594,772,775
			Condensate reclamation	2,188,209	1,625,892	1,658,732
			Acidic water reclamation	466,010	269,512	327,153
			Other water reclamation	4,559,171	4,172,589	3,726,381
		Total water reclamation		594,469,787	631,702,598	601,784,544
Ratio		98.07%	98.16%	98.10%		

Plant	Unit (m ³)		Year			
			2019 ¹	2020 ¹	2021	
Taoyuan Refinery	Total amount		295,978,902	269,407,335	279,354,448	
	Runoff (tap water, river water, Irrigation system water)	Water Withdrawal	6,063,087	4,689,782	5,368,348	
		Ratio	2.05%	1.74%	1.92%	
	Groundwater (well water)	Water Withdrawal	734,240	896,867	1,323,272	
		Ratio	0.25%	0.33%	0.47%	
	Reclaimed Water	Rain		0	0	0
		Process Wastewater (Reclaimed volume of effluent reclamation equipment)		0	0	0
		Others	Cooling water circulation	285,495,700	261,675,800	269,291,160
			Condensate reclamation	2,663,220	1,852,678	2,281,628
			Acidic water reclamation	381,768	292,208	305,034
			Wastewater reuse volume	640,887	646,496	785,006
			Other water reclamation	0	0	0
Total water reclamation		289,181,575	263,820,686	272,662,828		
Ratio		97.70%	97.93%	97.60%		

Plant	Unit (m ³)	Year				
		2019 ¹	2020 ¹	2021		
Linyuan Petrochemical Plant	Total amount		786,437,992	768,909,894	805,122,260	
	Runoff (tap water, river water, Irrigation system water)	Water Withdrawal	14,282,045	13,332,655	14,565,702	
		Ratio	1.82%	1.73%	1.81%	
	Groundwater (well water)	Water Withdrawal	0	0	0	
		Ratio	0.00%	0.00%	0.00%	
	Reclaimed Water	Rain		0	0	0
		Process Wastewater (Reclaimed volume of effluent reclamation equipment)		738,517	668,030	646,518
		Others	Cooling water circulation	716,140,573	703,565,116	735,226,734
			Condensate reclamation	3,199,769	3,186,643	3,133,029
			Acidic water reclamation	0	0	0
			Other water reclamation	52,077,088	48,157,450	51,550,277
		Total water reclamation		772,155,947	755,577,239	790,556,558
		Ratio		98.18%	98.27%	98.19%

Note: In the 95-96 pages of the 2021 Sustainability Report, the data of 2019 and 2020 are corrected.

In response to the risk of water scarcity and water consumption charges, CPC strives to recycle and reuse the wastewater in its plants, increase the water recycling rate in its processes, and reduce the intensity of water dependence. Through the following measures, CPC achieved the goal of water conservation and maximized the benefits of water recycling. CPC reduced water consumption by 1.6% in 2021 compared to 2020 and meet a water recycling rate of 98% or higher in all three plants. CPC's water conservation practices include process water conservation, wastewater recycling, and subscription for reclaimed water:



Water saving measures for each plant of CPC

Reduce cooling water loss: Strengthen the renewal of water trays and honeycomb water deflectors at each plant to lower cooling water lost in evaporation from 0.1% to 0.003% to reduce cooling water refill.

Improve boiler water quality: Produce water with pure/ultrapure water equipment at each plant to increase water intake and reduce effluent in cycle. Treat raw water with electro dialysis reversal (EDR) equipment to reduce water conductivity and total hardness. As a result, it increases the water intake of ion-exchange resin and thereby reduce boiler water consumption by improving intake water quality.

Improve water for firefighting: Stagnant water for firefighting is prone to deteriorate. Flushing water surface with backwash water for firefighting to inhibit algae growth can maintain water quality for a longer time.

Save process water: Install condensate monitoring and diversion equipment to keep track on condensate quality at all times to prevent condensate from contamination and non-reusability; solenoid valves are used to recycle water and replenish water towers; desecrating tanks are used to recycle low-pressure steam, which enables recovery of heat and condensed water.

Reclaim and reuse effluents: Process wastewater after treatment is transported to the park wastewater treatment plant. Some effluents are reclaimed and reused in sludge dehydrators or incinerator wet scrubbers; after sedimentation and sediment removal, some effluents from sewage can be used in washing gutters and oil tanks.

Purchase of reclaimed water: Each plant actively cooperates with the government's plan to build reclaimed water plants to subscribe for reclaimed water: At present, the third refinery has achieved an average water recovery rate of 98%. In order to continue to optimize the water resource management mechanism, CPC continues to subscribe reclaimed water. The Linyuan Reclaimed Water Treatment Plant in Kaohsiung completed at the end of 2021 and the Dalin Refinery has purchased 10,000 tons of reclaimed water per day from the Kaohsiung City Linyuan Reclaimed Water Treatment Plant. In addition, the Taoyuan Refinery signed a contract with the Taoyuan City Government in October 2020 and after the reclaimed water treatment plant of Taoyuan City Government North District Water Recycling Center is completed, 3,500,000 metric tons of reclaimed water will be purchased annually for use. (Taoyuan North District Water Reclamation Center Reclaimed Water Treatment Plant is expected to start supplying water in 2024.)

Water conservation progress

Effectiveness of water recycling over the last three years at three plants

Year		Dalin Refinery	Taoyuan Refinery	Linyuan Petrochemical Plant
2019 ³	Raw Water Replenished (tons)	11,722,724	6,797,327	14,282,045
	Reclaimed Water Volume ¹ (tons)	594,469,787	289,181,575	772,155,947
	Water Reclamation Rate ² (%)	98.07%	97.70%	98.18%
2020 ³	Raw Water Replenished(tons)	11,822,757	5,586,649	13,332,655
	Reclaimed Water Volume ¹ (tons)	631,702,598	263,820,686	755,577,239
	Water Reclamation Rate ² (%)	98.16%	97.93%	98.27%
2021	Raw Water Replenished (tons)	11,626,179	6,691,620	14,565,702
	Reclaimed Water Volume ¹ (tons)	601,784,544	272,662,828	790,556,558
	Water Reclamation Rate ² (%)	98.10%	97.60%	98.19%

Note1: Reclaimed Water Volume: Harvested stormwater, reclaimed process wastewater, reclaimed cooling water, reclaimed condensate, reclaimed acidic water, and reclaimed backwash water.

Note2: Water Reclamation Rate(%): Reclamation Water Volume/(Raw Water Replenished + Reclaimed Water Volume)

Note3: P.97 in 2021 CPC Sustainability Report, 2019 and 2020 data revision.



CPC drilling engineering team as a national team for drought relief

In 2021, Taiwan faced its worst drought in the century. CPC undertook the drought relief mission and served as the national drought relief team by offering its unique expertise in petroleum exploration via sending an engineering team that had been drilling oil and gas wells in Taiwan and abroad for years. With professional drilling technology and equipment, and years of experience in drilling oil and gas wells in domestic and overseas mining areas, CPC was given the mission of drilling deep water sources.

The drilling process was all kinds of hardships and difficulties due to the factors such as the unusual size of the available mining sites and drilling geological conditions. However, in order to meet the expectations of the people, the deputy technical director was also on the site to direct the work, and constantly reviewed the technology and work schedule with the team leader, engineers, and foremen so as to continue to improve the methodology of well drilling. Thus, it significantly shortened the preparation and completion time. It took a total of 7 months to complete the drilling of 3 wells with a depth of 356 meters. CPC successfully completing the task of developing water source for emergency use.

The accomplishment of the national drought relief water well mission not only brought out the best of CPC's drilling expertise, but also fully demonstrated the determination of our staff to "achieve the mission despite the difficulties". The three deep water wells had been handed over to the Water Resources Agency, MOEA in late February 2022, with each well testing up to 5,000 tons of water supply per day. When integrated into the water supply system, it is expected that more than 60,000 people will be able to use the water.



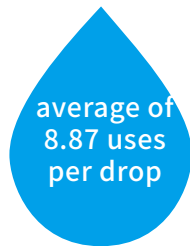


Highlight: Wastewater becomes the new water source, a solution to water shortage

Water conservation Begins with Daily Routine to support the use of process water with collective efforts

In response to the risk of water shortage due to climate change, CPC has not only implemented water conservation and recycling practices at all of its plants, but also made long-term efforts to improve the efficiency of wastewater treatment as well as actively promoted the recycling of wastewater resources, such as the efficient use of cooling water, boiler water, water for firefighting, and water for manufacturing as well as water reuse and recycling. The rainwater recycling systems for green buildings have also been built at gas stations. In particular, Linyuan Petrochemical Plant was awarded with the Outstanding Water-Saving Unit by the Water Resources Agency, Ministry of Economic Affairs for its ability to save approximately 1,771 metric tons of water per day through its wastewater recycling system. On the other hand, three of CPC's refinery plants have actively increased the recycled water ratio to fight against drought altogether. As of 2021, each drop of water has been used and reused for 8.87 times in average.

CPC Water Saving Performance Highlight



Reduce cooling water loss

- Lower cooling water lost in evaporation from 0.1% to 0.003% to reduce cooling water refill.

Reclaim and reuse effluents

- reduced water consumption by 1.6% in 2021 compared to 2020
- Recycling rate reached around 98% in all three plants.
- rainwater recycling system of Linyuan Petrochemical Plant saves 1,771 tons of water per day

Purchase of reclaimed Water

- The Dalin Refinery purchases 10,000 tons of reclaimed water per day from the Kaohsiung City Linhai Reclaimed Water Treatment Plant
- Taoyuan Refinery signed a contract with the Taoyuan City Government to purchase 10,000 tons of reclaimed water per day upon completion of the reclaimed water treatment.

To support Taiwan's corporations in fighting against the plight of water shortage in the century's drought in 2021, CPC Kaohsiung refinery activated the drought relief project at the beginning of February 2021. It is to support the industrial water of major technology plants, Starting from supporting ASE to collect 10,000 tons of water per day through a dedicated pipeline since February and providing water tanker trucks for manufacturers in Renda Industrial Park, Nanzih Export Processing Zone and Tainan Science Park. With the water restrictions become more severed, the number of water tanker truck continued to increase with more frequent trips. Among which, the Kaohsiung refinery also provided water supply services to TSMC. After water quality tests, CPC evaluated the schedule of tanker trucks and further optimized the number of intake ports and the number of leased tankers in order to optimize water supply efficiency. During the period from March and June, a total of 40 days of water supply service was provided to fight against drought, with an average of approximately 3,100 tons of water supplied per day.

In addition to the Kaohsiung plant, the Daliao water source station of the Refining Business Division of CPC played a key role in supporting drought relief due to its abundant underground water resources. In March 2021, with the consent of the Water Resources Agency, the Daliao water source station withdrew more than 60,000 tons of water per day. In addition to supplying 30,000 tons per day to the water company, CPC supplied more than 30,000 tons of water for its own use and for the use of manufacturers in the neighboring industrial areas. In which, CPC took care of both people's livelihood and industrial water needs. During the drought, CPC played the role in the relief of the drought by taking advantage of its water rights and sharing the water resources with major science park manufacturers to maintain the economic development of the southern region and establish a good relationship with enterprises and the government to solve the water shortage issue together.

Wastewater Recycling and Drought-Combating Measures for Car Wash in Gas Station

The car wash at CPC gas stations with a daily water consumption of more than 20 cubic meters are equipped with CPC self-developed wastewater recycling systems. The recycling process saved more than 50% of the water cost. During the domestic drought in 2021, CPC's gas stations have adjusted the car washing business in accordance with the Ministry of Economic Affairs' water signal and the water restriction measures of each county and city government. In addition, each gas station has taken the initiative to install water-saving devices at the faucets in public toilets and business rooms to adjust the amount of water discharged from the faucets. Moreover, Green plantings at gas stations are also watered with reclaimed water to conserve water usage.

3.3 Pollution Prevention

3.3.1 Environmental Laws and Regulations Compliance

To effectively comply with the requirements of environmental laws or regulations and to improve the regulation or control of environmental pollution, in addition to regularly track the latest content of various laws and regulations, each business unit of CPC adopts the best available control technology and establishes an independent inspection mechanism to quickly improve the problem. Moreover, CPC regularly invites experts to conduct environmental inspections, and establishes an environmental inspection team. The audit records are entered into the environmental protection audit system, which is tracked until the improvement is completed. By formulating the wastewater and waste management operation procedures, and regularly reviewing and updating, the practical work of each unit is compliant with the laws and regulations. The number of environmental fines issued by CPC in 2021 was the lowest in the past five years. CPC will continue to carry out a few pollution prevention and control efforts, and further develop measures to prevent and improve air pollutant emissions and adjust our response strategies in a timely manner to avoid similar violations.

CPC 2021 response and management practices

1. Regularly organize environmental protection conferences such as equipment components and volatile organic compound improvement research and business conferences, soil and groundwater pollution improvement conferences, and track the operation status and improvement progress of air, water, and environmental impact assessments in each unit.
2. Continuously improve the rate of autonomous inspection and repair of equipment components in each plant to reduce the leakage of VOCs.
3. Promote process safety management (PSM), strengthen operator familiarity and discipline management, and reduce problems caused by improper operation on site.
4. Carry out environmental protection inspections monthly to check the actual operation of each unit's process and track and improve the handling situation until the defect is amended.
5. Implement internal employee education and training on environmental regulations and provide credit courses for environmental safety and health certificates to strengthen the awareness of all employees to comply with regulations.
6. Organize professional training on environmental issues, covering topics such as air pollution, water pollution and toxic chemicals, to enhance professional knowledge. A total of 14 classes were held in 2021.

In 2021, CPC caused a total of 2 major fine incidents due to lack of operation, with a total fine of NT\$4.2 million, and corresponding hours of environmental education seminars. In addition, CPC immediately took countermeasures and corresponding improvements when the violation occurred.

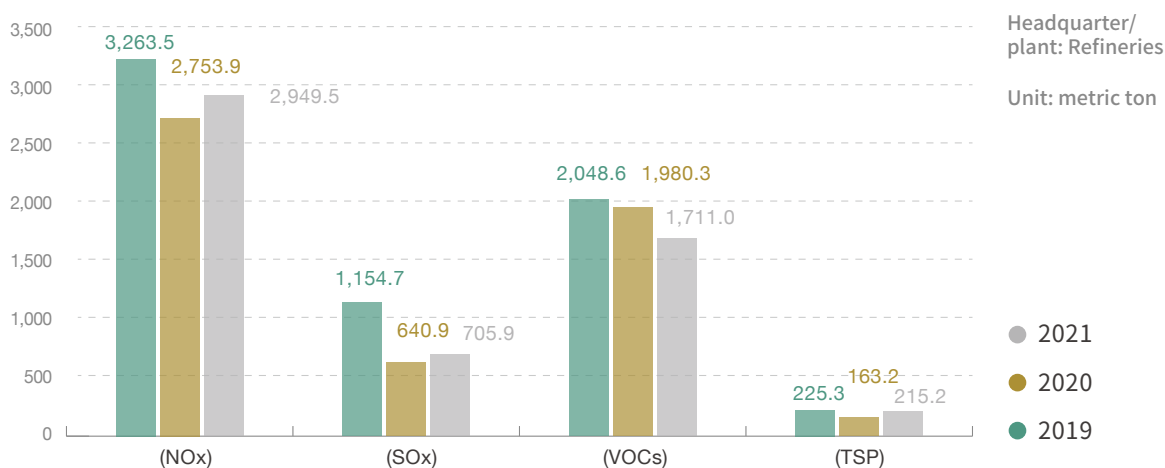
Violation unit	Reason for penalty	Fines and Penalties	Solution or Improvement
Linyuan Petrochemical Plant	The net test value of equipment components exceeded the statutory standard, in violation of Paragraph 1, Article 20 of the Air Pollution Control Act	NT\$450,000 and 2 hours of environmental training	<ul style="list-style-type: none"> Correct the design and lock the vent with a cap. Review similar designs in the plant and improve them to prevent further leaks.
Linyuan Petrochemical Plant	Emission of particulate pollutants (black smoke) from exhaust gas combustion towers, in violation of Subparagraph 1, Paragraph 1, Article 32 of the Air Pollution Control Act	NT\$3,750,000 and 8 hours of environmental training	<ul style="list-style-type: none"> Improve bearing lubrication mechanism, add vibration monitoring, seal tank level alarm and CCTV, etc. Re-implement the feed pump process hazard analysis and include it in the emergency response plan for rehearsal.

Note: Major fines are violations with fines greater than NT\$300,000

3.3.2 Air pollution emissions and management

In view of the increasing demand for air quality, CPC has demonstrated its determination to be environmentally friendly by actively promoting air pollution prevention and improvement, identifying its major air pollutants as nitrogen oxides (NOx), sulfur oxides (SOx), volatile organic compounds (VOCs) and particulate matter pollution (TSP). Emission sources include flue, exhaust gas combustion tower, storage tank, equipment components and loading operations, etc. Accordingly, CPC proposed various improvement plans. However, due to the impact of the COVID-19 pandemic in 2020, the production and operation of CPC were also affected with lower emission. Therefore, the emission data in 2021 was compared to 2019 instead. According to the statistics of CPC, NOx emissions in 2021 decreased by 9.6%, SOx emissions decreased by 38.9%, VOCs emissions decreased by 16.5%, and TSP emissions decreased by 4.5%, compared to 2019. The significant decrease in air pollutant emissions in 2021 compared to 2019 showed that the improvement measures implemented by CPC for air pollution prevention achieved significant results.

Emission volume in the past 3 years



Note 1: The information is the total annual emissions from the three petrochemical refineries of CPC (Taoyuan Refinery, Dalin Refinery and Linyuan Petrochemical Plant, unit: tons).

Note 2: There was no information regarding PM₁₀ and H₂S to be reported.

Note 3: CPC has a total of three refineries in densely populated areas (the township where the operating base is located has a population of more than 50,000): Taoyuan refinery is located in Guishan District, Taoyuan City, with nearby population of approximately 166,800 people; Dalin Refinery is located in Siaogang District, Kaohsiung City, with nearby population of approximately 156,000 people; Linyuan Petrochemical Plant is located in Linyuan District, Kaohsiung City, with nearby population of approximately 68,900.

Note 4: Due to the global impact of the COVID-19 pandemic in 2020, which led to a decline in market demand, CPC responded by reducing production capacity.

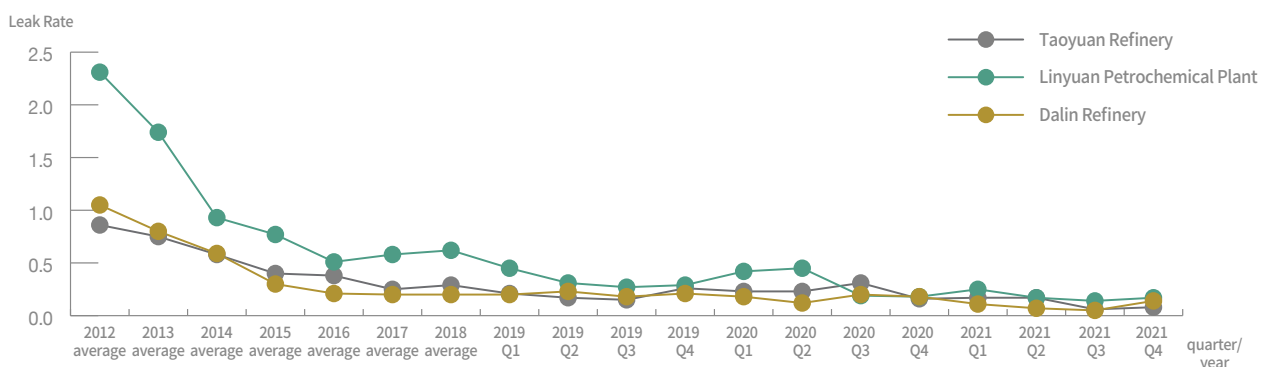
Note 5: The data for 2019 and 2020 is the verification amount; the data for 2021 is the declaration amount.

Among the sources of volatile organic compounds in the petrochemical industry, it is difficult to control equipment components escaping into the air. In the future, CPC will continue to strengthen the detection and maintenance of volatile organic compounds in equipment components. Each unit will hold monthly equipment component improvement project group meetings to regularly review on-site self-testing and maintenance. Improve the implementation situation, strengthen the horizontal communication between various departments, and implement the corresponding improvement measures, so as to effectively reduce the emission of air pollutants.

CPC has actively cooperated with government policies and planned air pollution improvement projects. Since 1989, CPC has invested more than NT\$50 billion in air pollution improvement projects and, in cooperation with the Environmental Protection Administration, has proposed the "Air Pollution Prevention Action Plan" to improve and control the emission of air pollutants. From 2017 to 2025, a budget of NT\$10.7 billion is planned to promote 32 air pollution improvement projects. A total of 21 projects have been completed as of the end of 2021, and 11 are still under implementation. Various air pollution improvement measures are as follows:

Improvement	Description
Refinery and Petrochemical Plant Air Pollution Improvement Program	The process adopts advanced technology and equipment (BACT) <ul style="list-style-type: none"> Introduce advanced process integration and control system to improve operational stability. Adopt best feasible control technology and low leakage equipment.
	Select clean fuel <ul style="list-style-type: none"> Existing and new boiler equipment has been changed to use gas fuel to greatly reduce pollution emissions and reduce environmental load.
	Process operation improvements <ul style="list-style-type: none"> Existing equipment can achieve optimal operation by adjusting the operating program. Improve combustion technology and increase equipment combustion efficiency.
	Install air pollution control equipment <ul style="list-style-type: none"> TSP: install electrostatic or bag-type dust collection equipment. SOx: Installation of flue gas desulfurization equipment (FGD) NOx: Using Selective Catalyst Reduction (SCR) or Low NOx Burner (LNB) VOCs: Gradually switch to low-leakage components and use vapor recovery equipment.
	Waste gas recycling and reuse <ul style="list-style-type: none"> Refineries and petrochemical plants are equipped with a Flare Gas Recovery System (FGRS) for waste gas combustion towers to recover the waste gas generated during normal operation of the plant to the process for reuse.
Diesel Vehicle Improvement Work Plan	Self-owned diesel car <ul style="list-style-type: none"> Diesel vehicles cooperated with the Executive Yuan's "Air Pollution Prevention Action Plan". From 2017 to 2019, all self-owned diesel vehicles below the third phase have been improved and complied with the fourth phase and above emission standards, a total of 330 vehicles have been improved.
	Contractor diesel vehicle <ul style="list-style-type: none"> Formulate contract performance regulations for contractors' diesel vehicles, requiring contractors to perform diesel vehicles to comply with air pollutant emission standards for mobile pollution sources.

Management and improvement of volatile organic compound emissions from equipment components



CPC's 3 plants have made remarkable progress through year-by-year efforts to control, and the leakage rate of volatile organic compounds in equipment components has dropped to below 0.3% (much higher than the 2% regulated standard). However, CPC still strives for perfection, with a target of 0.2% leak detection rate since 2021, and an internal control target of 0.2% for the quarter of 2022, aiming to improve the leakage of equipment components.

3.3.3 Wastewater and Waste Discharge and Management

Key measures for wastewater management of CPC

1



Implementation of water measures plan. Bypass and dilution must be approved by the Environmental Protection Bureau

2



In case of pollution of water bodies by omission, take emergency response measures to notify the competent authorities

3



Strengthen the source management of upstream plants to improve the quality of discharge water and wastewater recycling

4



Strengthen inspections, checks and emergency response drills for tanks and conveying equipment

5



Encourage employees to obtain certificates and participate in professional training

6



Promote wastewater treatment equipment upgrade and recycling

Wastewater Discharge and Management

CPC has wastewater treatment facilities or related units of wastewater treatment plants. In accordance with the "Key Points for Control of Wastewater Source Discharge Control in the Upstream of Wastewater Plants," CPC formulates regulations on the operation, maintenance and cleaning of oil-water separation tanks in each factory under its jurisdiction. The environmental protection departments of refining and petrochemical businesses formulate their discharge water quality standards and inspection requirements to facilitate the effective management of wastewater generated in the operation process.

CPC has established complete wastewater pollution prevention and control measures, including the process wastewater source discharge control measures, supplemented by high-efficiency equipment for wastewater recycling and treatment operations. The discharge water that has been recycled and treated follows environmental protection regulations and standards to reduce the impact of wastewater generated in the production process on the environment. The main pollutants in CPC's discharge water are organic components contained in petroleum. The continuous and regular monitoring of discharge water focuses on suspended solids (SS), chemical oxygen demand (COD), oils and phenol and other items. In 2021, the discharge water monitoring of each plant met the discharge water standards. In case of pipeline damage, CPC immediately removed the remaining oil in the damaged pipeline, the contaminated soil and negotiate with residents to stop using groundwater, and CPC will provide irrigation water instead, the drinking water will be subsidized by CPC to install tap water equipment and won't affect the daily water use of the public. In addition, a pressure monitoring system, inspection points, and anti-corrosion test points have been added, and pipeline replacement projects have been actively planned to prevent pipeline damage. Each plant area conducts statistics based on the average value of sampling and monitoring in the year. The description of wastewater pollution prevention and control is as follows:



Dalin
Refinery

Wastewater from Dalin Refinery (special wastewater, wastewater containing oil, mineral salts wastewater, and sewage) is transported to treatment at the secondary wastewater treatment site through the oil-water separator before being released through the ocean at the Kaohsiung Linhai Industrial Park.

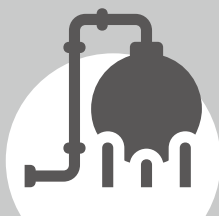
Testing Subjects	Effluent Standard (EPB) or Control Standard (Science Park)	2019	2020	2021
SS(mg/l)	100	4.3	8.95	6.13
COD(mg/l)	280	39.8	36.2	50.1
Oil(mg/l)	20	1.1	ND	<1.0
Phenol(mg/l)	1.0	0.0353	0.0227	0.0035
Discharge (ton)	-	2,064,735	2,128,142	2,199,567



Taoyuan
Refinery

Wastewater from Taoyuan Refinery (special wastewater, wastewater containing oil, mineral salts wastewater, and sewage) is transported to the wastewater treatment site before releasing to the Nankang River, provided that the volume must not exceed the river's assimilative capacity. In addition, as the quality of treated wastewater complies with the national effluent standards and is better than the quality of the river. There is only mild impact on the river.

Testing Subjects	Effluent Standard (EPB) or Control Standard (Science Park)	2019	2020	2021
SS(mg/l)	30	10.27	10.40	22.35
COD(mg/l)	100	21.40	29.20	52.575
Oil(mg/l)	10	4.37	0.70	4
Phenol(mg/l)	1.0	0.005	0.004	0.0069
Discharge (ton)	-	2,969,641	2,761,370	2,784,463



Linyuan
Petrochemical
Plant

After primary treatment, wastewater from Linyuan Petrochemical Plant (special wastewater, wastewater containing oil, mineral salts wastewater, and sewage) is transported to secondary biological treatment. After meeting the control standards, secondary treated wastewater will be released through the ocean from central wastewater treatment plant at the Kaohsiung Linhai Industrial Park. After primary treatment, some wastewater is transported to secondary treatment and tertiary treatment and sent back to the manufacture plant for reuse after it meets required standards.

Testing Subjects	Effluent Standard (EPB) or Control Standard (Science Park)	2019	2020	2021
SS(mg/l)	100	9.25	9.65	6.85
COD(mg/l)	280	38.5	61.85	74.7
Oil(mg/l)	20	<0.1	<1.0	2.8
Phenol(mg/l)	1.0	<0.01	<0.01	<0.01
Discharge (ton)	-	3,296,109	3,249,599	3,239,667



Mining formation with water production

Most domestic oil and gas mining are natural gas wells. When mining natural gas, condensate oil and formation water are also produced. After three phases (oil, water, and gas) of separation, the formation associated with water production will be affected by the difference in salt content (Cl⁻, about 3,800-11,000 ppm) in different mining areas. Although salt is not included in the effluent control standard, it may cause soil salinization. Therefore, there are two treatment methods for water production:

- After concentration, the associated water is used to restore the well and is re-injected into the oil and gas reservoir. This will help extract additional oil.
- After being treated by the wastewater treatment plant and discharged into the river after passing the quality inspection, the total output of stratum-associated water in 2021 was 22,945 kL.

Region	Tiezhanshan Mine, Jinshui Area, and Qingcaohu Area of Jinqing Mine	Chuhuangkeng Mine
Treatment	Re-injection into the ground formation through disposal wells	Discharge after wastewater treatment
Description	Before oil reinjection into the ground formation, the oil slick is recovered by oil-water separation then re-injection into the underground reservoir. The specifications of disposal wells mainly refer to the relevant regulations of the second class of injection wells of the United States federal regulations.	Oil is first separated and recovered by an oil-water separator (API) and discharged until it meets the release standard using an air pressurization floater and biological treatment system.
Volume treated in 2021 (%)	7,675 kL 33.4%	15,720 kL 66.6%

Waste discharge and management

To strengthen the management of waste reduction, reporting, storage, cleaning (removal, treatment, and reuse), CPC has established "Key Points of Business Waste Management" and "Principles of Business Waste Tracking" to enforce the tracking and management of waste cleaning. In accordance with laws and regulations and the current state of implementation, irregular meetings are held to conduct rolling reviews and revisions to implement waste management.

In addition to general domestic wastes, the industrial wastes produced by CPC are mainly waste catalysts, sludge, oil sludge, etc. General domestic wastes are entrusted to local cleaning teams and qualified removal agencies to be removed and transported to local incinerators for incineration treatment, scrap precious metal catalysts are treated by recovering precious metals, and sludge are treated by incinerators in the factory before final landfill treatment. Therefore, the overall current treatment methods for solid waste are recycling, solidification, burial, incineration, physicochemical treatment, heat treatment and stabilization according to the nature of the waste for proper disposal or treatment.

Since some business wastes still have green economic value and follow the list of wastes that should be reused as announced by the competent authorities, CPC is committed to promoting the recycling of business wastes. In 2021, the reused waste from refineries and petrochemical plants were mainly waste zeolite catalysts (mainly composed of aluminum trioxide (Al₂O₃) and silicon dioxide (SiO₂)), which were sent to reuse institutions in accordance with the reuse purposes stipulated in the regulations for the reuse of business wastes of the MOEA, with a reuse rate of 100%.

Waste volume and cleaning methods in 2021

Type	Method	Volume Disposed (tons)	Disposal Percentage (%)	Amount of Waste (tons)	Type Percentage (%)
Hazardous Waste	Chemical treatment	42,017.000	28.89	45,260.714	31.12
	Curing treatment	321.100	0.22		
	Physical treatment	124.760	0.09		
	Incineration	2,781.854	1.91		
	Stabilization treatment	16	0.01		
Non-Hazardous Waste	Chemical treatment	946.440	0.65	100,160.275	68.88
	Curing treatment	4,732.627	3.25		
	Physical treatment	5,628.554	3.87		
	Recycling	68,349.010	47.00		
	Landfill	4,609.380	3.17		
	Incineration	15,215.004	10.46		
	Heat Treatment (other than Incineration)	679.260	0.47		
Total		145,420.989	100	145,420.989	100

Note 1: The information is the total annual cleaning volume of the three plants of CPC (Taoyuan Refinery, Dalin Refinery and Linyuan Petrochemical Plant, unit: metric tons).

Note 2: As the hazardous waste generated by CPC is not included in the listed recyclable items in accordance with the Environmental Protection Administration's announcement "Items of Waste and Renewable Resources Required to be Recycled or Reused" and the Ministry of Economic Affairs' "Regulations for the Reuse of Business Waste", it cannot be treated by recycling and reuse. The percentage of hazardous waste recycling to total hazardous waste is 0%.

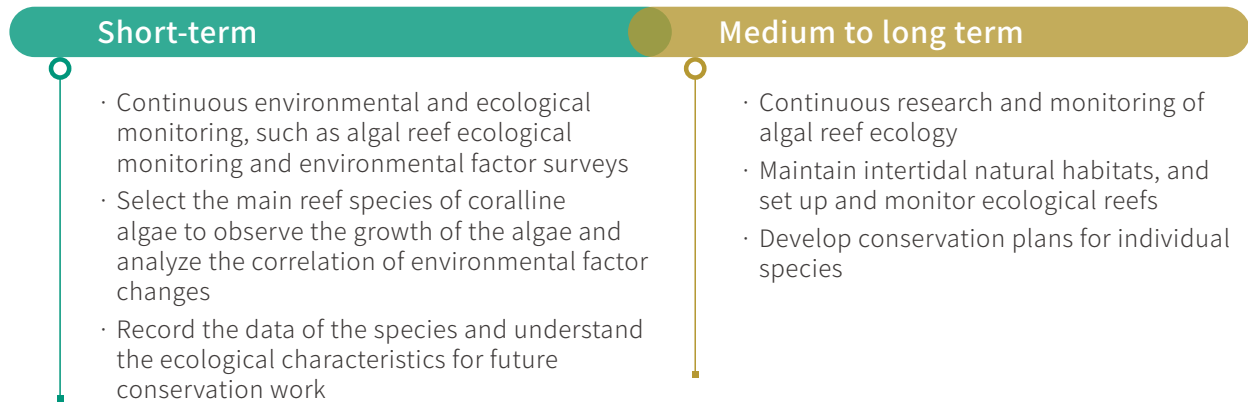
Toxicants Management

For the Class 1 to Class 3 toxic chemical substances and the hazardous chemicals of concern announced by the Environmental Protection Agency, which have reached large graded operation standard items, CPC submitted a contingency plan to the competent authority for review. The plan includes organize emergency response tasks, command system and notification mechanism, and prepare emergency response materials. Each contingency plan carries out 2 no-warning tests every year, the overall drill is conducted at least once a year, and the emergency response drill is carried out in cooperation with the local environmental protection unit, which is of substantial help in the prevention of poisonous disasters.

In addition, all relevant units of CPC have joined regional joint defense organizations in accordance with the provisions of Article 38, Paragraph 1 of the "Toxic and Chemical Substances Management Act" and handled existing chemical substances in accordance with the "Regulations on Registration of New Chemical Substances and Existing Chemical Substances". The first-stage registration of chemical substances has totaled 160 items so far. Moreover, in cooperation with the Environmental Protection Agency to implement the "Chemical Substance Registration and Import Management System", CPC proactively went to the pre-clearance declaration confirmation platform for goods to complete declaration confirmation and proceed in accordance with relevant regulations.

3.4 Ecological and Environmental Protection

3.4.1 Ecological Protection









Adhering to sustainable co-existence, CPC spares no effort to maintain and implement ecological conservation and environmental protection education. CPC hopes to maintain the sustainable development of society, nature, and business altogether. Regular meetings are held to review the results of the implementation and establish guidelines for ecological conservation. CPC conducts regular checks on ecological surveys, education and training, and ecological audits of public works for each unit. In 2021, a total of three units were inspected, including the LNG Project & Construction Division, the Yongan Plant, and the Kaohsiung Refinery of the Refining Business Division. In terms of handling ecological conservation-related complaints, a service hotline 1912 is available for the public and various authorities to contact, and the cases are referred to the relevant departments for handling.

In order to fulfill the commitment of the environmental assessment of Guantang Industrial Park (Port) development project, the "Guantang Industrial Park (Port) Ecological Conservation Committee" was established in 2018. The 17 committee members represent government agencies, experts, scholars, and civil society organizations. Their main tasks include deliberating and consulting on ecological conservation plans, implementation strategies, suggestions for improving abnormal conditions, and other issues related to ecological conservation and environmental monitoring, etc. An environmental performance evaluation mechanism is also in place to ecological review as one of the extra points in the environmental performance evaluation.

CPC is also committed to maintaining the cleanliness of the coast, regularly conducts coastal cleanup in the Datan area, and actively establishes partnerships with the community, experts, scholars, and government units through community participation to implement ecological and environmental conservation. At the same time, by educating the next generation, the concept of environment and ecological conservation is passed on. CPC Kaohsiung Refinery Environmental Education Park and Taiwan Oil Field Exhibition Hall Park provides CPC with learning channels for future generations.

In promoting education on the ecology and environment of algae reefs, we have combined with the local government and community to promote education on ecological conservation and established the Baiyu Coast Environmental Education Park, with the hope that counseling can be jointly operated by the community and local organizations to achieve a win-win situation for both conservation and economy. In 2021, CPC invested approximately NT\$33.5 million in the conservation of algal reef ecology in Taoyuan by conducting ecological surveys and monitoring of crustose coralline, research on the conservation of coral (*polycyathus chaishanensis*), conservation of little terns habitat, and monitoring of reeves's moray and scalloped hammerhead, and NT\$28 million in the study of drifting sand mechanism in the Guantang Industrial Area (Port) and environmental protection strategies in Guantang waters, totaling approximately NT\$ 61.5 million.

Target Groups and Relevant Objectives and Actions of Ecological Conservation

Target Groups	Short-term, Medium-term and Long-term goals	The impact of operations on biodiversity	Actions
 <p>Coral (<i>polycyathus chaishanensis</i>)</p>	<ul style="list-style-type: none"> Short-term: Distribution survey Medium-term: Artificial reproduction research Long-term: On-site and off-site rehabilitation and effectiveness evaluation 	<ul style="list-style-type: none"> Impact: Sea temperature and drifting sand affect the species Impact area: G1, G2 area of Datan Period of impact: Long 	<ul style="list-style-type: none"> Financial support : Invest in approximately NT\$5.5 million per year for ecological conservation work of polycyathus chaishanensis Manpower: Ecological survey by a professional team Technology: Under the guidance of experts and scholars, conduct research on the conservation of Chaishan polyporous corals, and investigate and monitor the site records of Chaishan polyporous corals Assessment mechanism: Quarterly survey of surviving strains of Coral (<i>polycyathus chaishanensis</i>) in Datan area. Operational model: Regularly report the monitoring results to the EPA Specific results: A total of 75 clusters surveyed in the 2018 environmental impact report and more than 100 clusters in 2021.
 <p>Whether the species is listed in the IUCN and national conservation lists</p>	Grade I of the Conservation Wildlife		
 <p>Little tern</p>	<ul style="list-style-type: none"> Short term: Habitat establishment Mid-term: Breeding observation Long-term: Habitat improvement is assessed by habitat and breeding conditions, making Taoyuan the best habitat for little terns in Taiwan 	<ul style="list-style-type: none"> Impact: Human, natural enemies (wild dogs, rats, etc.) Impact area: Various habitat of little terns in the Taoyuan. Period of impact: April to July every year 	<ul style="list-style-type: none"> Little terns are summer migratory birds that fly from Australia to Taiwan in April to July every year to roost and breed. Every year, CPC invites the Taoyuan City Wild Bird Association to assist in habitat planning and breeding monitoring. CPC reviews the effectiveness and improvement plan at the end of the year as the direction of improvement for the next year Specific results: Since 2019, CPC and the Taoyuan Wild Bird Society have been working on the habitat creation and breeding monitoring of little terns. In 2021, regarding the breeding monitoring of little terns along the Taoyuan coast, a total of 125 nests were found , with a breeding success rate of 72%. In the future, CPC will continue to promote ecology-related surveys and conservation measures.
 <p>Whether the species is listed in the IUCN and national conservation lists</p>	Grade II of the Conservation Wildlife		
 <p>Scalloped hammerhead</p> <p>Picture source: Fisheries Agency</p>	<ul style="list-style-type: none"> Short-term: Resource Survey Mid-term: Migratory route survey Long-term: Habitat conservation assessment 	<ul style="list-style-type: none"> Impact: Fishing Impact area: Taiwan's Water Region Period of impact: Spring and autumn. 	<ul style="list-style-type: none"> Scalloped hammerhead is migratory fish that appears in Taiwan waters in spring and autumn every year. It is one of the economic fish species in Taiwan and is also listed as an endangered species by the IUCN. CPC invites domestic shark experts and scholars to conduct a survey of the species' resources in Guantang and use satellite markers to understand the species' migratory route before assessing the necessity and feasibility of establishing a conservation area. Financial support: Invest in approximately NT\$3 millions per year for ecological conservation work of Scalloped hammerhead.
 <p>Whether the species is listed in the IUCN and national conservation lists</p>	IUCN endangered species		

Target Groups

Short-term,
Medium-term and
Long-term goalsThe impact of operations
on biodiversity

Actions

Crustose
Coralline algae

- Short-term: Annual survey of crustose algae coverage, species and environmental factor monitoring of algae reefs
 - Mid-term: Analysis of the occurrence of crustose algae species according to the characteristics of each reef area, and analysis of their cultivation environmental factors
 - Long-term: Artificial breeding to be carried out according to the environmental factor conditions obtained from the survey. In the future, in situ or ex situ rehabilitation will be possible
- The construction of industrial area and port may affect the direction and speed of the tide and waves, causing changes in the characteristics of coastal drifting sand and affecting the place where crustose algae are attached to grow
 - The open design between the industrial port and the area maintains the flow of seawater and does not affect the exchange of nutrient salts in the intertidal zone of the algae reef
- The results of the species diversity survey of macroalgae (including crustose coralline algae) showed that there were 35 species of algae in 2019, 14 of which were macroalgae and 21 of which were crustose coralline algae. There were a total of 40 species of algae in 2020, 15 of which were macroalgae and 25 of which were crustose coralline algae. There were a total of 42 species of algae in 2021, 20 of which were macroalgae and 22 of which were crustose coralline algae.
 - Specific results: Only a single-digit species were surveyed in the 2018 environmental impact report, and more than 20 species in 2021.
 - Financial support: Invest in approximately NT\$ 24 millions per year for ecological conservation work of crustose coralline algae.



Whether the species is listed in the IUCN and national conservation lists

None



Collaboration with various parties to build and operate the Algae Reef and Marine Ecology Museum

The Taoyuan City Government cooperated with CPC, Taipower and National Taiwan Ocean University, planned to build the Algae Reef and Marine Ecology Museum, and signed the "Letter of Intent for the Construction and Operation of the Algae Reef and Marine Ecology Museum" in September 2021 at the Hsingkuang Paolei in Taoyuan. It is expected to jointly promote the ecological conservation and restoration of algal reefs and the implementation of environmental education, creating a win-win-win situation between industry, government and academia.

Result

- ♥ The "Algae Reef and Marine Ecology Museum" is planned by the Taoyuan City Government and is expected to be built at the National Taiwan Ocean University's Taoyuan Guanyin Campus and the Marine Innovation and Development Base. The project was jointly signed by industry, government and academia to create a win-win-win situation.
- ♥ Taoyuan coast has the largest and most complete algal reef terrain in the country. The "Algae Reef and Marine Ecology Museum" will be opened in 2023 at the earliest. Upon completion of construction, it is expected that families and school groups will be able to visit the museum, allowing the public to get closer to and understand the marine ecology, enhancing public awareness and concern for the algae reef and marine ecology, and implementing environmental protection and ecological conservation.
- ♥ In line with the government's energy transformation policy, CPC built the third LNG receiving terminal. In the future, CPC will continue to take practical actions to protect the ecological environment of the algae reefs by adhering to our commitment to the environment and environmental assessment.



▲ Photo source: Taoyuan City Government

The signing ceremony of the "Letter of Intent for the Construction and Operation of the Algae Reef and Marine Ecology Museum"

3.4.2 Environmental Protection

CPC surveys soil and groundwater pollution and makes improvements according to the law. A total of 3 sites were deregulated in 2021. By the end of 2021, CPC had 43 sites deregulated while 38 sites were still under regulation.



Response measures for the contaminated sites

List and regulated	Not yet list nor regulated
<p>Relevant units are required to propose contingency, control and remediation plans within the prescribed time limit. Moreover, the units are to follow the pollution improvement plans reviewed and approved by environmental protection authorities, scholars, and experts to carry out subsequent soil, groundwater, and pollution improvement work.</p>	<ul style="list-style-type: none"> Strengthen the inspection and monitoring of oil depots, gas station leak detection pipe, and groundwater wells. The subordinate units are required to implement the “Reference Code for the Prevention and Improvement of Soil and Groundwater Pollution” by CPC. When abnormal soil and groundwater pollution monitoring data are found in the jurisdiction, they should formulate pollution improvement measures and actively carry out pollution improvement work.

In June 2021, a floating oil pipe rupture occurred at the Dalin Plant of CPC Refining Business Division during the off-shore floating oil discharge. Please refer to section [1.3.2 Response to Incident](#) for more details on the impact and subsequent contingency enhancement measures.

Countermeasures to Address the Difficulties Countered in the Soil Remediation Process

Technology: As it is not easy to determine the contamination area of the site, a pilot test is conducted at the early stage of remediation. According to the site characteristics, CPC constructed the detailed design of the subsequent remediation method in consider the impact radius of soil steam extraction method, the number of wells and horsepower evaluation, groundwater level, oil level, and longitudinal depth. Scope of planning, location and area of screening, etc. are continuously adjusted according to the change of site conditions.

Laws and regulations: If the site number of the preservation site is not verified by the Environmental Protection Bureau (i.e., the site number is not deregulated), it will be subject to the Soil and Groundwater Pollution Remediation Act:

- >> Article 17 of the Soil and Groundwater Pollution Remediation Act - Any subsequent construction, expansion, modification, repair or demolition of building will have to be approved by Environmental Protection Administration before proceeding.
- >> Article 19 of the Soil and Groundwater Pollution Remediation Act - Any work that involves removal, back-fill, temporary storage or transportation of soil or groundwater extraction will have to be approved by Environmental Protection Administration before proceeding.

Budget and duration: Due to the high degree of uncertainty, the estimation of remediation project cost and progress are complicated. It is necessary to reserve time for various administrative operations. It is difficult to execute with a single applicable standard. Vendors often raise the budget on safety factor to avoid performance disputes, resulting in higher project costs.

Policies: As CPC is faced with many policy issues, such as document preservation of Kaohsiung Refinery, bidding of the 5th naphtha cracking plant assets, brownfield development, green power promotion, etc., the duration of pollution remediation cannot be decided unilaterally, resulting in a high degree of uncertainty in the implementation direction. Pollution improvement operations need to be evaluated and revised as it goes, which takes more time for deliberation. It not only delayed the remediation time, but also made the competent authorities quite critical and required more time for communication.

Description of remediation method

 <p>Washing</p>	<p>Include two procedures: hydraulic sorting and wastewater treatment. In hydraulic sorting, soil bump breaking, sedimentation, up flow sorting, and hydro-cyclone procedures are implemented to facilitate particulate separation. It has higher processing capacity and better processing results.</p>	
 <p>Bioremediation</p>	<p>In order to speed up the revitalization of the Kaohsiung plant, CPC has commissioned the Kaohsiung City Government with an administrative contract to carry out the Kaohsiung refinery's entire plant area renovation and complete the unlisting, advancing the original approved total schedule of 17 years to complete the renovation by the end of 2023. In order to transfer the land to the Kaohsiung City Government as soon as possible, we started to remove the fescue planted on the original site of the Six Steam Plant on September 2, 2021, so that the original site of the Sixth Steam Plant can be restored to a vacant land and handed over to the Kaohsiung City Government for the underground pollution remediation work planning.</p>	 
 <p>In-situ chemical oxidation</p>	<p>Chemical oxidation can be achieved either in situ or ex situ. Given the rapid chemical reaction, in-situ chemical oxidation is more efficient and more competitive in processing time. In chemical oxidation, oxidants are added to damage pollutants or convert them into non-toxic or lowly toxic substances by means of oxidation reduction.</p>	
 <p>Ex-situ processing</p>	<p>When other methods are ineffective to treat highly contaminated soil or highly concentrated contaminated soil (sludge), CPC outsources treatment to qualified contractors.</p>	



04

Benevolent CPC · Caring Engagement

Chapter summary

Excellent human resources are valuable assets of CPC and the cornerstone of the company towards sustainability. CPC protects the rights and interests of all employees and continues to refine its talent selection, training, employment and retention system, optimizing the working environment and conditions of employees, and striving to create a competitive workplace environment while allowing employees to develop a sustainable career. CPC is also committed to giving back to the society. From green public welfare, care for the disadvantaged, environmental education, preservation of cultural resources, support for sports development to reading education, CPC's public welfare performance is all over Taiwan as its footprint of gas stations, illuminating every corner of the society.



Corresponding SDGs



Recommended audiences

1 Community	3 Business Partners	5 NPOs/NGOs
2 Employees	4 Public Representatives	

Chapter Highlights



Percentage of female
senior executives
23.32%



Percentage of male
employees on
extended parental
leave 34%



Reinstatement rates
for male and female
employees 100%



Average years of
service before
retirement
40.60 year



Health promotion
events and seminars 180
sessions



CPC's frequency-severity
indicator has been lower
than the industry standard
for 25 consecutive years



Donated NT\$ 464 million
to local charities



Total blood donations for
charity reached a high
record to 6.5653
million c.c.



Sponsorship to sports
talents 17 individuals
11 teams



Recruited and trained
559 slow-flying
angels at gas stations
and the proportion
reached 39.81%



Percentage coverage
of collective
bargaining reached
99.95% of employees

Award Highlights in 2021

Obtained various domestic authoritative awards, Demonstrated CPC's soft skills

Every year, CPC strives for innovation and self-improvement, not only in its own business, but also in contributing to the society and giving back to its employees. In 2021, CPC once again achieved remarkable results. In the highly competitive corporate awards, CPC participated in the 2021 TCSA Taiwan Sustainability Awards, winning the Social Inclusion Award, the People Development Award, and the Gender Equality Award in the "Sustainability Performance Award". CPC participated in the 2021 TSAA Taiwan Sustainability Awards and won the "Gold" award for the Slow-Flying Angels case. CPC also participated in the 2021 Asia Responsible Enterprise Awards (AREA) and won the "Social Empowerment Award". In addition to winning international awards, CPC, as a state-owned enterprise, was awarded the "Gender Equality Award" for its participation in the 2021 Gender Equality Business Counseling Assessment and Award Program promoted by the authorities under the Executive Yuan.

4.1 Workplace Safety

Short term

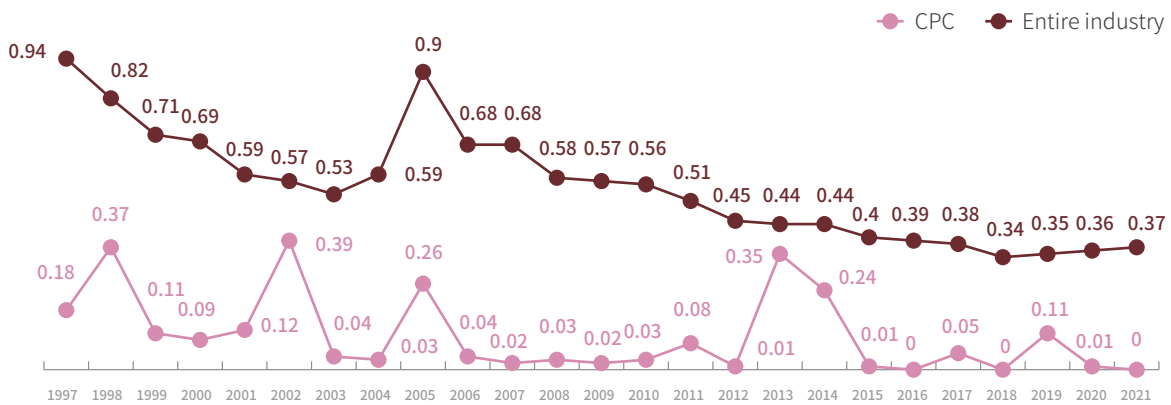
- Continue the enforcement of systematic management practices on contractor safety and health performance assessment, and enhance professional skill training for contractors
- Enforce work safety and health training and continue implementation of safety and health certification, credit and on-job training system
- Continue the execution of work safety protections and emergency response drill

Medium to long term

- Sustain the pursuit of 100% safety and zero accident
- Implement the process safety management system (PSM) and continuously optimize the 15 basic structures of the system to make it more perfect
- Leverage artificial intelligence (AI) technology tools to enhance the efficiency of industrial safety management and reduce the probability of accidents

CPC places industrial safety as priority. To achieve “100% industrial safety and zero accident” through employees’ and contractors’ safety, risk management, and health care, CPC is constantly committed to creating a safe, healthy, and comfortable work environment for employees. In addition, CPC is also dedicated to reducing occupational accident rates as its frequency-severity indicator has been lower than that of the industry for over 25 consecutive years.

Comparison of the total injury index between CPC and industry



4.1.1 Workplace Safety Management

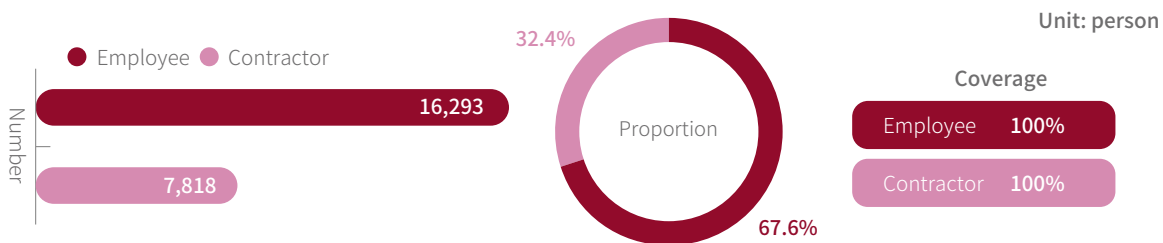
CPC has established the “Occupational Health and Safety Committee” to implement work safety, accident prevention, workplace improvement, and employee health maintenance. The committee has 26 seats, including the president as the committee chair and 25 representatives from different units as members. 9 seats (35%) are allocated to workers' representatives, which is more favorable than that required by the law. The Occupational Health and Safety Committee convenes 4 meetings each year. In 2021, worker representatives raised 11 proposals, constituting 85% of all discussions. All issues discussed were highly relevant to the workplace and employees' interest. From COVID-19 pandemic prevention measures, employee training, workplace facility safety, workplace safety performance evaluation, emergency response regulations, and even contractor management and auditing, all requests were taken seriously by committee members, and relevant departments were assigned to address the issues raised.

In order to establish a high-quality safety culture, CPC adopted the Taiwan Occupational Safety and Health Management System (TOSHMS) in 2008 to capture the hazard factors in various jobs through systematic management. To ensure risk assessment consists across all units, CPC has established the “Hazard Identification and Risk Assessment SOP” to identify risks in each type of business. “Duty and Job Inventory” has also been established for further risk identification based on the inventory results to complete the “Hazard Identification and Risk Assessment Sheet.” For high-risk jobs, CPC immediately reviews the integrity of existing protective measures and makes improvements as soon as possible in terms of system, equipment, and implementation to reduce risk in the work environment.

To systematize and internationalize the occupational safety and health management system, all units of CPC have passed the ISO 45001 conversion and certification to promote and continuously improve the occupational safety and health management system and management performance. It is to fully utilize the function of independent management of safety and health, to effectively control the risk of occupational hazards, and to achieve the protection of labor safety and health.

According to the identified risks, CPC formulates relevant countermeasures, formulates various emergency response drill plans, and regularly organizes emergency simulation drills to strengthen emergency response and disaster prevention capabilities. In 2021, a total of 344 disaster prevention and rescue drills were carried out, including 4 expanded emergency response drills, and a total of 5 emergency response drills without early warning was implemented in each unit. At the same time, in order to strengthen the management of contractors, CPC promoted a tripartite meeting and investigation mechanism. Before the construction of high-risk operations, the supervision and construction department, the regional department and the contractor must jointly visit the site for a meeting and investigation to draw up safe working methods before the construction can be carried out. Moreover, strengthening the management of supervisors, CCTV was set up at the site for remote monitoring and supervision to urge the workers to implement the safety regulations.

2021 Employee and Contractors



Occupational Safety and Risk Identification

CPC acknowledges the hazards involved in certain work activities such as oil tank cleaning and oil exploration, etc. For this reason, CPC complies strictly with the Occupational Safety and Health Act and related laws and has assembled separate audit teams for refinery, oil exploration, marketing, and construction activities, whose responsibilities are to perform safety and health audits on-site monthly. Each unit is also responsible for performing daily inspections and enforcing risk-based audits within their work sites. In 2021, CPC conducted 43 routine and non-routine industrial safety inspections as well as 12 construction inspections. However, CPC was handed 8 occupational safety fine totaling NT\$810,000 by the competent authorities for violations such as failing to implement contractor management and failing to improve on-site safety facilities in 2020. The main punishments include not having appropriate protective equipment in a harmful working environment, failing to take work contact and on-site inspections for contracted operations, etc. The violations are continuously tracked until they are completely improved. CPC continues to promote various improvement plans and promote the implementation of various units in terms of system, equipment and implementation aspects such as operating environment safety, contractor management and labor safety protection.

4.1.2 Workplace Safety and Protection

Occupational injuries

In order to protect the safety of employees, CPC follows the Occupational Safety and Health Act, which allows employees to exercise the right of withdrawal if they are in immediate danger of performing their duties. CPC has also set up an Accident Case Study Working Team to gather information on all industrial safety accidents of the company at home and abroad to find out their causes. The team has also published the Industrial Safety Case Studies as training resources to uplift the professional experience and accident analysis capabilities of employees, and thus enhance overall industrial safety performance. At the same time, in order to provide a healthy and comfortable working environment and to prevent workers from being exposed to various hazards due to occupational factors that may cause health hazards, CPC regularly implements work environment monitoring, employee health checks and implements graded management based on the health check results, and takes hazard control and related management measures for the fourth level of managers to reduce the risk of worker exposure.

Key points and procedural guidelines for safety protection of CPC employees

Occupational safety and health consultation and communication procedures	In order to establish a standard communication channel between internal departments, and to receive and respond to the messages from external stakeholders, CPC have established a standardized communication channel so that our employees and the external sectors can fully understand the sincerity of CPC to continuously improve safety and health, and to achieve the purpose of community harmony.
Prevention and handling of unlawful acts against the execution of duties	When employees are intimidated, threatened or attacked in the performance of their duties, the complaint and notification channels and follow-up mechanisms are clearly defined to protect the physical and mental safety and health of employees.
Regulations of employees occupational disease	The regulations are set up for the purpose of strengthening the management and prevention of occupational diseases and to ensure the health of employees. If an employee has a suspected case of occupational disease, an investigation team will be activated immediately to conduct an investigation, and appropriate work would be arranged for the employee's health condition. The necessary auxiliary facilities would be provided for the employee to engage in the work.
Workplace safety accident investigation and management guidelines	The guidelines establish the notification process, investigation, report writing, statistics and tracking when an incident occurs, and establish an online "Disaster and Emergency Report" on the company's internal network to capture the actual status of the disaster at each unit in the first place.

In order to understand the general situation and causes of occupational hazards among employees, CPC regularly conducts surveys and statistics on all employees and contractors (non-employees). The types of occupational disasters in 2021 are high and low temperature injury, object impact, objects falling, slip. CPC reports the number of occupational disasters for disability and injury every month. According to statistics, in 2021, there was 0 deaths of all employees due to work, and 0 deaths of non-employees under the control of the organization; a total of 3 employees and 2 non-employees were seriously injured; a total of 215 false alarm accidents in 2021, of which 86 were related to chemical spills. The number of deaths and injuries caused by occupational diseases in 2021 is 0. For more contractor management policies and performance, please refer to [chapter 2.1.2 Supply Chain Collaboration](#).

2021 Occupational Injury Survey

Worker category	Occupational injury		Absence rate (A.R.)			Disabling injury frequency rate (F.R.)			Disabling injury severity rate (S.R.)		
	Injury count	Death count	Total absence days	Total working days	Absence rate (A.R.)	Total disabling injuries	Total working hours	Disabling injury frequency rate (F.R.)	Total days lost to injury	Total working hours	Disabling injury severity rate (S.R.)
Employee	3	0	39,283.81	4,040,664	0.97%	3	34,567,871	0.08	16	34,567,871	0
Non-employee	2	0	No relevant statistics			2	1,632,2666	0.12	18	1,6322,666	1
Description of work injury	high and low temperature injury, object impact, objects falling, slip										
Fatality	None										

Description

- The calculation formula is as follows, which must include formal and informal employees.
 - Absence rate (A.R.) = (Total absence days (including personal leave, sick leave, public injury leave))/(Total working days total working days × number of people in the company)
 - Frequency of Disabling Injuries (F.R.) = (Number of Disabling Injuries × 106)/Total Working Hours [Take two places after the decimal point, discard after the third place]
 - Severity rate of disability injury (S.R.) = (Total number of days lost due to injury × 106)/Total working hours [rounded to the nearest whole number and discarded after the decimal point]
 - Average Lost Days (ADCDI) = (Severity Rate of Disabling Injury (S.R.))/(Frequency of Disabling Injury (F.R.))
 - The absence rate is calculated based on the employee's absence from work due to incapacity, not limited to work injury or illness.
- Excludes approved leave such as holidays, training, maternity/paternity leave and bereavement leave. Days of absence include personal leave, sick leave and public injury leave
- The number of "days" "lost" during which the worker cannot perform daily work due to occupational accidents or occupational diseases.
- The identification method of employees' occupational diseases must be diagnosed by professional doctors of the hospital's occupational medicine department.
- Disabling injuries do not include minor injuries, that is, those who recover from the injury on the same day and can resume work the next day are not included in the calculation.
- The total number of days lost includes the total number of days lost to four types of disability including death, permanent total disability, permanent partial disability and temporary total disability.
- Both death and permanent disability are calculated as 6,000 lost days.

Preventive measures

To prevent occupational disasters, CPC continues to improve various industrial safety management measures, such as developing an electronic system for automatic inspection of industrial safety, introducing AI technology to identify contractors' violations, and setting up contractors' face comparison and license plate recognition systems to strengthen access control, etc. In 2021, the total expenditure of CPC occupational safety and health is NT\$ 2.389 billion.

01

Work Safety Week

The theme of CPC's 2021 Work Safety Week is "Process Optimization, Contractor Implementation, and Safe Transportation". Each unit has arranged various courses and activities according to the nature of its business, such as: lectures on occupational safety and health, seminars for contractors, lectures on chemical management, traffic safety promotion, health promotion lectures, process safety lectures, pandemic prevention and health lectures, fire-fighting training, work safety knowledge examinations, protective gear wearing contests, 5S contests, and workplace safety and health awards, etc. It is to enhance the ability of employees in safety and health knowledge and techniques and strengthen workplace safety and health.

02

Contractor access control and mobile permit system

To strengthen the management of contractors, the access control management system of refining and petrochemical plants has been integrated with the function of palm or face recognition to confirm the eligibility of contractors to enter the plants and to tighten the access control. In addition, the Dalin plant has fully implemented the contractor access control and mobile permit system to combine the electronic work permit with the access control to achieve a greater integrated management effect. In the future, CPC will continue to promote such mechanism to all plants.



03

Safety auto-inspection on equipment integrated system

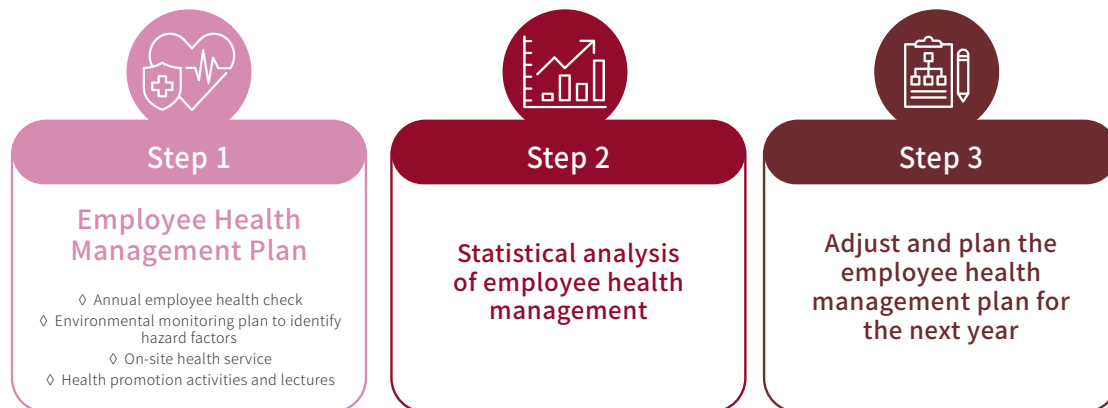
CPC has developed its very own safety auto-inspection on equipment integrated system of industrial safety. It adopts handheld devices and uses QR Code scanning, online form filling and photographing records to conduct equipment inspections to improve the convenience and implementation of inspections. At present, each unit is in the trial implementation and continuously reviews and revises the system program to meet the needs of the site.



4.2 Friendly Workplace

CPC abides by international labor conventions and Taiwan's Trade Union Act to ensure the freedom of association and participation in trade unions of employees. Employees are also entitled to collective bargaining according to the related laws and regulations. Mechanisms for communicating with the labor union include board participation of labor directors, the periodic Labor-management meetings held by each business unit, irregular collective bargaining meetings, and business expansion meetings with the Trade union chairperson as a guest. In addition, CPC organizes labor relations seminars every year to promote labor relations communication. Through official and unofficial activities with a host, the vice president and union representatives can communicate and exchange opinions. In addition, the company representatives often visit the Trade union to learn about union members' opinions. CPC also invites trade union representatives to participate in industrial safety and health, appeals, reward and punishment committees, engineering bid review meetings, and purchase review meetings. Both parties also form the "Employee Welfare Committee" and the "Labor Pension Review Supervisory Committee."

4.2.1 Employee Care



In order to provide a safe and healthy working environment for workers, CPC arranges employees to conduct annual health checks. In 2021, the whole company participated in 12,988 general health checks and 2,095 special health checks. The special health check targets include noise, dust, organic solvents, etc., specific chemical substances, ionizing radiation, abnormal air pressure and other operators. In addition, contractors are also required to comply with occupational safety and health regulations and to conduct regular health checks on their employees.

In order to prevent workers from being exposed to various hazard factors due to occupational factors, CPC has formulated a work environment monitoring plan and regularly implements environmental monitoring to achieve the purpose of preventing hazards. In 2021, there are 32 chemical hazard factors, such as organic solvents, specific chemical substances, dust and carbon dioxide, etc. and two physical hazard factors (labor noise exposure and comprehensive temperature and heat index) were monitored for operating environment, and the monitoring results were all within the allowable exposure standard range. At the same time, CPC also implemented physical and mental health protection measures such as occupational disease prevention, hierarchical management of health inspections, and work configuration, and employs or specially appointed physicians to provide on-site health services. In 2021, a total of 860 on-site health services was provided.

In order to further strengthen the statistical analysis ability of health management, CPC analyzes the results of employee health examination every year, and lists the top six abnormal items. In 2021, it was weight, chest X-ray, total cholesterol, low density cholesterol, waist circumference and triglyceride, and plan accordingly. CPC organizes relevant health lectures and promotion activities, and effectively use it as the basis for employee health management.



Employee occupational safety and health training

In order to enhance the safety and health functions of staff and effectively exert the training effect, CPC has established the "Staff Safety, Health and Environmental Protection Education and Training Guidelines", which regulates the occupational safety and health certificates, credit training and on-the-job education training that each position should have. A training survey is conducted at the end of each year. In 2021, a total of 175 sessions of industrial safety and health training (including license classes, credit classes and on-the-job education training, etc.) was conducted.



Health lectures and promotional activities

In order to improve workplace health protection and promote independent health management, CPC plans various themed lectures to provide colleagues with correct health knowledge, and organizes smoking cessation classes, weight loss classes, physical fitness, aerobics, hiking and other activities to encourage colleagues to cultivate the habit of exercise and fitness. In 2021, a total of 180 health promotion activities and lectures was held.



On-site health consultation services

CPC regularly invites professional occupational disease specialists to visit the company for monthly one-to-one on-site health consultation services. The contents of the consultation can be related to general diseases, abnormal work load, occupational diseases, office ergonomics, maternal health protection for female workers (female employees during pregnancy or less than one year after delivery), consultation of health examination report results, health promotion, etc. The contents and process of the consultation are kept confidential.



▲ Working environment monitoring



▲ Fire fighting activities



▲ Health promotion activities

Gender Equality



Although CPC is a traditional petrochemical manufacturing and service industry from exploration, oil refining, petrochemical and solvent production to gas station services, it exudes a technology-based masculinity, and the proportion of female employees is low, but it has never discriminated by gender and offer opportunities for employment, promotion and learning.

Creating Female Employment

In terms of the promotion and implementation of gender equality, in 1973, CPC took the lead in using the first batch of female fuel workers, leading the government's gender equality policy. In addition to improving customer satisfaction and oil volume at gas stations, it also blew the trend of female employment into all walks of life. In various industries, the demonstration effect has been raised, and the employment of women has been greatly improved.

Although the masculine CPC is still dominated by male employees, the number and proportion of female employees has increased in recent years, and the proportion of female engineers employed in the refining and chemical production business has been growing year after year.

The percentage of female engineers in the refining department of CPC in Taiwan in the last decade

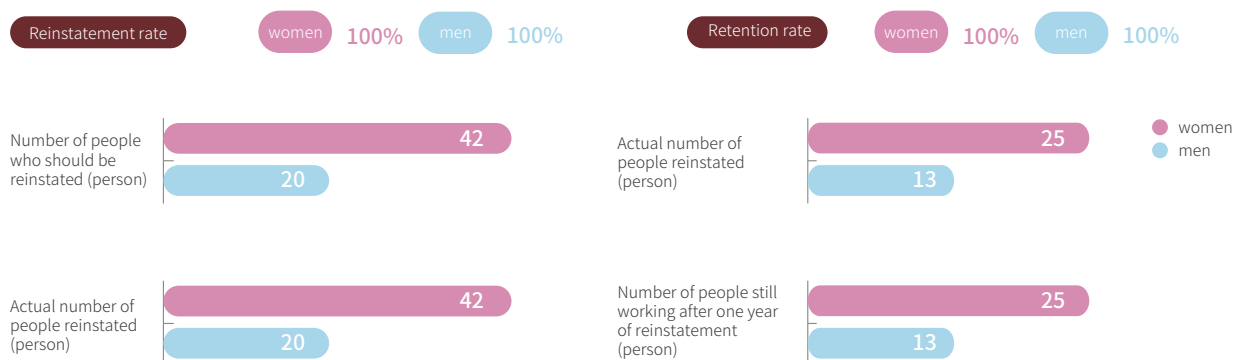
Year		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Female		48	54	57	50	57	56	68	78	93	105
Male		1,684	1,684	1,721	1,533	1,494	1,504	1,643	1,647	1,663	1,661
Percentage		2.85%	3.21%	3.31%	3.26%	3.82%	3.72%	4.14%	4.74%	5.59%	6.32%

In addition, CPC has spared no effort in giving back to the community. In these times of economic downturn and soaring prices, many single mothers or second-time employed women have difficulty finding jobs, which in turn affects the livelihood of their families. In order to fully utilize the advantages of the car wash sites and to help the economically disadvantaged groups, CPC also hired second-time employed women to provide car wash services at the gas stations.

Creating a gender-friendly workplace

CPC is committed to providing a friendly working environment for female employees, setting up high-quality certified breastfeeding (collection) rooms, supporting employees to apply for childcare leave, and complying with relevant regulations such as the Gender Work Equality Act. In 2021, a total of 112 people with childcare leave, including 39 males and 73 females, 34% males and 66% females. The reinstatement rate of childcare leave is 100% for both males and females. In addition, the retention rate of parental leave for the year is 100% for both males and females.

Statistics on the number of people who have been left in 2021



In addition to setting up breastfeeding room, to strengthen employees' awareness of gender equality and human rights, CPC also conducts gender mainstreaming education and training. The course broadcasts promotional videos such as workplace anti-discrimination and the Convention on the Elimination of Discrimination against Women (CEDAW) to let colleagues understand common discrimination in the workplace. In accordance with the "Act of Gender Equality in Employment", "Sexual Harassment Prevention Act", "Regulations for Establishing

Measures of Prevention, Correction, Complaint and Punishment of Sexual Harassment at Workplace", and the "Guidelines for Investigating and Disciplinary Actions of Sexual Harassment Complaints from the Ministry of Economic Affairs", the CPC's Guidelines for Complaint and Disciplinary Actions of Sexual Harassment Complaints has been established. A Sexual Harassment Complaint Review Committee has been established to handle sexual harassment complaints. In addition, a dedicated sexual harassment prevention website and a sexual harassment complaint hotline (02) 8725-8422 are available to handle complaints. New recruits will be guided to understand the working environment and receive courses on sexual harassment prevention and grievance mechanism when they report to the company. Every year, supervisors and employees at all levels are arranged to carry out sexual harassment prevention and gender equality education and training. In 2021, 10 complaints of sexual harassment were accepted, all of which have been reviewed, and the parties continued to be tracked and cared for. There was no discrimination in 2021. In addition, in order to cooperate with the national policy of encouraging childbirth and the implementation of a friendly workplace environment, CPC will implement a plan to reduce working hours by 1 hour every working day for colleagues who are raising children under the age of 3 from March 2022, so as to facilitate colleagues to balance work and family. As of July 1, 2022, CPC had a total of 1,017 colleagues with children under the age of 3, of which 772 people applied for the above-mentioned scheme. The number of applicants accounted for about 72% of the number of colleagues with children under the age of 3, and the application approval rate was 100%.

Human rights education and training hours for employees and number of trainees in recent years

Categories	2019			2020			2021		
	Male (persons)	Female (persons)	Overall average training hours(hours)	Male (persons)	Female (persons)	Overall average training hours(hours)	Male (persons)	Female (persons)	Overall average training hours(hours)
Human rights training hours (focusing on policies and procedures related to human rights issues, sexual harassment prevention, gender equality, and human rights convention)	3,407	1,048		4,146	2,059		2,738	882	
Total number of employees undergoing human rights training	683	180	5.16	1,039	342	4.49	910	265	3.08
Total number of employee	13,645	2,263		13,712	2,411		13,798	2,495	
Percentage of employees undergoing human rights training	5%	8%		8%	14%		7%	11%	

Note1: In 2021, due to the impact of the COVID-19 pandemic, some courses were suspended.

Note2: Overall average class hours = total training hours / total students

Fully practice women's empowerment

In terms of women's empowerment, the proportion of senior female executives in CPC 2021 was 23.32%, much higher than the proportion of female employees at 15.31%. Among the members of the board of directors are two female directors and one female supervisor, accounting for 20%. In 2016, the CPC of the petrochemical heavy industry set a precedent, the first female vice presidents in the history of state-owned enterprises, and the second female was appointed in 2018. The third female vice president was appointed in 2020. As of 2021, there was still one female vice president among the five vice presidents, leading the state-owned enterprises. In addition, in order to cultivate senior executives, CPC has been organizing an annual overseas training program for senior executives to attend overseas business management courses since 2009. The selection of senior executives to study at the top 50 schools in the world for MBA programs as rated by Financial Times, of which about 33% are female executives, higher than the percentage of female employees and female executives in the whole company, shows that CPC has spared no effort in promoting women.



Highlight: Taiwan's CPC Women Oilers Expand Sustainable Services Abroad

CPC not only has a strong presence in Taiwan, but also has many overseas locations around the world, and relies heavily on its overseas staff to travel around to open up more communication opportunities. Through various kinds of diversified communication, CPC expands the company's visibility and possible cooperation opportunities; and report the latest market information, regulations and policies, technology development and the current status and trend of existing investment projects to all relevant business units of the company immediately. Through the internal and external cooperation operation mode, it helps the company to accurately grasp the market trend, so as to expand the oil and gas business, obtain favorable new oil and gas mining areas, and ensure the sustainable growth of the company.

The joys and sorrows of the three CPC female oil people stationed abroad:

Yueh-Ping Ku: As the manager of the exploration and mining business of OPIC Australia, she braved the ravages of the COVID-19 epidemic to report the local epidemic situation and the corresponding epidemic prevention measures taken by the office, so that the company can truly understand the local situation and the latest information.

Ya-Lin Chen: Development Engineer at OPIC Niger, participated and supervised the production management of the local mine. During her tenure, she was affected by the COVID-19 pandemic, malaria, typhoid and cholera, as well as public security issues, which demonstrated the hardships of being the communication bridge as an expatriate.

Hong-Jun Fang: Working as a development and production engineer in OPIC Africa (Chad), and as a mother, it is not easy for her to step out of her comfort zone and leave her family to work abroad. It was during the time of the COVID-19 pandemic and other unacceptable conditions, where she had to face a lot of hardships. Due to the lack of manpower stationed abroad, she began to work with oilfield management and took the opportunity to learn many new things, which is also an unexpected gain for her.

The process of being stationed abroad is not always glamorous, but the women of CPC are bravely pursuing their dreams, challenging many impossibilities, and offering their abilities to shine brightest in the historical moment when CPC is creating new history in Taiwan.



▲ Participated in the West African Petroleum and Mining Exhibition



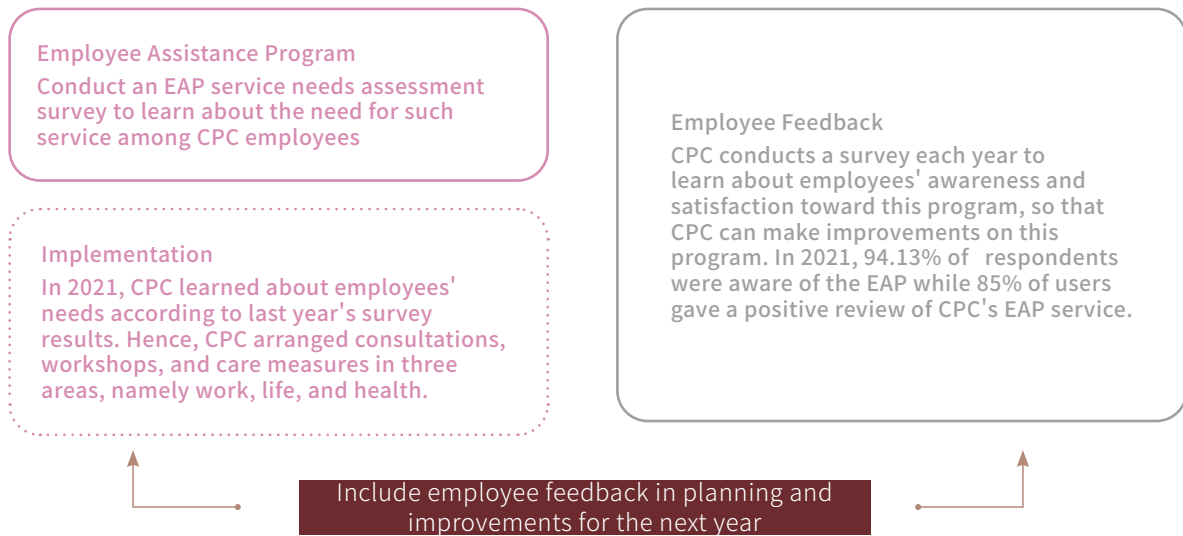
▲ Development and production engineer

4.2.2 Benefits and Welfare

Employee Welfare Policy

CPC creates a friendly workplace environment, and pays various bonuses based on the overall performance of each business unit, individual contribution and performance of employees, and allocates benefits in accordance with the "Employee Benefits Regulations". CPC sets up an employee welfare committee with the Taiwan Petroleum Trade Union to handle various welfare services and recreational activities. In order to promote the employee welfare business, various regional welfare branches were established under the committee. In addition to participating in national health insurance, public insurance, and labor insurance, all employees are provided with additional group insurance and overseas travel safety insurance for business trips, injury insurance, and work-related injury, disability, and death allowances to protect employees' work and life safety.

Employee Assistance Program



To create a harmonious and healthy work environment as well as improve employees' job satisfaction and quality of life, CPC continues to plan and improve the EAP. Areas involved in the implementation in 2021 are listed as follows:

- ➔ **Work:** In 2021, 46 sessions were held and 2,796 people participated in new recruits' job adaptation, work career development, retirement care planning, flexible working hours adjustment, sexual harassment complaints, employee complaints, workplace bullying prevention and management, etc.
- ➔ **Life:** In 2021, 36 sessions were held and 6,634 people participated in legal consultation, holding reeducation through labor activities, club activities, competitions, setting up breastfeeding rooms, providing nursery services, parenting education, life management, etc.
- ➔ **Health:** In 2021, 118 sessions were held and 6,186 people participated in psychological consultation, maternal protection health consultation, health medical consultation, clinic (on-site) medical service, stress adjustment, emotional management, health examination, diet and nutrition, quitting smoking and drinking, weight loss classes and physical fitness training.

Perfect and diverse welfare mechanisms and facilities

CPC provides complete welfare measures such as education scholarships and grants for employees' children, employee marriage, funeral, retirement allowances, and interest-free loans for emergencies. In order to take care of the newly recruited young colleagues, implement gender equality in work and encourage childbirth, the regulations on employee borrowing and expenses have been revised, and measures for marriage and childbirth borrowing and expenses have been added. For the part of retirement pensions, CPC is in accordance with the "Retirement pensions and severance measures for business personnel affiliated to the Ministry of Economic Affairs" and the Civil Servant Act, and established the "Employees (dispatched, employed) Pension Fund Management Committee" and "Labor Retirement Reserve Supervision Committee" "Handle the planning and payment of retirement funds, and co-organize the Association of Petroleum Industry Retirees of the Republic of China to care for retirees.

Each business unit has set up various welfare facilities, such as clinics, canteens, libraries or commissaries, as well as sports facilities, such as various kinds of ball courts and gymnasiums. Moreover, CPC assists in organizing club activities, such as ballgames, chess, mountaineering, swimming, calligraphy or movie appreciation, with a view to rejuvenating employees' body and mind and boosting their morale.

CPC Childcare Facilities and Measures



- ① Production units: The childcare facilities currently set up are the Kaohsiung Private Oil Refinery Kindergarten attached to the CPC Employee Welfare Committee (General Assembly) and the Miaoli County Private CPC Kindergarten attached to the CPC Miaoli District Welfare Branch, both of which are planned to be transformed into non-profit kindergartens in August 2022. The rest of the units contact the local branches of the Employee Welfare Committee to consult nearby childcare institutions with outstanding performance, and provide staff childcare services by contracting discounts. By the end of 2021, the total number of children
- ② Headquarter: Since 2009, CPC has signed a contract with the Taipei Child Welfare Center, a professional high-performance childcare institution, to provide childcare services for colleagues.
- ③ Future Plans:
 - Headquarters: In line with the government's promotion of public childcare, we plan to set up a daycare center of the CPC building on the 3rd floor, with an estimated capacity of 42 children in 3 classes (0~12 months, 13~24 months and 25~36 months).
 - Refining Research Institute: The Chiayi Refinery Research Institute plans to set up a non-profit kindergarten with 106 students in 4 classes.

CPC Clinic



In order to take care of the health of colleagues and provide colleagues around the world with safe and convenient medical services, CPC has set up family medical clinics in Taipei CPC Building, Miaoli Exploration and Mining Business Division and Refining Business Division, providing general adult and child health care, medical services, and some providing health check-ups or vaccination services, which is the greatest support for employees' physical and mental health. Clinics around the country not only serve CPC employees, but also serve all workers in the office and the factory area. They also open the public to register for consultation. High-quality services and open and transparent prices have a good reputation among the neighbors, and jointly maintain the health of the community.

Labor-management communication and group consultation

Labor-management meeting

CPC attaches great importance to harmonious labor-management relations, and the records of the labor-management meetings held in 2021 are all disclosed on the internal website. The main categories of the discussion content of the 2021 labor conference proposal are as follows:



Coordinate labor relations and promote labor cooperation

- A total of 20 labor-management meetings of the whole company and the head office were held, and a total of 1 business symposium between the president and the Taiwan Petroleum Trade Union.
- In order to create a more favorable communication environment and bridge, a total of 1 business seminar on labor-management meeting regulations and rules of procedure was held to promote labor-management harmony.



Labor conditions

- In response to the COVID-19 outbreak, we implemented work-from-home and worked in batches during the Level 3 alert to reduce the risk of infection during commute.
- In order to take care of the health of employees, they can apply for vaccination leave.



Working Environment

- In order to improve the cleanliness and hygiene of the working environment, an automatic license plate recognition system is established in the parking lot, and the cushion rubber deceleration pad at the entrance of the parking lot is changed to improve the entry and exit routes for employees who commute to work by motorcycles.
- In order to make employees feel at ease in the workplace and take into account the needs of work and child care, CPC plans to set up childcare facilities or appropriate childcare measures to create a friendly workplace parenting environment.
- In order to optimize the air quality of office premises, we have built a testing system and purchased related equipment to make improvements and continue to monitor the health of our employees.



Other Discussion Items

- Re-examine CPC's workplace bullying prevention mechanism.
- Establish a consultation window on the rights and interests of retired employees.
- Set up a body fat monitor in the office to promote employees' physical and mental health.
- In response to the COVID-19 outbreak, the agreement agreed to extend the expiration date of the Type 2 compensatory leave for one year for those hours produced in 2020 and expiring in 2021.

Labor disputes

CPC complies with labor laws and regulations. However, all state-owned enterprises under the Ministry of Economic Affairs implement a single salary system. Therefore, the night shift fee is not included in the calculation of pension wages. As a result, it has been repeatedly punished by the labor inspection agencies of various counties and cities. It is a legal act of the Labor Standards Act and the State-owned Enterprise Management Act, which is not a CPC violation. Except for disputes over the inclusion of nighttime pay and overtime pay, CPC has no other major labor disputes and no incidents related to forced or compulsory labor. In order to effectively resolve the dispute over whether the night shift fee is included in the calculation of wages for shift workers, the Ministry of Economic Affairs continues to ask the Executive Yuan to include the night shift fee in the calculation of wages. At this stage, the principle of case handling is still maintained.

Collective Bargaining Agreements

In compliance with International Labor Conventions and the domestic Trade Union Act, employees are free to organize and participate in unions and to conduct collective bargaining in accordance with relevant laws and regulations. Mechanisms for communicating with the Trade union includes: setting up 3 labor directors (accounting for 20%) on the Board of Directors, periodic labor-management meetings held by each business unit, irregular collective bargaining meetings, and business expansion meetings with the Trade union chairperson as a guest, etc., allowing the employees to fully express their voices and opinions. In addition, CPC organizes labor relations seminars every year to promote labor relations communication. Through official and unofficial activities with a host, the vice president and union representatives can communicate and exchange opinions. In addition, the company representatives often visit the Trade union to learn about union members' opinions. CPC also invited representatives of Trade unions to participate in occupational safety and health, grievance, reward and punishment committees, as well as tender evaluation review and purchase review meetings. Both parties also form the "Employee Welfare Committee" and the "Labor Pension Review Supervisory Committee."



Highlight: Signing Ceremony of the Collective Bargaining Agreements

CPC is currently negotiating with Taiwan Petroleum Trade' Union for the establishment of the collective bargaining agreement. The employer and employees have been engaging with each other to draft a collective bargaining agreement since 2019 and have convened 12 negotiation meetings to date. The signing of the collective bargaining agreement between CPC and the Taiwan Petroleum Trade Union on December 3, 2021 was witnessed by the Minister of Labor, the Director Secretary of the Ministry of Economic Affairs, and several associations. It was signed again after a lapse of 41 years, which also coincides with the 75th anniversary of the establishment of CPC, and it presents a special significance. By 2021, 99.95% of employees were covered by the collective bargaining agreements.



Employee communication and grievance channel

CPC upholds integrity, openness, immediate and positive response, and takes safeguarding the legitimate rights and interests of employees as the first priority. It has set up a staff complaint method. If there is any objection to the decision of reward and punishment, or due to improper company rules or administrative measures, or the colleagues whose rights and interests have been infringed by other employees' misconduct can all seek relief according to the method of appeal. In 2021, a staff complaint handling committee was held to review a case, which has been properly handled.

Highlights: CPC's Just Transformation, Inclusion of Sustainable Management Ideas

Just Transition to Net Zero

In the process of moving toward net zero transformation, CPC continues to incorporate the ideas of various stakeholders through the process of communication and dialogue, with the hope that fairness and justice can be met and that a people-oriented and just energy transformation can be achieved.

CPC invited representatives from the Taiwan Petroleum Workers' Trade and its branches, first-level supervisors and next-generation employees from all units (divisions) to hold the "CPC Transformation Seminar" from November 1 to November 2, 2021. The ideas of employees from different generations and positions on the future operation and development of the company is widely accepted. We invited the Vice Minister of the Ministry of Economic Affairs, Mr. Wen-sheng, Tseng to give guidance to us in order to build consensus on the transformation and to convey the threats and new opportunities of the future business environment, so that more generations of CPC staffs can clearly understand the direction and necessity of the company's transformation. Oil is the blood of industry and the CPC staffs. CPC staffs have been cheering for Taiwan in their posts for more than 75 years, and are proud of our oil products. In response to climate change and global warming, it is necessary to gradually back up and consider how to mitigate the impact of the transformation on employees' career, as well as take into account the emotions and impact on the corporate culture, which are issues that all CPC employees must face. In addition to strengthening communication with labor unions and employees to reach a consensus on future transformation, the employees' second expertise are cultivated, while all employees of CPC will carry out the mission of refueling Taiwan, continue to play the role of the foundation of all industries, and move towards the transformation of better oil, carbon reduction, and clean energy to inject zero-carbon sustainable energy into Taiwan!



▲ Above, Maoan Tribe's "Yilan-Tuchang Geothermal Power Plant Construction Operation" meeting

Promote the strategy of net zero transformation and commit to using local tribal residents

Before the drilling of geothermal wells No. 16, 17, and 18 in the Yilan Tuchang in December 2021, CPC with the assistance of the local government, organized a tribal meeting for the "Yilan-Tuchang geothermal power plant construction operation" for the Maoan tribe, and received the support of most of the tribe's residents for the future drilling activities after consultation. In addition, CPC has also made a contribution to the employment development of tribal residents. Before the upcoming drilling operation of the Tuchang No. 16 geothermal well, 6 tribal residents have been recruited to join the CPC drilling team. It is expected that after the successful construction of the future geothermal power plant, the combination of the tribe's story, culture, and surrounding ecological landscape will help to enhance the job opportunities of local residents and revitalize the local tourism and local economy. While actively investing in geothermal development to increase the proportion of renewable energy in the country, CPC has not forgotten to care about the remote tribes, and understands that since it's taken from the tribes, it needs to be given back to the tribes.

4.3 Talent recruitment and cultivation

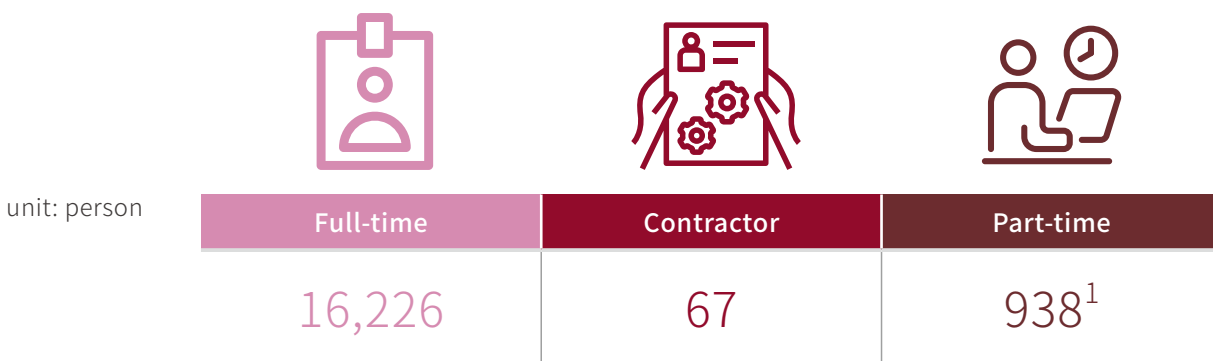
CPC has clear employment policies and has never employed child labor. At the same time, to provide more employment opportunities for disadvantaged groups, special preferential points are given to persons with disabilities and those with aboriginal status during recruitment. After employment, the salary is based on the principle of equal pay for equal work, and has never been considered differently based on race, ideology, religion, party affiliation, place of origin, place of birth, gender, sexual orientation, marriage, appearance, physical or mental disability or previous union membership. At the same time, CPC only cooperates with manufacturers that follow the aforementioned principles, so CPC has never had any complaints of gender or racial discrimination over the years. When hiring employees in 2021, there has been no incident of human rights violations or discrimination, and no activities that affect the company's operations due to human rights.

CPC has adopted the Kindness Gas Stations since 2001 for those with disabilities. CPC continues to guide and train persons with disabilities to serve at the gas stations, to provide them job opportunities and assist them in developing professional skills, thereby protecting the labor human rights for persons with disabilities.

4.3.1 Human resource management

In 2021, CPC had a total of 16,293 employees (including direct operators, researchers, support personnel, management personnel and contract employees), a total of 17,231 people, including part-time worker¹. CPC belongs to the petrochemical industry. Most of the professionals recruited are mainly graduates from the science and engineering departments of colleges and universities, and most of them are on-site units. Therefore, generally speaking, the proportion of males is relatively high, with a total of 84.69% and 15.31% of females. However, there is no discrimination or discrimination based on gender at workplace. In 2021, the proportion of senior female supervisors will reach 23.32%. The distribution of educational backgrounds is dominated by high schools and colleges and universities, accounting for 78.21% of the number of employees, followed by master's degrees, accounting for 19.94%. According to various voluntary agencies, CPC should employ a total of 512 persons with disabilities (including part-time workers), yet in fact 811 have been employed, with an excess of 299. In addition, the Hualien Oil Supply Service Center of the East District Business Office of the Marketing Business Division has over-employed aborigines, which is higher than the number of people that should be employed under the "Indigenous People's Right to Work Protection Act." In addition, the number of part-time employees was 1,299, or 938 full-time equivalent employees. The employment of persons with disabilities is as follows: CPC employed 811 persons with disabilities in 2021, accounting for 4.71% of all employees (including part-time employees). The employment of indigenous people is as follows: CPC employed 71 indigenous people in 2021, accounting for 0.41% of all employees (including part-time employees).

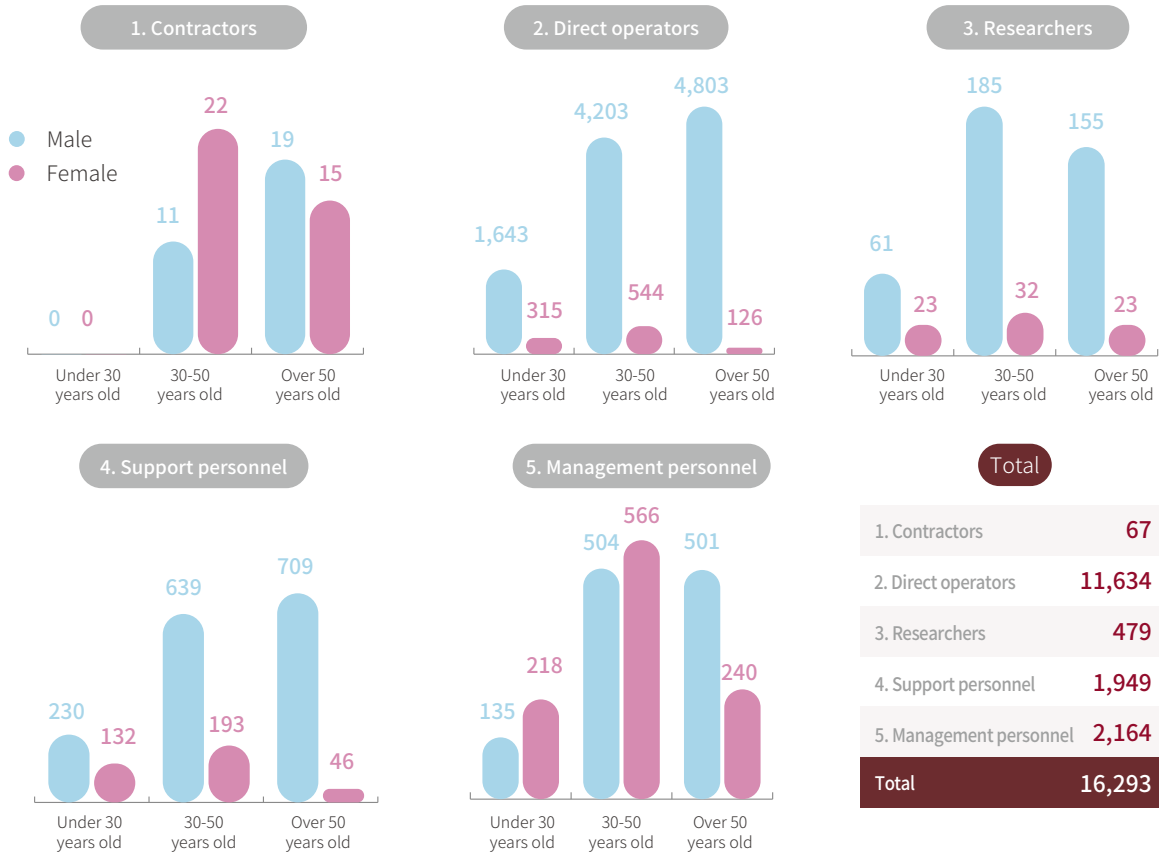
2021 Staff Statistics by Contract



Note 1: The actual number of working-study students is 1,299, and the equivalent number of employees is 938.

2021 Gender Data by Rank

unit: person



2021 Employment of The Disabled and Indigenous People Statistics

The Disabled	Proportion of all employees (including part-time workers)	Indigenous People	Proportion of all employees (including part-time workers)
811 people	4.71%	71 people	0.41%

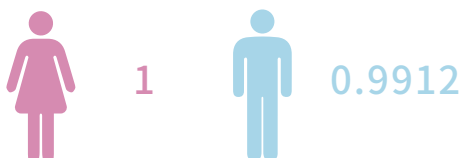
2021 Employees' Educational Statistics

Unit: person

Below high school	High school	Vocational school	Bachelor	Master	PhD
122	4,127	1,522	7,093	3,249	180

2021 Women to Men Base Salary Plus Pay Ratio Statistics

Director



Staff



The addition of new recruits is the basis for the company to maintain its vitality and innovation. CPC conducts talent recruitment every year. In 2021, there was 1,166 new recruits, accounting for 7.16% of the total workforce (i.e., the recruit rate). In 2021, there are 996 departed employees and retirees, with a turnover rate of 6.11%, and the turnover rate is 2.1% after deducting the number of 654 people who retire. Most of the employees serve for a long time until they retire, with an average retirement age of 40.60 years, showing a high degree of employee cohesion and a sense of identity.

Statistics of new/departed employees (by age)

			New employee (person)	New entry rate (%)	Departed employee (person)	Departed rate (%)
Under 30 years old	 Male		494	3.03	46	0.28
	 Female		109	0.67	5	0.03
30-50 years old	 Male		457	2.81	76	0.47
	 Female		81	0.50	15	0.09
Over 50 years old	 Male		23	0.14	766	4.70
	 Female		2	0.01	88	0.54
Total			1,166	7.16	996	6.11

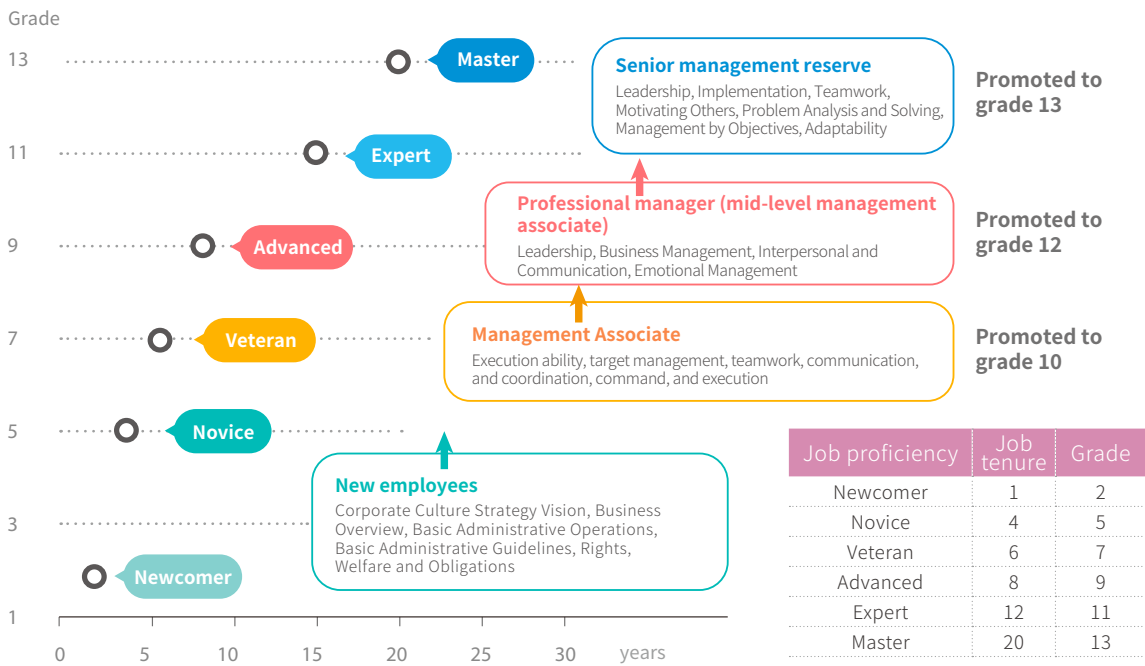
4.3.2 Talent cultivation

To cultivate human resources, strengthen professional skills, cooperate with the promotion system, implement the spirit of selection, training, and use, and establish a perfect human training structure in response to the business development of CPC. CPC has conducted a survey and research on the professional functions of each core professional position. In addition to the reference for internal promotion and rotation, it is also the content of the inquiries during the interviews for external recruitment of talents, so as to select the personnel with suitable work attitudes and concepts. Moreover, CPC also implements reserve and on-the-job management ability training for managers and personnel at all levels to strengthen management functions. In addition, employees are encouraged to participate in the national skills inspection to assist in obtaining relevant industrial safety, environmental protection, and other certificates, and to formulate key points for reward and training. CPC encourages employees to learn for life, participate in the training of the second specialty on their own, and organize training, spare-time training, foreign language training on their own and career training.

Framework of management function talent development

CPC provides training and subsidies according to the soft and hard knowledge and skills required for the functional development of employees at all levels to ensure that it can provide the most suitable training for employees at each stage. By gradually accumulating different types of work experience, CPC expects to expand the professional skills of employees and become experts in various fields.

Management role talent development framework



Note: Colleague promotion comprehensively evaluates basic qualifications, seniority and individual business performance.



▲ Senior management supervisors training team building activities



▲ Performance puzzle activities of senior management supervisors training

Management skills training by employee grade

		Supervisors		Professionals	
		Senior manager	Manager	Management associate manager	Field foreman, gas station master, deputy station master
Management skills training	Management associates	Organizational management practical training	Leadership ability and strategic planning training	Management concepts and routine management practical training	Job instruction, job improvement, and job relations
	On-the-job	Operational management development strategies and effective leadership management	Management ability development and training	Management ability development and training	To be conducted by unit supervisors or the human resources department as needed

Foreword	Transparent CPC· Ethical Governance	Ethical CPC· Acclaimed Spirit	Net-Zero CPC· Green Guardian	Benevolent CPC· Caring Engagement	Appendices
Workplace Safety	Friendly Workplace	Talent Recruitment and Development	Promotion of Social Inclusion	Industry-Academic Cooperation	Featured Topic

In addition, according to the company's vision, organizational development direction and annual training policy, and depending on the main business development and the professional development and future training direction required by the staff's duties, CPC sets the work objectives and training priorities in sequence, and compiles the training plan according to the category divided into "supervisor training", "professional training", "second specialty training" and "other training". The average training hours in 2021 was 41.05 hours. In 2021, due to the impact of the COVID-19 pandemic, physical course training was reduced, slightly less than 54 hours in the previous year, including internal and external training. The average training hours for women was 41.54 hours, which was higher than 40.96 hours for men, which shows that there is no discrimination or discrimination based on gender in talent cultivation. The training budget in 2021 is approximately NT\$142 million. A total of 3,014 self-organized training classes have been conducted, with a total of 85,654 trainees, of which women account for 16.36%, which is higher than the proportion of female employees in the company, which accounts for 15.31%.

Indicators related to employee education and training (including internal and external training, Taiwan and overseas branches, excluding subsidiaries)

Training Indicator	2019	2020	2021
Total amount of employee training (NT\$ million)	130	132	142
Total staff training hours (hours)	941,312	822,369	635,824
Total amount of employee training/total revenue (%)	0.01%	0.01%	0.02%
Total amount of employee training/total number of employees (NT\$/person)	8,209	8,151	8,715

Employee training class statistics

Categories of training	Shift	Total number of visits	Person-time			
			Male (person)	Male proportion (%)	Female (person)	Female proportion
Supervisor training	30	893	723	80.96	170	19.04
Professional training	2,080	49,667	42,273	85.11	7,394	14.89
Second specialty training	97	5,126	4,269	83.28	857	16.72
Self-inspiration training	4	127	98	77.17	29	22.83
Internal instructor training	1	30	18	60	12	40
Other training	610	26,840	21,704	80.86	5,136	19.14
Pre-employment training	190	2,948	2,542	86.23	406	13.77
Skill verification training	2	23	16	69.57	7	30.43
Total	3,014	85,654	71,643	83.64	14,011	16.36

Human Resources Training Center

Employee education and training statistics in 2021 (rank classification)

Rank	Number of People (person)	Training Hours	Average training hours per person (hours/person)
Director	2,847	75,883	26.65
Non-director	12,641	559,941	44.30
Total	15,488	635,824	41.05

To meet the needs of CPC's business expansion and national economic construction, and to handle various lectures and trainings required by the enterprise, CPC established a training center for Department of Human Resources and cooperated with the department of refining, department of exploration and production, department of engineering, department of marketing, department of management to meet the needs of talent cultivation in professional fields. CPC comprehensively establishes a vertical (primary, intermediate, advanced) and horizontal (educational) enterprise knowledge system and plans the functional development path of employees. Since the opening of the new building in 2014, the number of regular classes has grown from 327 in 2014 to 404 in 2021, and the number of participants in the course has grown from 13,575 in 2014 to 29,160 in 2021.

01

CPC e-Academy



Background information:

To enable employees to enhance their professional capabilities and increase their job skills. CPC has developed multiple channels of e-learning resources by combining information technology and learning applications and established a CPC e-Academy on the intranet to share innovatively, enhance knowledge, and provide electronic services. The CPC e-Academy has been incorporated into the system of the CPC Enterprise University. CPC upgraded and revised the platform in 2018 and launched a hybrid learning model, in which mobile learning and physical courses are adopted at the same time; as such, employees' frequency of digital learning has significantly increased and the quality of learning has been enhanced. CPC established a technology learning team in 2020 at the training institute of Department of Human Resources, to promote the application of technology to learning. In addition to the establishment of a CPC-Live synchronized system, covering video conferencing, real-time audio-visual interactive classrooms, live streaming/broadcast of courses, teaching material preparation and broadcasting in the cloud, pre-recording of lessons, video playback, and other multiple functions, CPC has developed a variety of hybrid course plans, such as e-learning + classroom (E+C), synchronous + asynchronous, offline + online, and self-directed learning + learning together, to ensure continuous learning despite the COVID-19 pandemic.



Outcome:

- ◆ Developed multimedia teaching materials for six courses and obtained the authorization of the use of the e-learning platform for public servants in alignment with the natural gas power policy; created a total of 155 hours of new and revised video teaching materials. There were 401,406 users; all courses were attended 1,676,863 times with 52,104 participants for a total of 300,207 hours.
- ◆ CPC-Live: There were a total of 220 live streamed/broadcast sessions for a total of 698 hours, viewed 7,096 times.
- ◆ Innovative courses: CPC planned and organized heart-warming events and activities, including the Golden Ox Welcomes Lunar New Year Online, CPC's 75th Anniversary Online, and Warm Care and Reminder; conducted project management and offered teaching training for online teachers.
- ◆ CPC supported the broadcast or recordings of the company's major internal and external events, including the Carbon Negative Summit and the Inauguration Ceremony of the First Carbon Negative Demonstration Plant of the NCKU Huichi Green Technology Research Center, the Chinese Petroleum Institute Forum - the Development Trend and Impact of Carbon Neutrality on the Oil and Gas Industry, and research results presentation conferences.



Future plan:

- ◆ In the stress test of the surging online learning demand in 2021, CPC discovered that there were still many defects. In the future, CPC, under the premise of establishing system security protection, will extend network and hardware equipment and resources, upgrade software, and increase network speed.
- ◆ Adopt emerging technologies, such as VR and AR, and apply them to employees' professional skills training and industrial safety education and training.
- ◆ Establish a professional video and audio recording studio to produce high-quality micro-courses by ourselves.
- ◆ Plan and develop education and training and digital teaching materials on new topics, such as net-zero emission, new energy, digital transformation, 5G AIoT, data analysis and application, and artificial intelligence.

02

Workshops for new employees in 2021

**Background information:**

Affected by the COVID-19 pandemic, in 2021, the 2-class physical training course originally planned for the new employee workshop were replaced by a digital and physical classroom teaching mode of 1-step E-learning+Classroom (E+C), providing more diverse teaching methods, training method. New recruits from each unit were divided into groups. In addition to using CPC-Live for synchronous off-site classes, relevant courses were also pre-recorded in CPC e-Academy, allowing colleagues to learn online by themselves and use QR-code online real-time quizzes. At the same time, the president was arranged to carry out the training course through physical and synchronous different places.

**Outcome:**

- ◆ CPC adopted an online grouping method in 2021. The participants in the same group met each other online to get to know each other and bond.
- ◆ A total of 337 people has completed the course. CPC provides more diverse training methods, accelerates new employees to understand business operations, and coaches them to be competent for their jobs.



▲ Online training for new employees in 2021

◀ Online teaching for new employees to pass on skills and experience in 2021

Talent Cultivation Highlight Project



Highlights: Gas station air test and Level B technician for petroleum chemistry training

Background information:

- To improve the air quality in Taiwan, CPC signed a MOU with the Environmental Training Institute of the Environmental Protection Agency. According to the "Administrative Measures for Gas Station Oil and Gas Recovery Facilities" issued by the Environmental Protection Agency, a joint course was held to help colleagues and related businesses to familiarize themselves with professional inspection and measurement of gas station oil and gas recovery facilities etc., and at the same time assist the trainees to obtain the training certificate issued by the central competent authority or the agency entrusted by it, and contribute to environmental protection. Based on the original intention of fulfilling its corporate social responsibility, CPC has established the only training organization for "Vapor Recovery Facilities Inspection Personnel" in the country to promote gas station operators to install oil and gas recovery equipment with oil guns to improve ambient air quality.
- To cultivate future petrochemical talents, CPC held a practical workshop for hands-on experience to enhance their basic knowledge and skills.

Outcome:

- A total of 2 classes was carried out in 2021, and a total of 43 employees from CPC and gas station-related operators participated in the training. Since its inception to the end of 2021, a total of 379 people was trained. In addition to training personnel in the petrochemical industry on the important and related measurement techniques for oil and gas recovery, CPC also advocates gas station operators to take the initiative to install oil and gas recovery equipment from oil guns, so that the current penetration rate of oil and gas recovery equipment from oil guns has reached 100%, which has greatly contributed to the improvement of air quality near gas stations.
- The Level B petroleum chemistry facility is currently the only site of its kind in the country to cultivate future petrochemical talents, train their skills to carry out petrochemical operations, and prepare them to enter this industry in the future. CPC had trained a total of 1,190 people between 2011 and 2021. In 2021, 21 people participated in the training, and 19 people passed the skill test, with a pass rate of 90.47%.



▲ Oil and gas recovery training

**Highlights: Competency map for middle and top-level managers****Background information:**

To cultivate reserve senior executives with a macro vision and professional knowledge on the business environment, corporate management, and development to respond to the company's future corporate operation, and effectively lead the team to complete organizational tasks. According to the CPC senior executive management function model in Taiwan, a suitable course is designed to reserve executive training workshops to improve students' "leadership ability", "implementation", "teamwork", "motivating others", "problem analysis and solving", "management by objectives" and "resilience" and other functions.

Outcome:

- In 2021, CPC adopted a hybrid teaching model, in which e-learning and classroom (E+C) were combined. CPC provided a variety of learning methods, including pre-recorded courses for self-directed learning at CPC e-Academy or the e-learning platform for public servants, online synchronous teaching on CPC-Live or TEAMS, and interactive group courses, allowing participants to learn continuously during the COVID-19 pandemic period.
- In the past 5 years, a total of 240 middle-level executives have been trained, and 92 of them have been promoted to 13 or above senior executives to meet the needs of the company's corporate operation.

Assessment and promotion

To make the work performance of CPC colleagues truly reflected in the assessment and to exert the incentive effect, CPC has formulated the "Key Points for the Evaluation of Managers and Staff." The vice president and each first-level unit shall set performance items and goals according to the implementation points of the performance evaluation of the responsibility center system approved by the board of directors, and use them as the basis for evaluation. Directors up to the second-level unit are within the scope of their work and set performance items and goals within the scope of the first-level unit's objectives. For on-site operators and non-directors, assessment items and scoring standards are also formulated, and evaluations are made according to the degree of achievement of goals and work performance. In addition, the annual assessment is conducted according to CPC's "Notes on Rewards and Punishments for Staff Assessment," and a performance appraisal bonus of up to 1 month's salary will be issued according to the list. Except for new recruits (interns), the annual acceptance rate is 100%.

4.4 Promotion of Social Inclusion

CPC has been deeply rooted in Taiwan for decades and has become an indispensable good partner in people's lives. Adhering to the spirit of "take from society and use it for society", CPC actively maintains good interactions with local groups and people, and continues to give back to the village and locality. Around the factory and mining areas, in addition to ecological environment conservation and pollution prevention, CPC also actively communicates with local governments and two-way exchanges to create a more harmonious community. CPC's public welfare trajectory has continued for decades, looking forward to combining more public forces to drive the cycle of goodness and create sustainable value.

Three Aspects to Promote Social Inclusion

In 2021, continuing the spirit of cultivating public welfare in the past, CPC, as always, produced a dazzling transcript in promoting social welfare. In addition to attaching importance to the economy and the environment, CPC also attaches great importance to social care. The three specific areas of concern are "community care and care for disadvantaged groups", "green public welfare and environmental education" and "cultural and sports promotion". Creating a harmonious society is the biggest goal.

★ ★ Aspect 1: CPC social force, caring for the disadvantaged, spare no effort ★ ★



Donate blood for
public welfare,
warm the world

CPC enthusiastically advocates blood donation activities. Since 2013, CPC has continued to respond to the service tenet of "donate a bag of blood, save a life" by blood donation centers in various places, assisting in solving the blood shortage problem of blood banks in the society, and commending outstanding blood donation units at the company's anniversary every year. In 2021, due to the impact of the COVID-19 pandemic, the number of blood donations has dropped sharply, and Taiwan is suffering from blood shortage. CPC actively responded to social needs, encouraged colleagues to roll up their sleeves to alleviate the blood shortage, and called on 14 units across the country to respond.

In 2021, 17,103 people were called (26,261 bags in total), and the total annual blood donation was 6,565,300 c. c. It has hit a record high, with a total of more than 68,000 blood donations, more than 100,000 bags of blood and nearly 26.2 million c. c.



Purchasing
agricultural and
fishery products
to help the society

In 2021, due to the impact of the level 3 alert of the COVID-19 pandemic, the sales of agricultural and fishery products were unsustainable, and in response to the limited resources of vulnerable groups, CPC took practical actions to support Taiwanese farmers and fishermen, purchased and co-sold the season's rich agricultural and fishery products, and donated the crops. For disadvantaged groups, the effect of love was doubled. The purchase items include: 19,000 kg of cabbage, 10,434 kg of Wendan, 2,820 kg of mango, 1,500 kg of pineapple, 250 kg of Gaojie pear, 375 kg of guava, 704 groupers, etc.

In 2021, CPC jointly sold about 34.38 metric tons of agricultural products and 704 groupers.



★★ Aspect 1: CPC social force, caring for the disadvantaged, spare no effort ★★



Helping the weak and the poor, fulfilling responsibilities

- Actively maintain good interaction with local groups and the public. In 2021, subsidized educational and cultural activities, scholarships, emergency relief, low-income households, elderly and disabled people welfare, local folk festivals, local sports and culture, village activities, etc., with a total of 5,745 pieces, NT\$464 million.
- In 2021, the proportion of the amount of condolences or activities that was supplemented (donated) to the disadvantaged (emergency assistance, welfare for low-income households, the elderly and the physically and mentally handicapped) was 24.92%.
- CPC does not have related factories and mines in the aboriginal community, but it strongly supports the activities of the aboriginal people. In 2021, a total of 53 subsidies (donations) was made, totaling NT\$3,027,700. CPC over-used the indigenous people to provide employment opportunities.

In 2021, local public welfare donations were total about NT\$464 million.



Help the poor children, continue to send love

Since 2010, CPC has gathered all kindness and love, and through Taiwan World Vision, it has paid NT\$1,000 per month at its own expense to subsidize poor children in Taiwan, helping 203 children to go to school, study with peace of mind, and have a healthy and happy childhood.

A total of NT\$2.436 million was donated in 2021.



Digital power is boundless

CPC has cooperated with the Ministry of Education's "Digital Application Improvement Program in Remote Areas" for many years and handles the irregular donation of recycled computers to remote schools and disadvantaged groups every year. It is hoped that love will continue, happiness will be passed on, and CPC will fulfill its corporate social responsibility and implement the concept of resource recycling. In 2021, in addition to donating to disadvantaged groups, also due to the impact of the COVID-19 pandemic, CPC took the initiative to contact Fu Jen University, the operation center of the Ministry of Education's "Digital Application Improvement Program in Remote Areas", to assist in matching and providing recycled computers to remote schools for distance teaching use. CPC will continue to handle the "Recycled Computer Donation Program" to help schoolchildren in remote areas to "suspend classes without stopping learning" during the pandemic.

The total donation of recycled computers in 2021 reached 647 units.



Music to spread love, work together

2021 coincides with the 75th anniversary of CPC's establishment. A series of activities were originally planned, but due to the impact of the COVID-19 pandemic, there have been twists and turns. Fortunately, one of the biggest highlights of CPC's "Energy 75. Shining Innovation" concert was on October 20, 2021 at National Kaohsiung Center for the Arts (Weiwuying), as the pandemic has slowed down and vaccine coverage has increased. Playing a number of beautiful songs, CPC's gratitude to the land, employees and society were placed in the music, and the opening song "Farewell" is in memory of the victims who lost their lives in the structure fire in Kaohsiung. The repertoire of this musical feast covers the cultures of various ethnic groups in Taiwan, allowing everyone to better understand Taiwan's local music works and appreciate the various aspects of the treasure island presented in the notes. CPC supports Taiwan's local music with practical actions.

About 1,000 people were invited to participate in 2021.



Highlight: Good volunteer management, implementation of social co-prosperity

Human resources are CPC's greatest asset. Not only do they provide professional energy services and products, but they are also full of passion and dedication to social welfare. Employees participating in volunteer activities and contributing to CPC must also rely on a sound and orderly volunteer organization. Not only should they take into account the organization, education and training, and recruitment of volunteers, but also pay attention to volunteer retention and volunteer incentives to ensure social harmony. The power of promoting social co-prosperity can be endless.

In order to encourage the company's colleagues and family members (including retirees) to automatically join the company's volunteer team organization, assist the company to promote good neighborliness, public welfare care and support social welfare groups and other activities, CPC has formulated "CPC Volunteer Team Organization Points" and "Recruitment Guide", the chairman and president are the top guidance supervisors. At present, CPC has established a volunteer team according to business needs, and regularly recruits current and retired personnel with enthusiasm to serve as volunteers. It will continue to improve the volunteer management system and be committed to serving the society.

★★ Aspect 2: Green influence, low-carbon public welfare, environmental education ★★



Green beach
clean, pay
homage to the
sea

- Since 2017, CPC has adopted part of the coast in the Yongan section of Yongan District, Kaohsiung City, and cooperated with the Environmental Protection Administration of the Executive Yuan to formulate the "Salute to the Sea - Coastal Cleaning and Maintenance Plan", and dispatches personnel to the adopted coast to carry out cleaning and maintenance work for at least 2 times per month, and the results are registered on the EcoLife Clean Home Taking Care of Neighbor Green Life Network, mobilizing more than 400 people to participate every year. CPC believes that beach cleaning is not the end point of solving marine problems, but the starting point. Doing a good job in garbage monitoring and reducing the amount of garbage at the source are the keys to loving the sea. In addition to wanting to clean the environment, CPC also looks forward to conveying the concept of caring for the ocean and protecting Taiwan, and becoming a local residents' good neighbor.
- CPC has long been concerned about environmental maintenance and ecological conservation issues. In order to promote the concept and achievements of "Salute to the Sea", and to respond to the Earth Day publicity activities on April 22, CPC has combined with residents and environmental protection volunteers in the seaside district of Ruifang District. Work together to organize the "Earth Day Environmental Cleaning and Beach Cleaning Activity". The participating members were CPC employees, the public and environmental protection volunteers. About 32 kilograms of garbage were removed from the shoreline of the Shen' ao waters. CPC regularly and irregularly conducts coastal cleaning and maintenance inspections, maintains a good clean condition in the jurisdiction, and will continue to handle coastal cleaning work in the future. In addition to promoting the importance of marine environmental protection, it also allows the public to experience the emotional restoration of the ecological environment.

In 2021, more than 400 people were mobilized to participate.





Low-carbon hiking, protecting the coast

During the pandemic, colleagues' home lifestyle has reduced outdoor leisure activities. 2021 coincides with the 75th anniversary of CPC. While the pandemic was slowing down, we called on all units to hold the "2021 CNPC 75 Walk Out of the Pandemic for Health" winter joint hiking activity, inviting employees, family members go for a walk outdoors to stretch their muscles and bones, and at the same time advocated legitimate leisure activities, improved colleagues' awareness of healthy self-management, strengthened regular exercise habits, and promoted the policy of energy of CPC "Three connections without moving away coal, reducing air pollution and energy is more powerful." The policy is expected to move towards a low-carbon and diversified new energy era, continue to improve the environmental and ecological protection measures of the third terminal, do our best to improve air pollution and stabilize gas supply, protect the coastal ecology together, and coexist with the third terminal.

In 2021, more than 7,500 employees and family members were called to participate.



Seedling Event

In response to World Earth Day, CPC Corporation has held a sapling giveaway event at 100 directly operated gas stations throughout Taiwan on April 22, encouraging people to redeem saplings at designated gas stations with invoices or recycled waste batteries, which has been well-received by the public. CPC hopes that green planting can purify and stabilize people like art. Under the name of "Planting Saplings for Epidemic Prevention", CPC invited everyone to exchange saplings to protect the earth together and leave a sustainable and beautiful environment for the next generation. In 2021, the CPC Building also prepared 400 saplings and invited children from nearby kindergartens to participate in the "Art" sapling planting activity. Children are the seedlings of the country, and we hope to plant the concept of energy saving, carbon reduction and love for the earth in the young minds, and to establish roots for energy education.

A total of 20,400 seedlings were given away in 2021.



Six-hall joint exhibition to promote inheritance

CPC has built 6 exhibition halls with different themes throughout Taiwan, namely "CPC Petroleum Discovery Museum" in Taipei City, "Taiwan Oil Field Exhibition Hall" in Miaoli County, "Exploration & Development Technology Exhibition Hall" in Miaoli County, "Refining and Development Exhibition Hall" in Chiayi City, "Energy Life Hall" in Kaohsiung City and "Refinery Exhibition Hall" in Kaohsiung City Nanzhi District. The exhibition content ranges from petroleum exploration, refining, natural gas, research and development to energy diversification, covering the history of the petroleum industry and the texture of technological development, which anchors the cultural path of Taiwan's petroleum industry. In addition, "Taiwan Oil Mine Exhibition Hall" and "CPC Kaohsiung Refinery Environmental Education Park" have obtained the certification of environmental education facilities. Through the design and experience of energy and environmental courses, the public's awareness, knowledge and values of environmental protection were aroused.



All six halls in Taiwan are deeply engaged in energy education



CPC Petroleum Discovery Museum

Through interactive technology, visitors can experience the presence of petroleum deep in the stratum for millions of years as well as the wonderful way to use oil, including oil exploration, refining, transportation, and applications. In addition, visitors can learn about the past and present of petroleum and sustainable new energy sources while personally experiencing thousands of possible applications of petroleum in various scenarios, such as gas stations, families, streets, supermarkets, and laboratories. Visitors can also witness the gradual transformation of the black gold from germination to an oil energy giant. Filled with knowledge, the immersive five-sensory experience of the development of new energy sources is suitable for not only education visits from schools, but also parent-child tours. CPC Petroleum Discovery Museum plays the role of a corporate showcase. Affected by the pandemic, the number of visitors still exceeded 11,000 in 2021. It is an exploration area for parent-child learning and happy learning. From 2020, CPC has joined the "Chinese Association of Museums" as a group member, obtained professional consulting services from museums, and then promoted inter-museum cooperation and mutual assistance.

Main Events in 2021



- Organized a series of lectures on "Petroleum Elementary School OPEN Lectures", using easy-to-understand teaching materials to let the public understand the importance of environmental protection and sustainable development, and learn how to coexist with the environment. Taking green actions to be kind to the earth, creating a sustainable recycling home, and gradually moving towards a win-win society for environmental protection and economy. The 5 lectures attracted more than 100 people to participate and were affirmed by the participants.

- Organized the "CPC 6-Hall Joint Exhibition" to interpret the development of Taiwan's energy industry in a lively way. Through the "Petroleum Professional Market", 6 halls were designed as stall cars with different themes, and various oil industry facilities can be seen at each stage, including towers, tanks, valves, pipelines, derricks, waste gas combustion towers and natural gas ships. In addition to experiencing interesting interactive games, exhibits such as hand tools, early equipment, historical documents and innovative research and development in 6 halls were also displayed. In particular, a miniature train was recreated based on the prototype of the early Beipu oil tanker train, reproducing the changes in the history of industrial transportation, and combined with a guided animation film, visitors were invited to take the train to understand the past, present and future of CPC.



- Invited to participate in the "2021 2nd Taiwan Science Festival" organized by the Kaohsiung Science and Technology Museum. In the venue and activities, the R&D achievements and creative vitality of CPC in the circular economy were displayed in the way of technology life and education. At the same time, through this opportunity to promote the related issues of algal reef conservation of the third LNG terminal, so that the general public can establish a correct concept and receive positive comments from all parties.



CPC Kaohsiung Refinery Environmental Education Park

"CPC Kaohsiung Refinery Environmental Education Park" uses the remnants of the factory demolition site, business area and Banpingshan green space after the closure of the Kaohsiung Refinery as an environmental education site, and was certified in 2018, and was notified of qualification in 2021. . The core concept of the park curriculum focuses on energy management of oil refining and petrochemicals, combined with the history and culture from Japan's Sixth Naval Fuel Plant and the natural ecology of Banping Mountain, to develop and extend the curriculum module for adults - Rebirth, including 3 lesson plans- "Born with oil", "The sky is high and the earth is not thick", and "The source is endless". The course design allows students to experience the beauty of natural ecology in this field, and at the same time learn about the history of Taiwan's economic development and environmental protection, understand the meaning of environmental justice and environmental sustainability, and be aware of changes in the earth's environment, limited fossil energy and limestone minerals. Students can practice simple living, green consumption and energy saving in life, and take concrete actions to cherish and maintain the earth's resources.

Main Events in 2021

In 2021, due to the impact of the COVID-19 pandemic, the park suspended classes in February and May to August when the pandemic was heating up. The rest of the month was carried out with reduced number of classes to avoid crowds and continue to provide environmental education energy. The annual number of participants in environmental education was 374. In order to continue to take root in environmental education and go deep into the community, the developed elementary, middle and high school lesson plans were organized and submitted to the Environmental Training Institute for review, and cooperated with the nearby Nanzi High School to go out of the park to the nearby schools to handle customized environmental education courses; and organized a 2-day life knowledge activity with the Taiwan Petroleum Trade Union, and conducted an environmental education and interpretation activity in Banpingshan Greenland Park, so that company employees and their families can experience the park's rich cultural, historical and ecological environment education courses.

Adult lesson plan course



High school lesson plan course



Going into the community and cooperating with Nanzih Senior High School to organize customized lesson plans

Life knowledge activities with Taiwan Petroleum Trade Union



Taiwan Oil Field Exhibition Hall

Taiwan Oil Field Exhibition Hall is located in the Chukuangkeng Mine, Houlong River, in Kaikuang Village, Gongguan Township, Miaoli County. It is the place where oil was first discovered in Taiwan, and it is also the oldest oil field still producing in the world. In order to record the history of oil mines from exploration to mining and excavation, precious documents and historical materials and historical objects, it displays the history and evolution of oil mine exploration in Taiwan. In 1981, CPC established the "Oil Mine Development Exhibition Hall". In 1990, it rebuilt the new exhibition hall and named it "Taiwan Oil Field Exhibition Hall".

The Taiwan Oil Field Exhibition Hall was certified as an environmental education facility in 2017. It is divided into 7 exhibition areas. The themes of the exhibition hall include Taiwan oil mines and sulphur pits, oil and gas formation and exploration, oil and gas extraction and processing, oil and gas pipelines, sea areas and international exploration, sustainable development and the local customs of the Chukuangkeng, etc. It provides the public with a VR virtual reality way to revisit the Chukuangkeng in the 1960s, introduce the exploration and mining methods through interactive multimedia, and record the development of CPC in oil exploration. It is a leisure place that combines education and entertainment, and it also recalls the historical relics of the Chukuangkeng area.

Main Events in 2021

Although the hall was closed for many days in 2021 due to the severe domestic pandemic (Closed period: May 14 to August 26), the annual number of visitors still reached 52,412 and 7 local environmental education courses were held, with a total of 205 participants. In addition, Taiwan Oil Field Exhibition Hall

also organized environmental education activities for teachers and students in rural areas, and customized courses were designed according to middle school and elementary school groups. For example, the junior high school team experienced the formation of oil and gas digging in the museum, as well as the local dyeing and the culture of DIY dyeing of handkerchiefs; the elementary school team first went to the exhibition hall for a guided tour, and then went to the field life hall to conduct a guided reading of the picture book "Journey of Black Jinqi". At the same time, it cooperates with other environmental education fields to plan environmental education for the elderly. In addition to the film viewing and tour guide at the Taiwan Oil Field Exhibition Hall, it also cooperates with the Taiwan Silkworm and Bee Insect Education Park to bring the elderly a rich and diverse environmental education experience.



▲ Environmental education volunteer community participated in environmental education of dyeing activities.



▲ Students participated in environmental education activities at Oil Field Exhibition Hall.



▲ Taoshan elementary school in Hsinchu county listened to old CPC staff telling stories.



▲ Miaoli County's Hegang community guided the ground rail cable car at Oil Field Exhibition Hall.



▲ The results of dyeing by students from Houlong Middle School



▲ The students of Dahu Middle School earnestly do dyeing.

Taiwan Oil Field Exhibition Hall simultaneously implements environmental education volunteer training courses. The training hours are 12 hours in total. The topics of the course include introduction to environmental education, basic knowledge of environmental education law, environmental ethics, environmental education law and curriculum design. The details of participation are as follows:





▲ The class situation of Environmental education regulations introduction



▲ Students focus and study hard

Taiwan Oil Field Exhibition Hall also organized an observation activity for environmental education venues to enhance the ecological guidance skills of the Taiwan Oil Field Exhibition Hall.



Group photo before the guided tour of Shanlinxi Forest



Listen to Shanlinxi Environmental Education Experience Sharing



Guided tour of Waipu Green Energy Ecological Park



Waipu Green Energy Ecological Park Experience Sharing

In addition, Oil Field Exhibition Hall continued to promote environmental education strategic alliance and inter-library cooperation with the Hakka Cultural Development Center of the Hakka Committee in 2021, and cooperated with the Miaoli County Environmental Protection Bureau to organize the environmental education and environmental protection carnival booth promotion activities.

For more information about the Oil Field Exhibition Hall, please refer to the special feature - A digital perspective on the social influence of the Taiwan Oil Field Exhibition Hall.



Highlight: CPC Energy Explorer exhibited at the 2021 Maker Party

From April 9th to 11th, 2021, the "2021 Maker Party" held by "Parent-Child World" at the Taipei Flower Expo Yuanshan Zhengyan Museum attracted many preschool children and elementary school students to participate enthusiastically every year. The booth of CPC is "CPC Energy Explorer". It combines the concept of adventure energy with the shape of a liquefied natural gas ship. Through the interesting three-dimensional exhibition, it triggers a new feeling. On the first day of the exhibition, 53 second-grade students of Wenshan Elementary School in Miaoli County were invited to visit and experience, so that the children could understand the current energy policy and present the company's development vision of caring for schoolchildren in remote areas, promoting energy education and actively participating in environmental and ecological conservation.



★★ Aspect 3: Cultural Creativity, Cultural Resource Preservation, Sports Promotion ★★



Cultural and architectural cultural and creative opportunities

- The Kaohsiung Refinery was closed in 2015 in accordance with the national policy. After the closure, the refinery faced competition and cooperation on various issues including cultural resource preservation, soil pollution control, urban development, industrial transformation, and residents' demands. In order to preserve the historical trajectory of Kaohsiung Refinery, CPC actively cooperated with the Ministry of Culture and the Kaohsiung Municipal Bureau of Cultural Affairs to conduct cultural asset value assessment and review. As of 2020, 1 city-designated historic site and 40 historic buildings had been registered in the plant, and the scale and preservation scope of cultural assets are the highest in Kaohsiung City.
- The integration of the old and the new in the preservation of cultural assets and the transformation and activation of the land in the factory area is a very challenging topic. Therefore, CPC led the state-owned enterprise to set up a special department for the preservation of cultural assets. In addition to planning to collect and publish relevant historical books, it also actively promotes the reuse of cultural assets and buildings in accordance with the provisions of the Cultural Assets Law, and hopes to introduce diversified industries to give new life to cultural assets.



Sports talent, sports trend

- In order to promote the development of sports, cultivate outstanding sports talents, and fulfill its corporate social responsibility, CPC established the "Advisory Committee on Rewarding and Assisting Elite Athletes" in 2002, and formulated the "Key Points of CPC Rewarding and Assisting Elite Athletes Cultivation" to provide outstanding sports players with grants to support the development of sports. During the period, in line with the national sports policy, assist the country in cultivating elite athletes in various sports. In 2021, the total amount of sports sponsorship was NT\$8.75 million.
- CPC is well aware of the importance of sustainable society and talent cultivation. In response to the government's investment in sports policy, CPC also supports communities, schools and groups to hold various sports activities or competitions, reaching NT\$ 30 million per year, and has invested NT\$ 32.45 million annually since July 2020 to established "CPC Football Team" and promoted to "Taiwan Enterprise First Class Football League" in 2021 to contribute to the development of Taiwan's football industry, and will cooperate with various amendments to the "Sports Industry Development Regulations" to assist the development of the national sports industry .

CPC's specific approach to promoting sports development



Close-up of cultural buildings



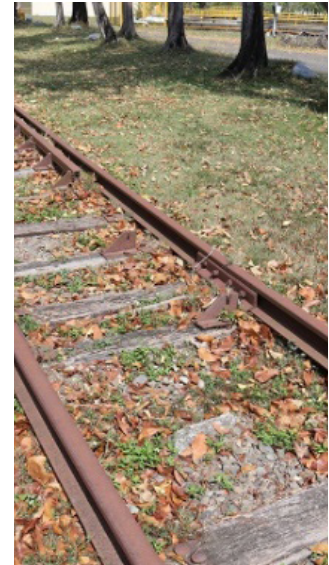
▲ Municipal Monuments - General Office



▲ Previous Warehouse N0.6



▲ Ground combustion tower for the No.2 Naphtha Cracker



▲ Remnants of Railway for tank trucks

With the spirit of "being the strongest backing of the light of Taiwan", CPC has rewarded sports players of various categories, fostered sports talents in remote areas, and promoted the development of sports, which has been recognized by the country. In 2021, CPC once again won the Gold Award in the Sponsorship Category of the Sports Promotion Award from the Sports Administration of the Ministry of Education. In the future, CPC will continue to support Taiwanese players to shine on the world stage. CPC has won a total of 7 sponsorship gold awards and 1 sponsorship long-term sponsorship award by 2021.

2021 is a harvest year for CPC-sponsored sports activities. Yun-Ju, Lin and I-Ching Cheng, who have been sponsored by CPC for a long time, won the bronze medal in the mixed doubles of table tennis event in the 2020 Tokyo Olympics. Chia-Hung, Tang of the gymnastics team of China Normal University, also sponsored by CPC, also won the 7th place in the men's competitive gymnastics all-around event, writing a new history for the Chinese team in the gymnastics all-around event. It is also worth mentioning that Bi-Chun, Luo, a player of the Tokyo Para Games Chinese team, is also long-term sponsored by CPC. Although she stopped before the top 8 of the Tokyo Para Games, her fighting spirit is still worthy of admiration and imitation by the Taiwanese. As a state-owned enterprise, CPC assists the country in cultivating outstanding sports players.



Yun-Ju, Lin and his father Xue-yi, Lin presented a signed table tennis racket to Chairman Shun-chin Lee



On July 26, 2021, Yun-Ju, Lin and I-Ching Cheng won the bronze medal in the 2020 Tokyo Olympics billiards mixed doubles event

Seeing the gap in resources between urban and rural areas, CPC hopes to support the diversified development of children in remote areas through sports awards. Since 2017, it has expanded the recipients of awards to sports teams of public and private schools at all levels in Taiwan, and changed its name to "Key Points of CPC Award to Help Elite Movement Development". At the same time, considering that the sports teams of remote schools often lack long-term and stable resources to help, it is often difficult for the children from remote areas to play their talents with sports talents. In order to care for the remote areas, the newly revised key points are specially added to reward and assist sports school teams in remote areas, hoping that children from remote areas can learn professional skills through sports, find self-affirmation and a sense of achievement, give children the opportunity to turn their lives around and thus rewrite the script of their lives.



Highlight: CPC has won the Gold Award for Sports Promotion for 4 consecutive years

CPC has long-term sponsored and supported communities, schools and groups to hold various sports activities or competitions, and rewarded elite athletes and rural sports school teams to promote the development of sports. In 2021, a total of 726 sports activities or competitions was subsidized, and a total of 17 individuals and 11 school sports teams was awarded.

For 4 consecutive years, CPC has won the Sports Promotion Gold Quality Award. Since the Sports Promotion Award was launched, CPC has won a total of 7 sponsorship gold quality awards and 1 sponsorship long-term sponsorship award. In the future, CPC will continue to uphold the spirit of "take from the society and use it for the society", and strive to improve environmental quality, assist local development, care for disadvantaged groups and promote the development of sports, so as to fulfill corporate social responsibility. It is hoped that by rewarding and assisting sports players, the thinking of "kindness cycle" will be fermented. Moreover, it is hoped that in addition to competition training, players can also inherit sports and life experience, so that Taiwan's sports legend will continue.



4.5 Industry-Academic Cooperation

With a long history of collaborating with the academia, CPC has established an industry-academia collaboration program. It rewarded and hired outstanding students, as well as set up a thesis scholarship program in collaboration with the Chinese Petroleum Institute and the Chinese Association for Energy Economics. It aims to strengthen their application of theories and practical abilities, so they can meet the development trends in the industry and employment needs. In recent years, CPC has worked with universities through competitions and business participation, so that students can learn about the workplace and the employment environment in advance. It strengthens their competencies and make better career choices. Furthermore, CPC has further combined university social responsibility (USR) and corporate social responsibility (CSR) to form the concept of university corporate social responsibility (UCSR) based on the thought of giving back to society while contributing to the industry.

In 2021, CPC's business diversification strategy achieved remarkable results. Continuing from the previous year, CUP&GO has been operated at various station. Gas station not only filled with the aroma of coffee, but also an important place for industrial-academic cooperation and creative marketing. The other two highlights of the CUP&GO were the integration with knowledge sharing and providing local libraries, using diversified forms of educational reading, such as promoting parent-child reading activities around Taiwan by leveraging CPC's scattered gas stations.

Cup & Go Industry and Academia Collaboration, The Dream Coffee Shop for Youth

Entrepreneurs

Having adopted a business diversification strategy, CPC gas stations continue to expand their business scope by adding drive-through CUP&GO coffee with aroma and humanistic concern into the gas stations. CPC gas stations work with local universities to spread the same aroma of Cup & Go coffee with different styles at all CPC gas stations across Taiwan using creative ideas and marketing approaches from different universities.



There are a total number of 9 schools participating in CPC's second-year competition include special education, high schools, bachelors, and masters in 2021. By proposing the creative marketing ideas for the CUP&GO project, participants showed their abilities and ambition. It attracts people comes to gas stations soely for Cup&GO by performing customer base and customer opinion analysis, exhibition store and product design to digital marketing. The café atmosphere changed people's opinion on CPC's gas stations. Taking Qianfeng Gas Station in Tainan as the example, the Cup&GO has become a place for people in the community to rest and a place for local farmers to sell their fresh produces. The great performance of CUP&GO helped increased 8.9% oil sales and generated a turnover of million NT dollar by selling coffee.



Although the event coincided with COVID-19 Level 3 alert, the stations and schools still made efforts to combine with various enterprises and social organizations to jointly launch a cup-giving activity to support medical staff, police officers and firefighters who worked hard to prevent the pandemic as a way to fulfill corporate social responsibility.

Based on a survey done by a human resource organization, 94% of youth have dreamed of starting a business selling coffee, drinks and food. CPC's CUP & GO has built a bridge to their dreams from brain-storming to taking actions. This was a great opportunity to practice and to achieve an entrepreneurial dream.



Extensive Reading to Achieve Power of Knowledge

In order to eliminate the differences in reading resources, Kaohsiung Public Library has adopted the Greater Kaohsiung Book Rental System with the "Borrow from A, Return to B" online lending service. The reading van is not only an important source of knowledge base for the people of Kaohsiung, but also a blessing for the residents of rural areas and disadvantaged children. Moreover, Kaohsiung Public Library promoted the "Book and Bread" through the reading van to also deliver resources and love to the rural areas and disadvantaged children. Therefore, the mobile van not only brings spiritual food to the children, but also plays the role of a deliverer of necessities.

With the retirement of the reading van, CPC actively supports the concept of equal opportunities in reading resources at the Kaohsiung Public Library by generously subsidizing NT\$2 million and donating two children's youth entertainment reading vans to join the Kaohsiung Public Library's second-generation mobile book fleet; the reading van links the city's branch libraries into one library, supporting the network of books by shuttling between libraries. Customized gas stations, libraries, the Kaohsiung city flower "kapok" and the city bird "Japanese White-eye" are linked and mapped into a living circle. The reading van traveled between libraries, which allows Kaohsiung citizens to enjoy the book borrowing service without any obstruction. Citizens are able to enjoy the latest books on the shelves without geographical restrictions. CPC not only fills up the oil for the people, but also promote power for the mind.

Library & Gas Station Alliance to Create Business Value

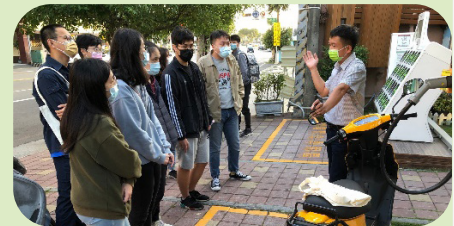
CPC Kaohsiung Business Office has commenced cross-industry alliance with the Kaohsiung Public Library and the to arrange library return drop boxes and exhibitions related to energy and environment at 61 gas stations in Kaohsiung City. The alliance further organized storytelling or parent-child friendly activities, which create a reading corner for travelers from everywhere.

At the same time, CPC has contacted the Main Kaohsiung Public Library and South Gushan Branch of Kaohsiung Public Library to plan activities such as visiting the reading vans and promote reading activities with CUP&GO coffee for adults. Children may listen to stories and emerge in energy education, which led a different styles of customers experience with books and aroma of coffee.



Highlight: Industrial-Academic Cooperation of Smart Green Energy Station to Convey the Concept of Green Living

In response to the policy of green energy transformation, energy saving and carbon reduction, CPC activated a demonstration station of smart & green e-station at Tainan Chienfeng Station in 2019, which was the smart & green e-station with multiple power supply and storage systems. The planning was divided into four major parts: energy production, energy storage, energy use and energy saving. At the same time, the concept of promoting and implementing smart & green e-station was further conveyed through education and guiding tours. A total of 23 guiding tours were held in 2021, with a total of 621 participants. In addition to discussing with industry and academic groups, there were also courses with universities and colleges in cooperation with industry and academia. CPC also invited the franchise owners to join the activities to demonstrate the application and green energy R&D results. The general public could have a better understanding of green energy technology with the project. In the future, CPC hopes to combine smart & green e-station facilities to apply for the qualification of green energy environmental education program.



Highlight: Industrial-Academic Cooperation Programs

Background:

Responding to the New Southbound Policy, CPC provides Industrial-Academic Cooperation Programs to cultivate knowledge related to the petrochemical industry and to shorten the gap between theory and practical use. The industrial-academic cooperation functions as a platform to provide students with trainings and strengthen the search and promotion interface of future human resources. Two forms of CPC's industrial-academic cooperation is as follows.



Online teaching of industrial-academic cooperation workshop

General and Vocational High school:

Since 2014, CPC has signed the "Chemical Science Class" and "CPC Science Class" with Kaohsiung Municipal Linyuan High School and Xiaogang High School to cultivate operators in petrochemical professions and has been operated for 4 years. CPC offers the outstanding students scholarships every semester, and provides students annual living allowances for low-income households, middle- and low-income households or families with special circumstances. In addition to the general petrochemical course, CPC also arranges summer internships in refining chemical fields for students. A total of 58 graduating students started to work for CPC through public interviews. This project won educational role model by the Kaohsiung Municipal Education Bureau.

Furthermore, CPC Refining Division has signed the first phase of industry-university cooperation "CPC Science Class" with Kaohsiung Municipal Xiaogang Senior High School since 2021, and continue to work together to cultivate local chemical science talents.

Colleges and Universities:

To strengthen the policy of industry-government-academic cooperation and social responsibility, CPC signed a "Memorandum of Understanding on Industry-University Cooperation" with National Chiayi University, National Donghua University, National Kaohsiung University, National Chung Cheng University, National Tainan University, National Taiwan University, National Taipei University of Science and Technology, Fengjia University, Zhengxiu University of Science and Technology, and Kunshan University of Science and Technology to implement the cultivation of learning-application through practical learning and field visits. At the same time, to implement New Southbound Policy, CPC provides in-class training classes and pre-employment functions for international students from countries listed in the New Southbound Policy. A total of 33 classes has been implemented from 2017 to 2021, with a total of 1,404 students trained, from Indonesia, Thailand, the Philippines, Malaysia, Outer Mongolia and new second generation etc.



Industrial-academic cooperation program signing ceremony



Highlight: Soft fire makes sweet malt, Slow-flying Angels with Burdened Wings

With long-term engagement of charitable activities, CPC has witnessed numerous challenges that people with disabilities encounter when they try to fit into our society. Thus, CPC has successfully initiated the concept of "Kindness Gas Station" since 2001, providing physically and mentally challenged people (known as the slow-flying angels, here after abbreviated as angels) with employment opportunities. CPC assists the angels with professional skills development, offering guidance and training for angels to perform services at the kindness gas stations.

CPC knows that "give a man a fish and you feed him for a day; teach a man to fish and you feed him for a lifetime" so CPC trains the slow-flying angels and offers them working opportunities and helps angels find self-reliant and self-esteem. From the basic refueling change, car washing service, sanitary cleaning on the public toilet, and even brewing a cup of CUP&GO coffee for visitors, the angels slowly achieved their goals step by step. CPC customized the trainings based on the angels' skills and to create a friendly learning and employment workplace with the "counselor training mechanism". CPC further it combined with the careful training of the stationmaster on duty and the care and guidance of the tutors affiliated to the cooperative welfare organization. The angels are often praised and encouraged by supervisors, colleagues, and customers. In addition, the angels are motivated to use their own characteristics and expertise to become a workplace expert.

As providing love and concerns, CPC gas stations give three guarantees to the angels: the same benefits as others, no workplace bullies, and friendly working environment. Diversified service include the kindness gas stations, kindness car-washing stations, and Cup & Go coffee, etc. In 2021, 45 kindness gas stations worked with more than 40 institutions to cultivate a total of 559 angel part-time staff, which accounted for 39.81% of the total 1,404 part-time staff in CPC's directly-operated gas stations. In 2021, more than 433 angels took part in 23 pre-employment education and training courses.

In 2021, under the level 3 alert of the epidemic, average of 3,537 cars per month were washed by 15 angels at the Miaoli Toufen gas station. They even rached the record of washing 414 cats on a day. CPC trained Slow Flying Angels, who can provide services indistinguishable from ordinary employees, is the biggest achievement and pride of CPC. Many agels have been stably working for CPC for more than 10 years! CPC would like to accompany the angels from their youth period to the time they retire.



How numbers depict the story of Taiwan Oil Field Exhibition Hall's social impact

The oldest oil field becomes an environmental education base

Miaoli Chuhuang Keng was the first place in Taiwan where oil was discovered. During the time of that its still rich in oil resource, it was even called as "the small Hong Kong". It was a bustling village with shining black gold. As the oil was exploited, it lost its former glory. However, due to the establishment of CPC's Taiwan Oil Field Exhibition Hall (the "Hall"), the Hall and its surrounding cultural resources are gradually recognized by the public. In 2017, the Hall obtained the environmental education facility certification. The exploration and mining activities are explained in an lively and vivid manner through the interactive multi-media presentation in the hall. Combining with the older care, rural education, and the innovation and trial operation near the Hall, it has become the driving force of enviromental education.

Social Return On Investment (SROI) of the Hall

The Hall plays a promoting role in the local environmental education. A visit to the Hall can have broaden your understanding of local cultural, historical and environmental knowledge. Moreover, it conducts environmental education activities for rural children to advocate environmental protection idea.

In order to understand the expected social impact, CPC introduces the calculation method of the Social Return On Investment. For example, in 2020 and 2021, the calculating items include the guided tour and activities, environmental education, trainee activities, and the above items totally presented a value of 36,916,027.08. The net investment is 6,018,727, so the SROI is 6.13. This value represents a gain of 6.13 dollars against every dollar invested.

In this case, from questionnaires and interviews, it was learned that the main audiences affected by the Hall were group visitors, individual visitors, and trainees in the environmental education. The main effects on them were as below: the image of CPC was raised in their minds, they knew more about the local cultural development, and CPC was better recognized locally. It is evident that the Hall is committed to the long-term preservation and publicity of historical materials to achieve its social benefits.

Social benefits from the Hall

Targeted visitors of the Hall



CPC's project personnel

The environmental education knowledge and the heritage of local culture and history enhances their senses of fulfilment and satisfaction in the work. Moreover, it helps to improve their recognition of the company and to strengthen the corporate image.



Visitors (Groups and Individuals)

Increase their knowledge and pay more emphasis on the environmental conservation. As for the sense of harmony with fellow travelers, the group visitors contributed 2.5% gain, and the individual visitors 4.9% in assessment result. In the tour, CPC's positive image has gradually been established.



Lecturers in environmental education

In the course, they increase the knowledge and teaching skills in environmental education planning; meanwhile, they strengthen the positive image of CPC in minds.



Students in environmental education

They strengthen the understanding of local industries and environmental education, and get a good impression of CPC.



Rural teachers

They are provided with a fresh teaching experience and inspiration.



Project personnel in oil-water vendors

They strengthen the ability to design local cultural and environmental education activities according to local contexts, and enhance the understanding of local culture and history.

Interviews in the Hall

I worked as a lecturer in the Hall. I keep learning every day and feel honored. That is a very great sense. I also interact with visitors, improving my expression ability and expand my knowledge.

When I conduct the course, I feel that I am the protagonist and get a lot of positive feedback, so I feel that my contribution is very meaningful, and I am full of fulfilment. (The interviewee: a lecturer in environmental education)

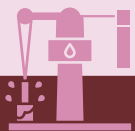


The visit to the Hall allowed me to learn more about the local literature and history of Chuhuangkeng as well as the energy industrial development. I expanded my knowledge. Furthermore, I am also aware that CPC's development and operation of the Hall have greatly enhanced its brand image. (The interviewee: a visitor)



The environmental education program in the Hall gives rural students the opportunity to receive diverse learning stimuli. In addition, the tour guiding inside and outside the buildings are very lively, helping children to understand Miaoli and coordinating with the courses in the school. I also got a lot of ideas for teaching and planning courses from this visit. (The interviewee: a rural teacher)

There are many visitors to the Hall, more than 10,000 persons in aggregate, producing a wide impact. In the future, CPC will continue to promote the Hall. In addition, CPC should take into account the eco-tourism around the Hall, combining with local agriculture (such as persimmon dyeing, sericulture, economic crops visit) and social groups (such as the older, rural students) to develop some leisure activities from which people can learn. CPC will take advantage of the features of local culture and history, and look forward to serving more audience in the future, so that visitors can learn new knowledge.



[Taiwan Oil Field Exhibition X-File]

With its rich collections, interactive and diverse show models, and historical background preserved environment, the Hall leads visitors into the time tunnel and on the path to looking forward to sustainable energy. The Hall is also committed to local creation & production and cultural linkages. It actively integrates with local industries (such as persimmon dyeing, sericulture field) and benefits villages (local communities and remote schools, the elderly) in order to achieve multiple goals.



Sustainable path that walked far and wide by CPC's staffs

“Africa’s Heart of Death”, Chad's long-standing military turmoil has trapped itself in poverty, food shortages, disease, and lack of basic education resources. In 2006, CPC completed the acquisition of 30,000 square kilometers of mining area and its exploration exclusivity in Chad. When the exploration team members came to Chad, they found that up to 52% of the local population had no clean drinkable water and only 2% had access to basic sanitation. In view of the above, in addition to driving the local economic development and increasing employment opportunities through exploration undertaking, CPC performed its corporate social responsibility by building roads and schools, procuring clean water resources and providing medical services. The wells can wash away the poverty for Chadian children, and the roads will guide the Chadian people to civilization.

Step into the Heart of Death in Africa-Chad



By 2021, 18 wells were constructed to facilitate water intake, benefiting more than 8 thousands residents. Saving time fetching water helps woman invest in more economically valuable activities and children can invest time in education.

The water source is shared by livestock and the distance to draw water is long and time-consuming

Improve the source of water and sanitation

Women's employment and Children's education

Provide Children in Chad hopes of future



CPC provided free clinic services, allowing the disadvantaged to enjoy healthy life style. There were 2,180 patients received diagnosis and treatment to relieve local long-term medical needs and helps establish a correct hygiene concept. Moreover, CPC assisted two sick children in Chad to seek medical treatment in Taiwan and gave their smiles back.

Assisted free clinic of Taiwan Root Medical Peace Corps

Demonstrate humanitarian care without borders

The people of Chad meet the dawn of life



Completed infrastructure and investment in Chad

Quantitative Beneficial Result

Number of beneficiaries

Approximately TWD 3 million invested in drilling wells

18 water wells completed

8,000 people

Avenues and roads built and annual repaired, with approx. TWD 22.5 million

83 km roads constructed

278,227 people

School buildings construction and donation of desks, chairs, stationery and supplies, with approx. TWD 12.415 million

13 classrooms; 3,000 sets of desks and chairs, and whiteboards provided

849 students

“Taiwanese are really kind. CPC feels like home. Everyone is like my family.” Assane, Chadian, an administrative director in OPIC Africa, says that his friend told him “You are Taiwanese now”. Every Friday, Taiwanese colleagues of OPIC wear Chadian traditional costumes in workplaces, represent that OPIC staffs are actually Taiwanese in Chad.

Taiwan's value, CPC staff's persistence

After three years of exploration, CPC succeeded in obtaining crude oil in 2010, and for the next 10 years, even after the turmoil of war and terrorist attacks, the local employees remained steadfast in the CPC's headquarters during the civil war. After completing seismic survey and exploration, CPC successively discovered new crude oil reservoirs with mining potential. In 2017, Oryx Oil Field in Chad was granted the development and production license, starting its 25-year development and production period. CPC completed base construction, ground equipment and pipeline installations, and drilling engineering. With the assistance of Chad's employees and partners, the first barrel of crude oil was produced and delivered to Taiwan in 2020 and that is after many challenges were overcome. It is milestone for CPC's overseas investment and exploration, demonstrating "go fast, go alone, go far, go together" mindset. CPC will continue to work with Chadian residents on the right path.



Reduce the impact of ESG of overseas investments

While seeking the best interests of stakeholders from business operations, CPC also recognizes the impact of its operations. Before obtaining the development license or land acquisition CPC will first assess the impact of the project on air, water, soil and vegetation, ensuring that the environmental impact is reduced to the minimum extent possible. CPC usually obtains the consent from the clan chiefs upon negotiation with them by utilizing the local community relation (CR). At the same time, it should follow the religious folklore of Chad. Before starting the project, local priests shall be requested to perform rituals. When employing local employees, various religious customs such as regular worship during working hours shall be allowed.



According to statistics, about half of the students drop out of school before entering Grade 4 in primary schools. The children who are lucky enough to continue their studies are sitting in the classrooms floor filled with sand and dust. On the top of their heads is thatched roof. CPC provides soft and hard learning resources and materials, as well as prizes for excellent students. CPC makes efforts to strengthen the willingness to learn of the students and the parents. In response to the UN's sustainable goals, CPC is committed to change the destinies of the poorest children in the world by means of education.



The access road in the Oryx Oilfield is based on local roads and extends from the equipment area of the CPC to the adjacent airport, with a total length of about 83 kilometers. This access road is open to local residents and will be converted to the property of Chad after the expiration of the development contract. CPC's road maintenance project in 2021 cost about NT\$22.5 million, and a total of 68 kilometers of road reinforcement and maintenance was completed. In addition, during the period, the existing local rural roads that crossed many places were filled with soil, compacted and improved in drainage.

Appendix I: GRI Standards Index

GRI Standards	Disclosure	Chapter and Pages	Page No.
General Disclosures (Core Items)		Chapter	
GRI 102: General Disclosures 2016	102-1 Name of the Organization	1.1.1 Company Profile	24
	102-2 Activities, Brands, Products, and Services	1.1.1 Company Profile	24
		2.1.1 Diversified Arrangement	54
	102-3 Location of Headquarters	1.1.1 Company Profile	24
	102-4 Location of Operations	1.1.1 Company Profile	24
	102-5 Ownership and Legal Form	1.1.1 Company Profile	24
	102-6 Markets Served	1.1.1 Company Profile	24
	102-7 Scale of the Organization	1.1.1 Company Profile	24
	102-8 Information on Employees and Other Workers	4.3.1 Human Resources Management	140
	102-9 Supply Chain	2.1.2 Supply Chain Collaboration	56
	102-10 Significant Changes to the Organization and Its Supply Chain	1.1.1 Company Profile	24
		2.1.2 Supply Chain collaboration	56
	102-11 Precautionary Principles or Approach	1.3.3 Risk management	48
	102-12 External Initiatives	2.3.2 Organizations and Initiative Responses	71
		2.3.2 Organizations and Initiative Responses	71
	102-14 Statements from the Senior Decision-Maker	Message from the Management	5
	102-15 Key impacts, risks and opportunities	1.3.3 Risk management	48
	102-16 Values, Principles, Standards, and Norms of Behavior	1.3.1 Legal compliance	39
	102-17 Mechanisms for advice and concerns about ethics	1.3.1 Legal compliance	39
	102-18 Governance Structure	1.2.1 Foundation of Sustainable Governance	32
		3.1.1 Climate Change Governance	81
102-20 Executive-level responsibility for economic, environmental, and social topics	1.2.1 Foundation of Sustainable Governance	32	
	3.1.1 Climate Change Governance	81	
102-21 Consulting stakeholders on economic, environmental, and social topics	1.3.3 Risk management	48	
102-22 Composition of the highest governance body and its committees	1.2.1 Foundation of Sustainable Governance	32	
	1.2.1 Foundation of Sustainable Governance	32	
102-25 Conflicts of interest	1.3.1 Legal compliance	39	
	1.3.1 Legal compliance	39	
102-30 Effectiveness of risk management processes	1.3.3 Risk management	48	
102-33 Communicating critical concerns	1.3.3 Risk management	48	
102-40 List of Stakeholder Groups	Communication with Stakeholders	18	
102-41 Bargain Agreement	Communication with Stakeholders	18	
	4.2.2 Benefits and Welfare	135	

GRI Standards	Disclosure	Chapter and Pages
GRI 102: General Disclosures 2016	102-42 Identifying and Selecting Stakeholders	Communication with Stakeholders 18
	102-43 Approach to Stakeholder Engagement	Communication with Stakeholders 18
	102-44 Key Topics and Concerns Raised	Communication with Stakeholders 18
	102-45 Entities Included in the Consolidated Financial Statements	About this report 3 1.1.2 Operational performance 28
	102-46 Defining Report Content and Topic Boundaries	About this report 3 Annual Sustainability Materiality Topic 15
	102-47 List of Material Topics	Annual Sustainability Materiality Topic 15
	102-48 Restatements of Information	About this Report 3
	102-49 Changes in Reporting	About this Report 3
	102-50 Reporting Period	About this Report 3
	102-51 Date of the Most Recent Report	About this Report 3
	102-52 Reporting Cycle	About this Report 3
	102-53 Contact for Questions Regarding the Report	About this Report 3
	102-54 Claims of Reporting in Accordance with the GRI Standards	About this Report 3
	102-55 GRI content index	Appendix 1 GRI Standards Index 169 About this Report
	102-56 External Assurance	Appendix 3 BSI Certification (AA1000 AS v3) 3 176 Appendix 4 CPA Assurance (ISAE3000) 178
	Major material topics	
Direct and indirect economic performance and impact		
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its Boundary	Annual Sustainability Materiality Topic 15
	103-2 The Management Approach and Its Components	1.1.2 Operational performance 28
	103-3 Evaluation of the Management Approach	1.1.2 Operational performance 28
GRI 201: Economic Performance 2016	201-1 Direct economic value generated and distributed	1.1.2 Operational performance 28
	201-2 Financial implications and other risks and opportunities due to climate change	3.1.2 Climate Change Risk Management 83
GRI 203: Indirect Economic Impacts 2016	203-1 Infrastructure investments and services supported	1.3.2 Response to Incident 45
		3.2.1 Low Carbon Green Energy Transformation and Circular Economy 94
	203-2 Significant indirect economic impacts	1.1.2 Operational performance 28 3.2.1 Low Carbon Green Energy Transformation and Circular Economy 94
Forward-looking R&D		
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its Boundary	Annual Sustainability Materiality Topic 15
	103-2 The Management Approach and Its Components	2.3.1 Technology Innovation 69
	103-3 Evaluation of the Management Approach	3.2.1 Low Carbon Green Energy Transformation and Circular Economy 94

Foreword	Transparent CPC· Ethical Governance	Ethical CPC· Acclaimed Spirit	Net-Zero CPC· Green Guardian	Benevolent CPC· Caring Engagement	Appendices
GRI Standards Index	SASB Index	BSI Certification (AA1000 AS v3)	CPA Assurance (ISAE3000)		
GRI Standards	Disclosure	Chapter and Pages			
GRI 203: Indirect Economic Impacts 2016	203-1 Infrastructure investments and services supported	3.2.1 Low Carbon Green Energy Transformation and Circular Economy			94
Ethical Management and Legal Compliance					
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its Boundary	Annual Sustainability Materiality Topic			15
	103-2 The Management Approach and Its Components	1.3.1 Legal compliance			39
	103-3 Evaluation of the Management Approach	3.3.1 Environmental Laws and Regulations Compliance			113
GRI 205: Anti-Corruption 2016	205-2 Communication and training about anti-corruption policies and procedures	1.3.1 Legal compliance			39
	205-3 Confirmed incidents of corruption and actions taken	1.3.1 Legal compliance			39
GRI 307: Environmental Compliance 2016	307-1 Non-compliance with environmental laws and regulations	3.3.1 Environmental Laws and Regulations Compliance			113
GRI 419: Socioeconomic Compliance 2016	419-1 Non-Compliance with Laws and Regulations in the Social and Economic Area	There is no violation of relevant laws by CPC. For details, please refer to 1.3.1 Legal compliance			39
Greenhouse Gas Management					
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its Boundary	Annual Sustainability Materiality Topic			15
	103-2 The Management Approach and Its Components	3.1.3 Climate Change Strategies			85
	103-3 Evaluation of the Management Approach	3.1.4 Climate Change Goals and			91
GRI 305: Emissions 2016	305-1 Direct (Scope 1) GHG emissions	3.1.4 Climate Change Goals and Indicator Management Achievement			91
	305-2 Energy Indirect (Scope 2) GHG Emissions	3.1.4 Climate Change Goals and Indicator Management Achievement			91
	305-5 Reduction of GHG emissions	3.1.4 Climate Change Goals and Indicator Management Achievement			91
Climate Change Response and Low-Carbon Development					
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its Boundary	Annual Sustainability Materiality Topic			15
	103-2 The Management Approach and Its Components	3.1.4 Climate Change Goals and Indicator Management Achievement			91
	103-3 Evaluation of the Management Approach	3.1.4 Climate Change Goals and Indicator Management Achievement			91
GRI 201: Economic Performance 2016	201-2 Financial implications and other risks and opportunities due to climate change	3.1.2 Climate Change Risk Management			83
		3.1.3 Climate Change Strategies			85
Ecological and Environmental Conservation					
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its Boundary	Annual Sustainability Materiality Topic			15
	103-2 The Management Approach and Its Components	3.4.1 Ecological Protection			120
	103-3 Evaluation of the Management Approach	3.4.1 Ecological Protection			120
GRI 304: Biodiversity 2016	304-2 Significant impacts of activities, products, and services on biodiversity	3.4.1 Ecological Protection			120
	304-3 Habitats protected or restored	3.4.1 Ecological Protection			120
Air pollution prevention and control					
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its Boundary	Annual Sustainability Materiality Topic			15
	103-2 The Management Approach and Its Components	3.3.2 Air pollution emissions and management			114
	103-3 Evaluation of the Management Approach				

Foreword	Transparent CPC · Ethical Governance	Ethical CPC · Acclaimed Spirit	Net-Zero CPC · Green Guardian	Benevolent CPC · Caring Engagement	Appendices
GRI Standards Index	SASB Index	BSI Certification (AA1000 AS v3)	CPA Assurance (ISAE3000)		
GRI Standards	Disclosure	Chapter and Pages			
GRI 305: Emissions 2016	305-7 Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	3.3.2 Air pollution emissions and management		114	
Workplace Safety and Health					
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its Boundary	Annual Sustainability Materiality Topic		15	
	103-2 The Management Approach and Its Components	4.1.1 Workplace Safety Management		127	
	103-3 Evaluation of the Management Approach				
GRI 403: Occupational Health and Safety 2018	403-1 Occupational health and safety management system	4.1.1 Workplace Safety Management		127	
	403-2 Hazard identification, risk assessment, and incident investigation	4.1.1 Workplace Safety Management		127	
	403-3 Occupational health services	4.1.1 Workplace Safety Management		127	
	403-4 Worker participation, consultation, and communication on occupational health and safety	4.2.1 Employee Care		131	
		4.1.1 Workplace Safety Management		127	
	4.2.1 Employee Care		129		
	403-5 Worker training on occupational health and safety	4.1.1 Workplace Safety Management		127	
	403-6 Promotion of worker health	4.2.1 Employee Care		129	
		4.2.1 Employee Care		131	
	403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	4.1.1 Workplace Safety Management		127	
403-8 Workers covered by an occupational health and safety management system	4.1.1 Workplace Safety Management		127		
403-9 Work-related injuries	4.2.1 Employee Care		129		
403-10 Work-related ill health	4.2.1 Employee Care		129		
Customer Rights and Product Safety					
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its Boundary	Annual Sustainability Materiality Topic		15	
	103-2 The Management Approach and Its Components	2.1.1 Diversified Arrangement		54	
	103-3 Evaluation of the Management Approach	2.2.1 Satisfied Customer		65	
GRI 416: Customer Health and Safety	416-2 Incidents of non-compliance concerning the health and safety impacts of products and services	1.3.1 Legal Compliance		39	
		2.1.1 Diversified Arrangement		54	
GRI 417: Marketing and Labeling 2016	417-1 Requirements for product and service information and labeling	2.2.1 Satisfied Customer		65	
		1.3.1 Legal Compliance		39	
		2.1.1 Diversified Arrangement		54	
		2.2.1 Satisfied Customer		65	
Major material topics					
Governance					
GRI 206: Anti-Competitive Behavior 2016	206-1 Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	CPC has no relevant anti-competitive, anti-trust and monopoly behavior and related legal actions, please refer to 1.3.1 Legal Compliance for details		39	
Risk Management					
GRI 413: Local Communities 2016	413-2 Operations with significant actual and potential negative impacts on local communities	1.3.3 Risk Management		48	
Information security and customer privacy					
GRI 418: Customer Privacy 2016	418-1 Substantiated complaints concerning breaches of customer privacy and losses of customer data	CPC has no information leakage or theft. For details, please refer to 2.2.2 Information Security and Privacy		67	
Energy Resource Management					
GRI 302: Energy 2016	302-1 Energy consumption within the organization	3.2.2 Energy Use and Management		105	
	302-3 Energy intensity	3.2.2 Energy Use and Management		105	
	302-4 Reduction of energy consumption	3.2.2 Energy Use and Management		105	

Note: The sustainability themes identified in the CPC 2022 Sustainability Report are divided into three levels, "Crucial Topics", "Key Topics" and "Basic Topics". Therefore, in accordance with the definition of the GRI core options, "Crucial Topics" are defined as major topics, and their

Appendix II: SASB Index

SASB Code	Accounting metric	Indicator Unit	Response to each indicator			Explanation	Page No.	
EM-RM-110a.1	Gross global Scope 1 emissions, percentage covered under emissions-limiting regulations	tCO ₂ e, %	2019	2020	2021 年	-	92	
			97.2	97.1	97.1			
EM-RM-110a.2	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	-	Corresponding to the following chapters: 3.1.4 Climate Change Targets and Indicator Management Achievement			-	91	
EM-RM-120a.1	Air emissions of the following pollutants: (1) NOx (2) SOx, (3) PM ₁₀ (4) H ₂ S, and (5) VOC	ton	Year	2019	2020	2021	PM ₁₀ and H ₂ S are not required to be reported. Therefore, there is no relevant information. Assessment of future needs in statistical data is currently in evaluation process.	114
			NOx	3,263.5	2,761.2	2,949.5		
			SOx	1,154.7	647.1	705.9		
			VOC	2,048.6	1,957.0	1,711.0		
			PM ₁₀	-	-	-		
			H ₂ S	-	-	-		
EM-RM-120a.2	Number of refineries in areas of dense population	Set	CPC has a total of 3 refineries in densely populated areas (The population of the township where the operation base is located is greater than 50,000)			Taoyuan Refinery is located in Guishan District, Taoyuan City, with a nearby population of approximately 166,800 people Dalin Refinery is located in Xiaogang District, Kaohsiung City, with a nearby population of approximately 156,000 people Linyuan Petrochemical Plant is located in Linyuan District, Kaohsiung City, with a nearby population of approximately 68,900 people	26	
EM-RM-140a.1	(1) Total fresh water withdrawn, (2) reclaimed volume (3) water consumption in regions with High Baseline Water Stress	M3	Total water withdrawal in 2021			Related contents can be found in 3.2.3 Water Use and Management	108	
			Dalin Refinery	Taoyuan Refinery	Linyuan Petrochemical Plant			
			613,410,723	279,354,448	805,122,260			
			Total reclaimed volume in 2021					
			Dalin Refinery	Taoyuan Refinery	Linyuan Petrochemical Plant			
			601,784,544	272,662,828	790,556,558			
Water consumption in 2021 in areas under high water stress: 0 m ³								
EM-RM-140a.2	Number of incidents of non-compliance associated with water quality permits, standards, and regulations	Number of cases	There were 2 violations of the Water Pollution Control Act in 2021			Related contents can be found in 3.2.3 Water Use and Management	108	

GRI Standards Index

SASB Index

BSI Certification
(AA1000 AS v3)CPA Assurance
(ISAE3000)

SASB Code	Accounting metric	Indicator Unit	Response to each indicator			Explanation	Page No.
EM-RM-150a.1	Amount of hazardous waste generated, recycled percentage	Tons/percentage	Total hazardous waste	Percentage of total waste by category	Recycling percentage	Related contents can be found in 3.3.3 Wastewater and Waste Discharge and Management	116
			45,260.714	31.12%	0 %		
EM-RM-150a.2	(1) Number of underground storage tanks (USTs), (2) number of UST releases requiring cleanup, and (3) percentage in states with UST financial assurance funds	Set	Number of underground storage tanks	Number of underground storage tanks to be emptied	Margin ratio of the underground storage tank	As the margin ratio of the underground storage tank is set by the U.S. regulations, it is not applicable to CPC	-
			3,014	0	-		
EM-RM-320a.1	(1) Total recordable incident rate (TRIR), (2) fatality rate of employees and contract, and (3) near miss frequency rate (NMFR)	%	Total Recordable Incident Rate (TRIR)	Disease and death rate	Near Miss Frequency Rate (NMFR)	Total Recordable Incident Rate (TRIR) = (Number of accident cases × 200,000) / Total working hours Fatality rate = (Death toll × 200,000) / Total working hours Near Miss Frequency Rate = (Number of near miss × 200,000) / Total working hours	-
			0.017	0	1.24		
EM-RM-320a.2	Practice statement for assessing, monitoring, and reducing worker exposure to long-term health risks	-	<ol style="list-style-type: none"> Continue to promote ISO 45001 re-validation, establish a systematic occupational safety and health management framework through the PDCA operation mode, and reduce the probability of accidents Formulate a series of occupational safety and health certification training to improve employees' occupational safety and health knowledge and skills and encourage employees to obtain various occupational safety and health certifications to strengthen their professional capabilities Provide employees with information and training on emergency situations through regular drills of emergency response plans and prepare necessary emergency response equipment 			Related contents of CPC's renewable fuel can be found in 4.1.1 Workplace Safety Management	127
Product Specifications and Clean Fuel Blends							
EM-RM-410a.1	Percentage of Renewable Volume Obligation (RVO): production of renewable fuels, purchase of "separated" renewable identification numbers (RIN)	-	As CPC only conducts R&D on renewable fuels and does not produce or purchase renewable fuels, there is no requirement or market survey on the percentage of renewable fuel obligation (RVO).			Related contents of CPC's renewable fuel can be found in 3.2.1 Low Carbon Green Energy Transformation and Circular Economy	94
EM-RM-410a.2	Total addressable market and share of market for advanced biofuels	-					

GRI Standards Index

SASB Index

BSI Certification
(AA1000 AS v3)CPA Assurance
(ISAE3000)

SASB Code	Accounting metric	Indicator Unit	Response to each indicator		Explanation	Page No.
EM-RM-520a.1	Total amount of monetary losses as a result of legal proceedings associated with price fixing or price manipulation	Sum	In 2021, there were no legal proceedings resulting from oil and gas price inflation or manipulation-related events, and the related currency loss was \$0		Related contents of CPC's renewable fuel can be found in 1.3.1 Legal Compliance	39
EM-RM-530a.1	Discussion of corporate positions related to government regulations and/or policy proposals that address environmental and social factors affecting the industry	Number of cases	There were 2 incidents that resulted in major fines due to operational deficiencies in 2021		Related contents can be found in 1.3.1 Legal Compliance 3.3.1 Environmental Laws and Regulations Compliance	39 113
EM-RM-540a.1	Process Safety Event (PSE) rates for Loss of Primary Containment (LOPC) of greater consequence (Tier 1) and lesser consequence (Tier 2)	%	Tier 1 PSE 0	0.005	(Total Tier 1 PSE / Total hours worked) × 200,000	-
			Tier 2 PSE	0.034	(Total Tier 2 PSE / Total working hours) × 200,000	
EM-RM-540a.2	Challenges to Safety Systems indicator rate (Tier 3)	%	0.497		(Total Tier 3 PSE / Total working hours) × 200,000	-
EM-RM-540a.3	A management system to identify and mitigate catastrophic and back-end risks	%	To promote the risk management policy and establish a crisis management mechanism, CPC earnestly cultivates colleagues' awareness of risk management and crisis management, so as to improve the efficiency of risk management and crisis management, and achieve the goal of sustainable enterprise operation. Therefore, through the risk management operation system, all units carry out actions such as risk identification, risk analysis, risk assessment, risk treatment, communication and negotiation, supervision and review, comprehensively assess risks, and actively deal with them		Related contents can be found in 1.3.3 Risk Management 3.1.1 Climate Change Governance	48 81
EM-RM-000.A	Refining throughput of crude oil and other feedstocks	10,000kL	Oil products total sales (including petrochemical products and multilateral trade)	3,030	-	29
		100mn m3	Finished natural gas sales	255.60		
EM-RM-000.B	Refining operating capacity	10,000kL	2,185		-	29

Appendix III: BSI Certification(AA1000 AS v3)



INDEPENDENT ASSURANCE OPINION STATEMENT

CPC Corporation, Taiwan 2022 Sustainability Report

The British Standards Institution is independent to CPC Corporation, Taiwan (hereafter referred to as CPC in this statement) and has no financial interest in the operation of CPC other than for the assessment and verification of the sustainability statements contained in this report.

This independent assurance opinion statement has been prepared for the stakeholders of CPC only for the purposes of assuring its statements relating to its sustainability report, more particularly described in the Scope below. It was not prepared for any other purpose. The British Standards Institution will not, in providing this independent assurance opinion statement, accept or assume responsibility (legal or otherwise) or accept liability for or in connection with any other purpose for which it may be used, or to any person by whom the independent assurance opinion statement may be read.

This independent assurance opinion statement is prepared on the basis of review by the British Standards Institution of information presented to it by CPC. The review does not extend beyond such information and is solely based on it. In performing such review, the British Standards Institution has assumed that all such information is complete and accurate.

Any queries that may arise by virtue of this independent assurance opinion statement or matters relating to it should be addressed to CPC only.

Scope

The scope of engagement agreed upon with CPC includes the followings:

1. The assurance scope is consistent with the description of CPC Corporation, Taiwan 2022 Sustainability Report.
2. The evaluation of the nature and extent of the CPC's adherence to AA1000 AccountAbility Principles (2018) in this report as conducted in accordance with type 1 of AA1000AS v3 sustainability assurance engagement and therefore, the information/data disclosed in the report is not verified through the verification process.

This statement was prepared in English and translated into Chinese for reference only.

Opinion Statement

We conclude that the CPC Corporation, Taiwan 2022 Sustainability Report provides a fair view of the CPC sustainability programmes and performances during 2021. The sustainability report subject to assurance is free from material misstatement based upon testing within the limitations of the scope of the assurance, the information and data provided by the CPC and the sample taken. We believe that the performance information of Environment, Social and Governance (ESG) are fairly represented. The sustainability performance information disclosed in the report demonstrate CPC's efforts recognized by its stakeholders.

Our work was carried out by a team of sustainability report assurors in accordance with the AA1000AS v3. We planned and performed this part of our work to obtain the necessary information and explanations we considered to provide sufficient evidence that CPC's description of their approach to AA1000AS v3 and their self-declaration in accordance with GRI Standards: Core option were fairly stated.

Methodology

Our work was designed to gather evidence on which to base our conclusion. We undertook the following activities:

- a review of issues raised by external parties that could be relevant to CPC's policies to provide a check on the appropriateness of statements made in the report.
- discussion with managers on approach to stakeholder engagement. However, we had no direct contact with external stakeholders.
- 20 interviews with staffs involved in sustainability management, report preparation and provision of report information were carried out.
- review of key organizational developments.
- review of the findings of internal audits.
- review of supporting evidence for claims made in the reports.
- an assessment of the organization's reporting and management processes concerning this reporting against the principles of Inclusivity, Materiality, Responsiveness and Impact as described in the AA1000AP (2018).

Conclusions

A detailed review against the Inclusivity, Materiality, Responsiveness and Impact of AA1000AP (2018) and GRI Standards is set out below:

Inclusivity

This report has reflected a fact that CPC has continually sought the engagement of its stakeholders and established material sustainability topics, as the participation of stakeholders has been conducted in developing and achieving an accountable and strategic response to sustainability. There are fair reporting and disclosures for the information of Environment, Social and Governance (ESG) in this report, so that appropriate planning and target-setting can be supported. In our professional opinion the report covers the CPC's inclusivity issues.

Materiality

CPC publishes material topics that will substantively influence and impact the assessments, decisions, actions and performance of CPC and its stakeholders. The sustainability information disclosed enables its stakeholders to make informed judgements about the CPC's management and performance. In our professional opinion the report covers the CPC's material issues.

Responsiveness

CPC has implemented the practice to respond to the expectations and perceptions of its stakeholders. An Ethical Policy for CPC is developed and continually provides the opportunity to further enhance CPC's responsiveness to stakeholder concerns. Topics that stakeholder concern about have been responded timely. In our professional opinion the report covers the CPC's responsiveness issues.

Impact

CPC has identified and fairly represented impacts that were measured and disclosed in probably balanced and effective way. CPC has established processes to monitor, measure, evaluate and manage impacts that lead to more effective decision-making and results-based management within the organization. In our professional opinion the report covers the CPC's impact issues.

GRI Sustainability Reporting Standards (GRI Standards)

CPC provided us with their self-declaration of in accordance with GRI Standards: Core option (For each material topic covered by a topic-specific GRI Standard, comply with all reporting requirements for at least one topic-specific disclosure). Based on our review, we confirm that sustainable development disclosures with reference to GRI Standards' disclosures are reported, partially reported or omitted. In our professional opinion the self-declaration covers the CPC's sustainability topics.

Assurance level

The moderate level assurance provided is in accordance with AA1000AS v3 in our review, as defined by the scope and methodology described in this statement.

Responsibility

The sustainability report is the responsibility of the CPC's chairman as declared in his responsibility letter. Our responsibility is to provide an independent assurance opinion statement to stakeholders giving our professional opinion based on the scope and methodology described.

Competency and Independence

The assurance team was composed of Lead auditors experienced in relevant sectors, and trained in a range of sustainability, environmental and social standards including AA1000AS, ISO 14001, ISO 45001, ISO 14064 and ISO 9001. BSI is a leading global standards and assessment body founded in 1901. The assurance is carried out in line with the BSI Fair Trading Code of Practice.



AA1000
Licensed Report
000-4/V3-ZSDE7

For and on behalf of BSI:

Peter Pu, Managing Director BSI Taiwan

Statement No: SRA-TW-2021017
2022-05-27

...making excellence a habit.™

Appendix IV: CPA Assurance (ISAE3000)



安侯建業聯合會計師事務所

KPMG

台北市110615信義路5段7號68樓(台北101大樓)
68F., TAIPEI 101 TOWER, No. 7, Sec. 5,
Xinyi Road, Taipei City 110615, Taiwan (R.O.C.)

電話 Tel + 886 2 8101 6666
傳真 Fax + 886 2 8101 6667
網址 Web home.kpmg/tw

會計師有限確信報告

台灣中油股份有限公司 公鑒：

本會計師接受台灣中油股份有限公司（以下簡稱「台灣中油」）之委託，對台灣中油民國一一〇年度（2021年度）永續報告書（以下簡稱「報告書」）中所揭露之特定績效指標（以下簡稱「確信標的資訊」）執行有限確信程序並出具報告。

確信標的資訊與報導基準

台灣中油依據永續會計準則委員會（Sustainability Accounting Standards Board，「SASB」）發布之SASB永續性報導準則（SASB準則）之核心依循選項所揭露之特定績效指標資訊及其報導基準詳列於附件一。

公司之責任

台灣中油應設定其永續績效和報導目標，包括辨識利害關係人及重大性議題，並依前述報導基準編製及允當表達民國一一〇年度（2021年度）報告書內所涵蓋之確信標的資訊，且負責建立及維持與報告書編製有關之必要內部控制，以確保報告書所報導之特定績效指標未存有導因於舞弊或錯誤之重大不實表達。

會計師之責任

本會計師係依據由國際審計與確信準則委員會（International Auditing and Assurance Standards Board）所發佈之國際確信業務準則第3000號—歷史性財務資訊之查核或核閱以外之確信業務（International Standard on Assurance Engagements (ISAE) 3000: Assurance Engagements other than Audits or Reviews of Historical Financial Information）規劃並執行工作，以對第二段所述之確信標的資訊是否存在重大不實表達出具有限確信報告。因有限確信案件對風險之瞭解及考量低於合理確信案件，所執行程序之性質及時間與適用於合理確信案件者不同，其範圍亦較小，因此有限確信案件取得之確信程度明顯低於合理確信案件取得者。

品質管制與獨立性

本會計師及所隸屬會計師事務所已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、專業能力及盡專業上應有之注意、保密及專業態度。此外，本會計師所隸屬會計師事務所遵循審計準則公報第四十六號「會計師事務所之品



質管制」，維持完備之品質管制制度，包含與遵循職業道德規範、專業準則及所適用法令相關之書面政策及程序。

所執行程序之彙總說明

本會計師係針對第二段所述之確信標的資訊執行有限確信工作，主要執行之確信程序包括：

- 取得台灣中油民國一一〇年度（2021年度）報告書，並閱讀其內容；
- 訪談台灣中油管理階層及攸關員工，以瞭解用以蒐集及產出確信標的資訊之相關作業流程與資訊系統；
- 基於上述事項所取得之瞭解，就報告書揭露之特定資訊執行分析性程序，或於必要時檢視核對相關文件，以獲取足夠及適切之有限確信證據。

上述確信程序係基於本會計師之專業判斷，包括辨識確信標的資訊可能存有重大錯誤或不實表達之範圍並評估其潛在風險，設計足夠且適切之確信程序暨評估確信標的資訊之表達。本會計師相信此項確信工作可對本確信報告之結論提供合理之依據。

先天限制

台灣中油民國一一〇年度（2021年度）報告書內容涵蓋非財務資訊，對於該等資訊之揭露內容可能涉及台灣中油管理階層之重大判斷、假設與解釋，故不同利害關係人可能對於該等資訊有不同之解讀。

結論

依據所執行之程序及所獲取之證據，本會計師並未發現第二段所述確信標的資訊有未依適用之報導基準編製而須作重大修正之情事。

其他事項

台灣中油網站之維護係台灣中油管理階層之責任，對於本確信報告於台灣中油網站公告後任何確信標的資訊或適用基準之變更，本會計師將不負就該等資訊重新執行確信工作之責任。

安侯建業聯合會計師事務所

會計師：謝秋華 

事務所地址：台北市信義路五段七號六十八樓

民國一一年五月三十一日



附件一：確信標的資訊彙總表

編號	報告書對應章節及頁碼	確信標的資訊	SASB 準則
1	3.3.2廢棄物管理 CH3 P2	在人口密集地區的石化產物精煉廠數量	EM-RM-120a.2.
2	3.2.3水資源使用與管理 CH3 P.19、20	總取水量、回收量、位於高用水壓力區域之用水量	EM-RM-140a.1.
3	3.2.3水資源使用與管理 CH3 P.18	違反水質許可/標準/法規等事件數量	EM-RM-140a.2.



台灣中油股份有限公司
CPC Corporation, Taiwan