2023

SUSTAINABILITY REPORT

TABLE OF CONTENTS

Sustainable CPC

Special coverage on sustainability

Introduction

Report Profile

CPC Corporation, Taiwan (referred to as CPC throughout the report) has always valued interaction and communication with stakeholders and considers them to be the foundation for business continuity. CPC has been preparing sustainability reports voluntarily since 2007; the 2023 report marks the 15th issue, and it is intended not only to disclose CPC's sustainability goals, strategies, and progress, but also to address ESG issues that are of concern to the general public.

Cover story

For more than three quarters of a century, CPC has contributed to the development of many successful industries and infrastructures known today. Given how environmental and ecological changes are happening at a fast, drastic, and uncontrollable rate, CPC believes carbon transformation to be the correct path to sustainability. For corporate identity system (CIS), the cover page displays roads in red, white, and blue colors to symbolize CPC's role of providing raw materials for virtually every industry and supplying clean, sustainable energy to support the lifestyles, visions, and prospects here in Taiwan.

Scope of Report and Reporting Period

The report period is from January 1, 2022 to December 31, 2022. For information integrity and trend comparison, information for some content includes historical data and 2023 information. The last version was published in June 2022. Compared to the last report, this report contains no re-edited information, and the boundaries of both reports are similar. This report provides information regarding the activities of CPC headquarter and affiliates. Environmentally, the report boundaries mainly cover the performance of the Taoyuan Refinery Plant, Dalin Refinery Plant, and Linyuan Petrochemical Plant. For matters and data not disclosed in this report, please visit our corporate website (https://www.cpc.com.tw/).

CPC website

Normative References

We have prepared this report in accordance with the GRI Sustainability Reporting Standards (GRI Standards) published by the Global Sustainability Standards Board (GSSB), and disclosed information on CPC's current ESG practices as well as domestic and foreign trends using GRI 11: Oil and Gas Sector Disclosures 2021. Standards of the Sustainability Accounting Standards Board (SASB) and indicators of the Task Force on Climate-related Financial Disclosures (TCFD) were used as reference for the disclosure of CPC's current practices and domestic/foreign ESG trends for 2022. The following guidelines and initiatives were also taken into consideration:

- **AA1000 Accountability Stakeholder Engagement Standard (AA1000SES)**
- **The Global Compact's Ten Principles**
- **ISO 26000 Guidance on Social Responsibility**
- **United Nations Sustainable Development Goals (SDGs)**
- **Standards of Sustainability Accounting Standards Board (SASB)**
- **Task Force on Climate-related Financial Disclosures (TCFD)**

» Note: The report is prepared based on the 8 principles of GRI sustainability reporting standards (version 2021), namely: accuracy, balance, clarity, comparability, completeness, sustainability context, timeliness, and verifiability. Data was sourced from internal departments that had been reviewed by senior managers, and the report has been published following the review and approval of the Sustainable Operations Promotion Committee.

Report Quality Control Workflow and Data Calculation Basis

Report Editing

Established the "2023 Sustainability Report Editing Panel," with the Vice President of the Department of Planning (DoP) as the convener, the DoP as the executive secretary, and members from all business divisions, research units, and staffing offices.

Report Content Review

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

External Assurance of the Report

This Report has been verified and assured by the British Standards Institution (BSI) and Ernst & Young to comply with,

- BSI: GRI Standards 2021, AA 1000 AS v3 (with 2018 addendum) and Type 1 Moderate Assurance Standard
- EY: ISAE3000 assurance (3 aspects)

All financial data contained in this Report is extracted from CPA-certified financial statements, and all values are expressed in New Taiwan Dollars. Some statistics are quoted from the open information of government agencies (e.g. EPA). ISO 14064-1, ISO14001, and ISO 45001 are certified by third-party certification bodies.

Contact

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Opinions and feedbacks

Message from the management

Over the past year, the conflict between Russia and Ukraine has continued, the world has experienced its fourth "energy crisis," and the direction of energy trade has been reorganized. Amid rising inflation, geopolitical tensions, and the ongoing fluctuations of the pandemic, the overall economy has slowed down. Despite operating in a challenging environment, CPC has been dedicated to fulfilling its mission of ensuring stable domestic oil and gas supply. We have also cooperated with the government in safeguarding the well-being of the people, maintaining stable prices, and adhering to our core values of ESG—environmental, social, and governance—by promoting corporate transformation and upgrades. Our commitment lies in providing safe, diversified, and low-carbon energy services to the people of Taiwan, pursuing a triple win in ESG, and contributing to the United Nations' Sustainable Development Goals (SDGs) with significant results.

As a major energy supplier in Taiwan, CPC has internalized sustainable development as a core principle. Over the years, we have actively pursued policy objectives related to environmental protection, energy conservation, carbon reduction, and green energy development through continuous innovation and research and development. We firmly believe that long-term and robust development can only be achieved when the economy, society, and environment are balanced and given equal importance. In the future, CPC will continue to align with the nation's sustainable development goals, accelerate transformation and upgrades, optimize our corporate structure, and further promote innovative technologies and the development of new energy sources, aiming to achieve green and low-carbon development.

Standing together with the people, we weather the energy winter

In 2022, amidst global energy price hikes and high inflationary pressures, CPC cooperated with policies by supplying industrial and domestic oil and gas at prices below cost. We have been implementing measures to freeze or slow down fuel prices, resulting in substantial operating losses. However, as a state-owned enterprise and a leading player in the energy industry, CPC has an unwavering commitment to assist in maintaining price stability and supporting economic development. In the past year, CPC chose to unite with a greater belief and effort, creating new opportunities through various measures such as optimizing procurement and improving efficiency in the face of adversity.

ESG—net-zero sustainability linking three transformation strategies

Starting with ESG as a foundation, CPC is moving towards sustainable development. We have outlined the " High-value Petrochemical, Low-Carbon Emission and Lean-Renewable Energy " net-zero transformation strategy, which encompasses three dimensions: optimizing oil products, carbon reduction in processes, and promoting the transition from low-carbon natural gas to zero-carbon energy. Substantial achievements have been made in this regard.

In terms of " High-value Petrochemical," leveraging our advantage in carbon fiber composites, CPC has independently designed space-grade composite cylinders and signed a memorandum of understanding (MOU) with the National Space Organization and the Metal Industries Research & Development Center. CPC has successfully transformed underground petroleum reserves into high-end and cutting-edge materials, paving the way for space exploration.

Regarding Low-Carbon emission, by 2022, CPC had achieved a cumulative carbon reduction of over 30% and invested NT$5 billion in 34 carbon reduction projects. In addition to launching carbon-neutral natural gas and carbon-neutral ethylene products, we completed the nation's first carbon-neutral refueling station and received 1.05 million barrels of carbon-neutral crude oil for the first time.

In the area of Lean-renewable energy, CPC has continued the development of geothermal energy in Ruisui, Hualien, conducting geological surveys, exploration, and drilling. We are also actively promoting the construction of the Yilan Tuchang geothermal power plant. In collaboration with the Hydrogen Energy Task Force established by the Ministry of Economic Affairs, CPC has been designated as the most crucial domestic hydrogen energy supplier. The first hydrogen refueling demonstration station is currently under planning, and portable hydrogen refueling station equipment is expected to be introduced by the end of 2023.

Linking the environment and society, fostering inclusivity and a better future

In 2022, CPC continued to demonstrate remarkable achievements in ecological conservation, safeguarding precious natural assets through concrete actions. Since 2019, we have been engaged in ecological conservation efforts in the Guantang area. Through four years of continuous and unremitting restoration work, the number of endangered Polycyathus chaishanensis colonies has increased from 75 to over 100, and new colonies have been discovered. The variety of shell-forming coral algae has also increased from single digits to over 20, laying the foundation for homeland security and soil conservation. CPC's ecological conservation measures not only contribute to carbon sequestration and environmental and economic benefits but also dedicate efforts to the beauty of Taiwan and the sustainability of the Earth.

CPC has won the "Asia Responsible Enterprise Award" for three consecutive years. In 2022, we received the Health and Hygiene Promotion Award for our long-term commitment to promoting a culture of cleanliness in gas station restrooms. Our "Kindness Gas Stations" program, which nurtures slow-flying angels, also received the Social Welfare Development Award. Furthermore, our carbon-neutral actions earned us the Green Leadership Award. These three awards not only recognize CPC's long-term dedication to social inclusivity but also serve as ongoing motivation for all employees to implement sustainable values. Together with companies from various Asian countries, we will continue to work hand in hand with all sectors in Taiwan to create a better society.

Pioneering sustainability, internationally recognized

In 2022, CPC's efforts in ESG and sustainable development were recognized by major domestic and international awards. These included the longstanding Reader's Digest Trusted Brand Award, as well as the Asia Responsible Enterprise Award (AREA), Asian Corporate Excellence and Sustainability Awards (ACES), BSI Sustainable Resilience Award, Targeted Sustainable Actions Award (TSAA), Global Corporate Sustainability Award (GCSA), Taiwan Corporate Sustainability Award (TCSA), Global Views Magazine Corporate Social Responsibility Award, National Brand Yushan Award, Taiwan Innotech Expo Invention Contest, Ministry of Education Sports Promotion Award, National Startup Award, Excellent Public Engineering Award, Executive Yuan Golden Torch Award, and National Corporate Environmental Protection Award, among others. CPC has received numerous national first-place awards in the categories of ESG and sustainable development, leading the way among state-owned enterprises and ranking among the top companies nationwide.

Diversity and innovation, partnering with stakeholders to achieve sustainable vision

After the 27th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP27) in November 2022, initiatives such as net-zero transformation, green monitoring mechanisms, and just transitions have once again gained attention. The establishment of the "Loss and Damage" fund for climate compensation signifies the responsibility that developed and developing countries must shoulder regarding climate change issues. It also signifies that CPC's carbon reduction actions and efforts to mitigate and adapt to climate change risks are no longer voluntary actions but rather responsibilities and obligations integrated into our operational costs.

As CPC celebrates its 77th anniversary, we will rally all employees and collaborate with stakeholders to accelerate the transformation steps of "High-value Petrochemical" (enhancing the value chain of oil and gas), "Low-Carbon Emission" (promoting carbon-negative technologies), and "Lean-Renewable Energy" (developing zero-carbon energy). Our first step is innovation and research and development, utilizing technology to drive digital transformation. The overarching goal is to transition from "black gold" to "green gold." By supplying diversified low-carbon and clean energy, transforming gas stations into multi-energy supply stations, and leading Taiwan towards a green energy homeland, we strive to realize our new vision of becoming a diverse, innovative, and sustainable international energy company.

Chairman

President

2022 Sustainability Accomplishments

Awards | Certifications and ratings

2022 Asia Responsible Enterprise Awards
Social Empowerment Award
Health Promotion Award
Green Leadership Award

2022 Asia Corporate Excellence & Sustainability Awards
Sustainability - Community Initiative Award

2022 Global Corporate Sustainability Awards
Sustainability Reporting Award - Silver

2022 Taiwan Sustainable Action Award
Gold for: CPC Net Zero Transformation
Silver for: CPC Overseas Sustainability Footprint
Bronze for: CPC Public Restroom Cleanup

2022 Taiwan Corporate Sustainability Awards
"Corporate Sustainability Report Award - Energy, Platinum" along with 6 "Single Category Sustainability Performance Awards" including "Climate Leadership," "Talent Development Leader," "Growth through Innovation Leader," "Sustainable Supply Chain Leader," "Water Resource Leader," and "Gender Equality Leader"

Won Reader's Digest's "Trusted Brand Platinum Award - Petrol Station Category" for 22 consecutive years
and "Automobile and Supplies - Lubricant Category - Gold" for 3 consecutive years

British Standards Institution
Sustainability Resilience Pilot Award

Global Views Magazine's 18th CSR and ESG Awards
First Prize in Education Promotion Category

Association for Talent Development
Best Practice Award

Won a total of 7 major awards in the 19th National Brand Yushan Award
including "National Best Product - First Prize," "Most Popular Brand," and 5 "Best Product" awards

Won the 19th National Innovation Awards
"Enterprise Innovation Award" - "Value-adding Carbon Fixation Technology - High Capacity Artificial Graphene-based Anode Material Technology for Electric Vehicles"

Won invention challenges during the 2022 Taiwan Innotech Expo
2 Gold Awards
4 Silver Awards
2 Bronze Awards

2022 National Invention and Creation Award
"Silver Award" - "Marine Algae Cultivation Method and Equipment"

Named "Water Conservation Top Performer" by Water Resources Agency, Economic Affairs

4th National Corporate Environmental Protection Awards
"Silver," "Bronze," and "Honorary Award for Environment-friendly Enterprise" from the EPA, Executive Yuan

Named "Sponsorship of Clean Air Zones - Special Contributor" by the EPA, Executive Yuan

Won commendations for "Inter-sector Greenhouse Gas Reduction" and "Sponsorship of Clean Air Zones - Special Contributor" from Kaohsiung City Environmental Protection Bureau

Won Construction Safety and Health Promotion Award
"Excellence in the Public Construction Category" from the Ministry of Labor

Won "Sports Facilitator Award" - Golden Award in sponsorship from Sports Administration, Ministry of Education, for 5 consecutive years

Named "Public Construction Model Performer"
Won "Excellence in Green Purchase - Private Enterprise and Organization Category" and "Excellence in Sponsorship of Rivers" from the Department of Environmental Protection, Taoyuan City Government

Won "Public Construction Golden Quality Award"
"Emission Improvement Turnkey Work for Hydrogen Sulfide Waste Gas Burning Tower at Taoyuan Plant No. 3/4" and "Pipeline Turnkey Work for Talin Plant at Talin Tank Farm" from Ministry of Economic Affairs

Named "Critical National Infrastructure Protection Drill Top Performer" by the Executive Yuan

Won "Gender Equality Commitment Award" in "Gender Equality Performance Evaluation and Reward Program for Subordinates of Executive Yuan"

Received domestic long-term rating of "AAA(twn)" from Fitch Ratings Taiwan for 17 consecutive years

Passed certification for Taiwan Intellectual Property Management System (TIPS) - Grade A in 2022

World Toilet Organization
Received "World Toilet Day Campaign Certification"

The CPC website received Web Content Accessibility Guidelines Level AA rating for 5 consecutive years

Talent Quality Management System (TTQS) from Ministry of Labor
silver award

the CPC Building received gold-level green building certification

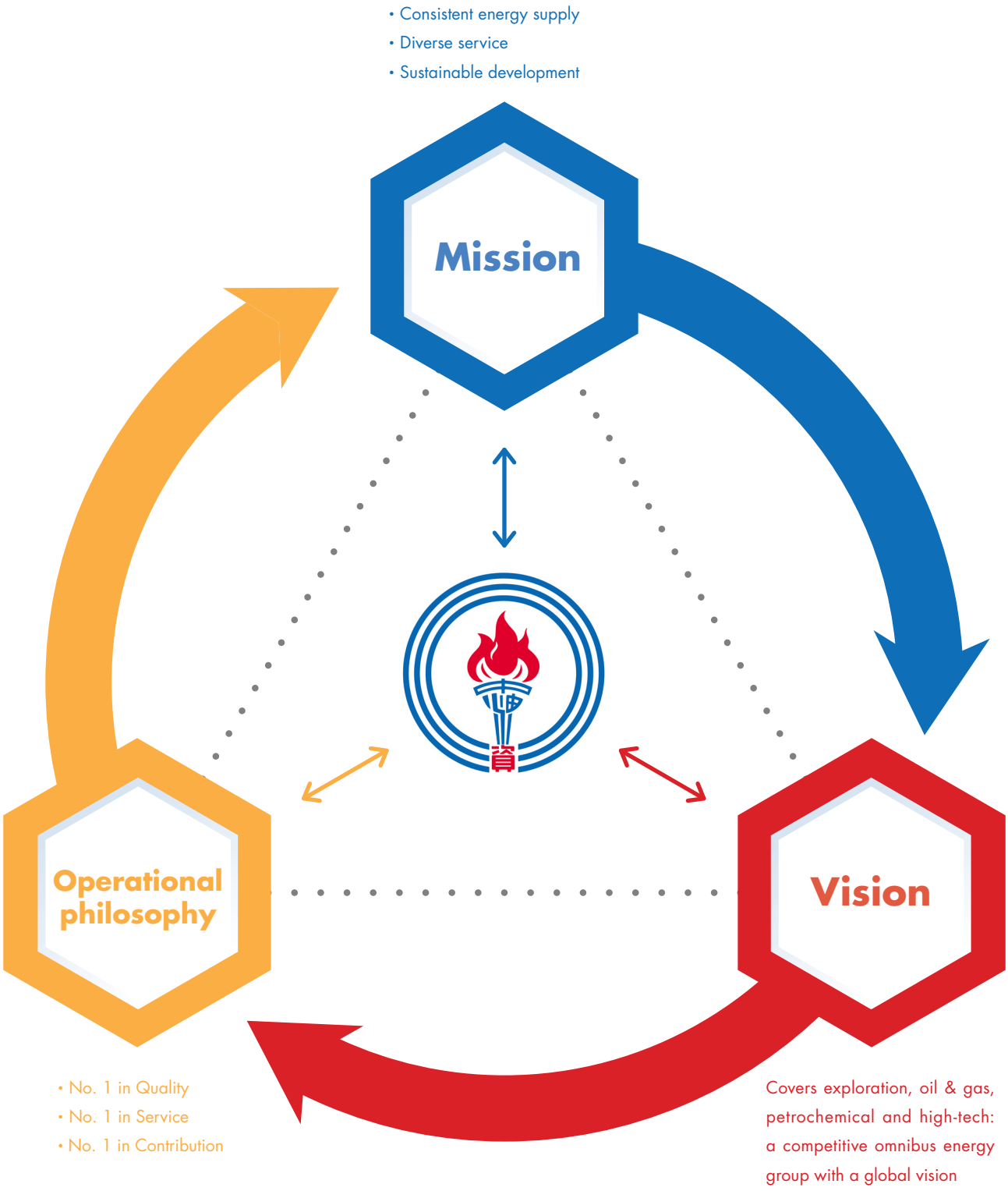
A total of **70** petrol stations received green building certification

Public restrooms at **601** direct petrol stations received the "Excellent" rating from environmental protection units

A total of **19** proprietary photovoltaic systems attained Renewable Energy Project certification

CPC currently holds a total of **4,796** renewable energy certificates including **11** diamond certifications

CPC's sustainability roadmap



Sustainability Strategies and Goals

CPC was founded in 1946, and for more than 77 years, it has shouldered the responsibility of a state-owned enterprise and stabilized oil and gas prices while ensuring adequate supply of oil and gas to domestic users, thereby helping mid-stream and downstream participants of the petrochemical industry grow. CPC is also dedicated to improving the quality of the environment, and fulfills its corporate social responsibilities to cater for the interests of all members of the society. CPC first established its sustainability management policy back in 2003; the policy has since been reviewed and adjusted time and time again to conform with environmental protection trends around the world, and below is the 2022 amendment last amended and approved by the board of directors.

	Sustainability Management Policy	Strategic goals and value creation	CPC's sustainability role
Environmental	**Make efficient use of resources and reduce water and energy on an ongoing basis** 	• Commit to climate actions and support greenhouse gas reduction • Supply low-carbon, green energy and enforce preservation of the ecosystem	**Climate Protection Company** **Clean Power Company**
	Adopt total clean production and protect the ecosystem 		
Social	**CSR Emphasis and Service Expansion** 	• Create a happy, friendly workplace and train a group of professional employees • Give back to the community; implement environmental/ energy education • Embrace energy transformation challenges; create a net zero and sustainable future	**Caring Personal Career** **Cultivating Prosperity for Community** **Committing a Premium Century**
Governance	**Environmental Indicators and Information Transparency** 		
	Proactive R&D and Domain Cultivation 	• Contribute to treasury income; stabilize energy and consumer prices • Strive to deliver top-notch quality and the best service	**Creating Profit to Country** **Customer's Perfect Choice**
	Legal Compliance and Abidance with International Conventions 		**Coexistence Partnership & Co-glory**

Facilitating net zero transition and sustainable management

Extreme weather has increased in severity in recent years, and as of July 2022, more than 137 nations worldwide had announced their commitments to net zero emissions by 2050. Taiwan, too, has announced its 2050 net zero emission goals in line with the rest of the world. Meanwhile, the EU's Carbon Border Adjustment Mechanism (CBAM) and the U.S. Clean Competition Act (CCA) are expected to be effected at the end of 2023 and in 2024, respectively; charges collected from the two systems will contribute to the climate budget and be used to help least developed nations eliminate carbon. Overall, Taiwan has set its collective goal to reduce net greenhouse gas emission by 55% compared to the 1990 baseline before 2030.

The net zero emission movement has raised carbon reduction awareness across countries around the world and fundamentally changed the demand for energy. In response to the carbon reduction trend, global conglomerates have begun imposing timelines toward achieving net zero emission with particular regards to business activities, products, and supply chain, and the wave of transformation is happening to the energy and petrochemical industries. Being a state-owned enterprise and a leader of the petrochemical/energy industry, CPC has adopted three transformation strategies with different emphases on high-value petrochemical, low-carbon emission and lean-renewable energy. Meanwhile, CPC continues to direct attention to the latest low carbon trends, and takes pragmatic actions to reduce emission, improve fuel quality, develop renewable energy sources and carbon negative technologies, and work with all stakeholders toward exploring new business opportunities for a sustainable, net zero future.

High-value Petrochemical

Short-term	Medium-term	Long-term
Convert oil to petrochemical products	Convert petrochemical products to high value materials	New materials industry

Growth of electric vehicles will eventually lessen demand for oil products, and CPC will aim to adapt to the change from both the production and sale perspectives. Research and development will be the key to driving corporate transformation, as it allows timely adjustments to the refining/production structure and facilitates transition into "crude oil to chemicals" (COTC). Through adoption of COTC, CPC hopes to reduce production of fuel in favor of petrochemical products, and take this opportunity to develop advanced new materials needed for the domestic semiconductors, aerospace, or biomedicine industries.

Performance highlight:

- Application of amorphous carbon anode materials, lithium-titanium oxide materials, and battery system technologies
- Application of dicyclopentdiene derivatives
- Smart green energy stations
- Developed an advance catalyst center and R&D platform for organic materials

Low-Carbon Emission

Short-term	Medium-term	Long-term
Improve energy efficiency Carbon neutral oil/gas	Carbon capture Carbon storage	Carbon utilization

CPC prides itself for having the ability to reduce carbon emission at the source by improving the energy efficiency of its production process. Through promotion of carbon trading for oil and gas products and development of carbon capture, utilization, and storage (CCUS) technologies, CPC hopes to create new opportunities from carbon cycling.

Performance highlight:

- The first in the nation to introduce trading of carbon neutral oil/gas products (natural gas, ethylene, and crude oil)
- Pioneer of carbon neutral fuel station in Taiwan
- Collaboration with China Steel Corporation for the formation of steel alliance
- Product carbon footprint survey
- Development of small test equipment for CO_2 capture and utilization

Lean-Renewable Energy

Short-term	Medium-term	Long-term
Natural gas	Photovoltaic/geothermal/ cold energy	Hydrogen power

Ongoing investments are being made to the development of photovoltaic systems, geothermal power, and natural gas and cold energy supply. CPC has also ventured into hydrogen power, and will explore viable business models given the domestic demand, regulations, and supply chain availability to transform into a supplier of clean energy. Success of the clean energy transformation will make each CPC fuel station a supply center for diverse energy sources.

Performance highlight:

- Development of photovoltaic maintenance system
- Evaluation for the establishment of 4MW geothermal power plant
- Evaluation for the establishment of pilot hydrogen fuel station
- Cold drainage algae and aquaculture

CPC's SDG footprint

Significance to Us	Our Contributions	Corresponding Sections
No poverty CPC assists the underprivileged at domestic and foreign mining sites; it is the organization's goal to eliminate poverty and under-development worldwide by exerting corporate influence	• Budgets are allocated annually to support construction and charity activities at mining's sites in under-developed nations; furthermore, work opportunities and skill training courses are offered in conjunction with school construction to promote children's education, which in turn mitigates poverty and ends the vicious circle	3.4 Social inclusion
Zero hunger CPC assures accessibility of basic nutrition for the poor and the underprivileged, and provides them with the support they need in life	• CPC donates supplies to Chad in Africa, and supports Taiwanese farmers and fishermen by purchasing or assisting in the sale of excess seasonal produce and seafood; the crops purchased are then donated to vulnerable groups. In 2022, we cooperatively sold 58.56 metric tons of agricultural products and 8,974 groupers.	3.4 Social inclusion
Good health and well-being It is CPC's responsibility to ensure employees' health and safety	• CPC provides employees with comprehensive health checkup, on-site health consultation, and workplace safety protection; a total of 207 health promotion events and seminars were organized in 2022 • CPC clinics have been established in Taoyuan, Miaoli, Kaohsiung and Taipei to serve employees and local community residents	3.1 Friendly Workplace 3.2 Work in peace
Quality education CPC associates energy education with daily living activities and conveys its sustainability philosophy through awareness campaign, exhibition, event, and environmental education. Through entertainment, message is conveyed to a broad audience including children, young adults, and the general public. CPC is also the only business in Taiwan to implement a counselor training system for persons with developmental retardation.	• CPC actively sponsors MAKER PARTY, an energy education program targeting elementary school students that promotes learning through handicraft and games • "CPC Kaohsiung Refinery Environmental Education Park" and "Taiwan Oil Field Exhibition Hall" have been certified for Environmental Education Friendly Site • The CPC Petroleum Discovery Museum uses multimedia and interactive displays to connect complicated energy knowledge with day-to-day living activities, which makes the content interesting and effective for the intended purpose • CPC promotes cultural development, education, and knowledge transfer and helps local residents and children grow by sponsoring purchases of essential equipment, donating renewed computers, and sponsoring school sports teams in remote areas. • CPC has implemented a proprietary counselor system to help persons with developmental retardation develop professional skills	3.4.2 Green influence **Special coverage 5 Social responsibilities and education for all ages - CPC the green promoter**

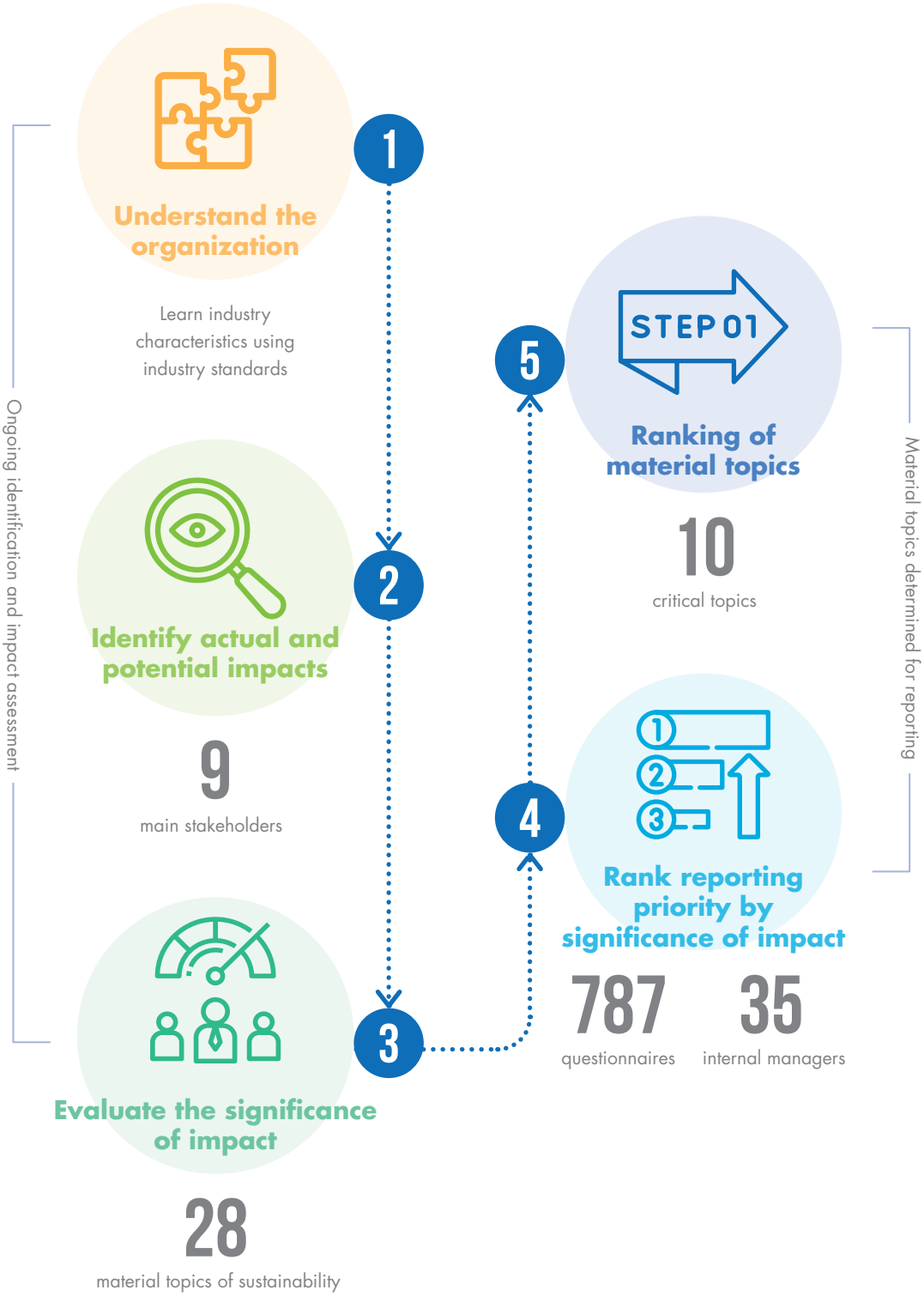
Significance to Us	Our Contributions	Corresponding Sections
Gender equality CPC treats all employees fairly; salary and promotion decisions are not differentiated by gender	• Females accounted for 15.5% of general staff and 21.58% of senior managers • CPC had a total of three female vice presidents until 2022, and the number surpassed all other state-owned enterprises • 48% of males took unpaid parental leave; reinstatement rate and retention rate for males and females who took unpaid parental leave were all above 90%	3.2 Work in peace 3.3 Talent recruitment and development
Clean water and sanitation CPC values water resource management and helps less developed countries improve infrastructures so that they have access to clean water; additionally, a multitude of water conservation measures are being implemented to improve water efficiency	• All three plants recycled more than 98% of water in 2022 • CPC donates water wells in mining areas of less developed countries as a way to improve local water quality; it even arranged complimentary medical service at one time to improve health and hygiene in the local environment • All 601 of CPC's direct petrol stations had public restrooms rated Excellent; CPC has also been supporting EPA's Public Restroom Sponsorship Program for 4 years since 2019, through which it contributed to the reduction of wastewater and waste discharge while at the same time increased the percentage of waste recycled and reused	2.3 Energy/resource management and transformation 2.5 Pollution Prevention
Affordable and clean energy CPC delivers stable energy supply and has a price balancing system in place; photovoltaic systems are being implemented at petrol stations to make use of green energy	• CPC has set short-term carbon reduction goals for 2030, and strives to achieve net zero emission by 2050 • Climate risk assessments for 25 energy supply complexes were completed; a total of 1,126 operational facilities were taken count of in 2022 • As of 2022, CPC had completed more than 248 photovoltaic project sites and installed total capacity of 12.518 MW	1.1 Our CPC 2.1 Mitigation and adaptation to climate change 2.2 Low-carbon/green energy transformation and circular economy
Decent work and economic growth CPC offers appealing employment opportunities and a friendly work environment, and strives to maintain strong operating performance	• CPC adopts a global deployment strategy that covers 16 countries in 4 continents; its presence helps improve employment and economic growth of mining areas in less developed countries • 854 people with disability (including interns) were hired, representing 4.78% of total employees (including contract staff and interns); CPC also recruited and trained 543 people with developmental retardation • Employees averaged 51.14 training hours in 2022; the training system adopted by CPC's Department of Human Resources has been certified for Talent Quality Management System (TTQS) - Silver and proven effective at improving employees' competitiveness	1.1 Our CPC 3.1 Friendly Workplace 3.3 Talent recruitment and development

Significance to Us	Our Contributions	Corresponding Sections
Industry, innovation and infrastructure CPC continually enforces circular economy, energy/resource efficiency enhancement and innovative R&D projects as means to enhance competitiveness, sustainability and resilience	• Ongoing expansions are being made to natural gas transportation and storage facilities, pipeline capacity, and related infrastructures for improved gas supply and a robust gas supply network • 70 petrol stations were certified for green building, and 11 of which received diamond grade certification • CPC had 4 green energy-based pilot smart fuel stations in Northern, Central, Southern, and Eastern Taiwan; plans were made in 2022 to begin construction of the 5th green energy-based smart fuel station	2.1 Mitigation and adaptation to climate change 2.2 Low-carbon/green energy transformation and circular economy
Reduced inequalities CPC holds the conviction that every employee is entitled to equal recruitment, treatment, and promotion opportunities, and takes actions to protect their interests	• CPC encourages employee feedback and pays attention to employees' opinions; a total of 20 labor-management meetings were convened in 2022 • Percentage of female employees and female engineers in the refining production unit has increased progressively in recent years • The first gas station brand to recruit female service staff; CPC also hires women seeking re-employment for car washing service at petrol stations • An Employee Grievance Handling Committee, a Sexual Harassment Complaint Review Committee, and a Disciplinary Committee have been assemble	3.1 Friendly Workplace 3.3 Talent recruitment and development
Sustainable cities and communities CPC has petrol stations deployed all over Taiwan; being one of the most highly used public spaces, it is especially important that they offer safety, inclusiveness, and convenience women, children, and people with disabilities	• •Petrol stations are being maintained on offshore islands and in remote areas regardless of profitability • In 2022, all 601 of CPC's direct petrol stations had public restrooms rated Excellent, whereas the public restrooms of 958 franchise stations were rated Excellent or Good and above • 70 petrol stations were certified for green building, and 11 of which received diamond grade certification	3.4 Social inclusion
Responsible Consumption and Production CPC undertakes innovative R&D and environment-friendly and sustainable solutions to fulfill its duties as a responsible producer	• All products have complied with or exceeded CNS requirements • Information and safety data sheet (SDS) of key products and services have been disclosed on CPC website • Progress of sustainability efforts is disclosed on an ongoing basis • In 2022, 21 products carbon footprint inventories and verifications were completed.	1.1 Our CPC
Climate Action CPC responds to the risks and opportunities of climate change and addresses them through mitigation and adaption measures	• CPC has set short-term goals to reduce greenhouse gas emission by 49.5% compared to the 2005 baseline by 2030, and long-term goals to achieve net zero emission by 2050 • A total of 7 plant sites updated their climate change risk assessment reports in 2022, and 1,126 operational facilities were taken count of during the year • All key investment projects have completed environmental impact assessment according to the Environmental Impact Assessment Act	2.1 Mitigation and adaptation to climate change

Significance to Us	Our Contributions	Corresponding Sections
 **Life below water** Some of CPC's operations take place near harbor areas; for this reason, the organization invests resources into marine conservation and adopts the duty and philosophy to reduce impact to the ecosystem	• Undersea ecological monitoring is being carried out at natural gas receiving stations to minimize environmental impact, and precautions have been taken to avoid damage to algal reefs near the 3rd receiving station • Approximately NT$61.5 million have been committed into preserving algal reefs in Taoyuan and to protect the marine environment in Guantang • Plans have been made to set up the nation's first ecosystem preservation fund • CPC provides cold drainage for residents living near the Yongan Plant to enhance aquaculture efficiency. • CPC promotes ecosystem preservation and environmental education at Guantang Industrial Park; the number of coral clusters (polycyathus chaishanensis) has grown by more than 25 from 2018 to 2022 owing to CPC's protection efforts	1.1 Business integrity 2.1 Mitigation and adaptation to climate change 2.4 Ecological preservation 2.5.3 Discharge and management of effluents and waste
 **Life on land** CPC is dedicated to preserving biodiversity at all operating sites, and embraces its responsibility and mission to facilitate sustainability of the ecosystem	• Plans have been made to set up the nation's first ecosystem preservation fund • CPC continues to support pollution removal, environmental protection, and ecological restoration efforts at various sites. For example, an ecological survey covering 19 vegetation areas and 12 fauna surveys was conducted near Suao Oil Supply Service Center • Through planning and monitoring of wild bird habitat, the breeding of little terns achieved a success rate of more than 70% in 2022	2.4 Ecological preservation
 **Peace, justice and strong institutions** CPC upholds business integrity and has management systems in place to protect consumers and prevent fraudulent and corruptive behaviors	• Rated "AAA (twn)" by Fitch Ratings for 17 consecutive years • CPC has dedicated ethics enforcement units in place to implement enhanced anti-corruption measures depending on indictments or convictions • Board performance was rated 94.01 in a self-assessment by directors and supervisors • CPC undergoes MOEA's corporate governance evaluation on a yearly basis	1.1 Our CPC 1.1.4 Sustainable governance 1.3 Business integrity
 **Partnerships for the goals** CPC makes ongoing improvements to operating practices as a way to care for the Earth's environment; strategies on low carbon transformation, technology development, and sustainable governance are being planned and implemented to connect with global sustainability trends	• Persistent efforts are being made to import carbon neutral oil and gas products; an announcement has been made to establish the nation's first carbon neutral fuel station • CPC interacts with international organizations on an unscheduled basis; since 2003, CPC has participated in 15 Conference of the Parties (COP) to learn the impact of climate change and carbon reduction methods	1.1 Our CPC 2.2 Low-carbon/green energy transformation and circular economy

Material topics of sustainability for the year

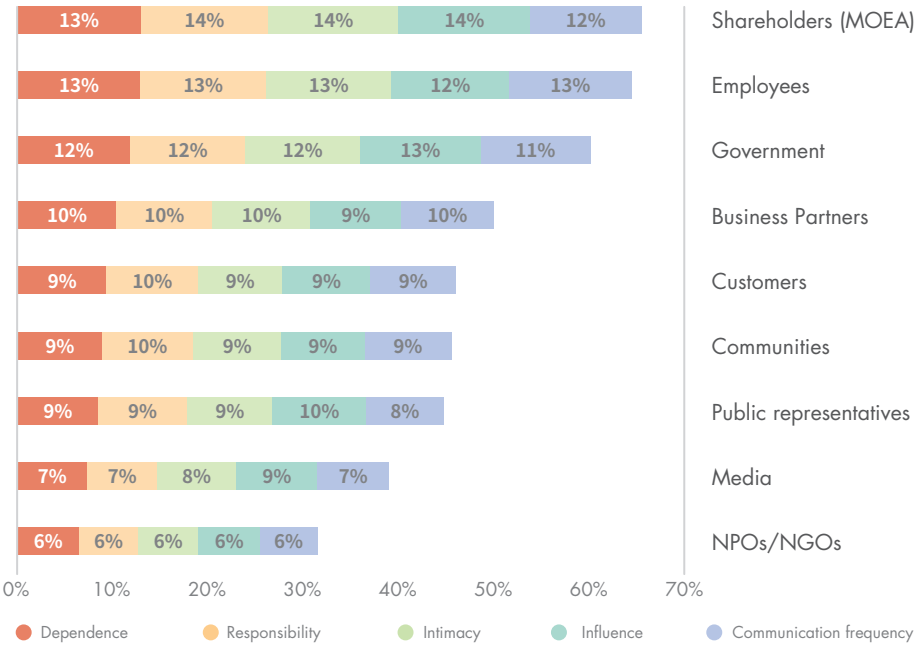
As a state-owned enterprise, CPC exercises significant influence as an industry leader. Its products, services and operations are constantly under public scrutiny; therefore, it is of utmost priority to meet expectations and address the interests of all its stakeholders. CPC values and keeps track of stakeholders' suggestions regarding sustainability management. Through a well-established and systematic process for material topic identification, we identify topics that either concern stakeholders or have greater impact on sustainable management, which become the subject matter of the Sustainability Report. Identification procedures for stakeholders and material topics and the outcome:



1. Identification of stakeholders

Through reference to the stakeholder groups identified by the energy industry at home and abroad, and referring to the attributes of stakeholders as specified in AA1000SES:2015 (Stakeholder Engagement Standards): dependency, responsibility, tension, influence, and diverse perspectives, we 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.

Stakeholder Identification and Analysis Results for CPC in 2023

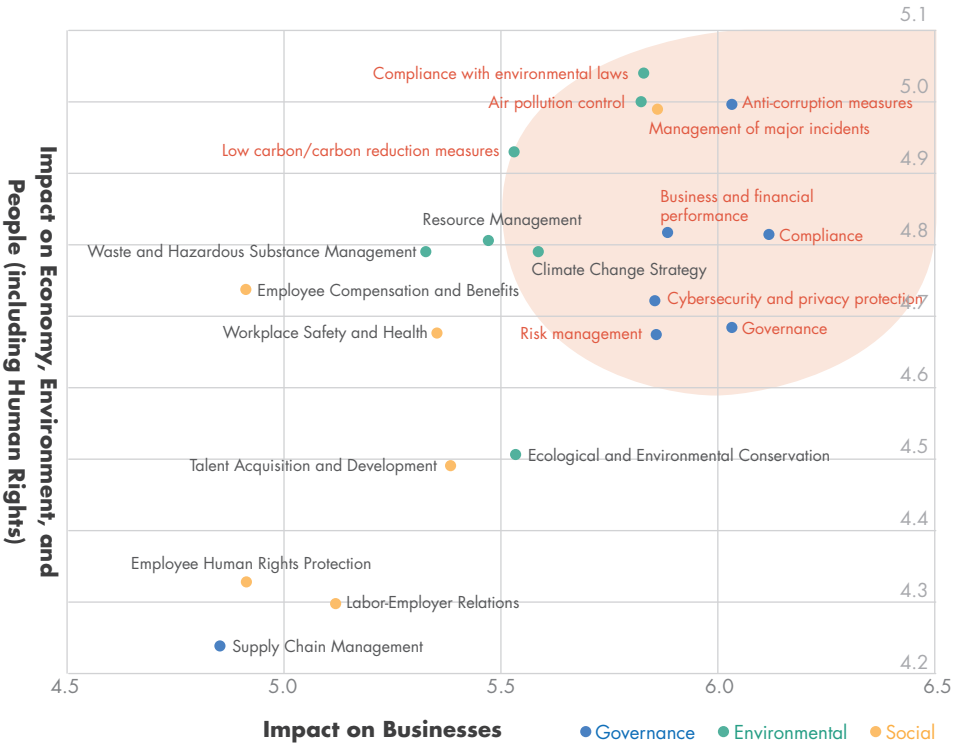


2.Gathering material topics of sustainability

Issues of concern are gathered through internal and external channels such as global guidelines and standards (e.g. Global Risks Report, United Nations SDGs, TCFD, CDP, and SASB), industry guidelines and standards, peer and non-peer benchmarks, annual organizational targets etc. By gathering sustainability-related issues, CPC is able to develop a better understanding of how sustainability affects the organization and the minimum responsibilities to be fulfilled. A total of 28 questions covering environmental, social, economic, and governance aspects were used to design "Stakeholder Concern Questionnaire" and "Material Topic Impact Questionnaire."

3.Analysis and discussion for materiality ranking of sustainability issues

The Stakeholder Concern Questionnaire was issued to the nine main stakeholders previously identified, and a total of 787 questionnaires were recovered; impacts of each sustainability issue from the governance, environmental, and social aspect were then taken into consideration. A total of 35 internal managers had participated in the material topic impact survey. After thorough analysis and prioritization, we have analyzed our 2022 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.



Out of a total of 28 material topics, CPC has identified 10 that are critical for communication 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.

Based on the answers provided in the questionnaires, the level of positive impact and negative impact is rated on a scale of 1 to 5 for each material topic, as shown in the following chart.

Overall ranking	Material topic	Internal stakeholders		External stakeholders	
		Positive impact	Negative impact	Positive impact	Negative impact
1	Anti-corruption measures ☆	3.1	2.9	3.3	2.9
2	Compliance	3.0	3.0	3.2	2.7
3	Compliance with environmental laws	3.0	2.8	3.4	3.0
4	Management of major incidents	3.0	2.8	3.4	2.9
5	Air pollution control	2.9	2.8	3.5	3.1
6	Governance	3.0	2.9	3.2	2.7
7	Business and financial performance	2.9	2.9	3.1	2.6
8	Cybersecurity and privacy protection	3.0	2.7	3.0	2.7
9	Risk management	2.9	2.8	3.1	2.8
10	Low carbon/carbon reduction measures ☆	2.8	2.6	3.3	2.9

» Note: ☆ Indicates that the material topic poses substantive risk.

● Governance ● Environmental ● Social

Confirming material topics of sustainability

Based on the outcomes of the analysis and after taking into consideration the emphasis of previous efforts, CPC has identified 10 topics that are critical to the organization. This year's material topics and impact boundaries are shown in the following chart; refer to corresponding chapters for more information.

1 Anti-corruption measures

Governance

Corresponding GRI disclosure: GRI 205

Corresponding chapter

1.3.2 Business integrity

Impact

Taking the initiative to identify corruption risks at various locations helps promote anti-corruption awareness and beings positive effects to corporate governance over the long term

Assessment system

- Corruption risk assessment at business locations
- Arrangement of anti-corruption training

2 Compliance

Governance

Corresponding GRI disclosure: GRI 2

Corresponding chapter

1.3.1 Compliance

Impact

Compliance, robust corporate governance, and the establishment, enforcement, and adherence of related guidelines not only reduce business risk and penalty risk, but also contribute favorably to the improvement of business performance

Assessment system

- Operational overview and performance review report

3 Compliance with environmental laws

Environmental

Corresponding GRI disclosure: GRI 2

Impact

Attention to climate change issues, regulatory changes, and market trends combined with appropriate adjustments to internal policies, transparent disclosures, and timely response help promote the organization's low carbon and green energy image, which has positive effects from an economic and environmental perspective

Corresponding chapter

2.5.1 Compliance with environmental laws

Assessment system

- Number of sites under supervision of the authority
- Number of training sessions, environmental protection meetings, and plant inspections

4 Management of major incidents

Social

Corresponding GRI disclosure: GRI 403

Impact

- Workplace hazards reduce employees' and stakeholders' trust for CPC and negatively impact CPC's reputation as an employer.
- Injury and illness affect employees' attendance and increase personnel cost.

Corresponding chapter

3.2.1 Workplace safety management
3.2.2 Workplace safety assurance

Assessment system

- Outcome of optimizations to the production procedure safety management system
- Number of safety and health training sessions
- Number of disaster prevention and rescue drills

5 Air pollution control

Environmental

Corresponding GRI disclosure: GRI 305

Impact

Ongoing improvements to leakage of equipment components, establishment of management goals, and tracking of execution outcomes through regular meetings help reduce emission of air pollutants and lower negative impacts on the environment.

Corresponding chapter

2.5.2Air pollutant emission and management

Assessment system

- Air pollution control action plans
- Air pollution detection and leakage management

6 Governance

Governance

Corresponding GRI disclosure: GRI 2

Impact

Empowerment of the board of directors, improvement to the leadership of the management team, protection of shareholders' interest, and accurate and transparent disclosure of information help improve corporate reputation and facilitate review of internal processes; all of which are favorable to commercial activities.

Corresponding chapter

1.1.3 Corporate governance

Assessment system

- Outcome of corporate governance evaluation
- Corporate governance refinement program

7 Business and financial performance

Governance

Corresponding GRI disclosure: GRI 201

Impact

The economic values generated by an organization are highly relevant to shareholders' interest and economic growth, and concern the interests of all stakeholders.

Corresponding chapter

1.2.1 Financial performance

Assessment system

- Direct Economic Value
- Economic Value-Allocated
- Net Income

8 Cybersecurity and privacy protection

Governance

Corresponding GRI disclosure: GRI 418

Impact

Enhancing cybersecurity awareness among employees is vital for maintaining customer data and establishing a cybersecurity framework that meet regulatory and customers' requirements.

Corresponding chapter

1.4.2 No. 1 in service

Assessment system

- Cybersecurity maintenance plan
- ISO 27001 - Information Security Management System
- Cybersecurity and personal data management procedures for customer service centers

9 Risk management

Governance

Corresponding GRI disclosure: GRI 207

Impact

Being able to equip employees with risk awareness and risk management ability and improve corporate crisis handling capacity help accomplish CPC's medium- and long-term plans and sustainable management goals for the protection of stakeholders' interests.

Corresponding chapter

1.2.4 Risk control

Assessment system

- Risk management and crisis handling principles
- Overall risk measurement principles

10 Low carbon/carbon reduction measures

Environmental

Corresponding GRI disclosure: GRI 302 | GRI 305

Impact

Setting short-, medium-, and long-term emission reduction goals in line with the nation's carbon reduction policy and global climate risk trends help minimize harm to the environment.

Corresponding chapter

2.1 Mitigation and adaptation to climate change
2.2 Low-carbon/green energy transformation and circular economy

Assessment system

- ISO 14064-1 - Greenhouse gas inventory

Analysis of critical issues

By gathering and analyzing the perspectives of 9 main stakeholder categories, CPC was able to assign more balanced weight between governance, environmental, and social aspects for the critical issues identified in 2022. CPC also conducted additional analysis for new critical issues; in the environmental aspect, the topic of "Low-carbon/carbon reduction measures" had originated from the topic - "Climate change response and low-carbon development," and combined low-carbon practices to form a new critical issue altogether.

By analyzing and understanding the critical topics, CPC is able to enforce integrity and eliminate corruption to a greater extend and thereby secure the foundation for future business success. While facilitating business growth, CPC invests into the development of advanced technologies so that it can better accommodate global trends of the industry, such as carbon reduction, protection of the ecosystem, and lowering of air pollution. Internally, CPC creates a working environment that is friendly to employees; externally, CPC places significant emphasis on protecting customers' interests and maintaining product quality. CPC looks forward to hearing opinions from more diverse sources in the future, and envisions itself becoming the role model business in the energy and petrochemical industries.

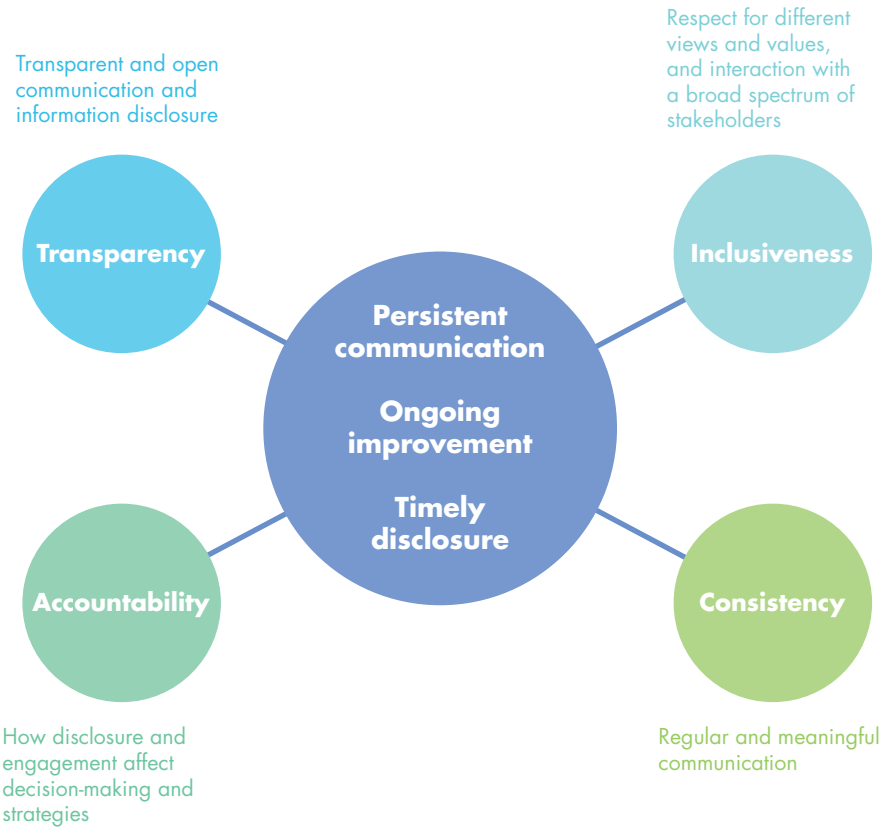
Topic ranking	2022	Change
1	Anti-corruption measures	+ New
2	Compliance	▼ 1
3	Compliance with environmental laws	+ New
4	Management of major incidents	▼ 1
5	Air pollution control	▼ 1
6	Corporate governance	▲ 5
7	Business and financial performance	▼ 5
8	Cybersecurity and privacy protection	+ New
9	Risk management	+ New
10	Low carbon/carbon reduction measures	▼ 8

» Note 1: New - denotes material topic of sustainability newly identified for 2022.
» Note 2: ▼ 1 - Means that the issue is one place down from 2021.
» Note 3: ▲ 1 - Means that the issue is one place up from 2021.
» Note 4: Item 4 - "Management of major incidents" was renamed from previous year's "Occupational safety and health."

Stakeholder Communication

Communication strategies and goals

CPC persistently improves the ways it interacts with stakeholders, and takes response actions, exerts influence, and adopts responsible business management. CPC enforces "persistent communication, ongoing improvement, and timely disclosure" as part of its core values, and values the transparency, accountability, inclusiveness, and consistency of its communication with stakeholders.



CPC's stakeholders include: shareholders (MOEA), business partners, public representatives, communities, non-profit/non-governmental organizations, customers, employees, and the media. CPC holds itself responsible to stakeholders, and communicates with them using a variety of methods and channels to learn their needs and expectations. This knowledge also provides useful reference to the Company when devising sustainability policies and related projects in the future. Methods and channels of stakeholder communication and outcomes:

Methods and channels of stakeholder communication

Communication with internal stakeholders

CPC addresses employees' grievances in an honest, open, immediate and direct manner, and implements a set of Employee Grievance Policy to protect employees' rights. Employees may raise grievances when there are objections to a reward or punishment decision; or when employee rights and interests are damaged due to inappropriate systems, regulations, or administrative measures; or when there is employee misconduct.

Grievance Handling Committee

CPC has established the Employee Grievance Handling Committee with seven to nine seats held by the spokesperson, heads of related departments and offices, and the Chairperson and representatives of the labor union.

Labor-management Meeting

CPC observes Regulations for Implementing Labor-Management Meeting and convenes labor-management meetings at least once every 3 months. The minutes of previous labor-management meetings are disclosed on the Intranet. Communication between labor and management has been transparent and open; no losses have arisen from employment dispute as due to the harmonious labor-management relationship.

Collective bargaining agreements

CPC has been engaging Taiwan Petroleum Workers' Union for the establishment of collective bargaining agreement since 2019, and after 12 negotiations, a collective bargaining agreement was signed with Taiwan Petroleum Workers' Union in December 2021. The agreement comprises 55 articles across 9 chapters in total; it outlines the rights and obligations between labor and the management, and provides foundation for the optimal labor-management relationship and employment terms for business growth, employee welfare, corporate profits, and continuity.

Communication with External Stakeholders

CPC maintains communication with the outside world, and actively gathers and responds to queries or suggestions through the corporate website, department websites, opinion mailbox, official Facebook page, CPC PAY APP, meetings, campaigns, media, and workers' union. CPC also has a 24-hour customer hotline ("1912") available to gather voices from the outside and respond to queries or suggestions. CPC also takes the initiative to communicate with the public, and has Neighborhood Engagement Guidelines and Neighborhood Engagement Review Committee in place to serve as guidance. Through active communication and visits and by holding monthly or ad-hoc meetings to discuss the needs of local communities, CPC looks forward to building a culture of sustainability with local organizations, individuals, and the community.

Diverse communication and grievance channels

- Opinion mailbox
- CPC website
- 1912 free helpline
- CPC Facebook

Creative communication through online video

The CPC Media webpage houses an extensive collection of online videos on brand promotion, business introduction, CSR activities etc.

Communication channels and frequency - 2022

Shareholders (MOEA)

- ESG questionnaire (once a year)
- Shareholder meetings and extraordinary shareholder meetings (currently convened on behalf by the board of directors) (at least once a month)
- Public policy meetings (at least 24 sessions a year)
- Official correspondence (at least 3,000 a year)
- Shareholder meeting annual report (once a year)
- Market Observation Post System (at least once a month)

Business Partners

- ESG questionnaire (once a year)
- Contractor meetings (at least 10,000 sessions a year)
- Training/drill (at least 400 sessions a year)
- Distributor evaluation/meetings (unscheduled/at least once a year)
- Counseling/service/inspection and oil quality management for franchise stations (generally once a month)
- Supplier evaluation/meetings (unscheduled/at least once a year)
- Awareness promotion activities (at least 230,000 attempts a year, carried out by various units)
- Performance evaluation/e-mail/telephone (unscheduled)

Public representatives

- ESG questionnaire (once a year)
- Special reports (106 total)
- On-site inspections (19 total)
- Coordination meetings (148 total)
- Personal visits (at least 150 visits a year)
- Official correspondence (at least 200 a year)
- Communication meetings of various form(others, at least 500 sessions a year)

NPOs/NGOs

- ESG questionnaire (once a year)
- CPC website and CPC Facebook page (real-time communication)
- Outsourced ecological survey of little terns involving Taoyuan City Wild Bird Association (task meetings are convened on an unscheduled basis)
- Outsourced ecological survey of algal reef involving National Taiwan Ocean University (at least 9 attempts)

Communities

- ESG questionnaire (once a year)
- Neighborhood engagement (unscheduled)
- Community or tribal communication meetings (unscheduled)
- Charity activities (more than 200 a year)

Government

- ESG questionnaire (once a year)
- Training courses organized by the authority (at least 12 sessions a year)
- Charity campaigns (unscheduled)
- Labor inspections/audits (at least 300 a year)
- E-mail/telephone (unscheduled)
- Official correspondence (at least 3,000 a year)

Customers

- ESG questionnaire (once a year)
- Customer satisfaction survey (once a quarter)
- Grievance/opinion mailbox (unscheduled)
- Education and training (unscheduled)
- Customer complaint service hotline (unscheduled)
- Visits/interactions (unscheduled) Website information (unscheduled)

Employees

- ESG questionnaire (once a year)
- Grievance (employees may raise grievances as needed)
- Internal meeting: worker director meetings (once a month)
- Internal meeting: labor-management meetings (generally once a month)
- External meeting: collective bargaining meetings (convened as needed)
- CPC Monthly (published monthly)
- Worker education seminars (generally once a month)
- Training/drill (unscheduled)

Media

- ESG questionnaire (once a year)
- News release (immediate response)
- Press conference (unscheduled)
- Company visits
- News coverage (at least 500 a year)

Shareholders (MOEA)

We are a state-owned enterprises (SOE) wholly owned by the Ministry of Economic Affairs (MOEA). Our integrity and sustainable management represent our commitment and mission for Taiwan.

Outcome

- Business and financial performance
- Governance
- Compliance
- Anti-corruption measures
- Management of major incidents

Performance	Outcome
• Questionnaire: 1 • Board of directors meetings: 14 (including 3 extraordinary board meetings) • Business Plan Review Team, Exploration Review Team, Procurement Review Team, Senior Personnel Nomination Review Team, and special meetings: 33 sessions • Opinions were communicated in writing • Shareholder meeting annual report: 1 • MOPS information is updated on a monthly basis	• Directors and supervisors attended the "CPC and Taiwan Cement Green Energy Development MOU Signing Ceremony," the "Academia Sinica and CPC Green Energy Development MOU Signing Ceremony," the "Satellite Organic Composite Materials Component Delivery Ceremony," the "CPC and Baseload Power Taiwan Green Energy Development MOU Signing Ceremony," and the "2022 Tri-institute R&D Conference" • Directors and supervisors paid visit to learn how CPC develops low-carbon ethylene, a high value-adding petrochemical material, and how the green energy-based pilot smart fuel station at Xinyi Road, Chiayi, operates

Business Partners

CPC and partners (including contractors, suppliers, and distributors) create value and stabilize the energy supply in Taiwan to build a sustainable value chain.

Outcome

- Compliance
- Management of major incidents
- Business and financial performance
- Anti-corruption measures

Performance	Outcome
• Questionnaire: 93 • CPC organized 345 disaster prevention drills (including four expanded emergency response drills)	• Training for installation and removal of contractors' equipment and use of aerial work platform was introduced; more than 1,200 participants had completed the training and passed certification • CPC completed collaboration for the import of carbon neutral crude oil, announced the nation's first carbon neutral fuel station, and continues to work with supply chain partners toward sustainability and mutual benefit • CPC has signed green energy development MOUs with Taiwan Cement, Academia Sinica, ExxonMobil, SLB, Baseload Power Taiwan, GreenFire, and Ormat, and continues to explore climate change responses as well as low-carbon business opportunities • 3 large-scale corporate integrity promotion campaigns were held • All franchise stations actively participated in the public toilet cleaning event as part of the 2022 World Toilet Day celebration

Public representatives

CPC engages public representatives in active communication in order to learn the opinions of local residents, so that projects and works can be carried out in conformity with the public's needs and expectations

Outcome

- Anti-corruption measures
- Compliance
- Compliance with environmental laws
- Management of major incidents
- Governance
- Low carbon/carbon reduction measures

Performance	Outcome
• Questionnaire: 14 • A total of 24 official replies were made to written inquisitions, verbal inquisitions, and correspondences of the Legislative Yuan • 597 responses were made on matters that were of concern to legislators, including inquisition, coordination, grievance, and personnel arrangement	• CPC communicates with public representatives through various meetings, and invites them to project meetings to update them on the progress of various projects • Information relating to issues that were of concern to public representatives was consolidated and provided in a timely manner; this solid communication ensured satisfactory completion of CPC's 2022 budget review • Outcome of the Congress Evaluation released during the 5th session of the 10th legislators showed CPC ranking first in Congress Contact in both the Group - state-owned enterprise category and the Individual category

Communities

In addition to having petrol stations that provide service at the frontline, CPC also operates refineries and petrochemical plants, and maintains good relations with local communities while making the commitment to uphold their quality of life

Outcome

- Compliance with environmental laws
- Management of major incidents
- Air pollution control
- Risk management
- Low carbon/carbon reduction measures

Performance	Outcome
• Questionnaire: 59 • 12 Neighborhood Engagement Review Committee meetings and 1 extraordinary meeting were convened • 4 on-site visits were arranged to assist local units with their neighborhood engagement efforts • CPC subsidized neighborhood charity events, scholarships, emergency aid, and welfare for elders and persons with disabilities for a total of 5,708 cases and NT$401 million	• CPC maintains good communication with its neighbors, and takes part in charity activities, public constructions, and various programs aimed at promoting culture, education, health awareness, care for elders, energy conservation, and carbon reduction • CPC listens to the opinions of local residents when developing geothermal power in Yilan; 9 residents from nearby locations were recruited to work on the geothermal well

NPOs/NGOs

CPC engages non-profit/non-governmental organizations (including the Fossil Fuel Industry Association) in ongoing communication to learn the opinions and needs of outside parties

Outcome

- Air pollution control
- Low carbon/carbon reduction measures

Performance	Outcome
• Questionnaire: 23 • CPC provides the latest updates over its official website and Facebook page • CPC takes part in various conferences and events organized by the industry association to exchange knowledge on the latest technologies	• Since 2019, CPC has been working with Taoyuan City Wild Bird Association to restore habitat and monitor breeding of little terns. Based on data gathered in 2022, a total of 117 nests were discovered along the coastal areas of Taoyuan, representing a breeding success rate of 72%

Customers

Based on the management philosophy "Supreme Quality, Superb Service, and Selfless Contribution to Society," we engage with customers and pave way for sustainable management with an appropriate amount of profit

Outcome

- Compliance with environmental laws
- Management of major incidents
- Cybersecurity and privacy protection
- Risk management
- Low carbon/carbon reduction measures

Performance	Outcome
• Questionnaire: 77 • CPC achieved a customer experience management (CEM) score of 95.0 in 2022	• A total of 196,597 customer service requests were received in 2022; 95.1% of which were resolved on the spot • Won "Trusted Brand Platinum Award - Petrol Station Category" for 22 consecutive years

Government

As a state-owned enterprise, CPC continues to support government policies and contribute to sustainability development in Taiwan

Outcome

- Compliance
- Compliance with environmental laws
- Management of major incidents
- Air pollution control
- Governance
- Low carbon/carbon reduction measures

Performance	Outcome
• Questionnaire: 65 • A total of 368 internal audits have been conducted in relation to the labor inspection; CPC will continue tracking progress until all required improvements have been made	• CPC responds pro-actively to national policies such as energy transformation, and contributes its part to ensure stable energy supply and provide COVID-19 relief • CPC contributed NT$73.5 billion of tax revenues in 2022 • CPC coordinated with the Industrial Development Bureau, Ministry of Economic Affairs, on a joint audit and organized a "Conference for Senior Safety and Health Officers" with Kaohsiung City Department of Labor, during which a total of 58 senior managers from the authority and vendors had attended • At the Industrial Development Bureau's request and with the assistance of Institution for Information Industry, CPC optimized and established an intellectual property management system that is linked to its operating strategies, and passed certification for Taiwan Intellectual Property Management System (TIPS) - Grade A

Media

CPC sees 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

Outcome

- Anti-corruption measures
- Compliance
- Management of major incidents
- Air pollution control
- Governance
- Low carbon/carbon reduction measures

Performance	Outcome
• Questionnaire: 13 • Press conference: 8 sessions; press release: 138 issues • CPC organized 1 on-site visit and 21 media interviews and forums to promote the media's knowledge toward CPC	• Media partners were invited to the certification ceremony for Tainan Qianfeng Carbon Neutral Petrol Station, the Satellite Organic Composite Materials Component Delivery Ceremony, and the announcement of MIT mark for Neihu Station • CPC cooperated with European Chamber of Commerce for the publication of 2050 net zero best practice report, the progress release for Guantang ecological conservation program, and various events such as CPC Support for MIT, World Toilet Day etc. • CPC received 527 favorable news coverages that reinforced the organization's reputation as a corporate citizen

Employees

CPC persistently explores ways to create a friendly workplace and introduces competitive human resource policies; a comprehensive talent training program has been implemented to ensure the quality of employees' work performance and lifestyles

Outcome

- Management of major incidents
- Business and financial performance
- Air pollution control
- Low carbon/carbon reduction measures
- Business and financial performance
- Cybersecurity and privacy protection
- Risk management

Performance	Outcome
• Questionnaire: 408; manager questionnaire: 34 • 8 grievances were received from employees; 2 of which were withdrawn • 24 labor-management meetings were convened • 12 issues of CPC Monthly were published • 5 sessions of worker education seminar and 3 sessions of educational tour were organized • Approximately NT$144 million of budget was allocated to training; employees averaged 51.14 hours of training	• 3,496 training sessions were organized, which received approximately 123,000 enrollments • Due to the spread of COVID-19, CPC adopted a broad variety of methods to train and certify its employees in 2022. Offered scholarships for individuals pursuing second specialization studies, continuing education, and language learning • The EAP organized a total of 366 sessions, with 15,071 participants. These sessions aimed to provide support and assistance to employees in various aspects of their work, life, and health

» Note: Please see 1.1.2 - Directors overview for more details on board of directors' engagement with stakeholders in 2022.

Special coverage on sustainability

Special coverage

1 Supply of clean energy

CLEAN POWER COMPANY

Green energy beneath the surface: CPC explores geothermal power

Mission - to develop geothermal power as the new clean energy source for Taiwan

According to Taiwan's "2050 Net Zero Emission Roadmap," renewable energy sources are expected to account for 60%-70% of total power supply by year 2050, whereas the Ministry of Economic Affairs has also set goals to increase geothermal power capacity to 20MW by 2025. CPC has long been developing geothermal power as a clean energy source, which is an important step to CPC's net zero transformation. In the future, CPC will continue supporting the government's energy policies and coordinate with domestic industries and the academia to create an ideal research environment that fosters the development of diverse renewable energy sources in Taiwan.

Three main strategies to develop geothermal power in Taiwan

Technology Development

Exploratory Drilling

Power Plant Construction

Commercial operation

Shallow Geothermal

Discovered through self-explore, or established a joint venture to accelerate the development progress.

Self-explore: Renze, TuchangJoint Venture: Ruisui, Hongye Valley, Jinlun, Hong Chai Lin

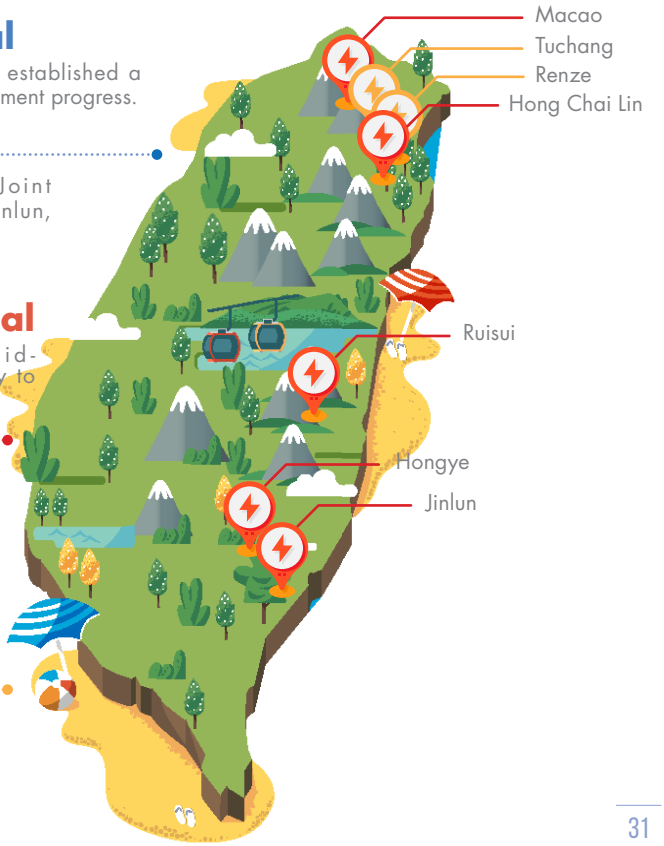
Mt.Datun Geothermal

Adopted and researched acid-resistant corrosion pipe technology to develop Acidic geothermal potential

Mt.Datan: Macao

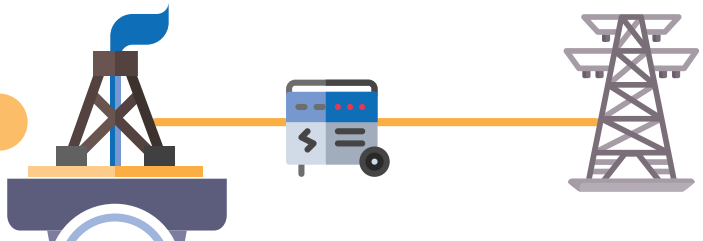
Deep Geothermal

Adopted Deep thrilling technology. Established a deep geothermal demonstration zone through industry-academia collaboration.



CPC has the most technologically advanced geothermal exploration team in Taiwan. The team first started exploration for geothermal power on Mount Datun back in 1964, then moved into Yilan area in 1976, and even dispatched a drilling team to assist with geothermal explorations in Kyushu, Japan, between 1981 and 1995. The government's efforts at enforcing green energy policy in recent years have inspired a new wave of geothermal exploration. In March 2018, CPC signed a memorandum of understanding with Taiwan Power Company to provide the foundation for future collaborations on geothermal power development. As a response to the government's Net Zero Emission Roadmap, CPC proposed three main strategies covering "Excavation and Generation," "Sole and Joint Capital Contribution," and "Research, Development, and Trial Production" aspects of geothermal power. CPC will first aim to explore shallow geothermal energy for the short term, and operate the facilities by way of sole proprietorship and joint venture before replicating successful experiences to geothermal sites in Yilan, Hualien, and Taitung. In addition to introducing and developing corrosion-resistant pipe materials, CPC will also work with Central Geological Survey, Ministry of Economic Affairs, to explore potentials of acid hydrothermal in Mount Datun, engage in industry-academia collaborations to adopt deep drilling technologies, and collaborate with Academia Sinica to investigate the potentials of deep geothermal energy and create a pilot zone for deep geothermal energy.

Geothermal development timeline



2016

April - A resolution was passed during the "CPC Geothermal Development Planning and Progress Report" meeting to devote resources into geothermal power development.

2018

March - CPC signed a "Yilan Tuchang-Renze Geothermal Exploration, Power Development, and Operation" MOU with Taiwan Power Company to assemble an elite geothermal team.

July - CPC held a seminar at the L.muan tribal area to explain excavation plans for geothermal wells - Renze #3 and #4 and the compensation system. The project received unanimous support in a subsequent meeting, and a groundbreaking ceremony for geothermal well #3 was held in November.

2020

March - CPC attended the groundbreaking ceremony for geothermal well #14 in Tuchang, Yilan, during which the L.muan chairperson hosted a blessing ritual for the upcoming construction works.

September - Completed drilling of geothermal wells #14 and #15 in Tuchang, Yilan.

2021

March - CPC signed a geothermal technical information collaboration MOU with Green Energy Laboratory, Industrial Technology Research Institute.

October - CPC held a seminar at the L.muan tribal area in Datong Township, Yilan, to explain the construction of Tuchang Geothermal Power Plant. The L.muan people gave unanimous consent in a subsequent resolution for CPC to construct Tuchang Geothermal Power Plant within the tribal area.

2022

May - CPC signed a green energy development MOU with Taiwan Cement Corporation in a collaboration toward building the nation's green energy industry. Later in July, CPC's excavation team moved to TCC Green Energy's geothermal site located in Vakangan Hot Spring Park to assist with well construction, making it the nation's first geothermal power collaboration project.

June - CPC signed a green energy development MOU with Academia Sinica to signify both parties' intent to cooperate on the development of green energy technologies. This MOU provides a solid foundation for Taiwan's vision of achieving net zero emission by 2050.

In 2022, drilling activities at wells #16 #17 #18 were carried out in Yilan's Tuchang area, , resulting in the successful extraction of geothermal resources. The construction of a 4MW geothermal power plant is expected to be completed by 2023, thereby expanding the territorial scope of Taiwan's geothermal potential.

October - CPC signed a green energy development MOU with Baseload Power Taiwan to signify both parties' intent to cooperate on the development of geothermal power technologies, and to create new opportunities for Taiwan's green energy industry.

2023

CPC signed a memorandum of understanding (MOU) with GreenFire Energy Inc., a reputable U.S. energy company, in an attempt to bring advanced technologies into Taiwan and train local talents to master the technology. This collaboration has the potential to improve development and utilization of geothermal power, and will contribute to the organization's movement toward sustainable, clean energy sources.

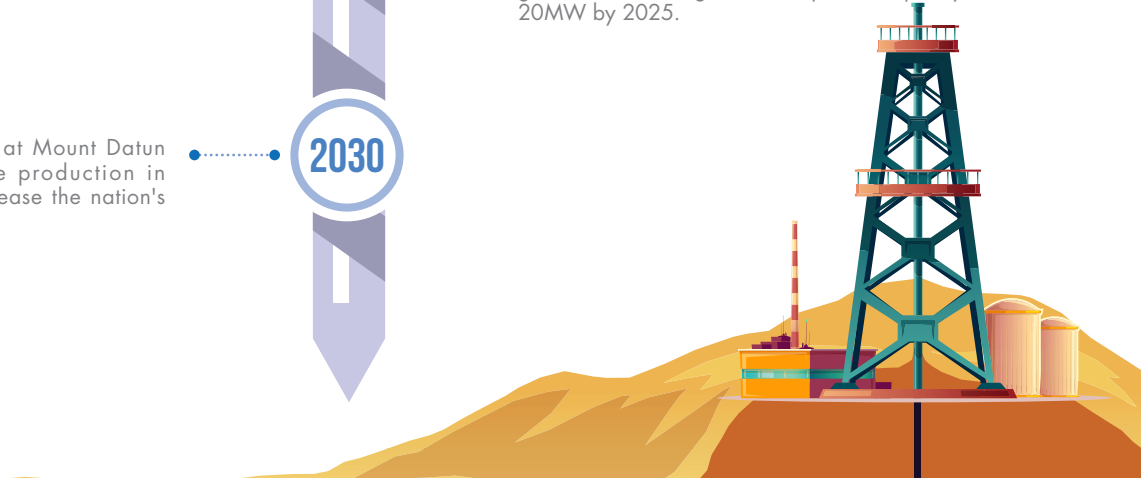
A Memorandum of Understanding (MoU) has been signed with Ormat International Inc., a leading geothermal company in the United States. This collaboration aims to combine CPC's geothermal exploration expertise with Ormat Corporation's geothermal operational experience to overcome the developmental obstacles in geothermal energy in Taiwan.

2025

Ministry of the Interior has announced its intent to amend the "National Park Law," and based on which the Ministry of Economic Affairs has set goals to increase geothermal power capacity to 20MW by 2025.

2030

Geothermal power facilities at Mount Datun are expected to commence production in 2030, which will greatly increase the nation's geothermal power capacity.



Leading the green energy industry toward net zero

CPC has been drilling wells in Renze and Tuchang within Yilan County to harvest shallow geothermal energy since 2018. By the end of 2022, CPC had constructed a total of 7 geothermal wells in Renze and Tuchang, Yilan, which are estimated to generate nearly 4.2MW of power each year. CPC employees old and new have overcome challenges one after another from the re-activation of geothermal exploration, feasibility studies on power plants, seeking approval from relevant authorities to the construction of geothermal power plants over the last few years. The current goal is to register 4MW of geothermal power capacity in 2023, which is expected to achieve a net generation capacity of 25.7 million kWh and reduce carbon emission by approximately 13,000 metric tons a year, thereby setting a new milestone in terms of geothermal power. Tuchang Geothermal Power Plant not only serves as an excellent example of how CPC is supporting the government's net zero emission policy, but also lends technical service to private businesses seeking to explore geothermal power. By bringing the private sector into the game, CPC contributes to Taiwan's progression into a sustainable, net zero future.

CPC's geothermal development goals, timelines, and milestones

2018-2022

- **Completed a total of 7 geothermal wells in Renze and Tuchang, Yilan:** Expected to generate nearly 4.2MW of power each year

2023

- **CPC expects to complete construction of geothermal power plants totaling 4MW in capacity:** Net generation capacity is estimated at more than 25.7 million kWh a year
- These facilities are expected to reduce carbon emission by approximately 13,000 metric tons a year (calculated as an alternative to gas-fired electricity)

2025

- **Goals have been set to reach a capacity of 11.2MW**

2030

- **Goals have been set to reach a capacity of 23.6MW**

2050

- **Goals have been set to reach a capacity of 127MW**

Special coverage

2 Commitment to climate actions

CLIMATE PROTECTION COMPANY

Pioneer in industrial carbon reduction; the first in Taiwan to complete carbon footprint survey for petrochemical materials

Being a provider of basic petrochemical materials in Taiwan, CPC supports the government's net zero policy and Kaohsiung City government's "Net Zero Industry Alliance" by taking the initiative to plan, conduct, and validate product carbon footprint surveys. Using the methods introduced in ISO 14067, CPC takes quantitative measurements of greenhouse gases emitted in different stages of the product life cycle; this data not only facilitates calculation of product carbon footprint throughout a supply chain, but also allows analysis of emission hot spots that internal departments can make use of to identify areas where emission can be reduced, and devise effective reduction plans and risk control measures accordingly.

Accomplishments of CPC's product carbon footprint survey

Identified carbon emission hot spots and increased energy efficiency

Introduced product life cycle survey for enhanced carbon management

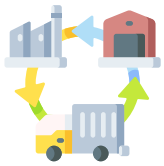
Responded to consumers' demand for green products

Prepared for entry into international markets and participation in carbon trading

Built comprehensive carbon footprint data on local products

Established a domestic carbon inventory demonstration template to reduce carbon inventory costs

Established baseline for carbon reduction designs for subsequent products



Led the oil industry in environmental surveys and coordinated with industry participants to create a sustainable value chain

CPC's product carbon footprint survey was carried out over several phases; the first phase began in 2022, in which CPC completed carbon footprint survey and third-party validation for 21 products including petrochemical materials, chemical solvents, and lubricants. For the second phase, CPC will progressively complete carbon footprint survey for 489 of the Company's main products before 2024.

Product Carbon Footprint Inventory Plan

Phase 1 2022 — **Phase 2** 2023-2024

Solvent & Chemical Business Division → Paint solvent 100, Paint solvent 150, Paint solvent 200, Paint solvent 230

Petrochemical Business Division → **Managed items by Ministry of Economy** Ethylene, propylene, butadiene, benzene, toluene, xylene, and 10 by-products.

Lubricants Business Division → LH80901

21 products' carbon footprint inventory and verification were completed in 2022

Petrochemical Business Division → Continue Updating

Solvent & Chemical Business Division → 35 Products

Lubricants Business Division → 411 Products

Refining Business Division → 28 Products

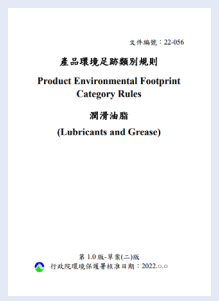
Exploration & Production Business Division → 4 Products

Marketing Business Division → 4 Products

Natural Gas Business Division → 1 Product

LPG Business Division → 6 Products

CPC was the first business in Taiwan to complete carbon footprint survey on petrochemical materials, and having the data validated by a third party was especially meaningful. In the future, midstream, downstream, and customers of the petrochemical industry will be able to determine their product carbon footprints based on CPC's emission coefficient, and take steps toward sustainability. In an attempt to exert greater green influence and help industry and supply chain partners adopt low-carbon, sustainable practices, CPC organized a "Product Carbon Footprint Survey Progress Report" at Kaohsiung Linyuan Petrochemical Complex in December 2022, during which the Environmental Protection Administration (EPA), Kaohsiung City Environmental Protection Bureau, subordinates of the Ministry of Economic Affairs, petrochemical members of the Net Zero Industry Alliance, paper makers, and downstream partners were invited to share experiences and tips on carbon survey. As an industry leader, CPC hopes to lead business partners toward achieving net zero emission.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產品環境足跡類別規則

Product Environmental Footprint Category Rules

潤滑油脂

(Lubricants and Grease)

Lubricant products received PEFCR certification from EPA

CPC shares opportunities and experiences on carbon footprint survey of petrochemical products

Representatives from the industry, the government, and the academia were invited to exchange experience on carbon survey, and to lead the industry toward net zero emission

Special coverage

3 Advancement in environmental protection

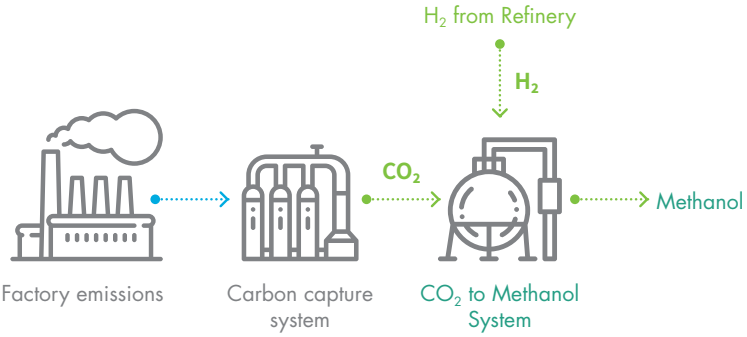
CARBON PRECISE CAPTURE

Carbon capture, utilization, and storage technologies

In line with Taiwan's 2050 Net Zero Emission Roadmap, CPC has been promoting net zero transmission within domestic boundaries by increasing investments into renewable energy sources, exploring zero emission power, and increasing the scale of CO_2 recycled and reused by the petrochemical industry. Through the adoption of carbon capture, utilization, and Storage (CCUS) technology, CPC aims to recycle and synthesize CO_2 into chemical products to create new industry chains and business models altogether.

CPC has set provisional carbon reduction goals for 2030 in response to the nation's carbon reduction policy and prevailing climate risks. As technologies mature, CPC will also adopt renewable energy, carbon capture/utilization, and carbon negative technologies to help achieve net zero emission by 2050. In the meantime, the CCUS Team assembled back in 2021 will assist emission-intensive plant site in implementing carbon reduction policies. With regards to the research and development of carbon capture and utilization technology, CPC's strategies currently focus on three main aspects: "development of CO_2 catalyst," "installation of CCU pilot equipment," and "CCU commercialization assessment." Through CCU, the CO_2 captured can be turned into chemical products such as dimethyl carbonate, methane, methanol etc., and the additional supply of methanol not only lessens Taiwan's dependency on imports but may even meet the increasing methanol demand in Northeast Asia and be turned into chemical products of longer carbon cycle for carbon reduction benefits.

In order to make a viable commercial model out of carbon cycling, CPC has been exploring ways by which CO_2 can be captured and utilized, and installed trial facilities for "CO_2 Capture and Methanol Conversion" within oil refineries to validate the technology, which will then enable catalyst development, and procedure optimization. CPC began construction of the trial facilities in 2022, and by the end of 2022, it had completed phase 1 - "CO_2 Capture System for Production Exhaust Gas"; full completion of the entire facilities is expected at the end of 2023. The trial facilities for "CO_2 Capture and Methanol Conversion" comprises two main systems: "CO_2 Capture" and "Conversion and Utilization," which are based on an innovative technology that involves low energy consumption. The technology adopts the chemical absorption method, using liquid amine to capture CO_2 from the exhaust gas generated from production activities. By applying the right catalyst and a highly efficient process, CO_2 is turned into methanol, which has lower carbon footprint and can be made into chemical materials such as ethylene, propane, and ethyl.



CPC's CO_2 capturing equipment

With the completion and full production of the trial facilities, CPC hopes to replace oil with CO_2 as an alternative source of raw material, and in doing so contribute to the supply of low-carbon plastics for the domestic petrochemical industry in order to meet the low-carbon requirements and carbon taxing in USA and the EU. CPC has committed to constructing the above trial facilities not only to reduce carbon, but also to accumulate practical experience on the technology, which may prove beneficial to the research and development of CO_2 hydrogenation catalysts while allowing technical support to other production procedures within the company. Furthermore, CPC plans to construct facilities capable of capturing more than one million metric tons of CO_2 by 2030 as a show of initiative to reducing carbon.

With respect to carbon storage technology, CPC has been working with CCS Alliance, an organization spearheaded by the Bureau of Energy of the Ministry of Economic Affairs, since 2010 to develop new technologies for storing carbon. A trial run for the technology was conducted at Yongheshan Power Plant in 2011 to validate the feasibility of the carbon storage technology and to provide useful reference for future R&D efforts. Today, CPC remains committed to mastering the carbon storage technology by integrating domestic resources and drawing experiences from around the world. CPC also takes the initiative to organize awareness campaigns, and cooperates with local government agencies, colleges, research institutions, and environmental protection organizations to investigate the acceptability of CCUS. Promotional materials were then prepared based on the findings in order to convey to the general public the proper knowledge on carbon storage while eliminating their concerns about the new technology.

CPC showcases CCS interaction model and conveys proper knowledge on carbon storage to the public

Net zero and carbon reduction have emerged to become the world's common values in recent years due to climate change, and out of the many possible carbon reduction solutions, CCUS is regarded as one of the most important technologies for achieving carbon neutrality on a global scale. CPC has made prominent progress in the development of CCUS technology, and aside from relying on its own R&D capacity, CPC also exchanges knowledge and cooperates with academic and research institutions in a pro-active manner, and supports government policies by taking part in cross-department carbon storage trials. Data gathered from the test sites is presented to government agencies to support law-making. CPC envisions itself as the industry leader, and looks forward to turning research outcomes into viable business models. The organization not only explores every possible way to reduce carbon internally, but also inspires other domestic industries to undergo net zero transformation and develop innovative technologies that contribute to the nation's carbon neutral goal by 2050.

Special coverage

4 Support community development

CULTIVATING PROSPERITY FOR COMMUNITY

Just transition and inclusion with a people focus

Neighborhood engagement by caring for local schools

CPC's geothermal drill site in Tuchang, Yilan, is located in a remote mountainous area. In order to provide the drill team with a place to rest and save them from having to commute over long distances, CPC chose to engage TaTung Junior High School in a number of collaborative tasks, including a lease arrangement to set up container dormitories on the basketball court.

Container office at drill site

The geothermal drill site in Tuchang, Yilan, is located in a remote mountainous area

CPC has long devoted attention to maintaining relationship with neighbors and providing service to the local community. Having noticed a shortage of water resource, CPC voluntarily, at its own expense, constructed a water well for teachers and students of TaTung Junior High School. Besides TaTung Junior High School, CPC also cares for the local education overall, and took opportunities to deliver energy education during the school's morning meetings so that students may have a chance to learn what it is like to work in a corporate environment and develop a broader perspective toward their studies.

Regular consultation meetings and consensus with the local tribe

Just transition is another value that CPC strives to uphold while implementing its net zero transformation strategy. Before drilling its geothermal well in Tuchang, Yilan, CPC sought help from the local township office and invited L.muan people to the "Yilan Tuchang Geothermal Power Plant Planning" seminar, during which CPC delivered a detailed briefing on the geothermal potentials of Renze area as well as the excavation plans, timeline, and the compensation system. After discussing with the local residents, CPC was able to gain unanimous support for future development activities. CPC also took this opportunity to assist local residents in career development, and recruited a total of 6 tribe members into the drill team.

The L.muan people resolved and gave consent for CPC to construct Tuchang Geothermal Power Plant within the tribal area

The future of Tuchang: Tourism with an emphasis on the local tribal culture

Once the geothermal power plant is completed, CPC hopes to support local tourism activities by promoting tribal stories, culture, and nearby scenery in ways that increase job opportunities and revenues for local residents. While making long-term commitments to develop geothermal energy and achieve the nation's renewable energy goals, CPC cares for the wellbeing of remote tribes and enforces just transition by engaging them in mutually beneficial arrangements.

Visit to the chief and secretary of Datong Township, Yiland County

Sheng-Li Ho, Chief of Datong Township, Yilan County, and local township representatives were invited to a visit to Renze #4 well

CPC's road to just transition

2018.07
The first "Yilan Tuchang Geothermal Power Plant Planning" seminar was held

2018.08
In a tribal meeting, the L.muan people voted unanimously in support of CPC's geothermal development

2019.06
Chief of Datong Township, Yilan County, and local township representatives were invited to a visit to Renze #4 well

2020.03
CPC held a groundbreaking ceremony for geothermal well #14 in Tuchang, Yilan, during which Mao-Shu Chen, the L.muan chairperson, hosted a blessing ritual for the upcoming construction works.

2020.12
CPC visited the chief and secretary of Datong Township, Yiland County

2021.10
The second "Yilan Tuchang Geothermal Power Plant Planning" seminar was held

2021.12
The L.muan people resolved and gave unanimous consent for CPC to construct Tuchang Geothermal Power Plant within the tribal area

2022.01
CPC continues to provide job opportunities for L.muan people, clean water for local schools, energy education for local residents, and support commercial activities and growth in communities near Tuchang, Yilan

Special coverage

5 Create promising future for the next generation

COMMITTING A PREMIUM CENTURY

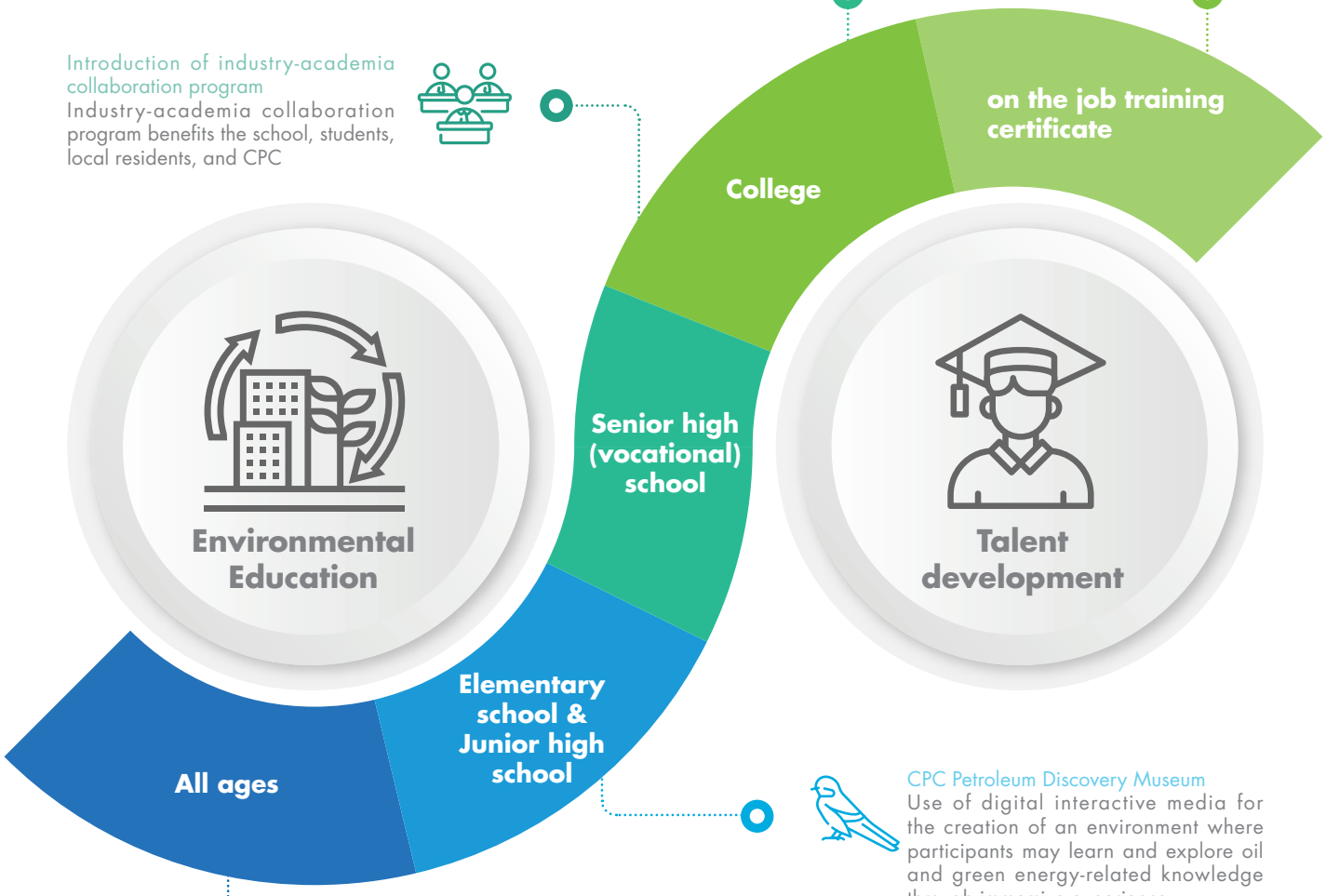
Social responsibilities and education for all ages - CPC the green promoter

Green lifestyle design and creativity competition
The competition inspires students to come up with creative ideas about net zero emission and low-carbon lifestyle

Sponsorship for master's degree/Ph.D thesis
Encourages students to apply theories in practical research

Gas vapor recovery testing at gas stations
Training of petrochemical talents

Introduction of industry-academia collaboration program
Industry-academia collaboration program benefits the school, students, local residents, and CPC



CPC Petroleum Discovery Museum
Use of digital interactive media for the creation of an environment where participants may learn and explore oil and green energy-related knowledge through immersive experience.

Taiwan Oil Field Exhibition Hall
Historical and cultural preservation of Chuhuangkeng Mine and environmental education

Green Dragon Creativity Summer Camp
Creative learning and youth development

CPC Kaohsiung Refinery Environmental Education Park
Energy conservation and environmental protection awareness in association with historical building and sustainability issues

Wellness of the petrochemical industry concerns national security and is regarded as the mother of all industries, because petrochemical products are needed in virtually every production activity from semiconductors, energy-efficient vehicles to solar panels. Considering that net zero emission has emerged as a critical issue and how the need for transformation is imminent, the petrochemical industry is in desperate need for the right talents.

CPC has long been working with schools for the introduction of industry-academia collaboration programs in an attempt to train talents for the petrochemical and energy industry. These programs combine expertise of the business world and the academia to deliver the right balance between knowledge and practical skills, and have proven to be effective at helping trainees develop petrochemical theories, basic energy knowledge, and workplace skills. By admitting top students into the program and setting good track record on "local talent retention," "career education," and "creation of local employment opportunities," CPC has motivated other state-owned enterprises to imitate and introduce their own industry-collaboration programs. CPC also engages schools in various forms of cooperation to encourage students toward applying theory in practice. By combining University Social Responsibility (USR) with Corporate Social Responsibility (CSR), CPC introduces the concept of University Corporate Social Responsibility (UCSR) to help students develop workplace skills and make better career choices in the future. Furthermore, CPC has set up a thesis scholarship with Chinese Petroleum Institute and Chinese Association for Energy Economics, and organizes "Green lifestyle design and creativity competition" in joint effort with Panasonic Taiwan to provide the encouragements needed to put knowledge into practice, and address the industry's talent shortage.

CPC is persistent when it comes to energy education, which is why the organization takes the initiative to engage local residents and the community in various activities that promote public interest, from talent training, revitalization of tangible and intangible cultural heritage, restoration of historical buildings to the preservation of Chuhuangkeng site, and in doing so creates an environmental education park that has positive influence on the society. Taiwan Oil Field Exhibition Hall and CPC Kaohsiung Refinery Environmental Education Park offer environmental education courses and exhibitions that are suitable for people of different age groups. Taiwan Oil Field Exhibition Hall, in particular, takes visitors on a tour through the history of Chuhuangkeng during the oil mining era, and at the same time conveys values of sustainability and environmental protection while raising the public's image toward the CPC brand.

Taiwan Oil Field Exhibition Hall

Converting Taiwan's earliest oil field into environmental education ground

Taiwan Oil Field Exhibition Hall, located at the bank of Houlong River, Miaoli County, was formerly known as Chuhuangkeng Mine, where oil was first discovered in Taiwan. During the prime age of oil mining, the mine even earned its name as "little Hong Kong" and supported the livelihood of a prosperous village. In addition to being an EPA-certified environmental education facility, Taiwan Oil Field Exhibition Hall later obtained "extended certification" for environmental education facility in 2022, making it a cultural heritage as well as a multi-aspect teaching site for geology and professional skills.

Taiwan Oil Field Exhibition Hall is dedicated to preserving local cultures, history, and carrying out environment-related education, and it does so by creating an elder-friendly community, providing learning resources, and supporting local businesses. By presenting itself as an ideal place for learning and leisure, Taiwan Oil Field Exhibition Hall helps bring environmental education into schools in remote locations and spreads knowledge where conventional channels can not reach. Meanwhile, CPC is working with the ticketing agent for Taiwan Hakka Museum, Taiwan Hakka Culture Development Center, Hakka Affairs Council, to introduce special tickets that allow visitors of Hakka Theatre at Taiwan Hakka Museum to redeem complimentary ice block at Taiwan Oil Field Exhibition Hall, limited to 50 per month. There will be an ongoing collaboration with ticketing agency to attract a greater number of tourists to the Taiwan Oil Mine Exhibition Hall in the future. This series of activities not only raised peoples' understanding about the local culture and history, but also strengthened the public's connection with the CPC brand.

Environmental education courses of Taiwan Oil Field Exhibition Hall

A Program	**Grade 5/grade 6 elementary**	• Oil and Gas Adventure • Story of Mining at the Chuhuangkeng Oil Mine • The black gold tour - mini wind turbine crafting competition
B Program	**Junior high school**	• Digging for oil and gas
C Program	**Senior high school and above and the general public**	• Searching for oil and gas in the ground • Chuhuangkeng: Past and Present • Excavation, mining, and refining of oil and gas

The black gold tour - mini wind turbine crafting competition

As part of the Chuhuangkeng transformation, CPC published a series of reading materials enriched with pictures that aimed to teach children useful knowledge about oil as well as the historical and cultural values of the Chuhuangkeng Mine. Under the guidance of the course instructor, "The black gold tour" takes children on a wonderful tour of oil discovery, using relatable stories to show children how oil plays a critical role in humanity's history. Through handicraft and game, the audience's attention is directed to the effect of climate change on energy issues, and how energy is scarce yet crucial to our lives, and thus deserves to be handled with care.

Cultural Heritage Experience Camp (The life of a Chuhuangkeng worker)

The Cultural Heritage Experience Camp (The life of a Chuhuangkeng worker) was an event organized by Miaoli County Government with assistance from CPC. The event comprised three main elements: a keynote speech about Chuhuangkeng, experience of the restoration process, and actual visit to the mine site. Participants were also invited to stay overnight in the restored Japanese-style dormitory, where they had the opportunity to experience up close the life of mine workers, the local culture, the cultural heritage of Chuhuangkeng as well as how it was restored. Furthermore, through the use of tutorials of a popular Youtuber, participants were taught to make simple, short videos as a team. By incorporating cultural heritage into learning and lifestyle, CPC hopes to preserve and preach our treasured heritage for generations to come.

Taiwan Oil Field Exhibition Hall has a complete program for training voluntary environmental educators. The program includes basic environmental training, a tour through the education environment, and a teaching workshop; and the courses cover a broad diversity of topics including an overview of environmental education, basics of The Environmental Education Act, environmental ethics, implications of The Environmental Education Act, and course design. Overall, the program is intended to help volunteers develop the basic concept and mission toward environmental education. In 2022, Taiwan Oil Field Exhibition Hall received a total of 92 enrollments across various activities, delivered 100 hours of training for environmental educators (specializing in school, social, and environmental aspects), and obtained certification for its environmental training facilities and educators, indicating improved professional capacity across voluntary environmental educators.

CPC Petroleum Discovery Museum

Exploring biodiversity through drawing

CPC views the Petroleum Discovery Museum as a bridge that connects the business to the general public, and chose to set it up in the heart of Taipei City, making it easy for citizens, students, and international visitors to visit and learn more about the petrochemical industry. Through the use of entertainment, the museum delivers energy education in a manner that is easily appreciated by the public and complements CPC's sustainability efforts. By incorporating interactive multimedia, the museum presents complicated information about oil in a manner that is easy to understand, and uses fun, interactive guiding interface to create an environment where visitors can learn, experience, and explore knowledge about oil and green energy with joy. CPC Petroleum Discovery Museum gives the public a chance to learn the many uses of oil, how new energy sources are being development, as well as CPC's history and social responsibilities. Throughout the museum tour, visitors are directed to rethink the connection between oil and sustainability, and encouraged to learn through discussions and exchange of knowledge.

In 2022, the museum organized a series of "little tern protection" and "little tern coloring" activities as part of CPC's promises to the environmental assessment of the 3rd natural gas receiving station. CPC's persistence in restoring habitat for little terns has successfully attracted little terns to nest and breed, and made Zhuwei Fishing Harbor the second home for this threatened species. Using various forms of fun, family-friendly activities, the museum promoted the public's awareness on ecological preservation and attracted nearly 400 participants in total.

CPC Kaohsiung Refinery Environmental Education Park

Sustainability in Japanese style

CPC Kaohsiung Refinery was decommissioned in 2015, and after 2 years of preparation, an "Environmental Education Park" was built at the same location on January 22, 2018, making it the first certified environmental education facility to be operated by the oil refinery/petrochemical industry. The park preserves historical buildings, remnants, factories, and environmental protection facilities from the Japanese colonial era, and is intended to be place of historical, cultural, and educational significance. The park offers many educational courses that are designed for different age groups; they cover a broad diversity of topics from oil refining, history, human culture, circular economy, petrochemical to the ecosystem of Mount Banping, and incorporates various forms of activity such as factory tour, outdoor game, handicraft etc. to teach participants the meaning of sustainability. The park also advocates energy conservation through action, and preserving the environment for future generations. In 2022, the park delivered a total of 7 courses for 207 adults, 2 courses for 52 elementary school students, and 2 customized courses for 100 individuals.

Education programs of CPC Kaohsiung Refinery Environmental Education Park

Elementary school	Oil and Earth
Junior high school	The history of oil
Senior high school	The secret garden of oil refineries
Adult	Sustainability of oil

Introduction of industry-academia collaboration program

an innovative education model that benefits four parties

since 2014
4 terms to date

The chemical engineering science course
325 trained students

upon graduation
68 individuals served at CPC

Increased admission rate of Linyuan Senior High School by **6.7** times

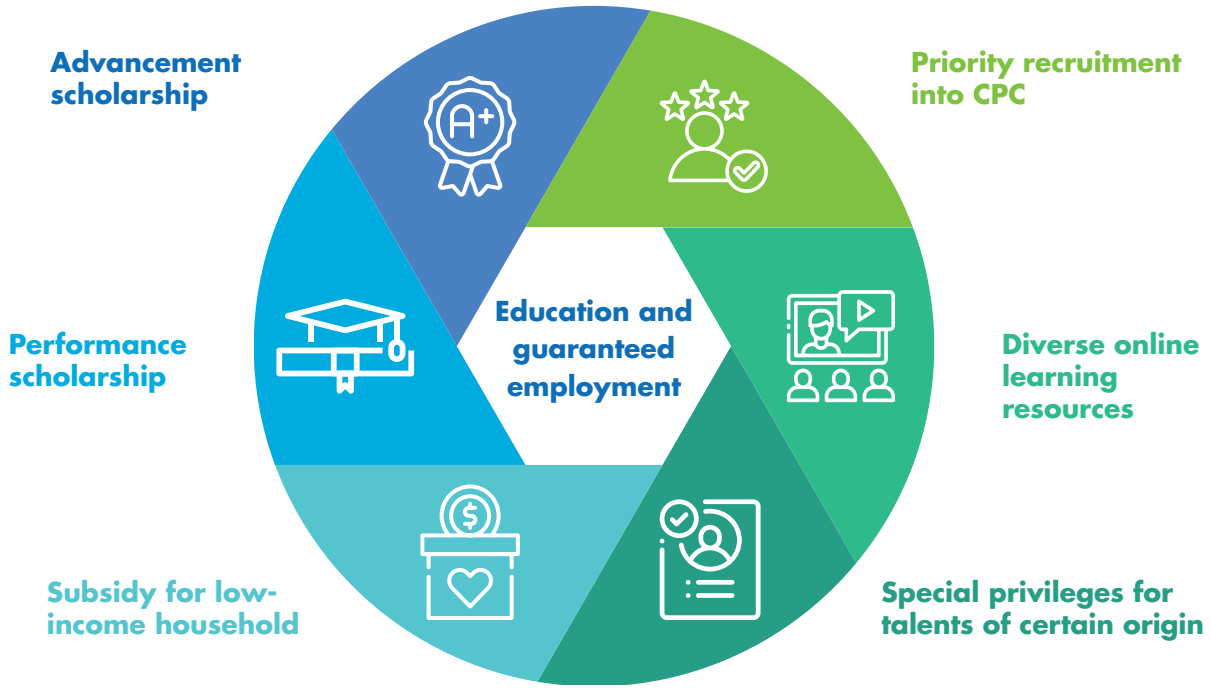
Acceptance rate by national universities **80%**

1 For senior (vocational) high school

The Linyuan District of Kaohsiung City had benefited from the government's Ten Infrastructure Projects and became a major petrochemical site. In 2014, CPC made an attempt that was unprecedented among state-owned enterprises and signed an industry-academia collaboration agreement with Linyuan Senior High School in Kaohsiung City for the introduction of "chemical engineering science course," which is intended to train entry-level operators for the petrochemical industry. The course had progressed into its 4th term in 2022, and it helped increase admission rate of Linyuan Senior High School by 6.7 times. CPC provides living subsidies to top-performing students from low-income households every school term, and offers them flexible options to seek employment and higher education by guaranteeing employment in the future. With the right incentives, CPC hopes to inspire students' thirst for knowledge, cater for their career paths, and keep top-performing students locally at Linyuan Senior High School. Unlike ordinary internship programs, CPC's industry-academia collaboration program only requires students to undergo 6 weeks of internship during winter and summer vacations, and the courses cover not only general petrochemical knowledge, but also special topics pertaining to different factories that are hosted by managerial staff currently in service. Students are issued a certificate upon completion of internship, and only then can they make use of the recruitment channel offered specifically for the program. A total of 68 graduates were recruited into CPC through open recruitment, making the program the most successful industry-academia collaboration in the local vicinity, for which Kaohsiung City Education Bureau had even named CPC as the Role Model in Education.

Due to the government's recent support for local senior high (vocational) school admission, it is essential for schools to develop distinctive features that attract students amidst the declining birth rate. Following the success of chemical engineering science course at Linyuan Senior High School, CPC signed another "CPC Science Course Collaboration Program" with Kaohsiung Municipal Siaogang Senior High School to further enforce its action to support localized development of chemical engineering and scientific talents. The program began in academic year 2021 and takes in one class of 35 students each year. CPC provides 10 program participants with scholarship of NT$6,000 each per term, and has contributed a total of NT$360,000 over three years. Program participants are entitled to take part in CPC's open recruitment after graduation, for which CPC will accept at least 10 candidates as a general rule, or refer candidates to CPC's vendors. By giving the school something distinctive to offer, CPC not only helps the local community retain and develop talents but also opens up career paths for students from financially challenged households to the benefit of the school, students, local residents, and CPC.

Key features of industry-academia collaboration



2 For universities and colleges

To facilitate stronger collaboration between the industry, government, and the academia and better support for social responsibilities, CPC signed "industry-academia collaboration MOUs" with National Chiayi University, National Dong Hwa University, National University of Kaohsiung, National Chung Cheng University, National University of Tainan, National Taiwan University, National Taipei University of Technology, Feng Chia University, Cheng Shiu University, and Kun Shan University in which it offered to organize classroom courses and tours to CPC's Petrochemical Business Division, thereby helping students apply theory in practice. CPC also supports the government's new southbound expansion policy by offering admission slots or organizing training courses for international students from Southeast Asia. 39 classes were organized between 2017 and 2022, which trained a total of 1,648 students from Indonesia, Thailand, Philippines, Malaysia, Mongolia, and 2nd-generation immigrants. Furthermore, to convey the organization's vision for diverse clean energy sources and green lifestyle, CPC continues to organize tours to its "Tainan Qianfeng Road Pilot Station," the first smart green energy fuel station featuring advanced power supply and energy storage systems. A total of 11 tours were organized in 2022 for 216 participants. The tour is also being offered to various industry-academia collaboration courses organized in conjunction with tertiary institutions as well as franchise station operators, so that the public may have a better understanding of current green energy technologies. Additionally, CPC will apply to have the pilot station certified for environmental education facility, and thereby contribute to environmental education.

Green lifestyle design and creativity competition: Sustainable lifestyle through action

CPC supports green energy transformation in line with the nation's energy policy, and with an extensive network of nearly 2,000 direct and franchise stations nationwide, CPC has begun introducing charging and battery swapping services for electric bikes, and aims to have 1,000 electric bike charging (battery swapping) stations established nationwide as part of its resolve to replace fossil fuel with green energy sources. Since 2018, CPC has been hosting "Green lifestyle design and creativity competition" in joint effort with Panasonic Taiwan. The competition is intended to inspire students' creativity with regards to "net zero emission and smart low-carbon lifestyle," and spark new creative styles and elements for energy-saving technologies in ways that can be realized and implemented. It is also CPC's intent to fulfill corporate social responsibilities through this competition by inspiring people's imagination for green lifestyle and bringing the public's attention to energy and carbon reduction. At CPC, we believe that visions for a better life begin from the campus and our city.

Sponsorship for master's degree/Ph.D thesis: Study and implementation of net zero emission

CPC has long been cooperating with Chinese Petroleum Institute and Chinese Association for Energy Economics on the establishment of thesis scholarship, and used it as an encouragement for students to apply theory in practical studies. The scholarship has rewarded a total of 205 papers since 1976. The research theme for 2022 was designated "Effect of Carbon Neutrality on the Oil and Gas Industries," in which students were encouraged to conduct theoretical, empirical, and application studies on petrochemical engineering, the natural gas policy, and renewable energy sources.

Development of licensed specialists

Training course for gas vapor recovery testing personnel

For the improvement of air quality in Taiwan, CPC signed an agreement with EPA's Environmental Protection Personnel Training Institute to co-host courses in accordance with EPA's "Gas Station Gasoline Vapor Recovery Facility Management Regulations" that aim to help employees and businesses familiarize with gas vapor recovery facilities and testing procedures. Course participants were also given the assistance needed to obtain certificates from the central authority or agents thereof. Driven by the mission to fulfill corporate social responsibilities and protect the environment, CPC became the first in the nation to offer training courses for "gas vapor recovery facility testing personnel," and in doing so contributes to air quality of the environment. Between 2013 and 2022, the courses had trained a total of 425 individuals. Currently, all refueling nozzles have been equipped with gas vapor recovery device, which contributes significantly to vapor recovery and improving air quality near petrol stations.

Special coverage

6 Support employees in career development

CARING PERSONAL CAREER

"Gender equality and female empowerment"
- The rise of female seafarers

Breaking the gender and professional barriers

CPC has always directed attention to female empowerment and protection of women's rights in the workplace. In addition to having women assume the position of first mate in part of the fleet, CPC also encourages the crew to take promotion exams and obtain the caption certificate. One female first mate has completed the probation procedures for captain, and will be assigned as such after passing evaluation.

Furthermore, approximately 15% of CPC's oil tankers have female crew onboard to serve the roles of engineer, officer, first mate, and captain. This percentage far exceeds the industry norm, and all of whom have delivered excellent work performance.

In addition to having females on the CPC fleet, CPC holds the belief that women are just as capable as men in terms of skills and potentials, and therefore deserve fair opportunities and treatment. A series of female empowerment programs have thus been put in motion to provide more training and promotion opportunities, introduce gender equality education, and to create a more open and inclusive corporate culture.

The current state of gender equality in shipping service

Shipping is such a tough profession to master that females make up very little percentage of the crew. Although shipping companies do hire female officers, "the profession has been dominated by males in the last several decades, as most people still had great concern about females working on ships." The 2019 amendments of the Shipping Act specifically prohibit any restriction to be imposed on the seafaring profession due to gender, thereby entitling female captains to the same licensing and eligibility requirements as male captains, and equal opportunities to be promoted captain. However, according to the statistics published by the Institute of Transportation, Ministry of Transportation and Communication, only 3.5% out of more than 87,000 ship crews in all of Taiwan were female at the end of 2021.

The rise of female captain

Taiwan depends heavily on maritime transport for oil and gas supply. All crude oil that CPC imports into Taiwan will have to be refined in a refinery before it is shipped using CPC's own fleet to major ports in Taichung, Kaohsiung, Taipei, Keelung, and Hualien, where the oil is unloaded to onshore oil tanks. The CPC fleet is entrusted with the task of transporting oil throughout the island, and one of the outstanding seafarers who stood up to shoulder the responsibility was Chia-Ling Lin, CPC's first female captain. Chia-Ling Lin said that her request to work on a ship had been rejected multiple times due to concerns regarding physical capacity and complications of sharing space between different genders. Eventually, she got an internship opportunity onboard, which allowed her to progress through her seafaring career all the way to captain. Being able to lead her crew to complete the assigned tasks safely is what Chia-Ling considers to be the greatest accomplishment. She had dreamed of "sailing around the world in smart sailor suit" as a child, and therefore considers seafaring her dream career.

Return to the safe harbor

Yu-Chun Lin's connection with the CPC fleet began in the junior year of her university study, when she was offered an internship opportunity onboard DAR YUN. After joining the CPC fleet, she worked her way up from junior third mate/sailor, third mate, second mate to first mate, and her jobs started from as simple as removing rust and painting the deck to safety duty, cruising duty, maintenance of fire safety equipment, charting, mapping, and cargo loading. Being the first mate, Yu-Chun Lin is in charge of everything that happens above the deck, from fire safety, daily supplies, food quality to clogged toilets. A first mate's duty lies beyond the oil cargo, and includes internal affairs and coordinations within the ship.

In a dry-dock repair, the first mate has to work with a ship inspector to take measurement of steel panels before proceeding with oil tank wash, vapor removal, and ballast adjustment. Until the ship is back into service, the first mate has to constantly ensure that safety precautions are taken and that works are carried out safely without delay. As a female first mate, Yu-Chun Lin has proven herself capable of leading male crew members in dock repair while ensuring their safety, and able to withstand the toughest sea conditions as well as doubts from crew members regarding the physical capacities of a woman.

The seafaring career gave Yu-Chun Lin a strong sense of accomplishment, whether in terms of compensation or challenges. After starting a family, she begins to treasure the little time she has to stroll through the park with her husband and child during weekends, and tries to make up for the lost time she spends at sea. Fortunately, Yu-Chun Lin was offered the opportunity to work as CPC's port officer, a position where she gets to apply her seafaring experience onshore in tasks such as fleet safety management and internal audit of oil tankers, and be with her family after work. Whenever she misses the smell and breeze of the sea, she simples takes the opportunity of a safety inspection and hops onboard.

INTEGRITY AND SUSTAINABILITY

01
CHAPTER

Chapter summary

Despite the drastic surge of oil and gas prices caused by the Russia-Ukraine war and global inflation, CPC persisted and absorbed the additional cost of oil and gas import in an attempt to stabilize domestic prices. This section explains basic information relating to CPC's operations, including business locations, fundamental facilities, and equipment, and discloses business outcomes for the year as well as major direct and indirect economic impacts caused by the external environment.

Reader Priorities

Shareholder (MOEA) · Partners · Public representatives · Customers · Government Employees · The Media · NPOs/NGOs

Corresponding SDGs

CPC's performance highlights

Rated AAA (twn) by Fitch Ratings for

17 consecutive years

Satisfaction score by petrol station customers

96.9

Satisfaction with customer service center's suggestion/ grievance handling:

99.5%

Received "Excellent" rating for public restrooms at direct petrol stations nationwide

100%

1.1 Our CPC

For more than 77 years, CPC has supported the growth and transformation of Taiwan's industries supplied them with essential energy sources. As a state-owned enterprise, CPC supports the nation's policies and carries the responsibility to ensure the stability of the society and the economy. Motivated by principles of integrity and compliance, CPC strives to operate in stakeholders' best interest, evaluate and control risks of the business environment, and incorporate sustainable governance into the corporate DNA while adhering to its missions on energy supply, diverse service, and sustainable growth. There had been no major change in the organization or supply chain, whether in terms of capital structure or supply chain location/structure etc., in the current year. The scope of the report covers all entities included in the consolidated financial statements or equivalent documents; and no entity was omitted or excluded.

1.1.1 Introduction to CPC

CPC's business activities cover virtually everything from importing of petrochemical materials in the upstream to supply of consumer goods in the downstream. Different production and sales models have been developed for the different types of oil products offered, and CPC has staffing offices in place to oversee operations and governance at the organization level. CPC has operating and sales locations available throughout Taiwan. It explores oil supply around the world in an attempt to create a vertically integrated supply chain that meets the nation's demand for various types of oil products, thereby supporting every aspect of the nation's growth, from infrastructure to consumer lifestyle.

Company Name
CPC Corporation, Taiwan

Authorized Capital
NT$130.1 billion.

Establishment Date
June 1, 1946

Revenues (2022)
NT$1,221.9 billion
(audited)

Ownership
State-owned Enterprise (MOEA 100%)

Chairperson
Shun-chin Lee

Employee count (December 31, 2022)
16,682 Persons
(including contract employees)

President
Jeng-Zen Fang

Headquarters Address
No. 2, Tso-Nan Road, Nan-Tzu District, Kaohsiung City, Taiwan 811 (R.O.C)

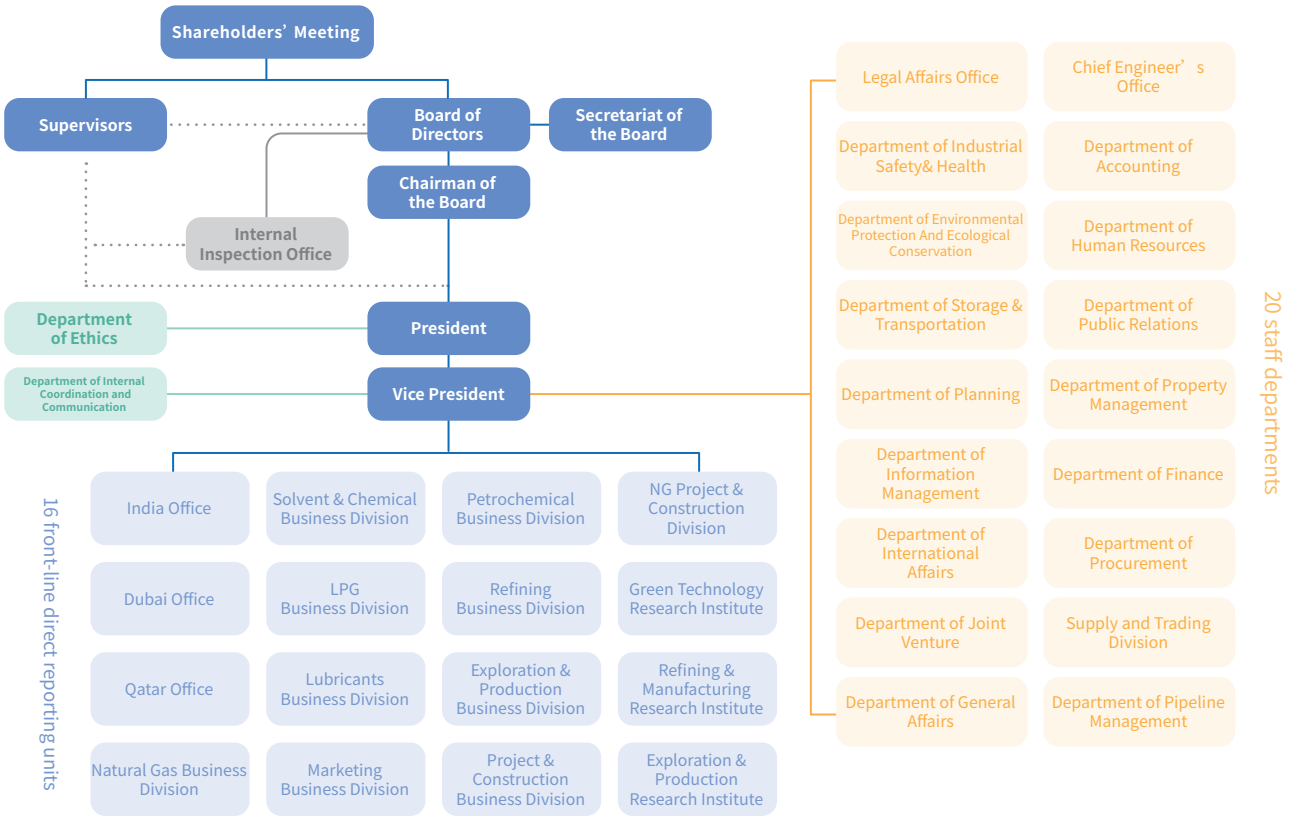
Credit Rating
"AAA (twn)" by Fitch Ratings

Main business activities

- Exploration, mining, and operation of oil, natural gas, geothermal energy (steam), and other related energy sources or minerals
- Establishment and operation of oil refineries and hydrocarbon compound production plants
- Import, storage, transportation, and sale of crude oil, natural gas, steam, hot water, and oil products, and rendering of related services

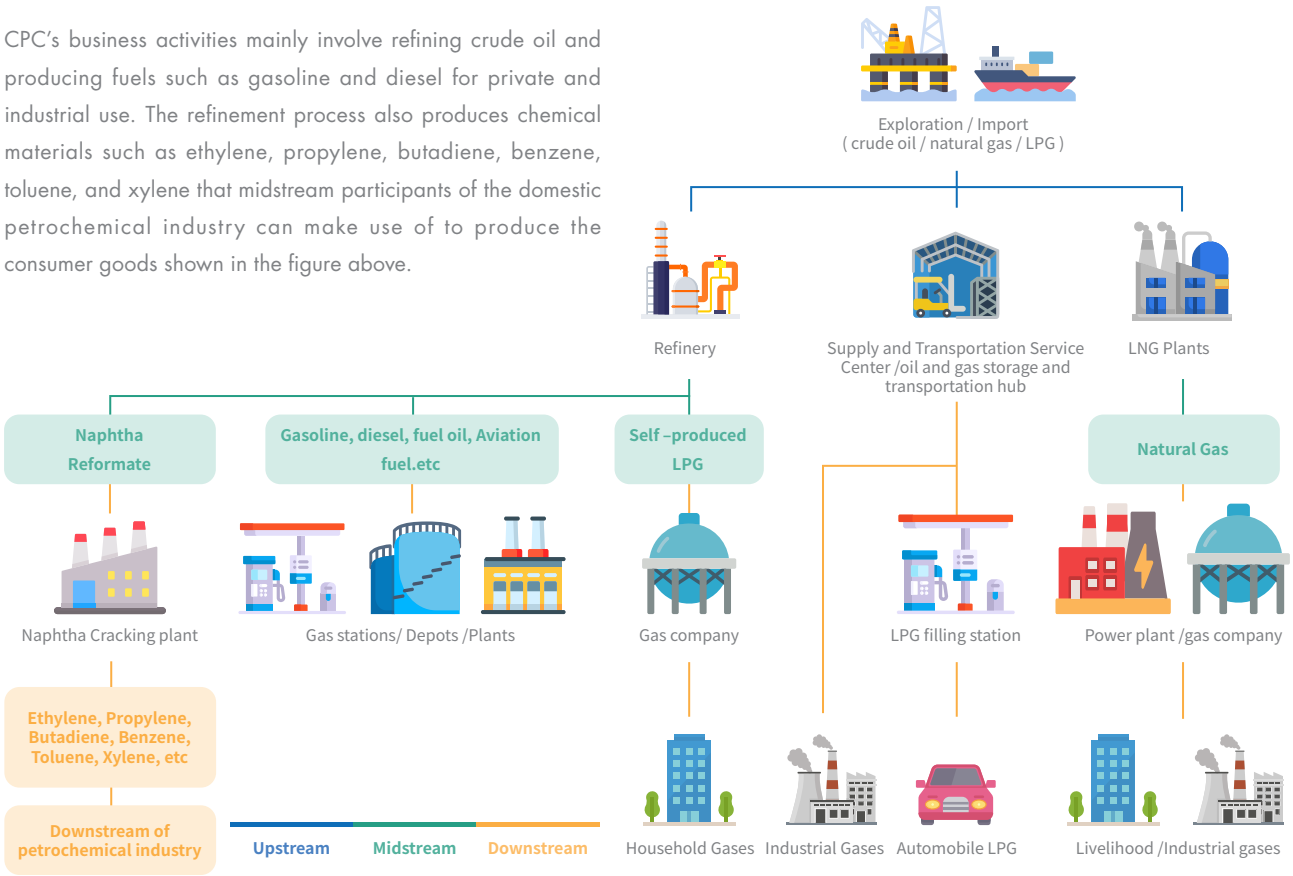
Organization

CPC currently has 20 staffing units and 16 first-line direct report units. For details regarding the organization system, please refer to the CPC website: https://www.cpc.com.tw/

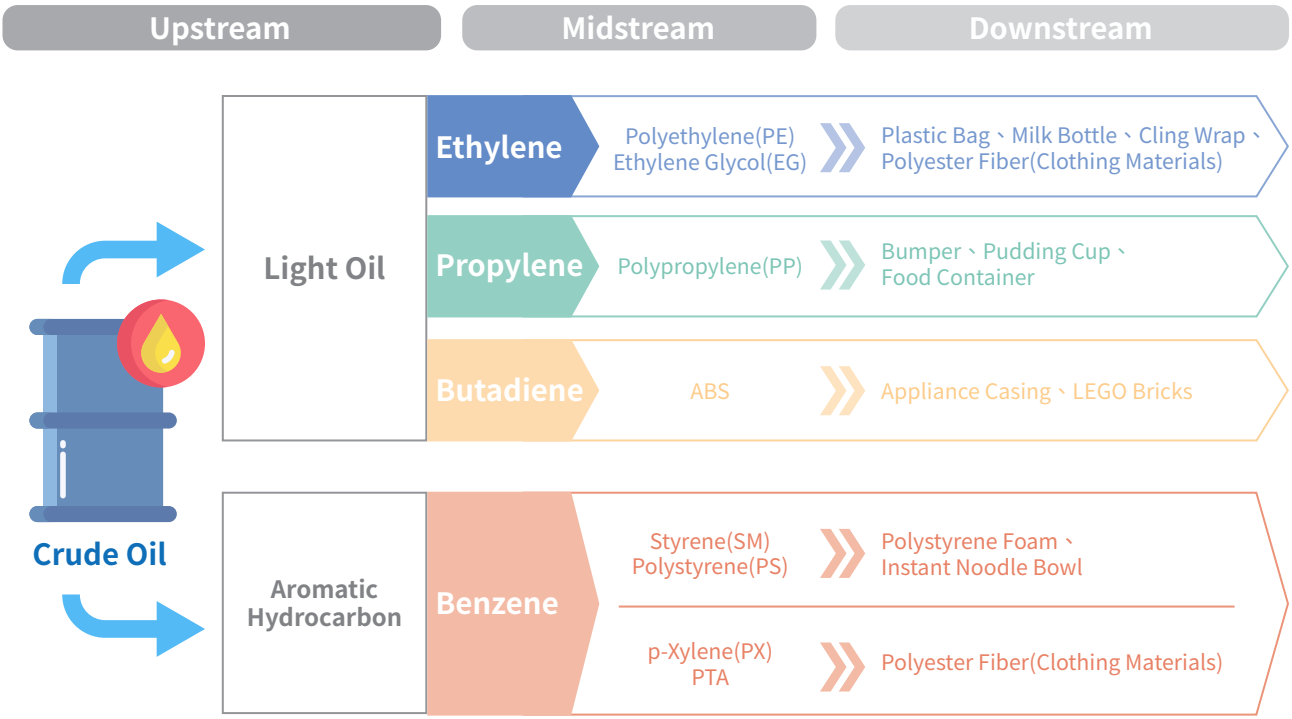


Business activities

CPC's business activities mainly involve refining crude oil and producing fuels such as gasoline and diesel for private and industrial use. The refinement process also produces chemical materials such as ethylene, propylene, butadiene, benzene, toluene, and xylene that midstream participants of the domestic petrochemical industry can make use of to produce the consumer goods shown in the figure above.



The petrochemical industry plays a critical role in supporting lifestyle, industry development, trade, and economics. It can be divided into: petrochemical raw materials, chemical fertilizers, synthetic fibers, synthetic resins, and plastics in the upstream/midstream and paint, cleaning agents, textiles, knitted wear, rubber etc., in the downstream that are closely related to people's lifestyles.



Petrochemical products are commonly used in lifestyle goods, transportation, production machinery, and synthetic goods, which is why CPC plays a critical role and holds the keys to lifestyle improvement and industry transformation. CPC devotes great attention to the environmental, social, and governance (ESG) impacts of the petrochemical industry, and evaluates and examines each decision in stakeholders' best interest while taking actions to minimize the negative impacts of its operation, examining risk tolerance, expand positive influence, and explore potential opportunities.

Major Domestic Locations

Refinery 2 sites Taoyuan & Dalin	Petrochemical Complex 1 site Linyuan	Fuel Distribution Center 13	Oil Product Offices 10	LNG Terminal 2 sites Taichung & Yongan	Natural Gas Supply Center 8	Business Department 8	Research Institute 3
Supply and Transport Center 1 site(s)	Storage and Transportation Office 1 site(s)	Nationwide petrol stations (including direct, franchise, and collaborative petrol stations) 1,925 site(s)		Natural Gas Transportation Center 1	Natural Gas Service Center 4	Construction Division 2	Training Institute 1

Global operations

In 2022, CPC exported approximately 8.327 million kL of oil products to countries including South Africa, France, The Netherlands, The Philippines, Hong Kong, Vietnam, Singapore, Japan, Korea, Malaysia, Australia, Mexico, Iraq, and USA. CPC adopts a global deployment strategy that covers 16 countries on 4 continents.

Overseas Bases

1 USA
Overseas oil operation and investment
Opicoil America, Inc.
Opicoil Houston, Inc.

2 Ecuador
Overseas oil operation and investment company
Ecuador Branch, OPIC

3 Niger
Overseas oil operation and investment
OPIC Niger S.A.R.L

4 Chad
Overseas oil operation and investment
OPIC Africa Corp.

5 Dubai
Dubai Office

6 Qatar
Qatar Office

7 India
India Office

8 Singapore
CPC International Trading Pte. Ltd

9 Indonesia
Overseas oil operation and investment company
Indonesia Branch, OPIC
OPIC East Seram Corp.

10 Australia
Overseas oil operation and investment
OPIC Australia Pty. Ltd.
OPIC Ichthys Pty. Ltd.
OPIC LNG Holding Pty. Ltd.

11 Somaliland
Overseas oil operation and investment
OPIC Somaliland Corp.

Investees

6 Qatar
Qatar Fuel Additives Co. Ltd.

10 Australia
ICHTHYS LNG Pty Ltd

12 Vietnam
Dai Hai Petroleum Corp.
Maxihub Company Limited

13 Liberia
Faraway Maritime Shipping Co.

14 Cayman Islands
NIMIC Ship Holding Co., Ltd.
NIMIC Ship Management Co., Ltd.

15 Taiwan
China American Petrochemical Co., Ltd.
CPC Shell Lubricants Company Ltd.
Kuo Kuang Power Co., Ltd.
Chun Pin Enterprise Co., Ltd.
Global Energy Maritime Co., Ltd.
Taiwan Stock Exchange Corporation
CSBC Corporation, Taiwan
Overseas Investment & Development Corp.

Overseas Concession

1 USA
Guardfish site

2 Ecuador
Site No. 17

3 Niger
Agadam site

4 Chad
Oryx oil site

5 Indonesia
East Seram site

6 Australia
Ichthys site

7 Australia
Prelude site

8 Paraguay
Pirity site

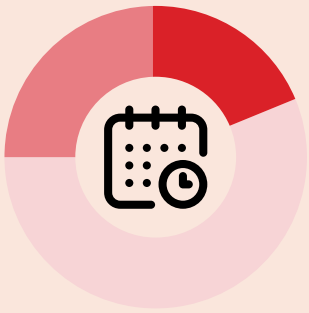
9 Somaliland
Site SL10B/13

1.1.2 Directors overview

Diverse board composition

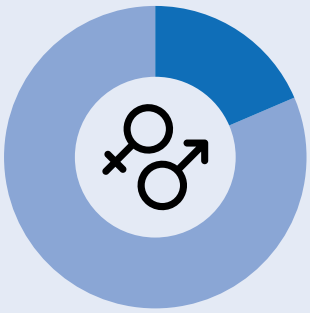
CPC is a state-owned enterprise that is 100%-held by the Ministry of Economic Affairs. The board of directors is the highest governance body and it exercises authority on behalf of shareholders. The board has a total of 13 directors and 3 supervisors, including 2 independent directors; all of which are appointed by the Ministry of Economic Affairs. Both the Chairman and President hold positions as executive directors. For details on directors' and supervisors' academic/career backgrounds, salary composition and education, please refer to 2022 Shareholder Meeting Annual Report.

Board of Directors Information



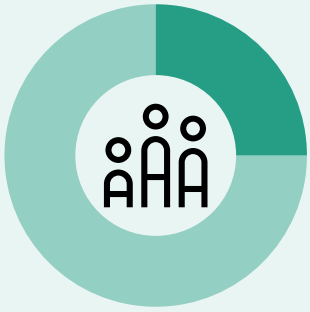
Term of Directors and Supervisors

Within 1 year	1-5 years	Above 5 years
19 %	56 %	25 %



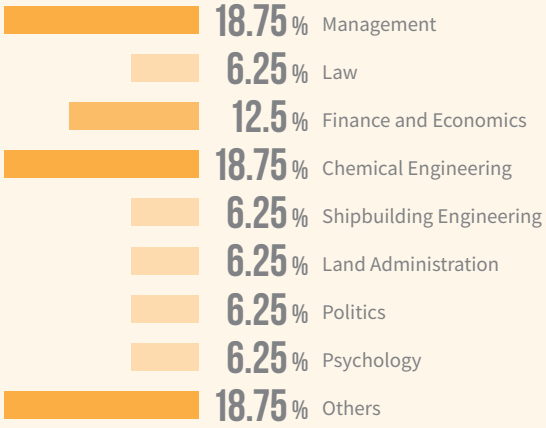
Gender of Directors and Supervisors

Male	Female
81.25 %	18.75 %



Age of Directors and Supervisors

Below 29	30 - 50	Above 51
0 %	25 %	75 %



Professional Competence of Directors and Supervisors

» Note 1: Based on data of the 33rd directors currently in active duty (as of the end of 2022).

» Note 2: None of CPC's directors and supervisors are socially disadvantaged.

Board operation

CPC convenes board of directors meetings on a monthly basis to review the major operating strategies of each department, examine operational reports, track progress, and evaluate the performance of its management team. The minutes of monthly board meetings are published on CPC's website.

CPC has "business plan," "exploration," "procurement," and "senior officer nomination" review panels available under the board of directors to assist with decisions concerning corporate strategies, resource exploration, regular procurements, and appointment of senior officers. These panels would thoroughly discuss relevant motions prior to a board of directors meeting and present opinions to the board in order to save time and facilitate the meeting process. A total of 57 motions were discussed in 2022.

To assist the board with supervisory duties, CPC would arrange to have directors and supervisors pay on-site visits at various departments and business investments where they can develop a better understanding of the company's business activities to support their supervisory duties. A corporate governance officer was also appointed in 2022 to assist the board with its duties and compliance matters, and to provide support as needed.

Overview of board meetings - 2022

Meeting Held

14

Including extraordinary and regular board meetings

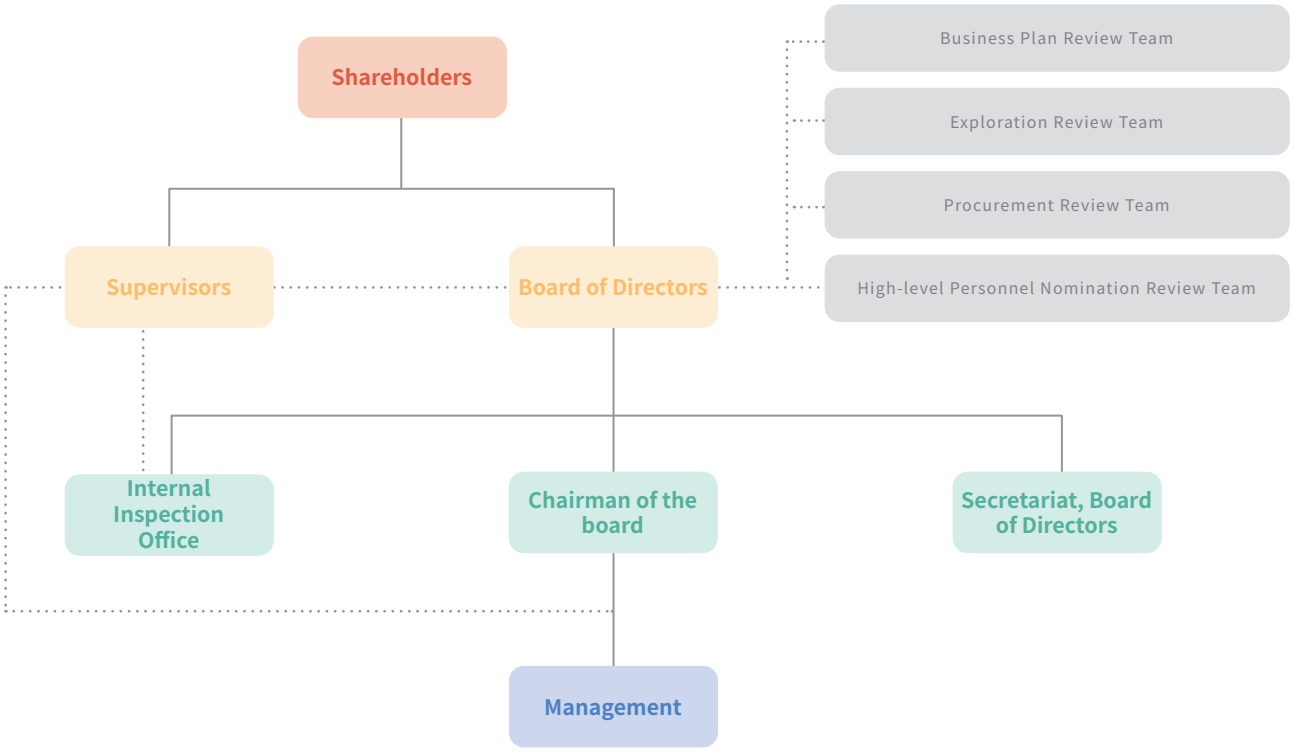
Average Attendance Rate

91.0%

Directors and supervisors

Motion Passed

122



HIGHLIGHT

Diverse education and certified home training for directors/supervisors

CPC organizes certified home training courses for directors and supervisors as a way to bring their attention to economic, environmental, and social issues concerning CPC's business activities. These courses are hosted by the Chairman and President, and involve senior managers as well as professional instructors from outside the organization, who will engage directors and supervisors in bilateral discussions so that issues can be reflected in operating activities and decision making.

In light of recent changes in the business environment and regulations, CPC organized 4 home training courses for directors and supervisors in 2022 on topics concerning "risks and opportunities of climate-related and energy transformations" and "net zero emission." Participants were also offered the option to choose between online and classroom learning due to COVID-19, and some of the courses were open to mid-level managers of related duties. These courses received a total of 226 enrollments.

Diverse engagement between the board and stakeholders

We have prescribed in the "Corporate Governance Best Practice Principles" and the "Rules of Procedure for Meetings of Board of Directors": A director having a conflict of interest (COI), either with himself or the corporate investor(s) he represents, shall specify the material contents regarding the COI. When a COI will cause threats to the organizational interest, this director shall sidestep from the discussion and voting and their processes of the related proposal, nor shall he represent other directors to exercise such rights.

In addition, proposals in relation to related party trade or board members shall be remarked in the proposal to remind directors or COI avoidance. The board of directors had 2 motions in 2022 that required recusal from directors. See 2022 Shareholder Meeting Annual Report for details.

Material bargaining events in 2022

01 Proposal to seek approval from the Ministry of Economic Affairs to introduce independent director seats and assemble an Audit Committee under the board of directors for enhanced corporate governance.

02 With regards to the change of urban planning involving 55.49 hectares of Kaohsiung Refinery's land, CPC is required to sign an agreement with Kaohsiung City Government according to the Urban Planning Industrial Zone Review and Modification Guidelines.

03 Signing of "long-term reclaimed water supply contract" between Dalin Refinery and the Industrial Development Bureau, Ministry of Economic Affairs.

04 Acquisition of interests in mine sites.

05 Review of business investment plan.

Performance of the board of directors

CPC has established a set of "Directives for Performance Assessment of the Board of Directors" in accordance with "Corporate Governance Best-Practice Principles for TWSE/TPEX Listed Companies," and evaluates the board of directors' performance by having the board conduct self-assessments internally. The assessment takes into account economic, environmental, and social impacts, goals as well as performance and is intended to support the future growth of the organization. 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. CPC also implements the use of a "Review Panel Performance Evaluation Worksheet," in which board members would evaluate the performance of various review panels such as the Senior Personnel Nomination Review Team, Business Plan Review Team, Procurement Review Team, and Exploration Review Team. Performance of the board of directors was rated good overall in 2022. Outcomes of the performance evaluation have been disclosed in the Corporate Governance section of the CPC website.

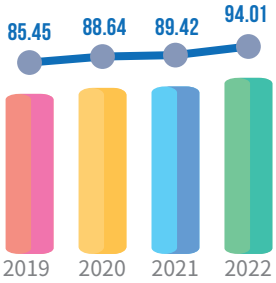
Board performance evaluation

2022

Evaluation outcome

Average score

94.01



Evaluation Indicators

Include level of participation, decision quality, board composition, directors' ongoing education, internal control etc.

Description

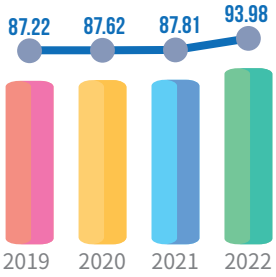
Each director would offer improvement suggestions with regard to directors' duties, and present the outcome of performance assessment to the board of directors at the end of each year. The outcome of an individual director's preliminary self-assessment, in particular, is forwarded to the Ministry of Economic Affairs for secondary review.

Functional Review Committee

Evaluation outcome

Average score

93.98



Evaluation Indicators

Include level of participation, decision quality, composition of review panel, scope of proposal etc.

Description

In October each year, directors and supervisors would evaluate the performance of various review panels including the Senior Personnel Nomination Review Team, Business Plan Review Team, Procurement Review Team, and Exploration Review Team in the last year. The outcomes of the assessment are also disclosed on the Corporate Governance section of the CPC website.

Director and supervisor compensation policy

Taiwan CPC Corporation is a state-owned enterprise under the Ministry of Economic Affairs. The remuneration of its directors, supervisors, and employees is based on the "Salary and Benefits Guidelines for Directors and Supervisors of Enterprises under the Ministry of Economic Affairs" and the "Employment Regulations and Salary Management Guidelines for Personnel of Enterprises under the Ministry of Economic Affairs." Performance bonuses are granted according to the "Implementation Guidelines for Operational Performance Bonuses of Enterprises under the Ministry of Economic Affairs," with additional assessment criteria for senior executives that include ESG business objectives.

1.1.3 Corporate governance

Short-term

- Respect the interests of stakeholders; strive to avoid major violation of social, environmental, and economic laws as the bare minimum; fulfill social responsibilities and obligations and deliver goals of the government's policies
- Make honest and transparent disclosure of information according to laws or instructions of the authority; adhere to conducts of high ethical standard

Medium/long-term

- Ensure that the board of directors effectively provides strategic guidance and supervision over the management
- Enhance the quality of the internal control system based on the "Regulations Governing Establishment of Internal Control Systems by Public Companies" and arrange related training and education activities from time to time

For the purpose of improving corporate governance, CPC not only conducts board of directors performance evaluation, but is also subject to correspondence review and on-site inspection by the State-owned Enterprise Commission, Ministry of Economic Affairs, for corporate governance evaluation, during which the Chairman, independent directors, worker directors, supervisors, the corporate governance officer, chief internal auditor, and head of finance/accounting are interviewed separately to establish a more in-depth understanding of corporate governance practices and how the board functions. Recommendations raised in the previous year's (2021) evaluation and CPC's actions taken in 2022 are explained below:

Outcomes of corporate governance enhancements - 2022

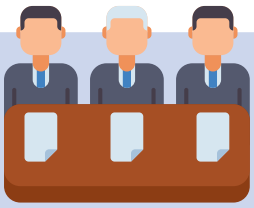
Recommendations for corporate governance evaluation

Female directors currently do not meet CPC's goal of having every gender represent at least one-third of the board. It is advisable to keep communicating with the superior (the Ministry of Economic Affairs) on this particular matter for the accomplishment of gender diversity goals.

Outcomes of corporate governance enhancements

- On August 19, 2022, CPC issued correspondence to the Ministry of Economic Affairs for the appointment of the 34th directors, during which it made a suggestion to have every gender represent at least one-third of the board for gender diversity.

Recommendations for corporate governance evaluation



CPC may consider making adjustments to the functional committees assembled under the board of directors as well as their operating guidelines to better support corporate governance requirements and internal practices.

Outcomes of corporate governance enhancements

- In March 2022, CPC issued a correspondence to the Ministry of Economic Affairs requesting permission to assemble an Audit Committee under the board of directors. The ministry approved the request in a correspondence issued in April, and the arrangement will take effect starting from the 34th directors.
- CPC has made preparations to assemble an Audit Committee. A decision was passed during CPC's 729th board meeting held on May 18, 2022 to first amend relevant policies (the Articles of Incorporation, the Board of Directors Charter, and Rules of Procedure for Meetings of Board of Directors), and officially assemble the committee according to CPC's Audit Committee Charter once members for the 34th board of directors have been appointed.

Recommendations for corporate governance evaluation

Given the large number of investment and procurement projects that CPC has planned as part of its transformation, CPC should explore ways to give directors/supervisors a better understanding of the motions being discussed, and evaluate the cost effectiveness of the methods developed.

Outcomes of corporate governance enhancements

- In light of the ongoing transformation, CPC continues to make arrangements to have the management brief members of the board before a meeting.
- CPC also makes regular arrangements to have the board of directors take part in internal meetings or events, including MBWA (management by walking around), outcome release conferences, and project report meetings for special issues. A total of 6 inspections were organized in 2022 to promote better understanding among directors and supervisors with regards to the execution of business strategies and CPC's business practices.

Recommendations for corporate governance evaluation

CPC currently has two independent directors and three supervisors on the board; the supervisors should involve more actively in supervisory duties to maximize the effectiveness of double-supervision between independent directors and supervisors.

Outcomes of corporate governance enhancements

- supervisors and personnel from the Audit Office, independent directors are also invited to attend these meetings. Issues discussed during the meetings mainly include: auditing of the work plan, execution of internal audit tasks, CPA's report on the financial statements, and key matters relating to business administration, for which managers of various departments are invited to provide explanations on the motions discussed. Through intensive discussion and communication among meeting participants, independent directors and supervisors may have a better understanding of weaknesses in the internal control system and are able to issue instructions and raise suggestions accordingly.

Recommendations for corporate governance evaluation

Considering that CPC is in the midst of transformation, the organization may consider involving mid-level and senior managers in continuing education as a way to transfer knowledge.

Outcomes of corporate governance enhancements

- CPC makes ongoing arrangements to have mid-level and senior managers take part in major meetings; in 2022, for example, the Chairman led members of the Sustainable Operations Promotion Committee along with mid-level and senior managers of related duties to visit sustainability role-model businesses, and invited mid-level managers to participate in goal announcement meetings, interim review meetings, Sustainable Operations Promotion Committee meetings, Risk Management Committee meetings etc. On August 1, 2022, CPC held a transformation planning conference involving mid-level and senior managers to help identify future development focus and accumulate experiences.

2022 Corporate Governance Evaluation – Excellent Award

For the purpose of enhancing corporate governance, CPC has proposed a series of improvement plans based on the opinions raised for the 2023 first-half corporate governance evaluation, and implemented accordingly to fulfill CPC's visions.

1

CPC has performed favorably in ESG and taken unprecedented initiatives with respect to the preparation of sustainability report, including: voluntary preparation of CSR reports in Chinese and English as early as 2007, renaming to sustainability report in 2013, acquiring AA1000 and ISAE3000 certifications in 2019, adoption of new preparation guidelines in 2021, and enhanced disclosure in 2022.

2

CPC shoulders the responsibility of a state-owned enterprise and mitigates the impact of inflation while ensuring adequate supply of oil and gas to domestic users, thereby helping mid-stream and downstream participants of the petrochemical industry grow. CPC is also dedicated to improving the quality of the environment and fulfills its corporate social responsibilities while being highly supportive of government policies.

3

CPC ranks top among state-owned enterprises in sustainability rating and has won countless awards of excellence in many aspects.

4

CPC discloses information with a high degree of transparency; its Chinese and English websites have been certified for "Web Content Accessibility Guidelines Level AA" for 5 consecutive years, which gives stakeholders easy access to the information they need. CPC also has diverse communication channels that stakeholders can make use of to secure their interests.

Corporate governance refinement programs - 2023

Recommendation to assemble additional functional committees and designate non-executive directors to serve as conveners.

All conveners of CPC's functional panels under the board of directors are assumed by non-executive directors; this principle will apply to other functional panels assembled in the future.

Despite having robust internal audit and internal control systems in place, they should be duly enforced to avoid recurrence of fraudulent conducts.

1. Before devising plans for the next year, the Audit Office would evaluate the risks borne by each auditee and determine the focus, scope, methodology, procedures, and frequency of audit tasks to be performed accordingly.

2. During an on-site audit, internal auditors would evaluate the appropriateness and effectiveness of internal control system design and execution within the auditee, maintain a record of the defects found and suggestions raised, and track on a regular basis until improvements are completed.

3. For every defect found with respect to the design of internal control system within the auditee in a given year, the Audit Office would highlight the defect as a key focus in future on-site inspections or special audits to avoid recurrence and exploitation of the defect. Furthermore, the auditee in question would be instructed to conduct rolling reviews to examine its internal control design and the necessity for amendments.

CPC adopted TIPS and was certified for TIPS_A

CPC continued implementing Taiwan Intellectual Property Management System (TIPS) in 2022 for improved management of intellectual property rights and to increase research capacity and overall competitiveness. The key progress of TIPS implementation is summarized below:

6 sessions of training

1,357 enrollments

CPC amended intellectual property management organization, systems, policies, and goals in 2022. Therefore, CPC has organized a series of courses to strengthen intellectual property rights awareness across relevant units, divisions, and offices. In 2022, CPC organized seminars includes:

"Practices and Notes on Trademark Search"

"Copyright Awareness in Outsourced Purchase"

"Business Secret Protection"

"Protection and Management of Confidential Information by Employees"

"Training for Accountable Personnel"

Intellectual Property Practice Training Program

"Patent Strategy and IP Protection/Application"

"Use of DI Patent Database"

"Protection of Patents and Business Secrets"

"Analysis of Patent Strategies and Scenario Drill"

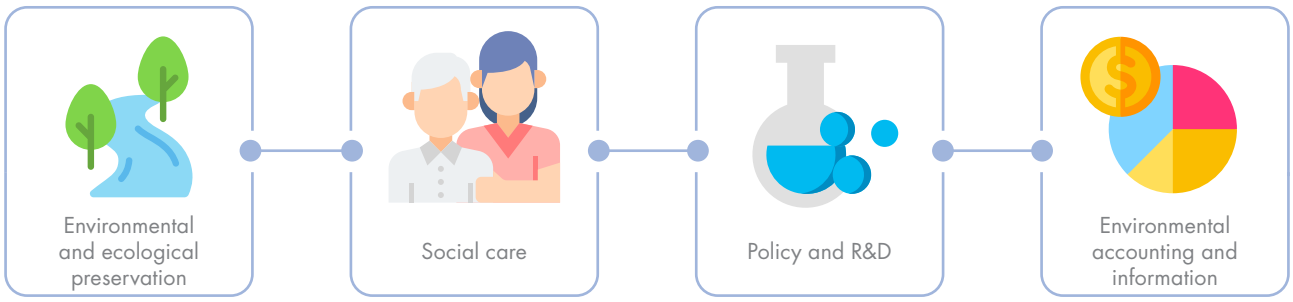
After presenting the "Report on Intellectual Property Management Plan and Execution - 2022" to the board of directors, CPC made detailed disclosures on its website about how it had planned and implemented its performance-linked intellectual property management practices in 2022.

On December 21, CPC renew the certification for Taiwan Intellectual Property Management System_A Version 2016, and made further optimizations to existing intellectual property management systems and rules in line with annual operational goals.

1.1.4 Sustainable governance

Cornerstone of sustainable governance

CPC is dedicated to integrating operating strategies and sustainable practices as a response to the market's increasing attention to ESG issues. With the assembly of "Sustainable Operations Promotion Committee" in 2005, CPC divided sustainability management into four main fields, namely:



Environmental

Environmental, Ecological preservation & Environmental accounting and information

To reduce the environmental impact of operations, promote renewable energy, minimize emissions, achieve net-zero emissions, and foster low-carbon sustainable development

Social

Social care

Committed to enhancing employee competencies, promoting education and public welfare, and creating shared benefits for society.

Governance

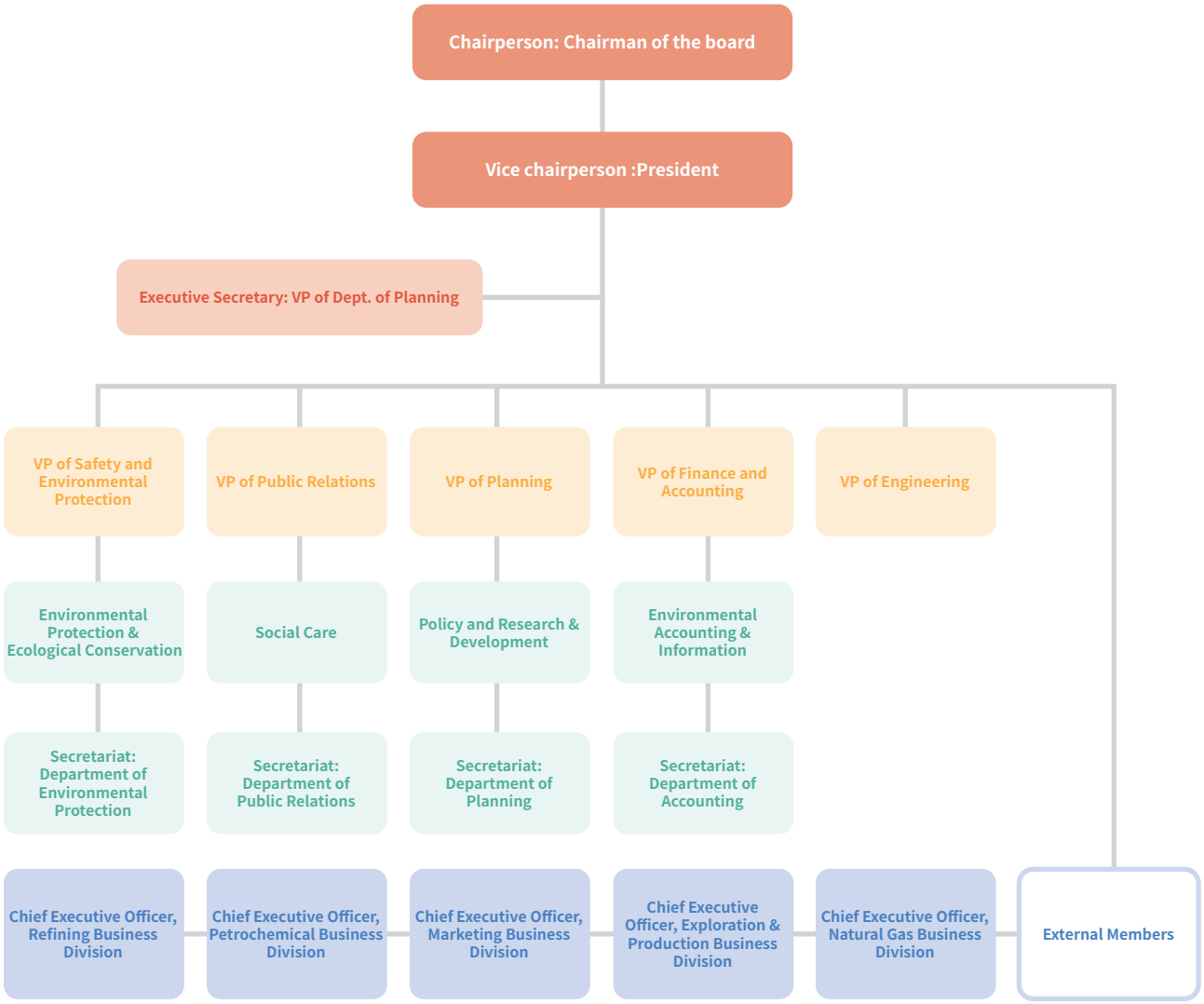
Policy and R&D

Committed to implementing sustainable governance, collaborating with supply chain partners, and achieving common sustainable development goals.

CPC pays constant attention to sustainability trends locally and abroad, contributes expertise on both strategic and operational levels, and promotes the sustainability of the organization as well as society. CPC has implemented internal policies including "Corporate Governance Best Practice Principles," "Code of Ethical Conduct," and "Rules of Procedure for Meetings of Board of Directors" to enforce corporate governance, and observes "Act on Recusal of Public Servants Due to Conflicts of Interest," "Integrity and Ethics Principles for Employees of the Ministry of Economic Affairs," and integrity principles when carrying out business activities. CPC strictly prohibits corruption, bribery, and any attempt to exploit the vested authority for own gains or gains of others, and continues to empower the board of directors and supervisors for supervisory duties. A corporate governance section, an e-publications section, and a news and announcements section have been created on CPC's website to disclose shareholder meeting annual reports, sustainability reports, and financial as well as non-financial information on a regular basis. With increased information transparency, CPC hopes to better protect shareholders' and stakeholders' interests.

Sustainable Management Committee

The "Sustainable Operations Promotion Committee" has been assembled to support CPC's sustainable governance efforts. The committee is chaired by the Chairman, with the President serving as Vice Committee Chair, the Vice President of Business Administration serving as general secretary, and other senior managers and outside experts/scholars making up the rest of the committee. Together, they review sustainability issues that are of concern to operations and stakeholders, and examine CPC's economic, environmental, and social impacts and responsibilities on an ongoing basis. The Sustainable Operations Promotion Committee convened 3 meetings in 2022, and directors were invited from time to time to raise proposals relating to sustainability; additionally, the President made unscheduled reports to the board of directors regarding the progress and outcome of sustainability practices. Internal departments were also required to make special reports to the board of directors and examine the impacts of economic, environmental, social, and governance issues as well as responses.



By creating dialog opportunities, CPC persistently promotes stakeholders' understanding toward net zero transformation and gathers employees' support for CPC's sustainability mission. Since 2020, the organization has actively discussed with managers and employees the transformation plan, and explored ways to implement strategies for fuel upgrade, carbon reduction, and clean energy. This resolve toward net zero transformation is conveyed through countless meetings and discussions.

HIGHLIGHT

Creating dialog opportunities and developing net zero consensuses among CPC employees

2020

In response to the government's 2025 nuclear-free policy and air pollution control action plans, CPC gathered senior managers and heads of tier-1 units to discuss how these policies may affect the organization, as well as the appropriate transformation steps.

2021

CPC transformation planning conference

The event is intended to give young employees an opportunity to express thoughts about CPC's future transformations and paths, and how CPC may apply its R&D advantage toward accomplishing the 2050 Net Zero Emission goal. The conference not only draws employees' attention to the importance of sustainable growth, but also encourages discussion and brainstorming about the just transition that CPC must adhere to over the course of growth.

2022

CPC transformation planning conference for mid-level managers

A total of 56 mid-level and senior managers participated in the conference. The event was intended to gather mid-level managers' opinions and visions on how CPC's future should be, and will provide useful reference for future transformations. Through this conference, CPC managers of various levels contributed their wisdom and professional capacity, and supported the organization's transformation efforts with action.

2023

New Vision Conference and Senior Managers' Conference

For the above conferences, 34 internal units (divisions and offices) were asked to each propose a new vision and assign a tier-1 manager to explain the implications. Opinions are gathered from the bottom up to provide reference for future discussions in senior managers' conferences. Two of the above conferences will be held during the year to unite consensus toward the new visions, give the public and employees a better picture of where the organization is heading, and show CPC's resolve toward net zero transformation and sustainable growth.

1.2 Operating environment and results

1.2.1 Financial performance

Short-term

- Strengthen business health, implement proper financial goal setting and performance management/evaluation, and examine performance indicators on a yearly basis to ensure conformity with the overall goal

Medium/long-term

- Due to changes in the production and sales structure, uncertainties concerning the volatility of international oil and gas prices, and ongoing infrastructure projects, CPC will aim to maintain financial stability by reducing energy and carbon, keeping oil and gas prices within a reasonable level, and exploring diverse business opportunities

Direct economic impact and operating performance

CPC has been entrusted with the mission to stabilize oil and gas prices for the growth of the national economy since the day it was founded. In 2022, CPC generated NT$1,221.9 billion in revenues and contributed NT$73.5 billion in taxes to the national treasury. Please visit the following webpages for CPC's consolidated financial statements and related financial information.

Annual report information

Government donations

		2020	2021	2022
Direct Economic Value	Revenue	7,217	9,038	12,219
	Operating Expense	7,324	9,331	14,258
Economic Value-Allocated	Employee Wages and Benefits	208	237	235
	Payment to Investors	26	20	44
	Financial contribution to governments of various countries and regions	1,083	1,018	735
	Community Investment	6.13	6.20	5.38
Others	Net Income Before Tax	(77)	(471)	(2,161)
	Net Income	(73)	(393)	(1,876)
	Total Assets	7,373	8,423	9,735
	Financial aid from the government	1.52	1.75	2.03

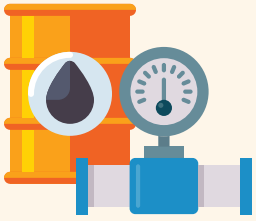
» Note: 2020 and 2021 figures were certified, whereas 2022 figures were audited

(NT$100 mn)

2022 business overview

CPC mainly sells oil products, petrochemical products, and natural gas, and has a monopoly in the domestic supply of natural gas. CPC supplies natural gas to power generators, utility service providers, and industrial users; approximately 80% of the natural gas supplied is used for generating electricity.

Main products



Product Types
(including multilateral trade)

- Natural gas finished product
- Petrol
- Diesel
- Aviation Turbine Fuel (ATF)
- Fuel oil
- Olefins
- Others

Other products and services

Lifestyle products

- Biotech products
- Festive gifts
- Agricultural Products
- Vehicle fuel

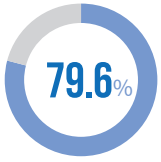
Quality service

- Quick Service and Tire Centers
- Carwash
- Compound stores and excellent public toilets
- Cup & Go Café
- Charging and Battery Replacement Points

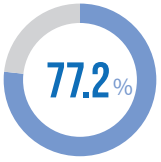
Mid-stream and upstream products

- Refinery and supply of petrochemical feedstock

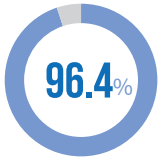
Market Share of Major Oil Products in 2022



Market share of gasoline

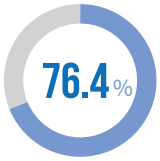


Market share of diesel



Market share of fuel

Market share of aviation fuel



Market share of petrol stations
(Direct, Franchise, and Collaborative stations)

Product Production and Sales Volume in 2022

Crude Refining Volume	Oil products total sales (including petrochemical products and multilateral trade)	Sales volume for natural gas finished product
2,219	2,896	265.39
10,000kL	10,000kL	100mn m^3

Revenues and revenue weight of main products

Product Types (including multilateral trade)	2021	2022
Natural gas finished product	23.49%	30.38%
Petrol	23.23%	20.39%
Diesel	12.48%	12.64%
Aviation Turbine Fuel (ATF)	2.31%	3.25%
Fuel oil	6.60%	5.81%
Olefins	7.26%	5.12%
Others	24.63%	22.42%

Indirect Economic Impact

CPC continued increasing commitments to major infrastructures in 2022, using smart, low-carbon, and efficiency enhancement technologies for energy and resource integration while adopting energy creation, utilization, storage, and management systems for enhanced energy control. Meanwhile, the uses of new technologies such as gas liquefaction, pressure energy-based power generation, and diamond water-based aquaculture are being promoted. CPC also supports the government's electric vehicle and green energy plans by constructing integrated power systems with upgraded energy supply. For more complete explanations, please refer to chapter - CPC and Green Contributions.

1.2.2 Tax governance

CPC has long supported the implementation of tax-related policies, and is dedicated to making transparent disclosure of information and promoting sustainable growth.

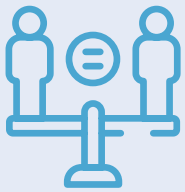
Tax policy

All operating activities of the organization are conducted in accordance with relevant tax laws

The financial statements have made tax disclosures in compliance with relevant rules and requirements, and presented information in a transparent manner

CPC does not make use of tax heaven or make tax plans with the intention to evade tax

CPC does not intentionally transfer the profits it generates to countries with a low tax rate



CPC builds relationship with the tax authority on the basis of mutual trust, transparency and respect

Income tax information

CPC bears the responsibility of stabilizing oil and gas prices for the growth of local industries, and therefore has been making losses in recent years. Last year's Russia-Ukraine war, in particular, drove up the cost of natural gas so high that CPC incurred massive losses in an attempt to maintain the stability of domestic prices, and therefore was not required to pay profit-seeking enterprise income tax. Considering that calculation of effective interest rate and cash rate was not meaningful in this case, CPC has opted to disclose only its pre-tax profit (loss) and income tax expense (benefit) shown in financial statements for the last 3 years, as shown below.

	Pre-tax profit (loss)	Income tax expense (benefit)
2020	(7,703.21)	(361.65)
2021	(47,131.72)	(7,847.29)
2022	(216,055.75)	(28,467.16)

Unit: NTD millions

Tax information by country - 2022

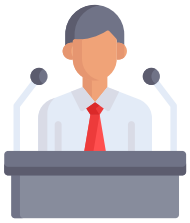
CPC's global presence spans across 16 countries in 4 continents, and operates a total of 14 overseas offices. Through coordination between international offices, CPC is able to supply oil products and related services around the world. Tax information for various jurisdictions is explained in the chart below. CPC complies with the tax rules of applicable countries and fulfills its tax obligations. All relevant tax information is duly disclosed for transparency.

Tax jurisdiction	Net sales to non-related parties	Pretax-profit (loss)	Income tax paid	Income tax expense (benefit)	Tangible assets	Employee count
Taiwan (TW)	1,202,923,309	(216,055,749)	0	(28,467,162)	970,966,343	16,682
Australia (AU)	4,380,106	11,254,839	0	0	36,045,887	2
United States (US)	34,357	(162,126)	0	0	914,475	10
Ecuador (EC)	2,457,022	949,164	0	6,842	1,588,239	1
Singapore (SG)	67	1,020	204	158	13,794	4
Niger (NE)	10,271,905	9,257,360	0	163,361	11,929,555	1
Congo (CG)	0	0	0	0	42,489	0
Chad (TD)	0	59,832	0	1,001,003	4,675,856	0
Indonesia (ID)	0	(6,429)	0	0	25,889	3
Panama (PA)	878,034	23,449,741	0	4,866,252	112,398	0
Somaliland (XX)	0	(296)	0	0	720,476	0

Unit: thousand dollars/person

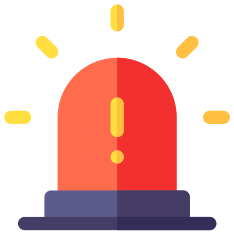
» 註：因海外地區尚未完成 111 年度營所稅申報事宜，故所有跨國資料皆以 110 年度資料為準。

1.2.3 Response to significant events



Event

Integrity incident involving CPC's Refining Business Division



Impact

On January 26, 2022, the Department of Ethics found NT$27.1 million cash of unknown origin stashed inside the office of Han Hsu, former CEO of CPC's Refining Business Division, which was believed to be a bribe for tender, given the personnel's high position and influence over procurement activities. CPC views integrity as the basic requirement and strictly prohibits inappropriate dealings with contractors; any action of similar nature would be considered a major violation of CPC's Employee Behavior Guidelines.

Response and subsequent enhanced measures

1. The personnel in question was found to have mishandled purchases during active duty, and improvement suggestions were raised with respect to regulations, policies, and execution.

   - A "Checklist for Purchases above Announcement Threshold" has been designed so that the department in need may use to conduct their own checks before forwarding the request to the Purchasing Department for review, and thereby enhancing internal control.
   - Adjustments have been made so that major purchases amounting to NT$100 million and above are reviewed by the headquarter. The Department of Ethics has been assigned to take part in procurement review meetings, where they can express opinions on major procurements to prevent fraud and improve integrity.

2. CPC created a procurement integrity platform for its major construction work - "Kaohsiung Intercontinental Container Terminal Phase 2 - Dalin Petrochemical Oil Storage Center Project" on June 13, 2022, and organized a commissioning ceremony later on September 16, 2022 in the presence of representatives from Agency Against Corruption, the district prosecutors office, the Public Construction Commission, and vendors. The platform not only serves as a means for participants to communicate on relevant issues, but is also a show of commitment to integrity, transparency, and ongoing supervision.

Procurement integrity platform for major construction work - "Kaohsiung Intercontinental Container Terminal Phase 2 - Dalin Petrochemical Oil Storage Center Project"

3. CPC has created an "integrity section" on its Intranet and Internet websites. Case studies are shared during monthly senior manager meetings so that employees and mid-level/senior managers are aware of the implications.

Event

Explosion of Kaohsiung Dalin Refinery

Impact

On March 27, 2022, an accident occurred at the 3rd Heavy Oil Hydrodesulfurization Plant that resulted in severe damage to the feeder heat exchanger (E-3006) and steel structure of the high-temperature low-pressure separation tank and steam/hydrocarbon compound separation tank located above the flared pipe. Meanwhile, the first air cooler (E-3004) located beside the broken pipe was also severely damaged, whereas the second air cooler (E-3005), the air cooler (E-3007) for high-temperature low-pressure separation tank, other equipment, and thermal insulation layer of the reactor suffered collateral damage. After the incident, Kaohsiung City Government issued an official correspondence demanding the suspension of all operations under Dalin Refinery NO.3 RDS for inspection, and to resume work activities only when cleared of all safety concerns.

Response and subsequent enhanced measures

CPC conducted a total examination of the equipment used in NO.3 RDS, and completed an investigation on the cause of the accident. A fire damage assessment will be completed before resumption of work activities, and all relevant equipment and materials will be examined and improved based on the assessment outcome. CPC will request for resumption of work activities after passing a review of an independent third party and the city government.

Equipment aspect

1. An independent third party has been engaged to conduct a fire damage assessment on related equipment and pipelines.
2. The materials used in E-3004 equipment have been upgraded from duplex stainless steel to nickel alloy 825.
3. A strain gauge was added to the air cooler tube header (NO. 3RDS E3004/5), and a hydrogen detector was installed above for real-time monitoring of equipment safety.

Policy aspect

1. Hazard and operability analysis (HAZOP) is being conducted on equipment to identify high-risk factors.
2. All similar air coolers inside the hydrodesulfurization plant are being checked for the presence of duplex stainless steel material.

Execution aspect

1. Enforcement of personnel training
   - The incident is being used as a case study for personnel training to improve employees' response in the event of an emergency.
   - (2) Amendments have been made to the furnace startup, shutdown, and emergency shutdown guidelines and the pressure buildup and leak inspection guidelines for NO. 3 RDS Plant.
2. Completed HAZOP on equipment and made improvements to defects for work resumption.
3. Key equipment (NO. 3 RDS E-3004/5) will be purchased from manufacturers recommended by the patent holder as a priority, in the form of a restricted tender.
4. In terms of work quality control, contracts have been amended so that inspection points are set up along any internal load-bearing weld runs. Only when quality has been verified by CPC or an independent third to conform with contract requirements may the work proceed beyond the inspection point. This is to ensure the quality and compliance of the works performed.

Event

Description of financial losses incurred in 2022

Impact

The government took a number of measures to stabilize prices in 2022 as a response to the outbreak of the Russia-Ukraine war and the inflation that ensued, which in turn protects consumers' interests. Being a state-owned enterprise, CPC did what it could to stabilize energy prices amidst the surging cost of natural gas due to the Russia-Ukraine war. As a result, what could have been a massive rise in the price of natural gas ended up with mild price adjustments to electricity enterprises that were spread across multiple months. Since no adjustment was made for households and industrial users as per the government's price stabilization policy, natural gas was sold at prices far below cost, and CPC amassed NT$212.168 billion of losses on natural gas products for the year. Furthermore, CPC raised an additional NT$321.8 billion of interest-bearing debts in 2022 to finance its operations, and the balance at the end of the year was 1.13 times more compared to the previous year-end. This happened at a time when both the U.S. Fed and the central bank of Taiwan were raising interest rates, and borrowing costs increased to the deterioration of the overall financial position.

Response and subsequent enhanced measures

CPC's response strategies for funding and increased cost of capital in light of high losses from operations in 2022, the high inflation rate in 2023, and potential rate hikes:

1. Enhance risk management, secure adequate short-term credit facilities, raise long-term borrowings at an appropriate time, and explore syndicated borrowing to ensure the availability of working capital.
2. Make timely adjustments to long-term, short-term, fixed rate, and floating rate borrowings and make flexible use of financing tools to lower the cost of capital.
3. Obtain a letter of support from the government to secure borrowing with financial institutions.
4. Aim to source capital from green finance at preferential rates.

CPC's response strategies for improving operating performance:

1. CPC sources crude oil primarily by way of long-term contracts and secondarily through spot purchases. Contracted purchase ensures long-term and consistent supply of oil whereas spot purchase is made on a monthly basis from the spot market as needed by the refinery, which adds flexibility to the refining business.
2. For many years, CPC has diversified its oil sources and taken the initiative to explore new types of crude oil. Currently, there are about 130 types of crude oil from 42 countries that are suitable for refining. Having a widely diversified source not only helps diversify concentration and price risks, but also ensures consistent supply to domestic needs.
3. Domestic prices of oil and gas are being adjusted to reflect cost, whereas actions are being taken to explore supply sources, increase revenues, and save expenses. CPC will continue monitoring the global natural gas market closely and make necessary adjustments to domestic selling prices for improved financial position and business performance.

1.2.4 Risk control

CPC has established its own "Principles for Risk Management and Crisis Handling Practices" and "Overall Risk Measurement Principles" to support the enforcement of risk management policy and the development of a crisis management system. A risk management system, an internal audit system, and a Crisis Response Team have also been put in place to provide appropriate and effective support for internal control practices. Four key risk management policies have been implemented to serve as guiding principles for organizational risk management:

Principles for Risk Management and Crisis Handling Practices

Reduce business risks for corporate sustainability

Adopt total risk management and enforce operating procedures

Improve risk management capacity and shape a risk management culture

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

Risk management goals

Short-term

- Based on the risk management policy, each unit (division and office) 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.

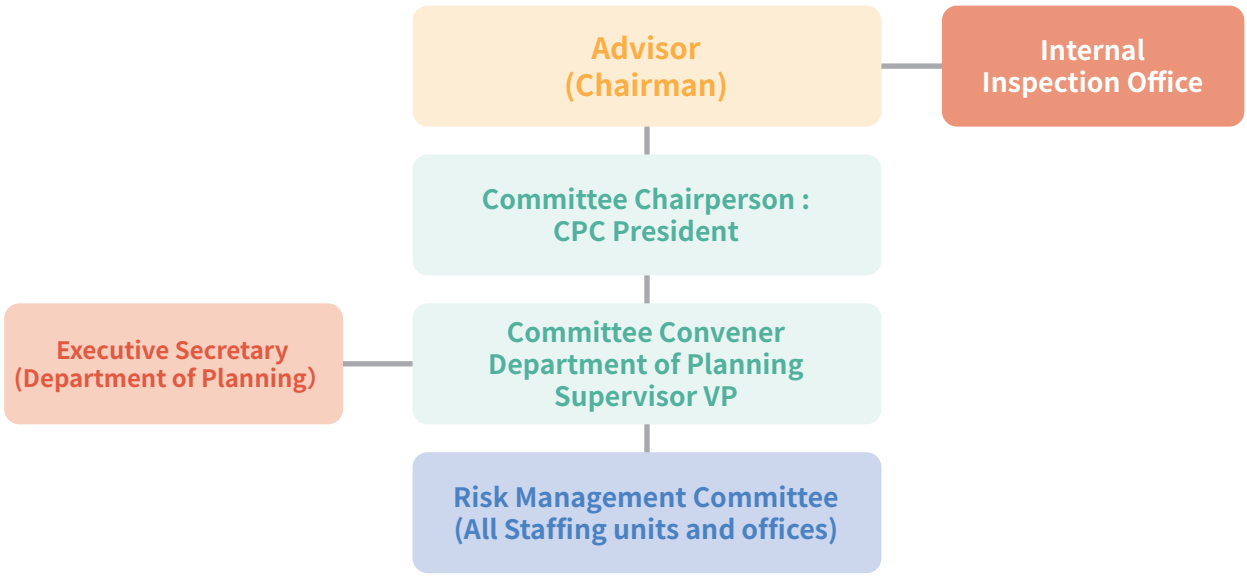
Medium/long-term

- 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 operational risk of the Company.
- 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 practices

In March 1998, CPC assembled its "Risk Management Committee" and risk teams under various units (divisions and offices) to help enforce the risk management system. The committee and teams continue to execute CPC's risk management system today, using "Risk Matrix" as an assessment tool and enterprise risk management (ERM) system to systematically record, trace, and control improvement of all risks that CPC is susceptible to.

Risk Management Organization Chart



Operations of Risk Management

Outcomes of risk management practice - 2022

CPC has a Risk Management Committee in which the Chairman serves as the Advisor and supervises meetings on behalf of the board of directors. All members of the board take part in the annual risk survey and ranking exercise, and participate in advanced risk management conferences from time to time.

The Risk Management Committee conducts a full-scale examination of risks that the organization may be exposed to, devises appropriate responses for various scenarios, and examines and monitors the outcome of each response. CPC identified a total of 10 risk aspects in 2022, and after adopting improvement measures and monitoring for a period of time, CPC found no change in residual risk for 7 of the above risk aspects, whereas the residual risk for "mishandling of crisis/extraordinary occurrence," "employees' corruptive and abnormal conducts," and "impact of ecological issues on major investments" had reduced.

Risk category
Social Regulations

Identification of risks and opportunities	Response measures and actions
Impacts of green energy transformation	1. In support of the Industrial Development Bureau's infrastructure plan, CPC accomplished its infrastructure targets by completing the construction of 204 battery swapping stations and 22 charging stations (for a total of 226) in 2022 2. CPC improved its refining process by introducing advanced, environment-friendly production technologies and by shifting focus toward the development of customized products and technologies; furthermore, more attention is being directed to choosing the appropriate type of crude oil and production model given the supply and demand of oil products and petrochemical products 3. CPC continues to develop energy and carbon reduction technologies and high value-adding petrochemical products
Financial and operational impacts from suspension of oil/gas price hikes	1. Losses incurred as a result of supporting the government's oil price stabilization policy are being reported to the authority and recognized on a monthly basis 2. As per request of the authority, CPC provided timely updates to the government on oil price risks, and implemented oil price stabilization measures according to changes in the international market in an attempt to stabilize the price of goods; proposals will be made to government agencies for the re-examination of the floating oil price system at an appropriate time 3. Due to COVID-19 and the fluctuation of commodity costs, CPC supported the government's attempt to stabilize domestic prices in 2022 and did not make full adjustments to the prices of gasoline, diesel, natural gas, LPG etc.; amounts that were affected by policy measures have been reported to the superior 4. Appropriate adjustments were made to the RFCC/ROC process as well as the export volume of gasoline, diesel, aviation fuel, and oil products according to fluctuations in oil price and the crack spread; new export markets were developed for improved flexibility and profitability

Risk category
Information technology

Identification of risks and opportunities
Risk of cybersecurity attack

Response measures and actions

1. In 2021, CPC founded Cybersecurity Center, a department that specializes in cybersecurity, to provide additional support for information technology and operating technology (IT/OT); CPC also introduced a terminal detection and response system and deployed it on all terminal equipment throughout the organization for broader monitoring

2. CPC continues to enforce the "4 don'ts and 3 do's" as part of its cybersecurity rules, and imposes social engineering drills and USB drive rules for improved cybersecurity awareness; CPC organized a total of 3 social engineering drills in 2022, including 2 planned drills and 1 ad-hoc drill

3. CPC continues to monitor backup performance and enforces daily differential backup as well as weekly and monthly full backups; progressive improvements are being made to increase the efficiency of backup recovery, for which full-scale inspections and audits are also being conducted

4. CPC completed the implementation of a log management system, which enables more effective storage of logs and records generated from networks and service systems as well as centralized search, management, and analysis for enhanced cybersecurity protection

Risk category
Employee conduct

Identification of risks and opportunities
Employees' corruptive and abnormal conducts

Response measures and actions

1. The Department of Ethics supervised a total of 3,762 purchases in 2022; its involvement reduces potential risks in procurement and helps maintain CPC's integrity image

2. In 2022, the Department of Ethics and its subordinate units organized 634 integrity awareness events for a total audience size of 15,528; 481 of such events were organized in digital form, which reached an audience size of 103,813

3. A collaborative platform has been created where the Department of Ethics and the Purchasing Department may notify each other of any abnormal occurrence in a procurement, such as bid-rigging; a total of 10 cases with suspected misconduct were identified in 2022

Risk category
Ecosystem

Identification of risks and opportunities
Impact of climate change

Response measures and actions

1. In 2022, as designated by the Bureau of Energy, the latest climate data was used to update the assessment reports on strong wind and flooding climate risks for 4 oil centers (Keelung, Shimen, Hualien, and Fengde) and 3 gas supply centers (Taipei, Taoyuan, and Kaohsiung)

2. Each department is developing water conservation strategies and implementing phased water restriction measures based on Water Resources Agency

3. Coordinating with the information provided by WRA regarding the water situation, we will implement rolling management and convene water response meetings as needed to control water usage

4. We integrate the information collected from various unit's typhoon preparedness checkpoint operations and meetings in 2022. We also establish a window of operations for our contingency center, preparing in advance for any typhoon approaching Taiwan.

Impact of ecological issues on major investments

1. CPC continues to communicate and coordinate with Ocean Conservation Administration and Taoyuan City Government on the preservation of the algal reef; by providing information on construction works and the ecosystem, CPC helps eliminate the public's concern about how the 3rd gas receiving station affects the ecosystem

2. For every press conference held in protest against the 3rd natural gas receiving station, CPC has assigned representatives to respond to the opinions of environmental groups and alleviate the public's concerns; data on ecological survey has been published on the webpage that CPC has created specifically for the 3rd natural gas receiving station

3. Outcomes of environmental assessment and related commitments have been submitted to the authority according to rules, and the tasks are being carried out according to resolutions of Guantang Industrial Park (Port) Ecological Conservation Committee

4. In November 2022, CPC organized an algal reef preservation exhibition within the Petroleum Discovery Museum to keep the public informed on the ecological preservation efforts taken in relation to the 3rd natural gas receiving station

Risk category

Operational management

Identification of risks and opportunities

Stable supply and safety of oil and gas

Response measures and actions

1. CPC sourced 13 different types of crude oil mainly from 8 countries in 2022; 45.3% of total imports were sourced from The Middle East, whereas the USA accounted for 43.7%, Africa accounted for 9.1%, and Indonesia accounted for 1.9%

2. CPC uses linear programming to calculate the optimal resource allocation, and convenes production and sales review meetings at the end of each month to plan the production and sale of key oil products in the next three months, after taking into consideration the progress of each unit

3. Through enhanced negotiation with suppliers, proactive sourcing of gas inventory, and additional investments into LNG storage capacity, CPC aims to develop backup gas pipelines and dual gas supply for some of its key customers

4. Pipeline management is being tracked regularly, and pipeline inspection is being conducted at a faster rate to ensure the safe delivery of oil and gas

5. CPC avoids sourcing crude oil and naphtha from Russia in order to prevent impacting domestic production of gasoline, diesel, aviation fuel, and low-sulfur fuel oil, and thereby ensure a consistent supply of fuel to domestic consumers

Risk of talent and core technology succession gap and outsourcing overall risk

1. All new recruits are required to undergo orientation, specialist training, and certification training; CPC also adopts a mentorship system to help new recruits familiarize themselves with the duties on hand

2. CPC has a "Short/Medium/Long Term Talent Development Program" in place that offers a broad diversity of training from core skills to advanced management skills; budgets are allocated to employee training and new programs are devised on a yearly basis

3. CPC continues to organize courses on marketing, management, construction etc., using platforms such as E Library and CPC University, and has created a knowledge management platform offering case studies and explanations to facilitate the transfer of knowledge; outside experts and personnel from relevant departments are also invited to exchange know-how for the improvement of employees' professional capacity

Risk category

Operational management

Identification of risks and opportunities

Mishandling of crisis/extraordinary occurrence

Response measures and actions

1. CPC continues to promote and enforce a spokesperson system; employees may issue public comments on CPC's business activities only with proper authorization, and this restriction prevents misunderstanding by the public

2. All units are required to make immediate reports according to the "Disaster and Emergency Reporting Sheet"; in addition to the use of awareness campaigns, CPC also organizes regular and ad-hoc response drills to help employees familiarize themselves with the reporting system and timeline, and develop proper responses as well as reporting habits for an emergency

3. CPC took the initiative to clarify scams over its Facebook page, and issued a total of 138 press releases in 2022

Construction or operation risk due to failure to implement the OHS SOP (including contractors)

1. CPC has made proactive efforts to promote awareness toward standard operating procedures (SOP), train employees (including contractors) on related matters, enforce SOPs, and conduct audits; contractors are being required to perform proper hazard identification, risk assessment, and work safety analysis, and duly implement work safety rating, work site inspection, morning briefing, and work permit checks

2. CPC made 34 construction quality inspections in 2022, during which it checked the safety of the construction sites; CPC also followed the work safety rules of its construction guidelines by examining the certification and eligibility of contractors' personnel, reviewing the proposed plans and execution, and tracking defects until improvements are completed

» Note: CPC also follows "TCFD Recommendations" when identifying potential risks and opportunities of climate change. Please see Chapter 2.1 - Mitigation and adaptation to climate change for details.

Internal audit and external supervision

CPC has assembled an Audit Office under the board of directors to enforce its internal control, inspection, and audit systems. CPC respects the professionalism and independence of its Audit Office and internal auditors, and fully authorizes them to carry out inspection or audit tasks. The following rules have also been implemented to support the internal audit system:

Policy aspect	1 For any internal control document established by the management and approved by the board of directors, each unit (division and office) is required to examine and evaluate on a regular basis the appropriateness and completeness of such document given the internal/external business environment, the prevailing regulations, organizational adjustments, business changes etc., and thereby improve the internal control system.
Execution aspect	1 Each year, the organization shall devise audit plans according to risk assessment and duly conduct on-site audits: On-site audits were conducted on a total of 20 units and 21 headquarter divisions/offices in 2022. 2 The management department shall conduct internal control self-assessments at least once a year. 3 Annual internal control special audits: CPC conducts special audits on high-risk business activities and recurring defects each year; a total of 4 special audits were executed in 2022, and any defects or non-conformities discovered are placed on a watchlist and tracked persistently until improvements are made.

Internal audit

- An Audit Office has been created directly under the board of directors; the Audit Office devises internal inspection/audit plans for the next year in accordance with "Regulations Governing Establishment of Internal Control Systems by Public Companies" and CPC's operating policies, business plans, and resolutions of supervisor meetings
- Supervisor meetings are convened on a yearly basis to examine defects within the internal control system and to evaluate the outcome and efficiency of current business practices

External supervision

- CPC is required to undergo a CPA audit and FSC inspection every year.
- CPC is subject to the supervision of the State-owned Enterprise Commission, MOEA, and the National Audit Office, Control Yuan

1.2.5 Sustainable Supply Chain

Supply Chain System

CPC values corporate sustainability. Not only has it imposed strict requirements for its own fulfillment of sustainability responsibilities and commitments, the organization also coordinates with upstream and downstream partners to exert positive influence and spread the sustainability philosophy for the mutual benefit of the supply chain, starting with their own products, services, and operations. Below is a description of CPC's supply chain system:

Upstream suppliers

Service related (contracting and service)
Construction related (building, equipment, and contracting)
Property related
Crude oil and natural gas

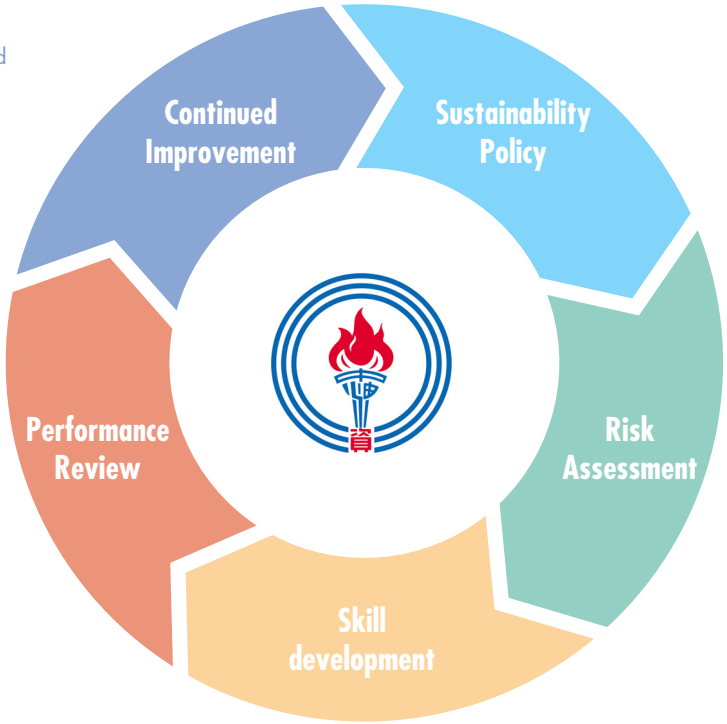
CPC

Downstream distributors

Franchise stations
Petrol station service

Distributor
Solvents
Lubricants
LPG

Supply Chain Sustainability Management



- 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 accords to labor, environment, and human rights relevant sustainability requirements

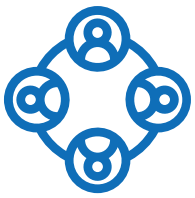
- Regularly reviewed supply chain's performance in quality, service, and health and safety

- Promote supply chain sustainability questionnaire; establish supply chain risk and impact assessment

- Establish training mechanism and share training resource

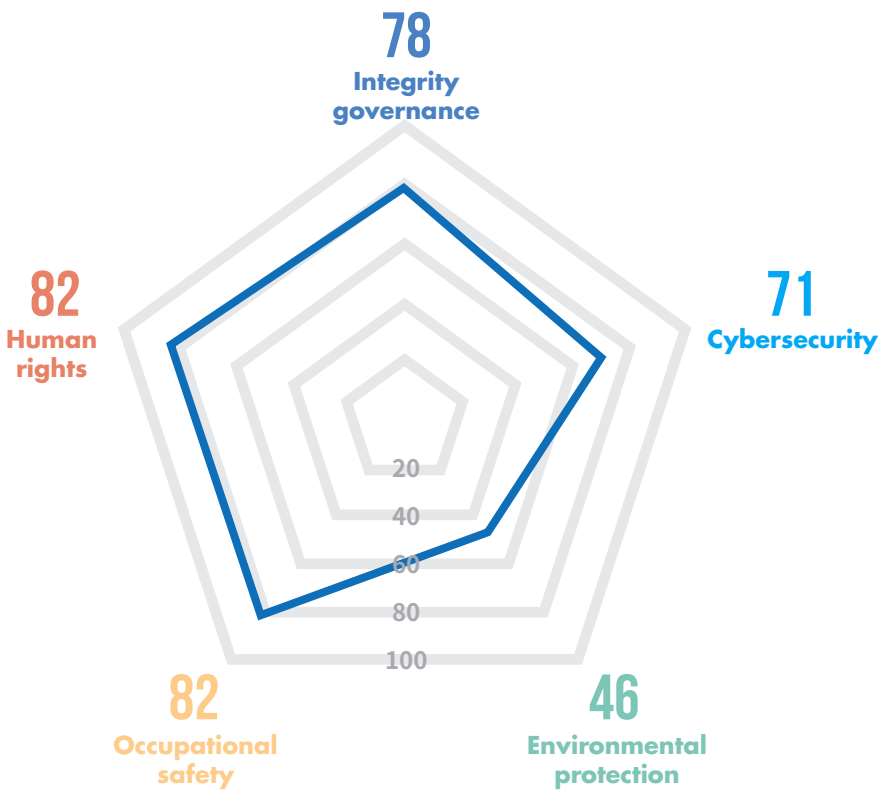
Supply Chain Sustainability Assessment

CPC continued supply chain sustainability assessments in 2022, asking all supply chain partners to complete a self-assessment questionnaire over the ESG evaluation system. The self-assessment questionnaire was revised this year to cover five aspects, including: integrity governance, cybersecurity, environmental protection, occupational safety, and human rights. A total of 313 supply chain partners had completed the ESG questionnaire, and by learning the progress of suppliers' sustainability efforts, CPC hopes to identify areas of weakness and respond accordingly.

Stage		Key focus
Identifying subjects of evaluation		A questionnaire was distributed to all 313 supply chain partners of CPC, including: suppliers, franchise stations, and distributors.
Design of evaluation questionnaire		The procurement unit surveyed suppliers on five main aspects, namely: environment, labor practice, human rights, ethics, and integrity, using a total of 58 questions.
Analysis of evaluation outcome		A total of 313 supply chain partners including 162 suppliers, 109 franchise stations, and 42 distributors have completed self-assessment. Except for the environmental aspect, all supply chain partners scored above 70 in all other aspects during the 2022 self-assessment.
Improvements to future practices		CPC adjusts its questionnaires based on the outcome of self-assessment, and will continue evaluating suppliers' performance in the five main aspects. Suppliers with low self-assessment scores will be subjected to enhanced oversight, and the procurement and management systems will be improved to achieve greater efficiency.

Supply Chain Score & Evaluation

Based on CPC's 2022 supply chain evaluation, the supply chain overall scored relatively well on all five major aspects, with environmental protection being the aspect with the lowest score of 46. The evaluation found only 16.7% of supply chain partners having conducted a greenhouse gas survey, which was one of the reasons for the low score in the environmental protection aspect. CPC will continue making improvements to environmental protection practices across the supply chain in the future by: encouraging supply chain partners to obtain environmental certification, promoting greenhouse gas survey, or hosting "product carbon footprint survey release conferences" where participants may share relevant experiences and tips. CPC hopes to lead supply chain partners in sustainable practices, and in doing so, fulfill its vision of a sustainable supply chain.



CPC Supply Chain Evaluation

Integrity governance

CPC evaluates integrity and corporate governance practices of the entire supply chain, including: compliance, ethics, fair trade, risk control, and supplier behavior guidelines.

Occupational safety

CPC evaluates occupational safety support of the entire supply chain, including: occupational safety and health principles or policies, labor/health insurance coverage, pension, major illness or work injury, identification of occupational hazards, and training.

Cybersecurity

CPC evaluates cybersecurity practices of the entire supply chain, including: cybersecurity policy, backup system, and compliance with cybersecurity regulations.

Human rights

CPC evaluates human rights practices of the entire supply chain, including: compliance with labor regulations, communication system, human rights policy, prevention against child labor, sexual harassment, and forced labor, and freedom of association.

Environmental protection

CPC evaluates environmental protection practices of the entire supply chain, including: environmental management system, greenhouse gas survey, energy conservation measures, use of renewable materials, waste control, and environmental impact assessment.

Supplier Management

As a state-owned enterprise, CPC's procurement activities are regulated by the Government Procurement Act and the Company is bound to exercise supply chain management in a fair, just and open manner. The Company treats all suppliers as key business partners, and checks its tenderers for blacklist history using a government database before awarding tender. 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 violation discovered must be responded to with an improvement plan and followed up accordingly.

Policy and objectives of supplier management

- Achieve co-existence and co-prosperity and develop long-term partnerships with suppliers
- Offer compliant quality at competitive pricing
- Exert sustainability influence through supplier management

Participation criteria for new suppliers

- Comply with Government Procurement Act and related rules; observe fair trade principles, environmental protection laws, the Labor Standards Act, and occupational safety and health regulations
- 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 & Impact Evaluation Method

Risk preventions

- Suppliers are evaluated for their ability to fulfill contractual obligations
- CPC discusses material supply mechanisms with suppliers periodically and establishes long-term strategic partnerships with them
- CPC determines safety stock based on the material preparation lead-time of various departments to ensure unobstructed supply chain operations

Supplier Risk & Impact Evaluation

Post-disaster damage control

- Damage prevention measures are implemented according to the emergency response system
- CPC gathers information regarding employee safety, plant and equipment, feedstock supply, and finished product damage of suppliers immediately after a disaster and submits the results to all staffing units to understand and take actions
- Depending on the severity of damage, CPC holds emergency meetings, adjusts supplier quota, and assesses the possibility of adding new suppliers to provide backup for the supply chain.

Promotion of integrity awareness among suppliers

CPC organized 3 large-scale campaigns to promote business integrity in 2022, during which it invited suppliers to attend and engage in a bilateral exchange of opinions for consensus toward integrity and ethics. The progress of the above campaigns is explained below:

CPC and the MOEA jointly organized the "2022 Enterprise Service Integrity Platform Commissioning Ceremony and Summit Forum" and invited nearly 200 representatives from small and medium enterprises, industries, government agencies, academia, and various associations as well as the Vice Chairman of Transparency International Chinese Taipei to attend in person. Together with nearly 200 online viewers, they exchanged opinions on several issues, from corporate transparency/integrity, sustainable management, corporate governance, and corporate social responsibilities to public-private cooperation.

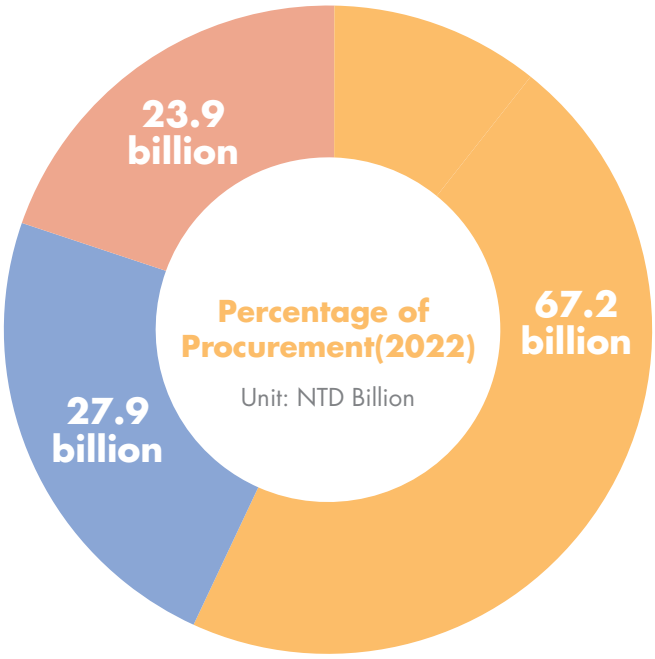
CPC organized an integrity forum titled "Forward to a Win-win Approach for Net Zero, Corporate Sustainability and Integrity," during which more than 70 outstanding businesses attended to exchange opinions on various issues concerning net zero emission, integrity governance trends and opportunities, and how the public and private sectors may work toward sustainability. Experts and scholars from industries, government agencies, and the academia gathered during the forum to discuss issues concerning zero emission, integrity management trends, the advantage of sound governance, and how the public and private sectors may work toward enforcing ESG and sustainable growth. Through intensive brainstorming, they lead small and medium enterprises to take part in fulfilling corporate social responsibilities and enforcing business integrity.

CPC organized a "Seminar on Procurement Integrity Risk for Vendors and Employees," during which more than one hundred contractors' representatives and CPC employees attended. Through the use of integrity campaigns, CPC not only emphasizes the importance of transparency and conveys zero tolerance for corruptive behavior, but also encourages the exchange of opinions between employees and suppliers' representatives to form a consensus against corruption. These efforts help create a procurement environment that promotes business integrity, anti-corruption, and respect for laws for the sustainability of the nation and businesses.

Sustainable Procurement

CPC procures services, properties, and outsources constructions according to the Government Procurement Act. The distribution of key purchases made in 2022 is explained in the figure below:

Procurement percentage (excluding crude oil and natural gas)



Engineering Procurement

57% | 67.2 billion

Material Procurement

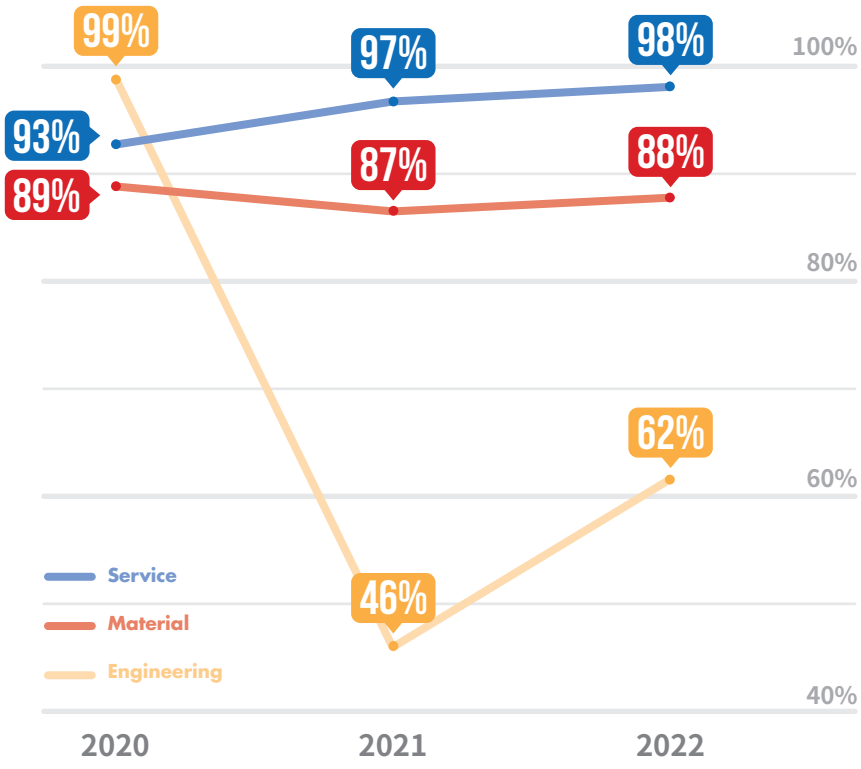
20% | 23.9 billion

Service Procurement

23% | 27.9 billion

CPC believes localized purchase to be an important step toward realizing corporate sustainability, and makes up a part of corporate social responsibilities. For many years, CPC has developed long-term and stable relationships with local suppliers through localized purchases. These efforts have proven effective at reducing supply chain risk and securing the supply of energy and resource. CPC also adopts local purchase as a means to create job opportunities, which in turn supports growth of the domestic economy and increases corporate competitiveness. In 2022, CPC purchased 98% of services locally, and 76% overall locally. The increase in local engineering procurement is mainly due to additional equipment spending across various plant sites in 2022.

Local Procurement Ratio in past 3 years



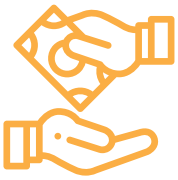
» Note: Overall percentage of local purchases = sum of local purchases (service, property, and construction outsourcing)/total amount of purchases

Crude Oil Procurement

Over 90% of energy used in Taiwan is imported. Therefore, it is CPC's responsibility to ensure the security and stability of energy supply by diversifying oil purchase. 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 (45%) of crude oil import in 2022, while Africa and America made up the rest.

Establishment of procurement plan

Monthly planning based on production requirements in the next 3 months



Raise procurement request

Send request to qualified crude oil suppliers

Execute administrative procedures

Evaluation of shipping schedule and price negotiation

Procurement decision

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

Management method

Implement management guidelines to ensure that suppliers:

- Deliver on time without affecting CPC's production and sales plan
- Are able to maintain consistent supply without compromising Taiwan's energy security or CPC's reputation
- Meet certain standards and are transparent about their backgrounds and track records to ensure that they are able to make delivery on time; only those that pass review may be accepted as qualified crude oil suppliers

Evaluation system

Apart from requesting suppliers to meet certain standards, we investigate their background and track record to ensure that they are able to make delivery on time; only those that pass review may be accepted as qualified crude oil suppliers

New suppliers

Required to submit documents for review to ensure compliance with requirements and standards

Existing suppliers

Subject to regular review at least once a year; suppliers' dealing with other suppliers are also reviewed during this process

Quality management of crude oil

The following methods are taken to evaluate and ensure the quality of new crude oils purchased:

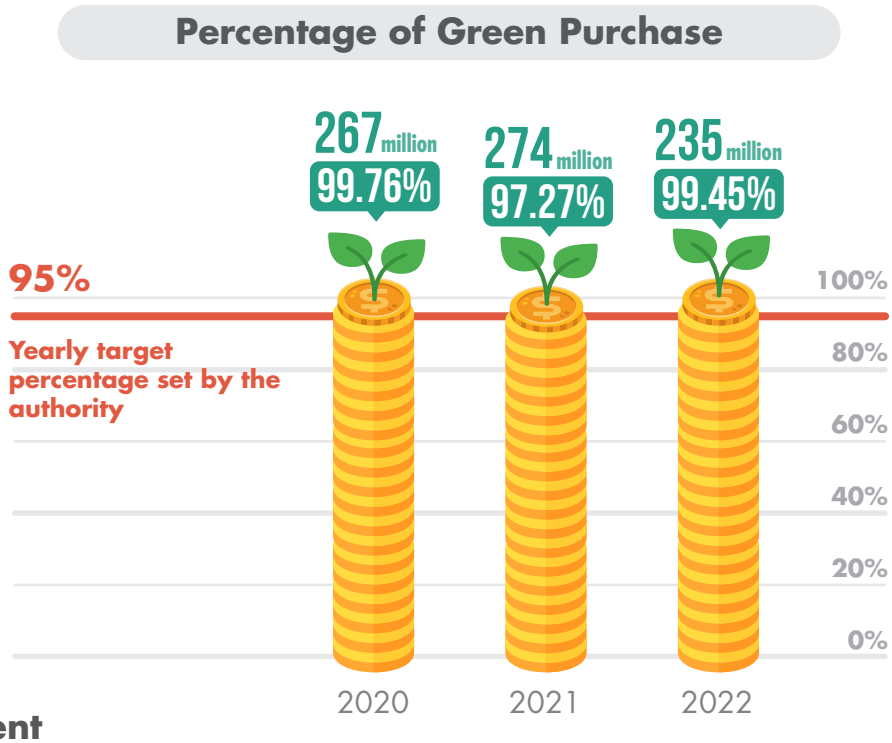
- Assess and test oil quality according to internal procedures to ensure that the crude oil conforms to requirements
- Take samples of the crude oil for quality confirmation and future tracking

Natura Gas (LNG) Procurement

CPC sources LNG from The Middle East, Southeast Asia, Australia, Africa, and USA, and has secured short, medium, and long-term purchases with 45 "Master Agreements." These agreements allow LNG to be acquired when needed. CPC purchased LNG from a total of 13 countries (out of a total of 19 exporting nations worldwide) in 2022; by sourcing supply from different parts of the world, CPC hopes to diversify the sources of its natural gas. Three new medium-term natural gas contracts were signed with Australia in 2022 to secure the domestic supply of natural gas.

Green Purchase

CPC makes the green purchase of environment-friendly products a priority. Green purchases (class 1 environmental protection products) made by CPC in the last 3 years had met annual targets. The amount, quantity, and percentage of purchase are explained in detail in the following chart:



Contractor Management

CPC values "safety first" and treats contractors as important work partners. For many years, CPC has implemented a certification and training system specifically for contractors, and all office locations have adopted management practices in accordance with the Occupational Safety and Health Act and relevant laws. It is our hope to exert positive influence in ways that help contractors develop professional capacity and systematic practices.

Contractor Safety and Health Management Policy

- Outlines entry and operational safety rules for contractors, machinery, and vehicles.
- Certification and proof of on-job training of occupational safety personnel and heads of various operations are reviewed before commencing work.
- Workers are educated each day before commencing work activities.
- Coordination meetings are convened on a regular basis.

Development of contractor skills

- Contractors are required to undergo a safety and health seminar before commencing work activities.
- Contractors are trained on skills such as: use of 3-in-1 scaffold, equipment installation/disassembly, use of aerial work platform etc., for improved professional capacity.

Contractor violation control system

- Employees are required to complete a Contractor Evaluation Form once the contractor has completed the works; points deducted for contractor's violation will have to be uploaded.

Contractor Management System

Management system	Practices and performance
Rules on workers' rights	• Contractors shall comply with occupational safety and health laws and organize regular health checkups for employees. • Contractors shall maintain effective labor insurance and health insurance coverage for the workers hired. • Contractors may not hire smuggled labor, illegal immigrant, or foreign (including China) labor that is not approved by the Ministry of Labor. • Contractors shall comply with laws when dismissing or transferring workers from job positions.
Development of professional skills CPC continues to assist contractors with the acquisition of certificates and implementation of relevant training. Training progress for 2022 is explained below:	• 3-in-1 scaffold training for contractors: 31 sessions, 679 enrollments, and 676 passes. • Equipment installation/disassembly training for contractors: 6 sessions, 155 enrollments, and 155 passes. • Aerial work platform training for contractors: 45 sessions, 405 enrollments, and 393 passes.
Occupational safety and health protection	• CPC has outlined safety and health management rules to regulate the entry and safety of contractors' workers, machinery, equipment, and vehicles. • New technologies such as facial comparison, finger vein verification, and license plate recognition have been adopted for enhanced management and protection of contractors' workers. • Contractors are required to designate eligible site supervisors and occupational safety personnel before commencing work activities. • Contractors are required to convene work safety meetings and notify workers of potential hazards before commencing work activities. • Work permits are to be issued on a day-by-day basis, and workers shall be educated each day before commencing work activities. • Coordination meetings are convened on a regular basis to coordinate on work site management.
Performance evaluation system	• Establishment of contractor violation control system: CPC conducts statistical analysis on contractors' violations, and evaluates contractors' overall safety and health management capabilities. • Enhanced management and audit: Employees are required to complete a Contractor Evaluation Form once the works are finished; contractors that have an average score of less than 6 (out of 10) will be notified of the violations committed on a quarterly basis for enhanced management and supervision.

Management of franchise stations

CPC has rigorous management and counseling systems in place to help franchisees construct and operate petrol stations. Below is a description of the actions involved:

Management system	Practices and performance
Development of business philosophy and basic skills	Hardware and software support for the construction of fuel stations: CPC offers counsel to franchisees for the construction of fuel stations and the acquisition of operating permits as required by laws. CPC also assists franchise stations in operational management, introducing uses of "oil tank connection system," "automated information management system," "CPC PAY," and major mobile payment tools to provide consumers with diverse payment options and the optimal service experience. New business activities are being explored and introduced to CPC fuel stations for additional revenues and improvements to operating performance.
Operating goals: Achieve consistency in terms of "business philosophy," "corporate identity," "products and services," and "operational management."	Trademark licensing: To ensure that a corporate identity system (CIS) is implemented and used uniformly across franchise stations and direct stations, all uses of CIS are subject to prior approval and licensing. Once the initial approval has been granted, CPC would conduct evaluations physically at each franchise station on a monthly basis to ensure that the CIS remains intact. For franchise stations, CPC has been implementing "CIS for Canopy of New Petrol Stations" progressively since 2022 as a way to create a new corporate image and strengthen the value of the CPC brand for continuity and growth.

Improvement of professional knowledge and skills

CPC actively assists franchise stations in the development of fueling SOP, and offers subsidies for environmental testing and training. Issues relating to environmental work safety are addressed in contracts and form part of performance evaluation so that franchisees may duly follow for the safety and health of their employees.

Annual training for franchise stations:
Manager training: About 1,270 trainees a year.

Domestic observational tours:
About 1,657 participants a year.

Quality management and evaluation

Quality of oil products:

1. Oil products are sampled and tested during shipment and delivery for quality assurance.

2. CPC has implemented oil quality sample testing rules for franchise stations: oil samples are taken at franchise stations and tested on a monthly basis to ensure the quality of products sold.

3. In 2022, CPC planned 23,382 sample tests on oil products across all centers and conducted 30,689 tests in total, representing an attainment rate of 131.25%. All tested samples conformed with product requirements.

- CPC provides franchise stations with full counseling and an integrated 3S system.
- Policies have been implemented for the licensing, utilization, and management of CIS.
- Service performance evaluation policy is stated as part of the contract.
- Top-performing stations are commended.

ESG, sustainability, and co-prosperity

- With regards to the environmental protection aspect that scored relatively low in the supply chain survey, CPC has since introduced regular VOC tests for franchise stations and subsidized their testing expenses and tank cleaning expenses. Meanwhile, CPC also provides counseling to franchise stations for the execution of environmental protection tests.
- CPC promotes smart green energy fuel stations, e-bike charging/battery swapping stations, and the CPC PAY service, and actively assists franchise stations with green energy transformation. By the end of 2022, a total of 470 franchise stations had installed charging/battery swapping stations.
- CPC introduced a public restroom quality improvement program and included it as a key performance evaluation for all fuel stations in an attempt to bring quality into its brand image.
- CPC supports local festivities (by gifting couplets and red packets) and participates in World Toilet Day, Earth Day, and charity activities such as blood donation, mountain cleanup, tree planting, gifting of tree seedlings, distribution of highway maps, radiator refill, and tyre inflation.

Commendation of top-performing franchise stations - 2022

CPC encourages all CPC fuel stations to contribute to brand value by exploring diverse services and improving service quality.

Distributors Management

Distributors are key business partners to CPC. Through regular communication and implementation of an enhanced management system, CPC works with distributors toward growing brand value and sales for the benefit of both parties. The number of physical engagements with distributors decreased in 2022 due to COVID-19; nevertheless, CPC adhered to its management and operating principles and executed the following measures:

Management system	Practices and performance
Contract management	• CPC examines and amends contracts with distributors depending on the current state of the market and changes in supply and demand. These contracts outline the rights and obligations of two parties with respect to distribution and brand management, and are signed after negotiation.
Improvement of professional knowledge and skills	• CPC pays unscheduled visits, monitors the market and current state of competition, and makes flexible adjustments to operating strategies. • CPC supports product promotion and after-sale technical service. • Annual training courses are arranged for distributors and employees thereof to help increase professional capacity, management experience, and quality of technical service.
Incentives and performance evaluation system	• CPC implements a reward system that caters to both the obligations and incentives of its distributors; distributors that meet performance requirements are rewarded with price discounts. • A distributor evaluation system has been implemented to identify top-performing distributors and support lagging distributors. • Customer satisfaction surveys are conducted each year to gather feedback/opinions and to examine and improve satisfaction with regard to distributors' sales, logistics, and technical services.
Persistent improvement in feedback	• CPC hosts distributor conferences to convey sales strategies and marketing philosophy, gather business intelligence and customers' feedback, and maintain and strengthen a trusted relationship • Strategies and plans for the next year are adjusted according to the outcome of the satisfaction survey. • Through in-depth interviews with distributors, CPC examines the effectiveness of its current system and adjusts/revises sales targets accordingly and provides individual counseling to unite consensus among distributors toward the common goal.

2022 distributors conference

CPC maintains productive communication with distributors, and hosts regular distributors conferences to report business updates, exchange intelligence and opinions, and make plans for the next year that are beneficial to both parties.

1.3 Business Integrity

1.3.1 Legal Compliance

Short-term

- Prevent corruption and pursue the highest standards of integrity
- No significant violation of social, environmental, and economic compliance

Medium/long-term

- Ensure the appropriateness and effectiveness of the internal control system and build an ethical business that is free of corruption

As a public state-owned enterprise, CPC values the integrity of its business practices and is dedicated to enforcing integrity values as part of the corporate culture. For this reason, CPC has established numerous principles and compliance requirements to be followed by employees:

Principles and commitments	• Guidelines for the Adoption of Codes of Ethical Conduct for TWSE/TPEX Listed Companies • CPC Code of Ethical Conduct • Act on Recusal of Public Servants Due to Conflicts of Interest • Integrity and Ethics Principles for Employees of the Ministry of Economic Affairs
Applicable subjects	• Members of the board • Management • General employees
Practices	• CPC carries out all business activities while observing integrity principles, and considers compliance with government regulations to be the minimum requirement. • CPC strictly prohibits corruption, bribery, embezzlement, and any attempt to exploit the vested authority for own gains or gains of others, so as to preserve a corporate culture of sustainability and integrity. • CPC pays constant attention to international conventions and policies that are potentially impactful to the Company given the prevailing trends, so that rules and procedures can be optimized to ensure that employee conduct business activities in accordance with laws.

Corporate Governance & Business Integrity Principles

Corporate governance framework	Performance and results
Implications of government ownership	CPC follows regulations and instructions of the authority, and commits efforts and issues authorizations as deemed necessary to fulfill special responsibilities and obligations under social and public policies.
The government in the owner role	① CPC is 100%-owned by the government; all members of the board of directors are appointed by the shareholder (Ministry of Economic Affairs), who exercises voting rights during shareholder meetings (which the board of directors will perform on shareholder's behalf). ② CPC submits business status reports and performance review reports to the State-Owned Enterprise Commission, Ministry of Economic Affairs, every month and reports performance and related review reports to the Executive Yuan every year.
The role of state-owned enterprise in market regulation and fair competition	① CPC is dedicated to making petrol accessible to everyone (even if it means sustaining fuel stations in remote locations and mountainous areas at a loss). ② CPC sells oil products in direct competition with Formosa Plastics. It sets selling prices for oil products each week using government-approved floating oil price adjustment system, whereas private-owned fuel stations are free to set retail price of oil, thereby keeping the market in productive competition. ③ CPC carries the mission of supporting government policies, and plays a critical role in stabilizing domestic oil prices.
Fair treatment for shareholders and other investors	① CPC has outlined and disclosed its own self-regulatory rules that prohibit insiders from exploiting non-public information for profit. ② CPC has clear rules in place to govern asset acquisition and disposal, external party lending, and external party endorsement/guarantee.
Responsible business and relationship with stakeholders	① CPC actively enforces its corporate social responsibility policy. ② CPC complies with laws and makes proper disclosures with respect to the fairness of employment, welfare and retirement system, work environment, and safety. CPC has appropriate rules and systems in place to handle illegal and negligent conducts of employees. ③ CPC reviews environment-related penalties for improvement on a monthly basis, and devises feasible responses to minimize the negative impacts of pollution on the environment. ④ CPC has a 1912 toll-free customer service hotline in place that is attended by dedicated personnel 24 hours a day (and fully recorded), all days a year. Cases that the customer service center can not resolve on the spot and issues submitted through the opinion mailbox over the CPC website or using other sources (such as: chairperson's mailbox, referral, personal visit, supervisor's mailbox etc.) are created on file on the back-end system and forwarded to the accountable unit for response.

Information transparency and disclosure

1. CPC prepares a "sustainability report" on a regular basis; all relevant information and progress have been disclosed on the CSR section of CPC's website.
2. CPC discloses financial statements within the required timeline. The shareholder meeting annual report discloses information on directors', supervisors', and senior managers' duties, career experience, concurrent position, performance, and compensation as well as the amounts and nature of fees paid to financial statement auditors.
3. CPC discloses rules and important information concerning corporate governance, such as directors' and supervisors' meetings, over the Corporate Governance section of its website.

Responsibilities of board of directors in a state-owned enterprise

1. CPC has 13 members on the board, including 2 female directors. The directors offer a broad diversity of expertise including chemical engineering, law, finance, and business administration. CPC also has 3 supervisors, including 1 female supervisor, all of whom possess accounting and financial expertise.
2. Directors and supervisors participated in the training courses organized by Taiwan Corporate Governance Association, Taiwan Institute for Sustainable Energy, and Financial Supervisory Commission in 2022.
3. Directors and supervisors averaged a 91.0% attendance rate in board meetings in 2022.

Accounting system

1. CPC evaluates the independence and suitability of its CPAs on a yearly basis. Appointment of CPAs is subject to the approval of the board of directors.
2. The CPAs regularly communicate with supervisors on how they plan to audit the financial statements and the audit opinions they have. CPAs are also invited to the board of directors meetings and supervisor meetings, where they reply to queries from independent directors and supervisors concerning the outcome of financial statement audits.

Integrity violations

CPC committed no violation against social or economic law in 2022, and did not engage in any action that would be considered anti-competition or anti-trust.

1.3.2 Anticorruption

Our anti-corruption work begins with corruption prevention. By establishing business reform and anticorruption measures and the "Principles of Co-Supervision of Government Ethics Personnel" and the "Platform for Reporting Procurement Anomalies to Government Ethics Department," we hope to prevent procurement corruption and ensure open, impartial, and transparent competition. In addition to promoting anticorruption laws during training and department meetings, CPC also conveys the implications with contractors that it has a relationship with, and instructs contractors to uphold ethics in business dealings.

All CPC units that have a dedicated anticorruption department established within are required to evaluate corruption risks, and identify responsibilities, rectify defects, recover proceeds, and raise improvement suggestions for any area of weakness that is likely to lead to a "corruption incident" depending on severity. For incidents that involve crime, the anticorruption department shall gather intelligence, report to investigators, and assist the ethics unit fully in investigations.

Business Location Corruption Risk Assessment - 2022

No. of business locations assessed for corruption risk: 14

Total No. of business locations: 14

= 100%

Percentage of business locations assessed for corruption risk

» Note: "Business location" refers to any single location that the organization uses for production, storage, product/service distribution, or administrative purpose (e.g.: office).

Corruption Risk Events - 2022

Low corruption risk		Moderate corruption risk		High corruption risk	
51	57%	30	34%	8	9%
Case count	Percentage	Case count	Percentage	Case count	Percentage

Severity of corruption risk	Low corruption risk	Moderate corruption risk	High corruption risk
Category	Embezzlement, forgery of document, fraud, inappropriate language/behavior, breach of discipline, violation of corporate vehicle rules	Incorrect filing for small purchase, incorrect filing for small claim, abnormality in procurement procedures, abnormality in fuel station bookkeeping	Improper inspection of the services procured to the extent that constitutes suspicion for a surrender of interests to the vendor, suspected breach of duty that involves a large bribe, suspected divulgence of secrets

1.3.3 Whistleblowing system and whistleblower protection

CPC has several channels in place (e.g. e-mail, physical mail, phone line etc.) to facilitate whistleblowing of corruption-related issues, and uses a combination of digital and printed media to make them known to the public. A total of 29 judicial investigations were concluded in 2022; 7 of which led to an indictment, 12 of which led to a deferred prosecution, and 10 of which led to a court judgment. 5 of the above cases involved corruption, whereas the remainder were general criminal cases (embezzlement, bid-rigging etc.). The Department of Ethics compiles violations into case studies and conveys them to employees on a regular basis.

Furthermore, CPC has an "Internal Control System for Whistleblower Protection" and "Whistleblower Protection Guidelines" in place to maintain the secrecy of whistleblower's identity, and all misconduct reports are handled in a confidential manner throughout the entire process. Any reply to the whistleblow is sent using a separate mail, and any discussion with the whistleblower will take place at an appropriate venue with proper confidentiality measures taken for whistleblower protection. Extra attention is being directed to protecting identity and job security for whistleblowers.

Procedures for accepting misconduct report

Outcomes of misconduct report - 2022

Cause for report	Case count	Handling measures	Percentage handled
Violation against Government Procurement Act	17	Clarification; referred to investigation	100%
Surrender of interests to vendors	6	Clarification; administrative resolution/discipline	100%
Corruption/bribery	3	Referred to investigation	100%
Fraudulent claim of business expense/overtime pay	6	Clarification; administrative resolution/discipline; referred to investigation	100%
Fraud	2	Clarification; administrative resolution/discipline; referred to investigation	100%
Embezzlement of common property, theft	8	Clarification; administrative resolution/discipline; referred to investigation	100%
Employee conflict, internal management (attendance, internal control etc.)	25	Administrative resolution, administrative discipline	100%
Exam fraud	1	Referred to investigation	100%

CPC devises yearly plans to promote anticorruption awareness among employees. 634 physical sessions of anticorruption promotion were conducted in 2022 for a total enrollment of 16,682. Additionally, 481 issues of digital material (e.g. anticorruption monthly, e-mail, internal correspondence etc.) were made to a total audience count of 103,813. CPC has ethics teams under various departments that are responsible for organizing anti-corruption campaigns for the public. A total of 146 social engagement activities were organized in 2022 to an audience size of 2,940. CPC assigned a total of 100 internal and external instructors and committed more than NT$1 million of expenses to anti-corruption awareness campaigns and social engagement activities in 2022.

Internal corruption reporting channels

CPC Department of Ethics:
Taipei Xinyi P.O. Box 128-36
TEL: (02)8725-8478
Fax: (02)8789-9007
e-mail: report@cpc.com.tw

External corruption reporting channels

MOEA Procurement Audit UnitAddress:
No. 15, Fuzhou Street, Taipei City.
TEL: (02) 2397-1592
Fax: (02) 2397-1593
Email: ps.unit@moea.gov.tw

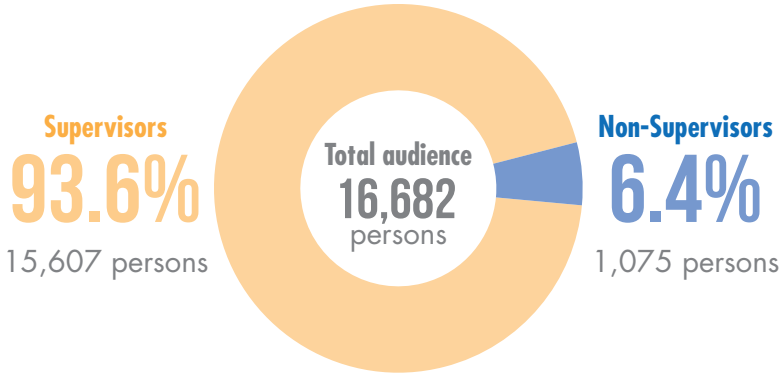
Central Government Procurement Audit Unit, Public Construction Committee, Executive Yuan Address:
9F, No. 3, Songren Road, Xinyi District, Taipei City
TEL: (02) 8789-7548
Fax: (02) 8789-7554

Agency Against Corruption, Ministry of Justice
No. 166, Boai Road, Zhongzheng District, Taipei City.
Mailbox:Academic Historica P.O. Box 153, Taiwan 10099
Free reporting line: 0800-286-586
Fax: (02) 2381-1234
Email: gechief-p@mail.moj.gov.tw

Offices and mailboxes of the Investigation Bureau, Ministry of Justice:
(https://www.mjib.gov.tw/EditPage/?PageID=68997624-Bae6dd97c5ca1f87)

Considering that it was difficult for certain units to gather employees and promote awareness in a single session due to shift arrangements or office location, CPC's Department of Ethics created an online "Ethics Course" on the E Library and took the initiative to have instructors travel throughout the organization for increased coverage.

Number and percentage of department employees subjected to anticorruption training and communicated on anticorruption policies and procedures
(by department)



Department	2022 Employee role	Employee count	No. of employees trained	Percentage
Headquarters	Supervisors	167	167	100%
	Non-supervisors	907	907	100%
Oil Product Marketing Division	Supervisors	255	255	100%
	Non-supervisors	4,834	4,834	100%
Exploration & Production Research Institute	Supervisors	13	13	100%
	Non-supervisors	126	126	100%
Chemical Solvent Business	Supervisors	19	19	100%
	Non-supervisors	219	219	100%
Project & Construction Division	Supervisors	24	24	100%
	Non-supervisors	204	204	100%
LPG Business Division	Supervisors	13	13	100%
	Non-supervisors	121	121	100%
Refining Business Division	Supervisors	224	224	100%
	Non-supervisors	4,109	4,109	100%
Natural Gas Business Division	Supervisors	99	99	100%
	Non-supervisors	1,670	1,670	100%
LNG Project Division	Supervisors	16	16	100%
	Non-supervisors	154	154	100%
Lubricants Business Division	Supervisors	22	22	100%
	Non-supervisors	138	138	100%
Exploration and Production Business Division	Supervisors	103	103	100%
	Non-supervisors	1,240	1,240	100%
Petrochemical Business Division	Supervisors	91	91	100%
	Non-supervisors	1,351	1,351	100%
Refining & Manufacturing Research Institute	Supervisors	19	19	100%
	Non-supervisors	363	363	100%
Green Technology Research Institute	Supervisors	10	10	100%
	Non-supervisors	171	171	100%

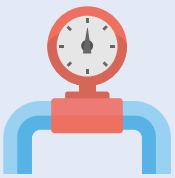
1.3.4 Transparent Product Pricing

CPC has been implementing a price stabilization system for oil and natural gas in line with the government's price stabilization policies since 2007. The system operates under the supervision of the authority, and is intended to charge users for the amount of energy used in a fair manner so that oil and gas prices can be set logically. CPC encountered no lawsuit in 2022 that involved manipulation of oil/gas prices. All key products such as oil (including 92 unleaded, 95 unleaded, 98 unleaded, ethanol, super diesel), LPG, and natural gas have passed quality requirements imposed by laws, and no loss on exchange was reported.

Product price adjustment system

Gasoline and diesel

Compliance principles	CPC proposes price adjustments each week according to the "Floating Price Adjustment Principles for Domestic Gasoline and Diesel" approved by the authority, and announces and implements the adjustment after seeking approval through administrative procedures.
Basis of price adjustment	CPC makes weekly adjustments in line with international oil prices and the average exchange rate; the extent of adjustment is determined solely by the outcome calculated using an oil price formula. Once calculated, the retail prices of 92 Unleaded and Super Diesel are used to determine the pre-tax wholesale prices. These prices are then compared to the current week's lowest pre-tax price observed in competing countries in Asia (namely Japan, Korea, Hong Kong and Singapore), which serves as the upper limit for price adjustments. Weekly price adjustments are disclosed on CPC's website and through a press release.
CPC's care for consumers	To lessen the financial burden and impact that price changes have on the general public, the MOEA announced a new set of oil price stabilization measures in 2018 that set three price thresholds for 95 Unleaded at NT$30, NT$32.5 and NT$35 per liter. If the retail price rises above the threshold, the government will absorb 25%, 50% and 75% of the excess, respectively. The same absorption rate applies to 92 Unleaded, 98 Unleaded, and diesel on a per-liter basis.



Natural gas

Compliance principles	The MOEA first approved the "natural gas price adjustment system" back in 2008, and given the current state of the natural gas industry, CPC issued a correspondence titled "Review and amendments to CPC's natural gas price and supply cost" to the MOEA in September 2020, and was granted the approval to implement the amended supply cost from 2021 onwards.
Basis of price adjustment	According to the natural gas price adjustment system, CPC is required to conduct monthly reviews of changes in LNG cost, and make adjustments within the scope of delegated authority (up to 3% in a single month and up to 6% over 3 consecutive months) and notify the central authority afterwards. Adjustments above this cap must be reported to and approved by MOEA before taking effect. Explanations of gas price adjustment and the basis of calculation (including cost of natural gas and pricing formula) are announced and updated on CPC's website.
CPC's care for consumers	The international prices of oil and natural gas soared in 2022 due to the Russia-Ukraine war, and instead of making significant adjustments to domestic selling prices to reflect the rising cost, the government agreed only to make mild adjustments for electricity enterprises over several months in an attempt to stabilize prices. However, these adjustments did not fully reflect the risen cost, and natural gas was sold at prices far below cost, causing CPC to amass NT$212.168 billion of losses on natural gas products for the year.

LPG

Compliance principles	CPC adjusts prices according to the "LPG price adjustment system" on a monthly basis, and announces and implements the adjustment after seeking approval through administrative procedures.
Basis of price adjustment	CPC calculates the amount of adjustment each month using the price adjustment system. These adjustments, once approved by the Chairman, are updated to the LPG rate sheet on CPC's website along with relevant details (including wholesale price, international CP average price, exchange rate, and prices in Asian neighbors) for public inquiry. In the downstream, canister filling factories and local gas suppliers are free to set end sales prices according to the market rate, which CPC does not interfere with.
CPC's care for consumers	As a state-owned enterprise, CPC follows the government's instructions to halt or defer price hikes whenever there are drastic changes to the supply, demand, or competitive landscape of the domestic or foreign market, and thereby preventing any excessive change in price levels that may otherwise impact people's lives. Losses arising from adjustments that fall short of the real changes will be reversed when international prices fall, and are considered to be short-term in nature. Once the shortfall has been recovered, CPC will revert to making price adjustments according to the system.

1.4 Service and Innovation

CPC upholds "Supreme Quality, Superb Service, and Selfless Cintribution" as its business philosophy. Every employee is committed to fulfilling that mission by learning customers' needs, protecting customers' interests, executing product safety management, and delivering products and services of the best quality. Ongoing attention is being directed to rectifying and reducing fails, preventing problems, and improving product quality and safety for the protection of customers' interests, which in turn raises customers' satisfaction and shapes a favorable corporate image.

1.4.1 No. 1 in Quality

Product/service quality requirements and tests

CPC places great emphasis on the safety of its products to customers. All products conform with CNS (Chinese National Standard) and relevant laws, and product quality is strictly managed using ISO 9001, among other standards. CPC discloses safety data sheet (SDS) for all key products and services on its website, which includes details on ingredient and potential hazards, along with product prices and price adjustment history for inquiry by all stakeholders. To ensure user safety, each individual package is printed with important notes that users should take note of. CPC's Refining & Manufacturing Research Institute, refinery, oil/gas supply center, transportation department, and fuel stations all conduct regular testing and monitoring of oil quality, natural gas quality, and thermal value, and produce LPG test reports at various points of shipment. Product and service performance are reviewed from time to time. Furthermore, the Bureau of Energy regularly executes the "Petroleum Product Quality Inspection and Management" program, whereas the Bureau of Standards, Metrology and Inspection also conducts random inspections on petroleum products that are imported and sold domestically (as well as refineries) according to "Petroleum Product Testing Procedures" to determine whether product quality conforms with national standards. There was no report of non-compliance with consumer health and safety involving our product or service in 2022.

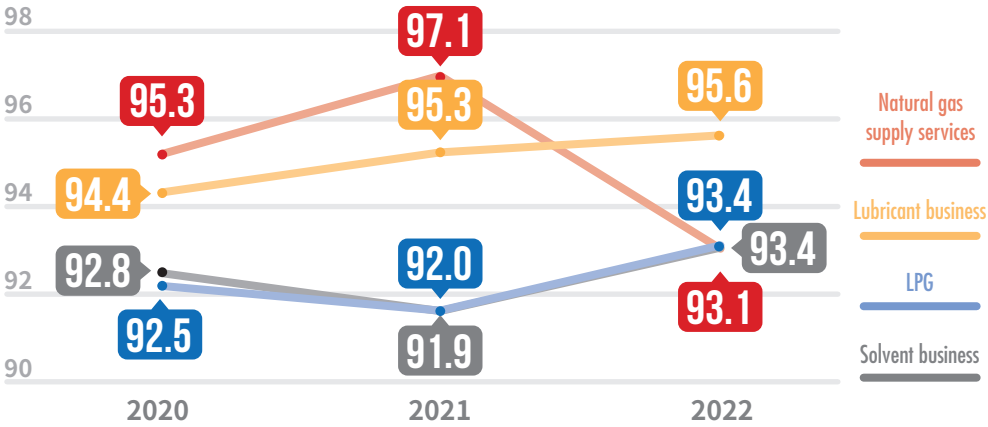
Furthermore, the quality of oil products and level of customer satisfaction has been included as part of the performance evaluation criteria in accordance with Notes on Implementation of Annual Performance Evaluation for State-Owned Enterprises of the Ministry of Economic Affairs and CPC's Notes on Implementation of Responsibility Center-based Annual Performance Evaluation. Interim and annual targets have been set across internal departments and are being examined for target attainment.

1.4.2 No. 1 in Service

Customer Satisfaction

Driven by the mission to serve the public, CPC learns customers' needs and opinions and strives to deliver the best services using complaint resolution rates, satisfaction surveys, and performance evaluations as internal measurements. CPC also implements the "Satisfaction Survey SOP" and analyzes survey outcomes on a yearly basis so that changes can be made to improve service quality. Outcomes of the survey are as follows:

① Outcomes of product and service satisfaction survey

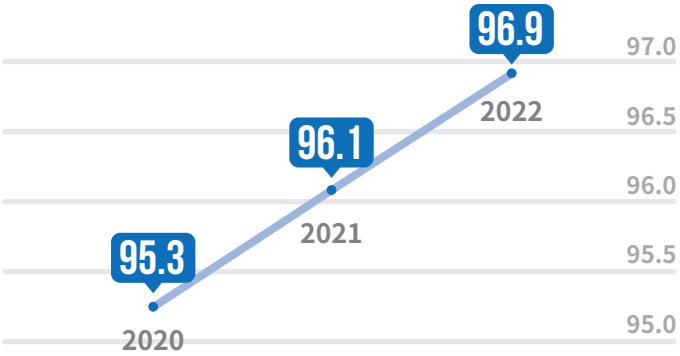


CPC gathers customers' opinions and satisfaction data through a combination of physical visits and call visits, and takes the initiative to help customers resolve problems for increased satisfaction. The figure shows that, with the exception of natural gas supply service, customer satisfaction has increased progressively year after year for all other products.

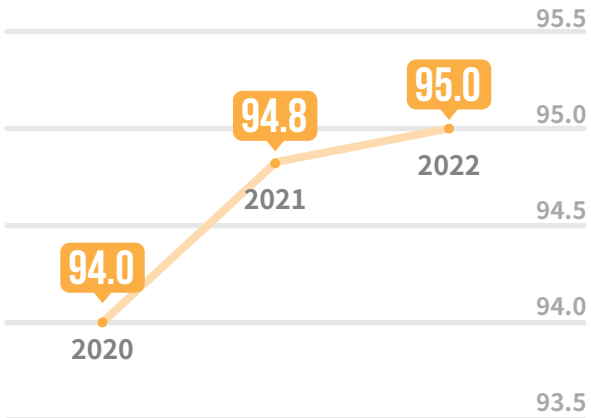
» Note: Due to the pandemic, some customers have been more resistant to gas safety inspections to enter community, resulting in a decrease in satisfaction.

The State-owned Enterprise Commission, MOEA, commissions external service providers to conduct customer satisfaction surveys on a yearly basis. Using a combination of face-to-face interview, phone interview, and questionnaires specifically designed for different customers, the surveys focus on investigating the underlying reasons for customers' satisfaction and dissatisfaction. Owing to CPC's persistence at improving the service quality of each petrol station employee, the organization has been favorably recognized for service attitude, presentability, and automated voice of the customer service center, which resulted in a progressive increase in overall satisfaction score year after year. CPC will continue making improvements to sustain a high quality of service.

② Petrol station customer satisfaction survey



③ Customer experience management (CEM)



CPC focuses on consumer experience and opinions and makes continual improvements to the quality of petrol station services. Through the introduction of "customer experience management" (CEM) and ongoing survey of customer satisfaction, we learn areas of petrol station service that require improvement. CEM is being introduced to at least 125 petrol stations a year. By having the customer service center make telephone surveys to VIPs who had spent money at a petrol station in the previous 24 hours, CPC gathers responses with respect to the overall service quality, service attitude, fueling technique, and the fueling environment so that improvements can be made to specific areas to increase service quality. With these efforts, we hope to raise satisfaction scores year after year.

Customer Grievance System

In an attempt to improve service quality to the next level, CPC promoters not only pay monthly visits to direct customers, but also gather and analyze interview reports and devise feasible strategies for customers' suggestions and needs. By interacting with customers and helping them solve problems, CPC is able to raise satisfaction over time. Furthermore, CPC has set up a dedicated customer service center and handles each complaint or suggestion separately on file. Average turnaround time for each case is 3-6 working days; cases that remain unresolved for more than 6 working days whether due to the additional time required or failure to establish contact with the customer are deemed overdue.

visits to customers
3,212 times

helped resolve
332 issues

CPC customer service center received
99.5% satisfaction

Customer complaints and suggestions received in 2022

95.1%
Real-time service delivery

In 2022, CPC received a total of 196,597 cases, including 190,330 customer inquiries, 4,021 customer suggestions, 1,267 customer comments, 110 customer complaints, and 869 other cases (including affirmation and recognition). The Customer Service Center and Customer Service Office resolved 95.1% of these cases, and 4.9% (9,643 cases) were referred to related responsible units for assistance or to reply to customers.

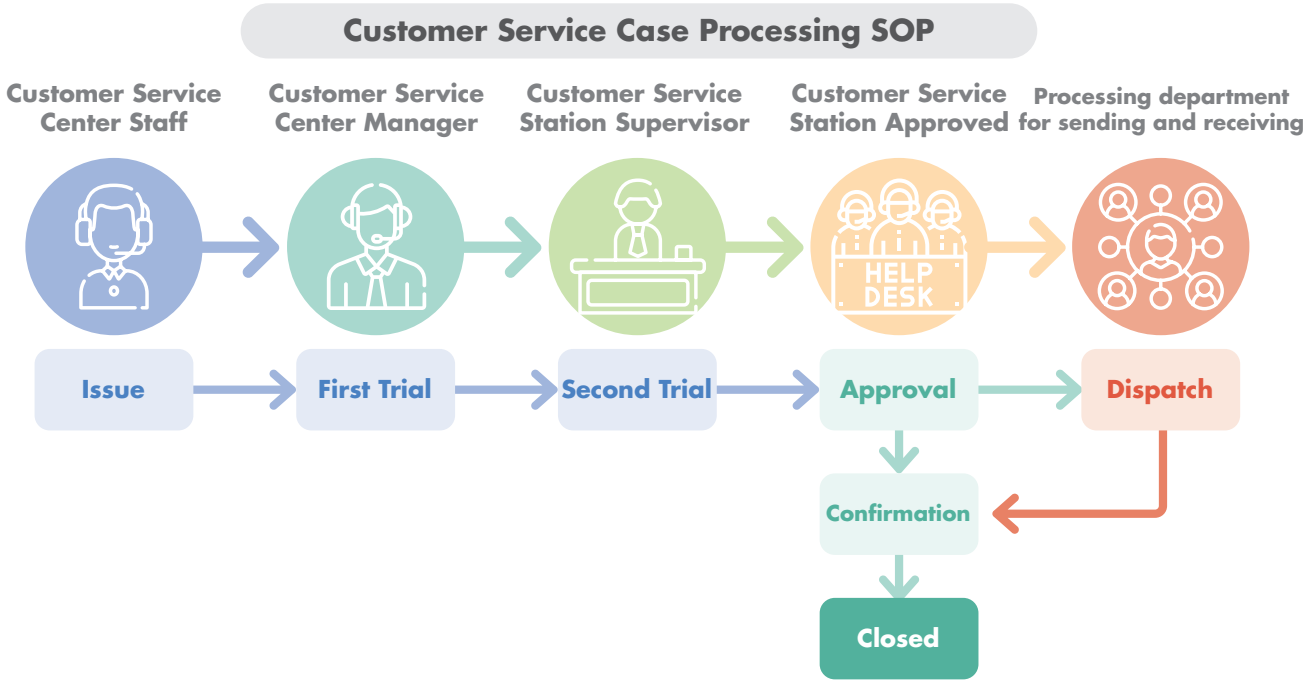
0.01%
Delinquency rate

In 2022, there were 15 overdue cases, with an overdue rate of 0.01%. All 110 consumer disputes (customer complaints) were resolved in time.

1912 - a toll-free hotline accessible 24 hours a day

"Opinion mailbox" on CPC website

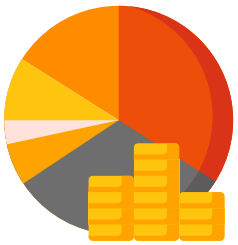
Resolution workflow for customer service cases



CPC cybersecurity promotion team and policy

In 2021, CPC established the Cybersecurity Center, a unit responsible for cybersecurity management and protection, to continually enforce cybersecurity protection in the IT environment and industrial automation.

CPC has allocated cybersecurity personnel in accordance with "Regulations on Classification of Cyber Security Responsibility Levels" and the "Cybersecurity Maintenance Plan" (Level A unit: 4 officers, Level B unit: 2 officers, Level C unit: 1 officer), and all Level A and Level B units have passed external certification for ISO 27001. Personnel of all three tiers above are responsible for the enforcement, management, and execution of cybersecurity tasks within their respective units to ensure conformity with legal and cybersecurity protection requirements. CPC committed approximately NT$170 million (tax-exclusive) to cybersecurity in 2022, which accounted for 20.5% of the total IT budget, which was slightly higher than the 18.29% in 2021.



170

million (tax-exclusive)

cybersecurity budget in 2022

2021 → 2022

18.29% → 20.5%

accounted of the total IT budget

Review criteria and performance indicators of the CPC cybersecurity promotion team - 2022

2022 → 2023

Quantitative performance

1. No cybersecurity incident involving alteration of data on CPC's website had occurred - Target attained
2. All reports, responses, and recoveries were completed according to rules - Target attained
3. Social engineering drills conducted in 2022 averaged a click rate of 2.11% and an attachment view rate of 1.81% which were within the MOEA's cap (click rate: 8%, attachment view rate: 5%); these results were also within CPC's stringent caps (click rate: 4%, attachment view rate: 2.5%), and the organization will continue promoting awareness on this matter

Qualitative performance

CPC continues to strengthen cybersecurity protection, enhance cybersecurity training for employees, and engage external service providers for cybersecurity management in accordance with laws and CPC's Cybersecurity Maintenance Plan; outcomes of the above efforts have met the prescribed goals

Quantitative targets

1. Conduct at least 2 internal audits of the headquarter and 6 on-site audits of external units (including contractors) each year
2. Report, respond to, and recover from cybersecurity incidents within the prescribed timeline
3. To keep the click rate below 4% and attachment view rate below 2.5% in social engineering drills

Qualitative targets

1. Ensure the confidentiality, integrity, and usability of CPC's business-related information
2. Meet requirements for the given level of cybersecurity responsibility, and reduce cybersecurity risks
3. Organize cybersecurity training to raise employees' capacity and awareness
4. Enhance cybersecurity protection in line with policies and laws
5. Adopt proper outsourcing of information/communication system or service, and meet cybersecurity requirements

Customer personal data protection policy

Short-term

- To review internal procedures for gathering, processing, and use of personal data at least once a year
- To organize at least two awareness campaigns and training seminars a year
- To complete the current year's audit before the end of December, and produce a personal data protection audit report

Medium/long-term

- To continually implement proper protection and management of personal data

CPC has established "Customer Service Center Information Security and Personal Information Management SOP," and regularly reviews existing operational mechanisms, enhances the security maintenance of information systems, and strengths the training and education of employees in "privacy protection" and "information security" to ensure the retention and protection of the customer's personal information. Any ill-intended damage or corruption of personal data and any leak of personal data, whether due to negligence, hacker's attack, or illegal intrusion, will be met with emergency response measures and quickly escalated to CPC's personal data protection promotion team. Leaks of personal data that constitute security incident will be handled according to the cybersecurity rules mentioned above.

CPC has been convening at least 1 personal data protection meeting each year following the enactment of the Personal Data Protection Act. These meetings are hosted by the vice president of legal affairs and attended by personal data protection officers of various departments, and are intended to discuss relevant issues and exchange opinions relating to personal data protection. CPC has allocated budgets to acquiring software and hardware for the protection and management of personal data, including the creation of a personal data input management system.

All personal data held in possession is checked yearly to ensure proper handling. CPC organizes two training sessions on Personal Data Protection Act each year to strengthen employees' awareness of legal requirements and practical interpretations, and thereby prevent violation due to ignorance. A total of two personal data seminars were held in 2022 to train employees on the practical implications of the Personal Data Protection Act as well as processes and operations of the personal data management system. There was no report of customer privacy violation or leakage or theft of personal information in 2022. For more details on CPC's information protection policy, please visit the CPC website.

Complaints concerning breach of customer privacy or loss of customer data

0

Substantiated complaints from outside parties

0

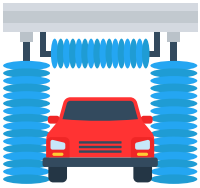
Substantiated complaints from the authority

1.4.3 No. 1 in Contribution

CPC is the pioneer of vertical integrations in Taiwan's petrochemical industry. Not only does the organization expand its product and service range from a value chain perspective, it also takes the initiative to explore innovations and introduce smart technologies as 5G and AIoT grow in popularity around the world. By incorporating digital technologies into existing research capacity, CPC facilitates the transformation of the entire petrochemical industry and exerts positive influence in ways that minimize negative impacts.

Business Diversification

In light of changes in the domestic and international markets, CPC is actively exploring alternative business activities in addition to the sale of oil, gas, and petrochemical products that bring value to its petrol stations and contribute to its stature as the one-stop shopping channel. CPC's petrol stations currently provide a wide range of services, from express vehicle maintenance, car wash, parking, convenience store, advertising, payment collection, Etag top-up, and coffee to the sale of agricultural products. Member rewards along with exclusive privileges are being offered to attract consumers and increase returning purchases and loyalty. As a response to the rise in environmental protection awareness, CPC began installing e-bike charging and battery swapping facilities in petrol stations that consumers can use to charge up their vehicles, and continues to support the transformation of its petrol stations into supply stations of diverse energy sources and services.



CPC-Life Wash

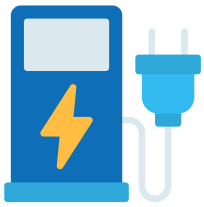
- CPC provides fast, convenient, and professional car cleaning services (including detailed manual wash and mechanical wash with manual finish) as well as add-on oil removal film and vehicle coating.
- In 2022, carwash service was being provided across 270 direct petrol stations.

CPC-Life Express

- The petrol stations provide express car maintenance, tyre changing, and fitness diagnosis for consumers' vehicles. All service technicians on-site have passed the national exam on Level B technician for automotive mechanic, and are competent at maintaining vehicles for the safety of their drivers.
- 66 direct stations are equipped with express car maintenance and tyre service facilities.

CPC-Life Shop

- Petrol stations have been designed to serve as convenient spaces to shop for supplies and goods. Aside from general necessities, petrol stations also sell festive hampers, agricultural products, proprietary brand products, and Cup & Go.
- All 144 direct stations nationwide have either a compound store or a convenience store, whereas CUP & GO, CPC's proprietary coffee brand, is available at 123 stations.



Charging&Swapping

- Stations now offer charging and battery swapping services for electric cars and bikes to accommodate the growth of electric vehicles and rising environmental protection awareness.
- CPC has a total of 100 e-bike charging stations, 900 e-bike battery swapping stations, 10 normal EV chargers, 18 quick charges in 2 stations, and 4 smart green energy fuel stations nationwide.

Technology innovation

CPC integrates and introduces digital technologies with three main emphases: 5G and AIoT application, talent training, and smart traffic and smart logistics application. Through collaboration between the industry, government agencies, and academia, CPC makes progressive transformations toward sustainability and accomplishes its visions of smart production.

5G and AIoT application

For the support of the national development policy, CPC cooperated with the Export Processing Zone Administration, MOEA, and leased out the land area of its Chengong Site for the expansion of Kaohsiung Software Technology Park. CPC has also been supporting the growth of new tech businesses by engaging them in real projects; for example, in collaboration with a new AI company located in Kaohsiung 5G AIoT Innovation Park, CPC initiated the project - "Big Data Analysis for Energy Efficiency Improvement in Naphtha Cracking" at its Linyuan Petrochemical Complex, where feedstock data and operating parameters for the last three years were gathered and analyzed to come up with solutions capable of reducing 20,000 metric tons of carbon emission each year, which is equivalent to the absorption capacity of 51 Da'an Parks. CPC continues to make more extensive use of 5G and AIoT technologies in applications such as work safety, environmental protection, pipeline and storage tank, key equipment, operational management, and training, and has been actively searching for technology and business partners in this respect. For example, in a memorandum of understanding (MOU) signed with the National Yunlin University of Science and Technology and Dynamic Computing Technology Co., Ltd., CPC offered the premises of its Ciaotou Oil Supply Center to be used as an experiment site for the 5G AIoT project - "Smart Technology in Decision Support for Work Safety Risk Control," for which it was approved project grant by the Industrial Development Bureau.

Furthermore, CPC is taking pragmatic steps to realize its vision of the future smart city and how people should coexist with the environment by combining different energy generation, storage, and utilization technologies with the use of big data and AI services. Solar power systems and e-bike charging/battery swapping facilities are being constructed at petrol stations throughout Taiwan as part of CPC's transformation. Over time, CPC hopes to become the energy source that powers a smart community and the key to achieving sustainability.

Training of 5G and AIoT talents

Apart from assigning field experts to be trained at professional institutions such as Taiwan AI Academy, CPC also arranges visits to leading digital innovators to learn how AI technology is used in industrial applications, and organizes courses for employees who have different understanding of AI. A big data platform and a deep learning platform have been established within the organization, and proactive attempts are being made to take advantage of the expandability of cloud-based services and mixed cloud platforms, so that CPC may have the adequate computing resources needed to execute AI projects and training for the improvement of employees' programming skills.

Smart traffic and smart logistics application

Oil transportation is an important factor in the stability of the oil supply. For the safety of tank trucks during transportation and to facilitate proper monitoring of oil quality and quantity and effective prevention of work safety accidents, CPC has developed a proprietary, patented (utility model) digital IoT fleet management system that combines in-vehicle GPS (global positioning system) with 4G communication, big data, AI, and IoT technologies. This management system allows real-time monitoring and status reporting of tank trucks, and has proven effective at optimizing the oil loading, unloading, and transportation workflow. Combined with the Tyre Pressure Monitoring System (TPMS), CPC has successfully introduced AI into oil transportation and safety management.

Electronic Internet of Things (IoT) Management System

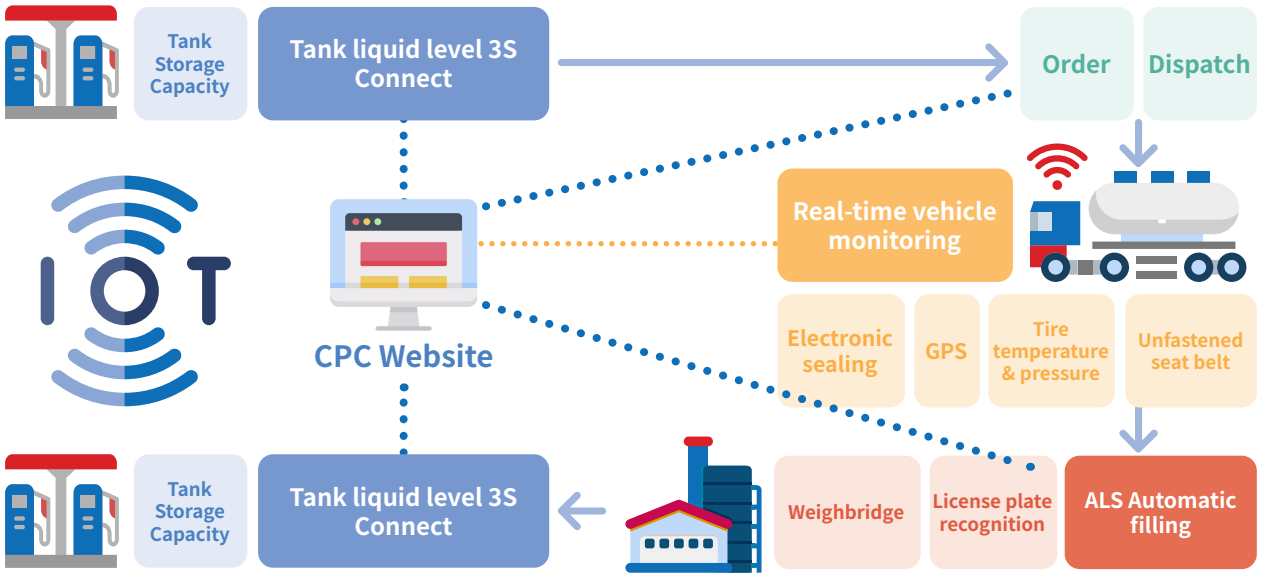
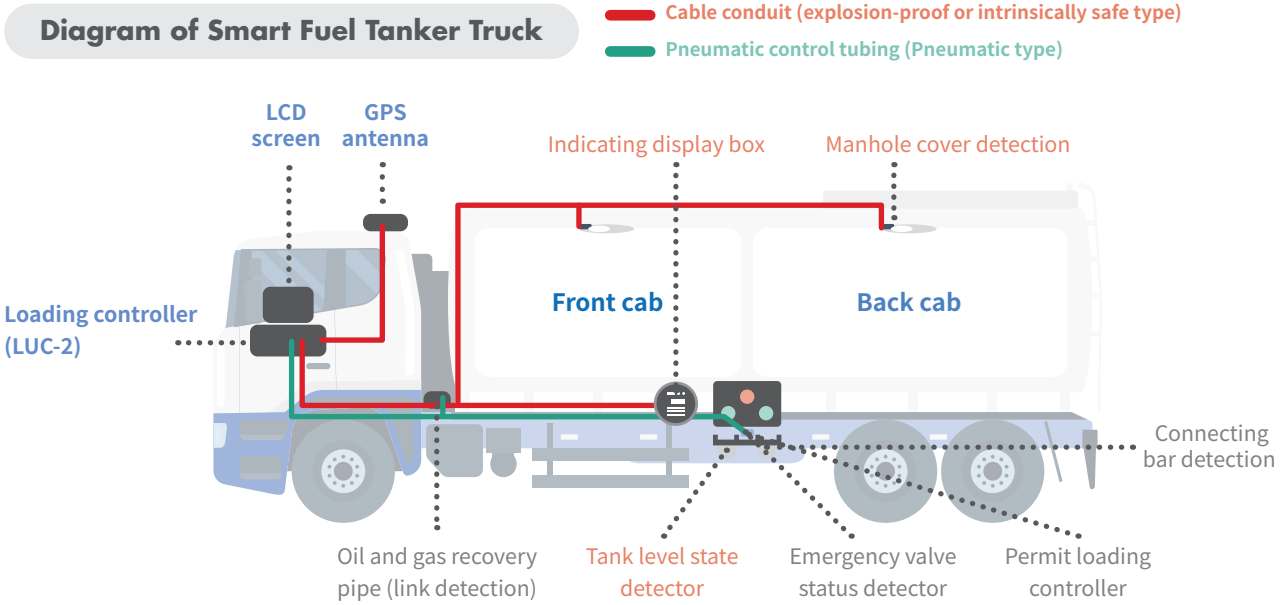


Diagram of Smart Fuel Tanker Truck



Performance and outcome after system adoption

Changing the post-review process for fleet managers, advance it by 14 hours to enhance management efficiency.

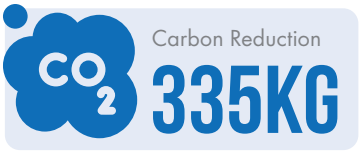
In the past, there were an average of 2.3 incidents of misloading oil per year. Since the system was implemented, there have been no more occurrences of misloading

CPC saves approximately 80 million yuan in labor and plastic seal costs for lead seals, which is a 5.8% reduction compared to last year.

No longer outsource or transfer the original lead seal task, resulting in a reduction of 9.8% in personnel compared to the original workforce for that task.

Each loading operation now takes 4 minutes less compared to the original operation time, resulting in a time saving of 28.5%.

A total of 180 questionnaires were distributed for the survey, and 138 valid questionnaires were collected. The overall satisfaction rate is 80%.



Each year, CPC reduces plastic seal waste by 7,988 kilograms, resulting in a carbon reduction of approximately 335 kilograms.

1.4.4 External recognition and collaboration

Environmental sustainability and innovative R&D award

This exposition was jointly organized by the Ministry of Economic Affairs, Taiwan Intellectual Property Office, and Industrial Development Bureau. The event featured an invention challenge where CPC won 2 gold, 4 silver, and 2 bronze awards, which demonstrated its commitment and progress toward sustainability as a state-owned enterprise. Through this exposition, CPC hoped to present the outcomes of its research and development efforts, and exchange know-how with supply chain partners to create new opportunities.

Invention challenge of 2022 Taiwan Innotech Expo

- Soft carbon and production method
- Polyphenylene oligomer, polymer, resin compound, prepreg, metal substrate

- A sand control completion device
- A method and system capable of treating wastewater that has a high concentration of ammonia nitrogen and organic compounds
- Cleaning compound and purpose
- Perovskite solar cell and production method

- Production method for bio-derived hard carbon in the anode of sodium-ion battery, and sodium-ion battery anode with bio-derived hard carbon material
- Water stoppage and drainage brick

Signing of collaborative agreements

- CPC has signed MOUs with 5 companies and continues to explore climate change responses as well as low-carbon business opportunities. These MOU partners include Taiwan Cement, Academia Sinica, ExxonMobil, SLB, and Baseload Power Taiwan.
- Driven by the resolve for net zero transformation, CPC signed a "net zero emission MOU" with National Taiwan University, under which the two parties will engage in an industry-academia collaboration to promote net zero emission and accomplish CPC's goals toward "High-value petrochemical, Low-carbon emission, Lean renewable energy."

Engagement with external organizations

CPC participates in several local and foreign industrial organizations and associations. This engagement provides CPC with the opportunity to expand multilateral relations, exchange business experience and market information, connect with international industry trends, and ultimately maintain corporate competitiveness and global visibility. Below is a list of key external organizations that CPC is a part of and its existing role.

	Name of external organization	Form of participation	Key discussions, decisions, or performance - 2022
Industrial exchange and development	**International Group of Liquefied Natural Gas Importers**	• Member • Executive Committee Member	Being a member of the organization facilitates the exchange of information and experience with LNG importers, and thereby improves the safety, reliability, and efficiency of LNG imports.
	Chinese International Economic Cooperation Association	• Member • member representatives: 5	CPC participates in member conferences to keep up-to-date on the global economy and overseas investment opportunities.
	Chinese Association for Energy Economics	• Member • directorship and supervisorship	By taking part in board meetings and annual conferences, CPC keeps up-to-date on the development of energy economy and energy management technologies, which enables the exchange of knowledge with the energy industry.
	Chinese Petroleum Institute	• Member • directorship and supervisorship	In an attempt to capitalize on energy transformation opportunities, CPC engages the institute to help determine winners for the "CPC Outstanding Thesis Award" and publish papers in the institute's quarterly periodicals for greater influence.
	Petrochemical Industry Association of Taiwan	• Member	CPC takes part in the association in accordance with the Industrial Group Act. The purpose of the association is to connect peers within the domestic petrochemical industry and explore improvements that promote common interest and support economic development.
	Taiwan Biotechnology Industry Alliance	• Member • member representatives: 3	Being a member of the alliance not only strengthens collaboration between domestic biotechnology companies and academic research institutions, but also facilitates the integration of resources between the industry, the academia, and researchers in a manner that is favorable to the sale and promotion of CPC's biotech products.
Technology innovation	**The Association for Materials Protection and Performance**	• Member • member representatives: 25	By holding corporate membership in the association, CPC secures access to resources on anti-corrosion technology and privileges relating to license acquisition/renewal that are essential for training anti-corrosion specialists.

	Name of external organization	Form of participation	Key discussions, decisions, or performance - 2022
Technology innovation	**Chinese Society of Structural Engineers**	• Member • member representatives: 1	CPC takes part in various engineering conferences organized by the society; the society also publishes quarterly periodicals that CPC employees may read to improve their professional capacity.
	The Corrosion Engineering Association of the Republic of China	• Member • member representatives: 1	CPC co-hosts academic events on anti-corrosion engineering, and engages the association from time to time to study and resolve issues concerning anti-corrosion engineering.
Governance	**The Institute of Internal Auditors-Chinese Taiwan**	• Member • member representatives: 4	CPC's internal auditors participate in courses organized by the institute as a way to expand their knowledge of internal audit theories and practices, which helps enhance CPC's internal audit system.
	Taiwan Institute for Sustainable Energy	• Member	CPC takes part in Taiwan Corporate Sustainability Awards (TCSA) and submits corporate sustainability reports as a means to exchange information. CPC also engages proactively in the training and certification of corporate sustainability managers.
	Center for Corporate Sustainability	• Member • directorship	CPC supports the organization in various initiatives to promote sustainable practice and achieve United Nations Sustainable Development Goals (SDGs).
	World Business Council For Sustainable Development Taiwan	• Premium member • member representatives: 12	CPC assisted in the review of Traditional Chinese translation for GRI 306: Waste (2020).
	Taiwan Association of Soil and Groundwater Environmental Protection	• Member • member representatives: 1	CPC participates in soil and groundwater remediation conferences organized by the association, and engages the association in technology exchange from time to time.
Work safety management	**Industrial Safety and Health Association of the ROC**	• Member	CPC takes part in various occupational safety and health training activities organized by the association in an attempt to improve employees' awareness and know-how relating to work safety. The association also helps train occupational safety and health officers.
	Taiwan Safety Council	• Member • member representatives: 3	CPC participates in various academic forums organized by the council, and engages in the discussion and study of issues concerning safety culture, safety leadership, production safety management etc., as well as possible improvements.
	Taiwan Responsible Care Association (TRCA)	• Member • member representatives: 3	CPC participates in yearly plenary meetings and conferences organized by the association to keep up-to-date on international work safety, health, environmental protection, and sustainability trends in the petrochemical industry.
	Taiwan Occupational Hygiene Association	• Member • member representatives: 1	CPC participates in international academic conferences organized by the association, during which it exchanges knowledge with experts and scholars in the field of occupational health.

CPC & Green Contributions

02 CHAPTER

Chapter summary

Taking on the important responsibility of decarbonizing the energy industry, CPC is committed to promoting the transition to net-zero emissions with great determination. Recognizing the risks and opportunities presented by climate change, CPC has established a Climate Change Response Team, integrating international management systems and the TCFD climate risk management framework. Guided by the three principles of "High-value Petrochemical, Low-Carbon Emission and Lean-Renewable Energy," CPC is executing a low-carbon and green energy transformation strategy, leading the development of various prospective R&D projects.

Initiatives include driving the development of LTO energy storage material technology, constructing smart and green refueling stations, and establishing an Advanced Catalyst Center. Additionally, CPC has implemented internal carbon pricing, actively seeking opportunities for carbon reduction and circular economy practices. Furthermore, CPC actively responds to environmental group demands by implementing conservation of the algal reef ecosystem in the third LNG Receiving Terminal. In addition, CPC will establish the first domestic Ecological Conservation Trust Fund to support various conservation actions, aiming to achieve a vision of ecological sustainability and economic progress, creating a win-win situation.

Reader Priorities

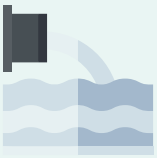
Shareholder (MOEA) · Public representatives · Customers · Employees · NPOs/NGOs · Business Partners · Communities · Government · The media

Corresponding SDGs

CPC's performance highlights

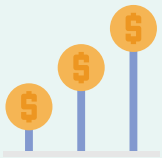
water recycled

98%



Total effluent pollutant intensity reduced by

25%



Prospective R&D produced financial yield of

NT$2.898 billion

The nation's first

ecosystem preservation fund

Developed complete TCFD framework for

effective response to climate change

Environmental protection expenses

Unit: NTD thousands

Environmental protection expenses	2020	2021 [8]	2022
Company operating cost [1]	2,478,184	2,430,179	3,065,659
Supplier and customer cost [2]	23,051	35,962	20,651
Management activity cost [3]	260,518	279,685	290,809
R&D cost [4]	127,306	111,353	227,451
Social activity cost [5]	158,262	182,257	159,053
Loss and compensation cost [6]	108,997	20,918	41,277
Fees and taxes [7]	4,271,719	4,658,858	4,153,115
Total	7,428,037	7,719,212	7,958,015

- Note 1: Expenditure on pollution prevention expenditure, 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, government-defined air pollution, soil pollution, water pollution and other fees.
- Note 4: Expenditure on products researched and developed for environmental protection and expenditure on research to reduce environmental impacts at the product sales stage, 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 the air pollution, soil pollution, water pollution and other fees imposed by the government.
- Note 8: Corrected 2021 figures to year-end account closure data.

Environmental performance indicators

Indicator	2020 [8]	2021	2022
Petrochemical feedstock input (kL)1/petrochemical output (kL) [1]	0.092	0.090	0.093
Crude oil input (kL)/equivalent distillation capacity for refinery (kL) [2]	0.202	0.204	0.213
Liquidized 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)	0.018	0.017	0.019
Water consumption (kM^3)/(equivalent distillation capacity for refinery + petrochemical output) (kL)	0.186	0.183	0.194
Electricity consumption (kWh)/(equivalent distillation capacity for refinery + petrochemical production) (kL)	11.345	11.634	12.946
CO2 emissions (MT)/(equivalent distillation capacity for refinery + petrochemical output) (kL)	0.042	0.043	0.0437
Waste (kg)/(equivalent distillation capacity for refinery + petrochemical output) (kL)	0.589	0.761	0.820
Effluents (MT)/ (equivalent distillation capacity for refinery + petrochemical output) (kL)	0.069	0.068	0.086
Total effluent pollutants (kg) [5]/(equivalent distillation capacity for refinery + petrochemical output) (kL)	0.003	0.004	0.003
VOC emissions (kg)/(equivalent distillation capacity for refinery + petrochemical output) (kL)	0.022	0.020	0.020
Air pollutant emissions (kg) [6] / (equivalent distillation capacity for refinery + petrochemical output) (kL)	0.021	0.022	0.026

- Note 1: Petrochemical feedstock input = (naphtha+ reformate+ xylene mixture) input, petrochemical output is the output of ethylene, propane, butadiene and benzene converted into equivalent distillation capacity (EDC).
- Note 2: EDC is a 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 chemical oxygen demand (COD) + suspended solids (SS) + oil.
- Note 6: Air pollutant emissions = total amount of sulfur oxides (SOx) + nitrogen oxides (NOx) + (total suspended particulates (TSP).
- Note 7: Emission in carbon dioxide equivalent term is calculated once a year. 2022 figures were provided after 3rd-party validation at the end of July 2023.
- Note 8: EDC of Taoyuan Refinery Plant was double-counted in 2020. Relevant environmental performance indicators for the year have been amended since 2021.

2.1 Mitigation and adaptation to climate change

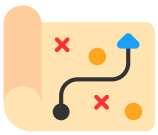
As a major energy supplier in Taiwan, CPC has been actively monitoring possible risks and opportunities of climate change in recent years. As a response to the global sustainability development strategies, CPC conducted scenario analyses, quantified financial impacts, and devised response measures using the climate scenarios published by United Nations Intergovernmental Panel on Climate Change (IPCC) and International Energy Agency (IEA), so as to evaluate possible operational impacts as well as physical and transition risks to CPC. CPC also adopts the framework developed by TCFD (Task Forced on Climate-related Financial Disclosures) for disclosure of climate resilience, and thereby ensures the sustainability of its practices.

Governance

- The board of directors continues to supervise climate change issues and review major investments including prospective R&D projects, green energy investments, and natural gas infrastructures while taking part in annual risk opinion surveys.
- CPC has assembled an interdepartmental panel to carry out important tasks while recognizing climate change impact as a major risk and enforcing controls using the corporate risk management system.
- CPC assembled a Sustainable Operations Promotion Committee in 2005 to explore climate change-related visions and strategies, enforce related actions, and make reports to the board of directors in a timely manner.
- CPC continues to organize certified home training courses for directors and supervisors, and engage senior managers, external committee members, directors, and supervisors for the discussion of climate change issues.

Risk management

- CPC has incorporated the TCFD framework into its business risk management process, and developed climate risk identification and assessment procedures that departments may follow to evaluate potential operational and financial impacts to CPC. Based on the outcomes of climate risk identification and risk matrix, CPC develops strategies that help improve climate resilience of the entire organization.
- CPC conducts rolling assessments of physical risk, transition risk, and opportunities on a yearly basis, and analyzes the operational and financial impacts of climate change risks and opportunities using the TCFD framework.



Strategies

- Through interdepartmental discussions about short-, medium-, and long-term climate risks and opportunities, the Risk Management Committee is able to proceed with materiality assessment and devise response strategies for major climate risks and opportunities as well as their potential operational and financial impacts to CPC. Resolutions of the Risk Management Committee are presented to the board of directors. CPC is actively adopting low-carbon practices in response to climate change risks, and although doing so incurs additional investments and costs, it allows CPC to better conform with future trends of the energy industry.
- CPC analyzes risks by adopting science based targets using transition scenarios (IEA 2DS) and climate scenarios (RCP 2.6, RCP 8.5 etc.).

Goals and indicators

- Based on the outcomes of risk identification exercises, CPC sets management indicators relating to climate change and monitors performance and attainment on a regular basis.
- CPC conducts regular surveys of greenhouse gas emission using ISO 14064-1 standards, and engages a 3rd-party institution to validate data.
- CPC has set medium-term goals to reduce emission by 40.6% and 49.5% by 2025 and 2030, respectively, compared to the 2005 baseline. As technologies mature, CPC will also adopt renewable energy, hydrogen power, carbon capture/utilization, and carbon negative technologies to help achieve net zero emission by 2050.

2.1.1 Climate change governance

CPC places great emphasis on the possible risks and opportunities of climate change, and everyone from the board of directors to risk management teams of various departments are committed to improving risk supervision, governance, and management practices. A Sustainable Operations Promotion Committee and a Risk Management Committee have been assembled at the executive level to make and approve decisions, and to coordinate climate-related task forces within CPC (such as Climate Change Response Task Force, Energy and Carbon Reduction Task Force, and Renewable Energy Development Act Response Task Force) toward carrying out interdepartmental actions. These units work together to maintain the completeness and depth of CPC's climate change governance and risk control efforts.

Climate change governance and risk management framework

Management level

Board of Directors
Supervision of CPC's Climate Change Risks and Opportunities

Sustainable Operations Promotion Committee
An interdepartmental decision-making body on climate change issues, with the chairman of the Board of Directors as the chairperson and the President reporting to the Board of Directors from time to time on the results of implementation

Risk Management Committee
Review the climate change risk management mechanism, supervise the improvement of the management situation, and report to the Board of Directors on a regular basis

decision-making and supervision

promote and implement

Implement level

Climate Change Response Team
Promote low carbon transformation and energy saving and carbon reduction strategies in response to climate change

Carbon Footprint Inventory and Internal Carbon Pricing Team
Promote product carbon footprint inventory and introduce internal carbon pricing mechanism to set the price of carbon emissions for the company

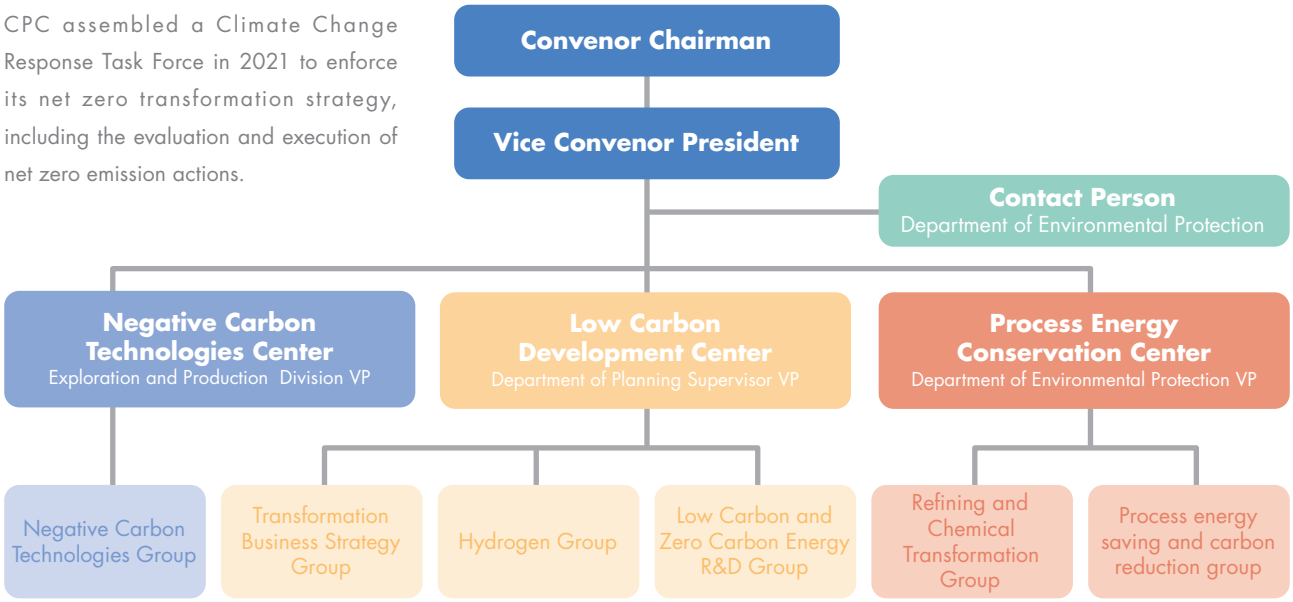
Process energy saving and carbon reduction group
Promote energy conservation and carbon reduction strategies

Renewable Energy Development Act Task Force
Promote the installation of renewable energy generation equipment to meet regulatory requirements

Risk management Team
Identify and implement climate change risk control actions, and continue to refine relevant risk management actions

CPC's Climate Change Response Task Force framework

CPC assembled a Climate Change Response Task Force in 2021 to enforce its net zero transformation strategy, including the evaluation and execution of net zero emission actions.



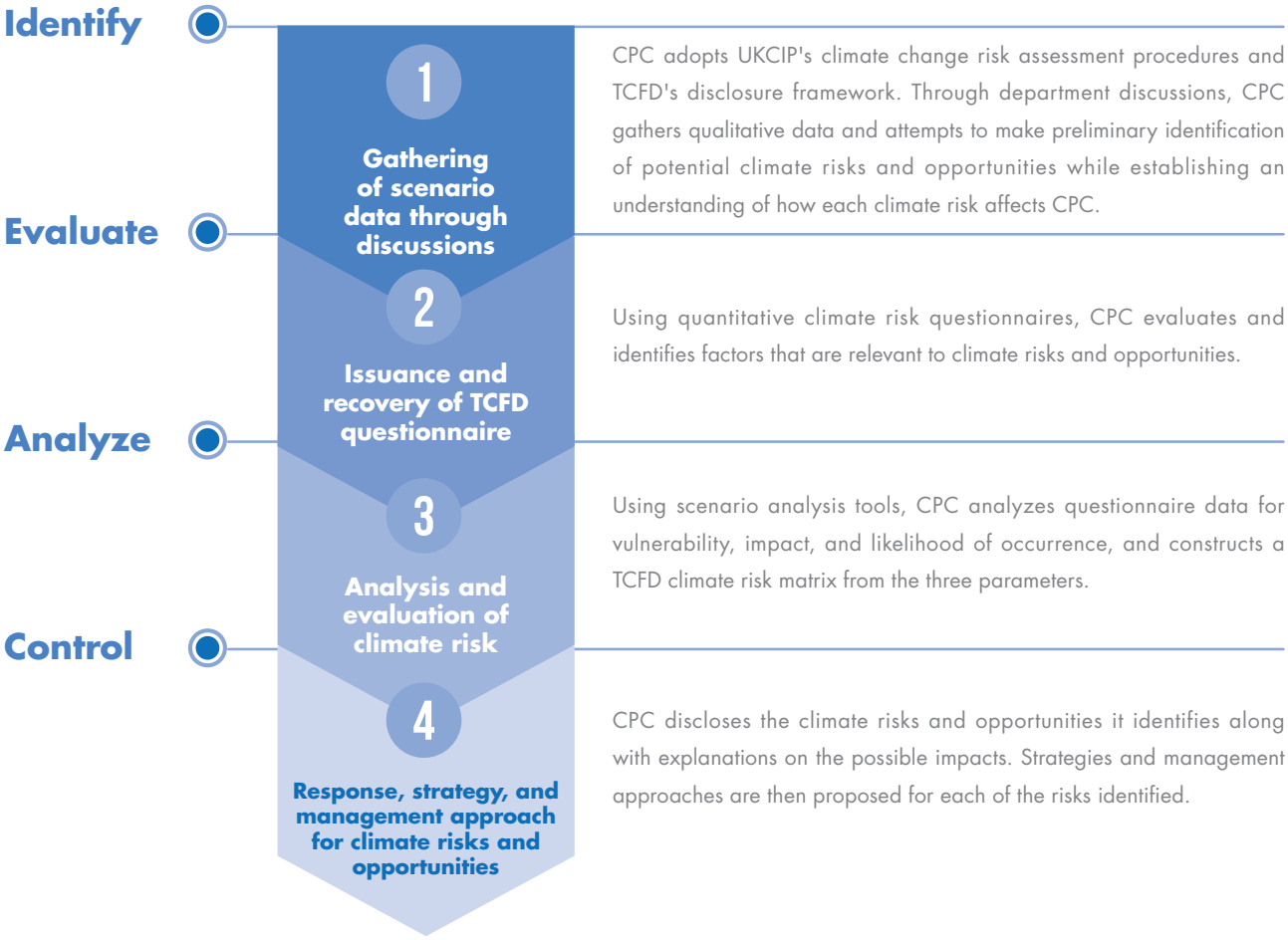
2.1.2 Risks and opportunities of climate change

Climate Change Response

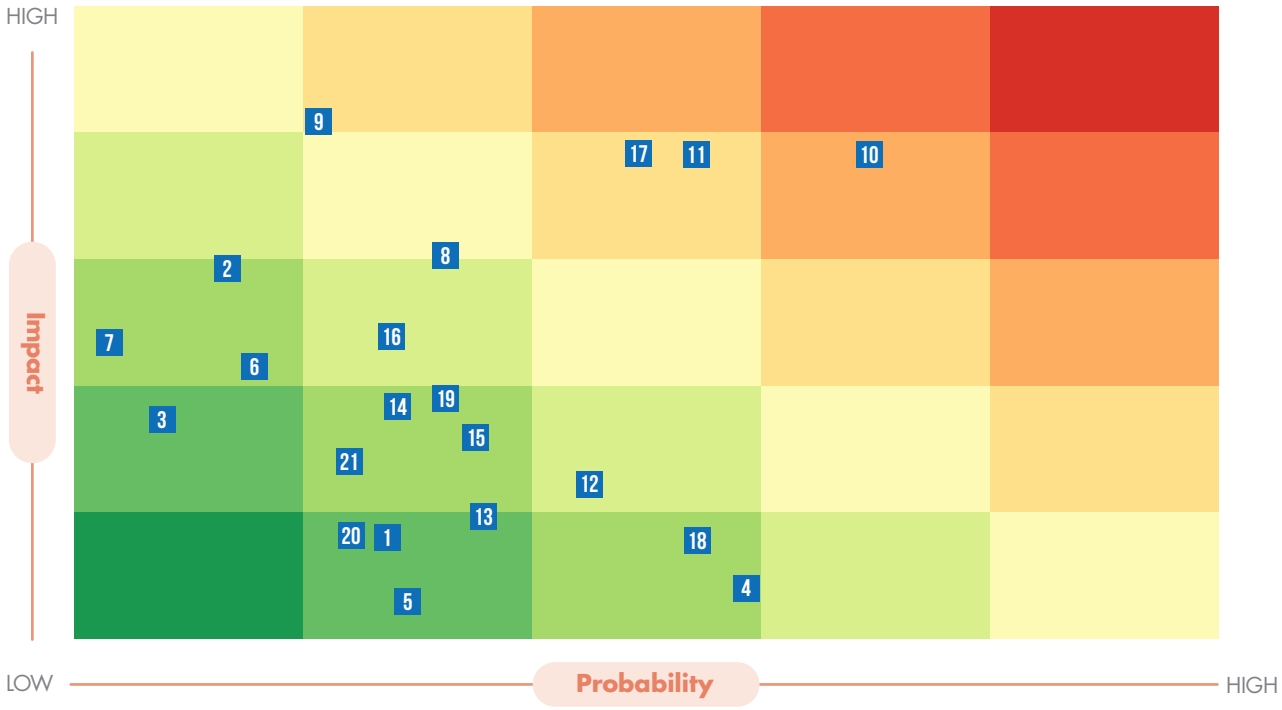
CPC has been incorporating climate change issues into its risk management system by following the TCFD framework. The risk management team of each department (division and office) first evaluates the potential risks and operational and financial impacts of "Climate and the ecosystem," and then devises appropriate responses and strategies based on the outcomes of risk assessment and priority determined using the risk matrix. Each of risks identified is tracked using a "Risk Matrix" and an enterprise risk management (ERM) system. Not only are risks reported to the board of directors and the senior management for materiality assessment, they are also raised in Risk Management Committee meetings for interdepartmental discussions about short-, medium-, and long-term climate risks and opportunities. Key resolutions of the committee are reported to the board of directors to enhance climate resilience of the organization.

CPC observes the TCFD framework and guidelines by distinguishing climate change risks between transition risks and physical risks, which are further broken down into sub-categories including: policy, regulation, technology, market, and reputation under transition risks, and immediate, and long-term under physical risks. CPC conducts climate change risk assessments generally at least once a year, and the assessment covers existing business locations and part of its supply chain.

Procedures for identifying major climate change-related risks and opportunities



TCFD climate change risks matrix



» Note 1: The X-axis represents likelihood of a given issue under the global sustainability trend.

» Note 2: The Y-axis represents the intensity of impact that an issue may have on CPC.

Physical risk

1 Equipment damage caused by extreme weathers

2 Impact on employees' attendance and operations caused by extreme weathers

3 Impact on transportation, supply, and communication caused by extreme weathers

4 Rising sea levels and impact on the operations of coastal plants

5 Property devaluation from rising sea levels

Disruption of operation caused by drought and water shortage

7 Rising average temperatures may force suspension of business locations due to excessive heat

Transformational risks

8 Shortage of key materials caused by extreme weathers

9 Tightened environmental regulations increase environmental protection spending

10 Unstable supply of power or risk of shortage from the green energy policy

11 Carbon credit/carbon tax systems imposed by governments around the world

12 Demand for green products

13 Change in customers' preference

14 Customers' increasing environmental requirements in production/operation

15 Unstable supply and transportation of energy sources

16 Long-term climate risk makes supply of renewable energy unstable

17 Rising cost of critical materials

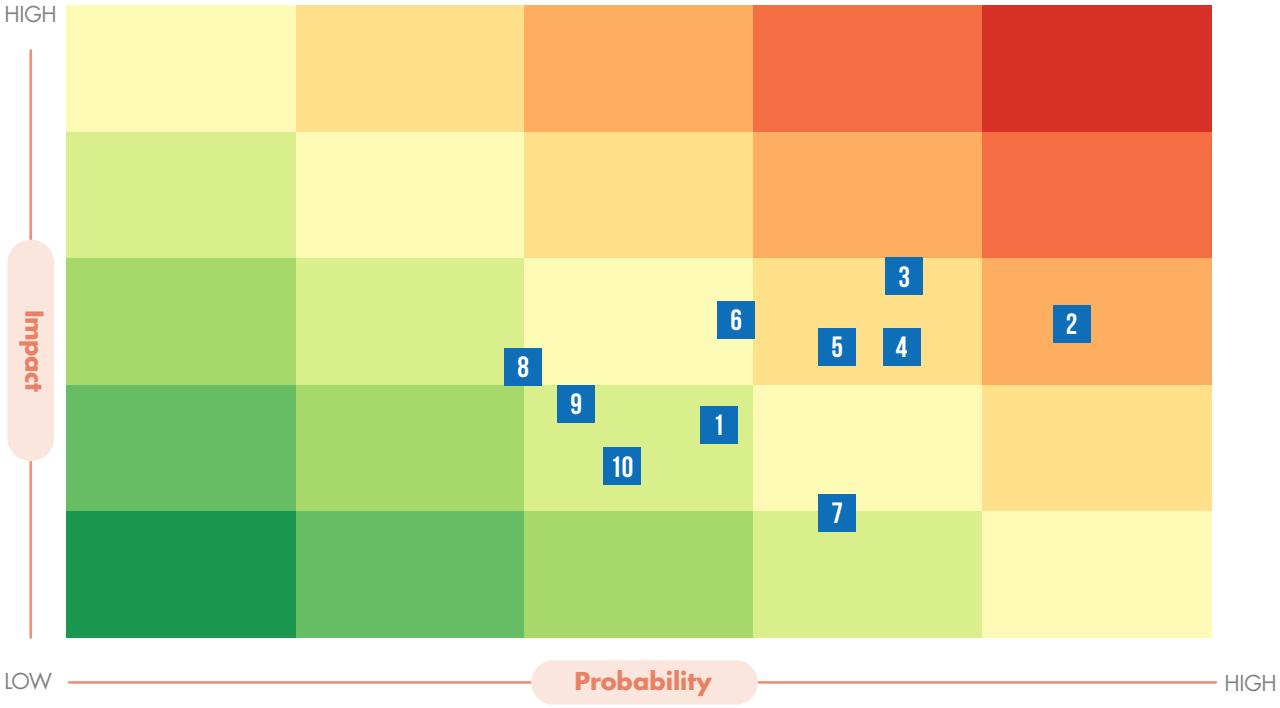
18 Product or market dominance may be replaced by peers with low-carbon or new technologies

19 The need to commit significant R&D budget increases operating costs

20 Underwhelming transformation in response to climate change affects reputation

21 Half-hearted effort toward energy and carbon reduction compromises brand image

TCFD climate change opportunities matrix



» Note 1: The X-axis represents likelihood of a given issue under the global sustainability trend.

» Note 2: The Y-axis represents the intensity of impact that an issue may have on CPC.

Opportunities

1 Implementation of water conservation measures increases the efficiency of water resource utilization

2 Analyze flood scenarios, devise risk management procedures, and implement disaster response system

3 Strengthen pipeline resilience to sudden temperature changes

4 Promote use of renewable energy sources for improvements to the energy structure

5 Increase energy efficiency and save operating costs

6 Smart/green energy transformation conforms with power conservation requirements and increases the competitive advantage of the industry

7 Invest resources into low-carbon R&D and secure early advantage in the new energy market

8 Acquire government incentives and engage in carbon offset and carbon trading

9 Set supplier behavior guidelines and improve supply chain stability

10 Improve brand reputation as well as customers' and stakeholders' perception

Impacts of and responses to major climate risks

Risk aspect	Risk	Financial and non-financial impacts (-)	Response actions / opportunities (+)
Transformational risks	Policies and laws	**Collection of carbon credit and carbon tax**	
		⊖ In light of the worldwide net zero carbon movement, carbon cost will account for a higher percentage of total product cost in the future.	⊕ CPC conducts greenhouse gas emission surveys each year to mitigate impact.
		⊖ The Climate Change Response Act introduces a carbon credit system that imposes surcharge on greenhouse gas emissions, and therefore increases operating costs.	⊕ CPC executed and completed carbon footprint survey and validation on 21 products in 2022.
		⊖ CPC emitted 7.58 million metric tons (MT) of greenhouse gas in 2022; at the rate of NT$100 to NT$300 per MT, CPC may be required to pay NT$758 million to NT$2.274 billion in carbon taxes each year.	⊕ CPC will progressively complete carbon footprint surveys for 496 of its main products before 2024.
			⊕ CPC promotes carbon pricing internally with the assembly of a Carbon Pricing Task Force, and has set performance management goals to progressively reduce carbon tax per unit of production.
			⊕ CPC persistently explores ways to reduce energy consumption and carbon emission of its production procedures and to improve the efficiency of energy/resource utilization. Net zero emission technologies and clean energy sources are being introduced whereas low-carbon models and services are being adopted.
		Green energy policy	
		⊖ Terms of the Renewable Energy Development Act that target intensive energy users have come into effect, which increases operating costs.	⊕ Through interdepartmental coordination, CPC has met its statutory green energy capacity by constructing more than 248 sites with a total capacity of 19.56 MW.
		⊖ Budgets are being allocated persistently into the research and development of solar power technologies.	⊕ CPC completed assessments for the construction of pilot hydrogen fuel station, and plans to introduce the nation's first mobile hydrogen fuel station by the end of 2023 to provide hydrogen fuel for vehicles.
	市場	**Unstable supply/ increasing cost of key materials**	
		⊖ Disruption in the supply of key materials may cause instability in domestic energy supply and put business activities to a halt	⊕ CPC will engage regional partners more actively in the emergency sourcing (i.e. exchange or resale) of gas inventory and sharing of market information.
		⊖ Rising cost of raw materials diminishes financial performance	⊕ More attention will be directed toward identifying trade opportunities, increasing risk management capacity, monitoring changes in market supply and demand, securing import sources, and increasing trade profits.
		⊖ War causes a surge in energy prices and poses challenges and uncertainties to the future business environment.	⊕ Develop a secondary supply system, increase energy reserves, conduct ongoing assessment of supplier risks, and avoid or reduce purchases from high-risk locations.
			⊕ Increase production and internal warehouse capacity.
			⊕ Promote waste heat recovery in collaboration with other companies in the industrial park; purchase reusable steam produced by China Steel to lower energy consumption.

» Note : The carbon dioxide equivalent emissions are calculated on an annual basis. The data for the year 2022 will be provided after the completion of third-party verification by the end of July 2023. This data is for internal auditing purposes.

Impacts of and responses to secondary climate risks

Risk aspect	Risk	Financial and non-financial impacts (-)	Response actions / opportunities (+)
Physical risk / Immediate and long-term considerations	Typhoon and flood	⊖ Climate change increases both the frequency and severity of Typhoons and heavy rains, which may cause damage to operating facilities and injury to employees, and thereby incur additional costs on equipment maintenance and insurance coverage.	⊕ Conduct detailed surveys on the vulnerability of existing facilities. CPC will consider moving equipment to elevated platforms and installing additional drainage pumps in the future, and work with the Industrial Technology Research Institute to devise adaptation strategies for improved operational resilience. ⊕ CPC will continually monitor and analyze climate disasters (including drought, tidal wave, flood, hurricane, mudslide, and lightening strike) while at the same time enhance disaster resistance of equipment and buildings and implement complete SOPs for disaster preparation, response, and recovery.
	Drought and water shortage	⊖ Production disruption due to output reduction or boiler shutdown as a result of water rationing.	⊕ Recycle and reuse reclaimed water through premium water treatment facilities for higher water efficiency and enhanced operational resilience. ⊕ Purchase of reclaimed water.
Transformational risks / Market	Change in consumers' preference	⊖ A change in customers' preference may render CPC unable to respond to market demand in time and ultimately affect revenues. ⊖ The rise of electric vehicles affects consumers' demand and ultimately corporate revenues.	⊕ CPC supports smart, green energy transformation of fuel stations and follows the "Smart e-Bike Charging Facilities Expansion Project." A total of 1,000 charging and battery swapping stations and 4 smart green energy fuel stations have been established to provide diverse services and to create green opportunities. ⊕ Through collaboration with a tertiary institution, CPC assembled a research team and contributed to the successful development of new farming technology for species of high economic value.
Transformational risks / Transformation technology	Existing products being replaced with low-carbon alternatives	⊖ The rise of sustainability awareness causes consumers to switch to low-carbon and energy-efficient products or services, which negatively affects the sale and revenue of CPC's conventional energy products. ⊖ Support the government's energy transformation policy by increasing supply of natural gas and committing resources into investment projects.	⊕ Direct technological advantage and R&D capacity into the development of relevant technologies and markets; construct a net zero transformation strategy that emphasizes High-value Petrochemical, Low-Carbon Emission, and Lean-Renewable Energy, and expand operations accordingly. ⊕ Construct (expand) LNG receiving stations; increase the import, storage, and supply capacity of natural gas to meet the market's demand for oil substitutes, thereby creating CPC's clean energy supply chain.

Risk aspect	Risk	Financial and non-financial impacts (-)	Response actions / opportunities (+)
Transformational risks	Transformation technology **High cost of low-carbon transformation**	⊖ To reduce greenhouse gas emission and meet demand for low-carbon products and services, CPC is required to invest into the acquisition of energy-efficient equipment and development of new production procedures and technologies. ⊖ Increasing market demand for environment-friendly products.	⊕ Make adjustments to the refining model as well as structural improvements and value-adding uses of petrochemical materials. Turn viable contents of pyrolysis gasoline into living necessities and make optimal use of oil by-products and turn low-value fuel into high-value materials. The total cost of investment is estimated at NT$14.597 billion. ⊕ Raise export sales of fuel oil. ⊕ Shift all boiler fuel to natural gas or fuel gas. Promote use of fuel gas in refineries by purchasing burners and accessories for Dalin Refinery, switching to fuel gas at Taoyuan Refinery Plant, and renewing No. 1 boiler at Taoyuan Refinery Plant. Approximately NT$1.72 billion of cost was committed in the last 5 years. ⊕ CPC signed its first state-owned enterprise sustainability linked loan in 2022 and followed up with 2 long-term sustainability linked loans that are expected to save up to NT$ 5.78 million in interest expenses.
	Reputation **Impacts to business reputation**	⊖ Climate change actions and products of high carbon emission that do not meet stakeholders' expectations will result in negative publicity and reduce customers' trust and satisfaction to the detriment of business reputation, causing CPC to lose market leadership and suffer financial losses.	⊕ In addition to monitoring international trends, regulatory changes, and market trends, CPC also adjusts internal management guidelines and makes transparent disclosures as well as timely responses to promote the organization's low-carbon, green image. ⊕ CPC takes part in the evaluation and certification of sustainability performance, and improves its practices based on the outcomes.

Response to climate change opportunities

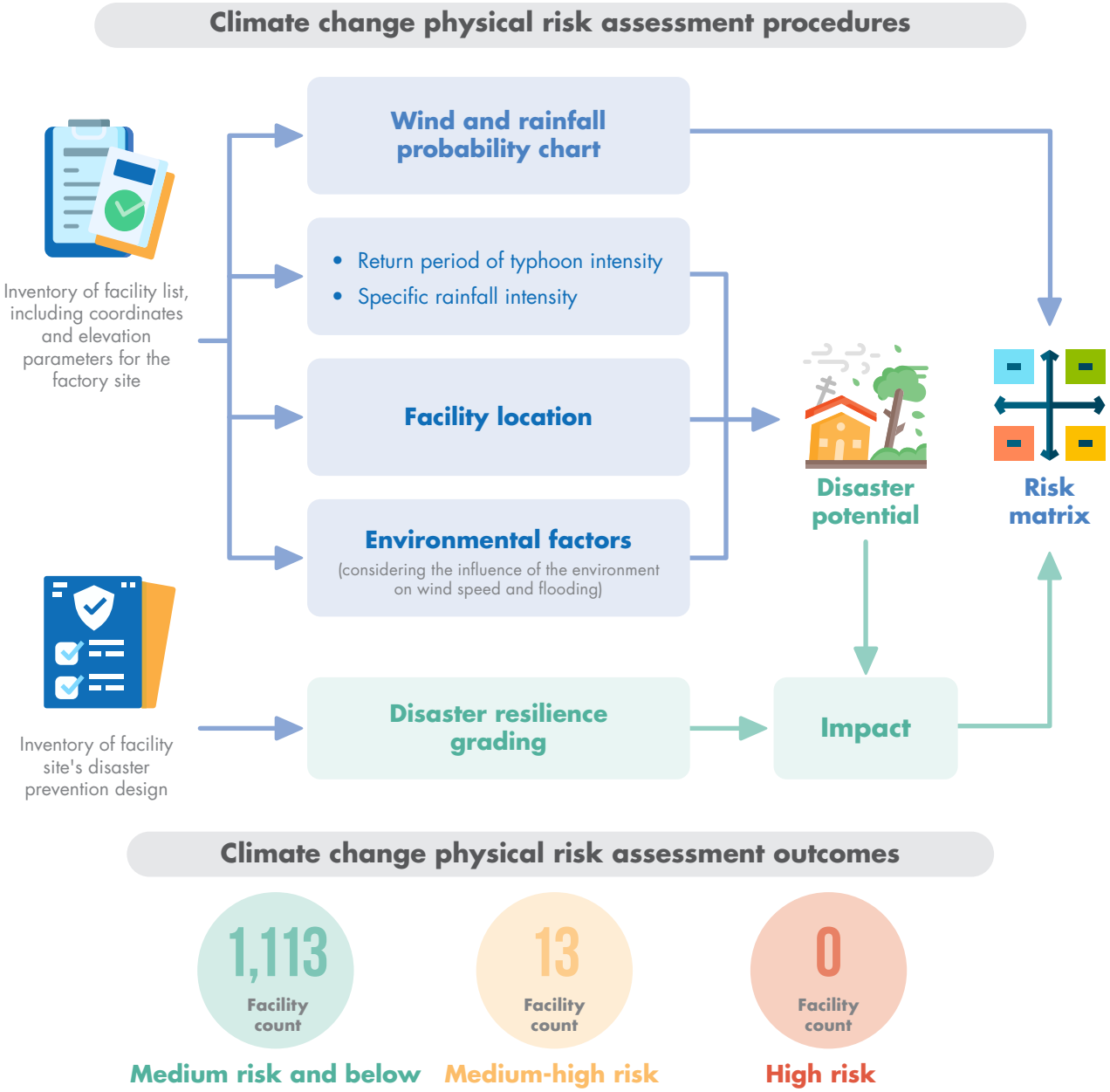
Aspect	Climate-related opportunities	CPC's practices
Use of energy	Use of renewable energy	+ Assembled a Offshore Wind Power Joint Venture Project Team and a Hydrogen Energy Team. + Resources are being directed to the construction of solar power systems; CPC expects to complete 19.56 MW of power capacity by 2023. + CPC promotes smart green energy fuel stations and obtains green building certification as well as renewable energy site certification for its fuel stations.
	Increase of energy efficiency	+ CPC has established an Energy Conservation and Carbon Reduction Team. The team holds working team meetings regularly and is responsible for the research and review of energy conservation and carbon reduction practices, introduction and implementation of energy conservation technologies, guidance of energy conservation and carbon reduction of plants, and compilation and experience sharing of energy conservation cases. + CPC helps at least 10 industry participants make use of natural gas as fuel a year. + Energy conservation measures are being implemented at refineries and petrochemical plants to increase energy efficiency across plant sites. These measures are expected to reduce carbon emission by 180,000 MT.
Operational resilience	Evaluation and prevention of risks and hazards	+ CPC conducts climate risk assessments on a yearly basis. A total of 7 plant sites updated their climate change risk assessment reports in 2022, and 1,126 operational facilities were taken count of during the year.
Resource utilization	Use and management of water resources	+ CPC introduced energy conservation technologies such as heat recovery pipe, heat exchanger network simulation, new air preheater, crude oil pre-flash system, and use of high efficiency blades for cooler tower fans. Furthermore, fuel gas, medium/low pressure steam, and water resources are being used and recycled at higher intensity. + Pro-active efforts are being committed to recycle and reuse wastewater, whereas improvements are being made to the use of coolant, boiler water, hydrant water, and production water. Rainwater recovery systems are being installed at petrol stations, whereas reclaimed water is being purchased by appropriate units.
Product/ market/ reputation	Market and business opportunities	+ CPC developed batch production technology for HMF, a precursor to the bio-based polyester material PEF, and reduced waste in the production procedures, making it an ideal upstream material for bioplastics. + Continue support to government policies by supplying and promoting E3 ethanol at 14 fuel stations in Taipei City and Kaohsiung City. Invest into the development of production technologies for renewable oil and bio-aviation fuel. + Invest into the development of technologies concerning biomass energy, energy storage materials, and biomaterials; make investments that add value to petrochemical products.
	Brand image and market presence	+ Enhance the adjustment of refining and manufacturing structure and equipment renewal Adopt the best available technology (BAT) to enhance energy efficiency and reduce environmental impact. + Continue promotion of product carbon neutrality. As of 2022, CPC had launched carbon neutral natural gas, carbon neutral ethylene, carbon neutral crude oil, and carbon neutral fuel stations. + After issuing Taiwan's first producer green bond in 2017, CPC signed its first state-owned enterprise sustainability linked loan in 2022 that set a milestone for sustainable finance.

2.1.3 Analysis of climate change risk scenarios

Analysis and evaluation of climate change physical risks

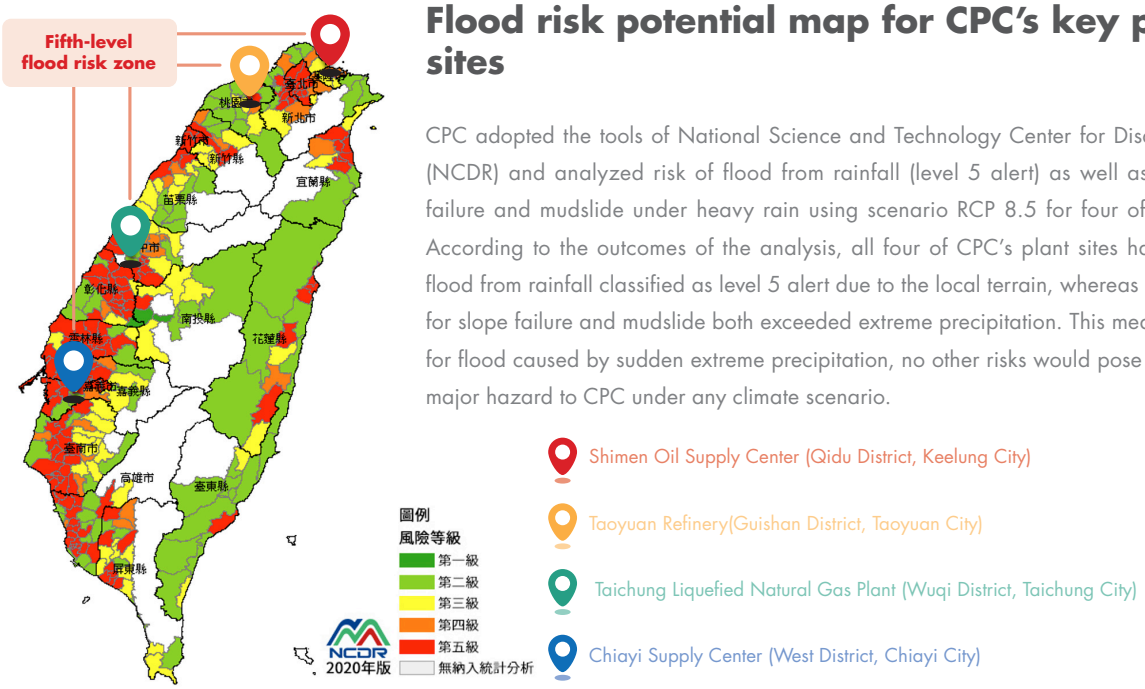
CPC has been a participant in the Bureau of Energy's "Climate Change Adaptation Strategy and Guidance for the Energy Sector" since 2018. After conducting a comprehensive survey of parameters such as coordinate and height and learning the disaster prevention design across plant facilities, CPC chose to evaluate disaster potential and disaster tolerance for various risk factors including strong wind and flood using the AR5 high emission scenario - RCP 8.5. Impacts of extreme weathers were also simulated during this process. Based on the probability of occurrence and impact assessment established above, a risk matrix was produced to help determine CPC's climate change physical risks.

CPC completed surveying climate risks for 25 energy supply sites (including oil refineries, LNG receiving stations, oil supply centers, and gas supply centers) between 2018 and 2021. Considering how the methodologies and scenario information used in each year had improved over time, CPC updated climate change risk assessment report for 7 sites across a total of 1,126 operating facilities in 2022 so that plant sites can be compared using a uniform baseline to establish current and future risk levels under the same scenario and conditions. The report highlighted 13 areas of medium-high risk and above, and CPC will continue updating climate change risk assessment reports for its plant sites in the future.



Choice of scenario and data for physical risk assessment

To enable better control over risks of physical damage associated with climate change, CPC adopted the future climate model and data published on Taiwan Climate Change Projection Information and Adaptation Knowledge Platform (TCCIP) and analyzed flood risks and impacts for some of CPC's operations using scenario RCP 8.5. Through climate risk assessments, CPC has chosen four key energy supply sites to undergo flood risk analysis, including Shimen Fuel Distribution Center, Taoyuan Refinery Plant, Taichung LNG Refinery, and Chiayi Gas Supply Center.



Flood risk potential map for CPC's key plant sites

CPC adopted the tools of National Science and Technology Center for Disaster Reduction (NCDR) and analyzed risk of flood from rainfall (level 5 alert) as well as risks of slope failure and mudslide under heavy rain using scenario RCP 8.5 for four of its plant sites. According to the outcomes of the analysis, all four of CPC's plant sites have had risk of flood from rainfall classified as level 5 alert due to the local terrain, whereas alert thresholds for slope failure and mudslide both exceeded extreme precipitation. This means that, except for flood caused by sudden extreme precipitation, no other risks would pose any immediate major hazard to CPC under any climate scenario.

CPC flood hazard potential assessment

	High risk	Medium-high	Medium risk	Low risk	Eliminated risk/no data
Shimen Fuel Distribution Center	0	0	0	0	12
Taoyuan Refinery Plant	0	1	13	267	343
Taichung LNG Refinery	0	0	0	75	24
Chiayi Gas Supply Center	0	0	0	88	87

Legends for risk grade:

- High risk: The building/facility is very susceptible or vulnerable to future climate change, and should be prioritized for mediation measures.
- Medium-high risk: The building/facility is highly susceptible or vulnerable to future climate change, and should adopt mediation measures.
- Medium risk: Susceptibility and vulnerability of the building/facility to climate change is acceptable, and should have risks closely monitored.
- Low risk: Susceptibility and vulnerability of the building/facility to climate change is low, and no further action is needed.
- Eliminated risk: Susceptibility and vulnerability of the building/facility to climate change is very low.

» Note 1: The flood potential assessment was conducted using assumptions: flood potential - 650mm/24hr and rain probability - 650mm/day

» Note 2: All climate change data was derived from physical or statistical simulations, and the simulation process involved many assumptions and conditions. Furthermore, TCCIP takes a low resolution of the global climate model and applies it to Taiwan using dynamic/statistical downscaling. Although this approach increased the resolution of space/time, it also introduced additional errors and uncertainties.

Response strategies for physical risks

Outcomes of CPC's current flood risk assessment show no area of high risk and above mainly due to incomplete flood map information, therefore it is inappropriate to assume low risk for susceptibility and vulnerability to future climates. CPC will continue monitoring climate change issues and direct attention not only to water buildup and drainage on plant premises, but also blockage of ditches particularly during rain. Ditches will be cleaned regularly to prevent flood from heavy rain that would otherwise disrupt operations at CPC's key plant sites.

Transition risk assessment procedures

According to the outcomes of CPC's climate change risk and opportunity identification exercise, the impact of policy and regulatory risks under transition risk was the highest among all risks, and has been highlighted as a major risk. The government of Taiwan announced its "Taiwan 2050 Net Zero Roadmap and Strategy" in March 2022 that outlined the path to net zero by 2050, and later enacted the Climate Change Response Act in January 2023 that set clear goals to net zero from now until 2050. For this reason, it is mandatory for the organization to observe the Climate Change Response Act and achieve net zero by 2050.

CPC adopted IEA's Stated Policies Scenario (STEPS), the Sustainable Development Scenario (SDS), and the Net Zero Emissions by 2050 Scenario (NZE) to estimate carbon emission volume from now until 2050. The same foundation is used to further assess how potential carbon credit impacts CPC.

Assumptions of IEA's 3 carbon reduction scenarios

STEPS

Covers the government's existing responses and measures for climate change and any policies that are in place

SDS

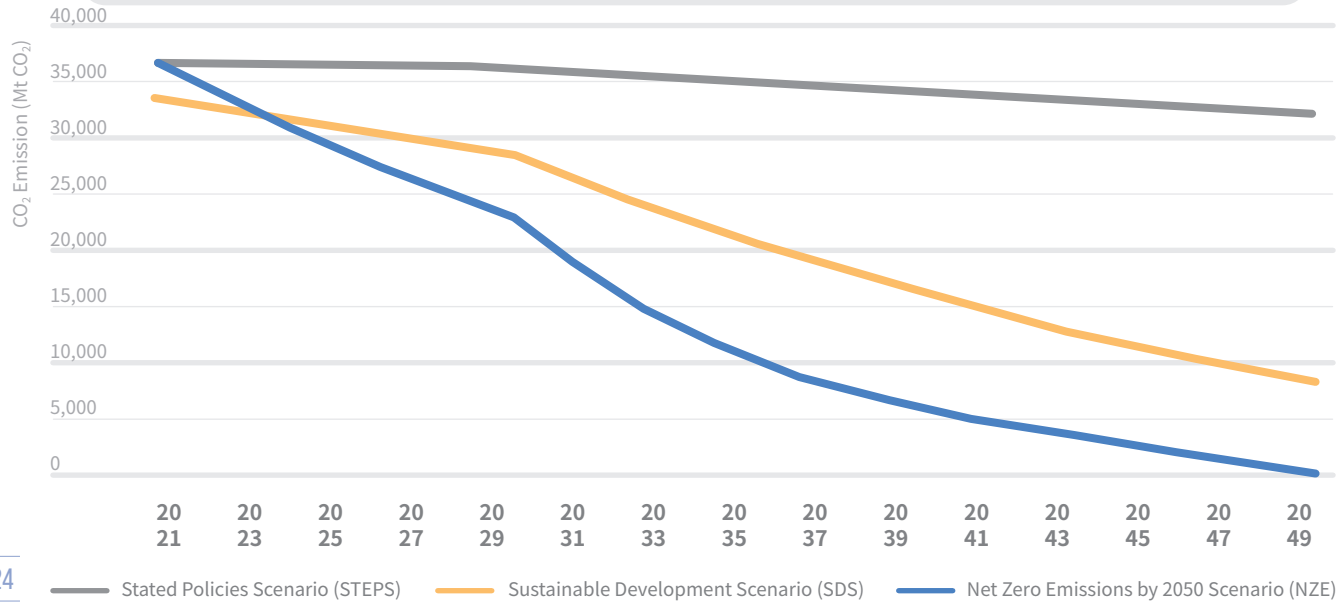
A scenario in which clean energy policies and investments increase to the point where the energy system becomes sustainable, and almost all current carbon reduction commitments are fulfilled

NZE

A scenario in which the global energy sector achieves net zero CO_2 emissions by 2050

As governments around the world begin to evaluate and adopt the carbon pricing system, CPC took the initiative to analyze the five carbon pricing systems introduced locally and abroad, and applied its own climate model and financial model to identify carbon price trends from now until 2050.

Carbon emission estimations for CPC under different carbon scenarios



EPA, Taiwan

Implementation of carbon pricing system recommended by EPA: NT$100 per MT of CO_2

Green Peace

Implementation of carbon pricing system recommended by Green Peace: Starting from NT$300 per MT of CO_2, increasing progressively to EU's carbon price.

EU ETS

Implementation of carbon pricing system equivalent to EU's carbon price; uses the carbon trading price growth rate project by the EU.

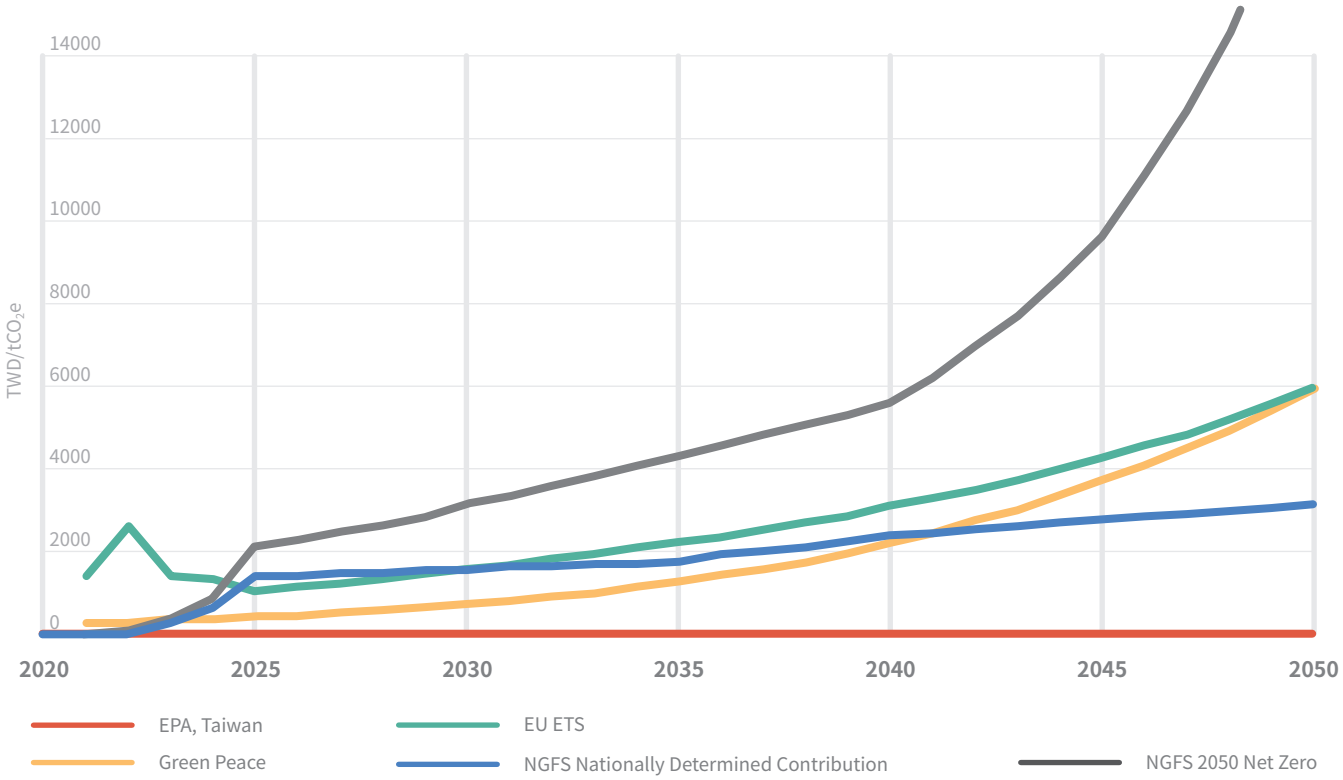
NGFS 2050 Net Zero

Takes into consideration scenarios of equivalent macroeconomic impact. For NZE, transformation impacts, policy impacts, and long-term physical effects are taken into consideration.

NGFS NDC

Takes into consideration scenarios of equivalent macroeconomic impact. The NDC scenario takes into account transformation impacts and long-term physical effects without considering policy impacts.

Domestic and international carbon pricing estimations



» Note 1: Following the enactment of the Climate Change Response Act, CPC expects an increase in carbon exposure as carbon taxing begins in 2024.

» Note 2: Because NGFS NDC sets the target to reduce carbon by 50% by 2030 and achieve net zero by 2050, carbon tax surges from 2025 onwards.

» Note 3: 2021 and 2022 used real data published by the World Bank, therefore carbon taxes varied significantly and did not exhibit a consistent upward rising curve.

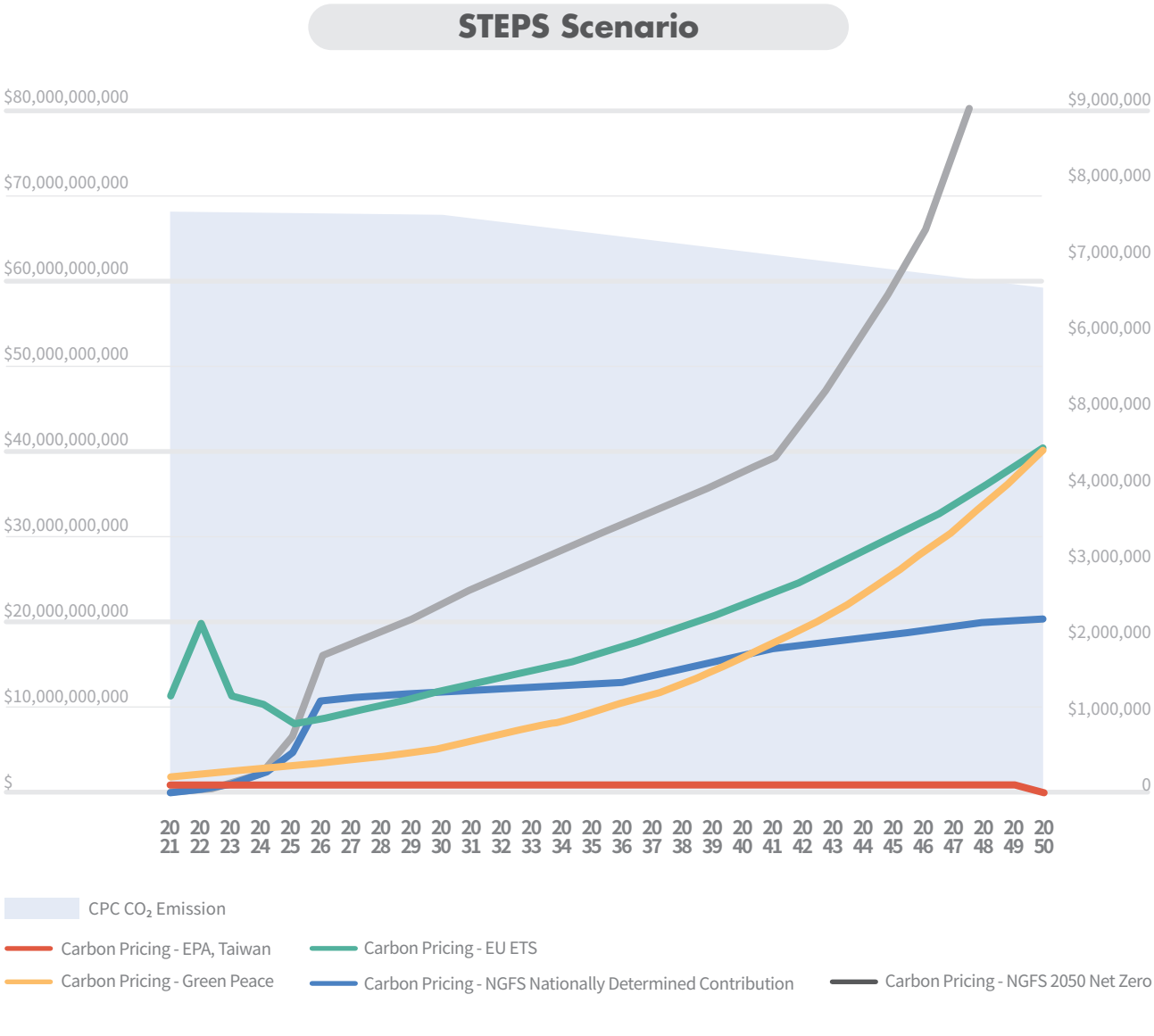
To simulate carbon taxes, CPC combined IEA's three emission scenarios with international carbon pricing systems and presented the financial impacts of actual carbon taxes that CPC is likely to bear in the respective scenarios using a layered graph.

STEPS

In IEA STEPS, it is assumed that the government of Taiwan accomplishes its provisional carbon reduction target while CPC continues its net zero actions in line with existing goals, and that carbon emission and power usage stay at the 2021 level. After making analyses and estimates, CPC expects to incur additional NT$920 million to NT$111.67 billion in expenses by 2050, based on the different levels of carbon price.

	EPA, Taiwan	Green Peace	EU ETS	NGFS 2050 Net Zero	NGFS NDC
2030	$838	$5,880	$12,187	$22,192	$11,989
2050	$922	$39,843	$39,843	$111,687	$20,642

Unit: million New Taiwan Dollars (NTD)

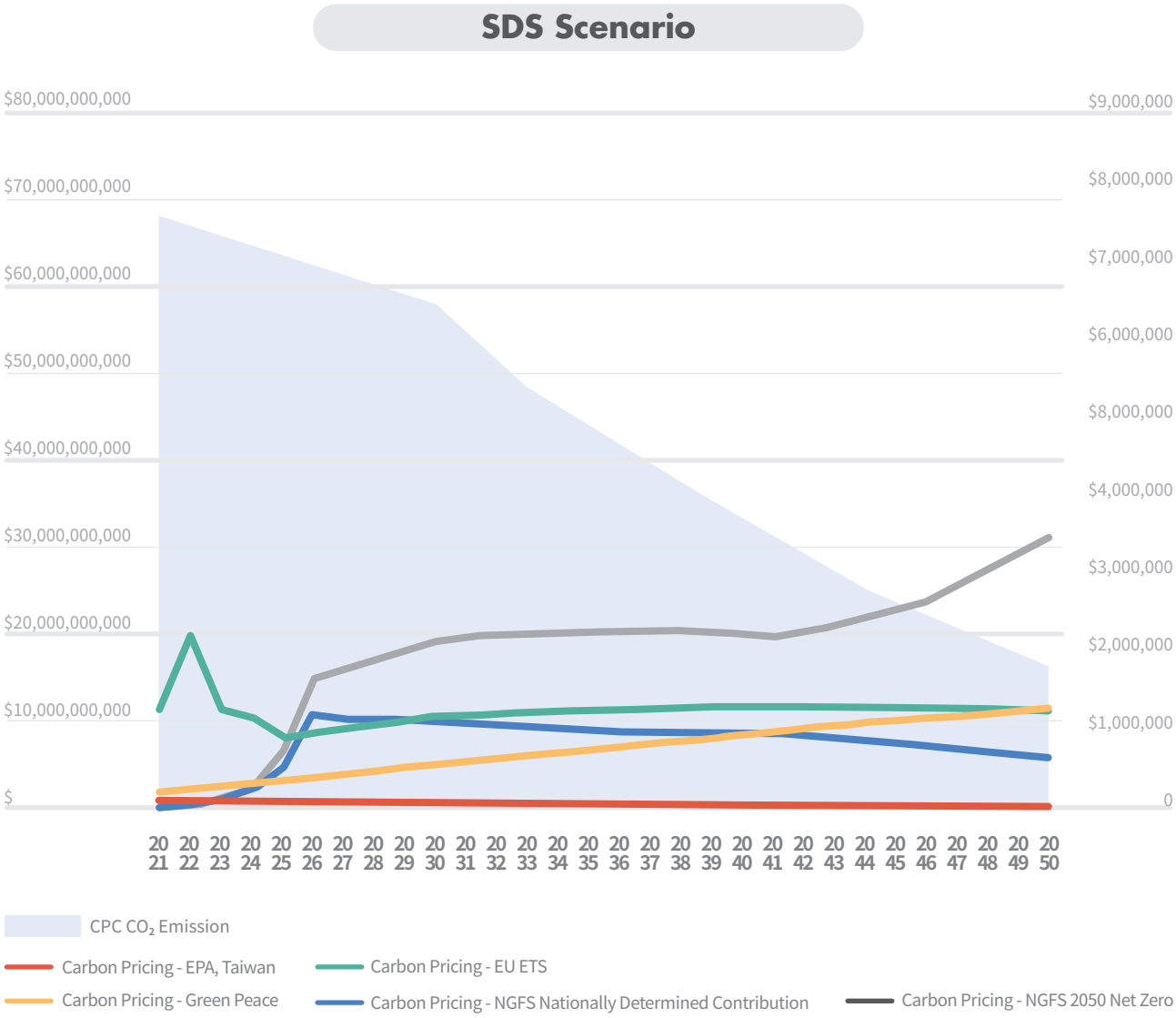


SDS

In IEA SDS, it is assumed that CPC reduces carbon emission progressively year after year, and while emission volume in 2050 is 78.6% less than 2021 (the baseline year), it does not accomplish Taiwan's carbon neutral goals by 2050. After making analyses and estimates, CPC expects to incur additional NT$260 million to NT$31.08 billion in expenses by 2050, based on the different levels of carbon price.

	EPA, Taiwan	Green Peace	EU ETS	NGFS 2050 Net Zero	NGFS NDC
2030	$718	$5,039	$10,444	$19,019	$10,274
2050	$256,477	$11,088	$11,088	$31,083	$5,745

Unit: million New Taiwan Dollars (NTD)

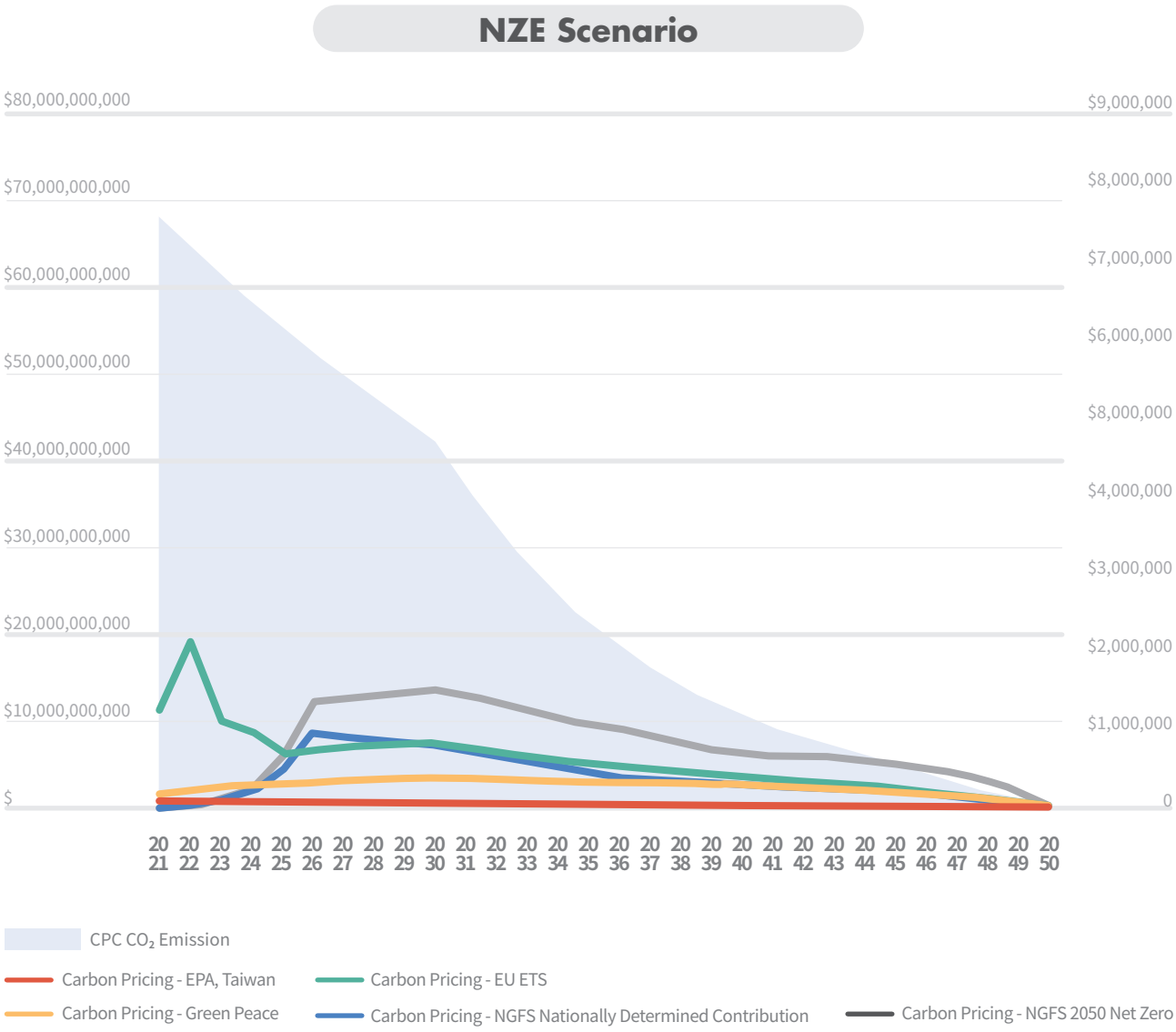


NZE

In IEA NZE, it is assumed that the government of Taiwan accomplishes its 2050 net zero goal and makes further regulatory amendments to tighten reduction requirements to 42%-45% by 2030, whereas CPC achieves net zero by 2050. Assuming that CPC actively sources renewable energy and purchases carbon credits to offset emission from now until 2050 and ultimately achieves net zero, an additional NT$530 million to NT$13.96 billion will have to be spent by 2030 depending on the carbon price, and since CPC is assumed to achieve net zero emission by 2050, no additional carbon tax will incur at that time.

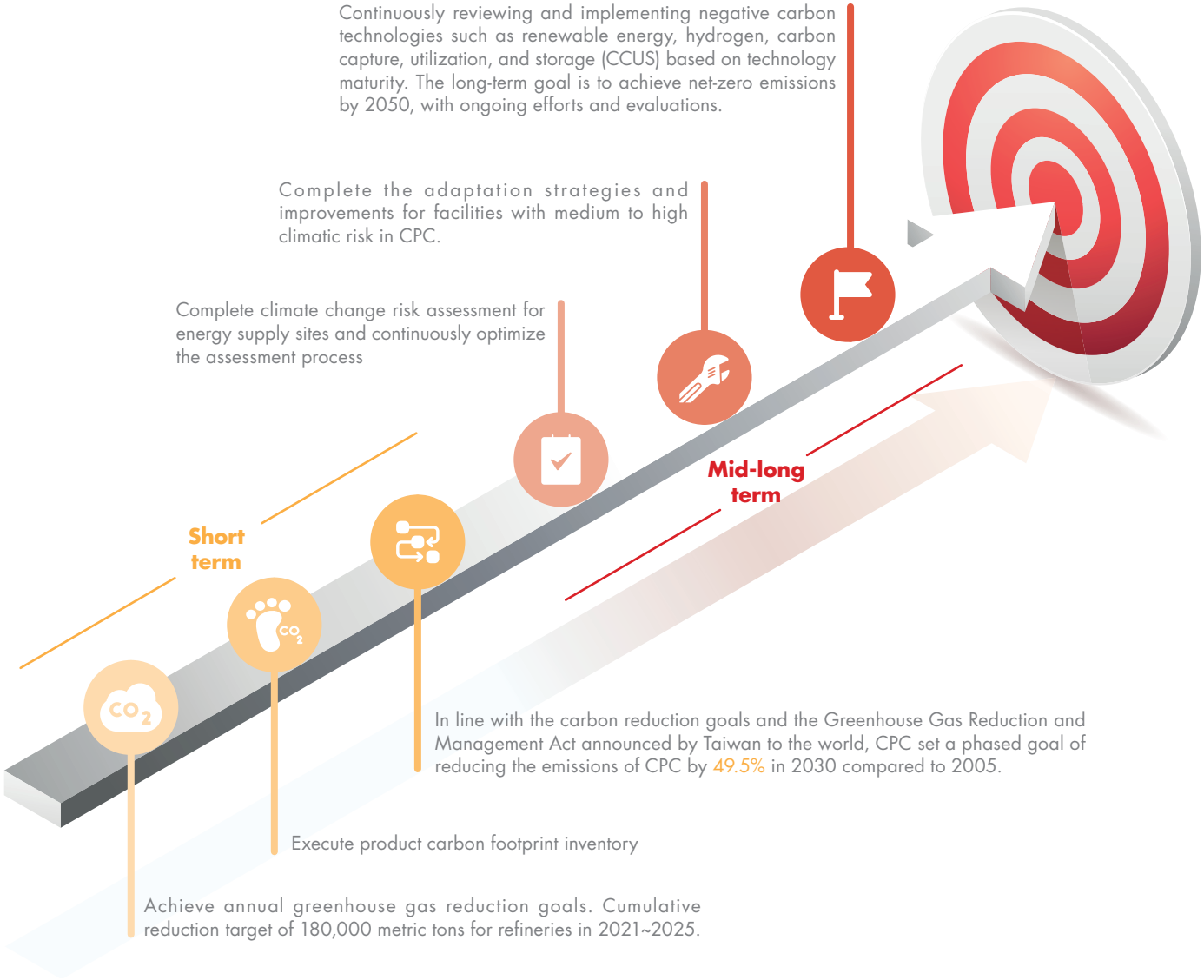
	EPA, Taiwan	Green Peace	EU ETS	NGFS 2050 Net Zero	NGFS NDC
2030	$527	$3,700	$7,668	$13,963	$7,543
2050	$0	$0	$0	$0	$0

Unit: million New Taiwan Dollars (NTD)



2.1.4 Climate change goals, indicators, and management performance

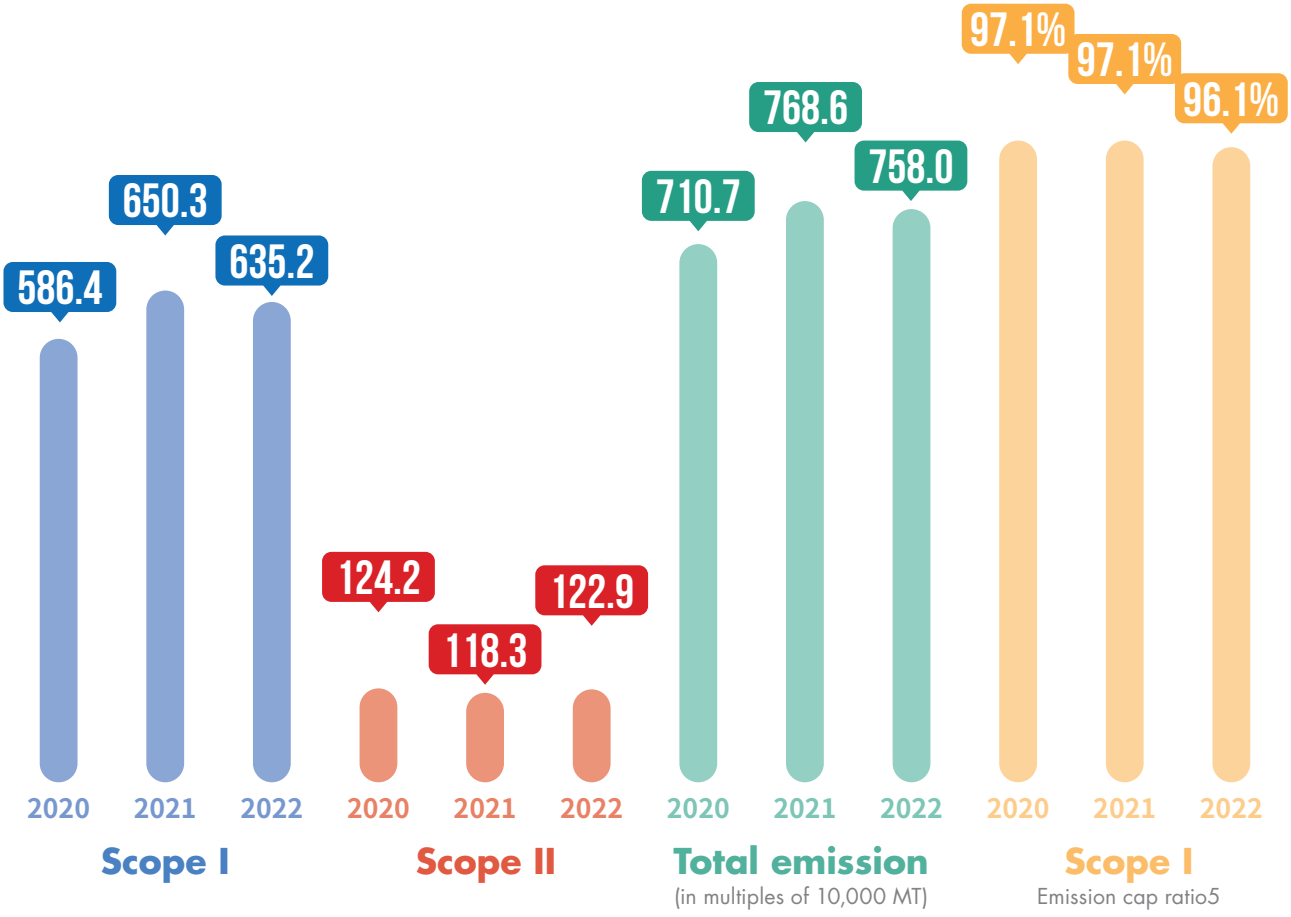
As a response to the nation's carbon reduction policy and how the world is responding to climate risks, CPC not only set provisional carbon reduction goals for 2025 and 2030 but also adopted long-term goals to achieve net zero by 2050, while carefully evaluating risks and opportunities of climate change. Based on the outcomes of risk identification exercise and international trends, CPC introduces climate change action plans along with short-, medium-, and long-term performance indicators for greenhouse gas management, energy/resource management, water resource management, and pollution control, which are examined regularly for target attainment and progress. CPC also follows the "GHG Protocol" and surveys direct emission (Scope 1) as well as indirect emission (Scope 2) of greenhouse gas to determine the effect of its operations and any potential impacts. Outcomes of greenhouse gas survey have been certified for ISO 14064-1.



To ensure conformity with the world's climate change mitigation actions, attainment of corporate reduction targets, and development of green competitiveness, CPC has implemented greenhouse gas reduction targets in line with the nation's policies and long-term reduction goals, and tracks emission persistently through greenhouse gas surveys. It introduced the ISO 14064-1 greenhouse gas survey system in 2004 and has since been surveying greenhouse gas emission on a yearly basis; meanwhile, emission volumes of Taoyuan Refinery Plant, Dalin Refinery, and Linyuan Petrochemical Complex are being validated by EPA-approved third parties. Based upon the survey outcomes, CPC sets greenhouse gas reduction targets and implements management plans to lower emission.

As a support to the national carbon reduction goals laid up in EPA's Greenhouse Gas Reduction and Management Act (GGRMA), CPC designated 2005 as the baseline year, in which it measured greenhouse gas emission at 11.58 million MT (carbon dioxide equivalent). CPC has since surveyed Scope 1 and Scope 2 greenhouse gas emission on a yearly basis, and made calculations by following EPA's Greenhouse Gas Emission Coefficient Sheet for guideline, or using proprietary coefficients as a priority. GWP values are adopted according to EPA's rules.

CPC greenhouse gas surveys are conducted using the operational control approach, and survey outcomes are presented in carbon dioxide equivalent term. Total greenhouse gas emission in 2022 had reduced by 106,000 MT carbon dioxide equivalent (CO2e) compared to 2021. This reduction was mainly due to the spread of COVID-19 since 2020 that decreased economic activities, for which CPC had adjusted its production strategies to accommodate the market's demand. Greenhouse gas emission intensity had reduced for 3 consecutive years between 2016 and 2019, but the global spread of COVID-19 in 2020 led to the collapse of oil prices, causing full-year revenues to fall by 29% and emission intensity increased as a result. Greenhouse gas emission intensity in 2021 had already fallen by 13.6% compared to the previous year. [6]



» Note 1: CPC does not use biofuel

» Note 2: CPC's greenhouse gas survey covers Scope 1 and Scope 2 and 7 major categories of greenhouse gas, namely: carbon dioxide (CO2), nitrous oxide (N2O), methane (CH4), hydrofluorocarbons (HFCs), perflourocarbons (PFCs), sulphur hexafluoride (SF6), and nitrogen trifluoride (NF3).

» Note 3: CPC has designated 2005 as the baseline year for its greenhouse gas reduction targets, and emission volume for the baseline year was measured at 11.58 million MT CO2e. Due to the extensive number of upstream and downstream partners involved, it is somewhat difficult to survey the entire chain. CPC is currently in midst of surveying the supply chain, therefore Scope 3 data and validation are excluded from calculation at the moment.

» Note 4: According to EPA's rules, Global Warming Potential (GWP) is taken from IPCC's 2007 4th evaluation report

» Note 5: Emission cap is defined using the sources of greenhouse gas emission announced by the central authority. CPC was required to survey and disclose emission sources for the four refineries and petrochemical plants back in 2020; Kaohsiung Refinery was later exempted of the obligation to survey and disclose greenhouse gas emission in 2020, which made Taoyuan Refinery Plant, Dalin Refinery, and Linyuan Petrochemical Complex the only three facilities that required survey and disclosure of emission source in 2021 and 2022.

» Note 6: CPC introduced ISO 14064-1 greenhouse gas survey system in 2004 and has since been surveying greenhouse gas emission on a yearly basis using the operational control approach. Total greenhouse gas emission volume for 2022 is pending for 3rd-party validation, which is scheduled to complete in June 2023. GHG emission intensity = GHG emission for the year / revenues for the year (kg/NTD).

Energy conservation performance and progress

CPC has been supporting the government's energy conservation policy and executing greenhouse gas emission controls intended for the nation's energy and manufacturing sectors. Since 2005, CPC has implemented a multitude of production improvements and energy management solutions in an attempt to reduce emission, and in 2022, the organization committed NT$870 million into additional GHG reduction measures including procedure optimization, equipment renewal, and heat recycling/reuse that reduced carbon by 88,000 MT. Between 2005 and 2022, CPC accumulated energy savings totaling 984,000 kL of oil equivalent, which equates to 2.836 million MT of carbon reduction.Power consumption per unit of production was significantly improved in major production sites.

"CPC has implemented a multitude of production improvements and energy management solutions in an attempt to reduce emission"

CPC continually replaces factory equipment with energy-efficient alternatives and implements energy conservation plans to save over 1% of electricity on average every year. As a response to the GHG Emission Control Action Plans (phase II) for energy and manufacturing sectors, CPC introduced its own "Refinery Performance Enhancement Program" and "Petrochemical Plant Performance Enhancement Program" that aimed to reduce greenhouse gas emission by 180,000 MT between 2021 and 2025.

CPC examines greenhouse gas management and energy conservation progress once every six months during performance meetings that are hosted by the vice president of environmental protection affairs. Domestic and overseas experts are also invited to provide counseling on energy and carbon reduction at various plant sites and business segments, where they assist in examining the operation and energy efficiency of large equipment, and offer improvement suggestions as deemed appropriate. Any improvement suggestions raised are followed up in performance meetings.

Major Energy Conservation Measures and Performance 2005-2022

Major Energy Conservation Measures	Reduction (KLOE)	Performance (NT$ ten thousands)	tCO_2e (t)
Process Equipment Renewal	255,881	362,647	784,697
Equipment Repair/Improvement	147,617	217,732	446,737
Waste Heat and Fuel Gas Recovery	268,072	430,597	796,136
Operation Improvement	119,857	286,176	352,179
Other Improvements in Energy Management	192,929	289,393	456,173
Total	984,356	1,586,545	2,835,922

2.2 Low-carbon/green energy transformation and circular economy

Short-term

- Completed carbon footprint survey for 496 products in 2024
- Introduce internal carbon pricing
- Enhance the added value of petrochemical energy

Medium/long-term

- Carbon emission in 2030 was 49.5% lower compared to 2005, and CPC strives to achieve net zero by 2050
- Meet diversity goals for sustainable, green energy sources
- Implement a circular resource supply model
- Realize smart green energy transformation

CPC's low-carbon green energy transformation strategy

Budget and outcome of prospective R&D

Item	2020	2021	2022
Budget committed (in multiples of NT$100 million)[1]	21.30	25.07	28.98
R&D expenses as a percentage of net operating revenues1	0.30%	0.28%	0.24%
Financial benefits (in multiples of NT$100 mn)	40.56	47.07	49.76
Acquired patents	18	19	21
Published papers	208	202	218
Outcomes delivered (items)	62	55	75

» Note 1: "Budgets committed" into R&D are calculated based on "actual amounts" of research and development expense (including capital expenditure) paid

Focuses and outcomes of prospective R&D

R&D category	Key projects	R&D outcome
 **Assessment and research of domestic and overseas oil mine potential**	**Study of domestic mine sites**	• The project consolidated existing paleontological data, sequence stratigraphy well surveys, and seismic interpretations to produce a stratigraphic chart for Tainan Basin • The project attempted to increase production capacity of natural gas wells in domestic sites using the foam lift approach; laboratory trial for the technology has been completed, and an on-site test is scheduled to take place in 2023
	Study of foreign mine sites	• The project targets gas fields discovered in the northwest seas of Australia that are undeveloped or under development, and completed 75 natural gas asset scores and asset/mine site ratings to be used as reference for future mine acquisitions • The project uses new data collected from wells at Benoy, Mbaikoro, and Mouroumar in Chad and applies prestack geological statistics inversion for thin-section identification; it helps establish lithological characters, porosity, and water saturation attributes and enables updates to the 3D geological model and reserves
 **Development and use of renewable energy**	**Geothermal analysis**	• CPC completed metamorphic facies analysis at the 3 wells located in Xiaoyoukeng, Qingtiangang, and Zhusongling of Mount Datun, and established cross-section profile of minerals between the connected wells • CPC completed a study on acid-resistant piping materials as well as economic benefits analysis for geothermal applications in Mount Datun, which will aid in CPC's geothermal development efforts in Mount Datun
	Development of photovoltaic technology	• CPC actively promotes construction of photovoltaic systems and the development of automated maintenance, operation, and management technologies; by 2022, CPC had constructed more 248 PV sites with rated capacity totaling 12.518 MW
	Evaluation for the establishment of pilot hydrogen fuel station	• The first hydrogen fuel station has been signed and implemented; mobile hydrogen fuel stations are expected to be introduced in the end of 2023 to support operation of pilot hydrogen-powered vehicles

R&D category	Key projects	R&D outcome
Development of new products and new technologies	**Development and application of lithium-titanate (LTO) materials**	• Factories and procedures for trial mass production of LTO materials are currently under development, and are expected to be completed by the end of 2023
	Development of biocarbon super capacitors	• CPC completed the trial production of 500 pieces of 1200F 40138 super capacitor, developed 48V modules, and invested into the development of anode materials for modified sodium ion battery
	Testing of high/Low temperature fuel cell	• CPC created a distributed power generation test site for high/Low temperature fuel cell, and completed the establishment of fuel cell monitoring system and big database
	Smart green energy stations	• CPC had 4 green energy-based pilot smart fuel stations in Northern, Central, Southern, and Eastern Taiwan, where research outcomes were applied to support "power generation," "power storage," "power usage," and "AI-assisted" services
	Study of carbon capture, utilization, and storage technologies	• CPC takes regular measurements near potential storage sites to establish a database of background values; CPC also made plans to take supplemental measurements along the western coastal survey line, and complete its first sea survey in November 2022 • CPC established a CO2 capture and utilization trial system and conducted studies on technology validation, catalyst development, and production optimization
	Development of production procedures for bioplastic materials	• In support of the nation's plastics reduction policy, CPC completed the development of production technology for 5-hydroxymethylfurfural (5-HMF), a critical precursor to the bio-based polyester material polyethylene furanoate (PEF), and successfully produced 5-HMF products of high purity
	Trial mass production of C5 fraction	• A trial mass production facility capable of manufacturing 8MT of dicyclopentadiene (DCPD) a year is being constructed; the factory is expected to be completed in 2023, at which time CPC will begin trial production of high purity DCPD **Patent acquisition in Taiwan**
	Development of environment-friendly high performance coating materials and solvents	• Development of bio-polyol formation technology and low-carbon vegetable oil-based coating materials to significantly reduce volatile organic compounds (VOCs) and lessen the carbon footprint • By applying hydrogenation technology on dearomatized solvents, CPC successfully developed environment-friendly solvent D80 that can be used in paint, coating materials, industrial cleaning agents, and metal processing; the reduction of aromatic hydrocarbons and toxic substances lessens harm to the human body and the environment **Won Best Product Award during the 2022 National Brand Yushan Award**
	Development of cosmetics material - MiBlancSol	• MiBlancSol has potential pharmaceutical uses due to its whitening and anti-bacterial properties; it is an auxiliary material to skincare products and supports CPC's business diversification efforts

R&D category	Key projects	R&D outcome
Circular economy	Adding value to heavy oil materials - development and application of soft carbon derivative for energy storage	• Ongoing promotion and construction of pilot soft carbon production factory • With the development of long-lasting soft carbon-based anode materials and spherical active carbon, CPC hopes to create high value-adding super capacitors and carbon materials for battery **Won invention challenge of 2022 Taiwan Innotech Expo - Gold** **Won the 19th National Innovation Awards - "Enterprise Innovation Award" - "Value-adding Carbon Fixation Technology - High Capacity Artificial Graphene-based Anode Material Technology for Electric Vehicles"**
	Use of cold energy - development of algaculture and functional materials	• CPC developed green extraction technologies to help extract sarcodia essence, a functional substance found in algae, for the development of high value-adding products **Patent acquisition in Taiwan** **Won 2022 National Invention and Creation Award - "Marine Algae Cultivation Method and Equipment"**
	Development of DeNOx catalyst	• CPC completed the development of catalyst renewal technology for DeNOx catalysts in 2022; more than 80% of old catalysts can now be renewed • CPC completed catalyst renewal facilities at oil refineries, and successfully renewed catalyst at China Steel Corporation's power plant
	Turning recycled PET into polymeric dispersant	• CPC developed catalytic depolymerization technology for turning PET into high value-adding applications, thereby increasing the economic benefits of recycling efforts • Through alcoholysis and functionalization, CPC successfully turned recycled PET into water-based polymers characterized by high polymer count and crystallization resistance, which can be made into titanium dioxide dispersant **Patent acquisition in Taiwan**

"High-value Petrochemical" transformation

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. CPC is actively promoting the construction of e-smart stations and research institutes to extend our business as a new materials business.

Highlight: LTO energy storage the first step to sustainable energy

The 18th National Innovation Award

The first 12-meter electric bus featuring LTO battery

The only supplier of LTO materials in Taiwan

Having anticipated the global warming phenomenon and the energy and carbon reduction trends that followed, CPC began investments into the development of lithium-titanate (LTO), the next-generation energy storage material, in 2015. By introducing LTO modifications and low-cost, automated continuous production procedures, the R&D team was able to improve the material's conductivity, milliampere-hours per gram, and lower production costs. This LTO energy storage material allows batteries to be charged more quickly and more safely, and was recognized by the 18th National Innovation Award.

As a support to the government's total shift toward electric buses and vehicles by 2030, CPC contributed its proprietary LTO materials and collaborated with the Industrial Technology Research Institute, Amita Technologies Inc., Chung-Hsin Electric and Machinery Manufacturing, and Tong Ying Motor Co., Ltd. to develop critical solutions specifically for the battery system of electric buses, including: fast-charging LTO battery, LTO cell module, high voltage LTO battery system, and motor-battery-VCU integration. All research tasks were performed by domestic teams, and the participants have successfully created a 12-meter long LTO-based electric bus that passed the six main electric bus functional tests of Automotive Research & Testing Center.

CPC began construction of a trial mass production factory for battery materials in March 2022; the construction progress was last audited by the Ministry of Economic Affairs in January 2023 and was awarded an excellent rating of A. CPC also held a commencement ceremony for "Construction of LTO materials trial mass production factory and substation" at Kaohsiung Petroleum Coke Plant in February, and will proceed to renovate the plant's facade and interior later in the year. Production equipment relating to the facility are being installed and tested on site, and CPC expects to begin operation of the factory at the end of 2023. With the capacity to produce more than 1,000 MT of LTO materials a year, this new factory will make CPC the only supplier of LTO materials in Taiwan, and contribute to Taiwan's battery industry chain by supplying high-quality anode materials to niche battery applications.

The first electric bus featuring LTO battery

Commencement ceremony for "Construction of LTO materials trial mass production factory and substation"

Highlight: promoting green lifestyle through smart green energy gas stations

1000
electric motorcycle charging and switching stations

From 2018 to 2022, CPC had completed the construction of 1000 electric motorcycle charging and switching stations (including 900 switching stations and 100 charging stations)

70
received the green building label

In 2013, CPC began planning "green building gas stations", using carbon reduction or ecological methods. By 2022, 70 gas stations received the green building label

4
smart & green e- stations

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 five demonstration sites of smart green energy gas stations

Each of CPC's smart green energy fuel stations carries a distinctive feature that is indicative of CPC's R&D capacity, and an energy management system is being used to adjust power consumption at fuel stations. All pilot stations have met their assigned targets to date in terms of equipment installation; as for awards and recognitions, CPC's smart green energy fuel station won National Brand Yushan Award - "Best Product Award" in 2021 whereas CPC's Tainan Qianfeng smart green energy fuel station became the nation's first carbon neutral fuel station in 2022, for which it won National Brand Yushan Award - "Best Product Award" again. CPC is currently planning to upgrade its Hsinchu Guangmin Petrol Station to the 5th green energy smart station, and expects to complete in 2023 as part of CPC's green energy transformation.

With regards to the external system, CPC will be upgrading the systems used in smart green energy fuel stations from Central EMS to SCADA (supervisory control and data acquisition). By integrating data from Xinyi Station, Qiedong Station, Qianfeng Station, and Guangfu Station and taking advantage of modularization and plug-in features of the SCADA system, CPC will be able to quickly replicate success to more than 1,000 stations and develop high availability (HA) backup for critical network equipment, so that backup switch can be made in the event of malfunction without disrupting operations. Dashboards have been implemented in the other four stations to allow real-time monitoring of the current state and power usage using customized KPIs to better manage the performance of each station.

Location of green energy pilot station

2022 results	Site features and recent progress

Chiayi Hsinyi Station

- Percentage of self-produced energy increased to 80.1% in 2022
- The energy storage system stored 67,434 kWh and released 51,990 kWh of electricity; power transfer efficiency was calculated at 77.1%

- The station generates solar power as the main form of green energy, and uses energy storage systems to regulate the amount of power supplied to the power grid
- Construction has been completed. The station gathers data on solar power and studies the relationship with climate factors to provide reference for future power prediction systems
- CPC developed a 24-hour solar power prediction module and a load prediction module to achieve more precise prediction of short-term and long-term power load as well as solar power generation; hierarchical scheduling was adopted to better conform with the power operations and limitations of Xinyi Station, which greatly reduces the occurrence of adverse events (reverse power flow) and maximizes the percentage of self-produced green power; with more precise transfer of green energy, fuel stations become less dependent upon the power grid

Tainan Qianfeng Station

- Percentage of self-produced energy averaged 24.4%
- Electric bikes averaged 271 charges a month
- Provided 3,249 charges

- By developing solar power and fuel cell capacities and using LTO and vanadium redox-flow energy storage systems for power regulation and peak cut, the station is able to power its own operations and provide quick charge to electric bikes

Taoyuan Qiedong Station

- Electricity charges averaged NT$3.2 per kWh; power savings averaged NT$0.5 per kWh
- The station charged an average 26.7 kWh per day and discharged an average 24.0 kWh per day

- The station has a 50 kWh mobile energy storage system that is made up of 10 small-size communication and positioning-enabled 25 kWh mobile lithium iron battery modules; 5 of these modules use graphene-based anode material while the other 5 is mixed with lithium-iron soft carbon, a quick charging capable, long lifespan, and safe material that took CPC 10 years to develop; meanwhile, a smart energy management system is being used to monitor and distribute power in a manner that improves the performance and safety of the energy storage system

Hualien Guangfu Station

- The LTO energy storage system allows the station to switch to islanding mode during power outage, so that it continues to supply power to the emergency needs of the local township or indigenous people's reserve

- The station introduced mobile LTO energy storage system developed by CPC and combined GPS and energy management system for power regulation and remote monitoring, so that energy can be delivered upon request

Highlight: Advance Catalyst Center

In light of the global movement to reduce energy and carbon and the multitude of innovative technologies being developed to achieve net zero emission in Taiwan, CPC assumed its role as the leader of industrial transformation and founded an "Advance Catalyst Center" in 2021 with the goal to support "carbon reduction, energy conservation, environmental protection, and green products" with upgraded refining processes, value-adding chemicals, and carbon capture/utilization solutions. By 2022, the Advance Catalyst Center had successfully developed: CO_2 hydrogenation for the production of methanol catalyst, catalysts for efficient removal of NOx, and high value green oil products. The Advance Catalyst Center also combines CPC's chemical products with other petrochemical materials into the development of electronic grade materials for the semiconductors industry.

R&D outcome of Advance Catalyst Center - 2022

Carbon reduction economy

Developed CO2 hydrogenation for the production of methanol catalyst

Energy conservation and environmental protection

Developed catalysts for efficient removal of NOx that can be used in power generation, steel refinery, and petrochemical plants

Green product

- Used hydrogenation technology in the development of high value-adding green oil products
- Integrated self-produced chemicals and other petrochemical materials into the development of electronic grade materials for the semiconductors industry

CPC aims to establish its Advance Catalyst Center as the "pilot site for next-generation smart production" and therefore incorporates digital and AI technologies to create a smart production environment that supports the petrochemical industry's transition into "Industry 4.0." In 2022, Advance Catalyst Center incorporated 5G and AIoT technologies and developed a "Bionic Automated Inspection Device" in the form of a dog. This bionic dog performs automated inspections throughout plant premises and sends inspection data to the control center to facilitate cloud computing for smart energy management, workplace safety, personnel safety etc., and is a good example of how AI can be applied in safety monitoring.

The Bionic Automated Inspection Device is assigned employee ID of "918779," which pronounces similarly to "Go machine dog."

The Advance Catalyst Center has been cooperating actively with industry participants, government agencies, and the academia locally and abroad toward accomplishing localized production of catalysts. In 2022, the Advance Catalyst Center completed validation of DeNOx catalyst with China Steel Corporation, developed carbon capture technology with Taiwan Power Company, and invited Nippon Shokubai Co., Ltd. to an exchange of technologies and know-how. With respect to industry-academia collaboration, the Advance Catalyst Center has outsourced studies of DeNOx catalyst, smart factory, and catalyst development to National Taiwan University and Academia Sinica as ways to secure growth for domestic catalyst manufacturers and to support circular economy.

Three main features of the Bionic Automated Inspection Device

- Helps check dashboard and reduces the need for manpower in patrols
- Checks gas leakage by detecting sound of unique frequency and triggers alarm
- Prevents personnel entry that may damage or contaminate environment, and therefore improves equipment uptime

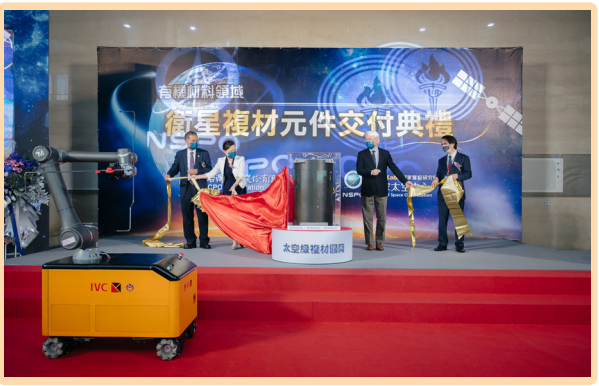
In 2023, the Advance Catalyst Center held a meeting hosted personally by the CPC Chairman to set key performance indicators. The KPIs revolved around the center's three main development focuses, and paved way toward the center's goals to develop CCU equipment by 2023 and create test site for honeycomb DeNOx catalysts. In the future, the center will continue supporting upgrades of domestic industries and promoting net zero transformations with innovative technologies.

HIGHLIGHT

satellite composite components fuel transformation of the next level

CPC has the technological advantage to develop carbon fiber composite materials, and cooperated with Taiwan Space Agency to plan the research and production of space-grade composite materials. In July 2022, the two parties held a Satellite Organic Composite Materials Component Delivery Ceremony at CPC Building, during which CPC handed the "Composite material cylinder for optics payload" and "High pressure fuel tank/valve component and pipeline coating" technology over to Taiwan Space Agency. The two parties also signed a "Memorandum of Understanding (MOU) for Collaboration on Aerospace Grade Composites" with Metal Industries Research & Development Centre to support local development of space-grade composite components, designs, materials, and production technologies and the growth of Taiwan's low-orbit satellite industry.

All carbon fiber composite components previously used in domestic satellite projects were either produced by local composite material manufacturers using imported materials or directly imported from abroad, which hindered Taiwan's satellite development efforts. Today, CPC is investing extensively into developing carbon fiber materials from its own products, which can then be used to produce composite components, thereby enabling total localization from materials supply, component design to manufacturing for the growth of Taiwan's satellite industry.



Climate change and global warming have made net zero transformation the world's common research focus. CPC will aim to turn this crisis into opportunity by turning oil and petrochemical products into advanced materials that can be used for electronics, semiconductors, space science, and biotech, and set good example of COTC transformation. With the development of new materials, CPC hopes to inspire innovation and support sustainability across all industries in Taiwan.

Notes on space-grade composite materials

Composite material cylinder for optics payload

- High rigidity, lightweight, corrosion resistant
- Improves operating efficiency of space satellite

High pressure fuel tank/valve component and pipeline coating technology

- Increases corrosion resistance and lifespan of fuel tanks, valve components, and pipelines in space satellites

“Low-Carbon Emission” transformation

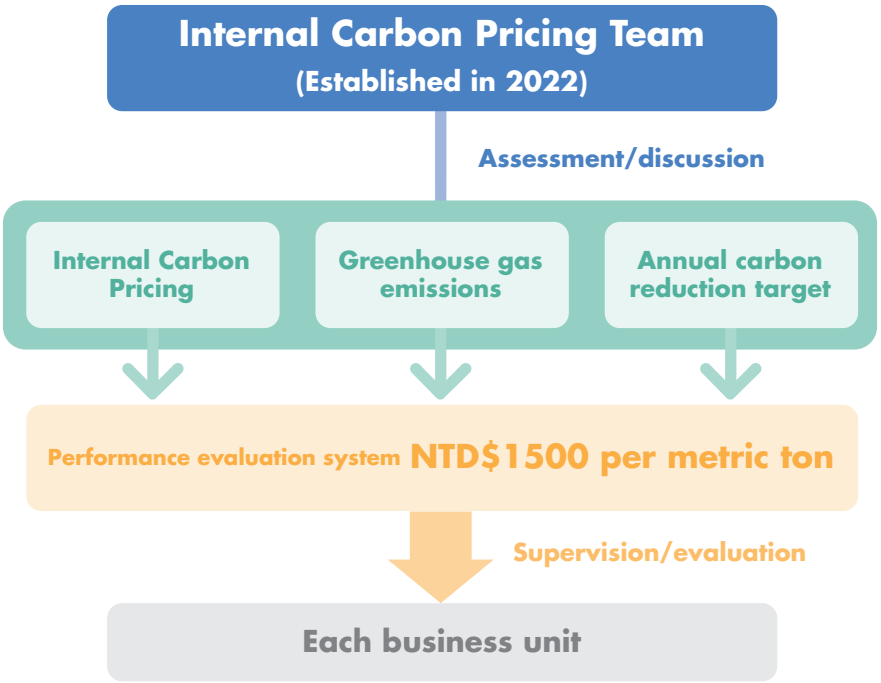
CPC exerts positive influence by taking pragmatic actions to reduce carbon at the source. In addition to implementing greenhouse gas reduction plans and promoting production efficiency improvements, CPC is also looking for ways to introduce internal carbon pricing system and direct existing technologies and R&D capacity toward carbon negative solutions (i.e. carbon capture, storage, and utilization). This combination of improved energy efficiency and use of carbon negative solutions will contribute to CPC’s goals of reducing carbon emission by 49.5% in 2030 compared to 2005, and achieving net zero emission by 2050.

HIGHLIGHT

internal carbon pricing

As a response to carbon reduction trends around the world, CPC has set its long-term goal to introduce internal carbon pricing and allocate emission costs to internal operating activities. The IPCC has stated in AR6 that global carbon tax must reach US$300 per MT by 2030 in order to keep temperature rise below 1.5 degrees. After taking into consideration the internal carbon tax rates of reputable businesses in Taiwan and the possible carbon tax rates to be imposed by the nation, CPC has set its own internal carbon tax rate at NT$1,500 per MT.

For phase 1 implementation, CPC has incorporated annual greenhouse gas reduction goals into the performance evaluation system and introduced methods to calculate carbon tax per unit of refined product for each business segment. This performance management approach will provide internal departments with the incentive to reduce carbon and progressively reduce carbon tax per unit of production. The system was still being developed in 2022 and is expected to begin performance evaluation in 2023. Outcomes of the performance evaluation will be forwarded to various business segments for decision-making and integrated management of carbon cost, and play a key role in CPC’s progression toward net zero by 2050.



HIGHLIGHT

pioneer in green energy and carbon neutrality

CPC supports the global net zero movement and makes extensive commitments to achieve carbon neutrality. In addition to engaging international supply chain partners for carbon reduction, CPC also makes use of the carbon offset system to fully offset the amount of carbon produced. In 2020, CPC made its first import of carbon neutral LNG and was able to obtain certification for PAS 2060 - Carbon Neutrality Standard and Certification the next year. By 2022, CPC had made plans to import carbon neutral ethylene and carbon neutral crude oil, and constructed the world's first carbon neutral fuel station; all of which are indicative of CPC's resolve to ensure business continuity, create a friendly environment, support a low-carbon lifestyle, and realize a sustainable supply chain.

CPC's carbon neutral milestones

2020
- •The first to introduce carbon neutral LNG

2021
- Signed carbon neutrality MOU with TSMC
- Received the world's first shipment of carbon neutral ethylene

2022
- Completed Taiwan's first carbon neutral fuel station
- Received the first shipment of carbon neutral crude oil

Persistent import of carbon neutral LNG

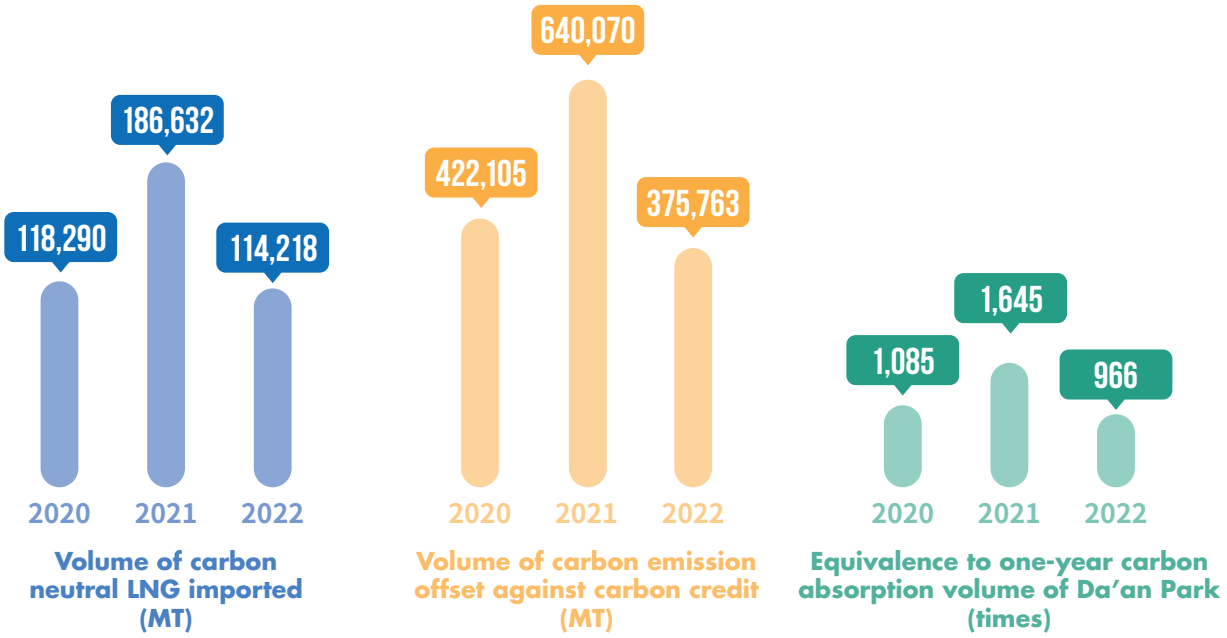
In 2022, CPC worked with Shell and Chevron to import 2 carbon neutral LNG vessels. Using the carbon neutrality system, greenhouse gases emitted from the mining to the use of LNG are offset against carbon credits that meet the "Verified Carbon Standard (VCS) - Gold Standard." These carbon credits are sourced from peatland restoration and international foreign preservation projects of REDD+, and the amount of greenhouse gases to be offset have been validated by independent institution - Verra. These actions are indicative of CPC's ambition for energy transformation.


Source of picture: Shell


Source of picture: Chevron

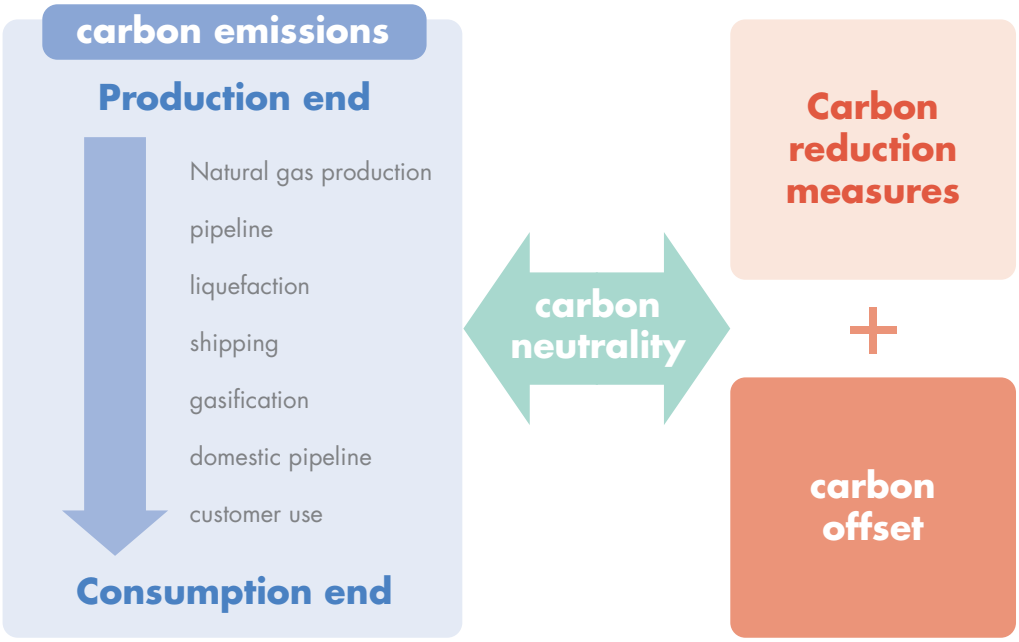
CPC worked with Shell and Chevron to import 2 carbon neutral LNG vessels

Between 2020 and 2022, CPC continued importing carbon neutral LNG, showcased real examples of carbon neutral product, and commercialized carbon neutral products to help industry participants achieve carbon neutrality. Today, CPC cooperates with many domestic enterprises and helps them connect with carbon reduction standards around the world to create a low-carbon and sustainable living environment.



» Note:According to the estimation by the Council of Agriculture, Executive Yuan, a forest can sequester approximately 15 metric tons of carbon dioxide per hectare per year. Therefore, a large Daan Park (25.8 hectares) can sequester approximately 384.6 metric tons of carbon dioxide annually.

Carbon Neutral LNG - carbon neutrality mechanism explanation



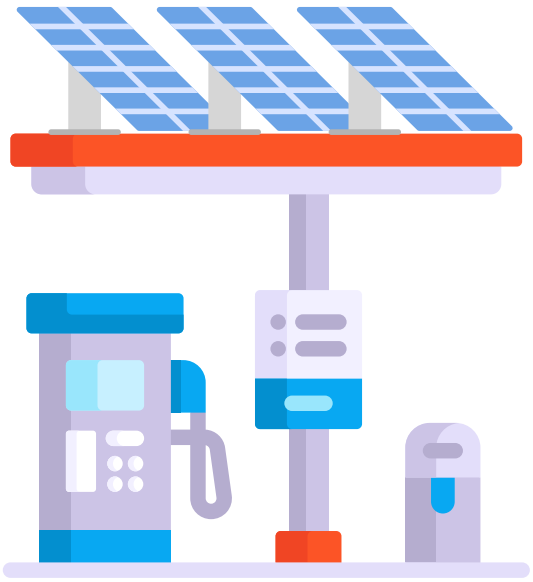
Carbon neutral certification for sustainable traffic

CPC is committed to using green energy as a means to carbon neutrality. Its smart green energy fuel station located at Qianfeng Road, Tainan, passed PAS 2060:2014 carbon neutral certification in March 2022, which made it the first carbon neutral fuel station in Taiwan and set a key milestone in terms of green energy development. This fuel station has been planned with the intent to lower greenhouse gas emission in the first place, and was designed and constructed after taking into consideration detailed data including: emission source, power usage, oil usage, water usage, air conditioning equipment, employee count, work hours, renewable energy generation, and carbon reduction measures to achieve effective reduction in greenhouse gas emission.

On April 18, CPC invited senior officers and guests from different fields to bear witness at the certificate conferring ceremony

In an attempt to obtain carbon neutral certification, all petrol stations conducted greenhouse gas survey using ISO 14064-1 standards in 2021, during which they took detailed records of greenhouse gas emissions. Through the use of renewable energy equipment such as rooftop solar power stations and natural gas fuel cells, petrol stations have successfully reduced greenhouse gas emission by 25 MT. The residual 99 MT of carbon emission was offset against the carbon credits purchased from Changbin Wind Power Plant, and the organization was finally able to obtain carbon neutral certification while at the same time set good examples of carbon offset using locally produced carbon credit.

Carbon Neutral Gas Station



Passed PAS 2060 : 2014 Organizational carbon neutrality certification.

Carbon offset mechanism	Greenhouse gas offset quantity (in metric tons)
Natural gas fuel cells Roof-mounted solar energy system	25
Purchasing carbon credits from Chang Pin Wind Power Plant for offsetting.	99

The first to introduce carbon neutral crude oil

Reducing greenhouse gas has become a global consensus, one that CPC strives to accomplish by supplying carbon neutral crude oil to the domestic market. This is why CPC has partnered with SOCAR Trading, a member of the State Oil Company of Azerbaijan, and signed its first low-carbon crude oil and oil product framework agreement that outlines how the two parties will engage in the trading of carbon neutral crude oil or oil product. This agreement also involves survey and certification of carbon footprint over the life cycle of oil product, and adopts a carbon offset system that is certified by a globally reputable third party.

In June 2022, the two parties completed import for 1.05 million barrels of carbon neutral crude oil, and enabled Taiwan to receive its first shipment of carbon neutral crude oil. Through the carbon offset system, CPC was able to obtain "GHG reduction credits" certified by international third parties and achieve 88 times the one-year carbon absorption volume of Da'an Park. Furthermore, this this batch of carbon neutral crude oil was certified by Climate Neutral Commodity (CNC) of Switzerland and by UK company Intertek for carbon neutrality from cradle to gate. While exploring domestic business opportunities of carbon neutrality, CPC will continue monitoring carbon reduction trends around the world and lead domestic businesses toward accomplishing net zero by 2050.

Carbon neutral crude oil - Carbon offset mechanism explanation

"Lean-Renewable Energy" transformation

CPC continually expands its clean energy business with the construction of solar power systems and by cooperating with academic institutions on the development of geothermal energy. Meanwhile, additional research capacity is being directed toward battery, energy storage, and hydrogen power solutions. Overall, CPC plans to transition from oil supply to the supply of renewable energy sources, and stand out amidst competition in the race for clean energy. With regards to circular economy, CPC directs cold drainage from LNG plant for aquaculture and algaculture uses in an attempt to open up new business opportunities.

HIGHLIGHT

reuse of cold drainage; a mutually beneficial solution between LNG plant and aquaculture

Reuse of cold drainage (diamond water)

CPC imports liquefied natural gas (LNG) from overseas, and in order to bring LNG back into gas form, the Company has to use large volumes of sea water to warm up the LNG, which is stored in extremely low temperatures during transportation. The sea water is discharged when temperature drops to about 15 oC, and this "cold drainage" undergoes three cleaning and filtering processes to remove any concern for contamination or eutrophication. The purified water has such excellent and stable qualities and carries ideal temperature of 22-24 °C during summer that make it very suitable for fish farming.

ESG benefits of cold energy

Economic benefit
Costs saved or values created

Liquefaction of gas	Pressure energy-based power generation	Chilled water air conditioning system
125 million Saved	42.67 million Saved	12.49 million Saved

Environmental benefits
Reduction of CO2 emission

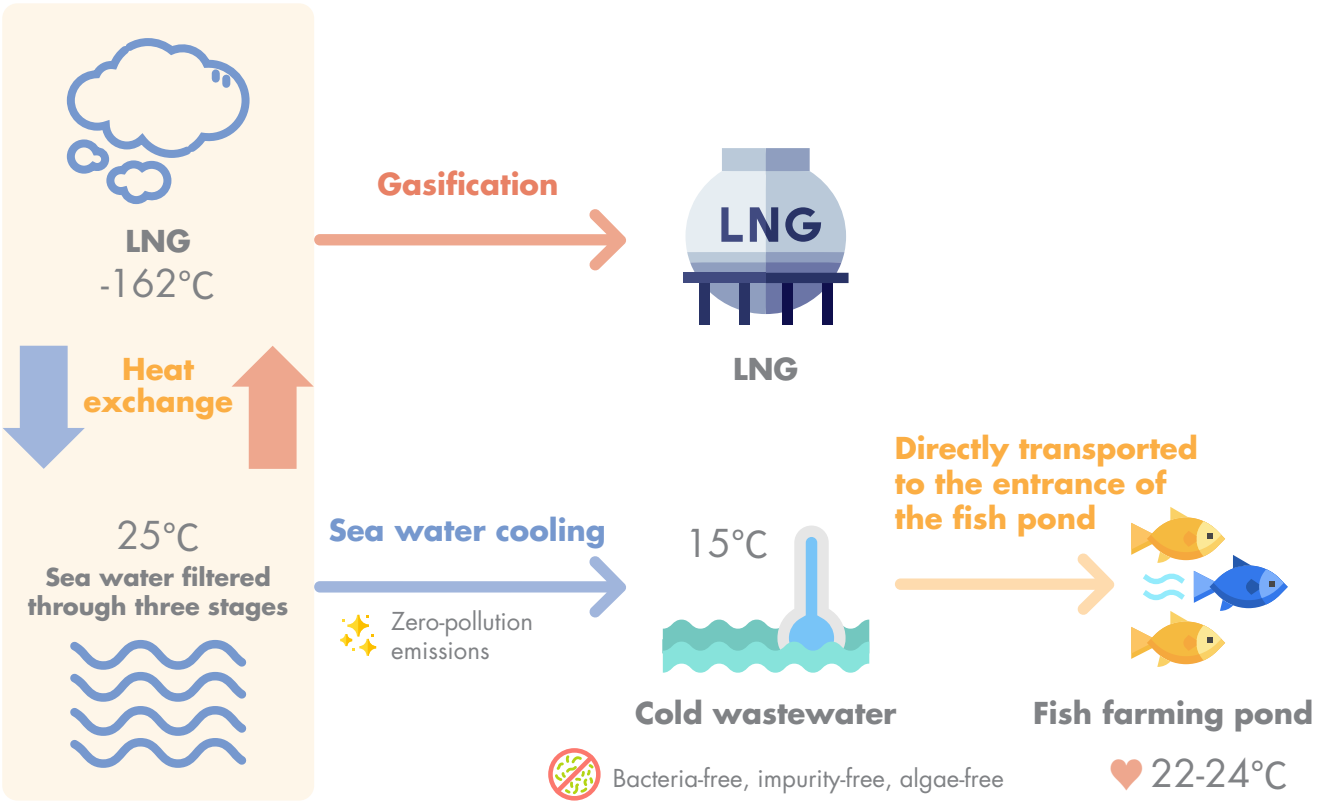
Pressure energy-based power generation	Chilled water air conditioning system	Aquaculture pump power savings from use of diamond water
8,196 MT	2,399 MT	1,001 MT

Social benefits

- Prevents fish farmers from drawing groundwater, which lessens risk of land subsidence
- Brings distinctive advantages to remote townships
- Assists government and academic institutions in the application of research outcomes
- Declutters pipelines along the coastline and improves coastal scenery for tourism benefits

1. Grouper

CPC's Kaohsiung Yongan LNG Refinery is the largest receiving station in Taiwan; it produce such a large volume of cold drainage that is too precious to be discharged directly into the sea. As a response to fish farmers' call, CPC has been supplying cold drainage free of charge to local fish farmers in Yongan since 2005 using underground box culverts for ease of access. The supply of cold drainage not only saves power and equipment maintenance expenses that fish farmers would otherwise incur on water pumps, but also increases the survival rate of fish by 15% as the cold drainage is superior in quality and greatly reduces chance of disease compared to ordinary water. Today, local fish farmers refer to cold drainage as "diamond water," and this by-product happens to fit in to CPC's vision of supporting local industries and neighborhood, and makes a model example of circular economy.



2. Culturing of macroalgae

Algae culturing is extremely difficult and virtually impossible to scale in Taiwan due to climate limitations. Since 2016, CPC has been trying to make use of its clean cold drainage for this purpose, and constructed a large-scale farming pilot site along the drain to experiment farming of red algae. Through photosynthesis, the algae can even turn CO2 into polysaccharides and thallus, which contributes to carbon reduction. With CPC's intervention, algaculture is no longer limited by seasonality, which opens up opportunities for new algae products and raw materials as well as advance farming technologies that are patented locally and abroad. These accomplishments won CPC the "2022 National Invention and Creation Award" from the Intellectual Property Office, Ministry of Economic Affairs, and earned CPC an invitation to share knowledge on the use of cold drainage and algaculture technologies during the "11th International Seaweed Conference EU." CPC will continue searching for ways to increase the economic viability of red algae farming, and establish itself as a key supplier of algae and functional marine materials in Taiwan.

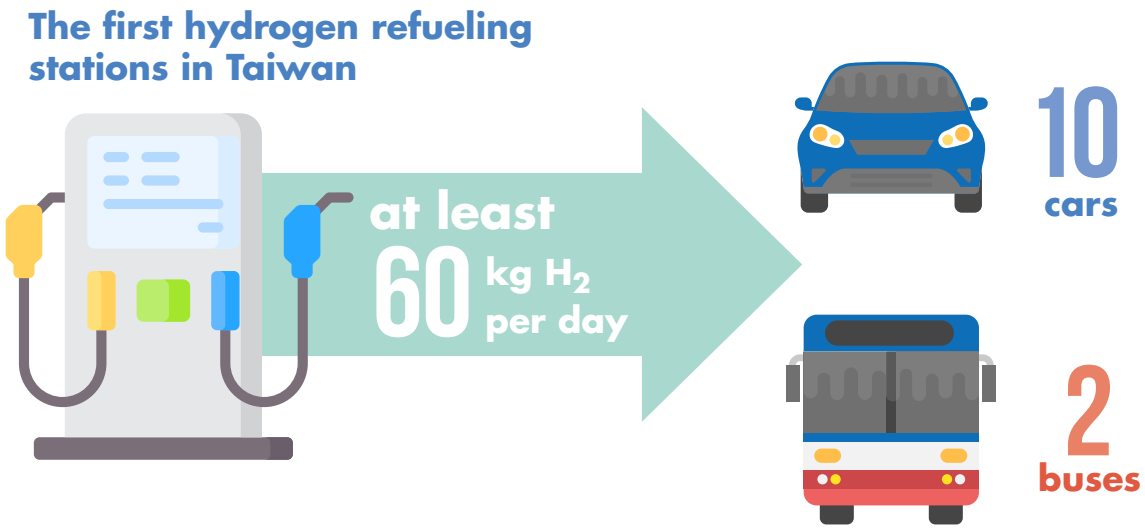
3. Cold water aquaculture

CPC also takes the initiative to introduce cold water aquaculture technologies, and has joined Fisheries Administration's "Taiwan Coastal Economy Promotion Project" to form a research team with National Taiwan Ocean University, National Taiwan University, National Kaohsiung University of Science and Technology, and National Pingtung University of Science and Technology. Through this industry-academia collaboration, CPC hopes to develop culturing technologies for high-value species and share research outcomes to attract investments that create more values and contribute to circular economy.

HIGHLIGHT

pilot hydrogen fuel station

Hydrogen power is one of the 12 critical strategies that Taiwan has taken to achieve net zero by 2050. As a key player in the government's future energy plan and net zero policy, CPC not only invests persistently into research and development but also assembled a Hydrogen Energy Team in March 2021 to oversee hydrogen power-related research projects, including the quantification of hydrogen power and hydrogen-assisted natural gas combustion. CPC has completed assessments for the construction of pilot hydrogen fuel station, and expects to introduce the nation's first mobile hydrogen fuel station in Kaohsiung by the end of 2023. The fuel station occupies very little space yet supplies 60 to 80 kg of hydrogen fuel a day to power two large buses or ten passenger vehicles. It plays a critical role in the government's move toward hydrogen-powered vehicles in the future. Being the pioneer of hydrogen power solutions in Taiwan, CPC will continue monitoring hydrogen power developments around the world and invest into research to help connect with the rest of the world. With this technology, CPC looks forward to becoming the supplier of zero carbon clean energy in the future.



For more accomplishments, please refer to [Feature stories] - "Carbon capture, utilization, and storage technologies," "Green energy beneath the surface: CPC explores geothermal power," and "Pioneer in industrial carbon reduction; the first in Taiwan to complete carbon footprint survey for petrochemical materials"

2.3 Energy/resource management and transformation

2.3.1 Use and management of energy

We consume electricity, natural gas, steam, fuel gas, petroleum gas, and fuel oils. The total 2022 energy consumption was 107 million GJ, with the highest heating value from fuel gas. In addition, the 2021 renewal energy output of our petrol station PV systems totaled 10.849 million kWh, and were sold to TPC. The 2022 output of own production was about 161.57 million kL, with energy intensity at 0.662 GJ/kL, about 7.7% lower than that of 2021 at 0.611 GJ/kL.

Being Taiwan's largest oil and gas supplier, CPC supports the global low-carbon movement and takes pro-active steps to reduce carbon in line with the government's net zero goal. Through import of carbon neutral LNG and implementation of related projects and measures, CPC contributes to the sustainability of the environment and continuity of future business activities.

» Note: Total energy intensity = total energy consumption/volume of products produced

Use of energy source (thermal value) by the three plants in 2020-2022

Unit: 10 million GJ (GJ=10^9J)		2020	2021	2022
Direct energy consumption	Natural gas	2.13	2.25	2.25
	Fuel gas	5.14	5.23	5.2
	Low BTU fuel gas	0.45	0.54	0.5
	LPG	0.03	0.0026	0.01
	Low sulfur fuel oil 0.5 %	0.55	0.63	0.35
	Carbon residue	1.23	1.48	1.69
	Total heating value	9.54	10.13	10
Indirect energy consumption	Purchased electricity	0.6	0.58	0.59
	Purchased steam	0.11	0.10	0.11
	Total heating value purchased	0.71	0.68	0.7
	Total energy consumption	**10.20**	**10.81**	**10.7**

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

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

Use of renewable energy

Pursuant to "Regulations for the Management of Setting up Renewable Energy Power Generation Equipment of Power Users above a Certain Contract Capacity," a sub-law of the Renewable Energy Development Act, CPC has 6 units that are subject to governance, and the mandatory capacity of renewable energy for each unit is explained in the following chart. CPC actively sources suitable land for the construction of solar power system. 6 of its units are bound to install renewable energy facilities under "Regulations for the Management of Setting up Renewable Energy Power Generation Equipment of Power Users above a Certain Contract Capacity," a sub-law of the Renewable Energy Development Act, and the mandatory capacities are explained in the following chart.

CPC actively sources suitable land for the construction of solar power system. The Company invested NT$40.11 million into the development of photovoltaic technology in 2022, and by 2022, it had completed 248 photovoltaic (PV) sites with rated capacity of 12.518 MW (excluding 709 KW that were leased out) located throughout Taiwan and offshore areas, including the rooftops of fuel stations, oil supply centers, refineries, petrochemical plants, and rooftops of office buildings. These PV stations generated 13.519 million kWh of renewable energy in and most of which was sold to Taiwan Power Company. As of 2022, CPC had obtained renewable energy site certifications for 19 of its self-use PV sites and accumulated 4,796 renewable energy certificates. In the future, CPC plans to expand renewable energy capacity to 19.56 MW in 2023 (with early bird privilege) and to 25.2 MW in 2024 (estimated based on the progress of existing projects).

Mandatory renewable energy capacity for CPC plant sites

Unit： (MW)

Threshold on contracted power usage	Contracted user	Contracted power usage	Capacity of existing equipment 2022	Required capacity by 2023 (MW) (8% of contracted power usage)
5,000 kWh (5MW) and above	Refining Business Division — Dalin Refinery	140	0.43	11.2
	Refining Business Division — Taoyuan Refinery Plant	42	1.00	3.36
	Petrochemical Business Division — Linyuan Petrochemical Plant	20	1.67	1.60
	Natural Gas Business Division — Yongan LNG Refinery	20	0.65	1.60
	Natural Gas Business Division — Taichung LNG Refinery	14.50	0.33	1.16
	Refining Business Division — Kaohsiung Refinery	8	0.98	0.64
	Others — CPC is not an intensive electricity user	-	7.45	-
	Total capacity		**12.51**	**19.56**

» Note: CPC is entitled to early bird privilege (20% deduction) for meeting the requirements of "Regulations for the Management of Setting up Renewable Energy Power Generation Equipment of Power Users above a Certain Contract Capacity" by 2023, and the mandatory capacity has been presented to reflect this goal

CPC founded a Solar Power Operations Center in 2021 to facilitate centralized management of solar power generation and to support development of proprietary operations management technologies that may benefit future PV projects. With the completion of PV systems at Zhongshan Hall Carpark of Kaohsiung Refinery and on the LTO bus garage in 2022, CPC now has 246 PV stations under its "Cloud-based Solar Power Monitoring, Maintenance and Management System." 90 of these stations have been inspected and reported before warranty expiry, and the monitoring system is constantly being optimized and updated with standard operating procedures established. CPC plans to set up repair workshops in Taoyuan and Taichung in 2023 to service PV sites nearby, and will train maintenance personnel to support the Company's diversification and transition into a provider of oil and electricity services in the future.

2.3.2 Water consumption and management

CPC has developed a comprehensive water resource management system to address the impact of climate change on water resources from two perspectives: "water recycling and reuse" and "access to water resource." All uses of water are subject to water impact assessment and do not pose any material impact on the water source. With respect to water usage, CPC plans and maintains records of water usage in accordance with Water Resources Agency's Regulations Governing Approval of Water Usage Plan.

Furthermore, CPC has a team of researchers that persistently explore ways to optimize the recycling and reuse of production water using high performance equipment, and in 2022, the 3 refineries were able to recycle 98% of the water used and use one drop of water 8.95 times on average. Rainwater recovery systems are being installed at petrol stations.

At CPC, we manage water resources through diverse strategies. CPC has also been expanding its access to water, and supports the government's strategies on water recycling plants by having Dalin Refinery purchase 10,000 MT of reclaimed water daily from Kaohsiung Linhai Reclaimed Water Treatment Plant starting from 2022. Taoyuan Refinery Plant, too, has signed an agreement with Taoyuan City Government to purchase 10,000 MT of reclaimed water daily after completion of the new reclaimed water treatment plant.

CPC committed only one violation against Water Pollution Control Act in 2022, which was reviewed and rectified immediately.

Use of water resource at the 3 refineries - 2022

Water reuse frequency per drop

Water recycling rate

Violating department	Cause of violation	Fines and penalties
Refining Business Division/ Taoyuan Refinery Plant	Non-conforming effluents	NT$4.374 million in fines plus a 2-hour environmental seminar

Solutions or improvements

- The Standard Operating Procedures for Abnormal Occurrence have been amended to tighten control over non-conforming oil products sourced externally and to introduce reasonable buffers for the recycling of non-conforming effluents.
- Plans have been made to use oil tank as buffer for recycling effluents at times of emergency.

Water usage and impact assessment

To enable better control over the water constraints and risks of water usage at various plant sites, CPC has adopted the water risk assessment tools developed by World Resources Institute (WRI) and devised water risk management strategies after taking into consideration the local water resources, stability of water supply, regional supply and demand, and risks of water usage identified for critical operations and sites. Using the WRI Aqueduct Tool, CPC considers the stability of water supply and regional supply and demand to be of low risk at critical operations and sites.

Water user	Water constraint	Water supplier	Water treatment provider	Location of discharge
Dalin Refinery	Low	1. Taiwan Water Corporation (Fresh water) 2. Daliao Water Station (groundwater) 3. Linhai Reclaimed Water Treatment Plant (Reclaimed water)	1. Effluents from living activities: internal water treatment plant (level 2 treatment) 2. Industrial effluent: internal water treatment plant (level 3 treatment)	1. Discharge into the ocean (Type B maritime space) 2. Directed into Combined Wastewater Treatment Plant (level 3 treatment)
Taoyuan Refinery Plant	Low	CPC worked with Shell and Chevron to import 2 carbon neutral LNG vessels	1. Effluents from living activities: internal water treatment plant (level 2 treatment) 2. Industrial effluent: internal water treatment plant (level 3 treatment)	Nankan River (Category C surface water from river)
Linyuan Petrochemical Plant	Low	Taiwan Water Corporation (Fresh water)	1. Effluents from living activities: internal water treatment plant (level 2 treatment) 2. Industrial effluent: internal water treatment plant (level 3 treatment)	Directed into the water treatment plant of Kaohsiung Linhai Industrial Park → Discharged into ocean (level 3 treatment)

» Note: WRI Aqueduct Tool assess water risks; "Low" indicates adequate water resource (http://www.wri.org/)

Data on water resources drawn and recovered by site

Dalin Refinery			2020	2021	2022
Unit (ML)		**Total volume**	**643,525.355**	**613,410.723**	**625,665.530**
Surface water (tap water, river water, irrigation system water)		Water drawn	8,861.979	8,098.122	5,574.819
		Proportion	1.38%	1.32%	0.89%
Groundwater (well water)		Water drawn	2,960.778	3,528.057	2,952.148
		Proportion	0.46%	0.58%	0.47%
Reclaimed water		Water drawn	0	0	3,637.891
		Proportion	0	0	0.58%
Reclaimed Water		Stormwater	116.974	51.181	52.790
		Production effluent (Water reclaimed through effluent recycling equipment)	796.130	1,248.322	817.030
	Others	Volume of coolant water cycled	624,721.501	594,772.775	609,224.208
		Volume of condensate reclaimed	1,625.892	1,658.732	2,063.685
		Acidic water reclaimed	269.512	327.153	320.725
		Other water reclaimed	4,172.589	3,726.381	1,022.234
		Total volume reclaimed	631,702.598	601,784.544	613,500.672
		Proportion	**98.16%**	**98.10%**	**98.06%**

Taoyuan Refinery Plant

Unit (ML)			2020	2021	2022
	Total volume		**269,407.335**	**279,354.448**	**269,222.212**
Surface water (tap water, river water, irrigation system water)	Water drawn		4,689.782	5,368.348	4,880.939
	Proportion		1.74%	1.92%	1.81%
Groundwater (well water)	Water drawn		896.867	1,323.272	1,228.059
	Proportion		0.33%	0.47%	0.46%
Reclaimed Water	Stormwater		0	0	0
	Production effluent (Water reclaimed through effluent recycling equipment)		0	0	0
	Others	Volume of coolant water cycled	261,675.800	269,291.160	260,036.962
		Volume of condensate reclaimed	1,852.678	2,281.628	2,051.181
		Acidic water reclaimed	292.208	305.034	289.120
		Other water reclaimed	646. 496	785.006	735.951
	Total volume reclaimed		263,820.686	272,662.828	263,113.214
	Proportion		**97.93%**	**97.60%**	**97.73%**

Linyuan Petrochemical Plant

Unit (ML)			2020	2021	2022
	Total volume		**768,909.894**	**805,122.260**	**807,107.392**
Surface water (tap water, river water, irrigation system water)	Water drawn		13,332.655	14,565.702	13,172.000
	Proportion		1.73%	1.81%	1.63%
Groundwater (well water)	Water drawn		0	0	0
	Proportion		0.00%	0.00%	0.00%
Reclaimed Water	Stormwater		0	0	0
	Production effluent (Water reclaimed through effluent recycling equipment)		668.030	646.518	497.258
	Others	Volume of coolant water cycled	703,565.116	735,226.734	740,393.324
		Volume of condensate reclaimed	3,186.643	3,133.029	3,168.706
		Acidic water reclaimed	0	0	0
		Other water reclaimed	48,157.450	51,550.277	49,876.104
	Total volume reclaimed		755,577.239	790,556.558	793,935.392
	Proportion		**98.27%**	**98.19%**	**98.37%**

Water resource management measures of CPC plants

1 Reduce cooling water loss

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

2 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 electrodialysis 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.

3 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.

4 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.

5 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.

6 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 Linhai Reclaimed Water Treatment Plant in Kaohsiung completed at the end of 2022 and the Dalin Refinery has purchased 10,000 tons of reclaimed water per day from the Kaohsiung City Linhai 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

Water used, recycled, and reused by the 3 plants in the last 3 years

	Unit(MT)	Dalin Refinery	Taoyuan Refinery Plant	Linyuan Petrochemical Plant
2020	Raw water replenished (A)	11,822,757	5,586,649	13,332,655
	Volume of water reclaimed(B)	631,702,598	263,820,686	755,577,239
	Water Reclamation Rate(B÷[A+B])	**98.2%**	**97.9%**	**98.3%**
2021	Raw water replenished (A)	11,626,179	6,691,620	14,565,702
	Volume of water reclaimed(B)	601,784,544	272,662,828	790,556,558
	Water Reclamation Rate(B÷[A+B])	**98.1%**	**97.6%**	**98.2%**
2022	Raw water replenished (A)	12,164,858	6,108,998	13,172,000
	Volume of water reclaimed(B)	613,500,672	263,113,214	793,935,392
	Water Reclamation Rate(B÷[A+B])	**98.1%**	**97.7%**	**98.4%**

2.4 Ecological preservation

Key progress in ecological preservation - 2022

Coral (polycyathus chaishanensis)
Cluster count increased from 75 to more than 100 in 3 years

Little tern
Breeding success rate increased from less than 30% to more than 70% in 3 years

Scalloped hammerhead
Confirmed the habitat of juvenile fish after 3 years of survey.

Crustose coralline algae
Increased the number of algae species from less than 10 to 43 at most in 3 years.

The nation's first ecosystem preservation fund
Plans have been made to set up the nation's first ecosystem preservation

Commitments and progress in ecosystem preservation

In support of the government's energy transformation policy to generate 50% of the nation's electricity through natural gas by 2025 and as a response to environmental organizations' call to protecting the algal reef ecosystem and endangered coral (polycyathus chaishanensis), CPC has adopted two priorities to "maximize protection for algal reef and minimize impact of power generation" and proposed a "3rd Receiving Station Extension Plan" in 2021, in which the industrial port is extended 455 meters into the ocean, creating a 1.5 km distance from the shoreline that minimizes impact to algal reefs in the intertidal zone. Furthermore, by eliminating the construction of turning basin and the canal that leads up to it, there is no need to reclaim 21 hectares of land, which therefore leaves the seabed and reefs undisturbed. After taking into consideration the key environmental factors such as geology, hydrodynamic force, marine physics, and the ecosystem, the Extension Plan is deemed to pose less impact on the environment compared to the previous "Detour Solution," and was approved by EPA on March 25, 2022.

Maximizing coral reef protection while minimizing power supply impacts

In a survey conducted by National Sun Yat-Sen University, 130 species of coral were found in the seabed near Kaohsiung Yongan LNG Receiving Station; the progress was comparable to that of a dedicated reserve

QR code link to the underwater footage "LNG Terminal, Beautiful"

As a show of commitment to protecting the ecosystem, CPC not only assembled an independent organization called "Guantang Industrial Park (Port) Ecosystem Preservation Committee" comprising community residents, experts, scholars, and government representatives to supervise environmental protection tasks, but also contributes manpower and resources persistently into preserving algal reefs. In 2022, CPC adopted the new practice of using UAV to track coverage of crustose coralline algae within the algal reef reserve during the breeding season (from October to December), and increased monitoring frequency for little terns during their breeding season. The data gathered all indicate consistent growth of corals, little terns, and crustose coralline algae, which suggests that the Extension Plan does in fact cater for economic development and ecological preservation.

CPC even organized an "Algal Reef Preservation Exhibition" and created a "Guantang Ecological Preservation Portal" along with the mobile software - "BioApp" in an attempt to promote the public's knowledge and awareness toward ecological preservation, and engage them in the process. CPC is also making plans for the creation of Baiyu Environmental Education Park.

Subjects, goals, and actions of ecological preservation

Coral

(polycyathus chaishanensis)

Preserved subject

Endangered species

Short/medium/ long-term goals	• Short-term: distribution survey • Medium-term: captive breeding • Long-term: in-situ/ex-situ restoration and progress evaluation
Action	• Finance: approximately NT$10 million were invested • Manpower: ecological survey is conducted by a professional team • Technology: assisted by experts and scholars • Evaluation system: quarterly surveys of live coral (polycyathus chaishanensis) in Datan area • Method of operation: the data gathered is reported to EPA on a regular basis. • Progress: the 2018 survey found 75 clusters, and more than 100 clusters were found in 2022
Effect on biodiversity	• Form of impact: this species is affected by sea temperature and drifting sand • Scope of impact: areas G1 and G2 in Datan • Duration of impact: long
location of the survey and experts	Experts from National Taiwan Ocean University were commissioned to conduct surveys in areas G1 and G2 in Datan

Little tern

Preserved subject/ IUCN directory and national preservation list

Level 2 protected species

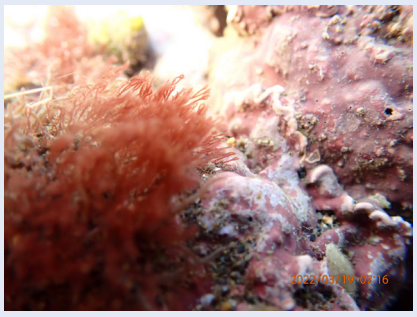
Short/medium/ long-term goals	• Short-term: habitat construction • Medium-term: monitoring of breeding • Long-term: improve habitat by monitoring inhabitation and breeding, and make Taoyuan the most ideal habitat for Little terns in all of Taiwan
Action	• Finance: approximately NT$2 million were invested • Manpower: ecological survey is conducted by a professional team • Technology: assisted by experts and scholars • Method of operation: Little terns are summer visitors; they would migrate from Australia between April and July each year to inhabit and breed in Taiwan. CPC engages Taoyuan City Wild Bird Association to help plan the habitat and monitor breeding on a yearly basis. Progress is discussed at the end of each year, during which improvements are proposed for the next year. • Progress: breeding success rate of little terns in the coastal areas of Taoyuan increased from less than 30% to more than 70% on average.
Effect on biodiversity	• Form of impact: the species is affected by human presence and predators (wild dog, mouse etc.) • Scope of impact: little tern habitats in Taoyuan • Duration of impact: April to July each year
location of the survey and experts	CPC engages Taoyuan City Wild Bird Association to monitor breeding activities of little terns at the Northern Seawall of Zhuwei Fishing Harbor, Xucuogang Wetland, Baiyu Coast, South Bank of Guanyin River, and high riverbank areas G1 and G2 in Datan from April to July each year; these monitoring reports are reviewed by experts and scholars of relevant fields

Scalloped hammerhead

Preserved subject

IUCN endangered species

Short/medium/ long-term goals	• Short-term: resource survey • Medium-term: survey of migration path • Long-term: evaluation of habitat protection
Action	• Finance: approximately NT$4 million were invested • Manpower: ecological survey is conducted by a professional team • Technology: assisted by experts and scholars • Method of operation: Scalloped hammerhead is a migratory fish. They can be found in the seas near Taiwan during spring and autumn, and is a commercial fish to Taiwan as well as an endangered species according to IUCN. CPC engages domestic shark scientists to conduct surveys on the fish in the Guantang area. Satellite tags are being used to learn the migration path of the fish, and future findings can be provided to the authority for the making of ecological preservation policies. • Progress: Surveys conducted in the last 3 years found no scalloped hammerhead in the intertidal zone, and according to catch yield data, most scalloped hammerheads caught in Western Taiwan are juvenile fish in the age of 0-2. The fish migrates from the southwest seas to the northwest during spring, and from northwest seas back to southwest in the end of summer and during autumn; records show that the entirety of the western coastline is habitat to the juvenile fish. ·Form of impact: fishermen's catch • Scope of impact: all maritime space of Taiwan • Duration of impact: spring and autumn each year
Effect on biodiversity	• Form of impact: fishermen's catch • Scope of impact: all maritime space of Taiwan • Duration of impact: spring and autumn each year
location of the survey and experts	CPC engages shark scientists from National Taiwan Ocean University to conduct gillnet trials in the coastal area near Guan Tang Industrial Zone on a quarterly basis



Crustose coralline algae

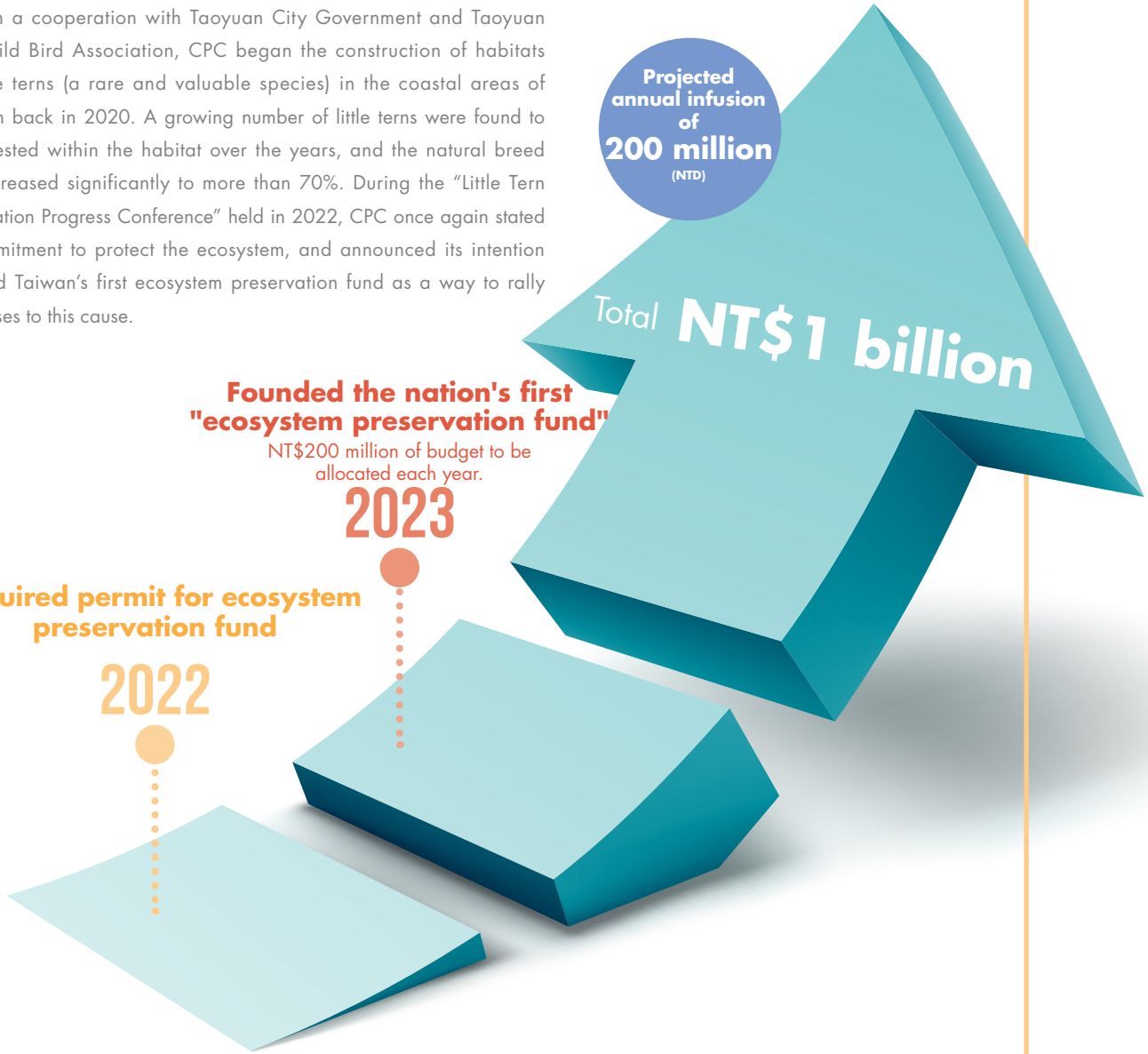
Preserved subject

Short/medium/ long-term goals	• Short-term: CPC surveys the coverage rate and species count of crustose algae in algal reef reserves on a yearly basis, and monitors environmental factors relating to algal reef • Medium-term: analyze the characteristics of different algal reef reserves, the crustose algae species observed, and environmental factors that are relevant to their growth • Long-term: engage in assisted reproduction based on the environmental factors gathered, and proceed with in-situ/ex-situ restoration
Action	• Finance: approximately NT$2.4 million were invested • Manpower: ecological survey is conducted by a professional team • Technology: experts and scholars assist in the diversity survey of macroalgae (including crustose coralline algae) • Progress: the 2018 environmental impact assessment report showed only single-digit number of species, whereas 39-43 species of algae were observed between 2019 and 2022.
Effect on biodiversity	• Construction of industrial zone and port facilities may affect the direction and speed of tidal currents and waves, alter the characteristics of drifting sand in the coastal area, and change the terrain that crustose algae attach to • By adopting an open design for the industrial port, seawater may flow through without affecting the exchange of nutrient salt in the intertidal zone of the algal reef reserve
location of the survey and experts	CPC engages experts from National Taiwan Ocean University to survey algal reef species, coverage, and environmental factors according to commitments of the environmental assessment

HIGHLIGHT

Ecosystem preservation fund" - commitment of the 3rd receiving station

Through a cooperation with Taoyuan City Government and Taoyuan City Wild Bird Association, CPC began the construction of habitats for little terns (a rare and valuable species) in the coastal areas of Taoyuan back in 2020. A growing number of little terns were found to have nested within the habitat over the years, and the natural breed rate increased significantly to more than 70%. During the "Little Tern Preservation Progress Conference" held in 2022, CPC once again stated its commitment to protect the ecosystem, and announced its intention to found Taiwan's first ecosystem preservation fund as a way to rally businesses to this cause.



CPC will be obtaining the permit to found its ecosystem preservation fund in accordance with "Regulations on Permit and Supervision of Marine Charity Trust," and expects to contribute budgets of NT$200 million each year over five years for a total of NT$1 billion. Meanwhile, an ecosystem preservation fund management committee and a set of "CPC Corporation Guidelines on Ecosystem Preservation Fund" will be introduced to ensure proper management of the fund. By supporting ecological preservation actions and research programs in Taiwan, CPC hopes to fulfill its corporate social responsibilities and realize its vision of supporting economic progress while catering for the sustainability of the ecosystem. In the future, we look forward to further contribute to the ecological preservation efforts in Taiwan.

HIGHLIGHT

engaging the public in ecological preservation through digital interactions

On November 7, 2022, CPC and Guantang Industrial Park (Port) Ecosystem Preservation Committee jointly organized the "Guantang Ecosystem Preservation Progress Conference" to showcase the outcomes of their preservation efforts over the last 4 years. In addition to presenting information on the growth of corals (polycyathus chaishanensis), crustose coralline algae, and little terns, CPC also announced the introduction of "Guantang Ecological Preservation Portal," BioApp," and a permanent "Algal Reef Preservation Exhibition" on the same day. Through transparency, citizen science, and public involvement, CPC hopes to deliver the promises of its 3rd Receiving Station to coexist with life.

Screen shot of "Guantang Ecological Preservation Portal"

Using the "Guantang Ecological Preservation Portal," the public may read up on ecological preservation efforts in Guantang and access a 24-hour live feed of the algal reef. Furthermore, using the mobile software - "BioApp" developed by National Taiwan University Department of Computer Science & Information Engineering, the public is able to report the species observed near Guantang Industrial Park and have experts verify the findings before updating to the portal. Through this approach, CPC invites everyone to take part in the protection of algal reef.

Guantang Ecological Preservation Portal

Download BioAPP

2.5 Pollution Prevention

2.5.1 Compliance with environmental laws

Short-term

- Communicate on compliance issues and convey ethics and integrity through training
- Arrange environmental protection meetings and plant inspections, and keep track of environmental protection improvements as well as department actions

Medium/long-term

- Discuss and make appropriate amendments to corporate policies and guidelines through regular meetings for conformity with environmental protection trends
- Observe domestic and foreign environmental protection laws and avoid violation

For compliance with environmental regulations and enhanced cleanup and control of pollution, CPC not only keeps track of regulatory updates but also adopts best available control technologies (BACT) and develops its own inspection systems for quick problem solving. An environmental patrol team comprising experts from relevant fields has been assembled to perform environmental patrols on a regular basis. All patrol findings are entered into the environmental protection audit system and tracked until improvements are completed. Operating procedures for effluent and waste management have been implemented and are regularly reviewed and updated to ensure that practices are compliant with laws.

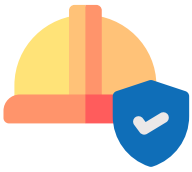
CPC received a higher number of environmental protection-related penalties in 2022 compared to 2021, but it was still the second lowest in the last 5 years. Most of the violations involved air pollution, and CPC will continue implementing pollution controls, preventions, and improvements in the future while making appropriate adjustments to avoid similar occurrences.

Technology and environmental protection meeting

CPC holds regular meetings to discuss improvements to equipment components, volatile organic compounds, and soil/groundwater contamination. These meetings are also used as opportunities to track how internal units handle and make improvements to air pollution, water pollution, and environmental assessments.

Factory self-inspection and maintenance

Persistent enhancements are being made to the self-inspection and repair of equipment components at various work sites, so as to minimize leake of volatile organic compounds (VOCs).



Procedure safety management (PSM)

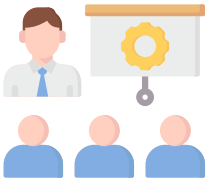
By enhancing operators' hands-on experience and discipline, CPC reduces errors at the work site.

Regular environmental protection audit

Each production unit is subjected to monthly environmental audit; any defects found will be tracked persistently until improvements are made

Compliance training

CPC trains internal employees on environmental regulations and offers courses on environmental safety and heath certification for improved compliance awareness.



Environmental protection training

CPC trains employees on current environmental issues and offers courses covering air pollution, water pollution, toxic chemical etc. to promote professional knowledge. A total of 14 course sessions were held in 2022.

CPC encountered 6 events of major penalty due to operational errors in 2022, for which it was fined a sum of NT$10.459 million and required to undergo appropriate hours of environmental education. All of the above violations were responded with appropriate measures and improvements at the time of occurrence.

» Note 1: An event of major penalty refers to violation that incurs NT$300,000 or above in fines
» Note 2: There were 8 appeals against major fines in 2022, amounting to NT$ 6.61 million

Violating department	Cause of violation	
Taoyuan Refinery Plant	Effluents did not conform with standards, which violated Paragraph 1, Article 7 of the Water Pollution Control Act	**Fines and penalties** NT$4.374 million in fines plus a 2-hour environmental seminar **Solutions or improvements** • The Standard Operating Procedures for Abnormal Occurrence have been amended to tighten control over non-conforming oil products sourced externally and to introduce reasonable buffers for the recycling of non-conforming effluents. • Plans have been made to use oil tank as buffer for recycling effluents at times of emergency.
Linyuan Petrochemical Plant	Net screening value of equipment component exceeded limits, operating thermal value of the flare was inadequate, operating steam-to-exhaust ratio of the flare exceeded limits, and odorous pollutants in stacks exceeded limits, which violated Paragraph 1, Article 20 and Article 23 of the Air Pollution Control Act	**Fines and penalties** NT$2.385 million in fines plus a 10-hour environmental seminar **Solutions or improvements** • Infrared leak detectors are being used for self-inspection of equipment components, so that leaks can be discovered and stopped in the shortest time possible. • The DCS has been fitted with steam-to-exhaust ratio alarm for immediate response and adjustment. • 3rd-party inspectors are being commissioned to inspect stacks for crackers used in factories.
Dalin Refinery	Black fumes produced from fire accident posed violation against Subparagraph 1, Paragraph 1, Article 32 of the Air Pollution Control Act	**Fines and penalties** NT$300,000 in fines plus a 2-hour environmental seminar **Solutions or improvements** • Gas detection and monitoring devices have been installed in platform areas where pipelines exist. • Increased the frequency of tests using infrared thermal imagers. • Case details have been turned into teaching materials for small-group teaching.
Linyuan Petrochemical Plant	Black fumes produced from fire accident posed violation against Subparagraph 1, Paragraph 1, Article 32 of the Air Pollution Control Act	**Fines and penalties** NT$675,000 in fines plus a 2-hour environmental seminar **Solutions or improvements** • Concentration of flammable gas inside the system is being checked before discharge; emission test points have been added to ensure that the samples taken are representative of the reality. • Work safety awareness programs and case studies are being arranged
Taoyuan Refinery Plant	VOC of equipment component exceeded limits, the prevention facilities did not function properly, and the flare operated at inadequate thermal value, which violated Paragraph 1, Article 20 and Paragraph 2, Article 23 of the Air Pollution Control Act	**Fines and penalties** NT$1.825 million in fines plus an 8-hour environmental seminar **Solutions or improvements** • The leaking component has been repaired with additional lock or gland/ washer replacement, and retested to meet the requirements. • The flow meter has been fitted with a nitrogen gas pipeline, which can be used to blow clear blockage. • Changes in thermal value are monitored on an hourly basis whenever the flare is emitting, so that adjustments can be made.
Linyuan Petrochemical Plant	Net screening value of equipment component exceeded limits, operating steam-to-exhaust ratio of the flare exceeded limits, and NOx in stacks exceeded limits, which violated Paragraph 1, Article 20 and Article 23 of the Air Pollution Control Act	**Fines and penalties** NT$900,000 in fines plus a 8-hour environmental seminar **Solutions or improvements** • Replaced the dysfunctional pressure transmitter; the DCS has been fitted with steam-to-exhaust ratio alarm • Enhanced self-inspection of equipment components; the percentage of parts inspected has been increased to 12% a month • The DCS system has been configured with breach alert and SMS notification to remind operators of timely adjustments.

2.5.2 Air pollutant emission and management

- Continually invest into air pollution improvement plans and research projects to reduce emissions year after year
- Reduce emission of VOCs
- Complete 37 air pollution improvement projects by 2031

In light of the public's increasing demand for air quality, CPC made the commitment to control and improve air pollution as part of its environment-friendly practices, and has identified nitrogen oxides (NOx), sulfur oxides (SOx), volatile organic compounds (VOCs), and total suspended particulates (TSP) to be the major air pollutants emitted from production facilities, and the sources of which include stacks, flares, storage tanks, equipment components, and loading operations. Improvement plans are proposed based on the above findings. Out of all sources of VOC emitted by the petrochemical industry, evaporations from equipment components are especially difficult to control. VOC emissions in 2022 were 15.2% lower compared to 2021.

Emission of air pollutants in the last 3 years

Type	2020	2021	2022
NOx	2,761.2	2,948.4	2,938.1
SOx	647.1	703.0	950.9
VOCs	1,957.0	1,723.9	1,464.8
TSP	168.2	214.5	216.7

Unit: tonnes

» Note 1: Data represents total emission of CPC's 3 refineries (Taoyuan Refinery Plant, Dalin Refinery, and Linyuan Petrochemical Complex; unit: MT).

» Note 2: No data was reported for PM_{10} and H_2S.

» Note 3: CPC has 3 oil refineries located in densely populated areas (where population of the local town is more than 50,000), which are: Taoyuan Refinery Plant in Guishan District, Taoyuan City, with local population of 172,200; Dalin Refinery in Xiaogang District, Kaohsiung City, with local population of 154,800; and Linyuan Petrochemical Complex in Linyuan District, Kaohsiung City, with local population of 68,400.

CPC makes pro-active plans to improve air pollution in line with government policies, and has proposed an "Air Pollution Control Action Plan" as per instruction of the EPA to improve and control the emission of air pollutants. CPC further introduced 5 improvement projects in 2022 and increased budgets to NT$11.1 billion. Overall, a total of 37 improvement projects have been executed between 2017 and 2031. As of the end of 2022, CPC had completed 27 improvement projects while 10 were still being executed. Progress of various air pollution improvement measures is explained below:

Incorporation of advanced procedures and equipment into the production process

- By introducing advanced procedure integration and control systems, CPC is able to improve the stability of its operations
- Use of best available control technologies (BACT) and low-leakage equipment

Use of clean fuel

- Transition into gas fuel for existing and new boiler equipment to significantly reduce emission of pollutants and burden to the environment

Process improvement

- Adjust operation and program of existing equipment for optimal performance
- Improve combustion technology for higher combustion efficiency

Installation of air pollution control equipment

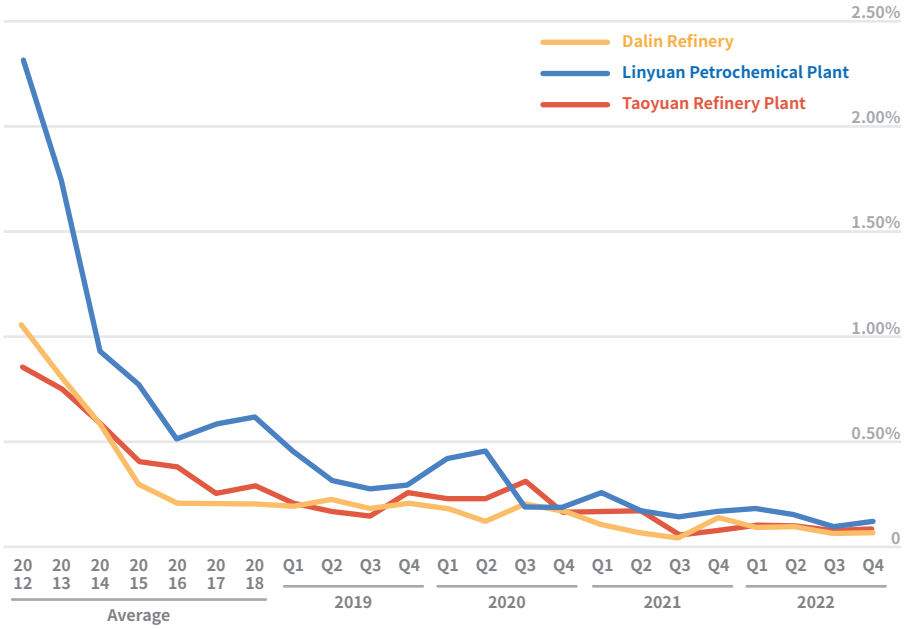
- TSP: Install static electricity- or bag-based dust collector
- SOx: Install fume gas desulfurization (FGD) equipment
- NOx: Adopt selective catalytic reduction (SCR) or low NOx burner (LNB)
- VOCs: Progressively transition into low-leakage components and adopt oil and gas recovery equipment

Waste gas recovery and reuse

- Install Flare Gas Recovery System (FGRS) at refineries and petrochemical plants, so that exhaust generated from plant operations can be recovered and reused in the production process

Out of all sources of VOC emitted by the petrochemical industry, evaporations from equipment components are especially difficult to control. CPC has been addressing this issue by: making persistent leak improvements to equipment components, setting management targets (0.2% leak, 60% repair rate, and 12% self-inspection rate on a quarterly basis), maintaining a list of equipment components with high risk of leakage, promoting the use of equipment component self-detection system, and holding regular meetings to track progress. Leakage of VOCs through equipment components has been significantly improved in all 3 refineries, as depicted in the figure below:

Management and improvement of equipment component VOC emission



2.5.3 Discharge and management of effluents and waste

CPC's key measures for effluent management

Discharge and management of effluents

CPC has its own facilities or departments in place to treat effluents; it has implemented a set of "Guidelines on Discharge of Effluents to Effluent Treatment Facilities" that outlines how the oil-water separator is operated, maintained, and cleaned at various sites. The Refining Business Division and the Petrochemical Business Division each has an environmental protection department that sets effluent standards and inspection rules to facilitate effective management of effluents produced from operations.

CPC's effluent pollution control measures begin with rigorous control over the discharge of production effluents at the source; high-performance equipment is then used to recycle and reuse effluents, and any runoffs will be treated in accordance with environmental protection laws and standards before discharge in order to lessen the impacts that production effluents may have on the environment. Petroleum organic compounds are the major pollutants contained in our effluents. The focuses of our regular effluent monitoring efforts include suspended solid (SS), chemical oxygen demand (COD), oil, and phenol. In 2022, the effluent monitoring values of all production facilities had met the effluent standards. In the event of pipeline damage, remedial actions will be taken to clear damaged pipeline of residual oil, remove contaminated soil, stop residents from using groundwater and use water supplied by CPC for irrigation instead, and subsidize installation of fresh water equipment for access to drinking water. Overall, residents' use of water will not be unaffected. Furthermore, additional pressure monitoring system, inspection points, and anticorrosion test points are being introduced whereas pipelines are actively replaced to prevent pipeline damage. All plant sites maintain records of the mean value of observations sampled throughout the year. CPC's effluent pollution prevention efforts are explained below:

Dalin Refinery

Oil-water separator → secondary wastewater treatment plant → central wastewater treatment plant of Kaohsiung Linhai Industrial Park → discharge into ocean

Test Item	Marine effluent discharge standards	2020	2021	2022
SS (mg/l)	100	8.95	6.13	7.30
COD (mg/l)	280	36.20	50.10	30.60
Oil (mg/l)	20	ND	<1.0	<1.0
Phenol (mg/l)	1.0	0.0227	0.0035	<0.01
Discharge volume (10,000 MT)		212.8	220.0	220.5

Taoyuan Refinery Plant

Treatment at wastewater treatment plant → discharge into Nankan River (the effluents volume is lower than the river's tolerance, hence impacts are minor)

Test Item	Marine effluent discharge standards	2020	2021	2022
SS (mg/l)	30	10.40	22.35	10.43
COD (mg/l)	100	29.20	52.575	18.62
Oil (mg/l)	10	0.70	4	3.33
Phenol (mg/l)	1.0	0.004	0.007	0.004
Discharge volume (10,000 MT)		276.1	278.4	305.2

Linyuan Petrochemical Plant

Primary treatment → partial secondary treatment → treatment at Linhai wastewater treatment plant → discharge into ocean

Primary treatment → partial secondary treatment → high-level treatment → recycled and reused in plant

Test Item	Marine effluent discharge standards	2020	2021	2022
SS (mg/l)	100	9.65	6.85	8.60
COD (mg/l)	280	61.85	74.70	48.35
Oil (mg/l)	20	<1.00	2.80	<1.00
Phenol (mg/l)	1.0	<0.01	<0.01	<0.01
Discharge volume (10,000 MT)		324.90	323.90	336.50

Mining formation with water production

Most domestic oil and gas mining areas are natural gas wells. When mining natural gas, condensate oil and formation water are also produced. After three phase separation of oil, gas, and water, the formation associated 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:

1. First, after concentration, it is reinjected into the reservoir via the water production reduction well, which helps extract additional oil.

2. Second, after the water is treated by the treatment plant and passes the water quality inspection, it will be discharged to the river. In 2022, the total output of water production in the formation was 27,368 KL.

Tiezhanshan Mine, and Jinshui Area and Qingcaohu Area of Jinqing Mine

7,703 kL **28.1%**

Volume treated in 2022

Treatment method

Reinjection into the formation through disposal wells

Description

Before oil reinjection into the formation, the oil slick is recovered by oil-water separation and before reinjection 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.

Chuhuangkeng Mine

19,665 kL **71.9%**

Volume treated in 2022

Treatment method

Discharge after treatment

Description

Oil is first separated and recovered through an oil-water separator (API) and discharged when it meets the release standard using an air pressurization floater and a biological treatment system.

Discharge and management of waste

CPC has "Industrial Waste Management Guidelines" and "Industrial Waste Tracking Principles" in place to guide management over waste reduction, reporting, storage, and disposal (clearance, treatment, and reuse). Pro-active efforts are being taken to track and manage waste disposal, and rolling adjustments are being made in meetings to reflect prevailing laws and progress.

In addition to general refuse, CPC produces industrial waste in the forms of catalyst, sludge, oil sludge, and oil mixtures. General refuse is handed over to the local cleaning crew and certified disposal service providers for incineration at incineration plants; precious metal catalysts are recycled as previous metals; sludge and oil sludge are first treated using in-plant incinerator before landfill; as for oil mixtures, they are made up of different waste collected from various stages of the refining process and represent about 40% of total waste, which the Company tries to direct them back into the refining process where possible. Overall, CPC currently treats solid waste based on their characteristics using a variety of methods such as: recycling and reuse, solidification, landfill, incineration, physicochemical treatment, thermal treatment, and stabilization.

Considering that certain industrial waste still carry economic values, CPC observes the authority's announcements about the types of waste to reuse and commits resources into the recycling and reuse of industrial waste. Zeolite catalyst (mainly consists of aluminum oxide (Al_2O_3) and silicon dioxide (SiO_2)) was the main form of waste reused at refineries and petrochemical plants in 2022. 100% of this waste was reused by the appropriate parties for the purposes outlined in Ministry of Economic Affairs Regulations Governing Reuse of Industrial Waste during the year. To address waste from product usage, CPC is looking to make use of renewable materials and apply for EPA's recycling label for plastic and iron containers with capacity of 17 liters and below.

Volume and method of waste disposal - 2022

Category	Method	Volume (t)	Percentage by disposal method (%)	Waste (t)	Percentage by category (%)
Hazardous waste	Chemical Treatment	38,046.00	28.03	40,304.59	29.70
	Solidification	237.59	0.18		
	Physical Treatment	21.50	0.02		
	Wash	0.82	0.001		
	Landfill	0.00	0.00		
	Incineration	1,998.65	1.47		
	Thermal Treatment (except for incineration)	0.03	0.00002		
	Stabilization	0.00	0.00		
Non-Hazardous Waste	Chemical Treatment	1,120.60	0.83	95,410.08	70.30
	Solidification	7,854.84	5.79		
	Physical Treatment	21,013.88	15.48		
	Recycling	48,268.84	35.57		
	Landfill	3,409.59	2.51		
	Incineration	13,483.94	9.94		
	Thermal Treatment (except for incineration)	258.39	0.19		
Total		135,714.67	100.00	135,714.67	100.00

» Note 1: Data represents total emission of CPC's 3 refineries (Taoyuan Refinery Plant, Dalin Refinery, and Linyuan Petrochemical Complex; unit: MT).

» Note 2: CPC does not produce any hazardous industrial waste that is recyclable or reusable as per EPA's announcement regarding "Waste and Renewable Resources to Recycle/Reuse" and MOEA's "Regulations Governing Reuse of Industrial Waste"; for this reason, none of the hazardous industrial waste can be recycled or reused, and the volume of hazardous waste recycled accounted for 0% of total hazardous waste.

Management of toxic substances

CPC is required to present to the authority a response plan for EPA's Class 1 to Class 3 toxic chemical substances and hazardous chemical substances of concern that meet a certain level of significance. This plan has to address details including: composition of the emergency response team, the command system, the reporting system, and availability of emergency disaster prevention equipment. Two unannounced tests and overall drill shall be implemented for every contingency plan each year, and drills in collaboration with the emergency response drills of local environmental protection units shall be implemented to ensure preparedness for toxic disaster prevention.

All relevant units participate in the nationwide toxic chemical substance joint prevention organization in accordance with Paragraph 1, Article 38 of the "Toxic and Concerned Chemical Substances Control Act." In addition, we complete the stage 1 registration of a total of 158 existing chemicals according to the "Regulations of New and Existing Chemical Substances Registration." Furthermore, we voluntarily complete the Chemical Commodity Importation Pre-Confirmation in coordination with the "Import Management in Chemical Substance Registration" promoted by EPA.

2.5.4 Management of soil and water contamination

CPC surveys soil and groundwater pollution and makes improvements according to law.A total of 2 sites were deregulated in 2022, and by the end of 2022, CPC had 45 sites deregulated while 39 sites were still under regulation.

Sites deregulated in 2022: 2

1. **Beining Road Station/Keelung City**
   Date of deregulation : 2022/6/7
2. **Wugu Station/New Taipei City**
   Date of deregulation : 2022/11/9

Countermeasures for polluted site

Regulated

Require relevant units to propose contingency, control, and remediation plans. Carry out improvement works for soil and groundwater contamination according to the pollution improvement plan approved by the environmental protection authority and experts/scholars.

Unregulated

- Enhance monitoring of data gathered from leak detectors and groundwater monitoring wells at oil supply centers and petrol stations.
- Require all units to follow CPC's "Soil and Groundwater Pollution Prevention and Improvement Principles"; devise improvement measures immediately upon discovering abnormal data from soil and groundwater contamination detectors and carry out improvement works accordingly.

Response measures for challenges during soil remediation

Technical aspect

Soil and groundwater contamination tend to occur deep below the surface that makes it difficult to determine the size of the contaminated area. Land remediation typically begins with a trial experiment that is customized based on the characteristics of the treated site, and the findings will enable more detailed planning on how to proceed with the remediation works. The preliminary technical assessment addresses details such as: impact radius of soil vapor extraction, well count and horse power, groundwater measurement, existence and location of floating oil, depth and scope of pollution control, location of chemical injection etc. The in-situ work approach requires ongoing adjustments to be made depending on the prevailing circumstances, and therefore involves more sophisticated technologies and expertise.

Regulatory aspect

Soil and groundwater contamination, whether due to accident or leakage, attracts attention from the local authority. If the inspection finds any breach of legal standards, the land in question will be deemed a pollution control area and subjected to the following treatments that affect the use of land:
Pursuant to Article 17 of the Soil and Groundwater Pollution Remediation Act: any new construction, expansion, modification, renovation, and dismantling activity at the pollution control area may proceed only with the approval of the authority (i.e. Environmental Protection Administration).

Meanwhile, Article 19 of the Act states that: any excavation, backfill, temporary storage, and attempt to transport soil or extract groundwater may proceed only with the approval of the county (municipal) authority (i.e. the respective department of environmental protection).

Budget and timeline

As described in the technical aspect, the selection of soil and groundwater remediation approach is so extensive that makes it is difficult to estimate the cost of work and outsource jobs to the right contractors. For this reason, project owners tend to reserve additional time for administrative process, and there is really no one standard that fits all scenarios. Kaohsiung City Government's Semiconductors Corridor Project, for example, has such a short completion timeline that land remediation works are being carried out a significantly higher costs. Meanwhile, investments from high-tech enterprises in the nearby location combined with rising property prices caused a shortage of labor and construction materials that further contributed to the rise of land remediation cost.

Policy aspect

CPC takes part in many of the government's policies, such as: preservation of Kaohsiung Plant as cultural heritage, creation of the semiconductor corridor, urban planning, brownfield development, and promotion of green energy. For this reason, the timeline of pollution cleanup is not something that CPC has sole control over. Pollution improvement works also involve such a high degree of uncertainty that plans have to be constantly evaluated and amended, which tend to result in delays.

Description of remediation method

Washing

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.

Asia New Bay Area - soil washing equipment at Temao Ernan Site

Green remediation and land revitalization

To speed up revitalization of Kaohsiung Refinery, CPC has engaged Kaohsiung City Government in an administrative contract to carry out remediation and fully decommission the factory. The works were initially scheduled to be carried out over 17 years, and are now expected to complete by the end of 2023. To ensure that the land is returned to Kaohsiung City Government in the shortest time possible, CPC has adopted an express soil remediation approach (i.e. thermal treatment and the wash method) since September 2021, and incorporated the use of bioremediation technologies and agents for environmental protection.

5th Naphtha Cracker Complex - before and after decommissioning

Bioremediation supplies for section 3 of Kaohsiung Refinery, temporarily stored at section 6-3

Performance highlights

1. Kaohsiung Refinery (section 3) was no longer deemed a soil pollution control area on March 28, 2022.

2. Groundwater control area restrictions were lifted on May 31, 2022. CPC subsequently supported Kaohsiung City's remediation plans and made the land available to Taiwan Semiconductor Manufacturing Co., Ltd. for the construction of production facilities in Kaohsiung.

Soil thermal treatment

Thermal desorption involves heating contaminated soil above the boiling point of inhabited organisms to vaporize the organisms; the contaminated gas is then treated to legal standards before being released in to the atmosphere.

Thermal treatment equipment site

In-situ chemical oxidation

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 low toxic substances by means of oxidation reduction (redox).

Automated chemical injection system

Outsourced

When other methods are ineffective to treat highly contaminated soil or highly concentrated contaminated s soil (sludge), we outsource treatment to qualified contractors.

Transportation of soil away from Kaohsiung Refinery

CPC & Social Co-prosperity

03

CHAPTER

Chapter summary

CPC has always viewed human resources as its greatest advantage, and recognizes employees' contribution in its path to sustainability. CPC is committed to ensuring employees' work safety and creating a satisfying work environment; the organization also makes ongoing improvements to the selection, education, and recruitment of talents, and helps each employee develop a sustainable career path.

Furthermore, CPC contributes persistently into charity by heeding the society's needs, responding to "United Nations Sustainable Development Goals (SDGs)," and taking real actions to eliminate uneven distribution of resources for the inclusion and progress of the society.

Reader Priorities

Communities · Employees · Partners · Public representatives · NPOs/NGOs

Corresponding SDGs

CPC's performance highlights

senior managers are female

21.58%

males are on unpaid parental leave

48.12%

Average years of service at retirement

37.92

Average training hours per employee

51.14

employees under collective bargaining agreement

99.96%

sessions of health promotion event and seminar

207

Frequency-severity indicator lower than industry average for consecutive years

26

donated to local charity

NT$4.01 million

Record-high blood donation at

10.3575 million c.c.

Sponsorship to sports talents

16 individuals | **7** schools

Petrol stations hired and trained interns with developmental retardation

543 individuals | **48%** of service staff

Highlight of awards received in 2022

CPC's influence recognized by reputable awards

Driven by relentless pursuit for excellence and innovative breakthrough, CPC not only delivers business success but also exerts social influence by giving back to the society and caring for employees' wellbeing. In 2022, CPC stood out among competitors and was recognized by prominent awards, including "Single Category Sustainability Performance Awards: Talent Development Leader and Gender Equality Leader" in Taiwan Corporate Sustainability Awards (TCSA).

During the 2022 Taiwan Sustainable Action Award (TSAA), CPC was awarded Silver for assisting in the community and economic development of overseas gas/oil mines in Chad. During the 2022 Asia Responsible Enterprise Awards (AREA), CPC won the "Social Empowerment Award." In addition to international awards, CPC also won the "Gender Equality Commitment Award" in 2022 as a state-owned enterprise in the Gender Equality Performance Evaluation and Reward Program for Subordinates of Executive Yuan. CPC took part in the Talent Quality Management System (TTQS) of the Workforce Development Agency, Ministry of Labor, and was awarded the "Silver Award."

CPC's social awards in 2022

2022 Taiwan Corporate Sustainability Awards (TCSA)

Single Category Sustainability Performance Awards: Talent Development Leader and Gender Equality Leader

2022 Taiwan Sustainability Action Award (TSAA)

Silver: for assisting in the community and economic development of overseas gas/oil mines in Chad

2022 Asia Responsible Enterprise Awards (AREA)

Social Empowerment Award - Health and Hygiene Promotion Award

2022 Asia Corporate Excellence & Sustainability Awards (ACES)

Sustainability - Sustainability Category - Community Initiative Award: "World Toilet Day - CPC Makes it Convenient"

Gender Equality Performance Evaluation and Reward Program for Subordinates of Executive Yuan

Gender Equality Commitment Award

Talent Quality Management System (TTQS) of the Workforce Development Agency, Ministry of Labor

Silver Award

2022 The 18th Far Eastern Group "CommonWealth Magazine" Corporate Social Responsibility Award

First Prize in the Education Promotion Category: "Slow and Steady Wins the Race - CPC Safeguards Slow-Flying Angels"

3.1 Friendly Workplace

CPC complies with international labor conventions and domestic union regulations, and protects employees' rights to associate, join unions, and engage in collective bargaining. CPC has long been improving its work environment with the implementation of a comprehensive care system, equal-gender practices, benefits, and communication channels that employees can use to enforce collective bargaining rights, and thereby strengthen employees' identification with CPC.

3.1.1 Human rights protection

Since incorporation, CPC has committed efforts into the creation of a healthy work environment with a "people-oriented" focus, and observed international human rights conventions including "The Global Compact," "The Universal Declaration of Human Rights," and "ILO Declaration on Fundamental Principles and Rights at Work" to ensure protection of employees' rights and that all employees are treated with dignity and respect. CPC received no major complaint concerning human rights in 2022.

CPC's human rights policy and execution

Policy	Description	Applicable subjects	Accountable department
Safe and healthy work environment	Reduce risk of occupational hazard, minimize risk factors in the work environment that may affect employees' health and safety, and enforce work safety and health training	All employees	Department of Industrial Safty & Health
Employees' freedom of association	Protect employees' right to union association and collective bargaining, and provide a diverse range of communication channels and platforms that help maintain harmonious relationship between labor and the management	All employees	Department of Human Resources Department of Public Relations
Respect for diversity and equality	Employees involved in the same line of work are compensated equally, and are not differentiated by ethnicity, thoughts, religion, political association, locality, place of birth, gender, sexual orientation, marital status, appearance, disability, or union membership.	All employees	Department of Human Resources All units (divisions and offices)
Prohibition against child labor	Elimination of all possibility of child labor	Job seekers	Department of Human Resources Department of Industrial Safty & Health All units (divisions and offices)
Prohibition of forced labor	Elimination of all forms of forced and compulsory labor	All employees	Department of Human Resources Department of Industrial Safty & Health All units (divisions and offices)

Execution of human rights policy - 2022

Safe and healthy work environment

- Implemented work safety training, protection, and emergency response drill
- Implemented production safety management system and made optimizations to 15 basic system functions
- AI technologies were used to lower chances of accidents
- CPC organized 345 disaster prevention drills in 2022, including 4 expanded emergency response drills and 6 department-level ad-hoc emergency response drills

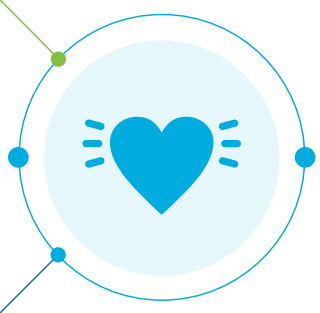
Employees' freedom of association

- CPC respects employees' choices to create, join, or abstain from unions or other employee associations; the organization supports workers' right to association and has signed a collective bargaining agreement with the Taiwan Petroleum Workers' Union

Respect for diversity and equality

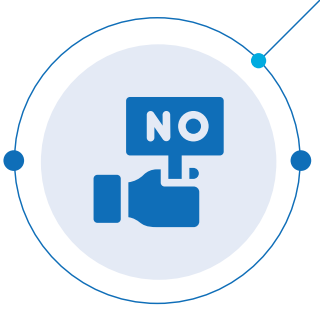
- CPC promotes diversity and equality, and discourages all forms of discrimination
- CPC is dedicated to protecting maternal rights, and introduces protection measures for female employees who work in places that pose risk to maternal health
- CPC goes to great extent to ensure that the workplace is free of harassment, whether sexual, mental, physical, or verbal, and any form of abuse and intimidation; we are committed to creating a dignified, safe, and equal work environment
- CPC organized 45 awareness training sessions in 2022 and received total enrollment count of 1,664

Prohibition against child labor



- CPC specifically prohibits use of child labor and duly complies with local government rules on work age
- All personnel have to undergo background check before recruitment
- CPC encountered no incident or dispute concerning use of child labor in 2022

Prohibition of forced labor



- CPC observes local employment regulations and international rules, and does not force or coerce anyone to perform work activities against their will
- CPC encountered no incident of forced labor in 2022

Gender equality

CPC's main business activities are resource exploration, oil refining, manufacturing of petrochemical products, and petrol station service. Although past data has indicated male as the dominant gender in CPC's workforce for an extended period of time, the organization views itself as a gender-friendly business and offers equal recruitment, promotion, and education opportunities for all genders. The Company does not differentiate by gender in any way, and strives to opens up career paths for outstanding employees of all genders.

Support for female employment

In 1973, CPC moved ahead of industry peers and hired the first wave of female petrol station service staff as part of its gender equality policy. This movement not only raised customers' satisfaction and increased the amount of gasoline dispensed, but also inspired female employment in other industries that significantly increased the percentage of female workers in Taiwan. CPC has also been catering for the society's needs, especially at the time of stagflation when single mothers and women seeking re-employment are having difficulties securing a job for their livelihood. In an attempt to help the financially disadvantaged, CPC puts carwash facilities to the best use and hires single mothers and women seeking re-employment to provide carwash service at petrol stations.

Even though males still represent a dominant size of CPC's workforce, female workers have increased in number and percentage in recent years. The refining business division has seen an increase of female engineers in the last ten years, from 4.74% in 2012 to 9.39% in 2022, which is indicative of CPC's efforts in promoting gender equality within the workplace.

Creating a gender-friendly workplace

CPC is committed to providing a supportive working environment for female employees. We have established high-quality certified lactation rooms to accommodate breastfeeding needs and support employees in applying for maternity leave in accordance with relevant regulations, such as the Gender Equality in Employment Act. In 2022, CPC had a total of 1,069 eligible employees for maternity leave, with a total of 133 employees taking maternity leave. Among them, 64 were male (48.12%) and 69 were female (51.87%). The return-to-work rate after maternity leave was 97.61% for males and 94.11% for females. Furthermore, the retention rate after maternity leave in 2022 was 100% for males and 97.61% for females.

Parental leave statistics - 2022

Return to work rate [1]

♀ 94.11%		♂ 97.61%	
No. of employees due to be reinstated	34 persons	No. of employees due to be reinstated	42 persons
No. of employees actually reinstated	32 persons	No. of employees actually reinstated	41 persons

Retention rate [2]

♀ 97.61%		♂ 100%	
No. of employees reinstated from the previous year	42 persons	No. of employees reinstated from the previous year	20 persons
No. of employees retained for 1 year after being reinstated in the previous year	41 persons	No. of employees retained for 1 year after being reinstated in the previous year	20 persons

» Note 1: Reinstatement rate = No. of employees actually reinstated in the year of report (2022)/No. of employees due to be reinstated in the year of the report (2022)×100%

» Note 2: Retention rate = No. of employees having worked for one full year after being reinstated in the previous year (2021)/No. of employees reinstated in the previous year (2021)×100%

Furthermore, as a support to the nation's efforts to raise fertility and create a friendly work environment, CPC introduced a new policy in March 2022 that gives employees with children below the age of 3 the option to reduce work duration by 1 hour per working day so that they may cater for family needs. As of the end of 2022, CPC had 1,069 employees with children below the age of 3, and 856 (about 80.07%) of whom had taken up the policy. 100% of the above requests were approved.

Gender equality awareness and grievance channels

CPC has established a set of "Sexual Harassment Prevention, Complaint and Discipline Guidelines" and assembled a "Sexual Harassment Complaint Review Committee" to handle sexual harassment claims. A dedicated webpage and hotline: (02)8725-8422 have also been set up to handle sexual harassment cases. CPC received a total of 8 sexual harassment complaints in 2022; all of which have been investigated upon, and the Company will continue tracking progress and caring for the subjects involved.

CPC organizes training courses to promote employees' awareness toward the mainstream values on gender equality and human rights. Videos on anti-discrimination in the workplace and Convention on the Elimination of all Forms of Discrimination Against Women (CEDAW) are used as teaching materials to help employees learn the common forms of discrimination in the workplace. Upon the arrival of new employees, we introduce them to the new work environment and arrange courses on sexual harassment prevention and grievance mechanisms for them. Managers and staff of all levels are subjected to annual training on the topic of sexual harassment prevention and gender equality. Awareness promotion and prevention tasks are being performed on a routine basis.

Training hours and trainee count - 2020-2022

Category	2020		2021		2022	
	Male	Female	Male	Female	Male	Female
Hours of human rights training[2] (hours)	4,146	2,059	2,738	882	5,315	2,025
No. of employees subjected to human rights training (persons)	1,039	342	910	265	1,321	343
Total employee count (persons)	13,712	2,411	13,798	2,495	14,096	2,586
Percentage of employees subjected to human rights training (%)	7.58	14.18	6.60	10.62	9.37	13.26
Overall training hours per employee[1] (hours)	**4.49**		**3.08**		**4.41**	

» Note 1: Overall training hours per employee = hours of human rights training/No. of employees subjected to human rights training.

» Note 2: Human rights training covers policies and procedures related to human rights issues, such as prevention of sexual harassment

Total female empowerment

In terms of female empowerment, 21.58% of CPC's senior managers were female in 2022, which far surpassed the overall percentage of female staff (15.50%). There were two female directors and one female supervisor on the board of directors, which represented 18.75% of the board. In 2016, CPC made an unprecedented decision in the domestic petrochemical industry and hired the first female vice president of all state-owned enterprises. CPC hired its second and third vice presidents in 2018 and 2020, respectively, and continued to lead state-owned enterprises in this respect. In 2022, one out of the Company's five vice presidents was female. CPC has been allocating annual budgets into the "Overseas Business Administration Training Program for Selected Senior Managers" since 2009 as a way to train senior management talents. In this program, senior managers are assigned to MBA courses at the top 50 institutions rated by Financial Times. One thing worth mentioning is that 33% of senior managers stationed overseas are female, which surpassed the percentage of females relative to total workers and senior managers. It is evident that CPC has committed significant resources and efforts into the empowerment of women.

Labor-management communication and collective bargaining

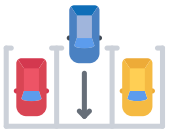
CPC organizes labor-management relations review meetings every year to promote labor-management communication. The Company also arranges official and unofficial activities where the event hosts and vice presidents are able to communicate and exchange opinions with union representatives, and pays visit to the labor union from time to time of hear the opinions of union members. CPC invites union representatives to attend OHS meetings, complaint adjudication meetings, reward/disciplinary meetings, tender review meetings, and procurement review meetings. An "Employee Welfare Committee" and a "Labor Pension Review Supervisory Committee" comprising management and union representatives have also been assembled to promote labor-management relations and devise employment terms that best cater for the organization's growth, profitability, and continuity as well as employees' welfare.

Labor-management meetings

CPC values the harmony of employment relations, and the minutes of all labor-management meetings held in 2022 are disclosed on the Intranet. Proposals discussed at labor-management meetings in 2022 are categorized as follows:

Employment terms

- Employees are entitled to take compensatory leave for traveling additional hours outside of work to undergo training
- CPC has "childcare facilities or appropriate childcare measures" in place to cater for employees' childcare needs, and thereby making the workplace friendly to child bearers



Work environment

- Improvements have been made to the carpark floor surface and motorcycle routes for the cleanliness and health of the work environment
- For the safety and health of the work environment, CPC takes detailed count of phase 1 and phase 2 vehicles currently in use and make plans to eliminate them entirely

Coordination of labor-management relations and promotion of labor-management cooperation

- CPC held 24 company-wide and headquarter labor-management meetings each month, and one business conference between the spokesperson and Taiwan Petroleum Workers' Union
- One seminar on labor-management conference laws and rules was held to promote communication and build harmonious relationship

Other discussions

- Establishment of work attire system for headquarter employees
- Improvements were made to the small procurement system at the headquarter
- Increased budget for CPC retiree gatherings
- Improvements were made to the digital form for contractor work permit
- Any changes to the promotion criteria and mandatory certification will be implemented with a grace period so that employees have time to react
- CPC introduced subsidies for online language courses as a way to encourage ongoing education amidst the pandemic

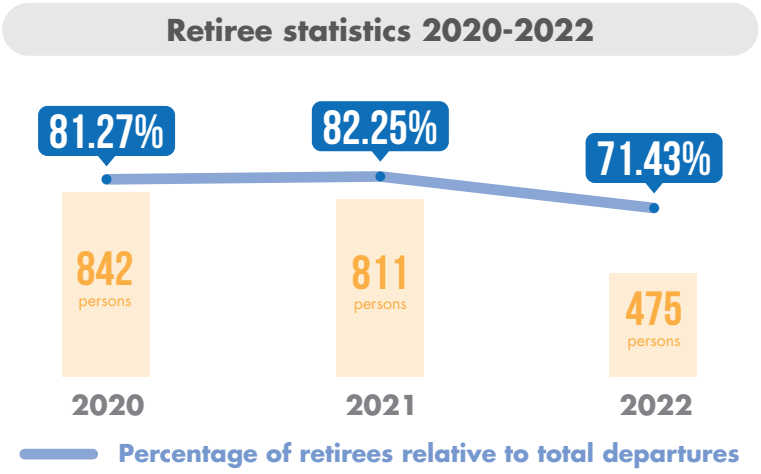
Collective bargaining agreements

We abide by international labor conventions and Taiwan's Labor Union Act and 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: worker directors on the board (representing 18.75% of the seats), periodic labor-management meetings held by each business unit, unscheduled collective bargaining meetings, and business expansion meetings featuring the labor union chairperson as a guest for representation of employees' voices.

CPC has signed a collective bargaining agreement with Taiwan Petroleum Workers' Union for the protection of employer's and employees' interests and for improved work efficiency. The agreement covers 99.96% of employees (including contract workers), and comprises 55 articles across 9 chapters to address issues concerning the employment term, reward, discipline, promotion, safety, and health.

- Note 1: CPC complies with Notes on Establishment of Collective Bargaining Agreement for Subordinates of Ministry of Economic Affairs, and ensures that the terms of collective bargaining agreement do not fall short of the minimum treatment, benefits, and standards specified in the Labor Standards Act or exceed the caps imposed by the Executive Yuan and the Ministry of Economic Affairs (MOEA).
- Note 2: With regards to employees' job transfer, CPC abides by Article 33 of the collective bargaining agreement and respects the willingness of individual members when making job transfer decisions, whether due to major organizational change or business requirement. In addition, all job transfers comply with the "five principles" stated in the Labor Standards Act. CPC also complies with Article 9 of the collective bargaining agreement, and would fully communicate with the union to develop consensus before proceeding with a change of ownership, and thereby protect members' work rights.

Employee retirement, compassionate compensation, redundancy, and privileged departure policy



CPC handles employees' retirement, compassionate compensation, redundancy, and privileged departure in accordance with "Regulations Governing Employee Retirement, Compassionate Compensation, and Redundancy for Subordinates of the Ministry of Economic Affairs" and "Notes on Downsizing for Subordinates of the Ministry of Economic Affairs." CPC had 665 employees departed in 2022; 475 or 71.43% of whom were retirees.

Employment disputes

CPC complies with employment regulations, and has been able to avoid major employment disputes except for details concerning night shift pay, overtime pay, and wage components. There was also no incident of forced or compulsory labor. However, as a state-owned enterprise of MOEA, CPC pays salary as the only compensation and excludes night shift pay from pension and overtime pay, and for which it has been penalized by county/municipal labor inspection authorities time and time again. These penalties are the result of discrepancies between the Labor Standards Act and the Administrative Law of State-Owned Enterprise, and are not caused by CPC's violations. With regards to the dispute over night shift pay mentioned above, the Executive Yuan has agreed to include the pay in average salary for pension calculation, which will take effect on November 1, 2022. Meanwhile, night shift pay continues to be excluded from salary when calculating overtime pay due to the salary-only system that applies to all state-owned businesses under MOEA. CPC currently observes rules of both the MOEA and the Executive Yuan in this respect.

Employee grievance channels

CPC addresses employees' grievances in an honest, open, immediate and direct manner, and implements a set of Employee Grievance Policy to protect employees' rights. Employees may raise grievances when there are objections to a reward or punishment decision; or when employee rights and interests are damaged due to inappropriate systems, regulations, or administrative measures; or when there is employee misconduct. One Employee Grievance Handling Committee meeting was convened to review 1 case in 2022, and the case has been properly resolved.

3.1.2 Employee care and benefits

Employee health and care

STEP 1

Employee health management plan

- Annual employee health checkup
- Environmental monitoring project for identification of hazard factors
- On-site health service
- Health promotion

STEP 2

Employee health management Statistical analysis

STEP 3

Adjust and plan for the next year Employee health management plan

To provide workers with a safe and healthy work environment, CPC arranges health examinations for employees on a yearly basis. In 2022, 15,503 employees took the general health examination and 2,350 employees took the special health examination for engaging in works involving noise, dust, organic solvents, specialty chemicals, ionized radiation, and abnormal pressures. Contractors are also required to comply with occupational safety and health laws and organize regular health checkups for employees.

To prevent employees from exposing to various work-related hazard factors, we have established the Work Environment Monitoring Plan and implemented work environment monitoring to prevent hazards. In 2022, we performed work environment monitoring on chemical hazard factors (organic solvents, specialty chemicals, dust, and CO_2) and physical hazard factors (noise exposure and wet-bulb globe temperature (WBGT) index). The monitoring results are within the permissible exposure limits. CPC also adopts occupational illness prevention, tiered health checkup, and health-oriented work arrangement among other mental and physical health protection measures. Physicians are hired or contracted to provide health services on-site, and a total of 1,015 on-site health service sessions were organized in 2022.

To further the statistical analysis capacity of health management, we analyze employee examination results every year and list the top six anomalies. In 2022, they were body weight, total cholesterol, chest X-ray, low density lipoproteins, waist circumference, and triglycerides. We also arranged health talks and health promotion activities based on these anomalies to guide employees' health management efforts.

Employee occupational safety and health training

CPC has implemented a set of "Worker Safety, Health, and Environmental Protection Training Guidelines" to improve workers' professional capacity with respect to work safety and health and increase the effectiveness of training efforts. Training requirements are surveyed on a yearly basis to ensure that every job position has access to occupational safety and health certification training, credit course, and on-job training. CPC held 220 sessions of work safety and health training in 2022 (including certification course, credit course, and on-job training course).

Health seminar and health promotion events

CPC arranges seminars of various themes that provide employees with the proper knowledge needed to maintain and manage health at work. Activities such as smoking cessation class, weight loss class, fitness class, aerobic program and hiking have been arranged to help employees develop healthy habits. A total of 207 health promotion seminars and events were organized in 2022.

On-site health service

CPC invites occupational health specialists to provide one-on-one health consultancy service on-site on a monthly basis. The scope of consultancy covers general illness, abnormal workload, occupational illness, ergonomics, maternal health protection (for female workers who are pregnant or have given birth for less than one year), health checkup review, and health promotions. The process and outcome of consultancy are kept confidential.

Employee welfare policy

To further improve the work environment, we release a range of bonuses based on the overall performance of business units and the contribution and performance of individual employees. We also make contributions to the welfare fund according to the "Employee Welfare Fund Act" and co-establish EWC with TPWA to organize various types of benefits and recreational activities. To promote employee welfare, we establish branch committees in different locations In addition to the mandatory National Health Insurance, Government Employee and School Staff Insurance, and Labor Insurance, we purchase additional group insurance, overseas travel insurance (business trips), and accident insurance for employees. We also provide employees with injury, disability, and death condolence funds to protect the work and life security of employees.

Employee assistance program

CPC has offers a wide range of service packages that aim to promote harmony and health of the work environment and raise employees' work satisfaction and quality of life. After a thorough evaluation of internal and external resources, organizational characteristics, and employees' accessibility, CPC decided to assign dedicated EAP personnel for the planning, promotion, and referral of resources. Mental and legal counseling are performed by external institutions or professionals, whereas medical consultation is provided by physicians and nurses of the employee clinic.

Include employee feedback in planning and improvements for the next year

Employee assistance program

CPC had executed its employee assistance program in 2022 based on corporate vision, the nature of the organization, employees' needs, employee categories, and the outcomes of satisfaction surveys.

Program execution

In 2022, CPC issued a series of questionnaire to learn employees' needs. Consultancy service, seminars, and care programs were then organized to cater for employees' work, life, and health.

Employee feedback

CPC surveys employees' awareness and satisfaction with the assistance program on a yearly basis so that further improvements can be made. 93.33% of surveyees were aware of the assistance program in 2022, whereas more than 80% of users gave positive feedback on the assistance program.

Execution of employee assistance program - 2022

courses/seminar sessions were held

Work aspect

93 courses/seminar sessions | 3,295 enrollments

For new recruits - workplace adaptation, career development, retirement planning, flexible work hours, sexual harassment complaint, employee grievance, and prevention and handling of workplace bullying

Living aspect

106 courses/seminar sessions | 5,767 enrollments

Legal consultation, worker education, club activities, competitions, nursery room, child care service, parenting education, and life management

Health aspect

167 courses/seminar sessions | 6,009 enrollments

Mental consultation, maternal health consultation, medical consultation, on-site medical service, stress management, emotion management, health checkup, nutrition, smoking/alcohol cessation, weight loss class, and fitness training

Comprehensive and diverse welfare system and facilities

CPC provides employees with a complete range of welfare measures from children's scholarship, wedding subsidy, funeral subsidy, pension to zero-interest emergency loan. To cater for the needs of young employees and to enforce gender equality, CPC has even amended the terms of its employee loan and added wedding and childbirth as two permitted purposes of loan. With regards to pension and compassionate compensation, CPC observes "Regulations Governing Employee Retirement, Compassionate Compensation, and Redundancy for Subordinates of the Ministry of Economic Affairs" and regulations on public officials, and has assembled an "Employee (dispatched and contract-based employees) Pension Fund Management Committee" and a "Labor Pension Review Supervisory Committee" to handle the management and payment of pension fund. CPC also coordinates with ROC Retired Petrochemical Workers' Association to care for retirees.

Besides setting up local welfare facilities such as clinics, employee canteens, libraries, and tuck shops; and sports facilities such as various ballgame venues and gymnasiums, every business unit supports club activities such as ballgames, chess, hiking/mountaineering, swimming, calligraphy, and movie appreciation to help employees balance work and relaxation and boost morale.

CPC employee clinic - protecting workers' health

CPC has family clinics established at Taipei CPC Building, Taoyuan Refinery, Exploration and Production Department Miaoli Branch and Kaohsiung Refinery to provide employees with reliable and accessible medical service. Services provided at these clinics include general healthcare for adults and children; some would even offer health checkup and vaccination, and has been a major support to employees' physical and mental health. These clinics not only serve CPC employees including all office and plant workers, but also provide outpatient service to the general public, and have been well-recognized within the neighborhood for their outstanding service quality, transparent pricing and contribution to community health.

Employee clinic at CPC headquarters

HIGHLIGHT

Excellent childcare support by CPC!

CPC has signed an agreement with Taipei Child Welfare Center to provide childcare service for CPC employees since 2009. Today, CPC operates 3 standalone childcare facilities in the form of non-profit kindergartens at Kaohsiung Refinery and in Miaoli County and Chiayi County for the assurance and convenience of its employees. CPC also works with the Employee Welfare Committee and branches to contract highly rated local childcare institutions and arrange service to employees at a preferential rate.

All CPC units survey employees' childcare needs on a yearly basis and have contributed to improving existing childcare services for many years. These services and privileges are being made known to and accessible by employees through webpage, internal correspondence, DM etc. As of February 2023, a total of 253 children were placed under childcare.

Contracted childcare institutions

19	16
No. of childcare facilities	No. of children under care

Standalone childcare facilities

3	237
No. of childcare facilities	No. of children under care

» Note: All three non-profit kindergartens above are staffed with professional teachers and are conveniently located with strict access control. According to government regulations, monthly kindergarten charges are capped at NT$2,000 for the first child, NT$1,000 for the second child, and zero for the third child. These rates ensure high-quality teaching while at the same time lessen the financial burden on parents.

Non-profit kindergarten for employees of Kaohsiung Refinery

Located inside the refinery, graduates this year are the 70th graduating class. Featuring spacious environment and competent staff, the kindergarten adopts an inquiry-based learning approach that is centered around the needs of children, and emphasizes on individuality, hands-on experience, and learning efficiency.

Non-profit kindergarten for CPC employees in Miaoli County

Backed by a team of experienced teachers, the kindergarten aims to provide a safe, healthy, and diverse learning environment for children and adopts a holistic education approach that caters for children's mental as well as physical health. By incorporating Miaoli's local cultures (such as Banglong and Kite Festival) and CPC's resources, the kindergarten not only teaches children on human culture, but also helps children develop care for the community, an interest in learning, and confidence about themselves.

Non-profit kindergarten for CPC employees in Chiayi County

Located within CPC's Human Resource Training Facility, the kindergarten has access to a beautiful park, spacious and comfortable classrooms, advanced teaching equipment and materials, and outdoor playground and performance stage that children can play with after class. As a support to the government's "0-6 National Child Support" policy, the kindergarten provides ideal learning environment, activity space, and game experience for children between the age of 2 and 6.

Future prospects

Support for the government's public childcare services: A childcare center will be created on the 3F of CPC Building to accommodate 42 children in 3 classes (0 to 12 months, 13 to 24 months, and 25 to 36 months).

Ongoing engagement with top-performing childcare institutions: All CPC units and branches of the Employee Welfare Committee will continue engaging highly rated childcare institutions in the local vicinity to provide childcare services for employees at privileged rates. All contractual arrangements will be disclosed on the corporate website, and employees in different regions may take advantage of the childcare agreement as well.

3.2 Work in peace

Short-term

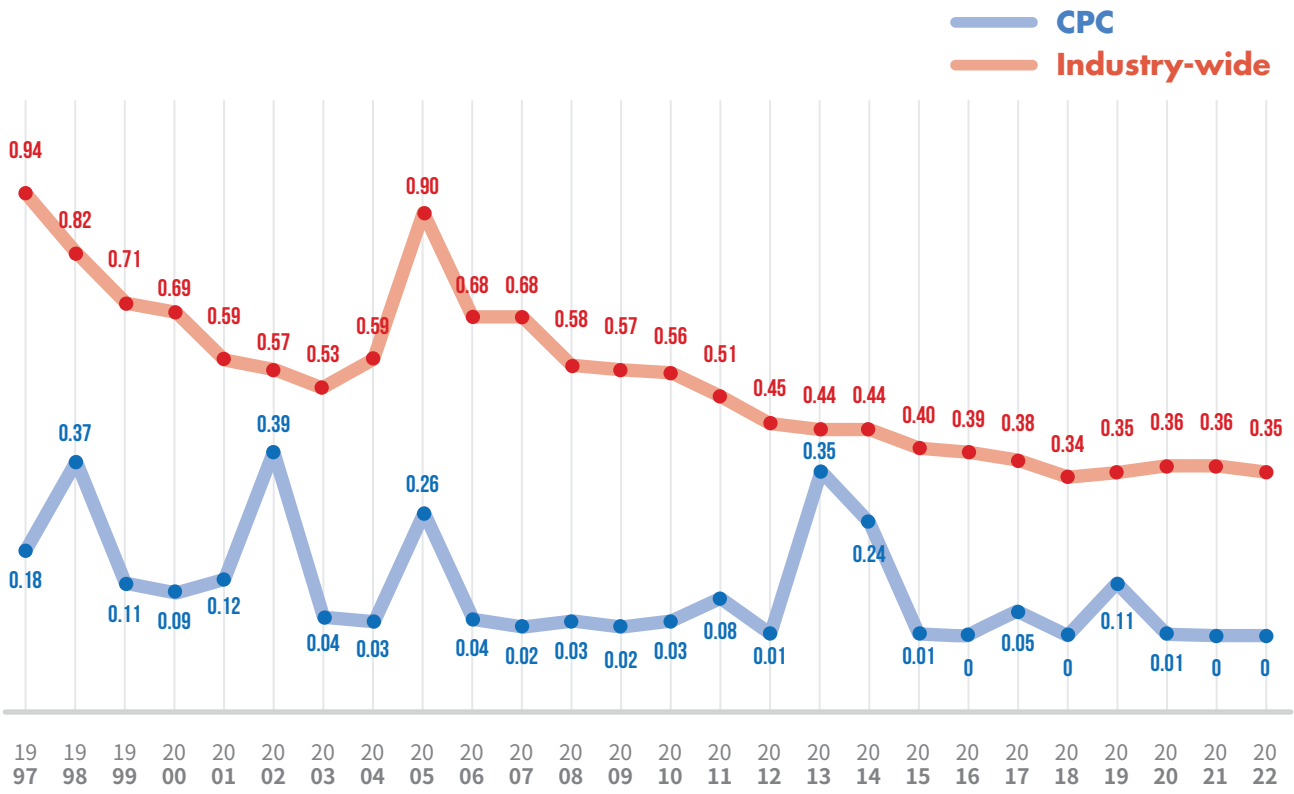
- Continue enforcement of systematic management practices on contractor safety and health performance assessment, and enhance professional skill training for contractors
- Enforce work safety and health training and continue implementation of safety and health certification, credit and on-job training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

Medium/long-term

- Sustain the pursuit of total industrial safety and zero industrial accident.
- Implement production safety management (PSM) system and make optimizations to 15 basic system functions
- Incorporate use of AI technologies for improved work safety management and reduced chances of accident

CPC is committed to building a workplace safety culture that is centered around people. By adopting "total involvement, risk management, and healthcare" as the core value and "absolute work safety and zero hazard" as the ultimate goal, CPC continues working with employees and contractors to create a safe, healthy, and comfortable work environment. Its dedication to reducing occupational accidents has enabled the organization to keep frequency-severity indicator below industry average for 26 consecutive years.

Comparison of frequency-severity indicator - CPC vs industry

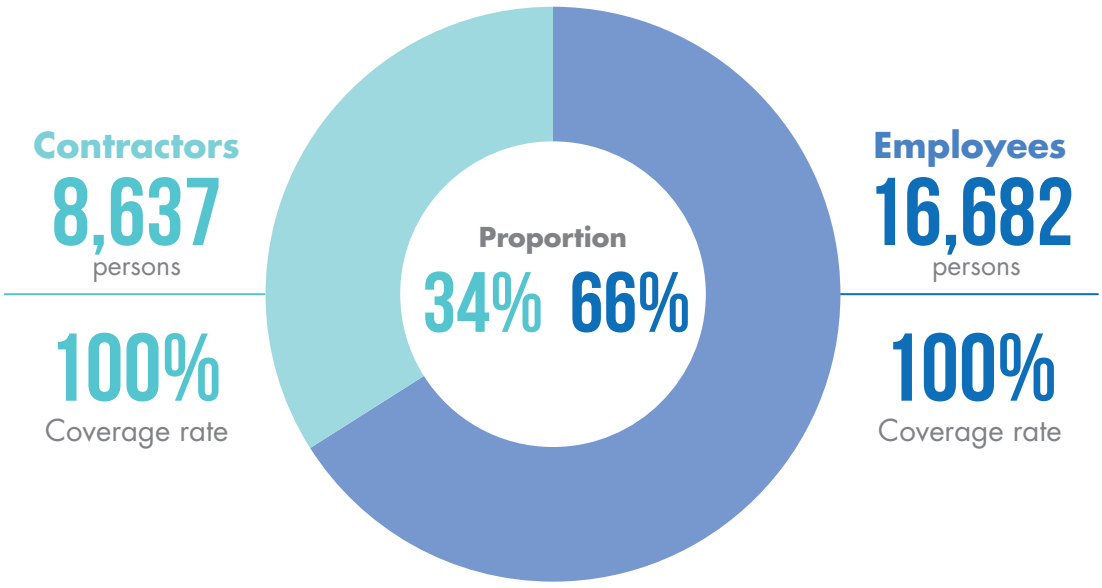


3.2.1 Workplace safety management

CPC has an "Occupational Health and Safety Committee" in place to oversee matters concerning employees' safety and health, such as safety and health training, health management, contractor management, and occupational hazard investigations and reports. 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 what the laws require. The Occupational Health and Safety Committee convenes 4 meetings each year; worker representatives raised 11 proposals in 2022, which accounted for 92% of all discussions. All motions discussed were closely related to the workplace and employees' interests, such as health checkup, training, EAP consultation, dormitory management, digital permit, and factory environmental/effluent monitoring, which are intended to ensure the safety and health of employees' working environment.

CPC has been implementing Taiwan Occupational Safety and Health Management System (TOSHMS) since 2008 as part of its effort to create a culture of quality and safety. This system introduces systematic management of hazard factors that pertain to various operations, and currently covers 100% of employees and contractors' workers. Furthermore, in an attempt to introduce systematic practices and international standards into OHS management, all CPC units have passed certification for the transition of ISO 45001, which helps implement occupational safety and health management system, improve performance, and promote autonomous management for effective control of occupational hazard as well as protection for workers' safety and health.

Workers covered by an occupational health and safety management system - 2022



Due to the high risks involved with oil refining and petrochemicals, CPC complies strictly with the Occupational Safety and Health Act and related laws, and has assembled separate audit teams for refinery, excavation, marketing, and construction activities, whose responsibilities are to perform safety and health audits on-site on a monthly basis. Each unit is also responsible for performing daily inspections and enforcing risk-based audit within their work sites. In 2022, CPC conducted a total of 49 routine and ad-hoc work safety audits as well as 12 construction audits. However, the Company was penalized by the authority on 11 counts of work safety violation, and was fined a total of NT$1.27 million in 2022. Most of the violations concerned a lack of safety and health equipment and measures, and the absence of communication and on-site inspection for outsourced works. All violations were immediately reviewed and improved upon, and subjected to enhanced audit. CPC has set its goals to make continuous improvements to occupational safety management, with particular respect to the safety of the operating environment, contractor management, and systems, equipment, and execution relating to worker safety protection. All units have been made aware of existing practices and are reminded to execute properly.

CPC has implemented "Hazard Identification and Risk Assessment SOP" to ensure that risk assessment standards are adopted uniformly across all units. The Company identifies risks on a yearly basis based on the "Duty and Job Inventory" list and the nature of individual business activities and units. These findings are further analyzed and compiled into a "Hazard Identification and Risk Assessment Sheet." For processes that are deemed high-risk, CPC will immediately examine the adequacy of existing protection measures and make improvements to the system, equipment, or execution in the shortest time possible to minimize risks within the operating environment. Based on the outcome of the risk identification exercise, CPC devises various emergency response drill plans and implements emergency response drills regularly to improve the ability to accident response and disaster prevention. CPC organized 345 disaster prevention drills in 2022, including 4 expanded emergency response drills and 6 department-level ad-hoc emergency response drills.

Contractor management - on-site audit

Contractor management - pre-work inspection

Expanded emergency response drill - 2022

CPC conducts pre-work inspection for enhanced contractor management. Where high-risk work activity is involved, CPC would assign representatives from the supervising department and the local department to inspect work site in the company of the contractor, and devise safe practices before proceeding with work activities. For enhanced work supervision, CCTV is deployed at the work site so that compliance with safety rules can be monitored remotely.

Article 10-2 of the Private Security Service Act states that: "When a security company hires security guards, it shall offer them pre-service professional training of one week or above. For serving security guards, it shall provide them with in-service training at least four hours for every month." At CPC, we evaluate security service providers by taking into consideration how they manage and train security guards with respect to legal knowledge, work skills, human rights awareness, and etiquette. Annual emergency response drills are held at guard stations and administrative buildings for premise security.

No. of security guards[1] **19** persons

Subjected to special training **19** persons

= **100%** Special training completion percentage

» Note 1: All CPC security guards are outsourced labor.

» Note 2: This data pertains to security guards at CPC's headquarter.

3.2.2 Employee safety protection

For the protection of employees' safety, CPC complies with the Occupational Safety and Health Act and allows employees to withdraw from job duties when there is potential imminent danger, provided that doing so does not compromise the safety of other colleagues. CPC also assembled the Accident Case Study Working Team to gather information on all industrial safety accidents at home and abroad to investigate their causes and accident types. The team has also published the Industrial Safety Case Studies as a learning resource of accident investigation to improve employees' ability to analyze accidents and thereby enhance overall industrial safety performance. For the health and comfort of the work environment, CPC monitors the work environment regularly and organizes general and special health checkups to minimize workers' exposures to occupational risk factors. CPC adopts a tiered management approach based on the outcome of employees' health checkup; those that have been classified as tier 4 are subjected to hazard control and appropriate management measures to minimize risk of hazard.

CPC's employee safety protection guidelines, procedures, and principles

Occupational safety and health consultation and communication procedures

These procedures have been established to support the development of standard communication channels between internal departments, and to allow proper reception and response of messages from external stakeholders so that employees and the public may appreciate CPC's persistent efforts in safety and health, and contribute to the harmony of the community.

Prevention against abuse when performing duties and action guidelines

Outlines the reporting channels, grievance procedures, and solutions in cases when employees are intimidated, threatened, or attacked while performing duties. It is intended to provide assurance for employees' safety and health.

Occupational illness management policy

The policy introduces enhanced management and prevention of occupational illness for employees' health. For any suspected case of occupational illness, an investigation team will be assigned immediately to evaluate the situation and make proper work arrangements depending on the employee's health state and capacity. Assistive tools will be provided as deemed necessary to perform works.

Work safety accident investigation and management principles

We have defined processes for reporting, investigation, report writing, statistics production, and follow-up of accidents. We have also designed the online "Hazards and Emergency Report Form" on the intranet to timely capture the actuality of accidents occurred in all units.

Occupational injury

CPC conducts regular statistical surveys on all employees and contractors (non-employees) to learn the current state and causes of occupational hazards. The most common types of occupational hazard reported in 2022 were: fall, tumble, falling object, cut, abrasion, impact, clamping, jamming, and electric shock. Data on disabling injuries is collected and reported on a monthly basis. According to statistics, no work-related death was reported among CPC employees or non-employees under the organization's control in 2022; a total of 3 employees and 12 non-employees suffered severe injury; and a total of 157 close calls were reported in 2022, and 89 of which concerned production procedures. No personnel had died or was injured due to occupational illness in 2022.

Occupational injury statistics - 2022

	Injury count	Number and percentage of injuries	Death count	Number and percentage of deaths	Recordable occupational injuries	Percentage of recordable occupational injuries
Employees	3	**0.08**	0	**0**	3	**0.08**
Non-employees	12	**0.66**	0	**0**	12	**0.66**

	Total absent days	Total work days	Absenteeism rate (%) (A.R)	Total disabling injuries	Total work hours	Disabling injury frequency rate (%) (F.R.)	Total days lost to injury	Total work hours	Disabling injury severity rate (%) (S.R.)
Employees	41,202.5	4,153,818	**0.99**	3 [1]	34,714,837	**0.08**	43	34,714,837	**1.24**
Non-employees	No available statistics			12 [2]	18,032,846	**0.66**	6,135	18,032,846	**340.21**
	Calculation of absenteeism rate (A.R.)			**Calculation of disabling injury frequency rate (F.R.)**			**Calculation of disabling injury severity rate (S.R.)**		

Work injury description Fall, tumble, falling object, cut, abrasion, impact, clamping, jamming, and electric shock

Whether resulted in personnel death None

» Note 1: The 3 injuries suffered by employees were due to fall, tumble, and electric shock.

» Note 2: The 12 injuries suffered by non-employees were due to fall, tumble, falling object, cut, abrasion, impact, clamping, and jamming.

Description

» **1.** Formula for calculations; include permanent and non-permanent employees.

- Absenteeism rate (A.R.) = (total absent days (including unpaid leave, sick leave, and work injury leave))/ (total work days X total employee count)
- Disabling injury frequency rate (F.R.) = (number of disabling injuries×106)/total work hours [rounded down to two decimal places]
- Disabling injury severity rate (S.R.) = (total days lost to injury×106)/total work hours [rounded down to the nearest integer]
- Average days charged for disabling injuries (ADCDI) = (disabling injury severity rate (S.R.))/ (disabling injury frequency rate (F.R.))
- The absenteeism rate is calculated based on employees' absenteeism due to inability to work, and is not limited to work injury or illness.

» **2.** It excludes the approved holidays or leave, such as folk festivals, training, maternity/paternity leave, and compassion leave. Absenteeism includes unpaid leave, sick leave, and compensation leave for injuries at work.

» **3.** The number of days lost from the inability to work of employees due to work-related injuries or diseases.

» **4.** Work-related diseases shall be determined based on the diagnosis of occupational specialists of a hospital.

» **5.** Disabling injuries do not include minor injuries, i.e. injuries healed on the same day and employees can return to work on the next day.

» **6.** Total lost days include the sum of the lost days of four types of disabling injuries: death, permanent total disabilities, permanent partial disabilities, and temporary total disabilities.

» **7.** Both deaths and permanent total disabilities are calculated as 6,000 days lost.

Prevention strategies

To prevent occupational hazard, CPC has been making ongoing improvements to work safety measures such as: development of automated work safety inspection system, introduction of AI technology for identifying contractors' violations, and implementation of facial recognition and license plate recognition for enhanced control over contractors' access to the premise. CPC incurred NT$3.076 billion of expenses on occupational safety and health in 2022.

CPC's Work Safety Week 2022

On July 4-5, 2022, CPC held an opening ceremony for the Safety and Health Conference and Work Safety Week at the Exploration & Production Research Institute, during which it invited 200 guests comprising representatives from domestic industries, government agencies, and the academia, as well as occupational safety and health managers and officers from various organizations, to discuss on the latest work safety trends and to reduce occupational hazards.

CPC's Work Safety Week 2022

Director-general Tzu-Lien Tzou of Occupational Safety and Health Administration, Ministry of Labor, was invited to host a speech on "Advancement of Digital Technologies and Challenges of Labor Protection." A total of 5 keynote speeches and 18 thesis papers covering smart technology, production safety, safety technology, accident case study, occupational health, and disaster prevention and response were presented during the event, and several OHS equipment and academic posters were also released. This conference served as a platform where participants from different areas of expertise were able to exchange knowledge and experience on disaster prevention, rescue, and response and contribute toward building a strong work safety culture.

Exchange of 5G and AIoT technologies

In order to accelerate the implementation of smart occupational safety and health measures at CPC, in 2022, the President led supervisors at all levels to visit Nanjing Information Co., Ltd. for on-site visits. The purpose of this visit was to facilitate mutual learning and promote the application of AI technology in various fields within CPC. As a company entrusted with the responsibility of national energy and petrochemical production and supply, CPC not only enhances occupational safety skills through regular training and drills but also gradually introduces intelligent technologies such as 5G IoT to strengthen safety management. The goal is to ensure the safety of the plant and reduce unplanned shutdowns, thereby rebuilding public confidence and positive perception of the oil refining and petrochemical industry. CPC is committed to achieving sustainable.


CPC's 5G and AIoT visit - 2022

3.3 Talent recruitment and development

CPC has established well-defined employment policies and has never hired child labor. In addition, to provide vulnerable groups with more job opportunities, we give extra credits to people with disabilities and indigenous peoples. Once recruited, employees involved in the same line of work are compensated equally, and are not differentiated by ethnicity, thoughts, religion, political association, locality, place of birth, gender, sexual orientation, marital status, appearance, disability, or union membership. Furthermore, CPC only deals with vendors that abide by the above principles, which is why no complaint of gender or racial discrimination had occurred for many years. In 2022, there was no report on violation of human rights, non-compliance with non-discrimination, or impact on business activities as a result of human rights.

Furthermore, with regards to the employment of persons with disabilities, CPC first introduced the idea of "kindness gas station" in 2001 and has since provided counseling and training for persons with disabilities, and offered them employment opportunities as well as assistance for developing professional skills. These actions are consistent with CPC's vision to protect the work rights and human rights of persons with disabilities.

3.3.1 Human resources management

CPC had a total of 16,682 employees in 2022 (including direct workers, research staff, support personnel, management staff and contract personnel), or 17,835 including Work-Study Student Note 1. CPC operates in the petrochemical industry. CPC recruits most of its employees from college graduates of science studies, and many of whom are assigned to work as operators. For this reason, males represent a dominant percentage of the workforce at 84.50%, whereas females represent the other 15.50%. However, CPC does not differentiate or discriminate between genders when assigning duties, and females accounted for 21.58% of senior managers in 2022. In terms of academic background, most employees graduated from senior high schools, colleges, and universities, which accounted for 78.11% of total employees, and 20.09% hold a master's degree.

CPC was obligated to hire a minimum of 521 persons with disability (including interns), and actually hired a total of 854, which exceeded the requirement by 333. Furthermore, the Hualien Oil Supply Service Center, Eastern Businesses Department, Oil Product Marketing Division, hired indigenous people above the minimum requirement stated in the "Indigenous Peoples Employment Rights Protection Act."

2020-2022 employees by employment contract

Unit: persons

	Permanent	Contract workers	Interns	Total head count
2020	16,057	66	1,108	17,231
2021	16,226	67	938	17,231
2022	16,613	69	1,153	17,835

Employment of persons with disabilities 2020-2022

	Persons with disability (persons)	As a percentage of total employees (including interns) %
2020	849	4.93
2021	811	4.71
2022	854	4.79

Employment of indigenous people 2020-2022

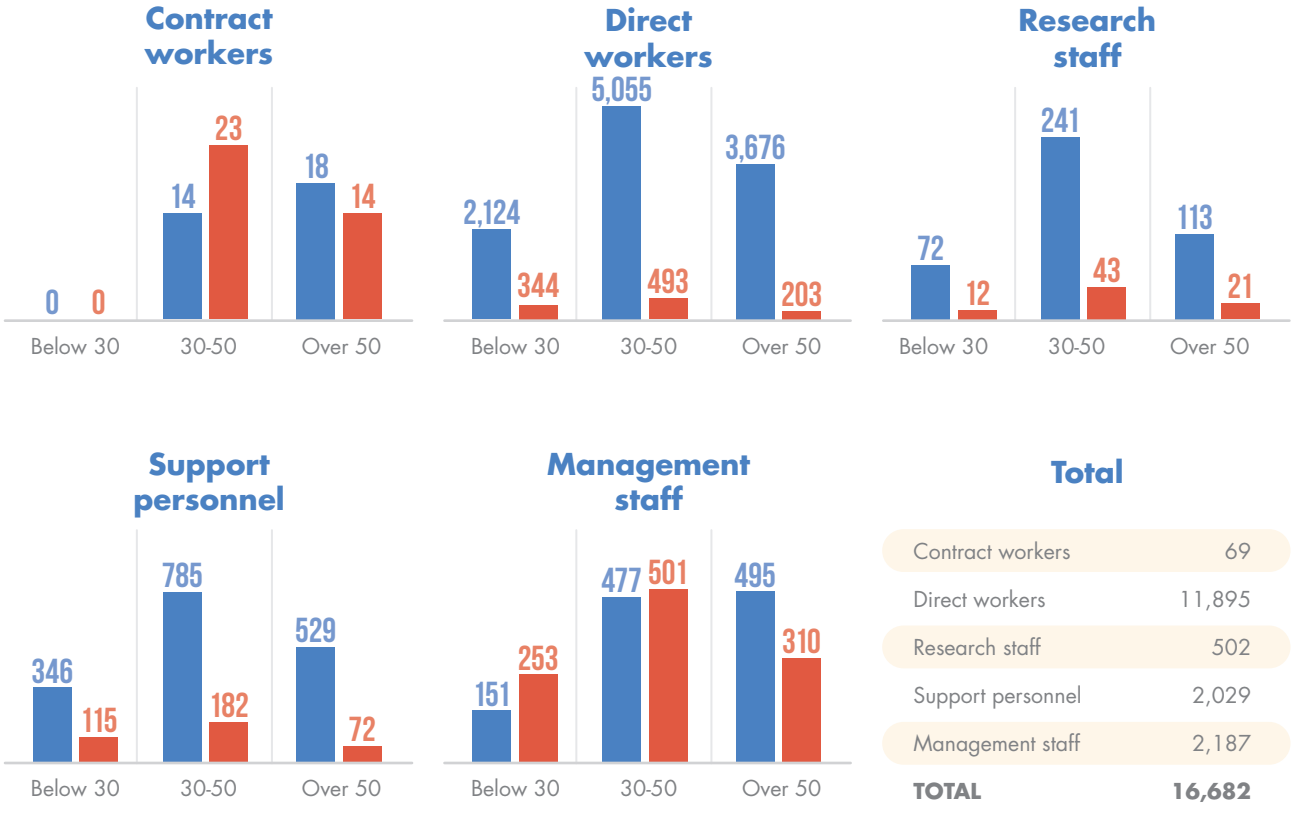
	Indigenous people (persons)	As a percentage of total employees (including interns) %
2020	63	0.37
2021	71	0.41
2022	88	0.49

Contractors' employee count 2022

		Type	Count
Non-contract	Non-employee workers	Non-employee workers include security guards, cleaners, construction contractors, agency-referred temp workers, apprentices, subcontractors, and volunteers.	10,390

Employee gender by job role - 2022

Male
Female
unit: persons



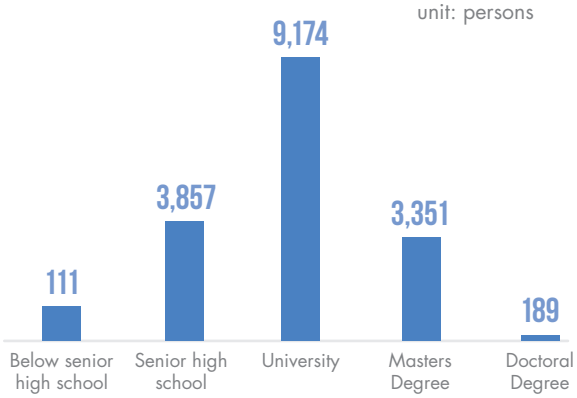
Total

Contract workers	69
Direct workers	11,895
Research staff	502
Support personnel	2,029
Management staff	2,187
TOTAL	**16,682**

» CPC had a total of 16,682 employees (including direct workers, research staff, support personnel, management staff, and contract personnel)

Employee academic background - 2022

unit: persons



Total 16,682

Female-to male ratio of basic salary and remuneration - 2022

Supervisors	Employees
1 : 1.0063	1 : 0.9979

Annual total compensation ratio - 2022

Annual total compensation ratio[1] 1.73 times

Annual total compensation change[2] 11.12 times

» Note 1: Compensation excludes performance bonus. Method of calculation: highest personal annual income / median annual income of all CPC employees

» Note 2: Compensation excludes performance bonus. Method of calculation: percentage increase of annual income for the top-earning individual / percentage increase of median annual income across all CPC employees

New recruits bring energy and creativity to CPC, which is why the Company recruits fresh talents on a yearly basis. CPC recruited a total of 1,054 new employees in 2022, representing 6.31% of total employees (i.e. the employment rate); a total of 665 employees departed in 2022, representing a departure rate of 3.98%, but after excluding the 361 retirees, the attrition rate was calculated at 1.82%. Most employees commit to long-term service until retirement; retirees averaged 37.92 years of service at retirement, indicating high degree of loyalty and strong identification with CPC.

Recruitments/departures - 2022 (by age and gender)

	New employees (persons)		Employment rate[1] (%)		Departed personnel (persons)		Departure rate[2] (%)	
	Male	Female	Male	Female	Male	Female	Male	Female
Below 30	471	106	2.82	0.63	52	4	0.31	0.02
30-50	397	56	2.38	0.34	83	16	0.50	0.10
Over 50	22	2	0.13	0.01	457	53	2.73	0.32
Total head count	**1,054**		**6.31**		**665**		**3.99**	

» Note 1: Employment rate = [No. of new recruits + persons hired in year of report (2022)]/total employee count in year of report (2022)×100%

» Note 2: Departure rate = [No. of resignees + retirees in year of report (2022)]/total employee count in year of report (2022)×100%

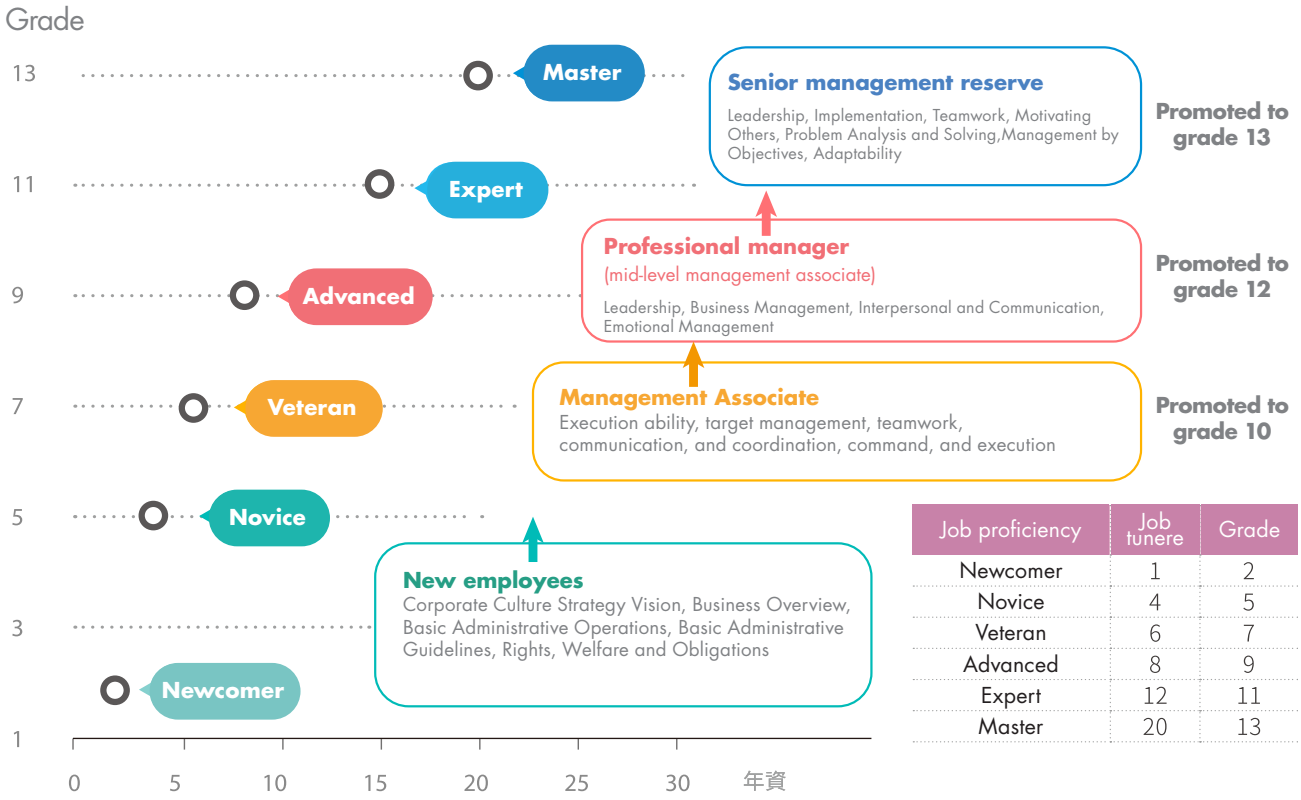
3.3.2 Talent development

CPC has implemented a robust training framework that aims to equip the workforce with the proper knowledge and skills. Meanwhile, a rational promotion system is available to ensure that employees are selected, trained and recruited to support CPC's growth. We survey and research the professional competencies of individual core, professional duty for the reference of internal promotion and job rotation and recruitment interviews, in order to select personnel with qualified work attitudes and beliefs. Furthermore, management associate training and on-job management training are arranged for managers and staff of all grades to enhance management capacity. In addition, we encourage employees to take national skill qualification tests, facilitate employees to acquire licenses and certifications in relation to health, safety, and environmental protection (HSE). We have also established directions for further education to encourage employees to engage in lifelong learning, second specialty training, in-house and outsourced training, further education after work, foreign language education, and job transfer training.

Comprehensive talent development framework

CPC has developed its talent training system to cater for the roles and skills needed within the organization, and uses various software, hardware, and assistance to support the training effort. Each internal unit is required to identify work goals and training emphases based on corporate vision, organizational prospects, current year's training policy, and the skills needed for business growth and employees' duties, and devise and adjust execution of training plans accordingly. It is our hope to expand employees' professional capacity and skills closely in line with the organization's growth.

Management role talent development framework



Job proficiency	Job tunere	Grade
Newcomer	1	2
Novice	4	5
Veteran	6	7
Advanced	8	9
Expert	12	11
Master	20	13

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

Management skill training by employee grade

Management skill training		Managerial personnel		Professional	Junior Management
		Senior Management	Officers	Management reserves	Onsite leaders & manager & assistant manager of petrol stations
	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	Operations, management, and development strategies and team leadership effectiveness management	Management ability development and training	Management ability development and training	Implemented by unit supervisors or the human resources department as necessary

Senior management skill development map

Background:

Senior managers of CPC are defined as managerial staff of grade 13 and above. None of the senior mana!ers at key operating locations in Taiwan are foreigners, and 100% are R.O.C. nationals. In an attempt to help senior management reserves expand vision of the business environment and develop business administration skills to better support CPC's growth and lead the team toward accomplishing tasks, the Company has designed a series of training courses based on the senior manager skill model that target specifically the management reserves. These courses aim to improve trainees' skills with respect to "leadership," "execution," "teamwork," "problem analysis and solution," "goal management," and "response."

Outcomes:

E-LEARNIING
+
CLASSROOM

The training was carried out through a combination of e-learning + classroom (E+C) using a variety of methods such as CPC-Live and interactive group sessions. This approach ensured undisrupted learning during the COVID-19 pandemic and allowed trainees to engage in exchange of knowledge.

promoted to senior managers of grade 13 and above

89 persons

As a support to CPC's organizational transformation and adoption of enterprise management approach, the Company has trained 208 mid-level managers over the last 5 years, and 89 (42.79%) of whom have been promoted to senior managers of grade 13 and above.

CPC employees averaged 51.14 hours of training in 2022, up from the 41.05 hours in the previous year. Females averaged 52.55 hours of training, which was slightly higher than the 50.89 hours for males. This data shows that CPC does not differentiate or discriminate between genders in terms of talent development. Training budget for 2022 totaled NT$145 million. CPC organized a total of 3,496 training sessions that received 123,436 enrollments in total; 17.29% of such enrollments were from female employees, which exceeded the overall percentage of female employees (15.50%).

Training-related indicators

Training indicators	2020	2021	2022
Total employee training expense (NTD millions)	132.00	142.00	144.62
Total hours of employee training (hours)	822,369.00	635,824.00	825,242.80
Total employee training expense/ total revenue (%)	0.01	0.02	0.01
Total employee training expense/ total employee count (NTD/person)	8,151.00	8,715.00	8,669.22

Statistics on 2022 employee training

Training Type	Training classes (classes)	Total enrollments (enrollment count)	Male (enrollment count)	Percentage of males (%)	Female (enrollment count)	Percentage of females (%)
Supervisor training	23	1,850	1,681	90.86	169	9.14
Professional training	2,368	73,736	61,552	83.48	12,184	16.52
Second specialty training	75	4,269	3,642	85.31	627	14.69
Internal instructor training	2	34	20	58.82	14	41.18
Other training	822	40,831	32,926	80.64	7,905	19.36
Orientation training	204	2,673	2,234	83.58	439	16.42
Skill qualification training	2	43	37	86.05	6	13.95
Total	3,496	123,436	102,092	82.71	21,344	17.29

Statistics on 2022 employee training

Title	Trainee count (persons)	Training hours (hours)	Average training hours per person[1] (hours)
Supervisors	3,079	117,592.6	38.19
Non-supervisors	13,057	707,650.2	54.20
Total	16,136[2]	825,242.8	51.14

» Note 1: Average training hours per person = training hours/trainee count.

» Note 2: Total trainee count (16,136) was different from total employee count (16,682 excluding interns) because not all employees underwent training in the year.

HIGHLIGHT

Bringing new talents into the energy industry through talent expansion

To resolve the disruptions in talent succession, CPC has been exploring action strategies, work targets, and suitable training plans on a yearly basis by taking into consideration the corporate vision, organizational prospects, future growth requirements, and internal workforce shortages.

2019

CPC's short-/medium-/long-term talent development plan: Training courses have been planned to help employees develop the professional capacity needed to support future talent requirements, corporate transformation, and future prospects.

2020

Rigorous talent selection and shortened learning curve for new recruits in the last 5 years: All internal units conduct ongoing reviews and propose response measures to help new recruits familiarize with the tasks on hand and thereby improve work efficiency.

Meeting discussions on promotion criteria and skill profile for CPC employees: After determining the promotion criteria and skill profile for each grade, internal units were instructed to propose a promotion system for various job roles that is suitable given the nature of its duties, so that employees may follow and develop the professional capacity and skills needed for promotion.

2021

Course plans for CPC factory managers and task force meetings: Based on meeting resolutions, CPC has planned courses of relevant themes including PSI production safety information, transfer instrumented system, MI (mechanical integrity), operational integrity, and accident investigation that apply only to factory managers.

2022

Manpower analysis and training development meetings: Hosted by the Chairman and President, these meetings are intended to address personnel issues and devise proper responses. Four of these meetings were held in 2022, during which internal units were asked to analyze employees' age distribution and service duration in order to identify any potential disruption of talent succession caused by labor shortage. Each unit was also required to propose responses and improvements, and discuss the potential challenges. Through internal communication, CPC hopes to make optimal use of human resources, minimize the impact of talent shortage, and support future business transformations.

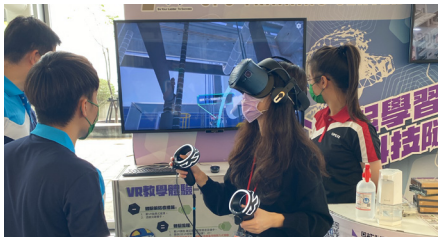
Human Resource Training Facility

CPC has established a Human Resource Training Facility that organizes seminars and training classes to support CPC's business development and national growth. The facility trains employees on a wide range of expertise from refinery, excavation, engineering, marketing, administration to environment safety, and offers vertical advancement (entry-level, mid-level and advanced level) as well as horizontal advancement (across different fields of expertise) paths to help employees develop the skills needed for their career. Since the new building was commissioned in 2014, the number of classes have increased significantly from 327 in 2014 to 492 in 2022, whereas class enrollments have also grown from 13,575 in 2014 to 33,627 in 2022.

HIGHLIGHT

Participation in "ATD Asia Pacific Conference" for 8 consecutive years; collaboration toward training industry talents

CPC actively takes part in overseas talent development forums, where it shares talent development strategies and award-winning experience with experts from various fields to improve its own practices. CPC has been a participant of "ATD Asia Pacific Conference" for 8 consecutive years; for the 2022 conference, CPC gave a presentation on "Technology-assisted Learning during Pandemic," and demonstrated how VR technologies are being used for immersion training at the Human Resource Training Facility as well as the strong lineup of instructors it has. Through these forums, CPC hopes to expand cooperation and connect human resources development with the rest of the world. CPC also looks forward to engaging industry partners, government agencies, the academia, and research institutions in various forms of collaboration, such as open courses and premise sharing, to support the nation's talent development policy and train creative minds that are capable of leading future industry growth.



CPC E Library

Background:

A "CPC E Library" combining new information technology and learning application has been set up on the Intranet to provide diverse e-learning resources that employees may use to expand their professional capacity and work skills. The E Library carries the mission to facilitate creative sharing, knowledge enhancement, and digitalized service, and is an integral part of CPC University. In 2018, the platform underwent an upgrade to introduce a hybrid learning approach, using a combination of mobile learning and classroom courses to greatly increase the frequency of digital learning and the overall outcome. In 2020, a Technology-assisted Learning Team was created under the Human Resource Training Facility to promote the use of technology in learning applications. This led to the creation of CPC-Live, a video conferencing system that supports remote conference, real-time interaction, livestream/broadcast of course activities, production/presentation of cloud materials, pre-recording of course content, video playback etc., which opened up opportunities for a wide variety of hybrid learning applications from E+C, live + non-live, online + offline, self learning to group learning. During the COVID-19 pandemic, CPC made drastic changes to the way it trains employees, and embraced the use of digital technologies to support a diversified learning approach.

CPC E Library

Outcomes:

- Six sets of multimedia teaching materials have been developed to train new CPC recruits on the refining technique. 146.5 hours of video streaming materials were created/amended by contractors, whereas 164.6 hours of teaching materials were produced in-house.
- The COVID-19 pandemic gave employees the motivation to learn online, and as a result, the CPC E Library was used 553,742 times, delivered 2,571,204 course sessions, accumulated 83,730 course enrollments, and completed 630,405 training hours in 2022.
- CPC-Live completed 364 livestreams/broadcasts for a total of 934.6 hours, and was used 12,303 times.

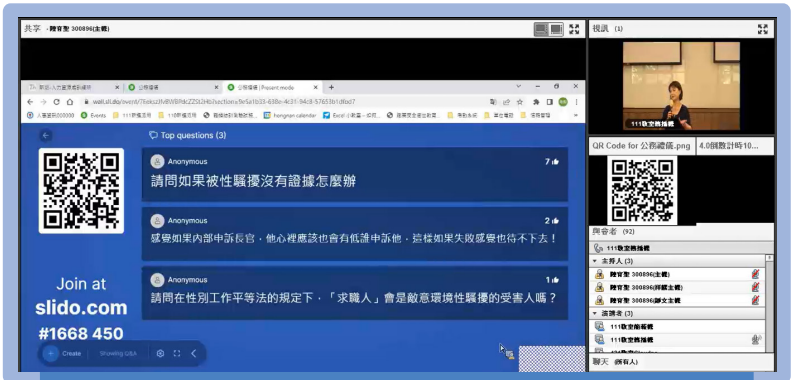
Orientation for new recruits - 2022

Background:

Due to the spread of COVID-19, orientation seminars for new recruits were delivered online via CPC-Live in conjunction with Slido, which allowed questions to be raised in real time for better interaction between the instructor and trainees, improved training effectiveness, faster comprehension of the duties involved, and more effective work guidance. Trainees are required to complete an online exam at the end of each course by scanning QR-code; online courses have been made available on CPC E Library where employees can access and learn at their convenience.

Outcomes:

- A total of 197 employees completed training.
- In 2022, trainees were divided into separate groups online so that they could see each other and build relationship.



Trainees raising queries during the 2022 online orientation

Performance evaluation and promotion

CPC has implemented a set of "Managers and Workers Performance Evaluation Guidelines" to ensure that employees' work performance is properly reflected during evaluation, and that the process serves as an incentive for excellence. Vice presidents and level 1 units are required to set performance measurements and targets based on board-approved performance evaluation guidelines for responsibility centers, which serve as reference for future performance evaluation. Managers of level 2 units and below are required to set performance measurements and targets within their scope of responsibility and the targets outlined by level 1 units. Performance measurements and scoring criteria have also been implemented for operators and non-managerial staff, whose performance is evaluated based on level of target accomplishment and quality of work delivered. Annual performance evaluations are carried out according to CPC's "Notes on Worker Performance Review and Bonus Allocation," and employees are entitled to performance bonus of 0 to 1 month's salary depending on the outcome of evaluation, without discrimination by gender or otherwise. Employees that have performance rated D are dismissed.

3.4 Social inclusion

As a state-owned enterprise, CPC continues to be motivated by its mission to "give back to the society," and devotes resources into solving the society's problems by exerting influence through business locations. CPC also maintains productive interaction with local organizations and residents, and gives back to the community through a variety of events and communication channels. In 2022, CPC adhered to its sustainable vision of "connecting the society" and directed internal as well as external resources into various causes such as care for the underprivileged, low-carbon education, and preservation of cultural heritage for the inclusivity and progress of the society.

Social inclusion from three main aspects

Being a member of the society, CPC is committed to becoming the promoter of social inclusion. The Company engages customers, the neighborhood, and the general public with a people-oriented focus, and strives to create a collaborative, mutually beneficial, and interdependent society by promoting corporate ethics.

Drawing from the success of previous charity efforts, CPC continued making prominent contributions to the public in 2022. In addition to economic development and environmental protection, CPC also cares for the society and contributes to the harmony of the society on three fronts: "Care for the underprivileged," "Ecosystem protection and environmental education," and "Cultural heritage and sports."

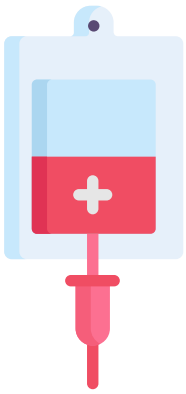
3.4.1 CPC's social influence

Care for the underprivileged

Support for "World Blood Donor Day"

CPC views "blood donation as a life-saving act" and actively supports blood donations. Since 2013, CPC has been organizing annual blood donation events to address the shortage in blood supply.

2022 marked the 10th year of CPC's blood donation support, and for this special occasion, the Company mobilized 16 internal units into hosting a large-scale blood donation event in the month of "614 World Blood Donor Day" as a response to UN SDG #3 - "Good health and well-being." In the month of June alone, the event attracted 6,547 donations and gathered 2.5645 million c.c. of blood in 10,258 bags. For the entire year of 2022, CPC received 26,715 blood donations for a total of 10.3575 million c.c. from 18 internal units, setting a record for yet another year.



2022 Employee donation attempts

26,715 Times 2013-2022 **95,346 Times**

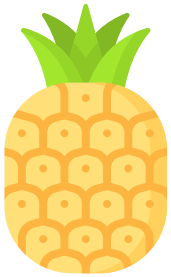
2022 Total blood donated (c.c.)

10.3575 million c.c. 2013-2022 **36.5545 million c.c.**

2022 Total bag count

41,430 bags 2013-2022 **146,218 bags**

Purchase of agricultural and aquaculture products



The COVID-19 pandemic has had significant impact on the sale of agricultural and aquaculture products and limited the amount of resources available to underprivileged groups. Out of support for Taiwanese farmers, CPC purchased in-season produce and livestock such as atemoya, pomelo, onion, and grouper and donated them to organizations of the underprivileged, thereby catering for the needs of two parties in a single gesture.

CPC helped sell

58.56 metric tons

of agricultural produce in 2022

and purchased

a total of 8,974 groupers

in the last two years

Support for the underprivileged and interracial harmony

CPC remains mindful of its social responsibilities while pursuing profit performance. The Company views harmonious relationship with community residents as the key to building corporate image and business success, which is why it has devised a neighborhood engagement plan and directed attention to care for the underprivileged and support local education, culture, sports, entertainment, and arts for many years. In 2022, CPC subsidized (donated) a sum of NT$401 million to 5,708 projects, including NT$3.5967 million for activities of indigenous peoples. By recruiting indigenous people above the minimum requirements, CPC hopes to provide employment opportunities and contribute to interracial harmony.

Projects and amounts subsidized (donated) in the last 3 years

	2020	2021	2022
Sum (in multiples of NT$100 million)	**3.72**	**3.68**	**4.01**

Tuition support for underprivileged children

CPC has been working with World Vision Taiwan since 2010 to rally employees into donating NT$1,000 per month to underprivileged children, and has helped 203 children learn at school and develop healthy, happy childhood.

donated in 2022

NT$2.436 million

Expanding the digital reach

CPC has long been supporting the Ministry of Education's "Digital Application Enhancement Project in Remote Areas" by making yearly donations of regeneration computers to remotely located schools and organizations of the underprivileged, where they can still be useful to those in need. In doing so, CPC fulfills its social responsibilities and contributes to the recycling and reuse of resources. Due to the spread of COVID-19 in 2022, CPC reached out to Fu Jen Catholic University, which served as the operational center for the Ministry of Education's "Digital Application Enhancement Project in Remote Areas," to help find remotely located schools that may be in need of regeneration computers for remote teaching, so that children may continue their learning while schools are closed.

donated in 2022

345 regeneration computers

CPC-TPC Charity Concert

CPC has been a long-time supporter of arts and cultural events, and an activist in helping the underprivileged. In December 2022, CPC organized two weeks of mini concert at the 1F event hall of CPC Building, during which it invited 6 music students from Taipei School for the Visually Impaired and 7 musicians from Taipei Music Foundation for the Visually Impaired to perform. Meanwhile, CPC encourages employees with music talent to perform on stage and bring healing notes to the audience.

Participant count

about 800

Physical invoices gathered on site

about 100

Donations to Taiwan Foundation For Rare Disorders

NT$50,000

Music without boundaries

CPC has been a long-time supporter of arts and cultural events, and an activist in helping the underprivileged. In December 2022, CPC organized two weeks of mini concert at the 1F event hall of CPC Building, during which it invited 6 music students from Taipei School for the Visually Impaired and 7 musicians from Taipei Music Foundation for the Visually Impaired to perform. Meanwhile, CPC encourages employees with music talent to perform on stage and bring healing notes to the audience.

Daily participant count

about 70

total participant count

about 700

HIGHLIGHT

CPC supports self-dependence of Slow-Flying Angels

The output of CPC 473,886,616 / The input of CPC 137,505,002	=	SROI Result : NT$1 → NT$3.45
		Input → Output

Slow-Flying Angels

Primary Benefits

- Acquisition of employable skills
- Gain confidence and self-esteem in the workplace
- Enhancement of economic independence

Customers

Primary Benefits

- Appreciation of CPC's friendly work environment
- Enjoyment of quality services

Family of Slow-Flying Angels

Primary Benefits

- Appreciation of CPC's friendly work environment
- Increase in family income
- Reduction of caregiver's physical and mental burden

Social workers and counselors Colleagues at the gas station

Primary Benefits

- Enhancing job satisfaction
- Increasing the sense of value in helping others
- Cultivating empathy and patience
- Developing effective communication skills with individuals with disabilities


SOCIAL VALUE INTERNATIONAL

Statement of Report Assurance

Social Value International certifies that the report

CPC Corporation, Taiwan Slow-Flying Angels SROI Report

satisfies the requirements of the assurance process.

The assurance process seeks to assess whether or not a report demonstrates a satisfactory understanding of, and is consistent with, the Principles of Social Value. Reports are independently reviewed by qualified assessors and must demonstrate compliance with the Social Value report assurance standard in order to be certified. The Social Value report assurance standard can be downloaded from the website socialvalueint.org.

Assurance here is against the Principles of Social Value only and does not include verification of stakeholder engagement, report data and calculations.

Awarded 23/01/2023

Signed

Mr Ben Carpenter
Chief Executive Officer
Social Value International

ASSURED REPORT SOCIAL VALUE

CPC has long been helping persons with disabilities connect with the society. With the introduction of "compassion gas station" in 2001, CPC took the initiative to counsel and train persons with disabilities (specifically people with developmental retardation, commonly known as slow-flying angels) to provide service at petrol stations, which presents employment opportunities and skill development potentials. In terms of social return of investment (SROI), every NT$ invested into this project produces 3.45 times the social yield, and the value has been validated by the Social Value International (SVI) in January 2023.

As of 2022, CPC had 46 compassion gas stations throughout Taiwan and worked with more than 17 counseling institutions. 543 slow-flying angels were hired as of December 2022, representing 48% of interns of direct stations in the current month. CPC's support for persons with disabilities has earned itself the titles of "Excellent Performer in Over-quota Employment of Persons with Disabilities" from Hsinchu City Government and "Top Employer of Persons with Disabilities - Second Tier Award" from the Department of Labor, Taoyuan City Government, and won Global View Magazine's 2022 CSR and ESG Awards - "First Prize in Education Promotion Category" and "2022 Asia Responsible Enterprise Awards (AREA)" - "Social Empowerment Award."

Service at petrol station may seem simple at first glance, but actually requires several skills including the ability to work with different interfaces, operate heavy fuel nozzles, and address customers with the right tone. For people with development retardation, it takes persistent learning in order to overcome difficulties and be able to serve customers at the front line. Having recruited slow-flying angels for petrol station service for more than 20 years, CPC persists in its one-to-one counseling approach that helps slow-flying angels slowly yet thoroughly develop the required skills, characters, and attention to detail to deliver services comparable to ordinary interns.

Linsen North Road Station, Taipei City

Friendly work environment with customized fuel nozzle and pump design

"Welcome!" the service staff yelled, guiding customer into the petrol station with hand gestures. Upon closer look, you may find something different about the smiling employees, and indeed, they are one of the slow-flying angels hired at CPC's compassion gas station at Linsen North Road, Taipei City. CPC has taken a great leap in making this petrol station accessible, using more expensive yet lightweight fuel nozzles while lowering and flattening the pump area so that even those who have deteriorated control of their hands or legs are able to provide service.

> *"I used to work at a private petrol station, and I had difficulties handling fuel nozzles there. Here, the fuel nozzles are light, and the pumps are the right height. The station manager and permanent workers here really look after us. I look forward to work everyday, and has been a wonderful job."*
>
> —Slow-flying Angel

Sanmin Road Station, Taoyuan City

Diverse skill development for CUP & GO

"Would you like a CUP & GO to light up your day? Brewed from Guatemala coffee beans. Buy six and get one carwash." said the PDR, fluently and confidently, introducing customers to CUP & GO. The petrol station sells more than 50 cups of coffee a day on average, and had once sold as many as one hundred a day. The Deputy Station Manager of Sanmin Road Station, Taoyuan City, had come up with this catchy sales pitch to help slow-flying angels promote CUP & GO, and their family members were surprised to see their verbal skills and patience improve significantly, not to mention the confidence that comes with the ability to promote products to customers' liking.

> *"I told them that I am earning a living through labor and through sales. Here, I can work with pride and dignity."*
>
> —Deputy Station Manager Hsiao, Sanmin Road Station, Taoyuan City

Slow-Flying Angels Support Campaign

To help slow-flying angels expand work skills, CPC organized a limited time charity promotion in 2022 involving CUP & GO outlets located in Yilan, Hualien, and Taitung, Through this campaign, CPC donated 5,000 cups of coffee to support volunteers of Mennonite Social Welfare Foundation in brining medical service to remote locations, and sponsored recruitment of "Slow-flying angels" at petrol stations.

CPC's Eastern Businesses Department and Mennonite Social Welfare Foundation jointly launched a "PDR Support Campaign" involving CUP & GO outlets at direct stations in Yilan, Hualien, and Taitung that offers a 20% discount for every two cups of coffee ordered. This campaign not only intends to restore care and connection between people, but also encourages the public to involve in charity activities. Simply by giving visitors the option to donate coffee to Mennonite Social Welfare Foundation through on-site purchase or by redeeming e-voucher through CPC Pay, the campaign attracted a large number of customers who visited petrol stations solely to purchase coffee instead of fuel, thereby allowing the coffee shop setting to overturn consumers' perception about petrol stations.

sold within the duration
97,409
cups of coffee

donated by consumers
19,870
cups of coffee

Outcomes of compassion gas station

46 stations
Compassion gas station and carwash station

17
Partnered institutions

543
Slow-flying angels trained

298,791 cups (in 20 stations)
Coffee served a year

CPC's short film
- The Smiling Angels

3.4.2 Green influence

Ecosystem protection and environmental education

Green Up - protection of the ocean

CPC continues to support the Executive Yuan's "Tribute to the Ocean" policy and has adopted practices to clean up coastal areas near CPC's operations "regularly, instantly, and at times of emergency" for the improvement of the marine environment. Currently, CPC conducts regular cleanups of coastlines in Guantang (Taoyuan), Yongan (Kaohsiung), and Qixingtan (Hualien) as a commitment to protecting the ocean.

Coastline in undeveloped areas of Guantang

At a frequency of 3 to 5 times a month, CPC cleared 40.86 MT of waste in 2022. This coastal area is subject to quarterly on-site inspections by the Office of Coastal Management Engineering Office, Taoyuan City Government, and based on Taoyuan City Government's Sustainable Coastline KPI, "Coastal cleanliness" was rated 100%. These coastal cleanup events received participation from approximately 250 people in 2022.

Coastline in Yongan Section, Yongan District

CPC has been sponsoring the cleanup of certain areas of the coastline in Yongan Section, Yongan District, since 2017. The Company assigns a crew to perform coastal cleanup at least twice a month, and uploads its progress onto the EcoLife portal. More than 360 people took part in the cleanup in 2022.

Coastal area in Ruifang District

In response to "Earth Day," CPC organized the "Earth Day Environmental and Coastal Cleanup" event on April 13, 2022 and mobilized a group of 48 comprising CPC employees, residents of Ruifang District, and environmental protection volunteers to clear out 32 of waste scattered on the shores of Shan'ao, thereby keeping the vicinity at a clean state. CPC also took this opportunity to convey the importance of preserving the ocean environment, and let participants experience for themselves the difference they could make in restoring the ecosystem.

Coastline from Hualien Qixingtan to Deyan Fish Farm

CPC sponsors the cleanup of coastline from Hualien Qixingtan to Deyan Fish Farm. The Company assigns a crew to perform coastal cleanup at least once a month. More than 100 people are involved in the cleanup each year.

mobilized in 2022

More than 758

employees and their family members

Free seedling Promotion of green coexistence

CPC has been supporting Earth Day for many years. On April 22 each year, the Company would organize a campaign across 100 direct stations nationwide that encourages the public to present invoice or bring in waste battery at designated petrol stations in exchange for tree seedlings. The campaign has always been favorably received by the public.

Although the free seedling campaign was suspended in 2022 due to COVID-19, CPC's passion for environmental education persists and will continue organizing free seedling events as a way to encourage sustainable practices.

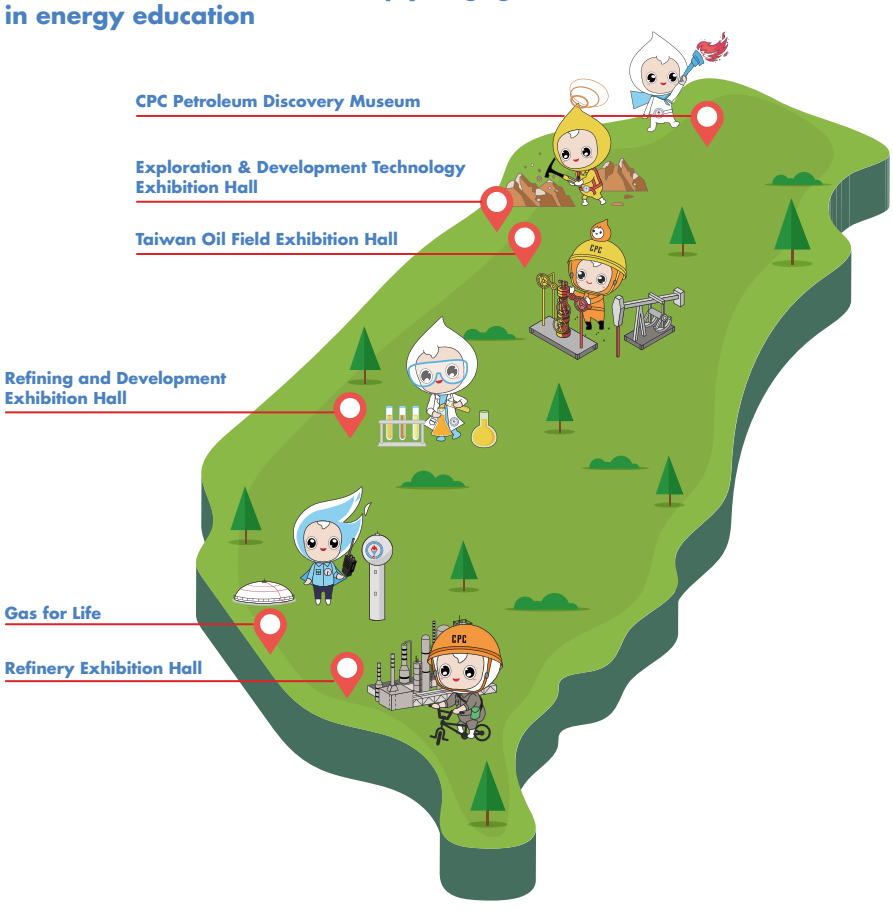
given away in the last 5 years

60,400 tree seedlings

Knowledge transfer through six facilities nationwide

CPC has six exhibition facilities located throughout Taiwan, including: "CPC Petroleum Discovery Museum" in Taipei City, "Taiwan Oil Field Exhibition Hall" in Gongguan Township of Miaoli County, "Exploration & Development Technology Exhibition Hall" in Miaoli City of Miaoli County, "Refining Institute Exhibition Hall" in Chiayi City, "Gas for Life" in Yongan District of Kaohsiung City, and "Oil Refining Exhibition Hall" in Nanzi District of Kaohsiung City. Each of these facilities carries a different theme from oil exploration, refining, natural gas, research and development to energy diversity. Together, they tell a detailed story of how Taiwan's oil industry has evolved over time. Both "Taiwan Oil Field Exhibition Hall" and "Kaohsiung Refinery Environmental Education Park" have even been certified as environmental education facilities for having designed and delivered energy and environmental courses in a way that increases the public's awareness toward environmental protection.

All six halls in Taiwan are deeply engaged in energy education



HIGHLIGHT

Energy education for children

Between December 2 and 4, 2022, the Education, Parenting, Family Lifestyle magazine held a "2022 MAKER PARTY" at National Taiwan Science Education Center that attracted children from all over the country. In this event, CPC designed its booth to resemble the appearance of a "smart green energy fuel station," and introduced games and challenges to teach children how AI and green energy may change our lives in the future.

Using a variety of interesting displays, CPC designed its booth to give visitors a completely new experience of smart and sustainable fuel station. Through challenges and games, children were taught the less known purposes of CPC's fuel stations, including power generation, power storage, and the role they play in circular economy. Overall, the interactive experience allowed visitors to better appreciate CPC's sustainability vision as well as commitment in energy education and green energy transformation. The exhibition attracted nearly 30,000 visits in total.

3.4.3 Cultural creativity

Cultural heritage and sports

Creating opportunities from cultural heritage

Kaohsiung Refinery was formerly the 6th Fuel Plant of the Japanese Navy. In 1942, General Ryozo Beppu, head of the 2nd Fuel Plant of the Japanese Navy, constructed three separate branches under the 6th Plant in Hsinchu, Taichung, and Kaohsiung to produce oil products using different feedstocks. The current office building of Kaohsiung Refinery and some of the common areas, storage/transportation facilities, repair stations, and storage systems were constructed in the days of Japanese rule.

After the surrender of Japan at the end of the Second World War, the fuel plant was taken over by the navy of the Republic of China, handed over to The National Resources Commission, and renamed Kaohsiung Refinery. With the inception of CPC Corporation in 1946, the company assigned Dr. Bin Guo to serve as the first plant manager. By the time CPC had taken over Kaohsiung Refinery, the plant premise had already been bombed beyond recognition by the U.S. military, but despite a lack of resources, Director Bin Guo gathered former employees to rebuild, renew, and expand the plant, which later became the pillar for Taiwan's petrochemical industry.

1942 constructed three separate branches under the 6th Plant

1946 CPC had taken over Kaohsiung Refinery

2015 Kaohsiung Refinery closed down

2019 the Ministry of Culture initiated an investigation on the potentials of Kaohsiung Refinery as a cultural heritage, and the review was later carried on by Kaohsiung City Government Bureau of Cultural Affairs

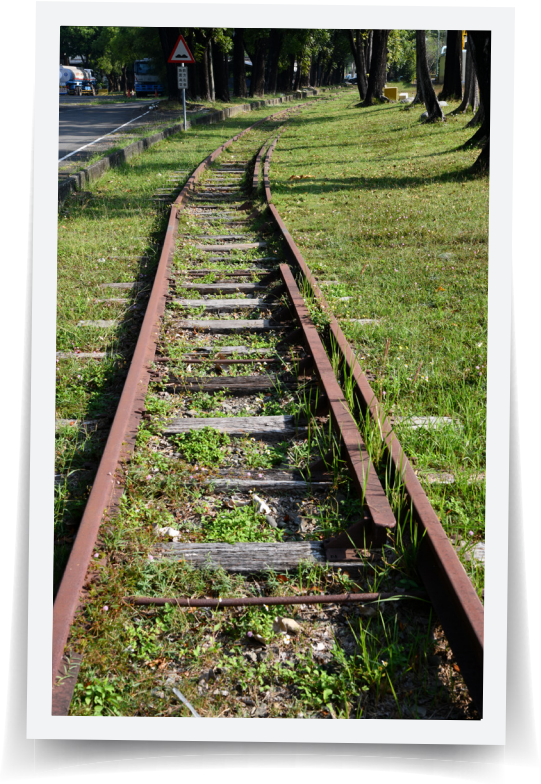
2020 the final resolution was made to designate one of the sites as municipal heritage and 40 sites as historical buildings

Photos of cultural heritage

Municipal heritage - the office building

Warehouse of the 6th Fuel Plant

Flare of the 2nd Naphtha Cracker



Tank truck rails

Sports Promotion

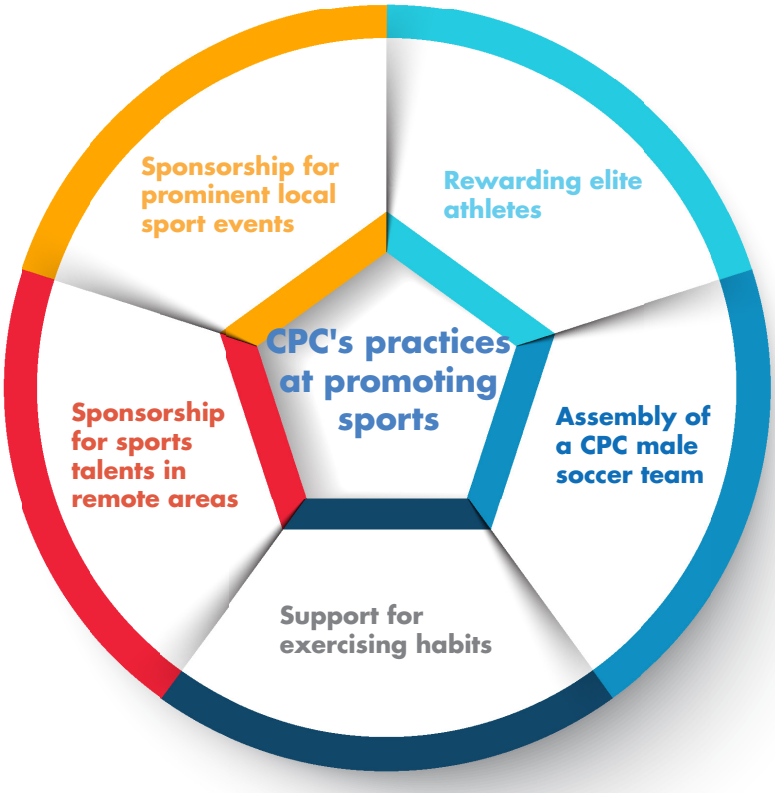
Sponsoring of athletes and sports

CPC assembled an "Elite Athletes Sponsorship Review Committee" in as early as 2002 to support sports development and help train outstanding athletes. A set of "CPC Directives for Sponsoring and Cultivating Elite Athletes" was also implemented, and later amended and renamed "CPC Directives for Sponsoring Top-Tier Sports Development" in 2017 to expand the scope of sponsorship to include sports teams of public and private schools.

CPC acknowledges the importance of talent development in a sustainable society, which is why the Company supports whole-heartedly to the government's sports policies and sponsors local communities, schools, and organizations in sport events and competitions. CPC also contributes to the development of soccer in Taiwan by assembling its own soccer team in July 2020, and managed to secure a place in "Taiwan Football Premier League" later in 2021.

CPC cares much about the urban-suburban divide, and hopes to help children in remote locations grow with its sports sponsorship programs. For this reason, CPC made the decision to expand its sponsorship to include sports teams of public and private schools nationwide starting from 2017, and renamed its sponsorship policy: "CPC Directives for Sponsoring Top-Tier Sports Development."

Considering that sports teams of schools in remote areas tend to be deprived of resources, which ultimately limits children's potentials, CPC has made special arrangements to sponsor school teams in remote areas and cater for the needs of local children. Through this program, CPC hopes to help children in remote areas develop professional skills, confidence, and sense of accomplishment through sports, and take control of their life.



Sport contributions in 2022

Subsidized
540 sport events or competitions
for a sum close to
NT$25 million

Sponsored
16 athletes
sports teams from
7 schools
for a sum of
NT$9.76 million

Invested into CPC's male soccer team
NT$32.44 million

sports sponsorship
Nearly **NT$67.2** million

CPC supports LLB in bringing resources to remote areas

HIGHLIGHT

CPCLube Children's Community Baseball Tournament

In an attempt to bring new baseball talents into the beloved national sport, CPC committed to its first sponsorship of "2022 CPCLube Children's Community Baseball Tournament," during which it also introduced its own mascot - Luby as a metaphor for the bond that contributes to teamwork. The three-week tournament took place on the baseball field at Zhongzheng Riverside Park, and despite the intermittent downpour, the players stayed passionate and energetic throughout. A total of 184 players from 10 teams entered the tournament, and TFCF Keelung Enjoy walked away with the championship title.

HIGHLIGHT

CPC wins Sports Activist Award - Gold for 5 consecutive years

CPC has long been promoting sports development by supporting local communities, schools, and organizations in various sport events and competitions, and sponsoring elite athletes as well as school teams in remote areas.

In addition to winning Sports Activist Award - Gold for 5 consecutive years, CPC has also won Sports Facilitator Award - Gold 8 times and Long-Term Sponsorship Award once since the Sports Activist Award was first introduced. By sponsoring athletes, we hope to kick start a "cycle of positivity" where the athletes not only train to compete but also pass on skills and life's experience to the next generation. Following the enactment of "Statute for Development of Sports Industry" in 2022, CPC founded its own Football Association to support the development of sports as a national industry. Through this association, CPC hopes to rally the support of state-owned as well as private enterprises toward growing the sports industry and contribute to the overall health of the general public.

In 2022, CPC subsidized

540

sport events or competitions

sponsored

16

athletes

sports teams from

7

schools

Appendix 1: GRI Index

Statement of usage	CPC follows the GRI Standards for the disclosure of information dated January 1 to December 31, 2022.
Application of GRI 1	GRI 1: Foundation 2021
Applicable GRI Industry Standards	GRI 11 Oil and Gas Sector (2021)

GRI Standards	Serial No.	Disclosures	Corresponding Section	Page	Remarks
General disclosures					
GRI 2: General Disclosures 2021	**The organization and its reporting practices**				
	2-1	Organizational details	1.1.1 Introduction to CPC	51	
	2-2	Entities included in the organization's sustainability reporting	1.1 Our CPC	52	
	2-3	Reporting period, frequency and contact point	Introduction_Scope of Report and Reporting Period; Contact	4-5	
	2-4	Restatements of information	Introduction_Scope of Report and Reporting Period	4-5	
	2-5	External Validation / Assurance	Introduction_Report Profile	5	
	Activities and workers				
	2-6	Activities, value chain and other business relationships	1.1.1Introduction to CPC	52	
			1.2.5 Sustainable supply chain	81	
			1.4 No.1 in Quality	99	
	2-7	Employees	3.3.1 Human resources management	191	
	2-8	Workers who are not employees	3.3.1 Human resources management	192	
	Governance				
	2-9	Governance structure and composition	1.1.4 Sustainable governance	63	
	2-10	Nomination and selection of the highest governance body	1.1.2 Directors overview	55	
	2-11	Chair of the highest governance body	1.1.1 Introduction to CPC	52	
	2-12	Role of the highest governance body in overseeing the management of impact	1.1.4 Sustainable governance	63	
			1.3.2 Anticorruption Introduction_Material	94	
	2-13	Delegation of responsibility for managing impacts	Introduction_Material topics of sustainability for the year	19	
			1.1.4 Sustainable governance	63	
	2-14	Role of the highest governance body in sustainability reporting	1.1.4 Sustainable governance	63	
	2-15	Conflicts of interest	1.1.4 Sustainable governance	63	
	2-16	Communication of critical concerns	1.2.3 Response to significant events	70	
	2-17	Collective knowledge of the highest governance body	1.1.2 Directors overview	55	
	2-18	Evaluation of the performance of the highest governance body	1.1.2 Directors overview	58	
	2-19	Remuneration policies	1.1.2 Directors overview	58	
	2-20	Process to determine remuneration	1.1.2 Directors overview	58	
	2-21	Annual total compensation ratio	3.3.1 Human resources management	193	
	Strategy, policies and practices				
	2-22	Statement on sustainable development strategy	Introduction_Sustainability roadmap	10	
	2-23	Policy Commitment	1.1.4 Sustainable governance	63	
	2-24	Policy commitments	1.1.4 Sustainable governance	63	
	2-25	Processes to remediate negative impacts	Introduction_Stakeholder communication	22	
			1.3.3 Whistleblowing system and whistleblower protection	95	
			3.1.1 Human rights protection	175	
	2-26	Mechanisms for seeking advice and raising concerns	1.3.3 Whistleblowing system and whistleblower protection	96	
	2-27	Compliance with laws and regulations	1.3.1 Compliance	92	
	2-28	Membership of associations	1.1.1 Introduction to CPC	51	

GRI Standards	Serial No.	Disclosures	Corresponding Section	Page	Remarks
General disclosures					
GRI 2: General Disclosures 2021	**Stakeholder engagement**				
	2-29	Approach to stakeholder engagement	Introduction_Stakeholder communication	24	
	2-30	Collective bargaining agreements	3.1.1 Human rights protection	180	
GRI 11 Oil and Gas Sector 2021					
GRI 3: Material Topics 2021	3-1	Process to determine material topics	Introduction_Material topics of sustainability for the year	17	
	3-2	List of material topics	Introduction_Material topics of sustainability for the year	19	
Low carbon/carbon reduction measures (Material Topic #10)					
GRI 3-3 ★	11.1.1	Management of material topics	Introduction_Material topics of sustainability for the year	149-151	
GRI 11.1 GHG emissions ★	11.1.2	302-1 Energy consumption within the organization	2.1.4 Climate change goals, indicators, and management performance	149-151	
	11.1.3	302-2 Energy consumption outside of the organization	2.1.4 Climate change goals, indicators, and management performance	149-151	
	11.1.4	302-3 Energy intensity	2.3.1 Use and management of energy	149-151	
	11.1.5	305-1 Direct (Scope 1) GHG emissions	2.1.4 Climate change goals, indicators, and management performance	130	
	11.1.6	305-2 Energy indirect (Scope 2) GHG emissions	2.1.4 Climate change goals, indicators, and management performance	130	
	11.1.7	305-3 Other indirect (Scope 3) GHG emissions	2.1.4 Climate change goals, indicators, and management performance	130	
	11.1.8	305-4 GHG emissions intensity	2.1.4 Climate change goals, indicators, and management performance	130	
GRI 11.2 Climate adaptation, resilience, and transition	11.2.2	201-2 Financial implications and other risks and opportunities due to climate change	2.1.2 Risks and opportunities of climate change	118-121	
	11.2.3	305-5 Reduction of GHG emissions	2.2 Low Carbon Green energy transformation and circular economy	141	
ir pollution control (Material Topic #5)					
GRI 3-3 ★	11.2.1	Management of material topics	Introduction_Material topics of sustainability for the year	17-22	
GRI 11.3 Air emissions	11.3.2	305-7 Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	2.5.2 Air pollutant emission and management	163,164	
	11.3.3	416-1 Assessment of the health and safety impacts of product and service categories	1.3.1 Compliance 1.4.1 No. 1 in Quality	99	
Compliance with environmental laws (Material Topic #3)					
GRI 3-3 ★	11.4.1	Management of material topics	Introduction_Material topics of sustainability for the year	17-22	
GRI 11.4 Biodiversity	11.4.2	304-1 Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	2.4 Ecological preservation	157-159	
	11.4.3	304-2 Significant impacts of activities, products and services on biodiversity	2.4 Ecological preservation	156	
	11.4.4	304-3 Habitats protected or restored	2.4 Ecological preservation	157-159	
	11.4.5	304-4 IUCN Red List species and national conservation list species with habitats in areas affected by operations	2.4 Ecological preservation	157-159	

GRI Standards	Serial No.	Disclosures	Corresponding Section	Page	Remarks
Compliance with environmental laws (Material Topic #3)					
GRI 11.5 Waste	11.5.2	306-1 Waste generation and significant waste-related impacts	2.5.3 Discharge and management of effluents and waste	165-168	
	11.5.3	306-2 Management of significant waste-related impacts	2.5.3 Discharge and management of effluents and waste	165-168	
	11.5.4	306-3 Waste generated	2.5.3 Discharge and management of effluents and waste	165-168	
	11.5.5	306-4 Waste diverted from disposal	2.5.3 Discharge and management of effluents and waste	165-168	
	11.5.6	306-5 Waste directed to disposal	2.5.3 Discharge and management of effluents and waste	165-168	
GRI 11.6 Water and effluents	11.6.2	303-1 Interactions with water as a shared resource	2.5.3 Discharge and management of effluents and waste	151-155	
	11.6.3	303-2 Management of water discharge-related impacts	2.5.3 Discharge and management of effluents and waste	151-155	
	11.6.4	303-3 Water withdrawal	2.5.3 Discharge and management of effluents and waste	151-155	
	11.6.5	303-4 Water discharge	2.5.3 Discharge and management of effluents and waste	166	
	11.6.6	303-5 Water consumption	2.5.3 Discharge and management of effluents and waste	151-155	
Risk management (Material Topic #9)					
GRI 3-3 ★	11.7.1	Management of material topics	Introduction_Material topics of sustainability for the year	19-21	
GRI 11.7 Closure and rehabilitation	11.7.2	402-1 Minimum notice periods regarding operational changes	3.1.1 Human rights protection	175	
	11.7.3	404-2 Programs for upgrading employee skills and transition assistance programs	3.1.2 Employee care and benefits	181	
GRI 11.8 Asset integrity and critical incident management	11.8.2	306-3 Waste generated	2.5.3 Discharge and management of effluents and waste	165-168	
Management of major incidents (formerly Occupational safety and health) (Material Topic #4)					
GRI 3-3 ★	11.9.1	Management of material topics	Introduction_Material topics of sustainability for the year	19-21	
GRI 11.9 ★ Occupational health and safety	11.9.2	403-1 Occupational health and safety management system	3.2.1 Workplace safety management	186	
	11.9.3	403-2 Hazard identification, risk assessment, and incident investigation	3.2.1 Workplace safety management	188	
	11.9.4	403-3 Occupational health services	3.1.2 Employee care and benefits	181	
	11.9.5	403-4 Worker participation, consultation, and communication on occupational health and safety	3.1.2 Employee care and benefits 3.2.1 Workplace safety management	181 186	
	11.9.6	403-5 Worker training on occupational health and safety	3.2.1 Workplace safety management 3.2.2 Workplace safety assurance	186 190	
	11.9.7	403-6 Promotion of worker health	3.1.2 Employee care and benefits	181	
	11.9.8	403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	3.2.2 Workplace safety assurance	181	
	11.9.9	403-8 Workers covered by an occupational health and safety management system	3.2.1 Workplace safety management	187	
	11.9.10	403-9 Work-related injuries	3.2.2 Workplace safety assurance	189	
	11.9.11	403-10 Work-related ill health	3.2.2 Workplace safety assurance	189	

GRI Standards	Serial No.	Disclosures	Corresponding Section	Page	Remarks
Management of major incidents (formerly Occupational safety and health) (Material Topic #4)					
GRI 11.10 Employment practices	11.10.2	401-1 New employee hires and employee turnover	3.3.1 Human resources management	193	
	11.10.3	401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees	3.1.2 Employee care and benefits	182	
	11.10.4	401-3 Parental leave	3.1.1 Human rights protection	177	
	11.10.5	402-1 Minimum notice periods regarding operational changes	3.1.1 Human rights protection	180	
	11.10.6	404-1 Minimum notice periods regarding operational changes	3.3.2 Talent development	196	
	11.10.7	404-2 Programs for upgrading employee skills and transition assistance programs	3.3.2 Talent development	197	
	11.10.8	414-1 New suppliers that were screened using social criteria	1.2.5 Sustainable supply chain	82	
	11.10.9	414-2 Negative social impacts in the supply chain and actions taken	1.2.5 Sustainable supply chain	82	
Compliance (Material Topic #2)					
GRI 3-3 ★	11.11.1	Management of material topics	Introduction_Material topics of sustainability for the year	19-21	
GRI 11.11 Non-discrimination and equal opportunity	11.11.2	202-2 Proportion of senior management hired from the local community	3.3.2 Talent development	195	
	11.11.3	401-3 Parental leave	3.1.1 Human rights protection	177	
	11.11.4	404-1 Minimum notice periods regarding operational changes	3.1.1 Human rights protection	178	
	11.11.5	405-1 Diversity of governance bodies and employees	3.1.1 Human rights protection	179	
	11.11.6	405-2 Ratio of basic salary and remuneration	3.3.1 Human resources management	193	
	11.11.7	406-1 Incidents of discrimination and corrective actions taken	3.1.1 Human rights protection	178	
GRI 11.12 Forced labor and modern slavery	11.12.2	GRI 409: Forced or compulsory labor	3.1.1 Human rights protection	175	
	11.12.3	GRI 414: Supplier social assessment	1.2.5 Sustainable supply chain	82	
GRI 11.13 Freedom of association and collective bargaining	11.13.2	GRI 407: Freedom of association and collective bargaining	Introduction_Stakeholder communication 3.1.1 Human rights protection	23 175	
Business and financial performance (Material Topic #7)					
GRI 3-3 ★	11.14.1	Management of material topics	Introduction_Material topics of sustainability for the year	19-21	
GRI 11.14 Economic impacts	11.14.2	201-1 Direct economic value generated and distributed	1.2.1 Financial performance	66	
	11.14.3	202-2 Proportion of senior management hired from the local community	3.3.2 Talent development	195	
	11.14.4	203-1 Infrastructure investments and services supported	1.4.3 No. 1 in contribution 3.4.1 CPC's social influence 3.4.2 Green influence 3.4.3 Cultural creativity	104 200-205 206-207 208-211	

GRI Standards	Serial No.	Disclosures	Corresponding Section	Page	Remarks
Business and financial performance (Material Topic #7)					
GRI 11.14 Economic impacts	11.14.5	203-2 Significant indirect economic impacts	1.4.3 No. 1 in contribution 3.4.1 CPC's social influence 3.4.2 Green influence 3.4.3 Cultural creativity	68 200-205 206-207 208-211	
	11.14.6	204-1 Proportion of spending on local suppliers	1.2.5 Sustainable supply chain	86	
GRI 11.15 Local communities	11.15.2	413-1 Operations with local community engagement, impact assessments, and development programs	1.2.4 Risk control	77	
	11.15.3	413-2 Operations with significant actual and potential negative impacts on local communities	1.2.4 Risk control	77	
GRI 11.16 Land and resource rights	11.16.1	GRI 3-3 Material topics	Introduction_Material topics of sustainability for the year	19-21	
GRI 11.17 Rights of indigenous peoples	11.17.2	411-1 Incidents of violations involving rights of indigenous peoples	3.3.1 Human resources management	175	
GRI 11.18 Conflict and security	11.18.2	410-1 Security personnel trained in human rights policies or procedures	3.2.1 Workplace safety management	187	
GRI 11.19 Anti-competitive behavior	11.19.2	206-1 Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	1.3.1 Compliance	92	
Anti-corruption measures (Material Topic #1)					
GRI 3-3 ★	11.20.1	Management of material topics	Introduction_Material topics of sustainability for the year	19-21	
GRI 11.20 Anticorruption ★	11.20.2	205-1 Operations assessed for risks related to corruption	1.3.2 Anticorruption	95	
	11.20.3	205-2 Communication and training about anti-corruption policies and procedures	1.3.2 Anticorruption	97	
	11.20.4	205-3 Confirmed incidents of corruption and actions taken	1.3.2 Anticorruption	96	
GRI 11.21 Payments to governments	11.21.2	201-1 Direct economic value generated and distributed	1.2.1 Financial performance	66	
	11.21.3	201-4 Financial assistance received from government	1.2.1 Financial performance	66	
	11.21.4	207-1 Approach to tax	1.2.2 Tax governance	68	
	11.21.5	207-2 Tax governance, control, and risk management	1.2.2 Tax governance	68	
	11.21.6	207-3 Stakeholder engagement and management of concerns related to tax	1.2.2 Tax governance	68	
	11.21.7	207-4 Country-by-country reporting	1.2.2 Tax governance	69	
GRI 11.22 Public policy	11.22.2	415-1 Political contributions	1.2.1 Financial performance	68	
Corporate governance (Material Topic #6)					
GRI 3-3 ★	-	Management of material topics	Introduction_Material topics of sustainability for the year	19-21	
Sector-specific issue	-	-	1.1 Our CPC	51-65	
Cybersecurity and privacy protection (Material Topic #8)					
GRI 3-3	-	Management of material topics	Introduction_Material topics of sustainability for the year	19-21	
Sector-specific issue	-	-	1.2.5 Sustainable supply chain 1.4.2 No. 1 in service	95 102	

Note 1: ★ Indicates material topic

Appendix 2: TCFD Index

Aspect	Recommended disclosures	Corresponding chapter in the report	Page
Governance	Describe the board's oversight of climate-related risks and opportunities	2.1.1 Climate change governance	114
	Describe management's role in assessing and managing climate-related risks and opportunities	2.1.1 Climate change governance	114
Strategy	Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term	2.1.2 Risks and opportunities of climate change	115
	Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning	2.1.2 Risks and opportunities of climate change	118
	Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios	2.1.3 Analysis of climate change risk scenarios	122
Risk management	Describe the organization's processes for identifying and assessing climate-related risks	2.1.2 Risks and opportunities of climate change	115
	Describe the organization's processes for managing climate-related risks	2.1.2 Risks and opportunities of climate change	118
	Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management	2.1.2 Risks and opportunities of climate change	118
Metrics and Targets	Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process	2.1.4 Climate change goals, indicators, and management performance	129
	Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas (GHG) emissions and the related risks	2.1.4 Climate change goals, indicators, and management performance	130
	Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets	2.1.4 Climate change goals, indicators, and management performance	131

Appendix 3: SASB Index

SASB Code	Accounting metric	Unit of measurement	Response for metric			Description	Page
EM-RM-110a.1	Gross global Scope 1 emissions, percentage covered under emissions limiting regulations	tCO_2e, %	2020	2021	2022	-	-
			97.1	97.1	97.1		
EM-RM-110a.2	Short-, medium-. and long-term Scope 1 reduction targets and strategies, and description of performance analysis	-	Corresponds to the following chapters: 2.1.4 Climate change goals, indicators, and management performance			-	129
EM-RM-120a.1	Air emissions of NOx, SOx, PM_{10}, H_2S, and VOCs	Tonne	Year	2020	2021	2022	There is no data on PM_{10} and H_2S because reporting is not required; the Company is currently evaluating the need to collect related data for the future	163
			NOx	2,761.2	2,948.4	2,938.1		
			SOx	647.1	703.0	950.9		
			VOC	1,957.0	1,723.9	1,464.8		
			PM10	-	-	-		
			H2S	-	-	-		
EM-RM-120a.2	Number of refineries in or near areas of dense population	Quantity (factories)	CPC has 3 oil refineries located in densely populated areas (where population of the local town is more than 50,000)				These are: Taoyuan Refinery Plant in Guishan District, Taoyuan City, with local population of 172,200; Dalin Refinery in Xiaogang District, Kaohsiung City, with local population of 154,800; and Linyuan Petrochemical Complex in Linyuan District, Kaohsiung City, with local population of 68,400	-

SASB Code	Accounting metric	Unit of measurement	Response for metric			Description	Page
EM-RM-140a.1	Total fresh water withdrawn, water recycled, and water used in regions with high or extremely high baseline water stress	M^3	Total water withdrawn in 2022			For details, refer to chapter 2.3.2 Water consumption and management	152-153
			Dalin Refinery 625,665,530	Taoyuan Refinery Plant 269,222,212	Linyuan Petrochemical Plant 807,107,392		
			Total water recycled in 2022				
			Dalin Refinery 613,500,672	Taoyuan Refinery Plant 263,113,214	Linyuan Petrochemical Plant 793,935,392		
			Water used in regions with high or extremely high baseline water stress in 2022: 0 m^3				
EM-RM-140a.2	Number of incidents of non-compliance associated with water quality permits, standards, and regulations	Cases	CPC committed one violation against Water Pollution Control Act in 2022 » 註：未涵蓋新臺幣30萬元以下非重大罰款事件及訴願中案件。			For details, refer to chapter 2.3.2 Water consumption and management	151
EM-RM-150a.1	Amount of hazardous waste generated, percentage recycled	MT/ Percentage	Total volume of hazardous waste 38,988.820	Percentage of given category relative to total waste 30.92%	Percentage recycled 0 %	For details, refer to chapter 2.5.3 Discharge and management of effluents and waste	168
EM-RM-150a.2	Number of underground storage tanks (USTs), number of USTs requiring cleanup, and percentage of UST assurance funds	Quantity (factories)	No. of USTs 3,061	No. of USTs requiring cleanup 0	Percentage of UST assurance funds -	UST assurance funds are introduced under U.S. laws, which do not apply to CPC	-
EM-RM-320a.1	Total recordable incident rate (TRIR), fatality rate, and near miss frequency rate (NMFR) for full-time employees and contract employees	Percentage	TRIR 0.017	Fatality rate 0	NMFR 0.904	TRIR = (Total accidents x 200,000)/total work hours; Fatality rate = (Total deaths x 200,000)/total work hours; NMFR = (Number of near misses x 200,000)/total work hours;	-
EM-RM-320a.2	Description of practices undertaken to evaluate, supervise, and reduce workers' exposure to long-term health risks	-	1. CPC continues to enforce ISO45001 re-certification; it adopts the PDCA model and creates a systematic occupational safety and health management framework to reduce changes of accident. 2. CPC has introduced a series of work safety and health training to improve employees' knowledge and skills on work safety and health, and encourages employees to take exams for occupational safety and health certifications as part of their professional capacity. 3. Emergency response drills are held on a regular basis to provide employees with relevant information and training on emergencies; all necessary equipment have been made available.			For details, refer to chapter 3.2.2 Employee safety protection	188
EM-RM-410a.1	Percentage of Renewable Volume Obligation (RVO) met through: production of renewable fuels, purchase of separated renewable identification numbers (RIN)	-	CPC only develops renewable fuel and is not involved in the production or sale; for this reason, it has no RVO and is not required to conduct market survey			For details, refer to chapter 2.2 Green energy transformation and circular economy	135
EM-RM-410a.2	Total addressable market and share of market for advanced biofuels and associated infrastructure	-					

SASB Code	Accounting metric	Unit of measurement	Response for metric		Description	Page
EM-RM-520a.1	Total amount of monetary losses as a result of legal proceeding associated with price fixing or price manipulation	Amount	CPC encountered no lawsuit in 2022 that involved manipulation of oil/gas price, and no monetary loss was reported.		For details, refer to chapter 1.3.1 Compliance	98
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	Case count	CPC encountered 6 events of major penalty due to operational errors in 2022		For details, refer to chapters 1.2.2 Response to significant events and 2.5.1 Compliance with environmental laws	70
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)	Percentage	Tier 1 PSE 0	0.011	(Total Tier 1 PSEs / total work hours) ×200,000	-
			Tier 2 PSE	0.011	(Total Tier 2 PSEs / total work hours) ×200,000	-
EM-RM-540a.2	Challenges to Safety Systems indicator rate (Tier 3)	Percentage	0.512		(Total Tier 3 PSEs / total work hours) ×200,000	-
EM-RM-540a.3	Management system for identifying and mitigating catastrophic risks and back-end risks	Percentage	CPC places great emphasis in developing employees' risk management and crisis handling awareness as part of its efforts to implement proper risk management policies and crisis management systems. This increased awareness is believed to enable more efficient risk management and crisis handling and contribute to business sustainability, which is why every internal unit is bound to follow the risk management system for risk identification, risk analysis, risk assessment, risk handling, communication, negotiation, supervision, and review. Risks are also assessed on the organization level with proper actions taken in response.		For details, refer to chapters 1.3.3 Climate change management and 2.1.1 Climate change governance	73 114
EM-RM-000.A	Refining throughput of crude oil and other feedstocks	(10,000kL)	Oil products total sales (including petrochemical products and multilateral trade)	28.69million kL	-	67
	Refining throughput of crude oil and other feedstocks	(100mn m^3)	Sale of natural gas products	26.539 billion cubic meters		
EM-RM-000.B	Refining operating capacity	(10,000kL)	22.19 million kL		-	67

Appendix 4: External Verification and CPA Assurance

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By Royal Charter

INDEPENDENT ASSURANCE OPINION STATEMENT

CPC Corporation, Taiwan 2023 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 purpose 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 2023 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 2023 Sustainability Report provides a fair view of the CPC sustainability programmes and performances during 2022. 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 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.
- 14 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 2021 (For each material topic covered in the applicable GRI Sector Standard and relevant GRI Topic Standard, comply with all reporting requirements for disclosures). 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.

For and on behalf of BSI:

Peter Pu, Managing Director BSI Taiwan

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Statement No: SRA-TW-789098

2023-06-14

Taiwan Headquarters: 2nd Floor, No. 37, Ji-Hu Rd., Ni-Hu Dist., Taipei 114, Taiwan, R.O.C.

A Member of the BSI Group of Companies.

English Translation of a Report Originally Issued in Chinese

Assurance Report of Independent Auditors

To CPC Corporation, Taiwan

1. Scope

We have been engaged by CPC to perform a limited assurance engagement in relation to and report on selected sustainability performance indicators included in CPC 2022 Sustainability Report.

Regarding the sustainability performance indicators selected by CPC and their applicable criteria, please refer to appendix A.

Management responsibility

CPC is responsible for the preparation of 2022 Sustainability Report in accordance with adequate criteria, including referencing to Global Reporting Initiatives ("GRI") GRI Standards, and for the design, execution and maintenance of internal controls in regard with report preparation to support the collection and presentation of the Report.

Independent Auditor's Responsibility

Our responsibility is to plan and perform limited assurance engagement in accordance with the TWSAE3000 "Assurance Engagements other than Audits or Reviews of Historical Financial Information", issued by Taiwan Accounting Research and Development Foundation.

2. Assurance

The procedures performed in limited assurance engagement vary in nature and timing, and are less in extent than for a reasonable assurance engagement so that the level of assurance is substantially lower than reasonable assurance engagement. While we considered the effectiveness of CPC internal controls when determining the nature and extent of procedures, our review was not designed to provide assurance on internal controls.

To conclude for limited assurance, our procedures performed included:

- Interviewing with CPC management and personnel to understand the CPC implementation of overall sustainability and reporting process;

- Understanding the main stakeholders of CPC and their expectations and needs as well as

interaction protocols by interview or examination of documentation and how CPC responded to those expectations and needs;

- Performing analytical procedures on selected sustainability performance indicators, gathering and checking other supporting documentation and management information obtained, testing on sample basis if necessary;

- Reading CPC Sustainability Report to ensure the implementation of overall sustainability and reporting process is consistent with our understanding.

3. Limitations

Non-financial information contained within sustainability reports are subject to measurement uncertainties. The selection of different measurement techniques can result in materially different measurement. Also assurance engagements are based on selective testing of information being examined, and it is not possible to detect all of the existing material misstatements whether resulting from fraud or error.

4. Quality and Independence

We are in conformity with TWSQC1 "Quality Control for Public Accounting Firms" to establish and maintain a sound system of quality control, including code of professional ethics, professional standards and those written policies and procedures in applicable regulations. We are also in conformity with related independence and other ethics requirements in Taiwan's Norm of Professional Ethics, which basic principles are integrity, objectivity, professional competence and due care and professional behavior.

5. Conclusion

Based on our procedures and obtained evidence, nothing has come to our attention that causes us to believe that any material modifications or adjustments should be made to the selected sustainability indicators in accordance with applicable criteria.

Lu, Chian Uen
Ernst & Young
June 20th , 2023
Taipei, Taiwan, Republic of China

Notice to Readers
The reader is advised that the sustainability report has been prepared originally in Chinese. In the event of a conflict between the assurance report and the original Chinese version or difference in interpretation between the two versions, the Chinese language assurance report shall prevail.

Appendix A

No.	Section Title	Article Title	Subject matter information	Applicable Criteria
1	1.1 Our CPC	1.1.2 Directors overview	Overview of board meetings 2022 Meeting Held 14 (Including extraordinary and regular board meetings) Average Attendance Rate 91.0% Directors and supervisors	Self-selected indicator.
2	2.5 Pollution Prevention	2.5.2 Air pollutant emission and management	CPC has 3 oil refineries located in densely populated areas (where population of the local town is more than 50,000).	SASB EM-RM-120a.2： Global refineries located in or near areas of dense population, which are defined as urbanized areas with a population greater than 50,000.
3	Appendix 3	SASB Index	CPC committed one violation against Water Pollution Control Act in 2022. Note: This statistical data does not include cases with fines below NTD 300,000 and appealed cases.	SASB EM-RM-140a.2： Number of incidents of non-compliance associated with water quality permits, standards, and regulations.

台灣中油股份有限公司
CPC Corporation, Taiwan