



長春集團
Chang Chun Group

2017

Corporate Social Responsibility Report



About This Report

This Report is an extension of CCPG's commitment to sustainable development in 2016. CCPG aims to be “a diligent, pragmatic, and integrity-oriented enterprise”, “a trustworthy material supplier”, “a sustainable producer that prospers with the environment”, and “an enterprise that undertakes responsibility and creates social values” as it advances the spirit of sustainability to important production sites overseas. CCPG discloses its implementation of corporate social responsibilities in this Report to domestic and foreign stakeholders as we join hands in creating a sustainable future.

Report Scope and Boundary

CCPG established the Executive Board in 2014, with the collective Group name CCPG created by the merging of Chang Chun Plastics Co., Ltd. (CCP), Chang Chun Petrochemical Co., Ltd. (CCPC), and Dalian Chemical Industry Co., Ltd. (DCC). The scope and boundary of this report include CCPG's Taipei Head Office and all Taiwan-based factories. Six CCPG foreign production factories have also been included in the Report from this year. Please refer to 1.1.1 Company Profile for detailed information.

Reporting Period and Issuance Date

CCPG shall regularly publish its Corporate Social Responsibility Report for the previous year each year. The previous report was published in December 2017 and the current “Chang Chun Group 2016 Corporate Social Responsibility Report” is published in December 2018, covering the disclosure period of January 1, 2017 to December 31, 2017. To demonstrate trends in changes each year, certain information in this Report includes statistics in the past 3 years (since 2015). The scope of disclosure of other statistics and information that differ from the aforementioned scope shall be specified in the chapters.

Report Compilation and Audit

This report is compiled with information provided by CCPG's CSR Executive Secretariat, four CSR task forces, all departments under the Taipei Executive Board, all Taiwan-based factories, and six foreign factories. To ensure that the report is accurate and meets stakeholders' expectations, all content was approved by CCPG's CSR Committee before its official release.

Report Compliance Standards

The contents and structure of the report are based on the GRI Standards published by the Global Reporting Initiative (GRI) in 2016. The information disclosure of relevant content indexes is carried out based on the following Core Options, fully illustrating CCPG's material topic management policies and implementation performance in Economic, Environmental, and Social Issues.

Contact

Feel free to contact us if you have any questions regarding the contents of the Report.

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Retrospect and Outlook of Sustainability Strategies

The chemical industry has made indispensable contributions to the development of technologies and human society. The business environment also faces new challenges with new emerging risks in global warming, extreme weather, air pollution, and deprivation of water resources. As the global economy recovers, the Group's profitability reached record high in 2017. Revenue in 2018 is also expected to grow and CCPG shall focus more on innovation, recycling, and sustainable development and it shall also expand into emerging markets such as ASEAN and India.



Advancement of the Framework for Sustainable Development

We established the Corporate Social Responsibility (CSR) Committee in 2017 to strengthen the Group's ESG "Environmental, social and corporate governance." We aim to integrate internal and external resources in the most effective manner to advance sustainable development. At first, we observed the benefits of integrating CSR with our core businesses and we adopted voluntarily disclosure of CSR information for stakeholders to learn more about CCPG's hard work. We shall continue to review and make improvements based on the short, medium, and long-term goals.



Talent Cultivation and Safety First

"Talents" are the most important assets of the Group and we implement excellent talent recruitment, cultivation, promotion, and retention to cultivate good talents. The Company made arrangements for nearly 570 domestic and foreign supervisors to participate in training in 2017. The management training mainly aims to improve management functions, unify management philosophies, and optimize management skills.

Based on the characteristics of the industry, in addition to strengthening safety in production, we focus on the health and safety of employees and we require each CCPG employee to internalize safe conduct into life and work. CCPG systematically established occupational health management framework and we achieved 100 percent in labor health care rate and special hazard health examination rate in 2017.

As a result of our hard work, we recruited approximately 300 new employees in 2017 and the average turnover rate for domestic employees of the Group in the past three years has been below 2%. In addition, the recruitment of various operations in Taiwan prioritized residents of local communities to intensify the localization of the industry.



Innovative Products and Green Procedures

CCPG Group seeks to become a high-value supplier in the green industry. As the world embraced measures for countering global warming and improving air quality in recent years, we have developed copper foil for lithium batteries to meet the rapid growth in the demand for lithium batteries for electric vehicles. CCPG independently develops products and technologies and provides full support for innovation and R&D. We also integrate vertical production lines to create economic benefits and reduce impact to the environment. The Group has obtained 771 patents and invests more than NT\$373 million in industry-academia collaboration, academic research institutions, and independent development.

With regard to operations, we maintain good source management to reduce energy and resource consumption while reducing risks in energy price fluctuations and supply. CCPG developed the unique process carbon capture technology in the world and recycles up to 103,000 metric tons of carbon dioxide each year as a raw material for producing acetic acid. In addition, domestic and overseas factories have achieved 100 percent adoption of green accounting in 2017. In response to future carbon trading, we also plan to add related forms to account for carbon costs. In terms of renewable energy investments, the solar power generation equipment in Miaoli Factory to be inaugurated in 2018 is expected to generate up to 2.6 million kWh and reduce 1,600 metric tons of CO2 emissions each year.



Connect Value to Create Sustainability

Through our promotion in the sustainable purchase policy in local procurement, promotion of regulations, materials recycling, and supply chain management system, we have improved management efficiency and facilitated joint growth with the supply chain as well as improved the value of products and services while providing feedback to suppliers.

The Group promoted the supplier CSR advancement event in 2017. Most of the domestic and foreign suppliers have signed the CSR statement and the signature rate is expected to reach 100% in 2019. In addition, CCPG provided training and tests sessions for contractors that more than 20,000 participants in 2017.

We received positive feedback from customers, employees, and suppliers for the first CSR Report we published in 2017. The 2018 CSR Report will further include factories in China, Malaysia, and Singapore and provide more comprehensive disclosure of the Group's material issues. Starting from the end of 2018, the Group shall advance its ISO quality, environment, safety and health management systems in accordance with CSR goals to seamlessly integrate CCPG's CSR policies with regular operations.

CCPG Executive Board Chairman

Chairman

Key CSR Performance of CCPG in 2017



Identification of Material Topics

CCPG takes stakeholders' needs and expectations very seriously and it uses questionnaires to conduct surveys and identify and analyze stakeholders' issues of concern as the reference for information disclosure in the report and as the basis for formulating corporate social responsibility policies to facilitate effective communications with different stakeholders. The major analytical steps are as follows:

1. Stakeholder Identification

Based on the five principles in the AA1000 SES 2015 Stakeholder Engagement Standards, CCPG identifies the Group's major stakeholders, through collection of opinions from CSR representatives from all departments. CCPG identifies CCPG's major stakeholders in a total of seven categories, including employees, suppliers (including products, freight services, engineering and etc.), customers, governments/competent authorities, shareholders / joint ventures, community residents, and trade associations.



2. Outcome of Material Topic List

With regard to the identification of material topics, the opinions of the CSR Committee and CSR promotion members from all of the Group's business units were collected to list the core material topics for CCPG's industry. In addition, the Group summarized seven categories of issues of concern to stakeholders and referenced the GRI Standards, sustainability trends in the petrochemicals industry, benchmark companies in the industry, social events, and issues of concern to society and compiled a list of 26 sustainability issues. Four material topics were adjusted when compared to the issues addressed in 2016:

Original Material Topic	Topic after Adjustment	Reason for Adjustment
<ul style="list-style-type: none"> Corporate Governance Shareholders' Equity 	Corporate Governance	These two issues involve governance and they are therefore merged into the Corporate Governance section for discussion
<ul style="list-style-type: none"> Labor Policy and Rights Protection Labor/Management Relations 	Labor Relations and Labor Conditions	The issues are merged by referencing global sustainability rating institutions and benchmark companies
<ul style="list-style-type: none"> Customer Communications and Grievance Management 	Customer Relationship Management	The issue was adjusted by referencing benchmark companies and long-term interactions between CCPG and customers
<ul style="list-style-type: none"> Processing and Insurance Mechanisms for Major Incidents 	Response and Management of Major Incidents	Adjustment of the title of the issue

3. Results of Material Topic Analysis

The Group adopted GRI G4 last year and reverted to GRI Standards this year in response to the amendment and to expand the boundaries to overseas factories. It adjusted the analysis methodology of material topics. With regard to the impact on Economic, Environmental, and Social issues, we have adjusted the questionnaires for identifying material topics and distributed them to the CSR promotion members of all of the Group's business units and senior executives of six foreign factories and received 37 copies in response. In the content of responses from 110 effective questionnaires issued to external stakeholders in 2016, the stakeholders' assessment different sustainability issues and the impact of decisions are adopted as the reference information for the data in this year's material topic and data from the 37 questionnaires received this year were also included as the basis for adjustments this year.

Based on a comprehensive analysis of the 147 questionnaires, we sorted by the level of the “economic, environmental, and social impact” and the “level of significant impact on stakeholders' decision-making” for the CSR Committee to conduct internal discussions before reporting to the Chairman and the General Managers of the three companies to produce the 2017 CCPG Materiality Matrix. With regard to the corresponding issues in the GRI standards, as the product quality issue has significant impact on the companies' CSR and important stakeholders, CCPG decided to adopt the spirit of GRI Standards and added product quality management strategy as the basis of disclosure in this Report. We will also analyze the results and use it as an important reference for communications with stakeholders and implementing sustainable management strategies.

The Significance of Material Topics to CCPG

Material Topic	Significance to CCPG
Product quality	We are committed to providing customers with satisfying products and services and grow along with customers and suppliers. We work hard and innovate to improve quality and ensure that all quality-related activities meet government regulations, product-related regulations, and customer demands.
Training and education, and talent development	“Talents” are the foundation of Chang Chun Group and “talent cultivation” is an important element in the development of human resources and our advantages for competing on the global stage. The significance of training and education, and talent development to CCPG can be explained in three ways: From the group perspective: <ul style="list-style-type: none">• They are the DNA of CCPG's continuous development and the cradle of future outstanding managers• They are the wind behind CCPG's cultural heritage and sources of a wealth of professional knowledge From the organization perspective: <ul style="list-style-type: none">• They fully advance supervisors' management capabilities and as CCPG actively adopts an inter-generation coaching model• They provide diverse and flexible learning channels and shorten the time required for high-quality talents to take on their respective roles• They are organizations for learning that promotes self-growth and development of others to achieve the continues quality improvements From the individual employee's perspective: <ul style="list-style-type: none">• They turn technicians into lecturers and improve employees' self-worth• They turn concepts into actions to build great lives for individuals
Compliance	CCPG adopts “integrity” as the basis of business development. CCPG reduces legal risks in operations and improves corporate governance systems to achieve sustainable development. Legal compliance is a cornerstone for its operations.
Customer relationship management	Putting the customer first is CCPG's core value. To provide customers with the best service quality, CCPG has built an operations team as the bridge between customers and the Company. CCPG shall implement the management cycle, continue to make improvements, and think from the customer's perspective to achieve the maximum social value by profiting with customers and creating prosperity for both CCPG and customers.
Occupational safety and health	Safety and sanitation of the work place has always been the core spirit of CCPG and a material topic that cannot be ignored in the chemicals industry. We use OHSAS 18001 and PSM to optimize processes, complete protection measures, advance pollution prevention and establish a management system that prevents workplace accidents. CCPG continues to review and improve implementation strategies to build a safe, healthy, and comfortable work environment.

Environmental impact management and assessment	CCPG understands that caring for society and protecting the Earth are top priorities for companies' sustainable development. In order to fulfill our responsibilities to the environment and implement the ideals of a circular economy, we pledge to complete pollutant prevention and continuous improvement tasks in our business activities in order to reduce the impact on the environment.
Response and management of major incidents	CCPG's processing and response to material incidents refer to the prevention of material incidents such as fires, explosions, poisoning, and accidental contamination of local areas and the prevention of losses to personnel, equipment, and properties.
Chemical management and product health and safety	CCPG is mainly a manufacturer of chemical products and its operations and development depends on effective management of chemical products to reduce the risks of operations in chemical products, protect employees' health and safety, and continue to improve products' compliance to health and safety regulations.
Waste management	To prevent secondary pollution caused by the contamination of the environment through waste, CCPG has introduced environmental management systems (ISO 14001) to all factories to ensure that waste disposal, reporting, and clearance in the factories' production process comply with legal requirements and provide management and responses on major environmental issues.
Energy management	Energy and greenhouse gas management are important issues in CCPG's day-to-day operations. We continue to advance energy conservation and carbon emissions reduction measures, improve energy efficiency, and implement energy and greenhouse gas management to reduce impact on climate change. We also lower the risks associated with fluctuations in energy prices and energy supply.
Water resource management	The shortage of water supplies is a common risk across the world and the depletion of water resources will cause tremendous challenge to corporate operations. CCPG pays attention to water resource management issues and continuously improves the efficiency of the use of water resources in day-to-day operations. Reduction in water consumption reduces risks.
Air emission management	CCPG is committed to providing to the people and our next generation with a clean environment and it also prioritizes healthy and fresh air for the people. Continuous improvement of air pollution is our responsibility and obligation.

CCPG Materiality Matrix



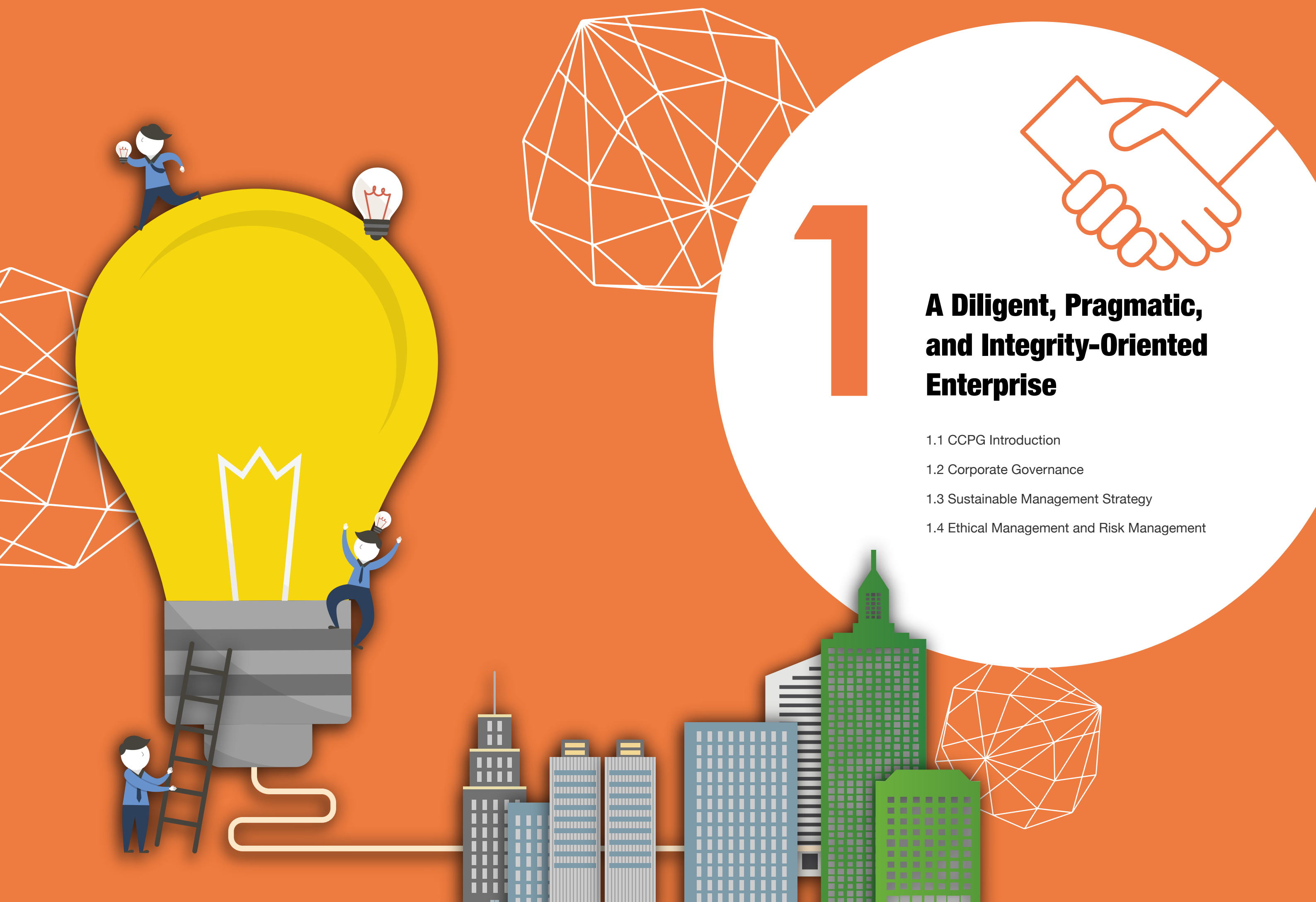
Scope and Boundaries of Material Topics

Level of Impact	Issues	Corresponding GRI Standards	Stakeholders								Management Policy and Related Information	Page Number
			Employee	Suppliers		Customers	Government/Competent Authorities	Shareholders/Joint Ventures	Community Residents	Trade Associations	Corresponding Chapter	
Severe Impact	Environmental Impact Management and Assessment	• Social: Local Communities	●				●		●		3.1 Environmental Management and Investment	64
	Response and Management of Major Incidents	• Social: Local Communities	●	●		●	●	●	●	●	2.2.3 Material Incident Management & Response	53
	Compliance	• Environmental: Compliance with environmental laws and regulations • Social: Compliance with socioeconomic regulations	●	●		●	●	●	●	●	1.4.2 Compliance	33
	Chemical Management	• Social: Customer health and safety, marketing and labeling	●			●	●		●	●	2.1.2 Chemical Management	42
	Product Health and Safety	• Social: Customer health and safety	●			●	●	●			2.1.2 Chemical Management	42
	Waste Management	• Environmental: Effluents and waste	●				●		●	●	3.4 Waste Management	78
	Energy Management	• Environmental: Energy	●				●				3.2.1 Energy Management and Conservation	66
	Water Resource Management	• Environmental: Water resources, effluents and waste	●				●		●		3.3 Water Resource Management	74
	Air Emission Management	• Environmental: Emissions	●				●		●		3.4.1 Emission of Air Pollutants	78
	Customer Relationship Management	• Social: Customer health and safety, marketing and labeling, customer privacy	●			●		●			2.1.4 Customer Communications	44
	Occupational Safety and Health	• Social: Occupational safety and health	●				●				2.2.1 Workplace Safety 2.2.2 Process Safety 4.3.2 Healthy Workplace Environment	47 51 105
	Product Quality	• Product quality • Social: Marketing and labeling	●			●		●			2.1.3 Product Quality	44
	Training and Education, and Talent Development	• Social: Training and education	●								4.3 Talent Cultivation	103

Note: ● indicates that the issue will cause an impact on this boundary

Level of Impact	Issues	Corresponding GRI Standards	Stakeholders								Management Policy and Related Information	Page Number
			Employee	Suppliers		Customers	Government/ Competent Authorities	Shareholders/ Joint Ventures	Community Residents	Trade Associations	Corresponding Chapter	
Moderate Impact	Corporate image	• Economic: Market position	●					●	●	●	1.1.1 Company Profile	16
	Corporate Governance	• General disclosure: Governance, ethics and integrity • Economic: Economic performance	●			●	●	●			1.2 Corporate Governance	22
	Operational Performance	• Economic: Economic performance	●					●			1.2.1 Financial Performance	22
	Supplier Management	• Economic: Procurement • Environment: Supplier environmental assessment • Social: Supplier social assessments	●	●							2.3 Sustainable Procurement Policy	56
	Product Strategy and R&D Innovation	• Social: Marketing and labeling • Economic: Economic performance	●			●					2.1.1 Green Process and Products 2.1.2 Chemical Management	38 42
	Business Ethics and Integrity	• General disclosure: Ethics and integrity • Economic: Anti-corruption and anti-competition	●	●		●					1.4.1 Ethical Management	32
	Sustainable Development Strategy	• General disclosure: Strategy, governance, organization overview	●	●		●		●		●	1.3 Sustainable Management Strategy	25
	Labor Relations and Labor Conditions	• Social: Labor relations, labor/management relations, Non-discrimination, freedom of association and collective bargaining, child labor, forced and compulsory labor, human rights assessments	●				●				4.1.2 Corporate Human Rights Management 4.2.3 Labor-Management Relations and Communications	88 1 02
	Product Transportation Safety	• Social: Customer health and safety	●	●		●	●		●		2.3.2 Supplier Management System	57
	Climate Change Mitigation and Adaptation	• Environmental: Materials, energy, water, emissions	●				●	●		●	3.2 Climate Change, Energy Conservation, and Emission Reduction	66
	Community Development and Social Investment	• Social: Local Communities • Economic: Indirect economic impact	●				●	●	●		4.1.1 Stakeholder Engagement 4.1.3 Social Engagement	84 89
Low Impact	Talent Enticements and Benefit System	• Social: Labor relations and labor/management relations	●				●				4.2.1 Employment Status 4.2.2 Employee Benefits	94 99
	Risks and Opportunities	• General Disclosure: Strategies	●					●			1.4.3 Risk Management	34

Note: ● indicates that the issue will cause an impact on this boundary



1

A Diligent, Pragmatic, and Integrity-Oriented Enterprise

- 1.1 CCPG Introduction
- 1.2 Corporate Governance
- 1.3 Sustainable Management Strategy
- 1.4 Ethical Management and Risk Management



When the Group's Executive Board was established in 2014, corporate governance, compliance, and risk management were all incorporated into Group-level integrated management. Since 2016, CCPG has established additional CSR governance mechanisms to meet its self-expectation as a corporate citizen, environmental, social and supply chain issues have been incorporated into the scope of CCPG's governance. CCPG hopes that all subsidiaries' resources and expertise can be well connected to ensure the Group's sustainable development through systematic and integrated approaches.

1.1 CCPG Introduction

CCPG consists of three companies. With three founders' selfless minds, they work with great efforts day and night, through perfect long-term teamwork, which has remained unchanged for more than six decades.

1.1.1 Company Profile

In 1949, CCPG's three founders, Mr. Liao Ming-Kun, Mr. Lin Shu-Hong, and Mr. Tseng Shin-Yi, created Chang Chun Plastics Co., Ltd. (CCP) with an initial capital of NT\$500, and sowed the first seed for CCPG.

In 1964, Chang Chun Petrochemical Co., Ltd. (CCPC), was founded. This is CCPG's second core company. CCPC produced methanol using natural gas from Miaoli and was a pioneer in Taiwan's petrochemical industry. In 1979, Dairen Chemical Corp. (DCC), CCPG's third core company, was established to produce vinyl acetate monomers.

CCPG actively expands its international business development and operates four main production sites through three core companies in Mainland China. The companies from north to south include Chang Chun Chemical (Panjin) Co., Ltd., Chang Chun Dairen Chemical (Panjin) Co., Ltd. (established in 2011), Chang Chun Chemical (Jiangsu) Co., Ltd. (established in 2002), Dairen Chemical (Jiangsu) Co., Ltd. (established in 2003), and Chang Chun Chemical (Zhangzhou) Co., Ltd. (established in 2003); it has three main production sites in Southeast Asia including CCD (Singapore) Pte. Ltd., Chang Chun (Singapore) Pte. Ltd. (established in 2010), Dairen Chemical (Malaysia) Sdn. Bhd. (established in 1998), and PT. Chang Chun DPN Chemical Industry Co., Ltd. (Indonesia) (established in 1992).

The Group produces hundreds of products including general chemicals, synthetic resin products, thermosetting plastics, high-performance engineering plastics, electronic materials, and semiconductor chemicals and it makes extensive contributions to industry development and improvements in people's lives.




CCPG CHANG CHUN GROUP 7F, No. 301, Songjiang Road, Taipei City			
Company Ownership and Legal Form		Company limited	
Official Company Name	CHANG CHUN PLASTICS CO., LTD. (CCP)	CHANG CHUN PETROCHEMICAL CO., LTD. (CCPC)	DAIREN CHEMICAL CORP. (DCC)
	No.8, Huaxi Road, Dafa Industrial Park, Daliao District, Kaohsiung City	7F, No. 301, Songjiang Road, Taipei City	No.8-1, Huaxi Road, Dafa Industrial Park, Daliao District, Kaohsiung City
Taiwan Operations	CCP Hsinchu Factory CCP Changpin Factory CCP Mailiao Factory CCP Dafa Factory CCP Kaohsiung Factory	CCPC Miaoli Factory CCPC Mailiao Factory CCPC Dafa Factory	DCC Mailiao Factory DCC Dafa Factory DCC Kaohsiung Factory

Overseas Operations	Abbreviation	Finance Merger Entity	Description
Chang Chun Chemical (Jiangsu) Co., Ltd.	Changshu Factory	CCP	Joint venture of CCP and CCPC
Chang Chun Chemical (Zhangzhou) Co., Ltd.	Zhangzhou Factory	CCP	CCP's wholly owned subsidiary
Chang Chun (Singapore) Pte. Ltd.	Singapore Factory	CCP	Joint venture of CCP and CCPC
Chang Chun Chemical (Panjin) Co., Ltd.	Panjin Factory	CCPC	Joint venture of CCP and CCPC
Chang Chun Dairen Chemical (Panjin) Co., Ltd.	CCDC Panjin Factory	DCC	Joint venture of CCP, CCPC, and DCC
Dairen Chemical (Jiangsu) Co., Ltd.	DCC Jiangsu Factory	DCC	DCC's wholly owned subsidiary
CCD (Singapore) Pte. Ltd.	CCD Singapore Factory	DCC	Joint venture of CCP, CCPC, and DCC
Dairen Chemical (Malaysia) Sdn. Bhd.	DCC Malaysia Factory	DCC	DCC's wholly owned subsidiary

Note: To display related statistics in the report, the merged entities of each company are specified based on the principles for the compilation of consolidated financial statements.

1.1.2 Business Philosophy and Operating Principles

Business Philosophy —

 Integrity	Integrity is the essence of CCPG's business philosophy. CCPG treats everyone with integrity, so customers receive CCPG's services with peace of mind, and government, employees, suppliers and the society all trust CCPG.
 Customer First	Under the quality policy of "Enhancing Quality to Satisfy Customers", CCPG's products are sold well all over the world. To ensure quality, CCPG's quality satisfaction is rigorously examined from procurement of materials to product delivery to customers.
 Creative Innovations	CCPG has long maintained 10% of its human resources in research and innovation, combined with professional expertise accumulated year by year, hundreds of products have been developed, forming a complete vertically and horizontally integrated product chain.

Operating Principles —

Be diligent and pragmatic; work together. Grow together with customers. Innovate through R&D and make contributions to society.
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CCPG adheres to the principle of "Environment is the Most Precious Asset for Mankind, and Environmental Protection is our Responsibility", by introducing the world's most advanced technologies and equipment, continuously improving manufacturing processes, promoting industrial waste reduction, implementing pollution prevention, researching and developing various technologies to enhance the effectiveness of pollution treatment. CCPG considers "Environmental Sustainability" one of the Group's primary goals and has taken both environmental protection and social responsibilities as its top priorities as CCPG continues to progress toward sustainable development.



1.1.3 Product Introduction and Location of Operation

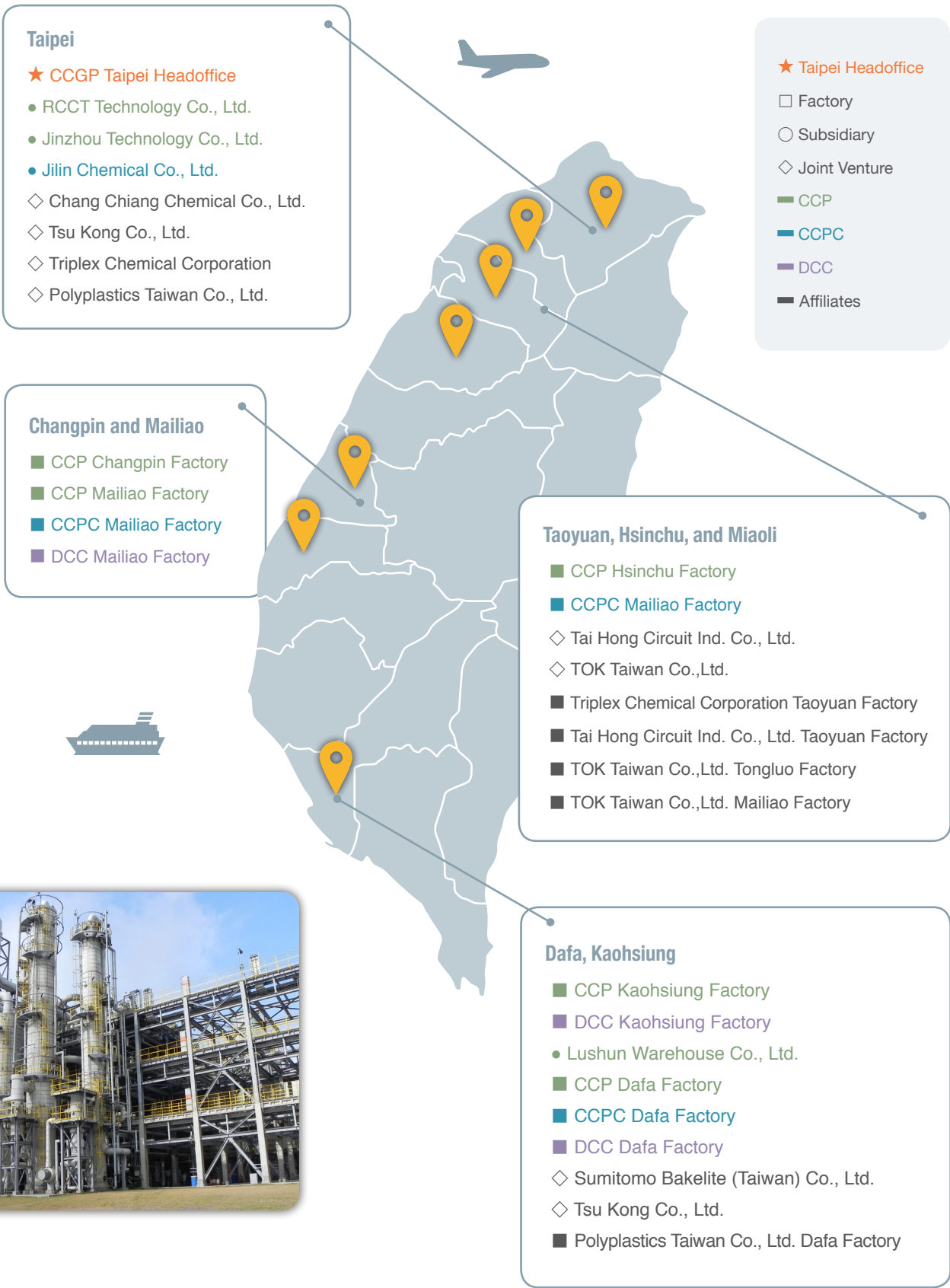
CCPG's products occupy very important positions in the upstream and midstream of petrochemical industry. They can be widely used as raw materials for end products of many industries. The descriptions of all companies' main products and applicable industries are as follows. For main descriptions of each product please refer to "Application" and " Products" on the Group's website.



	Major Products	Major Applications of Products	Major Markets
CCP	Epoxy resins, engineering plastics, bis-phenol A, copper clad laminate, and phenol	Electronic, coatings, and thermosetting molding materials	Taiwan, Mainland China, Japan, South Korea, Southeast Asia and the United States
CCPC	Copper foil, hydrogen peroxide, electronics-grade chemical products, antioxidants, and polyvinyl alcohol	Chemicals, textiles, coatings, resins, semiconductors, medicine, electronics, paper & pulp, plastic	Taiwan, Mainland China, Japan, South Korea, Southeast Asia, United States, Europe, and South Africa
DCC	Vinyl acetate, ethyl acetate, VAE emulsion, VAE powder, 1,4-butanediol, and PTMEG	Chemicals, coatings, resins, adhesives, paints, civil engineering, elastic fibers	Taiwan, Mainland China, Asia, America, Australia, Europe and Africa, etc.



Taiwan Locations of Operation





Global Locations of Operation

- Factory
- Subsidiary
- ◇ Joint Venture
- CCP
- CCPC
- DCC
- Affiliates





1.2 Corporate Governance

CCPG insists on operational transparency, and sets up a Board of Directors following laws and regulations, such as "Company Act", "Securities and Exchange Act "etc.; at same time, CCPG also focuses on shareholder equity and employee benefits. For a long time, the Board of Directors has continuously improved its corporate governance system, and conducted self-examination to reinforce employees' awareness of legal compliance as well as supervision and management of its subsidiaries; meanwhile, it also deepens its corporate social responsibility, emphasizes the concept of sustainable development, and maximizes the interests of its stakeholders.

In 2014, the Group established its Executive Board, composed of senior executives from three companies, and the Group's Chairman serves as Chief Executive Officer, three general managers serve as Chief Financial Officer, Chief Technical Officer and Chief Operating Officer respectively. The Group's resources and information are integrated by Head Office's department and offices, under the Executive Board's jurisdiction, and invested in the three companies' production factories and overseas locations of operation. Starting from the Group's own core business, CCPG focuses on three aspects including environmental protection, social relations, and corporate governance by providing well-cared products and services to create a better life for our society.

Please refer to CCPG's official website for the organization of the CCPG Executive Board.



1.2.1 Financial Performance

CCPG's revenue in 2017 remained stable and its sales were expanded across the globe. The Group also continued to strengthen business developments in Europe, United States, and emerging markets.

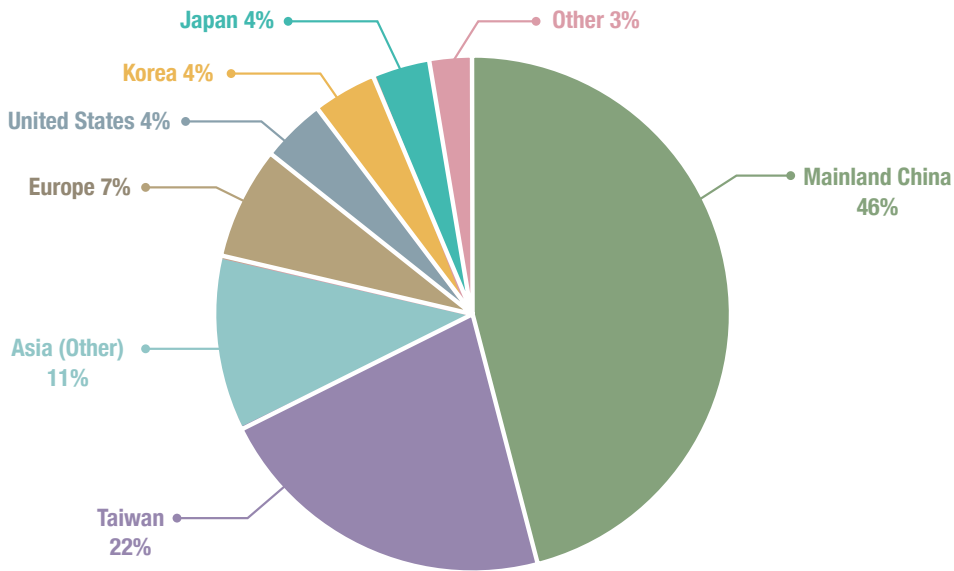
CCPG's stable financial performance contributed to the distribution of dividends as feedback for shareholders when the Group achieves earnings in the current year. The Board of Directors of the three companies have formulated the 2017 earnings distribution proposal for distribution in 2018.

Good financial performance is mainly exemplified in the continuous increase of growth in revenue and profitability which are key to sustainability corporate development. CCPG's good financial performance in recent years and its creation of long periods of stable economic value won tw AA- ratings from Taiwan Ratings.

Reference Website



Distribution of Revenue by Sales Territory



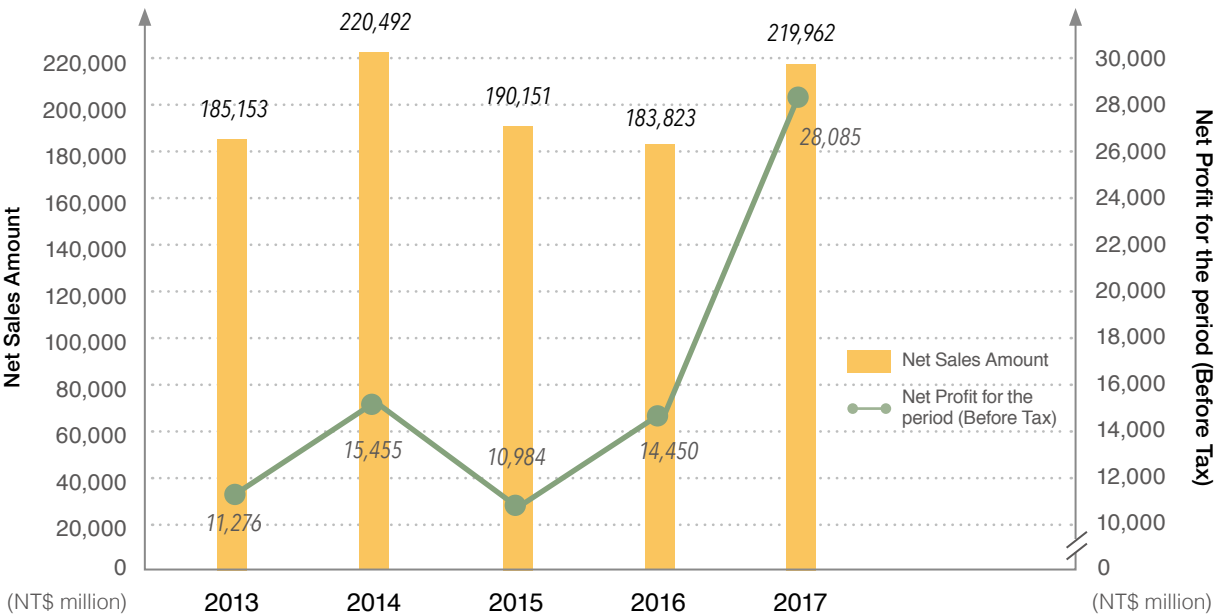
2013 - 2017 CCPG Operating Performance

Unit: NT\$ million

Year	2013	2014	2015	2016	2017
Net Sales Amount	185,153	220,492	190,151	183,823	219,962
Net Profit for the period (Before Tax)	11,276	15,455	10,984	14,450	28,085
Total Assets	244,985	255,438	240,902	239,043	256,478
Total Liabilities	115,127	115,236	99,206	88,133	93,782
Total Shareholders' Equity	129,857	140,202	141,696	150,911	162,697

Note: This table includes data from the consolidated financial report inspected and certified by a CPA. In addition to the boundaries of the Report, it also includes information of merged subsidiaries.

2013 - 2017 CCPG Net Sales and Net Profit for the Period (Before Tax) Trend



CCPG 2017 Operating Performance - Per Company

Unit: NT\$ million

	CCP	CCPC	DCC
Net Sales (or Net Interest Income)	104,201	115,761	64,878
Net Profit for the period (Before Tax)	10,303	17,782	8,641
Net Profit for the period (After Tax)	8,110	14,790	7,131
Total Assets	106,044	150,434	59,730
Total Liabilities	38,520	55,262	15,877
Total Shareholders' Equity	67,524	95,173	43,853

Note: 1. This table includes data from the consolidated financial report inspected and certified by a CPA. In addition to the boundaries of the Report, it also includes information of merged subsidiaries.
2. According to related financial regulations, CCP is an independently merged entity; CCPG's merged entity already includes DCC and CCPG's amount listed above already includes DCC.



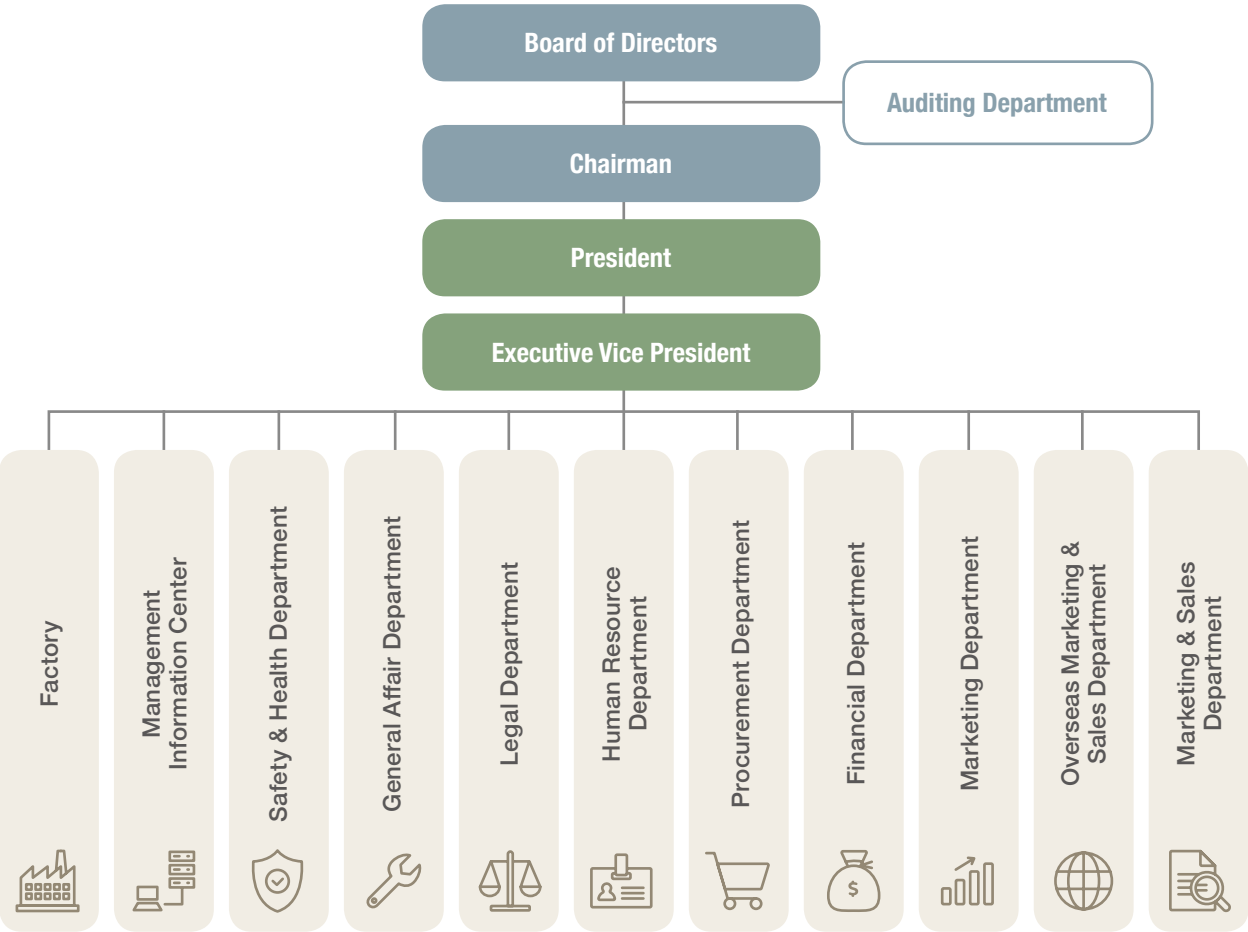
1.2.2 Corporate Governance Framework

CCPG's corporate governance is effectively supervised and strategically guided by each company's Board of Directors. CCPG assigns dedicated auditing personnel to complete supervision function, and conducts operational audits for each company and each department. This is to ensure that the business operations are conducted without any irregularities, that all information is correct, that its disclosure is immediate, and that the laws and regulations are strictly followed. The supervisors learn about the Company's actual operations through the audit report and financial statements and propose recommendations.

In addition, the Board of Directors meets on a quarterly basis in principle and the frequency of meetings is increased when necessary. The Board of Directors, on a quarterly basis, listens to the management team's reporting, including General Manager and Deputy General Manager, etc., and maintains dialogue with management team members. The management team proposes the company's vision and strategy to the Board of Directors. The Board of Directors assesses the feasibility of the company's strategy and urges the implementation schedule.

Procedures for the selection of Directors and Supervisors of CCPG companies have been established in accordance with related regulations and rigorous selection procedures. In addition to professional management expertise, the Group also values personal ethics and leadership skills to ensure their professionalism and independence and provide the most appropriate strategic guidance for the future development of companies in the Group. The three companies each held 4 Board of Directors meetings in 2017. The "Regulations Governing Procedure for Board of Directors Meetings" of the three companies were amended in December 2017 to provide more detailed regulations on the agenda for Board of Directors meetings in accordance with laws and strengthen the corporate governance functions of the Directors.

The professional experience and related discussion items of the members of Board of Directors and supervisors have been disclosed in the Annual Reports of the companies of the Group. The corporate governance frameworks of CCP, CCPC, and DCC are shown in the figure below.



1.3 Sustainability Strategy

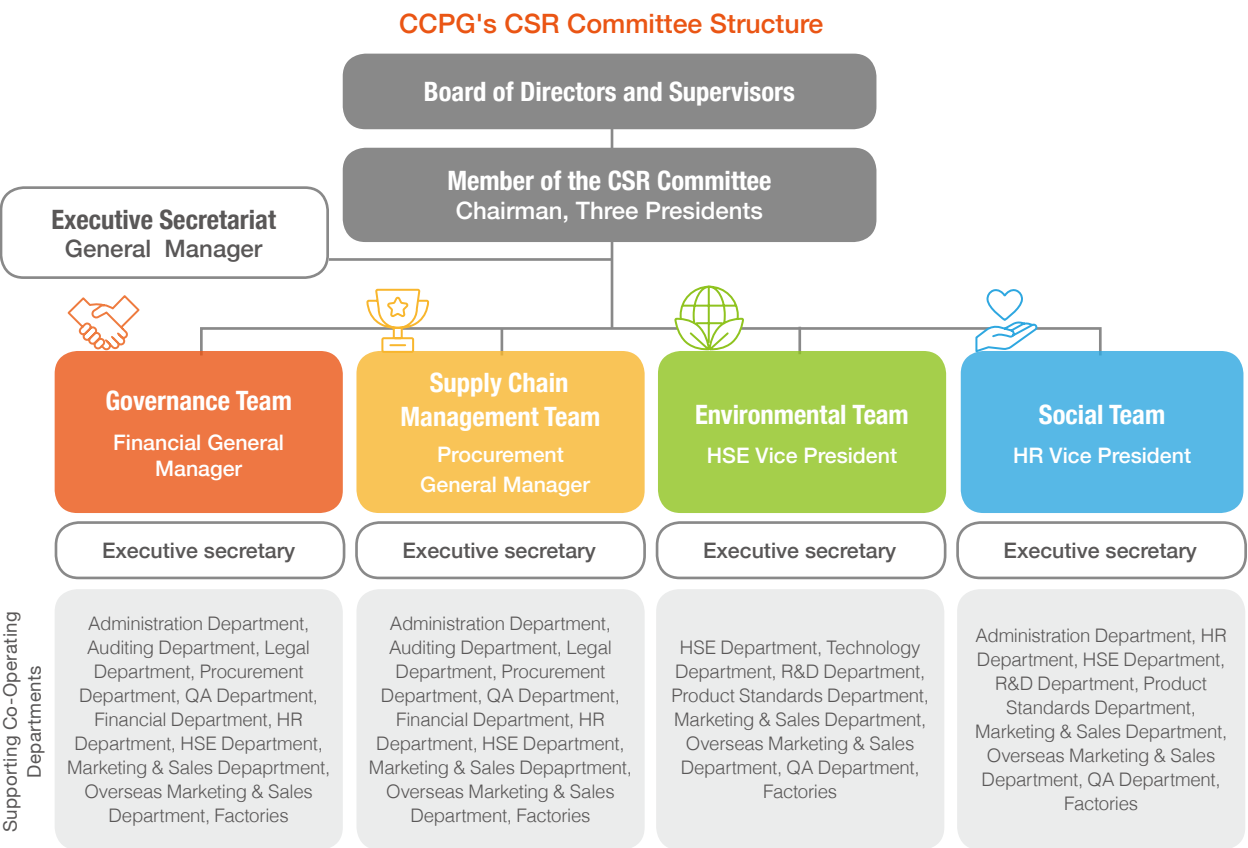
CCPG was founded upon corporate social responsibilities. In its pursuit of growth in corporate earnings and sustainable development, it remains rooted in business ideas and the formulation of its corporate culture as it seeks common prosperity in environmental protection and corporate growth.

The Group is committed to developing a sustainable strategy based on core businesses and it remains focused on practical developments. The key strategies include social strategies, environmental strategies, corporate governance, and supply chain management. On environmental aspect, CCPG continues to improve efficiency of energy utilization, improve product processes and raw materials, move towards recycling manufacturing process byproducts and developing alternative raw materials for petrochemicals, in order to achieve the goal of a circular economy; on social aspect, externally, the Group continues its efforts in deepening industry-university cooperative contents and maintaining good interactions with communities; internally, CCPG promotes a happy workplace and strengthens workplace safety culture; on corporate governance aspect, CCPG further implements integrity-oriented management through systematic management, gradually discloses performance of corporate social responsibility, and strengthens communications with stakeholders; on supply chain management aspect, CCPG progressively incorporates ESG management concepts and accompanies supplier to growth.

1.3.1 CSR Governance and Management Organization

CCPG established its CSR Committee in 2017. Following the Group's organizational structure, the Chairman serves as Committee Chairman, and three General Managers serve as Committee Vice Chairmen. Under the Chairman and Vice Chairmen, Executive Secretariat, Governance Team, Social Team, Environmental Team, and Supply Chain Management Team are established, and the Executive Director of the Executive Secretariat and all team leaders are held by heads of responsible departments and they are also members of the Committee.

The CSR Committee assigns the Executive Secretariat to be in charge of confirming execution and implementation of various CSR tasks, supporting co-operating departments, integrating issues with factory representatives, and reporting results of sustainable performance and stakeholder communications, on a quarterly basis, to CSR Committee.






In order to implement the Group's sustainable development strategy, the CSR Committee, in collaboration with its subordinate CSR teams, formulates short-term and mid to long-term sustainable development goals as well as action plans, and systematically plans related risk management issues for each responsible unit to implement and report. The heads of all CSR teams are responsible for leading and supervising the implementation status and reporting regularly to the Executive Secretariat. A total of 8 CSR team meetings and 1 CSR Committee meeting were convened in 2017. The Executive Secretariat reports the performance results to the Chairman of the Board and three General Managers and establishes the goals for the following year. Refer to the table below for the short, medium, and long-term goals for the quality of new products and the development goals and action plans of the CSR team in 2018:

Governance Aspect		
● Completed ◎ In progress		
Short-term Goals and Action Plans	2017 Achievement Status Description	Mid-and-Long-Term Goals and Action Plans
► Group ethics and integrity		
Construct the Group's code of ethics and compliance framework <ul style="list-style-type: none">Formulate code of conductEstablish anti-corruption investigation procedures and compile annual reportsConduct training and education on compliance, and establish internal risk identification mechanismsEstablish intellectual property protection policy	<ul style="list-style-type: none">CCPG established the CCPG Code Of Conduct in 2017 and it was signed and approved by the Chairperson of the Board. The Code of Conduct is binding to all CCPG employees across the world.CCPG conducted legal compliance training through e-Learning in 2017. The training completion rate in Taiwan was 98% and 4,905 employees have received training. CCPG expects to complete training for overseas factories in 2018.	Implement the Group's code of ethics <ul style="list-style-type: none">Establish grievance, reporting channels and internal investigation proceduresStrengthen internal training and education
► Co-exist and co-prosper with stakeholders		
Understand stakeholders and their connections with the Group <ul style="list-style-type: none">Identify stakeholders through questionnaires, seminars, etc.Analyze issues of concern to stakeholders	<ul style="list-style-type: none">The Group analyzed 7 types of stakeholders through the internal meeting of CSR representatives in 2017. It also distributed questionnaires to analyze issues of concern to stakeholders and disclosed them in the CSR Report.	Obtain stakeholders' trust and respect for the Group <ul style="list-style-type: none">Establish diversified and systematic communication channels, interact with stakeholders, and explain their issues of concern
► Product quality		
Continuous improvement of product quality <ul style="list-style-type: none">Integrate the Group's quality systemIntegration and digitalization of the quality assurance processISO9001:2015 revision/IATF16949 Automotive Quality Management System revisionEstablish quality assurance training mapsContinuously improve analysis methods	<ul style="list-style-type: none">Integrate the Group's quality proceduresComplete 18 training sessions for ISO 9001:2015 revision and IATF 16949Upgrade the quality inspection system to QA2.0 and add Statistical Process Control (SPC) and color early warning functions◎ The Group has completed plans for the quality assurance training map in 2017 for implementation in 2018	Establish customer-oriented quality requirements and expectations <ul style="list-style-type: none">Improve Q&AImprove statistical technologiesValue changes in quality and improve product quality in the manufacturing processIntroduce automatic analysis equipmentEstablish knowledge databases
► Group's sustainable development		
Promote CSR governance framework <ul style="list-style-type: none">Integrate CSR with routine business execution and provide budgetingIdentify business risks	<ul style="list-style-type: none">The Group has formulated related budgets for CSR in 2017 and it shall execute CSR plans based on the budget this year.The Group has assigned various units to take charge of risk identification, prevention, and correction for various management risks for continuous implementation.	Link the Group's core values and products with CSR <ul style="list-style-type: none">Periodically assess CSR implementation performance and management principles

► Corporate image		
Reinforce information transparency and establish the Group's CSR image <ul style="list-style-type: none">Publish CSR ReportUse public information platforms to demonstrate CSR results	<ul style="list-style-type: none">CCPG issued its first CSR Report in December 2017 and it shall issue CSR Reports each year to disclose information on related CSR activitiesCCPG has placed the Chinese and English versions of its CSR Report on its official website for stakeholders to download and to achieve effective communication.	Become CSR benchmark for industry peers <ul style="list-style-type: none">Continue to improve CSR strategies and programs

Supply Chain Aspect		
● Completed ◎ In progress		
Short-term Goals and Action Plans	2017 Achievement Status Description	Mid-and-Long-Term Goals and Action Plans
► CSR advocacy and commitment		
Develop and publish the Supplier Code of Conduct and request them to sign <ul style="list-style-type: none">Publish the Supplier Code of ConductPromote signing Code of Conduct to domestic and foreign manufacturers	<ul style="list-style-type: none">CCPG published the Supplier Code of Conduct in 2017 and placed it on the B2B supplier platform website◎ CCPG promotes signing code of conduct to domestic and foreign manufacturers and 100% of domestic contractors have signed the Code of Conduct in 2017. CCPG began promoting the Code of Conduct to foreign suppliers in June 2017. 	Establish sustainable procurement policies and promote related concepts <ul style="list-style-type: none">Establish sustainable procurement policies and incorporate them into Supplier Code of Conduct for promotionCommunicate and exchange CSR concepts with suppliers
► CSR Assessment and Management mechanism		
Practice Sustainable Procurement Assessment <ul style="list-style-type: none">Develop supplier CSR assessment questionnairesPromote CSR questionnaires to domestic and foreign manufacturersImprove the Group's procurement strategy	<ul style="list-style-type: none">◎ CCPG completed the CSR assessment questionnaires for suppliers in December 2017◎ CCPG plans to promote the CSR questionnaires to the main domestic and foreign suppliers of raw materials in March 2018 and the survey is expected to be completed in June 2018	Implement supplier CSR risk assessment and management <ul style="list-style-type: none">Conduct supplier risk assessment based on results from questionnairesConduct on-site assessments for suppliersAdjust procurement strategies to encourage and reward suppliers with great performance in the implementation of CSR policies

Environmental Aspect		
● Completed ◎ In progress		
Short-term Goals and Action Plans	2017 Achievement Status Description	Mid-and-Long-Term Goals and Action Plans
► Environmental Management Mechanism		
Establish environmental management mechanisms for the Group's informatization <ul style="list-style-type: none">Establish the Group's energy and environmental information platformsEstablish environmental monitoring and environmental indicatorsGrasp environmental resources related data and control related performance	<ul style="list-style-type: none">CCPG completed the first stage automatic continuous monitoring and early warning system for effluent discharge for factories in Taiwan and implemented audits for compliance with environmental regulations. The measures are expected to be implemented in the Group in 2020.	Implement additional changes to the Group's energy consumption structure and optimize efficiency through integration of energy and environmental information <ul style="list-style-type: none">Continuously optimize, revise and integrate all factories' management systemsStrengthen knowledge management mechanism



► Response to climate change and global warming		
Confirm the Group's greenhouse gas emissions <ul style="list-style-type: none">Receive counseling for greenhouse gas Programmatic CDM (Clean Development Mechanism)Evaluate greenhouse gas emissions per product typeReduce greenhouse gas emissions in 2025 by 10% from 2015	◎ Executed a total of two greenhouse gas Programmatic CDM projects for offsetting 19,487 tCO ₂ e/year (CCPC Mailiao Factory and DCC Mailiao Factory)	Promote the Group's and Factories' implementation of GHG reductions <ul style="list-style-type: none">Coordinate with national policy process by promoting relevant programs, such as: internal carbon pricing, green accounting, carbon tradingReduce greenhouse gas emissions in 2030 by 20% from 2015Reduce greenhouse gas emissions in 2050 by 50% from 2015
► Water Resource Management		
Enhance the Group's water conservation potentials and water recovery <ul style="list-style-type: none">Take inventory of all factories' water consumptionEvaluate the Group's water conservation potentialsInstall additional effluent recycling equipmentTrack water conservation potential programs	◎ CCPG advances projects for energy conservation, carbon emissions reduction, and water conservation for the whole Group. CCPC Miaoli Factory and CCPC Dafa Factory achieved 5% water conservation in the first stage	Reduce water consumption per product unit <ul style="list-style-type: none">Enhance process water-saving ratioIncrease proportion of recycled water usageIncrease wastewater recycle and reuse ratioIntroduce new technology or upgrade existing technologyAchieve the long-term goal of 3% in annual reductions through the aforementioned efforts
► Waste Management		
Reduce waste generation and properly dispose of hazardous wastes <ul style="list-style-type: none">Take inventory of process waste and analyze waste composition to assess and implement waste recyclingEstablish a mechanism to control the amount of waste disposed of from factories	◎ CCPG conducts independent audits on waste in the factories each quarter based on the internal waste inspection forms to ensure that waste disposal meets regulatory requirements	Realize circular economy through waste management <ul style="list-style-type: none">The Group to manage waste information in a unified manner, through waste output classification control, and research and discuss the feasibility of reuseEstablish waste reduction goals for 2019
► Toxic Chemical Management		
Effectively control toxic chemical operations <ul style="list-style-type: none">Establish toxic chemical substances certification management	● Complete the establishment of the toxic chemical substances certification management platform	Reduce the number of toxic chemicals in operation and reduce associated operational risks <ul style="list-style-type: none">Grasp relevant domestic and foreign laws and regulationsResearch and develop alternative energy sources or mechanisms to reduce toxic chemicalsMaintain long-term zero-penalties for toxic chemical substances
► Chemical Management		
Effectively control chemical operations <ul style="list-style-type: none">Construct chemical management platformsIntroduce chemical exposure assessment and chemical control banding (CCB) technologies, establish safety and health management system, and publish results	◎ Collect data on chemical products from all factories to establish chemical products regulatory management and reporting mechanisms	Establish chemical toxicology database <ul style="list-style-type: none">Incorporate data of chemicals that cause cancer and reproductive toxicity, and be in line with domestic and foreign chemical management regulations

► Promote process safety operations		
Reduce total number of process accidents down to 10 or less in each of Taiwan-based factories <ul style="list-style-type: none">Cultivate process safety management (PSM) related professional personnelImplement dedicated full-time personnelConstruct and strengthen process safety systems	◎ There are 12 unscheduled process suspensions in Taiwan-based factories each year and improvements are required ◎ Safety engineers have been appointed for all processes in factories in 2017 to continue the advancement of the following items: <ul style="list-style-type: none">Reassessment of process safety every three yearsFull PSI inventoryParticipation in incident investigationsParticipation in safety reviews for process suspensionsParticipation in management reviews for changesParticipation in process safety management auditsRefurbishment and maintenance of storage tanksCarry out safety improvement tasks assigned by the CCPG HSE Division	Shape the Group's safety culture and achieve "zero" material process accident <ul style="list-style-type: none">Develop high-quality safety operation habits through four safety management steps: standardization, autonomy, digitalization, and transparencyImplement reporting of false alarm accidents, and conduct accident investigationIntegrate the Group's resources to complete related equipment and systems
► Labor Health Management		
Implement labor health protection and management measures and advocacy <ul style="list-style-type: none">Establish employee health management measures, such as: operation procedure manualPlan health education materials and related programsEach factory completes the construction of breastfeeding room in accordance with law, in line with maternity protection rulesComplete new employee special physique examination and related procedures	● The Group organizes 11 three-hour sessions for doctors' services onsite with a total of 12 full-time registered nurses to provide employees with special care and healthcare services	Reduce labor health related risks <ul style="list-style-type: none">Grasp development of labor health related laws and regulations, and continue to strengthen management mechanism and advocacy

Social Aspect		
Short-term Goals and Action Plans	2017 Achievement Status Description	Mid-and-Long-Term Goals and Action Plans
► Improve the talent recruitment system		
Optimize recruitment and appointment system <ul style="list-style-type: none">Plan annual manpower requirementsExpand recruitment channelsUse online quiz to optimize selection processEstablish a new hire evaluation system	● Establish a report system for planned human resources requirements to fill 100% positions ● Establish summer internship programs ● Application for R&D substitute military service ● Participation in 10 campus recruitment events ● Optimize recruitment procedures to save an average of half an hour for each recruitment session ● Establish work proficiency assessment programs for new recruits in the probation period	Key talent recruitment <ul style="list-style-type: none">Analyze functional requirements and give feedback to talent recruitment to recruit key talents and reserve the talents



► Optimize talent cultivation and promotion system

Construct talent development foundation

- Promote online learning system
- Establish employee training system
- Cultivate internal lecturers
- Review and establish performance evaluation items
- Build a talent bank

- Optimize and promote the Chang Chun E-Learning Online Learning Platform and expand the platform to domestic and foreign factories and offices
- Improve the performance assessment system: Regular assessment systems for technicians and shift managers and conduct two assessments for engineers each year
- Place the performance assessment system online to clarify assessment items and standards; conduct follow-up performance assessment interviews and training
- Establish a seniority system to help new recruits learn quickly
- Completed management skill courses for department heads (4 rounds for 144 people), section chiefs (6 rounds for 224 people), and talented shift managers with potential (2 rounds for 79 people)

Plan talent development blueprint

- Establish key talent bank, develop employee individual development plan, and organize management trainee program

► Improve the talent retention and management system

Facilitate exchange of opinions and maintain harmony between labor and management

- Establish multi-directional communication channels, for example: grievance mailbox and hotline mechanisms
- Diversification of employee benefits

- Organize regular meetings with labor representatives each year to ensure smooth communication channels between employees and the management
- Organize interviews with section chiefs to collect their opinions
- Organize diverse courses (parents and children lectures, farm activities, oil massages, emotional management, etc.)

Construct a happy workplace

- Formulate reward and talent retention related measures
- Regularly collect employees' opinions for company to review and improve corporate strategy
- Enhance employee benefits and build a friendly working environment
- Promote club activities and encourage employees to establish various clubs.

► Social Welfare Involvement

Participate in social welfare and establish industry-university cooperative projects

- Sponsor campus events for departments/institutes, conduct campus recruitment, and execute industry-university cooperative projects
- Active participation in community activities such as environmental protection volunteers, events for festivities, and art and cultural events
- Establish inter-discipline talent training courses

- Respond to invitations to give speeches in universities, academic institutions, and chemical engineering conferences to share professional knowledge and practical management experience
- Conducted industry-university collaboration with 9 universities and 2 research institutes.
- CCPG participates in social activities and sponsored a total of 155 activities as of the end of 2017

Integrate Group resources for social investment

- Establish a system platform for charity events
- Propose long-term and continuous charity events
- Promote Taiwan's petrochemical strength and actively participate in government's high-value petrochemical industry promotion

I. Signing the "Responsible Care Global Charter"

Upholding the spirit of "Caring for the Society and Taking Self-Discipline as Our Own Responsibility", CCPG's subordinate companies started signing the commitment and statement of Responsible Care Global Charter in 2000 and continued to improve chemical manufacturing industry's management systems in environment, health and safety (EHS) aspects in accordance with international standards to jointly promote social co-prosperity and sustainable development of chemical Industry in our country.

II. Participation in French EcoVadis Supplier Sustainability Ratings

French EcoVadis is a third-party rating platform for the sustainable development of global supply chain. Its review method is constructed based on international CSR standards. CCP, CCPC, and DCC, the three parent companies of CCPG, participated in the EcoVadis assessment and won silver awards. They were also ranked among the top 30% of companies among more than 40,000 participating companies. CCPG uses a third-party platform to actively ensure the Group's fulfillment of corporate social responsibilities to achieve the goals of sustainable development.

III. Relevant Associations

In 2017, CCPG participated in a total of 22 industry associations, 11 R&D associations and academic societies, and 37 other associations. CCPG also serves important roles in 17 organizations and the Group actively communicates with external entities to maximize benefits for sustainable development of the Group.

Industry Association	
Chinese National Federation of Industries	Vice Chairman Huang Ho-Ching serves as Alternate Director General Manager Chen Jung-Tsung serves as Alternate Director
Taiwan Responsible Care Association	General Manager Su Shih-Kuang serves as Director General Manager Lin Fu-Shen serves as Executive Director
Taiwan Flat Panel Display Materials and Devices Associations	Assistant Vice President Tsai Jing-Jin serves as Director
Taiwan Synthetic Resin & Adhesives Industrial Association	Executive Board Vice Chairman Chen Shien-Chang serves as Honorary Chairman Vice Chairman Huang Ho-Ching serves as Honorary Chairman General Manager Chen Jung-Tsung serves as Executive Director General Manager Lin Fu-Shen serves as Director Senior Department Director Chao Huan-Chang serves as Occupational safety Consultant
Petrochemical Industry Association of Taiwan	Chairman Liao Lung-Hsing serves as Executive Director General Manager Chen Jung-Tsung serves as Director General Manager Su Shih-Kuang serves as Director General Manager Lin Fu-Shen serves as Chairman
Taiwan Paper Industry Association	General Manager Chen Jung-Tsung serves as Director
Taiwan Synthetic Resins Manufacturers Association	Chairman Liao Lung-Hsing serves as Director General Manager Chen Jung-Tsung serves as Supervisor General Manager Su Shih-Kuang serves as Chairman
Taiwan Chemical Industry Association	CCPG Executive Board Vice Chairman Chen Shien-Chang serves as Vice Chairman General Manager Su Shih-Kuang serves as Convener of the Board of Supervisors
Taiwan Electrical and Electronic Manufacturers' Association	China Chemical Industry Environmental Protection Association
Taipei Chemical Material Business Association	China Phenolic Resin Association
Taiwan Printed Circuit Association	China Chemical Fibers Association
Taiwan Battery Association	Federation of Malaysian Manufacturers
China Electronics Materials Industry Association	Malaysian Petrochemicals Association
China Synthetic Resin Association	Malaysia External Trade Development Corporation
China Petroleum and Chemical Industry Federation	Chemical Industries Council of Malaysia

R & D Associations and Academic Societies	
Chinese Petroleum Institute	General Manager Chen Jung-Tsung serves as Director
Taiwan Institute of Chemical Engineers	CCPG Executive Board Vice Chairman Chen Shien-Chang serves as Executive Director General Manager Chen Jung-Tsung serves as Director General Manager Su Shih-Kuang serves as Director General Manager Lin Fu-Shen serves as Director
Taiwan Nanotechnology Industry Development Association	Assistant Vice President Huang Kun-Yuan serves as Director

1.3.2 External Participation

CCPG actively participates in trade associations, academic societies, social gatherings and other non-profit organizations to enhance industrial development and progress through various exchange and sharing activities. In order to exercise specific influence and enhance the value of industrial chain, CCPG assigns managers, according to their expertise, to assume roles in related organizations and lead industry development or participate in academic research.



Fractionation Research, Inc. (United States)	Huizhi Club (National Cheng Kung University Chemical Culture and Education Foundation)
Chinese Chemical Society	Advanced Microsystems & Package Technology Alliance
The Chinese Institute of Environmental Engineering	Catalysis Society of Taiwan
National Central University Catalyst and Reaction Engineering Production and Research Alliance	Taiwan Safety Council

Other Associations	
The Third Wednesday Club	CCPG Executive Board Chairman Lin Fu-Shen serves as Director
Taiwan CIO Association	Manager Huang Chih-Shan serves as Supervisor
Cross-Strait CEO Summit	CCPG Executive Board Chairman Lin Fu-Shen serves as Alternate Director
Straits Economic and Cultural Interchange Association	General Manager Su Shih-Kuang serves as Director
Miaoli County Fire Department Association	Chairman Liao Lung-Hsing serves as Consultant
Taipei Accounting Association	General Manager Su Shih-Kuang serves as Vice Chairman
Information Management Association	Hsinchu Industrial Park Association
Chung-Hua Association for Financial and Economic Strategies	Hsinchu County Industrial Association
Pressure Vessel Association	Changhua County Industrial Association
Daishe Industrial Park Manufacturers Association	Changhua County Changhua Coastal Industrial Park Industry Association
Taiwan-Japan Business Exchange Association	Dafa Industrial Park Police Precinct Association
Importers and Exporters Association of Taipei	Association of Bio-Based Material Industry association
Chinese National Association of Industry and Commerce, Taiwan	Taiwan Halal Integrity Development Association
Dafa Industrial Park Association	Taiwan Hydrogen Association
Miaoli County Industrial Association	Taiwan Compatriot Investment Enterprises Association of Changshu
Miaoli County Employment Relation Association	Jiangsu Provincial Association of Enterprises with Foreign Investment
Importers and Exporters Association of Miaoli	Jiangsu Customs Brokers Association
Kaohsiung County Industrial Association	Yangzhou City Association of Enterprise with Taiwan Investment
Yunlin Hsien Industrial Association	Fire Protection Association of Yangzhou Chemical Industry Park
Renwu Industrial Park Manufacturers Association	Technical Supervision Association of Yizheng
Taiwan Cogeneration Association	Taipei Investors' Association in Malaysia
Industrial Safety and Health Association (ISHA) of the R.O.C.	



On August 14, 2017, CCPG General Manager Lin Fu-Shen took over as Chairman of the Petrochemical Industry Association of Taiwan and leads the Association in active communication with the government and other associations.



On September 12, 2017, CCPG Executive Board Vice Chairman Chen Shien-Chang received the "Outstanding Leadership Award" from the Taiwan Chemical Industry Association (TCIA) for his contribution to the industry.

1.4 Ethical Business Operations and Risk Management

The implementation of corporate social responsibility must be based on ethical management. CCPG hopes to become the industry benchmark, as it upholds ethical governance principle of fairness, justice and openness, and carries out sound monitoring and management mechanism for internal and external risks; while CCPG achieves operational objectives, it also effectively grasps business opportunities.

1.4.1 Ethical Management

"CCPG upholds the Group's core management philosophy of "Integrity, Customer First, Creative Innovations" as revealed by CCPG's three founding members. In 2016, CCPG clearly defined its Code of Conduct as the guidelines for all employees to follow while cooperating with customers, suppliers and other business partners, shaping the Group's ethical corporate culture." In 2017, the Directors, Supervisors, and employees in management and non-management roles completed legal compliance and anti-corruption training and passed tests through the Chang Chun e-Learning Platform. More than 98% of employees in Taiwan have completed the training. The Changchun e-Learning platform was introduced to overseas factories in 2017 and the Group expects to conduct compliance and anti-corruption training for all overseas employees in 2018. The results of the training shall be disclosed in CCPG's 2018 CSR Report.

In addition, CCPG also uses bulletin boards and emails to announce related anti-corruption information and conducts anti-corruption, anti-bribery, and anti-competition training for employees while requiring suppliers and contractors to sign commitments of ethical conduct before transactions. These measures are adopted to publish the company's ethical corporate culture and core values for effective anti-corruption communication. As of the end of 2017, CCPG completed communication with 763 employees in management roles and 7,593 employees in non-management roles and achieved 100% in communication rates in the Group. Employees or related stakeholders suspected of involvement in illegal activities or violations of codes of conduct may be reported through confidential channels such as the reporting hotline and mailboxes. The Group shall impose on penalties or transfer cases to judicial authorities for investigations based on the severity of the offenses.

2017 CCPG legal compliance and anti-corruption training statistics

Region	Category	CCP	CCPC	DCC
Taiwan	Management male	165	152	89
	Management female	13	17	8
	Total number of trained employees	178	169	97
	Total number of employees	178	169	97
	Percentage	100%	100%	100%
	Non-management male	1,586	1,827	731
	Non-management female	177	92	48
	Total number of trained employees	1,763	1,919	779
	Total number of employees	1,763	1,991	783
	Percentage	100%	96%	99%

Note: Management: Base-level supervisors (inclusive) and above; non-management: general staff.

1.4.2 Compliance

CCPG established the "Legal Compliance Committee" to incorporate the core values for ethical corporate management into the employees' code of conduct to ensure that the corporate governance and management activities of the Group comply with requirements of competent authorities. The General Manager of the Executive Board serves as the Chair of the Committee and members include the directors of departments, factory directors, and general managers of overseas factories. They conduct scheduled and unscheduled self-evaluations and assessment in accordance with the "Legal Compliance Management Regulations" to improve the Group sensitivity for legal compliance.

To ensure that all levels of the Company understand the requirement of compliance and to reinforce the integrity of the self-review results, the Group's Legal Office takes on the role as a legal counselor and it is responsible for providing legal advice, regulatory compliance training, notification of changes, training and education as well as assisting various departments in completing their compliance review. The Legal Office also conducts on-site inspections, in collaboration with auditing units, regularly reports to the Board of Directors, and continuously tracks improvement status of units which are identified with deficiencies. To implement related policies, Taiwan-based factories have completed legal compliance and anti-corruption training for more than 98% of employees as of the end of 2017. Training in overseas factories shall be completed in 2018. Please refer to Section 1.4.1 Ethical Management for related statistics.

In addition, all CCPG products and services comply with regulatory requirements and all products are provided with warning labels or attached with material safety data sheets. As of 2017, there were no violations involving the provision and use of products or services.

1.4.3 Risk Management

To effectively grasp business risks and opportunities, after CCPG assesses the impacts of relevant issues on its sustainable operation, the risk management is divided into six major aspects. Each department responsible produces a risk matrix according to probability and severity of occurrences, proposes response countermeasures with respect to high-risk issues, conducts management following PDCA process, and regularly reviews and tracks effectiveness at management review meeting. Their goal is to continue to strengthen CCPG's management constitution and reduce operational risk.



1. Compliance

According to laws and regulations applicable to the Group's companies and factories, a regulatory checklist is formulated for compliance. CCPG has also established internal and external grievance and reporting methods (please refer to 4.1.1 Stakeholder Engagement) to investigate and report unlawful incidents, complete relevant corrections and punishments, and prevent recurrences (Please refer to 1.4.2 Compliance).

2. Internal Control and Risk Management

CCPG companies have established Auditing Offices of the Board of Directors and they adopt independent auditing systems to review whether the conduct of CCPG companies meet regulations, internal rules, and operating procedures based on "Internal Control System" and "Internal Audit Implementation Guidelines" established in accordance with the scale and characteristics of companies. They conduct internal control evaluations each year and report results to the Board of Directors. The results are used to issue the "Statement on Internal Control" of each company. On-site internal inspections and supervision are conducted regularly on overseas subsidiaries based on the audit procedures of the Auditing Office. Corrective notices are issued to the units identified with deficiencies and improvement deadlines are given to ensure internal management procedures and internal control system are correctly implemented. These measures prevent damage to the Group's business reputation and related interests.

The Auditing Office conducted routine assessments on 17 factories and overseas subsidiaries of the Group in 2017. It also conducted unscheduled project audits and special audits for internal control cycles. A total of 49 recommendations for improving internal cycles were filed in 2017 (statistics are provided below) and corrective measures for improvement based on 40 recommendations have been completed. The 9 long-term corrective measures still in progress have been included in the system for management and follow-up till the completion of improvement measures.

Internal Control Cycle	Number of Items	Completed Corrections	Corrections in Progress
Sales Cycle	18	16	2
Production Cycle	14	10	4
Procurement Cycle	12	9	3
Salary Cycle	2	1	1
Financing Cycle	2	2	0
Computer Information System Cycle	1	0	1
Total	49	38	11

The Auditing Office has established an independent report mailbox ccpgaudit@ccp.com.tw to actively implement anti-corruption and anti-fraud operations. If a company employee or external party such as a supplier discovers corruption or conduct that violate duties committed by an employee of the Group to obtain illegal benefits or gain benefits for others and causes loss of company property or business reputation, he/she may report the violation.

3. Financial Risk Management

The Group's financial risks are divided as follows:

- (1) Credit Risk:** Maintain quality of accounts receivable, endorsements and guaranteed, and control of loans and capitals to lower risk of financial losses arising from customers or the trading targets of financial instruments failing to perform contractual obligations.
- (2) Liquidity Risk:** Maintain cash, cash equivalents, high-liquidity securities and sufficient bank financing limits, etc., required for operations to ensure that the Company has sufficient financial flexibility and liquidity.
- (3) Market Risk:** Properly manage exchange rates and interest rate, control the degree of exposure within acceptable range, and thereby optimize returns on investment.
- (4) Property Risk:** Various property insurances are purchased for operating assets, such as fire insurance, property insurance and cargo transportation insurance, to thereby reduce the risk of losing business assets caused by natural disasters or non-natural disasters, by transferring part of the risks to insurance companies.

4. Quality Risk Management

In 2016, a quality risk management system was formulated; from high-risk items identified through annual risk matrix, and major change issues raised by the "List of Internal and External Issues" and "List of Stakeholders and Issues of Concern", the company assesses the risk levels which may influence the Group's companies' quality management system, in order to take corresponding countermeasures and control measures, reduce the impacts on products and services, and increase competitive advantages.

5. Environmental and Occupational Safety and Health Risks

With regard to environmental protection and occupational safety, the most important areas in the chemicals industry, CCPG has implemented and ISO management system for major issues, environmental concerns, and identification of safety and health hazards and it continues to advance four major plans for JSA, HAZOP, and labor health protection in process safety to reduce the Group's environmental safety and health risks. The Group also established the ESH Division to conduct internal and external risk assessments for companies and factories of the Group and to improve the identification of significant ESH risks in the risk matrix. In addition, the Group has established emergency response systems to quickly respond to emergency large-scale natural or man-made disasters in order to impose comprehensive management of environmental impacts and protect the safety and health of employees.

6. Confidential Business Information Protection

CCPG attaches great importance to information security issues and it uses continuous information security training programs including information security training for new recruits and repeated training for current employees each year. CCPG also cultivates habits of employees for information security ideas and implements the "Information Security Policy" and "Business Secret Management Goals and Policy" to continue to enhance employees' safety awareness through constant education of policies.

To meet information security requirements of customers and related stakeholders, CCPG introduced the Information Security Management System (ISMS) and Trade Secret Management System (TSMS) and received ISO 27001 certification in 2012 and received the AEO certification in 2016 for strict requirements for information security. CCPG established a dedicated team to facilitate compliance to the General Data Protection Regulation (GDPR) of the European Union in 2018. The aforementioned information security verification standards ensure that the confidential information generated in operations and processed by employees (sources include third-party stakeholders such as customers, suppliers, etc.) are securely protected and used. They also ensure that units conducting transactions with CCPG satisfy each other's high standards for information security.



2

Trusted Material Supplier

2.1 Product Kinetic Energy

2.2 Responsible Chemistry

2.3. Sustainable Procurement Policy



Expertise and products in chemical materials is CCPG's core capabilities that allows it to prosper and facilitate innovation and transformation of other industries for a low-carbon emissions and sustainable future. Responsible chemistry is fused within CCPG's DNA. We adopt green manufacturing process, products, and workplace safety management and team up with customers and suppliers to play our roles in the value chain and maximize the benefits and value of green materials.

2.1 Product Kinetic Energy

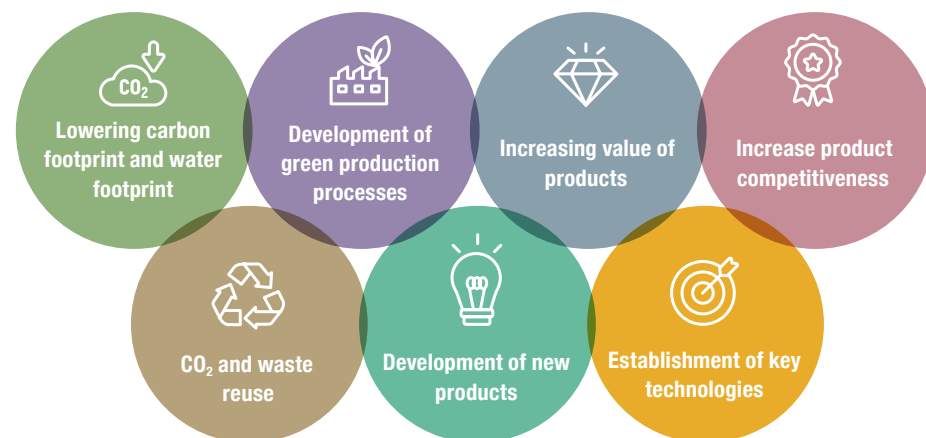
CCPG aims to be a trusted material supplier. We have established comprehensive quality policies, strengthened manufacturing process controls, ensured the product quality and stable supplies, valued each requirement and idea of customers, implemented strict management of chemicals and products, and actively invested in innovation and development in order to continuously provide customers with high quality products.

2.1.1 Green Processes and Products

Green technology and innovation are the focus of CCPG's development as CCPG marches towards sustainable development. CCPG is dedicated high-value product development projects through continuous improvement in manufacturing technology of existing products and debottleneck projects. In addition, CCPG continues to develop new catalysts to expand production capacity, enhance production efficiency, and lower production costs, hoping to integrate upstream and downstream material supply chain on top of the existing product lines.

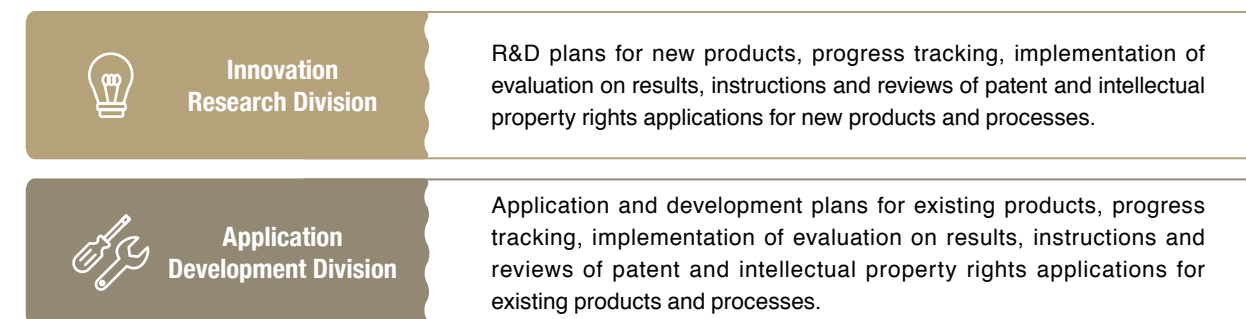
As Taiwan's second largest chemical industrial group, CCPG's products range from engineering plastics, chemical electronic materials, plastic additives, adhesives, medical intermediates, industrial intermediates, and resins. Although CCPG works hard to produce the necessary intermediate materials for products, certain materials and intermediate materials must be purchased from external sources or produced from purchased materials. The upstream and downstream supply chain has not been integrated completely and it makes the cost difficult to control. In addition, all chemical intermediates and products are produced from petrochemical materials and processes and many processes employ strong acid, alkali, or solvents and chemicals that may negatively impact the environment.

With the rise of the petrochemical/macromolecule/chemical processing of coal in China in recent years and the development of shale gas in the United States, CCPG and related domestic industries currently face severe tests in low-price competition. Therefore, the Group currently tackles issues such as:

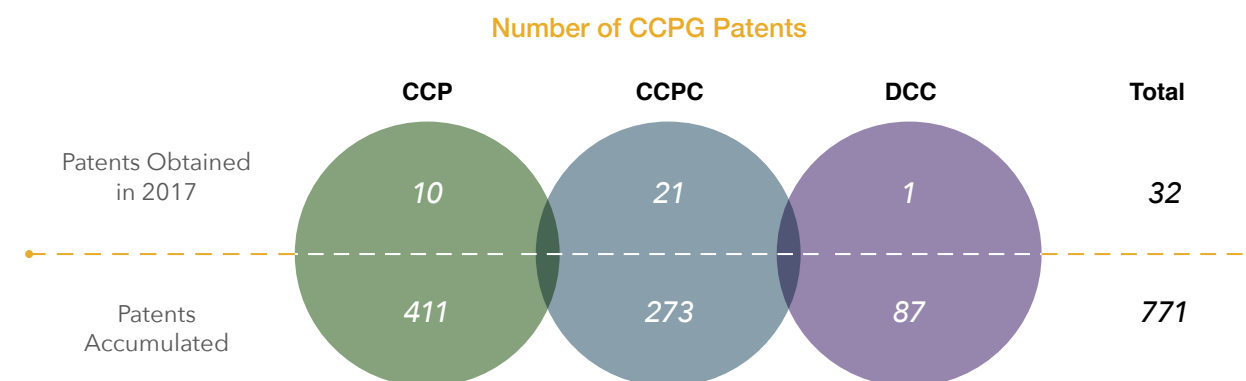


To actively respond to the aforementioned challenges, CCPG has established the Innovation Research Division and Application Development Division under the CCPG Executive Board and CCPG factories across Taiwan have also established R&D Departments to continue advancement in innovation through the internal value chain. It also takes into account its economic, energy, environmental, process safety, and social responsibilities to actively develop byproducts that makes full use of the process, products from waste materials, and non-petrochemical plastic products based on its core value of sustainable development. CCPG also seeks to improve the process to produce initial/intermediary materials and use energy/resource integration and green chemical technologies to achieve a circular economy.

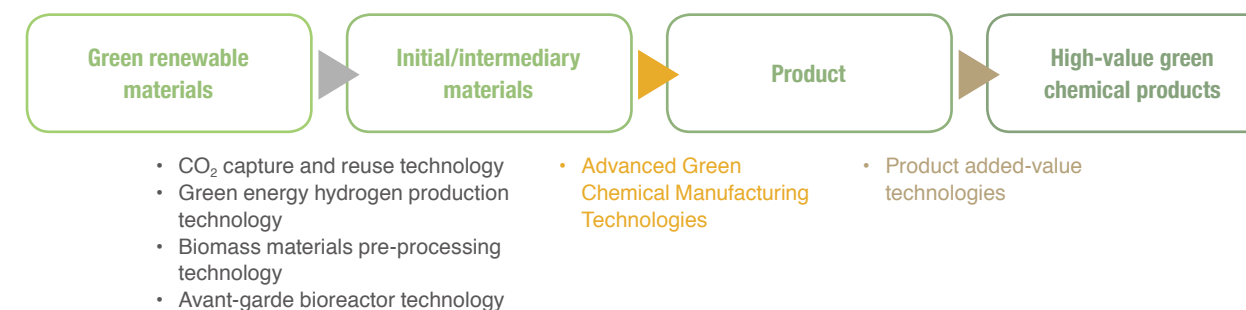
CCPG R&D Teams' Missions



CCPG continues to invest resources into research and development. The amount of research and development investment in 2017 reached 3% of the net profit before tax and it obtained a total of 771 patents. CCPG also actively implements industrial and academic cooperation and alliances with strategic partners. It invests more than NT\$32 million each year and its partners include Tsinghua University, National Taiwan University, National Chiao Tung University, National Central University, National Chung Hsing University, Yuan Ze University, Chung Hua University, Taiwan University of Science and Technology, Chung Cheng University, Industrial Technology Research Institute, Plastic Industry Development Center and Food Industry Research and Development Institute, etc. CCPG has adopted green chemicals process improvement, and biomass materials as development targets to help the Group develop new high added-value products, improve core technologies of existing products, optimize existing processes, and improve the expertise of researchers of the Group. CCPG's main innovation and results shall be described later in this Chapter.



CCPG's Next-Generation Green Chemical Technology Innovation Development



CCPG shall enter sectors including renewable energy, biomass materials, and medical and healthcare materials. In addition to building green technologies from upstream resources to downstream products, CCPG shall also use the development of valuable technologies in green energy, biomass processes, and products to build technology niches so that CCPG's product line would not only maintain or reach its top position in the world but also obtain advanced opportunities in the transition of shale gas and chemical processing of coal and become a benchmark enterprise in responding to climate change.



Green Processes and Green Product Applications

► **1,4-Butanediol (BDO) - Use in Biodegradable Plastic Raw Materials**

The polybutylene succinate (PBS) used in the processes is made from the polymerization of succinic acid and BDO produced by CCPG to produce biodegradable plastic “green materials”. It is safe and non-toxic and it can be degraded by multiple types of microorganisms in the natural world to ultimately form carbon dioxide and water. It is both biocompatible and biodegradable and it helps reduce ocean waste.

► **Reuse of CO₂ - Acetic Acid Production Process**

CCPG has developed a unique acetic acid manufacturing process. CCPC's Mailiao Factory collects the CO₂ emitted by nearby factories in their production processes as the materials for acetic acid with an annual production of 600,000 tons to replace the existing coke pyrolysis process while reducing CO₂ emissions and air pollutants. The CO₂ recycled for use in the process exceeded 103,256 tons in 2017 as the Group achieved effects of a circular economy.

► **Reuse and recycling of thinners and developers used in semiconductor/optoelectronics industries**

We developed the thinners and TMAH developers (tetramethylammonium hydroxide) recycling and reuse technologies to help semiconductor/optoelectronics industries process waste liquid thinners and developers and use purification procedures for recycling to achieve a circular economy. This recycling technology also helps customers reduce TMAH contents to meet national standards, reduce pollution, and contribute to environmental protection.

► **Gamma-Butyrolactone (GBL) - Usage in Lithium Battery Liquid Electrolyte**

The GBL produced by CCPG can be compounded to form N-Methyl-2-pyrrolidone (NMP) which is used as a liquid electrolyte for lithium batteries for electric and hybrid vehicles. GBL usage has gradually grown in power battery production in recent years. The rise of new energy policies and energy storage projects for transportation and mobile communication would also help growth in the energy storage battery market.

► **Polyvinyl alcohol (PVA)**

As calls for reduction of plastics grow increasingly strong, plastic packaging and plastic straws for beverages have become the focus of reforms. PVA has good physical and chemical attributes (it can be dissolved in water, made into film, and become biodegradable) and it is one of the best choices for materials for environmentally friendly packaging.



Cleaning agent packaging

Paper straws

► **Vinyl acetate emulsion (VAE emulsion) - Usage in Eco-Friendly and Low VOC Paint**

Traditional indoor paint emits large quantities of VOCs, causes indoor air pollution, and damages the nerve center and respiratory system. Water-borne emulsion replaces traditional indoor paints and drastically reduces the health and environmental impact of VOCs. The waterborne paint product was awarded the national certification for Green Building Material and its VOC content (VOCs 1.4g/L) was far lower than EU standard of 30g/L (flat).

► **Vinyl acetate emulsion powder (VAE powder) - Usage in energy conservation in buildings**

The effective heat/cold retention properties of buildings can prevent unnecessary energy consumption and the exterior insulation finishing system (EIFS) redispersible powder improves the energy efficiency of buildings. It meets requirements of advanced nations in energy conservation applications and it also helps improve the Earth's environment.

► **Coating resin**

VOCs are very harmful to humans and the reduction of VOC emissions is important to resolving the current air pollution. It is also particularly important to reduce VOCs in industrial coating and the industry has converted solvent-borne coating to waterborne coating.

CCPG is committed to using resins in waterborne coating for compliance with regulations as well as using high solids low viscosity coating resin and powder coating resin to avoid polluting water. It also uses biomass materials whenever possible to lower CO₂ emissions.

The directions of environmentally friendly development of resins for coating are as follows:

- Waterborne coating: Water-based epoxy, water-base amino resin, water soluble polyester resin coating, and water-based acrylic resin
- High solids low viscosity coating: New liquid epoxy
- Powder coating: Solid type epoxy resin and polyester resin
- Formaldehyde-free amino resins
- The use of biomass materials: Materials extracted from plants

► **Epoxy applications in large-scale offshore wind turbine blades**

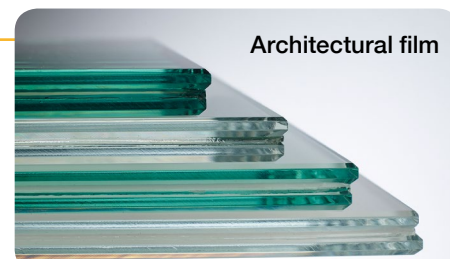
Wind is a natural energy. The epoxy developed by CCPG can be used in large-scale offshore wind turbine blades and each turbine can reduce approximately 14 tons of CO₂ emissions each year to provide a cleaner source of power.





► Polyvinyl butyral film (PVB film) - Applications in automobile and construction safety glass

CCPG Miaoli Factory is one of the PVB film producers that integrated upstream and downstream materials for use in automobiles and construction safety glass. The Factory will develop films with sound and heat insulation functions in response to future market demands.



Architectural film



Automotive film

► Electrodeposited (copper foil)- Applications in electric vehicles and lithium energy storage batteries

CCPG is currently one of the world's largest producers of electrodeposited copper foil and it produces and supplies electrodeposited copper foil for use in the lithium battery industry and the batteries are used for electric vehicles and hybrid vehicles as well as energy storage system (ESS) industries that makes energy consumption more efficient. In response to rapid growth in the EV and ESS market, CCPG shall continue to expand production and conduct additional research and development to increase the quality of copper foil to facilitate the increase in the energy density of lithium batteries in the future.



EV Market

2.1.2 Chemical Management

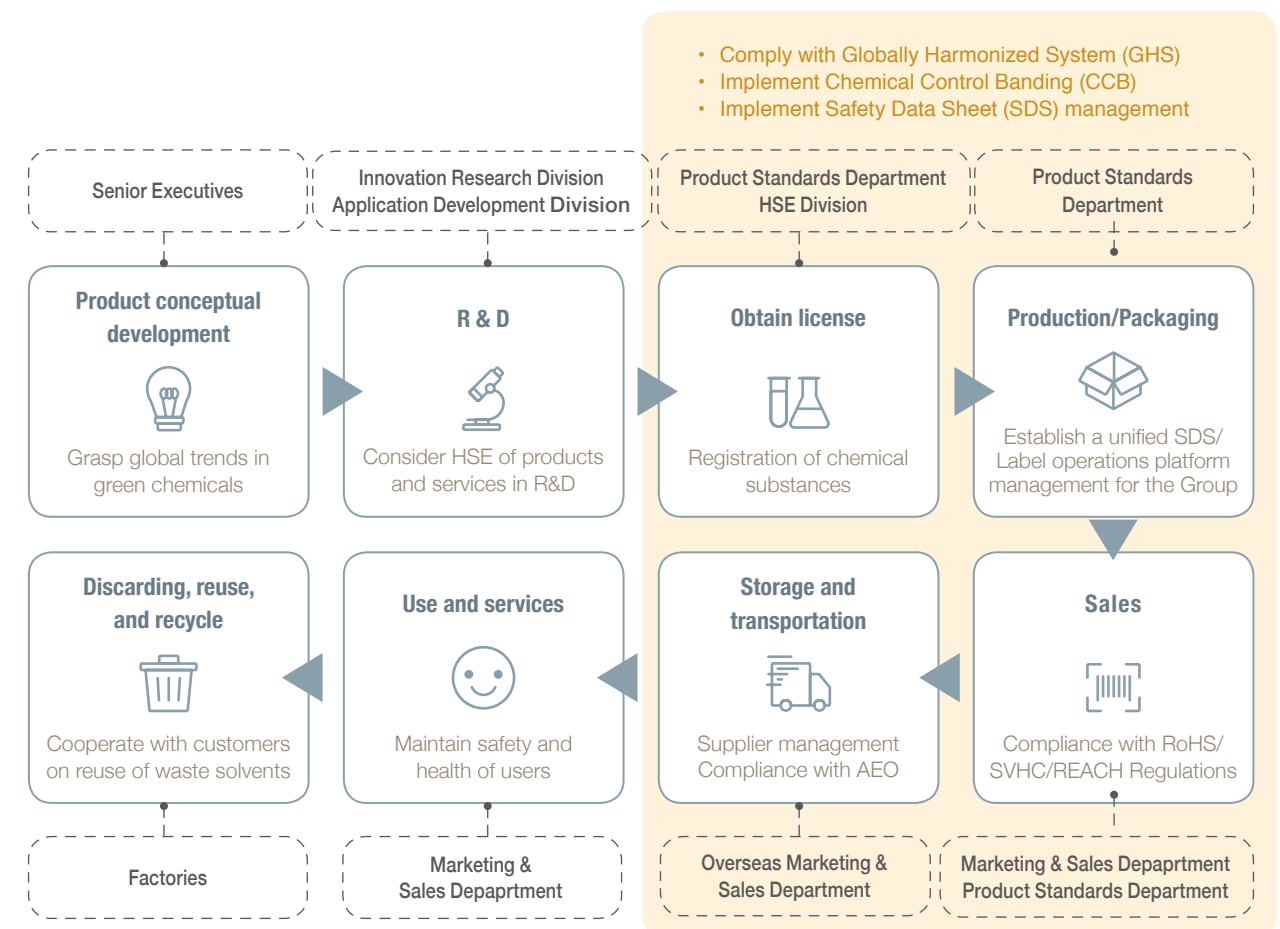
For chemical management, CCPG prioritizes legal and regulatory compliance above all and it focuses on product compliance to satisfy customer demands and confidence in products. To ensure that products meet related regulations of the country/region of sales, the CCPG HSE Division and Product Standards Department are responsible for reviewing whether products meet domestic/foreign regulations on chemicals. CCPG HSE Division is responsible for ensuring that products meet regulations on chemical products in the place of production while the Product Standards Department is responsible for ensuring that products meet the regulations of countries where they are sold. Affiliate companies of the Group can consult CCPG HSE Division or Product Standards Department through the IT system, on the telephone, or in person to quickly learn about the compliance status of products.

Internal management procedures for chemicals

The process starts from the inventory of products and materials and clarifies the Group's internal operating procedures from pre-registration assessment and identification of chemical substances to registration of the scientific data of the substances and the completion of the safety assessment of the chemical. It also builds a sound foundation for the management of chemicals. Today, we have successfully completed the registration or entry of dozens of chemicals in the EU, China, and Taiwan. We also have multiple chemicals in Korea for which we must complete regulatory obligations before the statutory period in order to provide customers with product compliance protection.

CCPG conducted a compliance study for Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) on more than 40 materials suppliers in 2017 to verify whether the suppliers have completed registration before the statutory deadline of the EU's REACH regulations in 2018. The goal in 2018 was to complete the registration of designated substances in the EU/Korea, ensure that chemical products are registered in EU/Korea, and continue to conduct sales to the EU/Korean market. With regard to CCPG's internal chemical management, the Group has conducted an inventory and verification of the information on the operations of chemicals in factories in Taiwan this year and established a toxic substance certification management platform to control the compliance measures for toxic substances in import/export. The Group plans to establish a regulatory database on chemicals and management mechanisms for low amounts of toxic substances in 2018. The system collects information on chemicals that require controls and reports in Taiwan for production and management units to identify the risks of chemicals and evaluate the management of such systems. They identify risks in chemicals before procurement to prepare related management measures in advance and meet requirements for legal compliance.

CCPG Chemicals Management Value Chain



Employee workplace safety management

The Group begins its protection of employees from the identification of the essential risks of the chemicals. CCPG conducts education and training sessions on chemical management each year and assesses the employees' risks of exposure in the production process. It then adopts measures such as substitution, isolation, engineering controls, and personal protection equipment to eliminate the possibilities of exposure to chemical hazards. It also follows regulatory requirements to classify risks into different levels and adopt management measures and reporting items to meet regulatory requirements. The goal of the aforementioned chemical management mechanisms is to impose "zero harm" to employees. In accordance with regulations, qualified agencies are consigned to perform at least two inspections on the operating environment each year. If there are any noncompliance in inspection results, improvement measures and performed immediately to protect the health and safety of employees. Please refer to 4.3.2 Healthy Workplace Environment for detailed description.



Product safety and customer service

International regulations on the management of chemicals change rapidly and customers may request to understand product compliance at any time. As related regulations on hazardous substances across the world grow increasingly strict, in addition to regular analysis and inspection equipment at our factories, CCPG also established ICP-OES, ICP-MS, GC/MS, and LC/MS analysis instruments to help customers take care of the inspection tasks of harmful materials. A set of rigid management mechanisms have also been established for the chemical transportation process that includes the installation of GPS on tankers, regional emergency allied defense, and tanker inspection mechanisms to strengthen management for the safe transportation of chemicals. Please refer to 2.3.2 Supplier Management System - Transportation Service Provider Management for detailed descriptions.

In addition to restricted chemical products, a few of CCPG's products have been listed or will be listed as precursors of psychotropic substances. To demonstrate and fulfill CCPG's corporate responsibilities, CCPG, members of the industry, as well as industrial associations have begun to adopt global independent management to prevent illegal use and proliferation and it implements effective management from production management to investigations on the use of the end customer.

2.1.3 Product Quality

CCPG aims to be a trusted material supplier and it upholds the quality policy of “continue improvements, honor commitments, improve quality, and satisfy customers” to provide customers with satisfying products and services. To ensure stability in quality and supply, the Group adopts quality management to strengthen control of the production process and it has established a supplier management system (refer to 2.3.2 Supplier Management System for details) to promote sustainable development of the supply chain.

“Quality” is of great importance to customers and the Group. To improve customers' trust and satisfaction in products, CCPG HSE Division establishes a quality goal each year (refer to 1.3.1 CSR Governance and Management Organization) and reviews related quality issues and improvements in system execution with quality assurance managers of all factories each month. We upgraded our QA system to QA2.0 in 2017 and added statistical process control (SPC) and color early warning functions to implement vigorous quality controls and actively advance innovation and R&D.

CCPG formulated a Management Manual in accordance with ISO 9001:2015 as the highest standards for compliance for all departments. We have adopted the IATF 16949 automobile quality management system for CCPC Miaoli Factory, CCP Kaohsiung Factory, CCPC Mailiao Factory, and CCJS which produce products for the automobile supply chain in order to pursue high quality products and services. In addition, we adopted topic-centric and ad hoc internal audits (15 audits in 2017) and unscheduled audits by customers to review whether all departments of Taipei Office and factories have complied with the quality system. We then conducted reviews and continued to make improvements. We will complete the transition to ISO 9001:2015 and IATF 16949 in 2018.

CCPG values every customer demand and idea and we immediately act on opinions provided by customers. Please refer to 2.1.4 Customer Communications for related procedures and details.

2.1.4 Customer Communications

CCPG has always upheld the business philosophy of customer first. It is the goal of all employees to provide comprehensive customer services and increase customer satisfaction. In addition, we have a top-notch operations team to serve as the bridge for communicating with customers.

CCPG places great emphasis on the management of customer relations and we periodically use customer visits, customer satisfaction surveys and customer opinion forms for periodic tracking to maintain good communications with customers. We also include customer opinions and customer satisfaction feedback into key discussion items and formulate improvement strategies from the perspective of the customer to create maximum social value for both CCPG and customers.

Good Customer Communication

CCPG aims to become a trustworthy business partner that grows with customers. To strengthen customer relations, we have adopted the communication methods described above and actively participate in important international exhibitions such as CHINACOAT, CHINAPLAS, India Chem, and Glasstec in Germany to communicate market information with customers face-to-face and establish spontaneous communication channels.

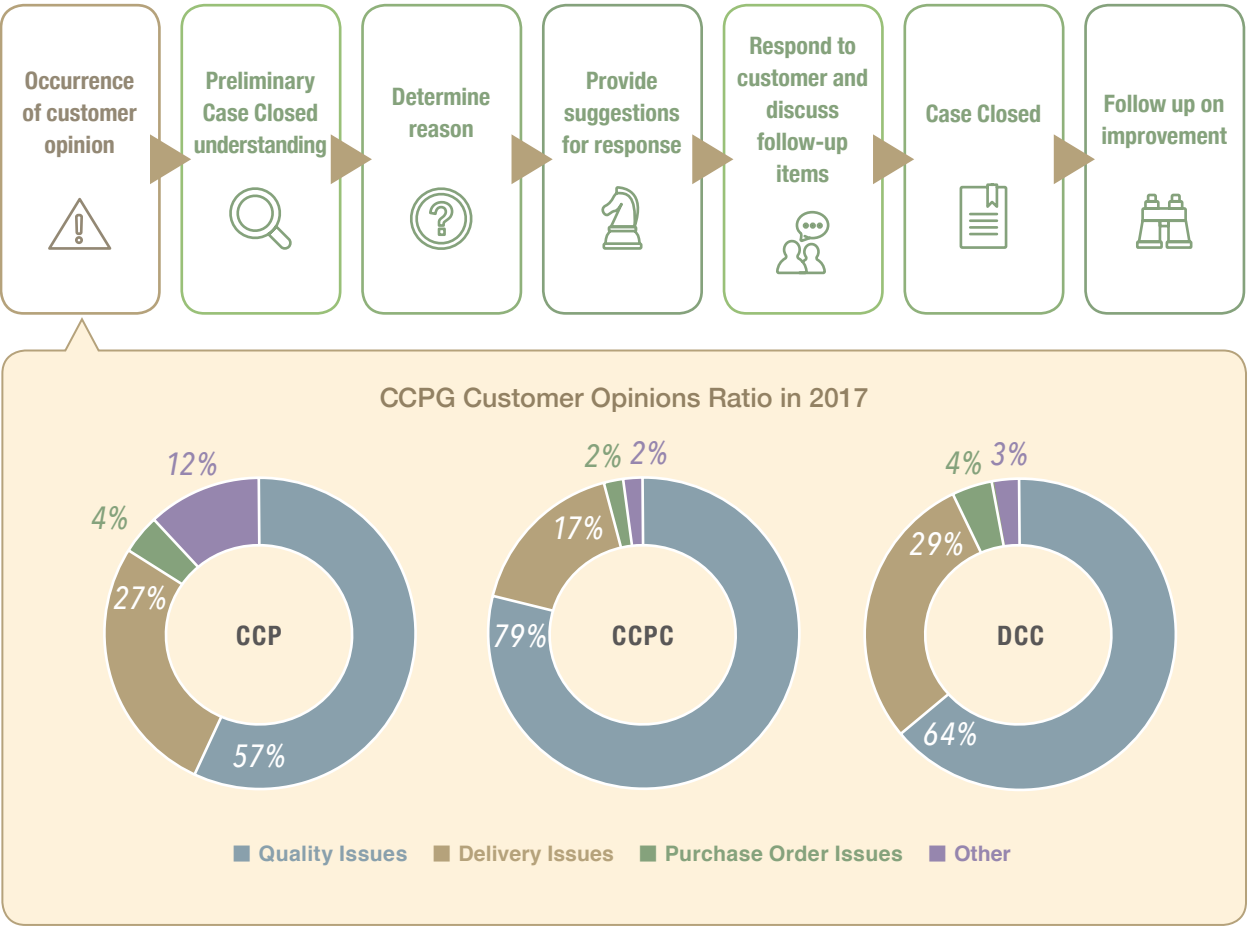
CCPG's new official website was placed on line in 2017 to provide customers with a platform for exchange of opinions, requests for information, and requests for quotations. In addition, we shall also use this platform to quickly process customer questions and opinions. The latest information from CCPG will also be announced on the website for customers to obtain important information from us at all times.

Product Information Disclosure

The Group's website provides customers with clear and detailed product information for each industry and product type. Customers can obtain information on the features, specifications, and applications of the Company's products and download digital catalogs and related certifications.

Processing Customer Opinions

CCPG collects customer feedback through visits to customers, emails, the customer section on the Group's official website, and the customer hotline. All related opinions are registered in in the customer opinion system and the reason and progress of opinions. Related units designated by supervisors are responsible for analyzing the causes from different levels, responding to customers as quickly as possible, and submitting adequate improvement plans. CCPG formulates improvement measures based on data from the customer opinion system to prevent the same issues from recurring.





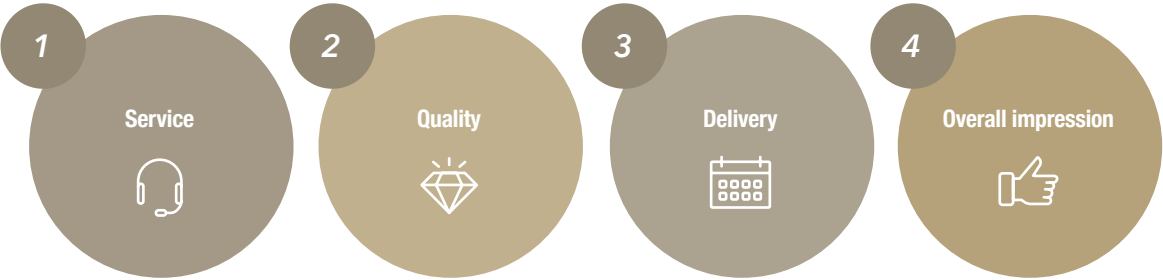
Customer Satisfaction Survey

CCPG values customer opinions and it conducts a customer satisfaction survey every year. The customers surveyed the top ten customers in terms of sales volumes or customers who have filed complaints in the current year. The questionnaires are collected before the fourth quarter of each year to inspect whether products and services meet customer expectations. They also collect opinions for continuous improvement. Customer satisfaction is the highest principle and we seek to maintain good relationship and communication channels with customers.

Customer Satisfaction Survey Model

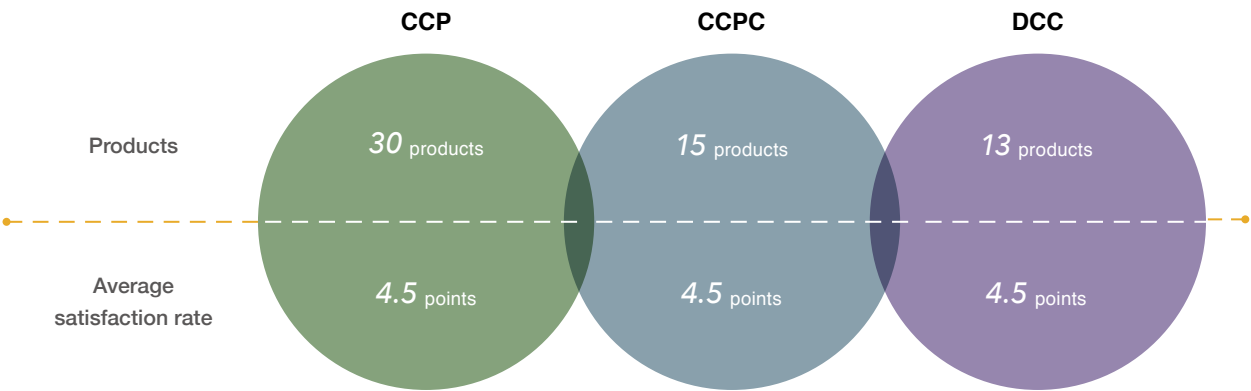


Customer Satisfaction Questionnaire Items



Note: The overall average of each item is adopted and the top total score is 5 points.

2017 CCPG Customer Satisfaction Survey



Starting from 2017, the products for customer satisfaction surveys are adjusted to: 30 products for CCP, 15 products for CCPC, and 13 products for DCC. CCPG strictly controls customer information and did not infringe on customer privacy or lost customer information in 2017. Please refer to 1.4.3 Risk Management for related practices.

2.2 Responsible Chemistry

Responsible care is the voluntary commitment of the global chemical industry for continuous improvement of its performance in environmental protection, health, and safety. CCPG identifies with and supports responsible care. It also actively internalizes the chemistry spirit into the Group. We implement ESH policies and process safety management (PSM) in the three companies of the Group and continues to make improvements toward the goal of zero-incidents. CCPG also hopes to expand the entire product cycle into CCPG's responsible care system.

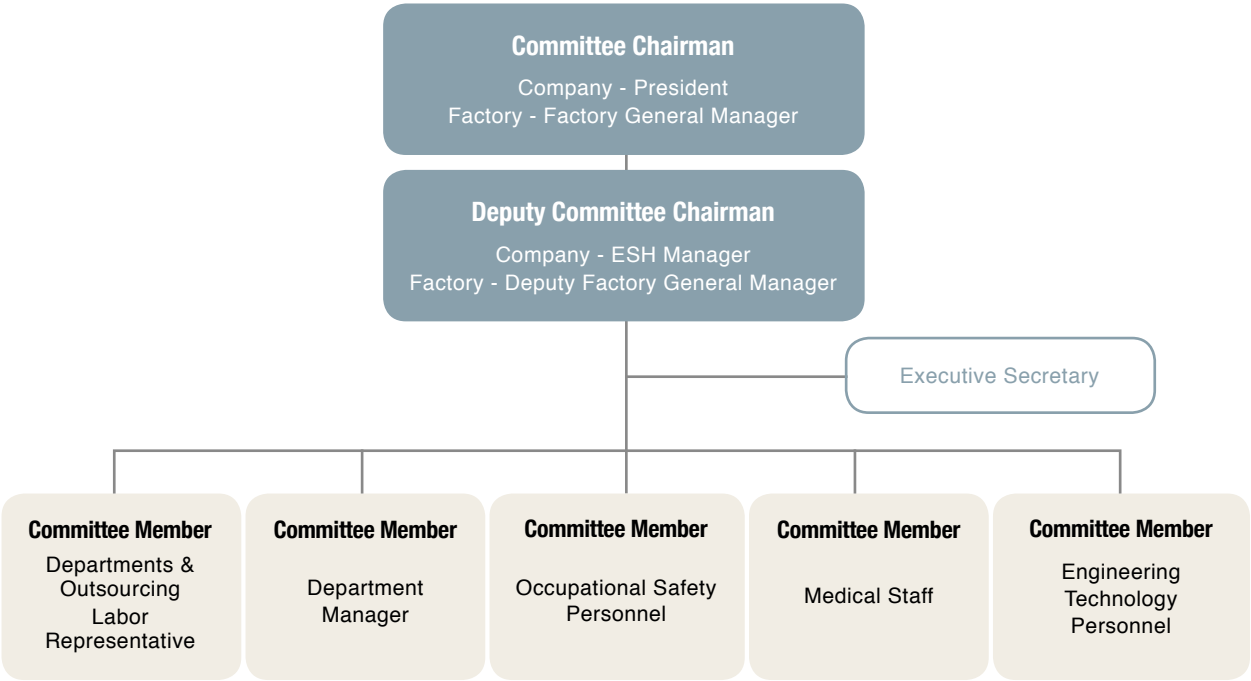
2.2.1 Workplace Safety

To build a safe work environment for the Group, CCPG's factories (including six overseas factories) have passed OHSAS 18001 occupational health and safety certification and factories in Taiwan have passed Taiwan Occupational Health and Safety System (TOSHMS) certification. The head offices of the three companies of CCPG in Taipei were include for inspections and management system integration in 2017. They have all passed inspections and the Group's management system in all factories have become consistent. In response to the upcoming publication of ISO 45001 Occupational Safety and Health Management System, CCPG plans to complete the inspections for the upgrade in 2020.

Advancement of the Workplace Safety and Health Committee

CCPG values workplace safety and promotes a culture and system of safety through committees of different levels, meetings and employee engagement that allow the safety policies of the Group to be implemented in the work of every employee and optimize the safety system based on feedback from employees. CCPG has established and implemented the "Regulations on the Operations of the Workplace Safety and Health Committee" and established Workplace Safety and Health Committees of the Group and various factories. The table shows the number of members and the percentage of staff members of the companies and factories in 2017. CCPG companies and the Safety and Health Committees of each factory shall be responsible for drafting, coordinating, and supervising affairs related to the environment, safety, sanitation, and health in the factories. They shall also organize quarterly meetings of the Workplace Safety and Health Committee to facilitate employee consultation and participation.

CCPG Workplace Safety and Health Committee Organizational Structure





Number of Members and Staff of CCPG Workplace Safety and Health Committee in 2017

Company		Operations	Total Number of Safety and Health Committee Members	Committee Staff	Percentage of Committee Staff
Taiwan Operations	CCP	Taipei Office	13	9	69%
		Hsinchu Factory	28	12	43%
		Changpin Factory	10	4	40%
		Mailiao Factory	16	7	44%
		Kaohsiung Factory	24	9	38%
		Dafa Factory	19	6	32%
	CCPC	Taipei Office	15	9	60%
		Miaoli Factory	23	8	35%
		Mailiao Factory	18	9	50%
		Dafa Factory	19	6	32%
	DCC	Taipei Office	13	9	69%
		Mailiao Factory	16	6	38%
Dafa Factory		23	9	39%	
Kaohsiung Factory		16	6	38%	
Overseas Operations	DCCJS		11	10	91%
	DCCM		10	4	40%
	CCZZ		24	10	42%
	CCJS		34	27	79%
	CCSG		26	14	54%
	CCPJ		17	11	65%

Occupational Injury Description

Year	2015			2016			2017		
Gender	♂ Male	♀ Female	Total	♂ Male	♀ Female	Total	♂ Male	♀ Female	Total
Total occupational injury incidents (number of cases)	29	0	29	33	2	35	37	3	40
Traffic accidents (number of cases)	10	1	11	9	2	11	23	3	26
Injury rate (IR)	0.51	0.08	0.45	0.52	0.31	0.49	0.71	0.43	0.67
Absentee Rate (AR)	0.20%	0.24%	0.21%	0.33%	0.28%	0.32%	0.36%	0.24%	0.34%
Lost day rate (LDR)	25.75	5.30	22.94	44.46	13.31	40.14	34.47	3.29	30.02
Deaths	1	0	1	0	0	0	1	0	1

Note: A total of 66 occupation injury incidents occurred in 2017 and they have all been included for management and references as the basis for optimization and improvements.

2017 CCPG Occupational Injury Statistics (by Company)

Region	Year	2015			2016			2017		
	Gender	♂ Male	♀ Female	Total	♂ Male	♀ Female	Total	♂ Male	♀ Female	Total
Taiwan	Total occupational injury incidents (number of cases)	6	1	7	10	0	10	1	1	2
	Traffic accidents (number of cases)	9	2	11	6	0	6	6	0	6
	Injury rate (IR)	0.73	1.52	0.80	0.69	0.00	0.65	0.73	1.77	0.79
	Absentee Rate (AR)	0.45%	0.14%	0.42%	0.29%	0.38%	0.29%	0.55%	0.58%	0.55%
	Lost day rate (LDR)	10.82	6.10	10.40	32.97	0.00	31.41	70.23	17.89	67.31
	Deaths	0	0	0	0	0	0	0	0	0
Overseas	Total occupational injury incidents (number of cases)	17	1	18	1	0	1	2	0	2
	Traffic accidents (number of cases)	1	1	2	0	0	0	1	0	1
	Injury rate (IR)	0.87	0.25	0.69	0.26	0.00	0.22	0.49	0.00	0.39
	Absentee Rate (AR)	0.27%	0.15%	0.24%	0.34%	1.10%	0.45%	0.39%	0.23%	0.35%
	Lost day rate (LDR)	50.00	2.95	36.75	40.47	0.00	34.44	7.88	0.00	6.33
	Deaths	0	0	0	0	0	0	1	0	1
Group Total	Total occupational injury incidents (number of cases)	23	2	25	11	0	11	3	1	4
	Traffic accidents (number of cases)	10	3	13	6	0	6	7	0	7
	Injury rate (IR)	0.80	0.50	0.74	0.63	0.00	0.59	0.64	0.48	0.62
	Absentee Rate (AR)	0.36%	0.15%	0.32%	0.29%	0.64%	0.32%	0.49%	0.32%	0.47%
	Lost day rate (LDR)	30.48	3.57	25.19	34.02	0.00	31.88	45.66	4.84	40.89
	Deaths	0	0	0	0	0	0	1	0	1

Note: • There were no occurrences of occupational diseases in CCPG in 2017. The occupational disease rate (ODR) is therefore 0.
• GRI Injury Rate (IR) = number of occupational injury incidents/ (work hours + overtime hours) *200,000*
• GRI Absentee Rate (AR) = (number of occupational injury leave hours + number of sick leave hours)/(work hours + overtime hours)* 100%
• GRI Lost Day Rate (LDR) = number of lost days/(work hours + overtime hours)*200,000*

(*: Refers to the percentage of for every 100 employees calculated based on 40 work hours each week and 50 weeks each year)



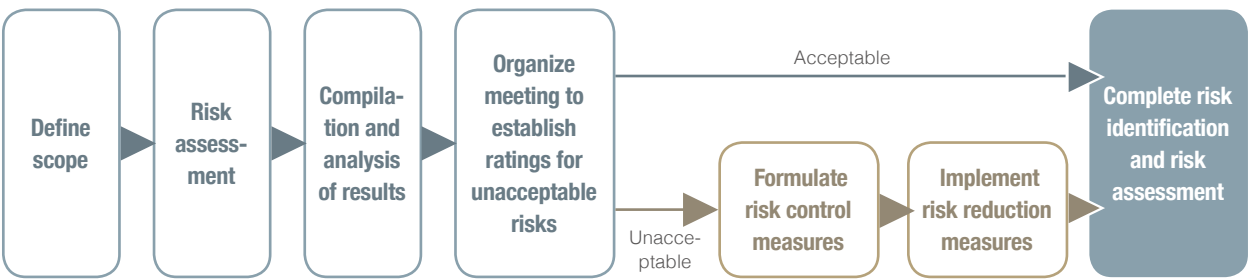
Occupational Injury Description

The reasons for occupational injuries in CCPG factories include falling, injuries and burns caused by mechanical operations, and spillage of chemicals inside the factories. Traffic accidents are more common outside factories. The number of external traffic accidents increased by 15 incidents in 2017 from levels in 2016. There was one death in DCCJS in 2017 that was caused by a traffic accident. In response to traffic accidents, the companies educate employees on traffic safety on the way to and from the workplace in the department safety and health meetings. The companies encourage employees to carpool or take shuttle buses instead of riding motorcycles so as to prevent traffic accidents from reoccurring. To prevent personnel from inside the factories from injuries due to operations of machinery and equipment, the improvement measures include education on standard operating procedures for employees and modifications to the operating equipment in order to satisfy requirements for intrinsic safety.

Workplace Disaster Prevention and Processing

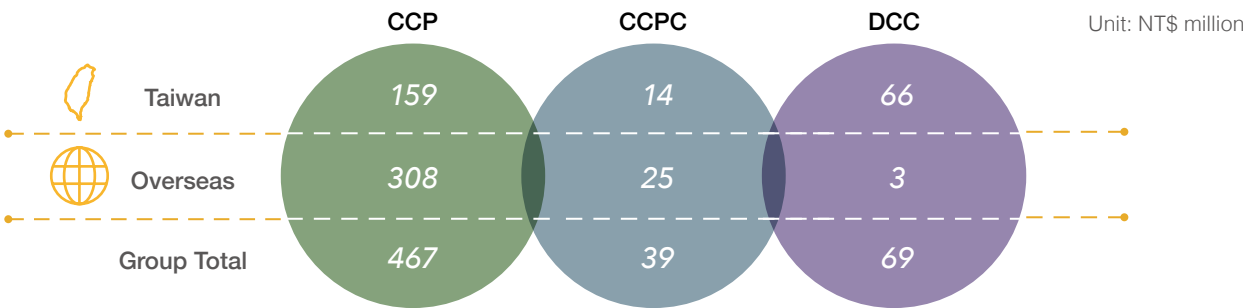
We use statistics to analyze the cause of accidents and results of investigations and formulate prevention plans for accidents that have already occurred in various workplace safety meetings. We then use safety and health hazard identification and risk assessment methods to uncover potential harm and implement control in order to protect the safety and health of employees.

Operating Procedures of Safety and Health Hazard Identification and Risk Assessment



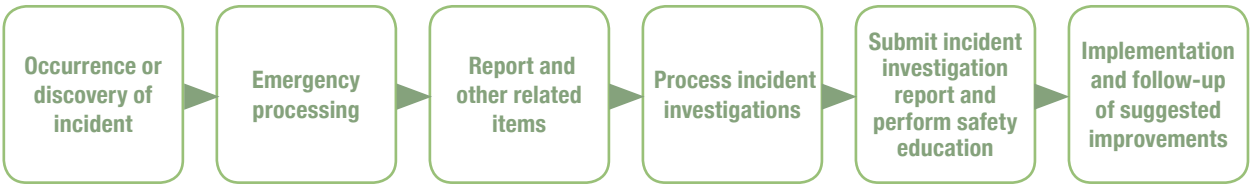
CCPG is committed to protecting the safety of all employees. In addition to personal protection equipment and related procedures and management, CCPG continues to invest to improve related safety and fire safety equipment. Investments totaled NT\$575 million in 2017. We expect to reduce the possibilities of accidents and improve the capacity for responding to accidents to reduce damage caused by accidents.

CCPG Investments in Safety and Fire Safety in 2017



Any accident in the Group, even near misses that do not lead to occupational incidents, shall be processed in accordance with regulations on incident management and investigations. Each accident shall become a supplement that makes the Group safer.

Regulations on Accident Management and Investigations



Multiple accidents of varying severity involving forklifts occurred in 2017. Forklifts are indispensable tools for operations but they often cause severe injuries when accidents occur. CCPG faced such pains and formulated the following improvement measures:

1. CCPG referenced management regulations in the industry and established safety management regulations for forklift operations. CCPG thus unified the management methods of forklifts in all CCPG factories and established safety standards.
2. CCPG strictly requires the installation of speed limiters or speeding alarms on all forklifts that operate onsite to implement speed control for hardware equipment.
3. CCPG completed the operational safety analysis for all forklift operations in 2017 and conducted another inventory of all hazards in the forklift workplace. The factories established optimal risk mitigation measures for possible hazards in different work environments through the analysis.

Contractor Safety Management

To protect contractors and reduce the safety and health risks in contractors' operations, services, and activities at the Company, we establish environmental protection, safety and health management procedures, organize coordination and organization meetings, and discuss with contractors before we assign the contracted work. We also inform the contractor of the hazardous factors of the work environment and operations such as elevated operations, repetitive moving tasks that may cause musculoskeletal disorders. We also supervise contractors in performing physical examination for their employees in accordance with the risks of operations and provide health management measures. In addition to managing the safety and health of CCPG employees, we initiated safety and health management for contractors in 2017 and established the "Operating Procedures for the Prevention of Musculoskeletal Disorders Caused by Repetitive Moving Tasks" and included contractors into its applicable scope. CCPG shall conduct observations on onsite operations for preventing musculoskeletal disorders and assess high-risk operating areas for musculoskeletal disorders for the plants to conduct follow-up health services and actions. We plan to begin automatic packaging machine operations in the high-risk areas for musculoskeletal disorders in 2018 to prevent musculoskeletal injuries for contractor personnel.

2.2.2 Process Safety

CCPG adopted 14 management elements in the three major structures for occupational safety, process safety, and mechanical integrity for the advancement of the internal management system. CCPG also developed the process safety management platform and included the overall PSM performance indicators, PSM audits, PSM management meetings, and related PSM technologies of all factories into the management system. With the commitment of senior management and full participation from employees, the factories have completed the implementation of the system and full-scale risk management. The process safety management functions were strengthened in 2017 to integrate various PSM factors and construct a more comprehensive safety net. They have also adopted PDCA procedures for continuous improvements.

Installation of following mechanisms and systems have been completed and they are described below:

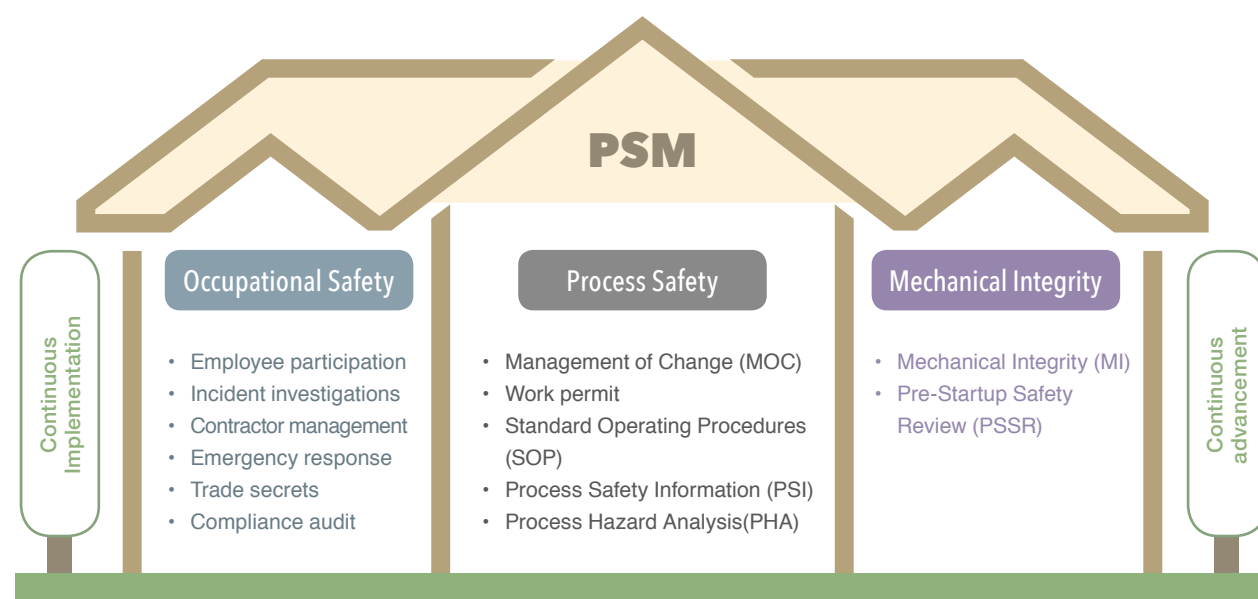
1. **Establishment of a P&ID (piping and instrumentation diagram) management system:** The Group has been founded for 68 years and the sources of technology have been highly diversified. The Group has adopted independently developed technologies that have been continuously improved and are competitive on the market and it has also introduced state-of-the-art technologies from foreign countries. However, certain gaps remain in PSI (process safety information) management on all levels. Therefore, the Group shall establish a P&ID system in the future to implement P&ID inventory systematically and integrate the CMMS system to control P&ID updates. The aim is to make P&ID management meet principles for promptness, accuracy, and confidentiality as it is the keystone to process safety.
2. **Computerized maintenance management system (CMMS) integration and installation:** The system integrates major functions for procurement, inventory, equipment, finance, and safety management and adopts RBI (risk-based inspection), RCM (reliability centered maintenance), and SIS (safety instrumented system), we could effectively control and improve static, dynamic, and instrumental reliability and build the most effective line of defense with the PSM system that is able to prevent fires, explosions, and poisoning caused by massive leaks.
3. **Establishment of the process safety management platform:** The system provides comprehensive records and monitoring of the advancement of PHA (e.g. HAZOP, JSA, etc.) in PSM that includes the production of valuable improvement recommendations from the assessment process. Appropriate follow-up shall also be provided for the recommendations to demonstrate a good PDCA cycle in the entire process. The Group has more than 3,500 tanks of various types whose hazardous levels are also classified on the platform. The management of engineering improvements can also effectively reduce the number of tank-related accidents that continue to occur in foreign



countries and in Taiwan. In 2017, the factories have fully implemented and advanced plans for tanks with higher risks in accordance with the results of the classification. Investment provided in the first year is estimated to exceed NT\$1 billion. The factories shall conduct comprehensive hazard analyses for tanks with lower risks and manage their risks based on the assessment results.

4. **Integration of the accident notification system of the Group:** Information on accidents, PSM incidents, medical incidents, environmental pollution incidents, traffic accidents, and near misses experienced by the Group shall be transferred and investigated through this platform. Once an incident occurs, the factories shall issue reports and notifications on the system in accordance with the specified schedule to begin horizontal self-inspections and inventories to review whether risks are still present. The system helps CCPG's transparent management and prevents accidents from reoccurring. It is an example of the effective use of information and knowledge management to improve safety management. We plan to classify incidents based on the level of severity by referencing international standards in 2018 and connect to world standards. For more severe incidents, we shall integrate more resources to provide a more comprehensive review and to formulate and implement preventive measures.
5. **Occupational safety mechanisms:** Occupational safety is an important structure in PSM activities. Please refer to 2.2.1 Workplace Safety and Health for detailed descriptions on related occupational safety and health management systems and the actual implementation results.

Construct A PSM-Based Safety Management System



Upgrade Process Safety Management



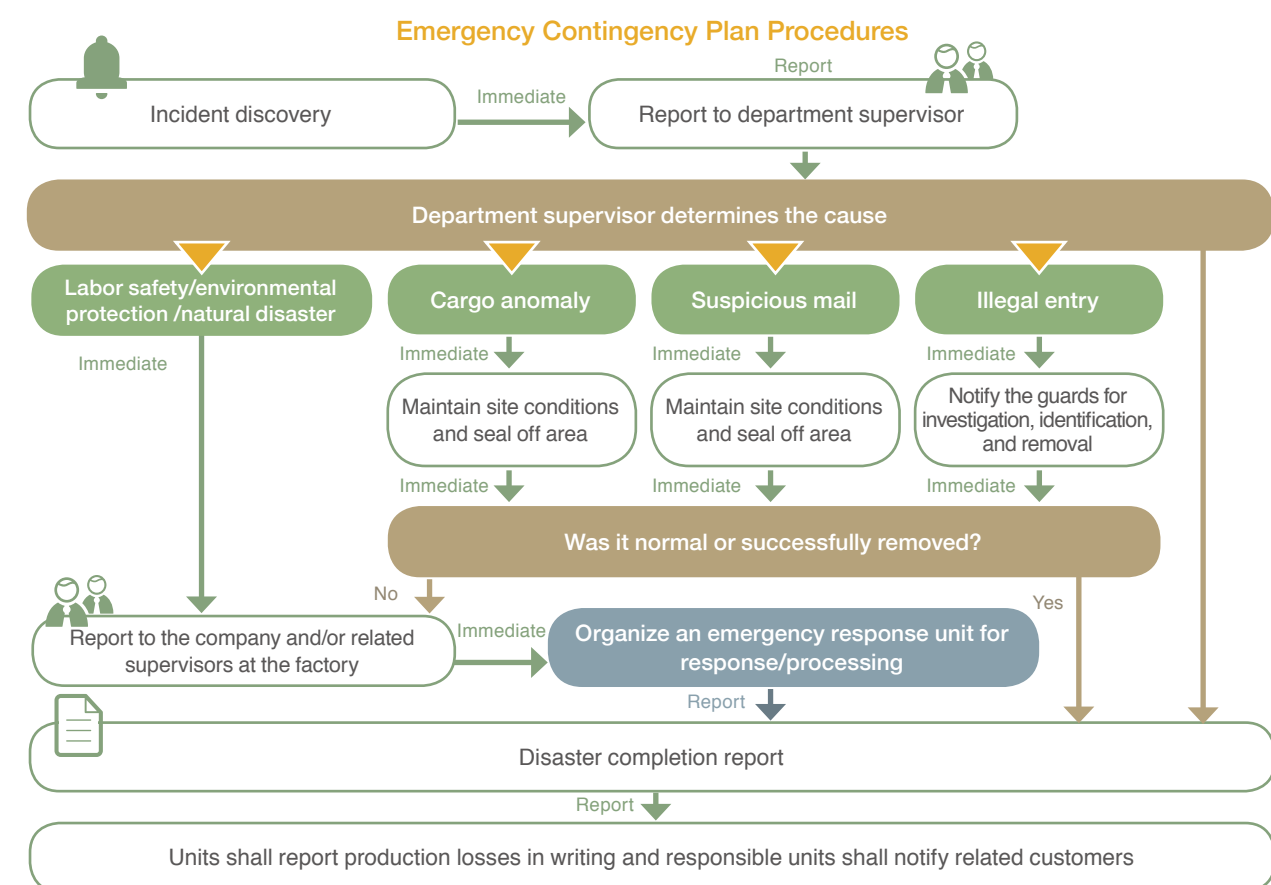
We continue to invest resources to implement the process safety system not only because of our persistence for safety but also for pursuing our goal of zero occupational injuries. In 2016, the Group formulated the following process safety plans and resource investment for the next 3 years:

Item	Short-Term Goals	Expected Benefits
Cultivate process safety management (PSM) related professional personnel	Achieve 100% growth in the number of API510, API570, and API653 of the American Petroleum Institute (API), other Individual Certification Program (ICP) inspectors, and PSM-related professional certificates before 2020 by increasing the number of licenses from 19 to 38	Professional technical skills required for the implementation of mechanical integrity
Implement dedicated full-time personnel	Complete professional PSM training for 32 process safety engineers by 2017 and recruit all required engineers before 2018	Implement and continuously improve process safety management
Introduce foreign technologies and resources	Since 2013, CCPG has begun strategic cooperation with National Kaohsiung University of Science and Technology (former Kaohsiung First University of Science and Technology), Yunlin University of Science and Technology, and domestic experts in the industry through education, training, and professional consultation	Effectively improved CCPG employees' knowledge and expertise in PSM

2.2.3 Material Incident Management & Response

CCPG's emergency preparation and response plans are planned in advance to prevent accidents caused by all kinds of disasters at the workplace and to prevent and reduce losses to personnel, equipment, and properties.

Fires, explosions, poisoning, accidental local pollution, and other accidents may occur in the work environment due to leaks of chemicals. Major accidents may also occur for the aforementioned reasons that are by natural disasters. In response to illegal entry, anomalies in shipments, suspicious mail, the departments and factories must implement all existing organizations, manpower, command system of the workplace for the units in the workplace to implement response measures in order to reduce damage, reduce harm to personnel, and restore normal conditions as quickly as possible.





2017 Emergency Response Drills Plan

Drill items and content

Disaster prevention response drill



Self-defense and fire safety team organization drill



Chemical leak and fire emergency response drill



Pipeline leak emergency response drill



Ccpg Pipeline Transmission Disaster Emergency Response

The Company continued to improve its independent maintenance and management of the underground industrial pipelines, abide by the regulations of related competent authorities and referenced international standards and regulations to implement a comprehensive evaluation on the safety of pipelines. Pipeline maintenance and operations plans were established and implemented each year. The Company also implemented comprehensive management with electronic onsite pipeline inspections, monitoring and management of input and output ends, corrosion potential and closed-interval potential of regular inspections, periodic smart pig inspections for assessing the integrity of pipelines, etc., to prevent pipeline damage and leaks and ensure the normal and safe transmission of material fluids. It also uses the regional defense organization of underground-piping group 5 and 6 to build public safety awareness and public relations for underground industrial pipelines, establish emergency response mechanisms for leak incidents, and continue to maintain effective management of the integrity of underground industrial pipelines.

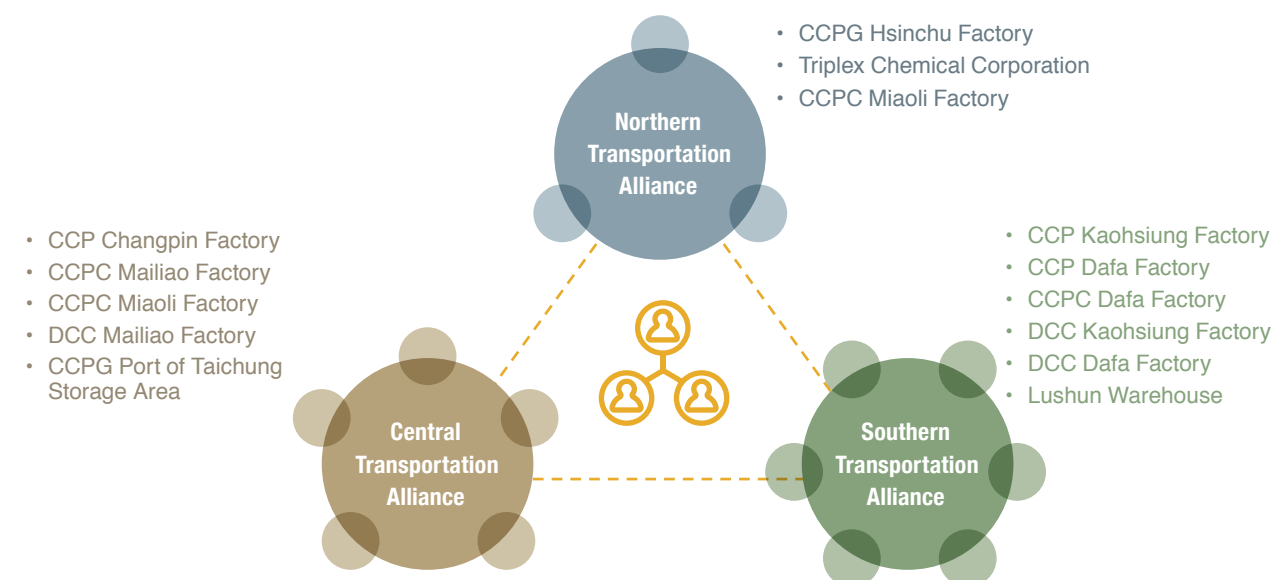


▲ Regional defense organization of underground-piping group 5 - Nitrogen pipeline leak, 2017/9/8

Ccpg Road Transportation Disaster Emergency Response

A broad range of materials and products produced by CCPG are transported via road transport to midstream and downstream factories for use. The transportation area encompasses counties and cities in the northern, central and southern regions as well as Yilan and Taitung County on the east. However, chemicals may leak in the transportation process due to natural disasters or negligence in personnel operations that cause the transportation vehicles to be overturned or collisions. The incidents could harm other individuals on the road and damage the environment.

To ensure that leaks of chemicals transported by CCPG can be controlled in the event of overturns or leaks on the road within the most opportune period and the affected scope can be effectively reduced and controlled, the CCPG transportation defense organization is formulated by integrating the Group's response capabilities in the northern, central, and southern production factories. In the event of an accident involving chemicals transported by the Group, response personnel in nearby production factories can be immediately sent to provide support, perform collaborated rescue, reduce losses from disasters, and prevent secondary pollution. In 2017, the Group continues to conduct drills for emergency response to road transportation disasters to strengthen personnel's familiarity with various operations.



2017 Transportation Alliance Drills



Tetramethylammonium hydroxide Accident drill

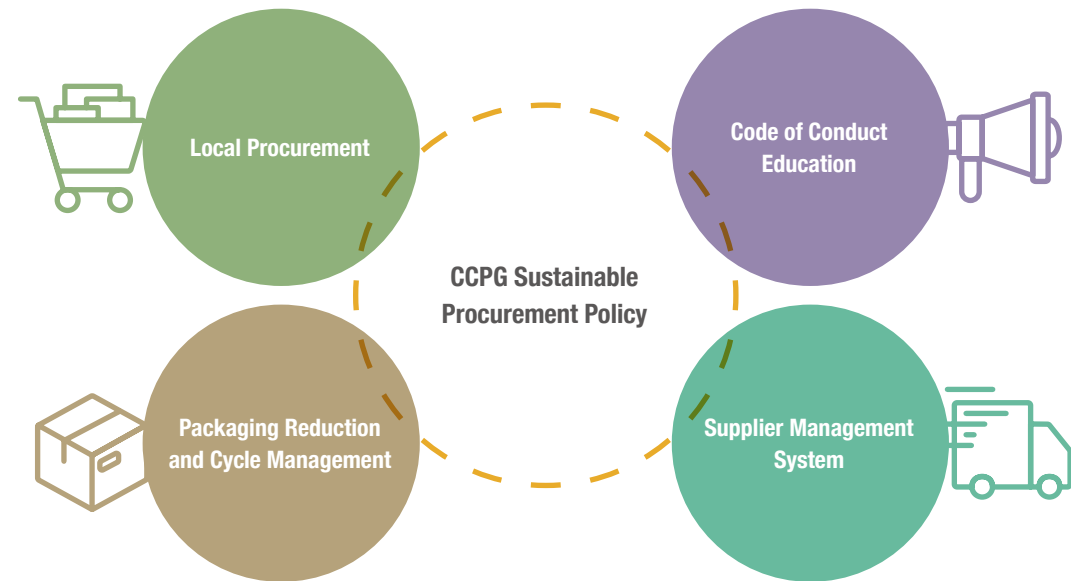




2.3 Sustainable Procurement Policy

CCPG adopts and implements a sustainable procurement policy to effectively manage the supply chain and grow with supply chain partners. This allows supply chain partners to increase the value of products and services provided to customers while respecting the society and environment in order to achieve the goal of sustainable development.

CCPG's Sustainable Procurement Policy can be divided into Code of Conduct education, supplier management system, local procurement and packaging materials reduction, and circular management. They are described in the following chapters.



2.3.1 Supplier Code of Conduct Education

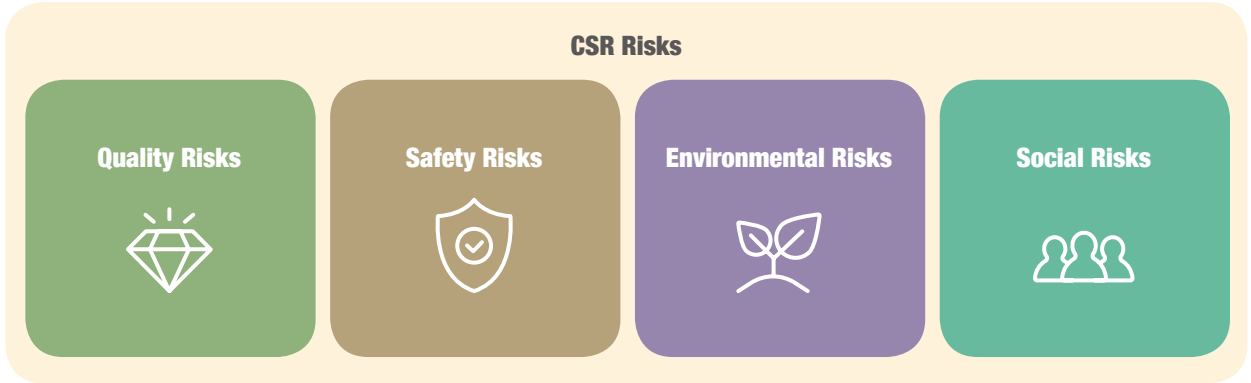
To continue to improve the corporate social responsibilities of the supply chain partners, CCPG educates all suppliers on CSR issues. The contents include labor rights, human rights issues, business ethics, and conflict minerals and suppliers complete the signing process during the establishment of contracts or agreements for transactions. The process of the signing of the Supplier Code of Conduct in 2017 is shown in the table. We plan to complete 100% signing rate for all suppliers of the Group by 2020.

Region	Factory	Implementation Status
Taiwan	-	B2B platform education 100% signing rate by suppliers in Taiwan
Overseas	CCDPJ	100% signing rate
	CCPJ	
	CCJS	100% signing rate
	DCCJS	78% signing rate
	CCDSG	100% signing rate for Code of Business Ethics
	CCSG	
	DCCM	100% signing rate for professional contractors 100% signing rate for Code of Business Ethics by raw material suppliers
	CCZZ	100% signing rate by raw material suppliers

Note: The signing of CCJS's conflict minerals clause only applies to materials suppliers.

2.3.2 Supplier Management System

CCPG aims to continuously improve suppliers' management system and requirements to reduce the quality, environmental protection, safety, and social risks of suppliers and thus reduce suppliers' CSR risks.



CCPG's supplier management system is explained as follows from the three categories for main raw materials, transportation service providers, and contractors:

1. Management of Raw Materials Suppliers

CCPG imposes management regulations in the table on suppliers of raw materials:

New suppliers	<ul style="list-style-type: none">✓ Meet quality, environmental, health, and government regulations✓ Obtain ISO 9001 or other quality system certification✓ Quality assurance, production, and procurement departments form an assessment team to conduct onsite evaluation tasks on new suppliers. Those that meet requirements become qualified suppliers✓ Disqualified suppliers are notified of the reasons for disqualification and they may reenter the assessment process after they make improvements.
Existing suppliers	<ul style="list-style-type: none">✓ CCPG compiles the delivery records of products from the supplier in the previous year and evaluates suppliers based on the quality, environment, services, and integrity of delivery documents.✓ Suppliers with higher ratings will see increases in the frequency of CCPG's purchases in the current year. No purchases shall be made from disqualified suppliers in the current year.✓ CCPG arranges annual supplier audit plans to assess the suppliers' quality system, supplier management, materials delivery, production management, and environmental safety management.

Note: The aforementioned guidelines may differ due to different local regulatory requirements and regulations for operations.

After the aforementioned evaluations, CCPG listed 1,842 qualified raw materials suppliers in Taiwan and 496 in foreign countries in 2017, totaling 2,338 suppliers. (The number of qualified suppliers is calculated based on individual companies in the Group. If a supplier is a qualified supplier of two CCPG companies, it shall be calculated once for each company.)

2. Transportation Service Provider Management

CCPG regards transportation and logistics as part of product quality and the management regulations on transportation service providers are specified in the table:



New suppliers	<ul style="list-style-type: none">✓ ISO 9001 certified (Taiwan)✓ AEO certified (Taiwan)✓ Obtain related transportation licenses for controlled chemicals in accordance with regulations✓ Vehicles must be equipped with GPS equipment (Taiwan)✓ Investigate contractors' safety, health, driver, vehicle safety, and vehicle and equipment maintenance systems as well as their implementation status
Existing suppliers	<ul style="list-style-type: none">✓ The status of the previous year is evaluated based on the satisfaction survey filled out by the operating unit and suppliers with poor performance will be required to perform improvement plans for verification✓ Suppliers are graded based on the annual satisfaction survey results and those that fail to reach standards will not be appointed

Note: The aforementioned guidelines may differ due to different local regulatory requirements and regulations for operations.

After the aforementioned evaluations, CCPG listed 35 qualified transportation service providers in Taiwan and 72 in foreign countries in 2017, totaling 107. (The number of qualified suppliers is calculated based on individual companies in the Group. If a supplier is a qualified supplier of two CCPG companies, it shall be calculated once for each company.)

3. Authorized Economic Operator (AEO)

CCPG has obtained AEO certification in Taiwan and included of raw materials suppliers and transportation service providers into the business partner management procedures. CCPG conducts periodic or spontaneous assessment of the safety operating procedures and facilities of business partners and ensures that the standard safety requirements are met to reduce risks and logistics safety.

CCPG has established related management procedures to evaluate transportation service providers each year and use the ratings to formulate the annual auditing plans. The auditing plans are used to audit business partners. CCPG audited 27 raw materials suppliers and transportation service providers in Taiwan in 2017 and all of them passed the audit.

4. Contractor Management

CCPG requires contractors to comply with local regulations and be responsible of providing insurance coverage and ensuring the safety of employees or contracted personnel. In addition, CCPG factories have enacted regulations and penalties for contractors to effective management the conduct of contractor personnel in factories in order to maintain safety in factory operations. The management regulations on transportation service providers are provided below:

New contractors	<ul style="list-style-type: none">✓ Content of the "profit-seeking enterprise registration certificate"✓ Qualification certifications required by related industries or governments✓ Qualifications and licenses of related personnel✓ Labor insurance or accident insurance required by local governments✓ Factory safety and health training for contractor personnel
Existing contractors	<ul style="list-style-type: none">✓ CCPG periodically verifies related qualification certifications of various contractors and the validity period for personnel training✓ CCPG established and announced related penalties and requests contractors to pay fines for violations✓ Contractors with severe violations or those that fail to implement improvement measures shall be suspended

Note: The aforementioned guidelines may differ due to different local regulatory requirements and regulations for operations.

After the aforementioned evaluations, CCPG listed 457 qualified contractors in Taiwan and 232 in foreign countries in 2017, totaling 689. (The number of qualified suppliers is calculated based on individual companies in the Group. If a supplier is a qualified supplier of two CCPG companies, it shall be calculated once for each company.)

CCPG provides labor safety and health education courses for each worker that enters a CCPG factory for construction. Only individuals who have thoroughly completed the training are permitted to work onsite. If the individual needs to enter the factory again after the validity period of the training course, he shall be required to take the training course again. The purpose of such actions is to effectively promote safety awareness for the operators of suppliers and to lower the risks of accidents. CCPG provided 17,016 instances of training and tests for contractors in 2017 and the statistical data on the number of participants are as follows:

CCPG's Training Hours Statistics for Contractors from 2015 to 2017

Year	2015			2016			2017		
Gender	♂ Male	♀ Female	Total	♂ Male	♀ Female	Total	♂ Male	♀ Female	Total
Training Hours	27,897	1,702	29,599	8,099	801	8,900	14,841	858	15,699
Participants	18,641	1,635	20,276	8,600	1,205	9,805	16,075	941	17,016
Average Hours	1.50	1.04	1.46	0.94	0.66	0.91	0.92	0.91	0.92

Note: Previous contractors only require refresher training which consists of fewer training hours; therefore, the average training hours are lowered.

CCPG's training hours statistics for contractors in 2017 (by company)

Company		CCP			CCPC			DCC		
Gender		♂ Male	♀ Female	Total	♂ Male	♀ Female	Total	♂ Male	♀ Female	Total
Taiwan	Training Hours	4,890	240	5,130	1,563	104	1,667	2,711	223	2,934
	Participants	5,491	272	5,763	1,563	104	1,667	3,303	258	3,561
	Average Hours	0.89	0.88	0.89	1.00	1.00	1.00	0.82	0.86	0.82
Overseas	Training Hours	3,152	89	3,241	540	60	600	1,986	142	2,128
	Participants	3,286	89	3,376	540	60	600	1,892	158	2049
	Average Hours	0.96	1.00	0.96	1.00	1.00	1.00	1.05	0.90	1.04
Total	Training Hours	8,042	329	8,370	2,103	164	2,267	4,697	365	5,061
	Participants	8,777	361	9,139	2,103	164	2,267	5,195	416	5,610
	Average Hours	0.92	0.91	0.92	1.00	1.00	1.00	0.90	0.88	0.90



2.3.3 Local Procurement

CCPG upholds the value of working with local companies for common growth and development in expansion or annual overhaul project contracting and tries to support or prioritize local companies in the country of the factory for procurement projects. From 2015 to 2017, at least 70% of the construction projects of CCPG's factories involved procurement from local companies.

2.3.4 Packaging Reduction and Cycle Management

CCPG materials and products require a diverse range of packaging and transportation methods. CCPG continuously evaluates suitable transportation and packaging methods for its independent units, suppliers, and customers to achieve environmental protection goals while meeting customer requirements. The improvements can be divided into four categories:

A
Recycling packaging materials with customers/suppliers (including procurement within the Group)

B
Increasing customers' shipment volume from low volume to high volume

C
Increasing suppliers' shipment volume from low volume to high volume

D
Convert to recyclable (repeated use) materials



Summary of CCPG Packaging Materials Reduction and Cycle Management Results in 2017 (By Company)

Improve- ment Type	Company	Region	Targets	Packaging Materials/Implementation Method	Annual Recycled (Reduction) Amount
A	CCP	Overseas	Group enterprises Customers	Recycling of wooden crates for finished products	39,332 wooden crates
			Group enterprises	Recycling of bulk bags for finished products	16,895 bulk bags
		Taiwan	Group enterprises	Recycling of PE barrels for finished products	2,780 PE barrels
			Group enterprises	Recycling of iron barrels for finished products	1,572 iron barrels
			Group enterprises	Recycling of bulk bags for finished products	80,527 bulk bags
	CCPC	Taiwan	Group enterprises	Recycling of PE barrels for finished products	37,885 PE barrels
			Customers	Recycling of wooden crates for finished products	20,317 wooden crates
			Customers	Recycling of FRP tubes for finished products	8,873 FRP tubes
			Group enterprises	Recycling of bulk bags for finished products	17,314 bulk bags
			Group enterprises	Recycling of iron barrels for finished products	2,642 iron barrels
B	CCP	Taiwan	Customers	Iron barrels for finished products converted to ISO tanks	476 iron barrels
C	CCP	Overseas	Group enterprises	25Kg paper bags for raw materials Converted to 575kg packaging	1,600 paper-plastic composite bags
D	CCP	Overseas	Suppliers	Original IBCs converted to self-produced SUS 304 stainless steel barrels	1,848 IBC barrels

The safety of packaging must be considered as we advance recycling and reducing packaging materials to ensure secure storage of products in the transportation and storage process. Therefore, CCPG shall continue to seek innovative packaging materials or transportation methods. Simultaneously, CCPG shall improve factoring unloading, transportation and storage equipment, and automation to reduce the use and consumption of packaging materials and achieve environmental protection goals.

Due to the changes in the market environment, regulatory changes, and changes in the nature of products or services in recent years, different types of suppliers are subject to different risks in supply. CCPG shall include corporate social responsibility issues more comprehensively into the supplier evaluation system and integrate them with existing quality, safety, and health management systems. The establishment and improvements of the management system shall be used to reduce the overall CSR risks of the entire supply chain.



3



A Sustainable Producer that Prospers with the Environment

- 3.1 Environmental Management and Investment
- 3.2 Climate Change and Energy Conservation
- 3.3 Water Resources Management
- 3.4 Waste Management





Among all the industries, the chemicals industry has always been regarded as an energy-intensive industry with high environmental risks. It is our basic mission and goal as a sustainable producer to minimize the environmental impact of CCPG's daily operations and process and fully implement environmental protection measures in all factories and for all employees. CCPG will continue to improve the cost analyses of products and prepare for the future carbon pricing trends through environmental cost accounting that integrates products and finances.

3.1 Environmental Management and Investment








CCPG deeply understands that enterprises should not only pursue profits but also perform their corporate social responsibilities. CCPG has therefore listed "environmental protection" as our top priority and we firmly believe that the implementation of a sound management system will be able to improve the environment and contribute to people's wellbeing.

CCPG's management goal is to adopt standards that are consistent with or superior to regulations and implement related environmental protection measures. To achieve this goal, the factories shall continue to improve waste recycle and production efficiency in order to reduce the level of pollution generated in the production process. It shall also invest in pollution prevention and process improvement equipment in order to implement optimal feasible measures for equipment maintenance, repairs, replacement, and installation and achieve sustainable development goals.

3.1.1 Environmental Management

CCPG's Environmental Safety and Health Policy

CCPG adjusted its environmental safety and health policy in 2017 and aimed to manage environmental safety and health issues through more comprehensive methods. CCPG's statement on its environmental safety and health policy is as follows:

-  Abide by the government's environmental protection, and safety and health regulations as well as commitments to related stakeholders.
-  Control hazardous risks and establish effective emergency response plans to prevent safety, health, and pollution incidents.
-  Use opportunities in system and process improvement to reduce pollution, safety, and health risks in order to facilitate waste reduction, energy conservation, and resource recycling and reuse.
-  Improve employees' and stakeholders' safety, health, and environmental protection awareness.
-  Continue to advance quantitative management goals and use periodic reviews to improve management performance.
-  Implement effective technical and management systems to protect the safety and health of employees and lower the impact on the environment.
-  Provide appropriate channels to maintain the communication and participation of safety, health, and environmental protection information.
-  Disclose product information where appropriate to protect customer safety and health.

CCPG's factories have all introduced environmental management systems (ISO 14001) to ensure that the emissions and waste disposal in the factories' production process comply with legal requirements and provide management and responses on major environmental issues. The Group has also introduced the ISO 9001 quality management system, Taiwan Occupational Safety and Health Management System (TOSHMS), and OHSAS 18001. Through these systems, we expect to achieve optimum management covering all three dimensions of environment, employee safety and health and product quality. Complete ISO 14001: 2015 and ISO 9001: 2015 third-party certification in 2018. Upgrade third-party certification from OHSAS 18001 to ISO 45001 in 2020. Please refer to 4.1.1 Stakeholder Engagement for related complaint mechanisms.

3.1.2 Environmental Protection Related Expenditures

CCPG voluntarily increases environmental protection expenditures and improves resource productivity in order to fulfill its sustainable development ideals and reduce the impact of the production process on the environment. The environmental protection expenditures in 2017 totaled NT\$1.23 billion and they mainly included pollution prevention, waste disposal, and energy conservation and carbon reduction which accounted for 38.1%, 24.4%, and 37.5% of total environmental protection expenditures, respectively. The investment for environmental projects (projects involving more than NT\$1 million) in 2017 amounted to NT\$2.45 billion. We expect to increase environmental protection project investments by more than 5% every year starting from 2018.

To clarify the environmental protection expenditures of companies of the Group, we continue to promote the following green accounting measures:

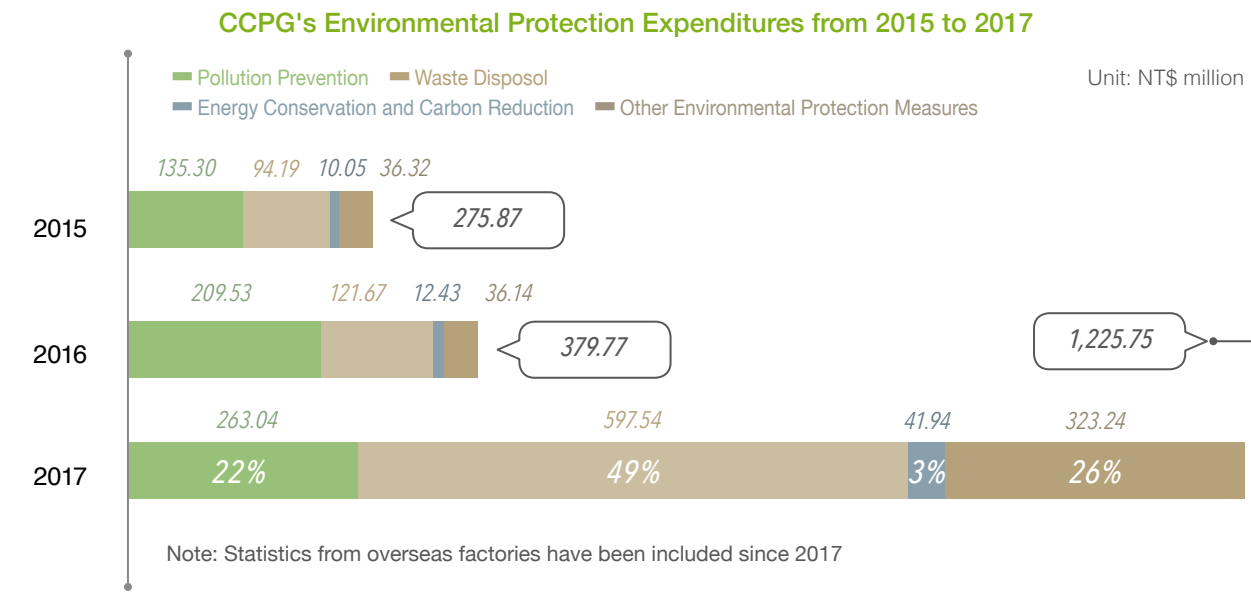
August 2006—CCPG started receiving guidance from Environmental Management Accounting Network-Taiwan (EMAN-TW) starting with CCP's Kaohsiung Factory and gradually promoted the guidance to the entire Group.

April 2009—CCPG officially launched measures to match accounts with environmental coding for purchase applicants or accountants to enter the environmental code of the environmental protection expenditure to the system to generate various environmental protection expenditure statements.

2017—CCPG simplified the environmental protection codes and made them more practical. The accounts are automatically numbered with the environmental codes by the account system. Green accounting has been adopted in all domestic and overseas factories of the Group in 2017.

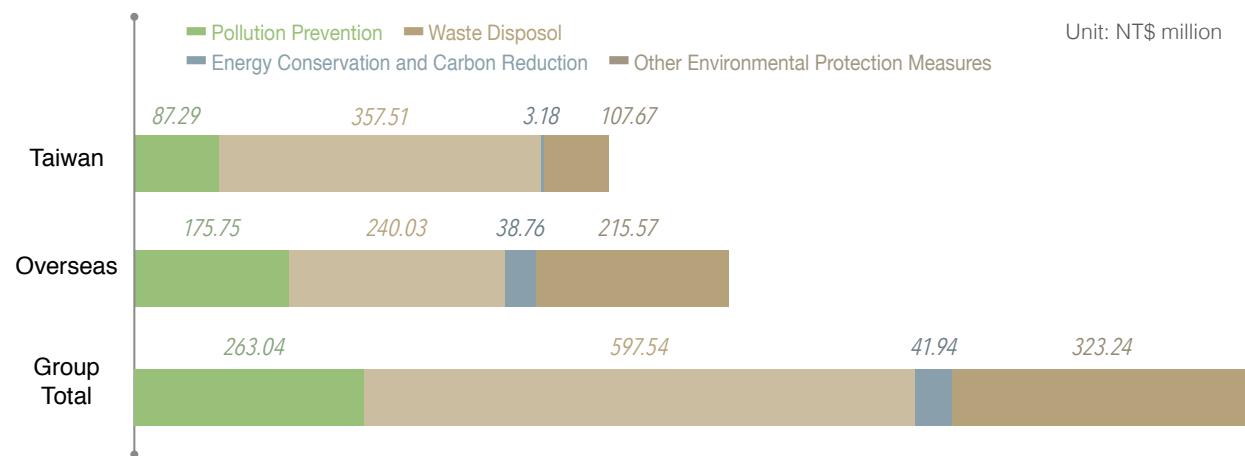
2018—In response to the Greenhouse Gas Reduction Act and the Group's green accounting policies, the Group has added calculations for the carbon emissions reduction/carbon cost and compiled analysis reports for reference to senior executives of the Group.

In response to trends in environmental protection regulations, we have conducted internal assessments on the cost of carbon to facilitate overall carbon asset management for the future. At the same time, we have also evaluated investments on pollutant prevention equipment and other capital expenditures to reduce the impact of products or processes on the environment and improve the management of environmental costs. As greenhouse gas emissions will be priced in the carbon trading market in China, the Group views greenhouse gas emissions as part of future financial management. CCPG shall include carbon emissions and carbon cost-benefit analysis for new investment or expansion of production lines and CCPG HSE Division shall conduct environmental cost-benefit assessments from the perspective of carbon emissions management for CCPG.





CCPG's Environmental Protection Expenditures in 2017 - by Company



CCPG's environmental protection project investment expenditures in 2017 Unit: NT\$ million

Region	Item	CCP	CCPC	DCC
Taiwan	A. Pollution prevention	248	370	N/A
	B. Waste disposal	20	164	3
	C. Energy conservation and carbon reduction	81	442	357
Overseas	A. Pollution prevention	295	20	N/A
	B. Waste disposal	N/A	205	205
	C. Energy conservation and carbon reduction	35	N/A	1
Group Total	A. Pollution prevention	543	390	N/A
	B. Waste disposal	20	369	208
	C. Energy conservation and carbon reduction	116	442	358
Total		679	1,201	566

Note: As DCC's project investments are classified under different categories, pollution prevention has been included in two other categories in the calculations.

3.2 Climate Change and Energy Conservation

CCPG adopts active management and positive engagement attitudes on climate change as well as energy conservation issues and risks. We organize energy conservation and carbon reduction meetings each month to adjust the implementation of energy conservation and carbon reduction measures and keep following up on the effectiveness. With regard to the management plan, the CCPG HSE Division periodically obtains information, tracks changes in related regulations, and provides responsive measures. It also conducts an inventory of greenhouse gases each year to verify the energy conservation and carbon emissions reduction effects of the current year and submit the plan for the next year for implementation.

3.2.1 Energy Management and Conservation

We continue to advance energy conservation and carbon emissions reduction measures, improve energy efficiency, and implement energy and greenhouse gas management to reduce impact on climate change. CCPC Miaoli Factory planned to set up solar power generation equipment on the roof of the factory in 2017 and the project is expected to be completed in 2018. After the solar power generation equipment is inaugurated, it will have a maximum annual power generation of 2.6 million kWh which will reduce 1,600 metric tons of CO₂ emissions. CCPG continues to advance heat integration and improvement operations for the process to use steam more efficiently. The energy consumption in 2017 was reduced by approximately 1,000,000 GJ compared to 2016.

CCPG Energy Conservation and Carbon Reduction Advancements

The head office plans CCPG energy conservation and carbon reduction mechanisms for 2018. CCPG reduces water, steam, and electricity consumption and cooperates with related government laws and regulations. The factories shall effectively implement energy conservation and carbon reduction measures and the Group aims to reduce total energy consumption by 3% each year.

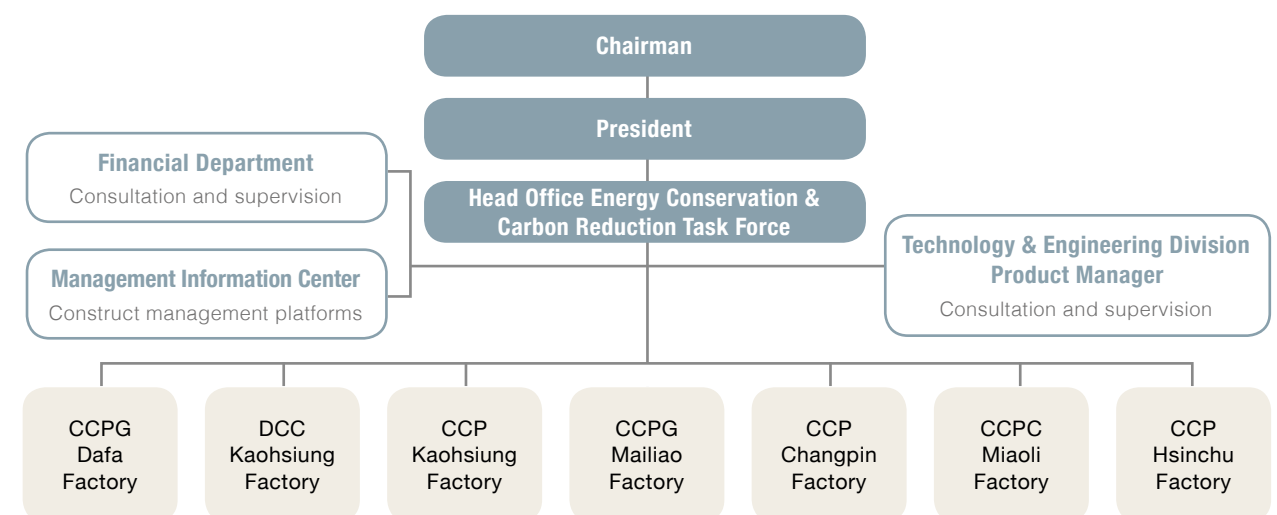
Energy conservation implementation strategy:

- Formulate water, steam, and electricity saving measures for all factories.
- Establish carbon reduction and reduction performance management to facilitate follow up inspections.
- Advance energy conservation and carbon reduction education and communication to promote energy conservation and carbon reduction concepts for factories.

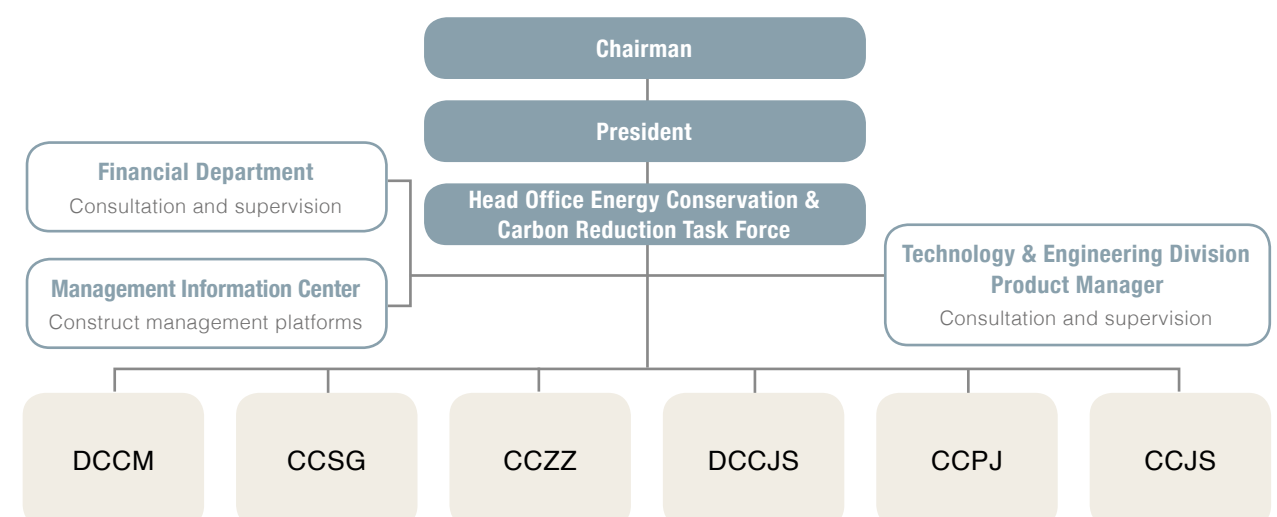
Energy Conservation and Carbon Reduction Organization Structure

CCPG shall establish an energy conservation and carbon reduction advancement organization and the highest-ranking management (President and above) shall define, establish, and implement energy conservation and carbon reduction policies to establish energy conservation and carbon reduction goals for all factories. The organizational structure of factories in Taiwan and overseas is as follows:

CCPG Energy Conservation and Carbon Reduction Advancement Organization Structure (Taiwan)



CCPG Energy Conservation and Carbon Reduction Advancement Organization Structure (Overseas Factories)





Main Energy Conservation Measures in 2017

Saved a total of 74.72 million kWh of electricity and 109,971 metric tons of steam

- CCPG optimized the aeration system and adopted low-horse power blowers to reduce energy consumption.
 - Reduction of **2.3 million kWh/year**
- CCPG optimized the cooling tower systems **reduction of 14.17 million kWh/year**
- CCPG improved processes and reduced power and steam usage
 - saved a total of **55.36 million kWh** of electricity and approximately **109,971 metric tons** of steam
- Old chiller replacement or integration of chillers with the process **Reduction of 2.89 million kWh/year**

Introduce the ISO 50001 Energy Management System to Factories

To improve energy management efficiency, CCP Dafa Factory and DCC Jiangsu Factory have adopted ISO 50001 Energy Management System and obtained third-party certification. The Group also applied for assistance from the Corporate Synergy Development Center of the MOEA's Industrial Development Bureau. Expert groups are expected to assist CCPC Miaoli Factory (central factory) in obtaining ISO 50001 Energy Management System international standards certification in 2018. They shall also provide inspection services for the three satellite factories including CCP Hsinchu Factory, CCP Changpin Factory, and CCP Kaohsiung Factory and provide suggestions for energy conservation improvement plans.

CCPG Energy Consumption from 2015 to 2017

Unit: Gigajoules (GJ)

Energy Type	2015	2016	2017
Externally purchased electrical power	6,294,618	6,742,800	8,602,365
Diesel	148,942	91,461	144,166
Natural Gas (NG)	2,439,678	2,732,308	2,978,728
Heavy oil/fuel oil	879,801	866,929	777,793
Coal	54,399,370	58,323,943	53,794,377
Externally purchased steam	18,088,918	18,387,515	20,336,166
Steam sold to external parties	4,299,919	4,630,043	5,205,461
Electrical power sold to external parties	1,459,108	1,407,088	1,392,646
Unconsumed self-produced steam	77,429	0	63,576
Total	76,569,730	81,107,825	80,035,488

Note:

- The Group does not use biodiesel or liquefied petroleum gas.
- The externally purchased electrical power, electrical power sold to external parties, externally purchased steam, steam sold to external parties that include sales and purchases within the Group and they have not been deducted.
- All statistics in Chapter 3 are rounded off.

CCPG Energy Consumption in 2017 - by Company

Unit: Gigajoules (GJ)

Energy Type	CCP		CCPC		DCC	
	Taiwan	Overseas	Taiwan	Overseas	Taiwan	Overseas
Externally purchased electrical power	1,199,519	1,248,948	2,712,809	41,696	2,479,877	919,515
Diesel	16,747	2,425	16,715	77,243	2,545	28,490
Natural Gas (NG)	750,704	999,409	8,274	3,353	996,944	220,043
Heavy oil/fuel oil	61,935	2,050	313,135	40,126	360,547	N/A
Coal	9,071,217	12,965,884	22,539,862	6,963,895	N/A	2,253,519
Externally purchased steam	4,889,845	870,965	2,162,356	N/A	10,600,623	1,812,376
Steam sold to external parties	1,266,774	N/A	3,911,815	N/A	N/A	26,872
Electrical power sold to external parties	251,391	N/A	1,141,255	N/A	N/A	N/A
Unconsumed self-produced steam	N/A	N/A	N/A	N/A	N/A	63,576
Energy consumption subtotal	14,471,802	16,089,681	22,700,081	7,126,313	14,440,537	5,207,071
Total energy consumption	30,561,486		29,826,394		19,647,608	

Note:

- The Group does not use biodiesel or liquefied petroleum gas.
- The externally purchased electrical power, electrical power sold to external parties, externally purchased steam, steam sold to external parties that include sales and purchases within the Group and they have not been deducted.

CCPG uses solid research and development, process technologies, process design, and engineering capabilities to use all kinds of methods for comprehensive factory energy conservation. The energy conservation strategies are listed as follows. Please refer to Creative Innovations under 2.1.1 for various green processes and products.

Replacement with high-performance aeration system

CCP Hsinchu Factory fully replaced its wastewater treatment system with high-performance aeration system in 2017 and saves approximately **2,489,600kWh** in electricity each year.



Original #2 aeration pool adopted open air and air diffusion devices for aeration



Converted to the Hanshin aeration system to lower operating costs





► Modification of the cooling water pump to reduce energy consumption

CCPJ conducted a hydropower analysis of the cooling water in the process for a new design and conversion. It modified the size of the pump's parts and adjusted the distribution parameters of the heat exchanger to reduce energy consumption. It saves **2,489,600 kWh** each year.

Note: Calculation is based on 8,000 hours of operations each year.

► Cross-process heat integration

CCPG Dafa Factory redesigned the heat energy network in the system and recycles heat from processes in the factory to reduce steam consumption by **23.3%** each year.



AAL waste heat recovery system



BDO waste heat recovery system



► Cooling water cycle system energy conservation

CCP Changpin Factory adopts magnetic coupling for pumps to reduce excess hydraulic head and flow in the cooling water pumps and reduce energy waste.

The two pumps reduced electricity consumption by **167.8kWh** and achieved energy savings of **24.6%**.

► Replacement of old chillers

CCPC Miaoli Factory completed 18 energy conservation and carbon reduction projects in 2017 and saves **20,502,599kWh** of electricity each year. It invested **NT\$13 million** to replace three old and energy-consuming chillers in 2017 which saves **1,816,111kWh** of electricity each year and reduces carbon emissions by **1,354.8tCO₂e**.



3.2.2 Greenhouse Gas Emissions

CCPG complies with Taiwan's greenhouse gas emissions reduction targets and we have established reduction goals for the Group for the year 2025, 2030, and 2050. We also established short, medium, and long-term GHG action plans to follow up on energy consumption, GHG emissions, and reduction benefits. CCPG also uses the monthly energy conservation and carbon reduction meeting organized each month to review whether the carbon reduction performance of the Group has reached reduction targets. Special teams shall conduct evaluations and improvements for factories that failed to reach reduction goals. Refer to 1.3.1 CSR Governance and Management Organization for detailed targets and action plans.



● Reduce greenhouse gas emissions in 2025 by **10%** from 2015

● Reduce greenhouse gas emissions in 2030 by **20%** from 2015

● Reduce greenhouse gas emissions in 2050 by **50%** from 2015

From June to August each year, factories in Taiwan shall obtain ISO 14064-1 greenhouse gas certification from third-party certification units and obtain statements issued by third-party certification institutions. At least one GHG inventory has been provided for each factory. Factories of the Group in Taiwan also register related reports on the National Greenhouse Gas Registration Platform before the end of August each year in accordance with regulatory requirements. Factories in China also advance annual GHG inventory in accordance with the "Guidelines for Accounting and Reporting Greenhouse Gas Emissions for Petrochemicals Production Enterprises in China."

CCPG Greenhouse Gas Emissions 2015 -2017

Unit: kt-CO₂e

	Taiwan			Overseas			Group Total		
	2015	2016	2017	2015	2016	2017	2015	2016	2017
Direct greenhouse gas emissions (Scope1)	2,904	3,048	3,137	1,959	2,239	2,057	4,863	5,288	5,194
Carbon dioxide (CO ₂) emissions	2,859	2,997	3,100	1,959	2,239	2,056	4,818	5,236	5,156
Methane (CH ₄) emissions (including CH ₄ emissions from the use of biofuel)	20	26	12	0.06	0.03	0.03	20	26	12
Nitrous oxide (N ₂ O) emissions (including N ₂ O emissions from the use of biofuel)	12	12	12	0.15	0.14	0.15	12	12	13
Hydrofluorocarbons (HFCs) emissions	12	13	12	0.10	0.05	0.27	12	13	12
CO ₂ emissions from the use of biofuel (not included in the total)	0.98	1.23	1.79	0	0	0	0.98	1.23	1.79
Indirect greenhouse gas emissions (Scope2)	3,332	3,237	3,498	702	692	736	4,034	3,929	4,234
Carbon dioxide (CO ₂) emissions (excluding all GHG transactions)	3,326	3,231	3,492	702	692	736	4,028	3,923	4,228
Methane (CH ₄) emissions (including CH ₄ emissions from the use of biofuel)	0.27	0.32	0.33	0	0	0	0.27	0.32	0.33
Nitrous oxide (N ₂ O) emissions (including N ₂ O emissions from the use of biofuel)	5.94	5.65	5.96	0	0	0	5.94	5.65	5.96



Unit: kt-CO₂e

CCPG Greenhouse Gas Emissions of 3 CCPG companies in 2017 (factories in Taiwan and overseas)

	Taiwan			Overseas			Group Total		
	CCP	CCPC	DCC	CCP	CCPC	DCC	CCP	CCPC	DCC
Direct greenhouse gas emissions (Scope1)	892	1,943	301	1,296	532	229	2,188	2,476	530
Carbon dioxide (CO ₂) emissions	881	1,923	295	1,295	532	229	2,177	2,455	524
Methane (CH ₄) emissions (including CH ₄ emissions from the use of biofuel)	5.15	7.12	0.13	0.02	0	0	5.17	7.12	0.14
Nitrous oxide (N ₂ O) emissions (including N ₂ O emissions from the use of biofuel)	3.91	8.44	0.10	0.14	0	0	4.05	8.44	0.11
Hydrofluorocarbons (HFCs) emissions	1.81	4.79	5.45	0.27	0	0	2.08	4.79	5.45
CO ₂ emissions from the use of biofuel (not included in the total)	0	1.79	0	0	0	0	0	1.79	0
Indirect greenhouse gas emissions (Scope2)	573	1,471	1,455	335	9.01	393	907	1,480	1,848
Carbon dioxide (CO ₂) emissions (excluding all GHG transactions)	572	1,469	1,451	335	9.01	393	906	1,478	1,844
Methane (CH ₄) emissions (including CH ₄ emissions from the use of biofuel)	0.04	0.10	0.20	0	0	0	0.04	0.10	0.20
Nitrous oxide (N ₂ O) emissions (including N ₂ O emissions from the use of biofuel)	0.63	1.82	3.51	0	0	0	0.63	1.82	3.51

Note: 1. The inventory of greenhouse gases at CCPG factories currently include the inventory of Scope 1 and Scope 2 statistics which are reported to the Environmental Protection Administration and greenhouse gases under Scope 3 do not inventory.
2. PFCs and SF6 under Scope 1 were not produced and PFCs and HFCs under Scope 2 were not produced.
3. Global warming potential (GWP): CO₂: 1; CH₄: 25; N₂O: 298.
4. Among the overseas factories, only the factories in China conducted inventories of CO₂ emissions. CCSG calculated scope 1; DCCM calculated emissions based on emission coefficient factors of Taiwan.

Advancement of the Greenhouse Gas Offset Program

CCPG evaluates the factories in Taiwan and advances efficient carbon reduction programs that meet the required methodology. We filed applications for greenhouse gas emissions offset programs including the two greenhouse gas offset program applications in 2017. They included CCPC's "blower/pump variable-speed control conversion project" which is expected to offset 4,230t CO₂e from 2019 to 2028 and DCC Mailiao Factory's "VAM2/VAM3 process heat integration engineering improvement project" which is expected to offset 190,640t CO₂e from 2019 to 2028. Third-party certification has been completed and we expect to offset a total of 19,487t CO₂e each year after the review and approval of the Environmental Protection Administration.

Factories in Taiwan shall continue to follow up on projects that meet the methodology and use the assistance and resources provided by competent authorities to continue to file applications for greenhouse gas offset programs to the Environmental Protection Administration as the Company's credit for offsetting after controls for total greenhouse gas emissions are implemented. Although overseas factories have not applied for related projects for generating carbon credits, they have been committed to energy conservation and carbon reduction activities. For instance, the installation of a permanent magnet variable speed coupler and adjustment of impellers in CCPJ's cooling water system which will save 2,480,000kWh of electricity and reduce approximately 1,927t CO₂e.

► CCSG CO₂ Reuse

CCSG sells excess CO₂ produced in the factory to downstream customers to use as materials and it sold a total of 4,568 tons of CO₂ in 2017. The customer's CO₂ demand will grow by 10% each year. This project not only created economic benefits for CCSG but, most importantly, but it also reduced emissions and contributed to a circular economy.





Use of pipelines and blowers to transport CO₂ to downstream customers

3.2.3 Climate Change Adaptation

CCPG actively responds to the risks brought forth by climate change and turns risks into opportunities. Factories stored appropriate reserve materials and optimized production schedules to reduce impacts on the production process. They also advanced energy conservation plans to reduce carbon emissions in response to the requirements in the Greenhouse Gas Reduction and Management Act and advances the carbon footprint and energy conservation measures in response to the impact of future carbon taxes.

In addition, CCPG also established early warning measures and standard operating procedures for natural disasters in response to torrential rains, typhoons, and water shortages generated by extreme weather. The establishment of procedures and control of all sorts of updated information effectively integrates execution in factories and decision making in the CCPG Executive Board in Taipei for full control of internal and external conditions. CCPG further reviewed climate change issues in 2017 and proposed new response strategies. All levels of the Group are therefore able to make the most suitable decision and actions at the most appropriate times and implement them effectively to reduce the impact on the Group.

Factories' Response Strategies for Climate Change

Extreme weather	Incident	Response	New response measures in 2017
	 Water shortage and reduction of output	<ul style="list-style-type: none">• Increase water storage by increasing the water level of city water tank, connecting temporary pipelines to the basement, and using silos (storage tank for solid objects) to store water• Increase the reutilization rate of water resources• Increase rainwater recovery rate• Reduce water consumption• Add water recycling equipment• Adjust the operating efficiency of the waste water treatment facilities• Adjust the concentration level of the cooling tower to reduce water release volume	<ul style="list-style-type: none">• Establish facilities to store groundwater and adjust water usage for emergency needs• Establish emergency response plans for suspension of water supply and conduct exercises each year
	 Flooding caused by rain	<ul style="list-style-type: none">• Build rainstorm collection pools• Increase the building elevation of factories• Perform periodic inspections and clear the drainage system; open up other water channels to divert water flow during torrential rains	<ul style="list-style-type: none">• Establish emergency response plans and conduct drills each year
	 Power blackouts	<ul style="list-style-type: none">• Increase the ratio of cogeneration power• Adopt solar power generation	<ul style="list-style-type: none">• Manufacturing process improvement to reduce power consumption• Use electricity-saving equipment• Adoption of high-efficiency motors• Set air-conditioning temperature to 27°C• Establish blackout emergency response work guidelines to conduct exercises for backup emergency power generator to ensure dual-loop power supply
	 Natural disasters	<ul style="list-style-type: none">• Strengthen response measures for typhoons• Implement patrols and replacement of old pipelines to ensure that the production process can be maintained during natural disasters and ensure the stable supply of water, electricity, and steam through public pipelines• Improve earthquake evacuation drills• Increase the wind-proof level of buildings• Purchase related insurance to ensure compensation after disasters	<ul style="list-style-type: none">• Regular disaster prevention drills• Establishment of the disaster response organization• Establish emergency response plans for typhoons and conduct drills every year• Pay attention to extreme weather reports and adopt corresponding preventive measures in advance such as measures against blizzards and low temperatures.



3.3 Water Resource Management

CCPG pays attention to water resource management issues and continuously improves the efficiency of the use of water resources in day-to-day operations. The energy conservation and carbon reduction advancement team sets a goal of reducing total water consumption in various factories by 3% each year. The factories perform evaluations to review the water consumption status and water conservation performance and they also formulate improvement plans to improve the management of water resources. These measures are aimed to enforce water conservation, recycling, and reuse in the process and it promotes good performances to other factories for them to learn.

3.3.1 Water Management

Water is the most precious gift from the heavens and the Group is also committed to advancing rainwater recovery. CCPG Mailiao Factory completed a 5,000-ton rainwater recovery system in 2016 and CCJS established a 2,000-ton rainwater recovery tank in 2017. CCPG Dafa Factory also planned a rainwater recovery area of close to 13 hectares to use rainwater as supplemental water supply for the cooling towers and flue gas desulfurization (FGD) system of cogeneration power plants. The system is expected to start the recovery and reuse in 2018 to reduce the use of tap water and raw water.

Main Water Conservation Measures in 2017

CCPG saved 1,759 kiloliters of water

- CCPG appointed the Industrial Technology Research Institute to assist CCPG in improving water usage efficiency and improve water plans.
- Recovery of water in the boiler system of the public cogeneration system ► 100,227 kiloliters of water
- Optimization of the water purification system of the public cogeneration system to reduce the regeneration frequency of resins ► reduced water usage by 13,860 kiloliters
- Improvement of the public cooling tower systems ► reduced water usage by 118,145 kiloliters
 - Process optimization and adjustment of process parameters to achieve water conservation ► reduced water usage by 24,726 kiloliters
- Recycle of condensed water from used steam after the process as supplemental water for the cooling tower ► reduced water usage by 1,183,417 kiloliters
- Reuse of low-concentration wastewater from the process ► reduced water usage by 39,522 kiloliters
- Recycle biological wastewater from treatment plant ► reduced water usage by 278,850 kiloliters

In response to the shortage of water resources, CCPG has established short and mid to long-term goals for the management of water resources in order to implement the Group's water usage efficiency improvement measures and continue to optimize the efficiency in the use of water resources:

CCPG Water Resource Management Goals

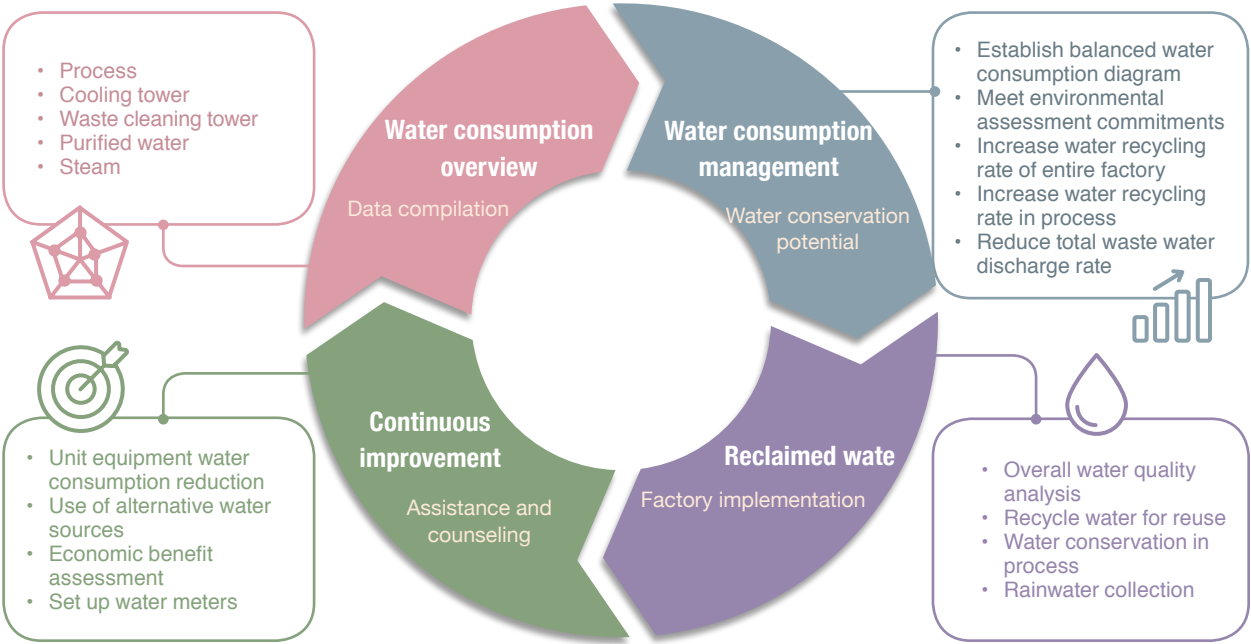
2016-2019 short-term goals

Advance the water usage efficiency measures in CCPG Mailiao Factory, CCPC Miaoli Factory, and CCPG Dafa Factory

2019-2029 mid to long-term goals

Continuous process water conservation rate of more than 3% each year

CCPG's Strategic Water Efficiency Improvement Plan

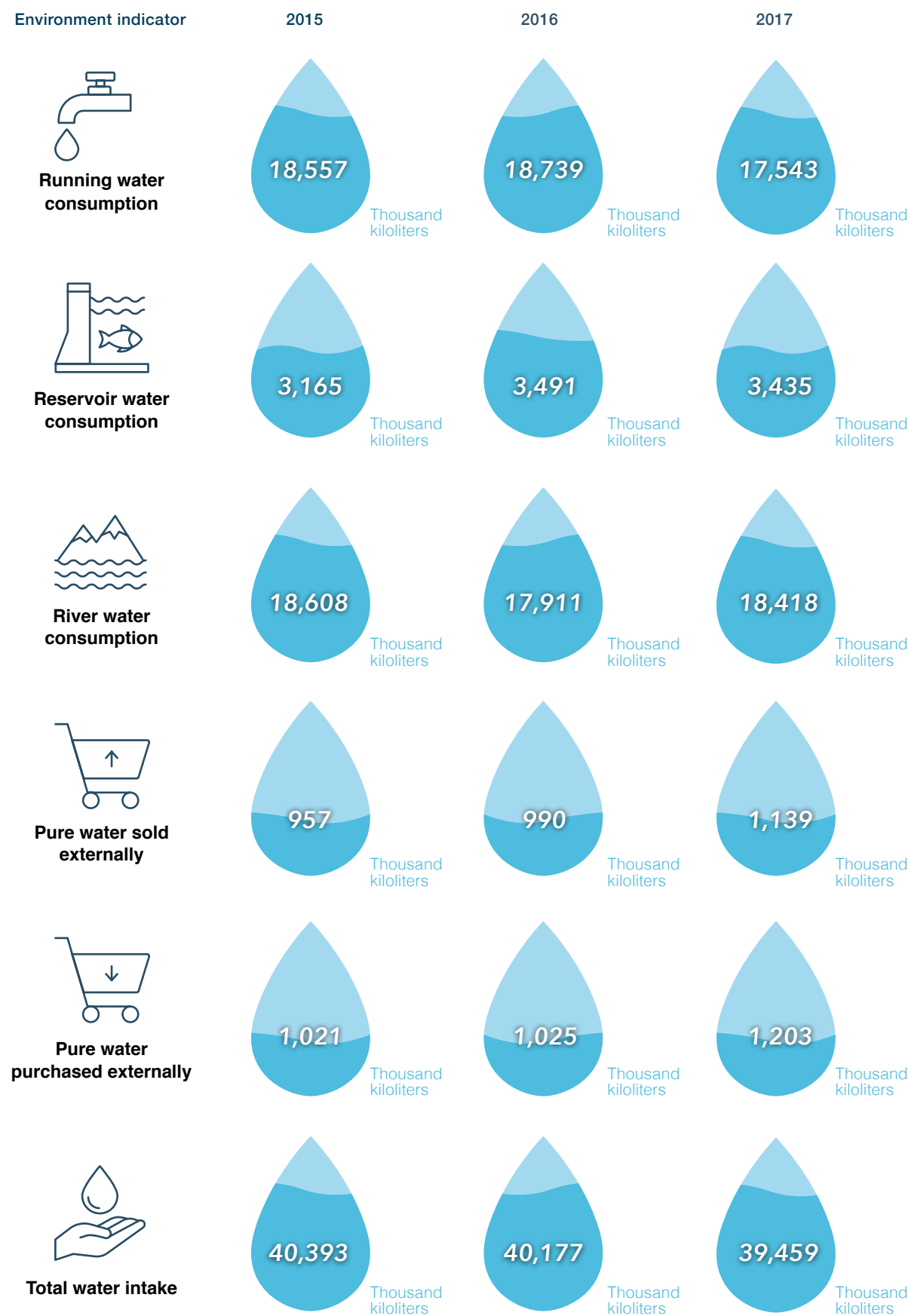


The implementation status of water conservation measures (CCPG Mailiao Factory, CCPC Miaoli Factory, and CCPG Dafa Factory) for short-term goals (2016-2019) is as follows:

	Content of Improvement Plan	Benefits of Energy saving
CCPG Mailiao Factory	Replacement of pumps in the wastewater treatment plant with mechanical seal types to reduce water consumption	33,000 kiloliters/year
	Recycle condensed water from steam from the process as supplemental water for the cooling tower	48,180 kiloliters/year
	Recycle level 2 biological wastewater	278,850 kiloliters/year
	CCPG Mailiao Factory water savings	360,030 kiloliters/year
CCPC Miaoli Factory	Convert the use of ultrapure water for public usage to wastewater from the DP process in the lye bath of the EC process to reduce raw water consumption.	13,870 kiloliters/year
	The waste water from the ending stages of water cleaning or water purification system after the regeneration in the hydrogen peroxide process is delivered to copper foil process for reuse.	36,000 kiloliters/year
	Improve the performance of the pure water RO system in cogeneration plants and the intake water quality to reduce the number of regenerations and the cost of agents.	368,400 kiloliters/year
	Recycle effluent from the boilers of the cogeneration plants to the cooling tower.	54,672 kiloliters/year
	Recycle effluent from the copper foil process through RO and return water to the raw water system.	270,000 kiloliters/year
	Recycle water from the resins in the copper foil process.	66,000 kiloliters/year
	CCPC Miaoli Factory water savings	808,942 kiloliters/year
CCPG Dafa Factory	Improvement of the VAC PIT equipment to reduce requirements for supplemental water and reduce waste water discharge.	18,315 kiloliters/year
	Recycle process cooling water from the First Production Department for use as cooling water.	15,035 kiloliters/year
	Reuse wastewater from the methanol fractionating column from the Second Production Department.	27,720 kiloliters/year
	Recycle low-salt wastewater from the washing tank of the Second Production Department for use in the purification tank.	16,512 kiloliters/year
	Optimization of the active carbon adsorption, regeneration time, and number of regeneration of the Third Production Department.	2,400 kiloliters/year
	Reheat excess steam from the Third Production Department for reuse and return the condensed water to the power plant for reuse.	20,000 kiloliters/year
	Change the wastewater effluent volume in ultrapure water system of the EC Department.	17,520 kiloliters/year
	Recycle rainwater in Dafa Factory separately to replace the use of raw water.	71,820 kiloliters/year
	CCPG Dafa Factory water savings	189,322 kiloliters/year



CCPG Water Resources Statistics from 2015 to 2017



CCPG Water Resources Statistics in 2017 - by Company

Unit: Thousand kiloliters

Environment indicator	CCP		CCPC		DCC	
	Taiwan	Overseas	Taiwan	Overseas	Taiwan	Overseas
Running water consumption	2,768	5,974	252	1,930	3,388	3,231
Reservoir water consumption	N/A	N/A	3,435	N/A	N/A	N/A
River water consumption	228	5,858	8,706	N/A	3,626	N/A
Pure water sold	N/A	1,139	N/A	N/A	N/A	N/A
Pure water purchased	N/A	N/A	664	N/A	476	64
Total water intake	13,689		14,986		10,785	

Note: 1. Only CCPC Miaoli Factory used reservoir water.

2. CCP Dafa Factory produces pure water for sales to CCPC Dafa Factory and DCC Dafa Factory

3. CCSG purchases pure water from external sources.

CCPG Water Recycling Statistics from 2015 to 2017

Environment indicator	Unit	2015	2016	2017
Total volume of recycled and reused water	Thousand kiloliters	20,564	21,903	22,520
Total volume of recycled and reused water as a ratio of total water intake	%	51	55	57

Note: 1. The total volume of recycled and reused water is the sum of recycled steam condensated from the process and the volume recycled from the process for reuse.

2. Total volume of recycled and reused water as a ratio of total water intake = Total volume of recycled and reused water / total water intake.

CCPG Water Recycling Statistics in 2017

Environment indicator	Unit	CCP	CCPC	DCC
Total volume of recycled and reused water	Thousand kiloliters	3,322	16,279	2,919
Total volume of recycled and reused water as a ratio of total water intake of each company in 2017	%	24	109	27

Note: 109% means that each drop of water was reused 1.09 times.

3.3.2 Wastewater treatment

To strengthen waste water monitoring and control and implement active management, the Group has installed automatic monitoring systems at each wastewater discharge point for instantaneous notifications. Irregular data are processed through tiered electronic notification procedures to effectively control the water quality of waste water discharge points.

CCPG Waste Water Statistics from 2015 to 2017

Unit: Thousand kiloliters

Environment indicator	2015	2016	2017
Total discharge volume	17,967	15,552	14,742

CCPG Waste Water Statistics in 2017 - by Company

Unit: Thousand kiloliters

Region	CCP	CCPC	DCC
Taiwan	5,363	4,164	1,066
Overseas	2,542	958	650
Group Total	7,905	5,122	1,716

Note: The waste water of CCP Hsinchu Factory, CCP Changpin Factory, CCPG Dafa Factory, DCC Kaohsiung Factory and overseas factories that meet effluent standards is discharged to the waste water treatment plant of the industrial zone; CCPC Miaoli Factory discharges waste water into Houlong River; CCPG Mailiao Factory discharges waste water into the sea; CCP Kaohsiung Factory discharges waste water into Houjin River.

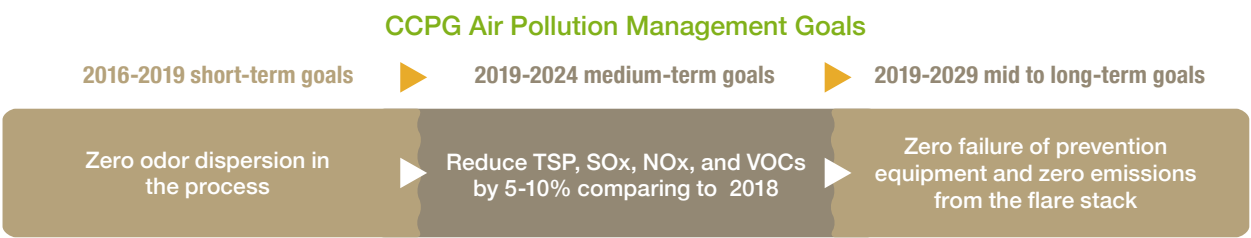


3.4 Waste Management

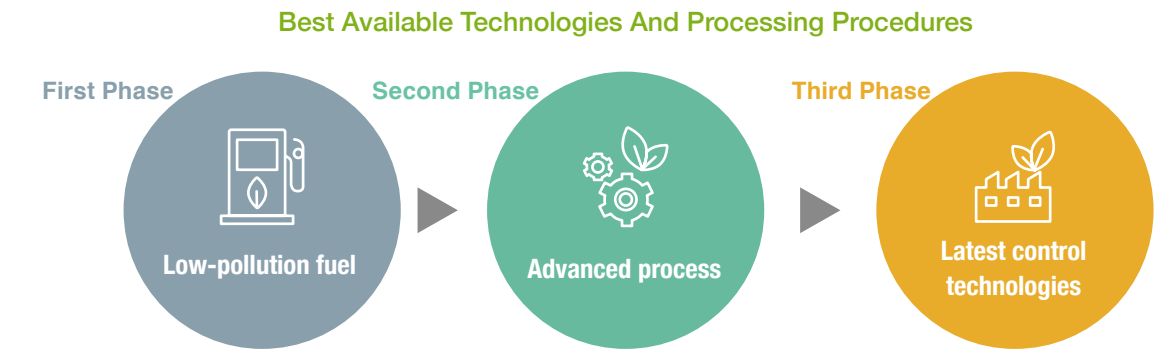
CCPG follows the "Corporate Social Responsibility Policies" and adopts pollution prevention measures to prioritize the environmental risks in various production procedures and reduce pollution from the process. In addition to truthfully reporting the level of air pollutant emissions and quantity of waste, it also pays attention to the processing of waste in order to effectively reduce impacts on the environment and ensure compliance to environmental protection regulations.

3.4.1 Emission of Air Pollutants

CCPG has established short, medium, and long-term goals to effectively reduce the emission of air pollutants and improved the efficiency of the Group prevention equipment to continue to improve air quality:



To achieve the aforementioned air pollution management goals, CCPG adopted the best available control technologies to effectively collect and process air pollutants. The procedures are implemented in three stages based on the principle of "source reduction, process improvement, and terminal controls". In the first phase, CCPG uses low-pollution fuel (e.g. natural gas) for improvements in raw (materials) fuel. In the second phase, CCPG adopts advanced process technologies to mitigate pollution. We introduced the latest domestic and foreign prevention technologies and equipment in the third phase to effectively control air pollution emissions.



Emissions of nitrogen oxides and particulate contaminants in 2017 were reduced by 968 tons and 91 tons respectively from the previous year mainly due to the conversion of heavy oil to natural gas, the installation of the nitrogen removal equipment, and the improvements in the efficiency of electrostatic precipitation. In addition, the Group also established continuous monitoring facilities for air quality in various factories and continued to conduct various improvement measures for various contaminants:

● Nitrogen oxides

The selective catalytic reduction (SCR) process was added to cogeneration plants to periodically "replace" and "replenish" catalysts to effectively control emissions concentration and substantially reduce nitrogen oxide emissions.

● Sulfur oxides

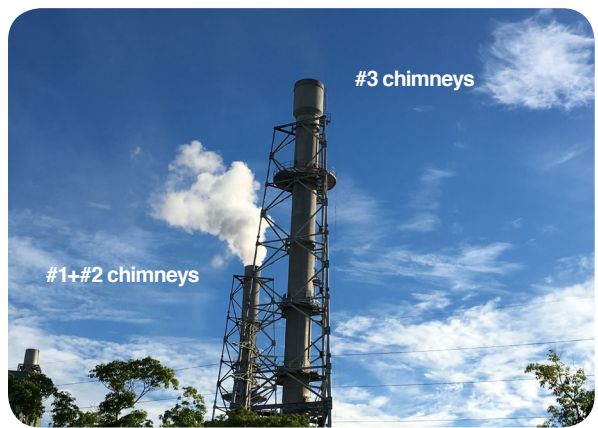
The dosage of magnesium hydroxide (Mg (OH)2) in the flue gas desulfurization (FGD) equipment in cogeneration power plants were increased to maintain efficiency at 94-96%. In addition, the clean fuel natural gas was used to replace heavy oil in the boiler to directly remove sulfur oxide emissions.

● Volatile Organic Compounds (VOCs)

CCPG added pollution prevention equipment for scrub columns and used active carbon absorption to replace scrub columns. Balancing facilities were adopted for transportation vehicles of raw materials.

● Particulate contaminants

Electrostatic precipitators (ESP) were fitted with high-frequency transformer/SMPS to increase output power and improve processing efficiency by 25 to 28%. CCPG also introduced media gas-gas heaters (MGGH) and wet electrical static precipitator (wet ESP) from overseas sources. MGGH can recycle residual heat and reduce the visual pollution from white vapor rising from chimneys while wet ESP removes low-concentration SO3 acid spray, PM2.5 dust, aerosol, and heavy metals that are difficult to remove from the smoke. Actual measurements found that the concentration of particulate contaminants in the emissions can be reduced to 8 mg/Nm³.



Smoke from #1+#2 chimneys before the improvement



Smoke from #1+#2 chimneys after the improvement

CCPG Air Pollutant Emissions from 2015 to 2017

Unit: Metric tons

Pollutants	2015	2016	2017
Nitrogen oxides (NOx)	4,285	4,288	3,320
Sulfur oxides (SOx)	1,120	1,045	1,102
Volatile organic compounds (VOCs)	1,091	1,188	1,335
Suspended particles (PM)	441	379	288

Note: Operations have increased in 2017 and although pollution prevention equipment such as the SCR was adopted and NOx and PM levels improved, total SOx and VOCs have increased slightly and we shall continue to work hard on improvements.

CCPG Air Pollutant Emissions in 2017 - by Company

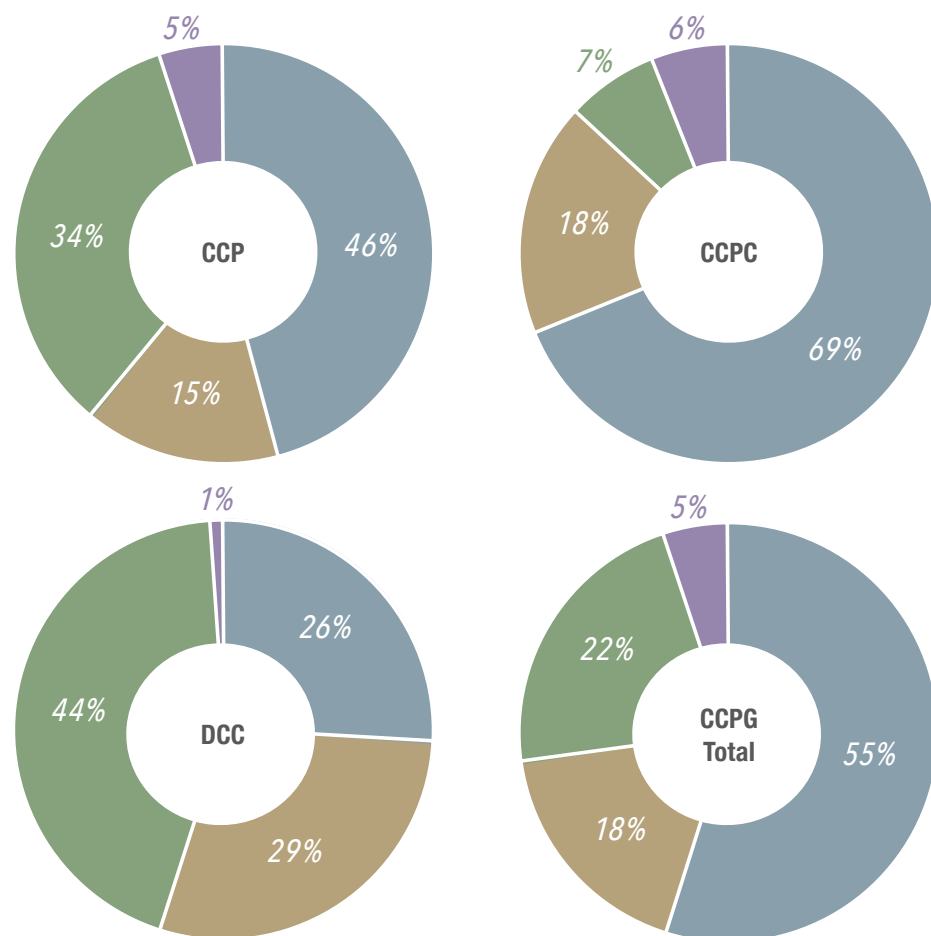
Unit: Metric tons

Pollutants	Taiwan			Overseas			Group Total		
	CCP	CCPC	DCC	CCP	CCPC	DCC	CCP	CCPC	DCC
Nitrogen oxides (NOx)	613	1,913	95	418	163	118	1,031	2,076	213
Sulfur oxides (SOx)	234	436	16	101	93	222	335	528	238
Volatile organic compounds (VOCs)	327	153	167	431	62	195	758	215	362
Suspended particles (PM)	59	154	8	40	23	4	100	177	11



CCPG Air Pollutant Emissions Ratio in 2017

■ Nitrogen oxides (NOx) ■ Sulfur oxides (SOx) ■ Volatile organic compounds (VOCs) ■ Suspended particles (PM)



3.4.2 Waste Disposal

The Company continued to expand production capacity and achieved approximately 10% growth in product sales volume while increasing waste by only 2% from 2016 to 2017. It shows that CCPG has effectively implemented waste management measures. In the future, we shall continue to plan related measures to reduce waste and advance energy conservation and carbon reduction in related meetings. We shall introduce the concept of a circular economy and integrate inter-department and inter-process resource recycling policies to achieve the goal of gradual waste reduction each year.

Main Waste Disposal Measures in 2017

- Diatomaceous earth used for the waste water in the flue gas desulfurization (FGD) system of CCPJ is replaced with clarifying agents ► reduce **386.4 tons** of inorganic sludge
- The methanol wastewater from the EC Department in CCPC Miaoli Factory is recycled, distilled, and reused ► reduce methanol raw materials consumption by **3,240 tons**

The sludge driers of the Group have been installed and they use steam drying and dehumidifying heat pumps to achieve reduction. The water containment of sludge was reduced from 85% to approximately 35% to achieve substantial emission reductions. After the installation of the driers, CCPG reduced total sludge from 13,788 tons per year to 6,480 tons per year. The 52% reduction not only reduced the impact on the environment and achieved sludge reduction goals, but it also reduced fees for outsourcing processing to achieve both environmental protection and economic benefits.

CCPG Waste Disposal Statistics from 2015 to 2017

Unit: Metric tons

	2015	2016	2017
Total general industrial waste	380,449	420,198	407,538
Total recycled general industrial waste	326,673	336,671	320,099
Total incinerated general industrial waste	19,928	35,898	43,142
Total buried general industrial waste	29,651	43,856	37,595
Total general industrial waste processed through other methods <small>Heat treatment, solidification, physical processing, chemical processing, etc.</small>	4,197	3,773	6,701
Total hazardous industrial waste	52,889	56,118	53,103
Total recycled hazardous industrial waste	13,688	15,442	13,001
Total incinerated hazardous industrial waste	38,976	40,316	39,148
Total buried hazardous industrial waste	214	360	537
Total other hazardous industrial waste processed through other methods <small>Heat treatment and high-temperature wet air oxidation</small>	11	0	417
Total waste quantity	433,338	476,316	460,641

CCPG Waste Disposal Statistics in 2017 - by Company

Unit: Metric tons

	CCP		CCPC		DCC	
	Taiwan	Overseas	Taiwan	Overseas	Taiwan	Overseas
Total general industrial waste	75,017	82,040	185,315	47,241	1,673	16,252
Total recycled general industrial waste	64,226	81,818	137,641	20,114	330	15,971
Total incinerated general industrial waste	4,213	N/A	38,342	N/A	329	259
Total buried general industrial waste	5,630	223	3,601	27,127	992	22
Total general industrial waste processed through other methods <small>Heat treatment, solidification, physical processing, chemical processing, etc.</small>	948	N/A	5,731	N/A	22	N/A
Total hazardous industrial waste	6,936	6,955	5,878	2,658	N/A	30,676
Total recycled hazardous industrial waste	7	620	2,226	35	N/A	10,113
Total incinerated hazardous industrial waste	6,773	6,179	3,235	2,623	N/A	20,338
Total buried hazardous industrial waste	156	156	N/A	N/A	N/A	225
Total other hazardous industrial waste processed through other methods <small>Heat treatment and high-temperature wet air oxidation</small>	N/A	N/A	417	N/A	N/A	N/A
Total waste subtotal	81,953	88,995	191,193	49,899	1,673	46,928
Total waste	170,948		241,092		48,601	



4



An Enterprise that Undertakes Responsibility and Creates Social Values

4.1 Stakeholder Communications

4.2 Talent Gathering

4.3 Talent Cultivation








Enterprises cannot operate independently without the society's support, therefore, as a corporate citizen, it is CCPG's basic responsibility to establish solid human capitals and stable relationships with its stakeholders, as they are the basic foundation for CCPG to create shared values. Through close care and interactions with its employees and the communities, CCPG not only ensures internal cohesion within the organization but also co-exists and co-prospers with local communities and the society.

4.1 Stakeholder Communications

In order to pursue sustainable development, CCPG must categorize stakeholders, establish communication channels to effectively collect information from stakeholders, and clarify stakeholders' needs and expectations as important references for the Board of Directors for formulating social responsibility policies and operations.

4.1.1 Stakeholder Engagement

We take stakeholders' needs and expectations very seriously and we use feedback from questionnaires issued by units to identify and analyze stakeholders' topics of concern. The communication channels/frequency in 2017 are shown in the table below:

Stakeholder	Communication Channel	Communication Frequency in 2017
 Customers	<ul style="list-style-type: none">Phone, letter, fax, webpageVisits by customers, visiting the customersExhibitions and trade fairsCustomer satisfaction surveyCustomer's evaluation of factoriesEstablish customer grievance channels	<ul style="list-style-type: none">Conducted customer satisfaction survey onceParticipated in large-scale exhibitions 4 timesIrregular telephone, email, fax and webpage communicationsIrregular visits by customers
 Suppliers/contractors	<ul style="list-style-type: none">Phone, letter, fax, webpageMutual visits with suppliers/contractorsTraining and education for suppliers/contractorsSupplier evaluation and audit	<ul style="list-style-type: none">Irregular mutual visits with suppliers/contractorsCCPG provides multiple training sessions to suppliers and contractors each year and it provided 20,912 of training and tests sessions for contractors in 2017.1,892 suppliers were evaluated11 suppliers were auditedIrregular telephone and email communications
 Community residents surrounding factories	<ul style="list-style-type: none">All factories provide grievance telephone, mailbox, security guard boothsParticipation/sponsorship of community activitiesEnvironment/public facility adoption and maintenanceInvite residents to visit the factoriesProvide scholarship sponsorship for local and nearby colleges	<ul style="list-style-type: none">Irregular visits to community residentsCCPG participated in and sponsored a total of 155 social activitiesActively sponsor local activities and public facility adoption and maintenanceCCPG provided 111 internship opportunities to local and nearby college graduates
 Shareholders/joint ventures	<ul style="list-style-type: none">Board of DirectorsManagement meeting and monthly report	<ul style="list-style-type: none">4 meetings of the Board of Directors each yearHold monthly management meetings
 Employees/labor unions	<ul style="list-style-type: none">Various work meetings (quality/environment/safety/production, etc.)Various employee benefit meetingsInternal meetings or seminarsAnnual performance evaluationTraining and educationGrievance mailbox, E-bulletin board, questionnaire surveys, interviews	<ul style="list-style-type: none">Work meetings (weekly/monthly/quarterly/annual)Employee benefit meetings (quarterly)Various irregular meetingsIrregular communications, including grievance mailbox, E-bulletin board, questionnaire surveys, interviews, etc.Performance evaluation once a year and regular evaluation 4 times each year



Governments/competent authorities





- Coordinate with central and local competent authority operations, including relevant advocacy and briefing sessions, reviews, audits and meetings, etc.
- Visits by government officials
- Joint fire drills
- Official correspondences
- Declaration, reviews and factory on-site inspections
- Official correspondences and telephone communications
- Irregular visits by government officials
- Irregular participation in meetings (review meetings/business conferences/briefing sessions/seminars/forums) multiple times a year



Trade associations

- Participate in meetings held by trade associations
- Participate in meetings irregularly
- Please refer to 1.3.2 External Participation for related achievements in 2017

CCPG establishes multiple communication channels to address different types of issues: For internal labor and human rights related issues, employees may bring forth their opinions or appeals through labor-management conference platform and labor union organizations; and for residents nearby factories, smooth communication channels are made available; and for those who are most concerned about environmental issues, feedback information from different platforms is also actively provided; and as for whether the enterprise operations are in line with the principle of good faith, they are supervised by permanent internal audit and internal control units; CCPG also has a smooth censure and reporting system, and investigates related incidents independently.

Issue	Grievance Channel	Process	Result
 Legal compliance	In the event that any department, factory or individual discovers illegal incidents, the Legal Department shall be notified for investigations. Illegal activities may be reported by way of telephone, fax, letters, or emails: CCPGLG@ccp.com.tw ccpgaudit@ccp.com.tw	The Legal Department shall conduct investigations or engage in joint investigations with auditing department for illegal incidents reported and compile reports. The parties involved in illegal incidents shall be corrected and punished and the recurrence of illegal incidents shall be prevented.	There were no violations that involved in legal compliance issues in 2017
 Society and economy	CCPG requires all departments to duly abide by laws and regulations. They are required to actively report illegal activities or notify the Legal Department to conduct investigations. Illegal activities may be reported by way of telephone, fax, letters, or emails: CCPGLG@ccp.com.tw	Departments shall actively investigate violations in social or economic sectors along with the Auditing Department and formulate reports for filing. Departments shall review compliance issues for violations and response measures for preventing future violations.	There were no social or economic violations in 2017
 Environment	Each factory's Environmental Health and Safety Department Each factory's security guard booth Each factory provides grievance telephone and mailbox	After grievance cases are received, relevant units at the factory are notified to handle, then report processing status and follow-up results to each company's management levels.	There were 20 cases with penalties exceeding NT\$100,000 in 2017.
 Corporate human rights and labor conditions	Once any department, factory or individual discovers any cases violating human rights and labor conditions, it shall be reported through labor-management platforms, labor union organizations, telephone, fax, letters, or email: achiang@ccp.com.tw	When factory directors or the company's human resources department are notified of grievance cases, they shall actively investigate and process the cases. If the grievance cases are proven to be true, the violating parties shall be held accountable according to work rules and relevant laws and regulations. In the case of false accusations and frame-ups, the complainants shall be punished according to the work rules.	There was no human rights or labor related grievance in 2017.

As of 2017, CCPG did not experienced any violations of laws in terms of social, product, service, legal compliance, socioeconomic development. In terms of environment issues, the three companies of the Group were involved in 20 major deficiencies in 2017 which consisted mainly of excess emissions of VOCs. It was mainly caused by excessive levels of emissions detected in equipment and emissions pipelines that exceeded permissible levels. CCPG HSE Division improved the process equipment to prevent pollution and increased the frequency of internal self-inspections. It also appointed a third-party verification institution for confirmation.



Description of Material Environmental Incidents in 2017

● Description of the fire in CCPC Mailiao Factory in the No.6 Naphtha Cracker Complex

Background:

The ethylene vinyl alcohol process in CCPC Mailiao Factory experienced equipment malfunction during the production process at 3 p.m. on February 12, 2017. The protection equipment was automatically activated to immediately transfer the ethylene materials and gases in the pipeline to the flare stack for incineration. Although fire and thick smoke appeared in the process, normal operations were restored after a few minutes and the emitted gas did not contain hazardous materials and no accidents were caused.

CCPC Mailiao Factory 's response/processing methods:

CCPC Mailiao Factory reported to the local competent authorities (Environmental Protection Bureau and Yunlin Offshore Industrial Park Service Center) within one hour of irregularities of the production process equipment and initiated standard operating procedures to suspend production to ensure normal operations of all process protection equipment no pollutions of the environment. Yunlin County Environmental Protection Bureau also monitored the use of the flare stack through the surveillance cameras of the Offshore Industrial Park. In addition, Yunlin County Environmental Protection Bureau also entered the factory to inspect the usage status of the flare stack. The results of audits met related laws and regulations.

Subsequent adjustments of CCPC Mailiao Factory management system:

CCPC Mailiao Factory continued to optimize the following related management systems after the incident to prevent the occurrence of related incidents in the future:

1. Improvement of environmental protection reporting procedures:

When CCPC Mailiao Factory conducts planned suspension or initiation of the process, it shall consider the necessity and safety of process operations and report to the local competent authorities in advance if the flare stack may be used in operations.

2. Inherent safety improvements:

CCPG implemented risk identification for the reliability of the ethylene vinyl alcohol process in CCPC Mailiao Factory and listed high, medium, and low risks for additional management and control to ensure that issues can be promptly discovered and ensure the safety of the production process.

3. Review and improvement of emergency response procedures:

All possible scenarios are listed into Mailiao Factory's annual drills. The Factory reviews and schedules the drills to help employees cultivate related skills and expertise to quickly respond to contingencies.

● Description of the DDC Mailiao Factory public pipeline leakage incident in the No.6 Naphtha Cracker Complex

Background:

Yunlin Environmental Protection Bureau received a report of dead fishes in the gateway of rainwater floodgate drainage area of No.6 Naphtha Cracker Complex at 6 p.m. on July 28, 2017 and it immediately sent personnel to conduct onsite inspections for pollution. Inspectors arrived onsite at 7 p.m. but did not discover tens of thousands of dead fish in the water. They took samples from the floodgate and reported the progress of the case on the same day. They also arranged onsite inspections in the factory on the next day.

The Environmental Protection Bureau conducted inspections on July 29, 2017 and found DDC Mailiao Factory responsible for leaking vinyl acetate, polluting the water, and failure to report to the competent authority within the specified time. It was fined NT\$31,500 for violation of Article 28 of the Water Pollution Control Act and NT\$1 million for violation of Article 24, Paragraph 1 of the Toxic Chemical Substances Control Act. It was also fined NT\$6,000 for violation of Article 36 of the Waste Disposal Act for failure to adequately process the fishes killed in the incident by burying them in the Factory as fertilizer.

Explanation of the incident:

A leak of unidentified liquid was discovered in at 11 p.m. on July 21, 2017, and it was confirmed at 2 a.m. on July 22 that the leaked pipeline was caused by a leak in a valve of the vinyl acetate pipeline in DCC Mailiao Factory. DDC Mailiao Factory control room personnel immediately suspended the transportation and went to No.6 Naphtha Cracker Complex to stop the leak. They also assigned personnel to clean the environment. They used water for cleaning when the incident occurred and part of the water used for cleaning flowed into the floodgate of No.6 Naphtha Cracker Complex and killed fishes. The dead fishes weighed approximately 30kg. As vinyl acetate does not dissolve in water and oil containment booms were set up in the drainage system, DCC assigned tankers to extract the wastewater produced in its emergency response actions for storage in the wastewater storage facilities in the Factory.

Subsequent adjustments of DDC Mailiao Factory management system:

Various improvements measures have been implemented after the incident to prevent future incidents and reduce the impact of incidents. They are described below:

1. Improvement for notification for the pipelines used with Formosa Plastics:

DDC Mailiao Factory personnel have been included in the Formosa Plastics SMS notification system.

2. Review and improvement of emergency response procedures:

CCPG Mailiao Factory has improved the promptness of the entry of personnel/vehicles into the Formosa Plastics complex, improved the performance of the pipeline liquid detection equipment, and reviewed and improved the emergency responses for the collective prevention and support system for DDC Mailiao Factory and Formosa Plastics.

3. Inherent safety improvements:

The gas release valves and liquid drainage manifolds in the public pipelines used by CCPG Mailiao Factory for vinyl acetate were removed on March 2, 2018 to improve the reliability of pipeline delivery. CCPG Mailiao Factory also conducted a comprehensive inspection of all CCPG Mailiao Factory pipelines in the Formosa Plastics complex to ensure safety in operations.

4. Inspection improvement:

DDC Mailiao Factory personnel performs 24-hour inspections on pipelines when vinyl acetate pipelines are in use. The inspection procedures are as follows:

- (1) Personnel inspects the pipelines before the pumps are started and notifies the control room to start the pumps after the normal state is verified. After the pumps start, they inspect the outgoing pipelines from the pumps to the receiving end at 8-hour intervals till the transmission is completed.
- (2) DCC Mailiao Factory assigns personnel to drive along roads in Haifeng District for inspections (bicycles are used for the port tank areas). One person shall drive the car and one person shall open the window to inspect whether there are leaks or abnormal smells. They use lighting equipment during the night to facilitate inspections.

5. Improvements for the comparison of transported volume via the public pipelines:

DDC Mailiao Factory completed the installation of mass flow meters for the vinyl acetate pipelines on March 2, 2018, and installed screens to compare the flow volume on the Formosa Plastics end and DCC end for control panel personnel to conduct real-time monitoring and control. When the difference in the flow volume exceeds the alert value, the system will automatically generate an alert to the DCC computer control system personnel.





The Group has reviewed the discrepancies by each case and completed improvements and follow-up inspections. In addition, it also established the “Regulation Identification Guidelines” in 2017 which included: identification of compliance issues in ESH regulations, management of response targets for significant impact in ESH regulations, periodic assessment of compliance of licenses, inquiry of regulations, and notification and implementation of inspection results to facilitate unified management and verification of identification and process-related regulations. The implementation units for the regulations are the persons in charge of the Safety and Health Department and supervisors of production departments. They aim to reduce the number of penalties by 80% over the short-term and achieve zero penalties in the mid to long-term plans in order to be responsible to community residents and the nearby environment.

CCPG's Environmental Violation Cases and Fine Statistics in 2017 - by Company

Company Unit: case, in NT\$10,000		CCP		CCPC		DCC		CCPG Total	
		Number of cases	Amount	Number of cases	Amount	Number of cases	Amount	Number of cases	Amount
Taiwan	Air pollution	10	207	5	90	4	40	19	337
	Water pollution	0	0	0	0	0	0	0	0
	Waste pollution	1	12	0	0	0	0	1	12
	Toxic chemical substances	0	0	0	0	1	100	1	100
	Soil and groundwater	0	0	0	0	0	0	0	0
	Subtotal	11	219	5	90	5	140	21	449

Note: 1. The incidents disclosed here are mainly cases of inadequacies with fines of over NT\$100,000.
2. There were no cases of penalties exceeding NT\$100,000 in overseas factories.

4.1.2 Corporate Human Rights Management

Employees are CCPG's most important partners as well as some of the most important stakeholders. We value human rights and follow internationally recognized guidelines for sustainability and human rights, including the core labor standards of basic conventions in the United Nations Global Compact and International Labour Organization. CCPG also complies with local applicable laws and regulations of the location where each factory is based in.

CCPG established the CCPG Code of Conduct in 2017 and it was signed and approved by the Chairman of the Board. The Code of Conduct is binding to all CCPG employees across the world. We are committed to providing employees with respect and dignity and ensure a safe and secure workplace for employees to pursue sustainable development of the Group and environmental sustainability as well as abide by business ethics. CCPG reviews 5 human rights issues based on international human rights regulations, requirements in the sustainability evaluations, and benchmark trends and requirements to ensure that each human rights issue is provided with comprehensive management mechanisms to mitigate risks to human rights.

To implement related policies for human rights, the Taipei offices and factories in Taiwan completed human rights education, training, and tests through the Chang Chun e-Learning System. 444 management-level personnel and 4,461 non-management personnel completed the courses. A total of 2,452.5 hours was completed for education and training and more than 98% of employees in Taiwan have completed the training. The Changchun e-Learning System was introduced to overseas factories in 2017 and the Group expects to complete human rights training for all overseas employees in 2018 to increase their awareness and protect their own rights.

Note: As of December 31, 2017, 76 employees have not passed human rights education and training and they were mainly employees on parental leave for child rearing without pay and new employees. CCPG shall complete training in 2018. Human rights education and training include: Fair and equal treatment, prohibition on forced labor, ban on child labor, anti-discrimination, harassment prevention, protection of employee privacy rights, ensuring humane treatment, and providing a healthy and safe environment.



CCPG Code of Conduct

Corporate Human Rights Issues	Management mechanisms
 Provide a safe and healthy workplace environment	<ul style="list-style-type: none">Adopt “zero incident” as the goal of corporate management.Organize annual health inspections, follow up on high-risk personnel, and organize healthcare seminars.Provide free special physical examination items for employees in different process environments.Provide full reimbursements for employees' to purchase of safety suits and safety shoes every two years.Continue to advance environmental 5S/7S activities and proposals for improving work procedures.Organize emergency response and conduct emergency response drills for hazardous incidents each year.Change management operations to reduce potential impacts and ESH risks.
 Prevent illegal discrimination and ensure equality of opportunities	<ul style="list-style-type: none">Implement related internal regulations.Implement internal control procedures and establish the “Employee Grievance Procedures” and “Measures for Prevention, Complaint, and Punishment of Workplace Sexual Harassment” to eradicate illegal activities.CCPG established the “CCPG Operating Procedures for Recruitment of New Employees” to expressly declare that salaries, promotions, training, and other rights of employees shall not be affected by race, religion, age, marital status, gender, or health conditions in the recruitment or appointment process.
 Ban on child labor	<ul style="list-style-type: none">CCPG established the “CCPG Operating Procedures for Recruitment of New Employees” to expressly prohibit the hiring of child labor. Employees less than 18 years of age may not conduct dangerous or hazardous tasks and recruitment of employees less than 20 years old shall require the approval of the legal representative.
 Ban on forced labor	<ul style="list-style-type: none">Implement internal control procedures and establish the “Employee Grievance Procedures”.CCPG convenes labor-management meetings to foster communication and harmony between labor and management.Employees may freely join unions and express their opinions on the current state and illegal activities such as forced labor through the unions.CCPG established the “CCPG Operating Procedures for Recruitment of New Employees” to expressly prohibit the appointment of non-voluntary labor or forced labor to provide labor services.
 Assist employees in maintaining physical and mental health and work-life balance	<ul style="list-style-type: none">CCPG provides all employees with 2 days of travel leave each year which is superior to regulations.CCPG subsidizes the activities of the employee welfare committees and unions of all factories in Labor Day banquets, Mid-Autumn Festival dinner parties, year-end parties, and family activities on family day.CCPG organizes child rearing seminars, stress relief courses, interpersonal communication courses, etc.CCPG provides employees with an interest-free emergency aid loan equivalent to their salary for 80 days.CCPG provides “regulations for unpaid leave for general injuries and illnesses” to let employees recover with peace of mind.CCPG cooperates with daycare institutions for providing daycare discounts.

4.1.3 Social Involvement

In order to implement CCPG's pragmatic and law-abiding spirit of “Giving Back What One Takes from the Society to the Society”, CCPG has continuously invested in social welfare and has also long been rooted in the local communities through the efforts of the Group's factories. The ways in which CCPG carries out social involvement can be categorized into education promotion, community activity involvement, and community resource sponsorship, such as industry-university cooperative projects, student internships, participation in community environmental protection, arts activities, donations and care for disadvantaged groups, adoption of public facilities, etc. As of the end of 2017, CCPG sponsored a total of 155 projects to contribute various resources to society.

CCPG strengthens relations with local communities through interactions with local community organizations. CCPG provides direct sponsorship with resources and creates more job opportunities for local communities in related supply chains such as transportation and catering to advance local economic development. In addition to community organizations, CCPG also communicates with industry organizations of local industrial parks to support each other with emergency equipment and share resources in day-to-day operations. CCPG aims to create a cooperation framework for labor safety and health and emergency response assistance in each industrial park in order to advance industrial safety and health measures in industrial parks and prevent occupational hazards. For instance, regional allied defense meetings are organized each month and book club meetings are organized every two months. The companies in the industrial park also take turns in organizing fire drills and demonstration.



1. Promotion of Education and Culture

CCPG continues to use its core competencies and resources to contribute to advance education. CCPG implements Industry-university cooperative projects, organizes student visits, and helps students understand business operations to cultivate young students' interest in the petrochemicals industry and become talents for CCPG in the future.

CCPG also values local cultural characteristics and cultural heritage. We support local governments, associations, schools, and other units in organizing various local cultural activities and provide funding to promote and expand local culture.

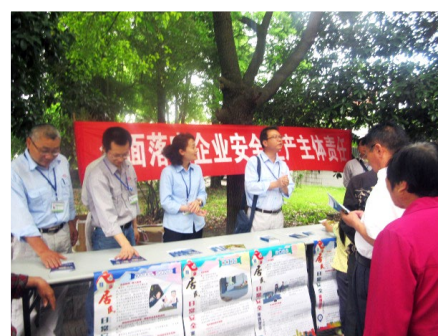
In 2017, CCPG continued to implement the industry-high school cooperative projects established between Renwu Senior High School and 13 companies (including CCP, Formosa Plastics Renwu Factory, USI Kaohsiung Factory, Dashe Industrial Park Manufacturers' Association, etc.) in 2014 and sponsored the "Petrochemicals Industry-Academia Class" of Renwu Senior High School in talent cultivation for visits to Japan and scholarships. CCPG aims to invigorate the local economy, advance local economic development, and reduce emigration of the local population. CCPG also employs industrial and academic resources to invigorate education, reduce gaps between urban and rural areas, and provide employment for students to develop their talents and for the prosperity of companies, schools, and local communities.



Distribution of scholarships to the Petrochemicals Industry-Academia Class of Renwu Senior High School in 2017

2017 DCC Jiangsu Factory Community Promotion

Personnel from DCC Jiangsu Factory accompanied community residents in organizing a company community education event based on the theme of "Full implementation of corporate safety and production accountability" in 2017. The event aimed to use safety and production education to increase residents' safety awareness and knowledge to create a safe environment. More than 200 people participated in the event.



2. Participation in Community Activities

CCPG has always maintained great relations with local communities and actively organizes or participates in activities with local communities to establish good relations with residents. CCPG companies also establish close and diverse communication channels with heads of boroughs and neighborhoods, persons in charge of community units, and residents.

CCPG organized the 2017 Nanzi District Talent Contest to facilitate interaction between communities and industrial zones and to encourage the people and employees of companies to show off their talents. The event uncovered the talents of community residents and built their confidence in themselves. It was both educational and entertaining.

CCPG pursues environmental protection and the harmonious development of environment. Internal activities: CCPG established energy conservation and carbon emissions reduction operations and ESH policies such as improving the production process to reduce pollution, conserving energy, fully implementing waste reduction, and resource recycling and reuse. External activities: In order to take environmental protection into consideration, CCPG regularly participates in large-scale environmental protection activities organized by local governments and communities where the factories are located, such as annual beach cleaning up activities, river cleaning up and hiking activities. Through close cooperation with communities, CCPG achieves the goal of being neighborly and cohesion of environmental awareness within the company.

CCP Kaohsiung Factory 2017 Fall beach cleaning up activity



CCPG has always been committed to protecting the beach and organized 11 beach-cleaning-up activities in 2017 including 1 in CCP Kaohsiung Factory, 9 in CCPG Mailiao Factory, and 1 in CCPC Miaoli Factory which cleaned up 2219.6kg of waste. CCPG works with the community to protect the beautiful shorelines of Taiwan.

CCPG Mailiao Factory 2017 June beach cleaning up activity



DCC Jiangsu Factory participated in the "Green waters and green mountains are treasure mountains" education activity organized by local communities in 2017 and donated supplies to support the respect for nature, compliance with nature, protection of nature, and implement green values in our lives.





DCC Jiangsu Factory invited community residents to the company to experience DCC values and it organized an event based on the theme of "Social enterprise support environmental protection and strengthen green ecology awareness" to let community residents learn more about the chemicals industry and environmental protection. Environmental protection seminars provided the people with a clearer picture of the chemicals industry based on rigorous implementation and meticulous management of items from laws and regulations to the leaders' dedication to inspections and from the introduction of environmental protection equipment to the disposal of exhaust and waste materials. Factory personnel also led the group on a visit of the factory to promote its ideals for green and environmental protection development.

In response to the government's green community transformation project in 2017, CCPG led employees in growing vegetables on the rooftop of the head office building of the Group in Taipei. CCPG achieved the goal of adding greenery and improving the environment and employees were also able to harvest and enjoy the organic fruits and vegetables they personally planted. The project achieved multiple goals for the price of one. The success of the project won NT\$600,000 in subsidies from Taipei City Government for "Architectural Ecological Protection" (green roof) and CCPG used the funds to install an automatic sprinkler system and for the purchase of items used for growing plants such as various soils and seedlings to improve the green rooftop facilities and provide CCPG employees with more motivation for sustainable development.



2017 CCPC Miaoli Factory Plastic-Free Ocean beach cleaning up activity

Oceans are the cradle of life but plastic waste generated in human activities have caused severe negative impact to marine ecology. CCPG remains committed to environmental protection. Employees set off together and even brought family members to participate in the beach cleaning activity on World Oceans Day. Adults and children alike gained first-hand experience in the severity of waste along the coast and worked together to reduce pollution and contribute to plastic-free oceans.



3. Social Contribution

In addition to actively participate in various activities of local communities, CCPG also actively provides various resources of the Group to give back to the society. CCPG happily adopts measures such as sponsorship of local activities, donations to disadvantaged groups, public facility adoption, and provision of event venues to share resources of CCPG with local communities. CCPG also actively organizes and sponsors various sporting activities and events to promote sports participation for all citizens.



In 2017, DCC Jiangsu Factory employees and community personnel actively collected and cleaned old clothes, sheets, and other supplies from their homes and organized various books and magazines. They appointed volunteer groups to collect them and deliver them to poverty-stricken regions to spread the love and care, provide spiritual food for youths and children in communities, and enrich their after-class lives.

CCPG Dafa Factory
- Kaohsiung Dafa National Charity Marathon, December 17, 2017



The Factory is a healthy workplace and it improves employees' health promotion opportunities through charity runs. A total of 32 employees from the Factory participated in the charity run and supervisors from the Factory Affairs Department, Quality Assurance Department, Fiberglass Section, and the Union led the teams to demonstrate their support for health promotion activities.

CCPG Dafa Factory - "Preventive Education for Addictive Substances in the Workplace and Performance Assessment Plan" education program, November 4, 2017

Dafa Factory initiated abuse prevention programs for tobacco, betel nuts, alcohol, and addictive substances in accordance with annual plans of national health administration authorities to provide employees with preventive education. The Factory use interactive participation to strengthen employee awareness for abuses of tobacco, betel nuts, alcohol, and addictive substances. A total of 16 employees quit smoking this year through transferring to clinics arranged by the Factory nurses. Awarded units adopt corporate education programs and set up a booth in collaboration with the Department of Health, Kaohsiung City Government for promoting education. The program reached 300 to 500 employees.





4.2 Talent Development

The Group was named “Chang Chun” which means “eternal spring” and the Chinese character of “spring” symbolizes three people working together each day for sustainable corporate development because an enterprise without people, as per the Chinese character, would “cease to exist”. From that moment on, “people” became CCPG’s greatest assets and the ideal gradually became an integral part of its DNA.

For more than sixty years, CCPG’s employees have grown from its initial 3 employees to over 5,000 in domestic and close to 12,000 employees worldwide. Outstanding talents have played the most important roles in CCPG’s growth and achievements throughout the years. CCPG’s most substantial assets and foundation lie in passionate work ethics, abundant professional expertise, and integrity. It has therefore been our goal to continuously improve the talent recruitment, talent cultivation, talent promotion, and talent retention systems.

According to regulations of the International Labour Organization of the United Nations, it is strictly prohibited to hire child labors who are under the minimum age required by laws. CCPG expressly prohibits the use of child labors in its Corporate Social Responsibility Policy and there had been no instances of the use of child labors in the auditing statistics compiled from 2017.

4.2.1 Recruitment Status

CCPG actively advances into major campuses and institutions while applying for the selection of R&D substitute servicemen and participating in industry-academy collaborations. It also provides competitive salaries and benefits as well as comprehensive and professional education and training programs to actively seek out talented employees.



In order to implement CCPG’s concept of “Giving Back What One Takes from the Society to the Society,” when new employees are recruited, priorities are given to local residents, to promote local job opportunities. More than 90% of the employees at Group’s CCPC Miaoli factory, DCC Kaohsiung factory, and overseas factories are local residents.

The number of employees hired by CCPG in Taiwan and overseas has increased by nearly 4% each year. The average turnover rate of employees in Taiwan was below 1% and CCPG has been praised for its 100% appointment rate for local labors in Taiwan. In addition, 100% of the management were promoted from entry-level employees of the companies and factories of the Group. The number of female employees has grown consecutively in recent years and the number of hired female employees has grown by approximately 5% in the past three years.

The salaries of new employees are established based on the price index, scarcity of the post, field of study of job seekers and connection to the content of work, difficulty of the tasks, and related licenses to undergo comprehensive assessments.



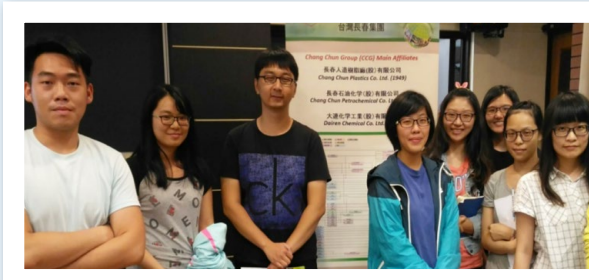
Talent recruitment seminar for the Department of Chemical Engineering, National Cheng Kung University



Campus talent recruitment exposition at National Taiwan University



R&D substitute servicemen recruitment in National Chiao Tung University.



Campus talent recruitment and company introduction seminar in National Chiao Tung University

Ratio of employees in 2015-2017		2015		2016		2017	
		♂	♀	♂	♀	♂	♀
		Male	Female	Male	Female	Male	Female
Fixed-Term Contract Temporary employee <small>Student employees, contracted drivers, consultants</small>	Taiwan	42	35	37	31	51	26
	Overseas and assignment	0	0	0	0	0	0
	Subtotal	42	35	37	31	51	26
Non-Fixed Term Contract <small>Other employees</small>	Taiwan	4,103	297	4332	316	4575	329
	Overseas + assignment	2,598	738	2667	773	2555	820
	Subtotal	6,701	1,035	6,999	1,089	7,130	1,149
Group Total		6,743	1,070	7,036	1,120	7,181	1,175

Ratio of employees in 2017 - by Company		CCP		CCPC		DCC	
		♂	♀	♂	♀	♂	♀
		Male	Female	Male	Female	Male	Female
Fixed-Term Contract Temporary employee <small>Student employees, contracted drivers, consultants</small>	Taiwan	11	8	38	16	2	2
	Overseas and assignment	0	0	0	0	0	0
	Subtotal	11	8	38	16	2	2
Non-Fixed Term Contract <small>Other employees</small>	Taiwan	1,740	182	2,013	93	822	54
	Overseas + assignment	1,720	621	293	62	542	137
	Subtotal	3,460	803	2,306	155	1,364	191
Group Total		3,471	811	2,344	171	1,366	193



The average age of CCPG's employees is approximately 39 years old and the average year of service is approximately 13 years. The employees are in the life stage when they have rich experiences and full physical strength.

Employee age distribution in 2015-2017	2015		2016		2017	
	Management roles	Non-management roles	Management roles	Non-management roles	Management roles	Non-management roles
30 and below	16	2,475	14	2,499	11	2,273
30-50	433	4,054	450	4,354	438	4,741
50 and above	207	628	208	631	218	675
Total	656	7,157	672	7,484	667	7,689

Distribution of the age of employees in 2017 - by Company		CCP		CCPC		DCC	
		Management roles	Non-management roles	Management roles	Non-management roles	Management roles	Non-management roles
30 and below	Taiwan	0	332	0	486	0	134
	Overseas	103	1,057	98	1,289	59	582
30-50	Taiwan	75	374	71	216	38	67
	Overseas	7	959	3	206	1	156
50 and above	Taiwan	95	1,256	30	110	53	447
	Overseas	18	6	6	0	10	12
Group Total		298	3,984	208	2,307	161	1,398

Age distribution of new employees in 2015-2017		2015		2016		2017	
		Male	Female	Male	Female	Male	Female
30 and below	Taiwan	244	34	302	38	399	33
	Overseas	339	72	350	69	310	87
30-50	Taiwan	46	4	151	7	84	7
	Overseas	57	10	84	34	62	45
50 and above	Taiwan	0	0	2	1	7	0
	Overseas	0	0	2	0	1	0
Group Total		686	120	891	149	863	172

Age distribution of new employees in 2017 - by Company		CCP		CCPC		DCC	
		Male	Female	Male	Female	Male	Female
30 and below	Taiwan	146	14	209	17	44	2
	Overseas	251	76	13	3	46	8
30-50	Taiwan	42	1	35	3	7	3
	Overseas	27	35	10	0	25	10
50 and above	Taiwan	2	0	4	0	1	0
	Overseas	0	0	0	0	1	0
Group Total		468	126	271	23	124	23

Age distribution of resigned CCPG employee in 2015-2017		2015		2016		2017	
		Male	Female	Male	Female	Male	Female
30 and below	Taiwan	50	15	73	19	98	21
	Overseas	261	54	287	65	349	54
30-50	Taiwan	66	4	108	8	75	4
	Overseas	58	20	86	18	110	32
50 and above	Taiwan	51	4	82	5	75	6
	Overseas	0	0	1	0	1	0
Group Total		486	97	637	115	708	117

Age distribution of resigned employees in 2017 - by Company		CCP		CCPC		DCC	
		Male	Female	Male	Female	Male	Female
30 and below	Taiwan	32	6	55	14	11	1
	Overseas	231	41	73	9	45	4
30-50	Taiwan	33	2	23	1	19	1
	Overseas	61	26	23	1	26	5
50 and above	Taiwan	20	6	50	0	5	0
	Overseas	0	0	0	0	1	0
Group Total		377	81	224	25	107	11

CCPG carries out employee hiring and training with high levels of intensity and breadth. They are divided into two aspects: "Taking root downwards" and "Horizontal expansion." The former enhances employees' overall professional quality through CCPG's rigorous and accurate work trainings, supported by mentor system; the latter provides young employees the opportunities for overseas training and helps employees develop international professional standards, management capabilities, and world-class vision.

Employee Job Rank Category in 2015-2017	2015		2016		2017	
	Male	Female	Male	Female	Male	Female
Executives	20	3	23	3	27	3
Senior managers	81	2	79	3	70	4
Mid-level managers	151	9	151	10	152	9
Junior-level managers	422	58	440	57	439	58
General employees	6,069	998	6,343	1,047	6,493	1,101
Group Total	6,743	1,070	7,036	1,120	7,181	1,175



CCPG 2017 Employee Job Rank Category - by Company		CCP		CCPC		DCC	
		♂ Male	♀ Female	♂ Male	♀ Female	♂ Male	♀ Female
Executives	Taiwan	2	0	7	3	4	0
	Overseas	4	0	5	0	5	0
Senior Manager	Taiwan	17	0	14	1	14	0
	Overseas	11	2	1	0	6	0
Mid-level managers	Taiwan	39	1	48	3	24	1
	Overseas	27	1	7	0	12	4
Junior-level managers	Taiwan	107	12	83	10	47	7
	Overseas	150	22	23	2	32	5
General employees	Taiwan	1,586	177	1,899	92	735	48
	Overseas	1,528	596	257	60	487	128
Group Total		3,471	811	2,344	171	1,366	193

In 2017, the proportion of local-hire senior managers was 100 percent in Taiwan and 10 percent for overseas areas. The Group adopts comprehensive management and competence training to actively cultivate local management personnel.

2017 CCPG Senior Executive Distribution	Taiwan	Overseas
Number of senior managers (Executives and senior managers)	62	41
Local-hire senior executives	62	4
Percentage	100%	10%

CCPG explicitly declares, in various management measures, operating procedures and policy announcements that there shall be no discrimination in recruitment, selection, performance evaluation, salary adjustment, promotion, salary, retirement, layoff, dismissal, training and education, benefit measures, etc. due to factors, such as gender, religion, political affiliation, age, marital status, sexual orientation, race. CCPG hired 39 people with disabilities in 2017 and protected their equality and employment rights to create a friendly employment environment.

Employee Diversity in 2015-2017	2015		2016		2017	
	Management roles	Non-management roles	Management roles	Non-management roles	Management roles	Non-management roles
People with disabilities	1	41	1	41	1	38
Total	1	41	1	41	1	38

CCPG 2017 Employee Diversity - by Company	CCP		CCPC		DCC	
	Management roles	Non-management roles	Management roles	Non-management roles	Management roles	Non-management roles
People with disabilities	0	20	0	12	1	6
Total	0	20	0	12	1	6

4.2.2 Employee Benefits

"Talent retention" requires dedication. In nearly 70 years of history, CCPG employees have enjoyed salaries and benefits superior to the average standards in the industry. CCPG has implemented salary adjustments each year and provided year-end bonuses, remuneration, and benefits system to satisfy every CCPG employee.

Cash welfare

1. Bonuses for the three traditional holidays including Mid-Autumn Festival, Dragon Boat Festival, and Labor Day
2. Chinese New Year work commencement red envelope
3. Year-end bonus
4. Bonus
5. CCPG awards senior employees who have provided 20 years of services with a gold coin
6. Employees are provided with one month's salary for marriage and bereavement subsidies
7. Interest-free emergency aid loan equivalent to employees' salary for 80 days
8. NT\$100,000 for the death of the employee
9. Meal subsidies for staff on evening and night shifts
10. Overtime pay calculation more favorable than those specified in the Labor Standards Act

Non-cash welfare

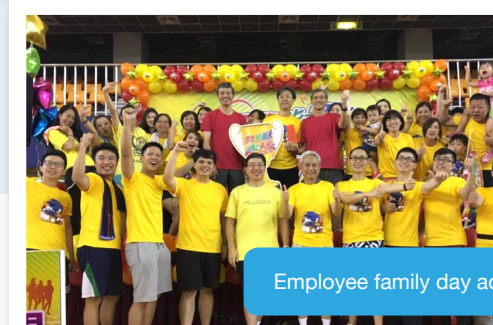
1. Establishment of an employee welfare committee to appropriate benefit funds for subsidies for employee travels in accordance with laws
2. Two days of employee travel leave each year
3. Group insurance for employees
4. Free annual health examination
5. Subsidies for purchases of employee cafeteria facilities, employee uniforms, and employee sports activities, holiday activities, and club activities
6. Organize diverse training programs (professional courses, management courses, online courses, and health and psychological support courses)
7. Subsidies for activities of (retired) employees' associations
8. Advancement of CCPG family day activities and family seminars
9. Free English and Japanese language courses
10. Encourage employees to apply for parental leave for child rearing without salary



Executive Board Chairman awards senior employees for their 20 years of service



Farm activity



Employee family day activity



Book club activity



Bicycle Club activity



Employee softball tournament activity



CCZZ basketball games



DCCJS mini marathon



CCPJ annual tour



CCJS model employees' tour in Taiwan

The “pragmatic and law-abiding spirit” is a corporate ideal long upheld by CCPG. In addition to establishing many benefit systems internally, CCPG also abides by relevant labor, environmental protection, tax laws, and regulations to take care of employees and the general public.

Retirement with peace of mind exemplifies how CCPG takes care of its employees. CCPG companies have established the “Labor Pension Preparatory Fund Supervision Commission” to supervise the use of employee pension funds. Companies appropriate sufficient funds to the pension preparatory fund each month and appoint third-party actuarial consulting firms to calculate the pension funds and ensure that the companies’ financial resources are sufficient for paying employees’ pensions. In addition, CCPG also awards retirees with a one-ounce pure gold coin marked with CCP for CCPG for commemoration and for their legacy.

CCPG's domestic and overseas factories encourage employees to apply for parental leave for child rearing without salary based on their actual needs. Companies approve 100% of applications for parental leave for child rearing without salary from both male and female employees and 100% of employees are reinstated to their original posts after the parental leave. This measure allows employees to take care of the future of the nation with peace of mind.

Analysis Of Unpaid Parental Leave For Child Rearing Without Salary -Taiwan	2015		2016		2017	
	♂	♀	♂	♀	♂	♀
	Male	Female	Male	Female	Male	Female
Number of people eligible for parental leave in the current year (A)	142	11	193	21	212	26
Number of applicants for parental leave in the current year (B)	9	3	6	2	10	4
Application rate (B/A)	6.3%	27.3%	3.1%	9.5%	4.7%	15.4%
Number of people reinstated from parental leave in the current year (C)	8	4	7	3	2	0
Number of employees applying for reinstatement in 2015 (D)	8	4	7	3	2	0
Reinstatement rate (D/C)	100%	100%	100%	100%	100%	-

CCPG Taiwan in 2017 Unpaid Parental Leave for Child Rearing - by Company	CCP		CCPC		DCC	
	♂	♀	♂	♀	♂	♀
	Male	Female	Male	Female	Male	Female
Number of people eligible for parental leave in the current year (A)	55	8	117	8	40	10
Number of applicants for parental leave in the current year (B)	2	1	4	0	4	3
Application rate (B/A)	4%	13%	3%	0%	10%	30%
Number of people reinstated from parental leave in the current year (C)	0	0	1	0	1	0
Number of employees applying for reinstatement in 2015 (D)	0	0	1	0	1	0
Reinstatement rate (D/C)	-	-	100%	-	100%	-

CCPG Overseas Regions Parental Leave (Maternity Leave) Analysis in 2015-2017	2015		2016		2017	
	♂	♀	♂	♀	♂	♀
	Male	Female	Male	Female	Male	Female
Number of people eligible for parental leave in the current year (A)	65	31	134	57	160	56
Number of applicants for parental leave in the current year (B)	65	31	134	57	160	56
Application rate (B/A)	100%	100%	100%	100%	100%	100%
Number of people reinstated from parental leave in the current year (C)	63	26	131	52	152	49
Number of employees applying for reinstatement in 2015 (D)	63	26	131	52	152	49
Reinstatement rate (D/C)	100%	100%	100%	100%	100%	100%



CCPG Overseas Regions Parental Leave (Maternity Leave) Analysis in 2017 - by Company	CCP		CCPC		DCC	
	♂	♀	♂	♀	♂	♀
	Male	Female	Male	Female	Male	Female
Number of people eligible for parental leave in the current year (A)	84	34	38	10	38	12
Number of applicants for parental leave in the current year (B)	84	34	38	10	38	12
Application rate (B/A)	100%	100%	100%	100%	100%	100%
Number of people reinstated from parental leave in the current year (C)	84	34	35	5	33	10
Number of employees applying for reinstatement in 2015 (D)	84	34	35	5	33	10
Reinstatement rate (D/C)	100%	100%	100%	100%	100%	100%

4.2.3 Labor-Management Relations and Communications

CCPG follows internationally recognized guidelines for sustainability and human rights, including the core labor standards of basic conventions in United Nations Global Compact and International Labour Organization. CCPG also complies with local applicable laws and regulations of the location where each factory is based in.

CCPG's subordinate factories established the first labor union as early as 1971 and more than 90% of employees have joined the labor unions. CCPG has 9 corporate labor unions and it has signed collective bargaining agreements with 8 unions (no collective bargaining agreements were signed at DCCJS). CCPG convenes regular meetings with labor representatives each year to ensure smooth communication channels between employees and the management.



CCP Kaohsiung Factory 2018 Congress of Union Representatives



CCPC Miaoli Factory Congress of Union Representatives

To ensure smooth and transparent communication between labor and management and effective broadcast of information on material incidents, CCPG has established multiple labor-management communication channels to resolve labor-management disputes through communication. In addition to the annual meeting of union representatives, labor pension fund supervisory committee, and labor-management meetings, employees may also use unofficial communication channels such as using telephones, email, and face-to-face communication with factory supervisors and union officers. Employees may also use the Employee Welfare Committee, employee grievance channels, interviews with the human resources department to propose opinions and suggestions to companies of the group. The topics of discussion in 2017 mainly included expansion of parking space, suggestion on style and materials of employee uniform, additional cafeteria equipment, adjustment for evening/night shift allowances, renovation of personal protective equipment, increase of annual physical examination items, and suggestion on year-end bonus and pay raises, which all reached conclusions that satisfied both the labor and the management.

Subsidiary/Factory	Year of Establishment	Number of Members	Union Member Percentage
CCP Hsinchu Factory	1979	723	99.7%
CCP Dafa Factory	1996	450	100%
CCPC Miaoli Factory	1971	1639	97.0%
DCC Mailiao Factory	1996	180	80.0%
CCP Kaohsiung Factory	1979	435	99.8%
DCC Kaohsiung Factory	1985	201	99.0%
DCC Dafa Factory	1999	294	89.6%
CCSG	2014	53	28.0%
DCCJS	2013	327	100%

4.3 Talent Cultivation

Talent cultivation is an important element in CCPG's development of human resources and its solid strength for gaining a foothold in an international competitive arena. CCPG defined the six core competencies of the Group in 2016 including being earnest and responsible, quality orientation, teamwork, communication and coordination, self-development, and honesty and integrity in hopes of building common cultural viewpoints, a code of conduct, and consistent values for all CCPG employees. CCPG's Talent Development Committee was established in the same year and it is chaired by the Chairman and President. The Committee discusses and formulates plans for talent recruitment, cultivation, promotion, and retention with the head of the Human Resource Department each month.



4.3.1 Education and Training

CCPG establishes feasible strategic goals based on the development strategy of the Group each year. It also promotes organizations to achieve the key core competencies required for achieving the targets. It employs management competency training, professional competency training, core competency training, and orientation training to help organizations achieve their goals. The structure of CCPG's education and training system is shown in the figure at right.

CCPG plans comprehensive and up-to-date education and training courses and plans a series of high-quality training programs for candidates for leadership roles. CCPG designs professional courses with top-down focuses and in-depth analysis based on professional competencies to strengthen employees' work skills and improve teamwork through horizontal management skills. CCPG encourages employees and provides them with opportunities to unleash their potential and continue to improve the performance of the employee, department, factory, company, and the Group.





2017 Ccpq Training and Education Analysis			
	Total training hours	Taiwan	138,250 (hours)
		Overseas	112,269 (hours)
	Total participants in training	Taiwan	61,733 (attendances)
		Overseas	39,595 (attendances)

CCPG's training and education programs can be classified by the recipients and they include

1. Orientation Training for “New Employees”

Provide new employees with basic training and divide them into common training for the Group (including professional competencies), common training for each unit (including factories and subsidiaries), and orientation training (including departments of the head offices and factories) so that each new employee can receive complete and comprehensive training and education. In addition, CCPG has established a “mentor” system for new employees to quickly integrate into the organization and adapt to the corporate culture and work environment.

2. Core, Management, and Professional Competency Training for “Current Employees”

More than 5,000 courses on “core, management, and professional competency training” were organized for current employees of the Group in 2017 (nearly 250,000 hours of courses). At the same time, CCPG provides corresponding management competency training for employees in different management roles to provide supervisors with the same values and common goals and to cultivate their management competencies required for completing their tasks. CCPG aims to cultivate consistent corporate culture, management skills, and behavioral patterns for management personnel. More than 300 participants from domestic and overseas factories have taken part in related training and the overall satisfaction rate was more than 4.8 points (based on a total possible score of 5 points).

Management training for factories in Taiwan in 2017



Training in Changshu Factory in 2017



Training in Zhangzhou Factory in 2017

The CCPG e-Learning system was used to integrate the education and training database of companies and overseas factories of the Group in 2017. Data from past courses were collected, analyzed, and integrated to provide reference information for training courses in 2018.

The implementation and effects of education and training are exemplified in employees' work performance, zero occupational safety incidents, and the career development of core managers. All CCPG's domestic and overseas employees were evaluated for their performance in 2017. 17.5% of domestic employees and 27% of overseas employees received excellent ratings. The proportion of excellent ratings for domestic and overseas employees was superior to levels in 2016. Moreover, the Group carries out two key management reviews every year and conducts internal audits on the implementation status of annual training and education plan proposed by all departments and factories. There were no major deficiencies in 2017.

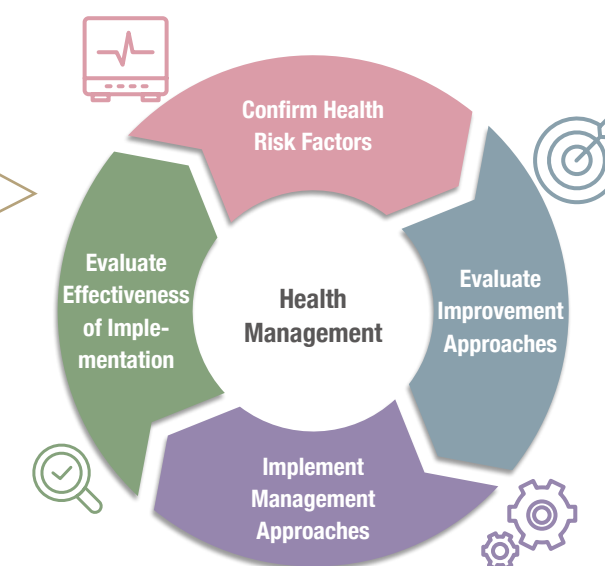


4.3.2 Healthy Workplace Environment

To promote a healthy workplace environment for employees, the three companies of the Group have adopted systematic occupational health management frameworks to provide comprehensive management and regulations for implementation from the identification of health risk factors, evaluation of improvement methods, and implementation of management measures to evaluation of performance. CCPG has established health-related regulations for operations to achieve the aforementioned goals and implement related measures to protect employees' health.

Regulations for CCPG's Health-Related Operations

- Regulations Governing Occupational Safety and Health Committee Operations and Implementation
- Employee Health Management Approach
- Regulations Governing Contractor Environment, Health and Safety (EHS) Management Operation
- Procedures Governing Hazardous Chemical Assessment & Control Banding Operations
- Regulations Governing Uses and Operations of Personal Protective Equipment
- Procedures Governing Hearing Conservation Program Implementation and Operations
- Procedures Governing Prevention of Musculoskeletal Disorders Induced by Repetitive Operations
- Procedures Governing Prevention of Ailments Induced by Exceptional Workload
- Procedures Governing Prevention of Wrongful Physical or Mental Harm Caused by the Actions of Others during the Execution of Job Duties
- Procedures Governing Maternal Health Protection for Female Workers



CCPG plans short, medium, and long-term goals for the health management for employees and contractors. The short and medium-term goals include a comprehensive survey of chemical risk factors in employees' workplace environment and reduction of exposure content to one-tenth of the maximum permissible levels. The long-term goals include the risk analysis of the top 5 highly infectious diseases in the Group for investments of related health management resources for high-risk diseases to create a healthy workplace environment.



Employee Health Management

CCPG encourages employees to exercise and it developed the app “CCP Play” in 2017 to allow employees to record the number of steps they take each day and the distance they walk. It also allows employees to view past data and learn about their exercises and habits in life. It also includes a daily rankings function to add fun to exercising and promote employees’ physical and mental health.

Occupational Health Management Measures

We believe that most diseases are not developed merely due to one single factor, therefore, during annual physical examinations, we also provide questionnaires to inquire employees' past medical history, lifestyle habits (such as smoking, drinking alcohol, chewing betel nuts) and self-aware symptoms. Through data analysis and observation of trend changes, the factory medical (care) personnel would conduct health education reminder and health care practices in order to eliminate the risk factors that may possibly cause illness and thereby prevent diseases from developing. For more prevailing irregular data from 2017 that indicated suboptimal health (e.g. abdominal ultrasonography, cholesterol, and triglycerides), CCPG targets each employee with suboptimal health and provides reminders and care through medical education provided by doctors (nurses) at the factories. CCPG's ERP system also includes an “Employee Health Management System” that keeps records of employees' past physical examination data for employees to view changes in their data and always pay attention to their health. CCPG's ERP system has passed the ISO27001 information security certification for seven consecutive years. Employees' physical examination data are properly and securely stored and they do not have to worry about data leaks.

Special Hazards Operations Management

Each year, CCPG conducts regular special hazard physical examinations, in accordance with law, according to how its employees are exposed to different hazard workplaces, and records employees' actual daily working status, tested concentration and number of operations in chemical operations environment, and provide the aforementioned records to the physical exam doctors to use as the basis to determine whether there was occupational exposure and confirm whether the employees developed diseases due to occupational exposure. For the employees with abnormal test results, CCPG would refer to physicians' suggestions to carry out administrative measures, such as improving the nature of risk sources or transferring affected employees away from current workplace. The special hazard physical examinations in 2017 included 13 examinations totaling 755 participants in Taiwan and 11 examinations totaling 2607 participants in overseas regions. The coverage rate was 100% and no special hazards were discovered.



Operations of Special Physical Examination Items Performed By CcpG In 2017

Region	Operations included in special physical examination items	CCP	CCPC	DCC	Total
Taiwan	Dimethyl formamide operations	29	N/A	N/A	29
	Formaldehyde operations	152	9	N/A	161
	Dust operations	24	46	N/A	70
	Ionizing radiation operations	23	10	5	38
	Operations in noisy environments	159	82	71	312
	Benzene operations	41	N/A	N/A	41
	Chromium operations	N/A	N/A	1	1
	Tetrachloroethane operations	4	N/A	N/A	4
	N-hexane operations	1	N/A	N/A	1
	Chromic acid operations	N/A	32	N/A	32
	Nickel operations	N/A	24	25	49
	Manganese operations	N/A	12	N/A	12
	Arsenic operations	N/A	5	N/A	5
	Total	433	220	102	755
Overseas	Dimethyl formamide operations	44	N/A	N/A	44
	Formaldehyde operations	68	N/A	N/A	68
	Dust operations	453	115	20	588
	Ionizing radiation operations	16	N/A	N/A	16
	Operations in noisy environments	468	244	317	1,029
	Benzene operations	307	51	125	483
	Chromium operations	182	N/A	N/A	182
	Toluene	44	N/A	N/A	44
	Methanol	44	N/A	N/A	44
	Phenol	44	N/A	N/A	44
	Vinyl chloride monomer	N/A	N/A	65	65
	Total	1,670	410	527	2,607

Note: Special occupational health examinations are performed in accordance with related regulations for occupational health exams established by the competent authorities in charge of labor at the location of the factories. They focus on the types of related chemical substances and inspection items.

Motherhood in Workplace

CCPG continues its commitment to establishing a high-quality motherhood friendly environment for female employees. We follow the laws and regulations, such as the Act of Gender Equality in Employment, the Labor Health Protection Regulation, and Standards for Establishment and Administration of Public Breastfeeding (Collecting) Rooms, and plan to set up 10 breastfeeding rooms in all of the Group's factories. They have been completed in 2017. They will be available in all factories and they will be managed by designated staff in accordance with the usage, cleaning and maintenance regulations. Female employees, contractors or visitors will enjoy a comfortable and private breastfeeding environment during their pregnancy and breastfeeding periods.

GRI Standards Indicator Reference Table

General Disclosures

GRI Standards	Disclosure Item		Chapter	Page Number
GRI 102: General Disclosures	Organizational Profile			
	102-1	Name of the organization	1.1.1 Company Profile	16
	102-2	Activities, brands, products and services	1.1.1 Company Profile	16
			1.1.3 Product Introduction and Location of Operation	18
	102-3	Location of headquarters	1.1.1 Company Profile	18
	102-4	Location of operations		
	102-5	Ownership and legal form		
	102-6	Markets served	1.1.1 Company Profile	16
			1.1.3 Product Introduction and Location of Operation	18
	102-7	Scale of the organization	1.1.1 Company Profile 1.2.1 Financial Performance	16 22
	102-8	Information on employees and other workers	4.2.1 Employment Status	94
	102-9	Supply Chain	2.3 Sustainable Procurement Policy	56
	102-10	Significant changes to the organization and its supply chain	- No significant changes in 2017	
	102-11	Precautionary Principle or approach	1.4.3 Risk Management	34
			2.2 Responsible Chemistry	47
			2.2.2 Process Safety	51
			2.2.3 Material Incident Management & Response	53
	102-12	External initiatives	1.3.2 External Participation	30
	102-13	Membership of associations		
	Strategy			
	102-14	Statement from senior decision-maker	Retrospect and Outlook of Sustainability Strategies	4
	102-15	Key impacts, risks, and opportunities	1.4.3 Risk Management	34
	Ethics and integrity			
	102-16	Values, principles, standards, and norms of behavior	1.4.1 Ethical Management	32
	102-17	Mechanisms for advice and concerns about ethics		
	Governance			
102-18	Governance structure	1.2.2 Corporate Governance Framework	24	
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102-19	Delegating authority	1.3.1 CSR Governance and Management Organization	25	
102-20	Executive-level responsibility for economic, environmental, and social topics			
102-24	Nominating and selecting the highest governance body			1.2.2 Corporate Governance Framework

GRI Standards	Disclosure Item		Chapter	Page Number
GRI 102: General Disclosures	Stakeholder Communications			
	102-40	List of stakeholder groups	Identification of Material Topics	7
	102-41	Collective bargaining agreements	4.2.3 Labor-Management Relations and Communications	102
			Identification of Material Topics	7
	102-42	Identifying and selecting stakeholders	Identification of Material Topics	7
	102-43	Approach to stakeholder engagement	4.1.1 Stakeholder Engagement	84
	102-44	Key topics and concerns raised	Identification of Material Topics	7
	Reporting Practices			
	102-45	Entities included in the consolidated financial statements	About this Report	1
			1.1.3 Product Introduction and Location of Operation	18
	102-46	List of material topics	Identification of Material Topics	7
	102-47	Restatements of information		
	102-48	Changes in reporting	About this Report	1
	102-49	Reporting period	Identification of Material Topics	7
	102-50	Date of most recent report	About this Report	1
	102-51	Reporting cycle		
	102-52	Contact point for questions regarding the report		
	102-53	Claims of reporting in accordance with the GRI Standards		
	102-54	GRI content index		
	102-55	External assurance	GRI Standards Indicator Reference Table	108

Topic-Specific Standards

GRI 200: Economic Standards

GRI Standards	Disclosure Item		Chapter	Page Number
Economic Performance				
GRI 103: Management Approach	103-1	Explanation of the material topic and its boundary	3.2.3 Climate Change Adaptation 4.2.2 Employee Benefits	73 99
	103-2	The management approach and its components		
	103-3	Evaluation of the management approach		
GRI 201: Economic performance	201-2	Financial implications and other risks and opportunities due to climate change	3.2.3 Climate Change Adaptation	73
	201-3	Defined benefit plan obligations and other retirement plans	4.2.2 Employee Benefits	99

GRI Standards	Disclosure Item		Chapter	Page Number
Market Presence				
GRI 103: Management Approach	103-1	Explanation of the material topic and its boundary	4.2.1 Employment Status	94
	103-2	The management approach and its components		
	103-3	Evaluation of the management approach		
GRI 202: Market Position	202-2	Proportion of senior management hired from the local community		
Indirect Economic Impacts				
GRI 203: Indirect Economic Impacts	203-2	Significant indirect economic impacts	4.1.3 Social Engagement	89
Procurement Practices				
GRI 103: Management Approach	103-1	Explanation of the material topic and its boundary	2.3.2 Supplier Management System	57
	103-2	The management approach and its components		
	103-3	Evaluation of the management approach		
GRI 204: Procurement Practices	204-1	Proportion of spending on local suppliers		
Anti-corruption				
GRI 205: Anti-Corruption	205-2	Communication and training about anti-corruption policies and procedures	1.4.1 Ethical Management	32
	205-3	Confirmed incidents of corruption and actions taken	4.1.1 Stakeholder Engagement	84

GRI 300: Environment Standards

GRI Standards	Disclosure Item		Chapter	Page Number
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GRI 103: Management Approach	103-1	Explanation of the material topic and its boundary	2.3.2 Supplier Management System	57
	103-2	The management approach and its components		
	103-3	Evaluation of the management approach		
GRI 301: Materials	301-2	Recycled input materials used	3.4.1 Emission of Air Pollutants	78
	301-3	Reclaimed products and their packaging materials	2.3.2 Supplier Management System	57
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GRI 103: Management Approach	103-1	Explanation of the material topic and its boundary	3.2.1 Energy Management and Conservation	66
	103-2	The management approach and its components		
	103-3	Evaluation of the management approach		
GRI 302: Energy	302-1	Energy consumption within the organization	3.2.1 Energy Management and Conservation	66
	302-4	Reduction of energy consumption		
	302-5	Reductions in energy requirements of products and services		

GRI Standards		Disclosure Item		Chapter	Page Number
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GRI 103: Management Approach	103-1	Explanation of the material topic and its boundary		3.3.1 Water Management	74
	103-2	The management approach and its components			
	103-3	Evaluation of the management approach			
GRI 303: Water	303-1	Total water withdrawal by source			
	303-2	Water sources significantly affected by withdrawal of water			
	303-3	Water recycled and reused			
Emissions					
GRI 103: Management Approach	103-1	Explanation of the material topic and its boundary		3.2 Climate Change, Energy Conservation, and Emission Reduction 3.2.2 Greenhouse Gas Emissions	66
	103-2	The management approach and its components			71
	103-3	Evaluation of the management approach			
GRI 305: Emissions	305-1	Direct (Scope 1) GHG emissions		3.2.2 Greenhouse Gas Emissions	71
	305-2	Indirect (Scope 2) GHG emissions			
	305-5	Reduction of GHG emissions		3.2.1 Energy Management and Conservation	66
	305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions		3.4.1 Emission of Air Pollutants	78
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GRI 103: Management Approach	103-1	Explanation of the material topic and its boundary		3.3.2 Wastewater Treatment 3.4.2 Waste Processing	77 80
	103-2	The management approach and its components			
	103-3	Evaluation of the management approach			
GRI 306: Effluents and Waste	306-1	Water discharge by quality and destination		3.3.2 Wastewater Treatment	77
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GRI 307: Environmental Compliance	307-1	Non-compliance with environmental laws and regulations		4.1.1 Stakeholder Engagement	84

GRI 400: Social Standards

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GRI 103: Management Approach	103-1	Explanation of the material topic and its boundary		
	103-2	The management approach and its components	4.2.1 Employment Status 4.2.2 Employee Benefits	94 99
	103-3	Evaluation of the management approach		

GRI Standards	Disclosure Item		Chapter		Page Number			
GRI 401: Employment	401-1	New employee hires and employee turnover	4.2.1	Employment Status	94			
	401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	4.2.2	Employee Benefits	99			
	401-3	Maternal leave						
Labor/Management Relations								
GRI 103: Management Approach	103-1	Explanation of the material topic and its boundary	4.2.3	Labor-Management Relations and Communications	102			
	103-2	The management approach and its components						
GRI 402: Labor-Management Relations	103-3	Evaluation of the management approach						
	402-1	Minimum notice periods regarding operational changes						
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GRI 103: Management Approach	103-1	Explanation of the material topic and its boundary	2.1.2	Chemical Management	42			
	103-2	The management approach and its components	2.2.1	Workplace Safety	47			
			2.2.2	Process Safety	51			
			3.1.1	Environmental Management	64			
103-3	Evaluation of the management approach	4.3.2	Healthy Workplace Environment	105				
GRI 403: Occupational Health and Safety	403-1	Occupational health and safety management system	2.2.1	Workplace Safety	47			
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GRI 103: Management Approach	103-1	Explanation of the material topic and its boundary	4.2.1	Employment Status	94			
	103-2	The management approach and its components				4.3.1	Education and Training	103
	103-3	Evaluation of the management approach						
GRI 404: Training and Education	404-1	Average hours of training per year per employee	4.3.1	Education and Training	103			
	404-2	Programs for upgrading employee skills and transition assistance programs						
	404-3	Percentage of employees receiving regular performance and career development reviews						
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GRI 103: Management Approach	103-1	Explanation of the material topic and its boundary	4.2.1	Employment Status	94			
	103-2	The management approach and its components						
	103-3	Evaluation of the management approach						
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GRI Standards		Disclosure Item		Chapter	Page Number
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GRI 103: Management Approach	103-1	Explanation of the material topic and its boundary	4.2.1 Employment Status	94	
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	103-3	Evaluation of the management approach			
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GRI 408: Child Labor	408-1	Operations and suppliers at significant risk for incidents of child labor	4.1.2 Corporate Human Rights Management	88	
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GRI 409: Forced or Compulsory Labor	409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	4.1.2 Corporate Human Rights Management	88	
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	103-2	The management approach and its components			
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GRI 412: Human Rights Assessment	412-2	Employee training on human rights policies or procedures			
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	103-2	The management approach and its components			
	103-3	Evaluation of the management approach			
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	103-2	The management approach and its components			
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GRI Standards	Disclosure Item		Chapter	Page Number
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GRI 103: Management Approach	103-1	Explanation of the material topic and its boundary	2.1.2 Chemical Management	42
	103-2	The management approach and its components		
	103-3	Evaluation of the management approach		
GRI 417: Marketing and Labeling	417-1	Requirements for product and service information and labeling		
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	103-3	Evaluation of the management approach		
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GRI 419: Socio-economic Compliance	419-1	Non-compliance with laws and regulations in the social and economic area	4.1.1 Stakeholder Engagement	84

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