

**台塑企業**  
FORMOSA PLASTICS GROUP



**2018** Formosa Plastics Corporation  
CSR Report Corporate Social Responsibility Report

# Table of Contents



## About This Report

Report Overview	4
Progress of Corporate Social Responsibility Goals	6
2018 CSR Highlights	11
Award-Winning Performance in 2018	15



## Chapter 1

### Builders of Innovative and Sustainable Future

1.1 Message from the Chairman	18
1.2 About FPC	20
1.3 Stakeholder Identification and Communication	23
1.4 Identification of Material Issues	25



## Chapter 2

### Builders of a Prosperous Economy

2.1 Operation Overview	34
2.2 Corporate Governance	37
2.3 Innovative Sustainable Products	50
2.4 Customer Service	63
2.5 Response to Significant Economic Issues	66



### Chapter 3

#### Builders of Sustainable Environment

3.1 Environmental Management Policies and Strategies	70
3.2 Water Resource Use and Management	75
3.3 Greenhouse Gas and Energy Management	82
3.4 Air Pollutant Management	85
3.5 Waste Management	89
3.6 Environmental Compliance	93
3.7 Response to Material Environmental Issues	94



### Chapter 6

#### Builders of Shared Development

6.1 Local Community Engagement	134
6.2 Development and Donations to Local Communities	144
6.3 Community Engagement	146
6.4 Response to Local Community Issues	153



### Chapter 4

#### Builders of Happy Talent

4.1 Human Resource Policies and Employee Composition	98
4.2 Employee Welfare and Care	103
4.3 Talent Cultivation and Retention	109



### Appendix

I. Global Reporting Initiative	156
II. Corporate Social Responsibility Best Practice Principles for TWSE/GTSM Listed Companies	162
III. ISO 26000 Guidance on Social Responsibility	163
IV. United Nations Global Compact	165
V. Independent Assurance Opinion Statement	166



### Chapter 5

#### Builders of a Safe and Healthy Workplace

5.1 Occupational Health and Safety	116
5.2 Industrial Safety Management in Supply Chain	126
5.3 Response to Material Industrial Safety Issues	130





# About This Report

Report Overview	4
Progress of Corporate Social Responsibility Goals	6
2018 CSR Highlights	11
Award-Winning Performance in 2018	15

# About This Report

102-45

102-46

102-48

102-49

102-50

102-51

102-52

This Report was published pursuant to the Global Reporting Initiative Sustainability Reporting Standards (GRI Standards) issued by the Global Reporting Initiative (GRI) in 2016, and compiled based on the guidelines and framework of the Core Options. This Report provides an accurate and detailed introduction to the sustainability actions of Formosa Plastics Corporation (hereinafter referred to as "FPC") in areas including corporate governance, environmental sustainability, happy enterprise, safe workplace and community co-prosperity.

## Information Period

2018 (January 1, 2018 to December 31, 2018)

## Scope and Boundary of Reporting

The information recorded herein mainly focuses on FPC and does not include its investment companies in Taiwan and the U.S and subsidiaries in China. Community co-prosperity refers to FPG as a whole. Any other information with a different scope of the disclosure will be otherwise specified. The data quoted and reporting boundary used in the 2018 CSR Report are identical to those in 2017.

The source of the financial information is the public accountant-certified statement, while other statistics are generally quoted from information provided by government departments or relevant websites and will be presented normally. Any exceptions will be specified.

## Release Frequency

Annually. The 2017 CSR Report was released on June 20, 2018, and this Report was released in June 2019.



## Report Guidelines

The content structure of the report has been prepared pursuant to the GRI Standards and structure listed by the core options and discloses the main sustainability issues, strategies, targets, and measures of the Company.

To strengthen performance comparison and report credibility, all information disclosed in this Report has been certified by the reputable British Standards Institution (BSI), disclosed in accordance with AA 1000AS Type I and the disclosure requirements specified in GRI Standards. The BSI Independent Assurance Opinion Statement is included in the Appendix V., and will be presented in the internationally accepted format. Any estimation will be specified in the relevant chapters.

- i. Sustainability Reporting Standards of the Global Reporting Initiative (GRI Standards)
- ii. Materiality, Inclusivity, Responsiveness, and Impact of AA 1000 APS (Accountability Principle Standard)
- iii. ISO 26000 Social Responsibility Guidelines
- iv. Rules Governing the Preparation and Filing of Corporate Social Responsibility Reports by TWSE-Listed Companies
- v. Corporate Social Responsibility Best Practice Principles for TWSE/GTSM-Listed Companies
- vi. United Nations Global Compact
- vii. United Nations Sustainable Development Goals (SDGs)

## Contact Information 102-53

If you have any opinions or questions about the content of this CSR report, please feel free to submit your valuable recommendations via the following methods:

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# Progress of Corporate Social Responsibility Goals 102-15

Economic	  	
Commitment	Promoting Sustainability	
<ol style="list-style-type: none"> <li>1. Improve business performance</li> <li>2. Protect shareholders' interests</li> <li>3. Strengthen the structure and operation of the Board of Directors</li> <li>4. Enhance information transparency</li> </ol>	Short-Term	1. Complete the construction of the new ethane cracking plant and HDPE plant in the U.S. and the PP debottlenecking project in Ningbo, China in the second quarter of 2019 as scheduled
		2. Advance the transformation plan for Renwu Complex
		3. Establish a creative platform and hold regular innovation presentations
		4. Promote AI technology development and applications and cultivate AI talent
		5. Increase the sales volume of differentiated products by more than 5% compared to 2018
		6. Disclose company-related information in English in alignment with the international community
		7. Implement Industry 4.0 with "production optimization"
	Medium-Term	1. Advance the construction of the new propane dehydrogenation (PDH) plant in Ningbo Plant expected to be completed in the third quarter of 2021
		2. Reduce the proportion of exports to Mainland China and expand into emerging markets
		3. Strengthen research and development of differentiated products
		4. Continue to improve various internal control systems in line with regulatory and practical requirements
	Long-Term	1. Implement Industry 4.0 with "automated production and selling"
		2. Continue to promote key performance indicators (KPIs) and understand the competitive advantages of benchmark peers to increase business performance



## 2018 Achievements

Please refer to the section "2.5 Response to Significant Economic Issues" for more details.

Please refer to the section "6.3.1 Renwu Complex Transformation Plan" for more details.

1. Launched in November 2017, the creative platform has had 147 proposals.
2. The 3rd innovation presentation was held at National University of Kaohsiung on October 5, 2018.

1. As of May 2019, 11 AI technology development cases have been applied with the annual benefit of NT\$49 million; 110 AI technology development cases are now ongoing with the expected annual benefit of NT\$117 million.
2. As to the cultivation of AI talent, please refer to the section "2.5 Response to Significant Economic Issues" for more details.

In 2018, the sales volume of differentiated products increased only by 0.4% compared to 2017. Continuous efforts will be made.

1. The English version of the company website, the handbook for the annual shareholders' meeting, and this Report has been updated respectively.
2. In line with the Corporate Governance Roadmap implemented by the government, FPC will compile the English annual report starting from 2019.

A total of 42 improvement plans have been made to enhance the quality of products, achieve optimal operations, and optimize generation set scheduling and formulas. In 2018, 29 improvement plans were completed with the annual benefit of NT\$70 million. The remaining 13 improvement plans will be completed by the end of 2019.

Please refer to the section "2.5 Response to Significant Economic Issues" for more details.

In 2018, the proportion of exports to Mainland China was 46.4%, an increase of 1.8% from 2017. FPC will continuously diversify markets to reduce risks.

Please refer to the section "2.3.5 Product Technology Development and Innovation" for the research and development results of differentiated products in 2018.

1. In May 2018, the Board of Directors passed the amendment to the implementation rules of the internal control system and internal audit for stock affairs.
2. In line with the Corporate Governance Roadmap implemented by the government, FPC will appoint a corporate governance officer in 2019.

Automated production and selling system: Automated production and selling systems for PVC, PE, and PP have been completed. FPC will continue to expand the application of the automated production and selling system to other products.

FPC set 147 KPIs for 21 products. In the fourth quarter of 2018, 12 KPIs for 8 products (8%) were not met (with the achievement rate less than 80%). A countermeasure has been drafted for improvement.

Environmental	   			
Commitment	Promoting Sustainability			
1. Prioritize industrial safety and environmental protection 2. Pursue zero disaster, zero pollution, and zero safety accident objectives 3. Advance various eco-friendly measures with regard to environmental protection and energy conservation	Short-Term	1. Promote "circular economy" in each complex to implement reduction, reuse and utilization of resources		
		2. Strengthen leakage control and improvement in equipment components at each complex		
		3. Promote the annual greenhouse gas voluntary reduction project at each complex		
		4. Continue to promote water and energy conservation, carbon and waste reduction, reduce water, electricity and steam consumption by 5% compared to those in 2018, as well as increase storage and utilization of rainwater		
	Medium-Term	1. Adopt higher standards in the supervision and management of the environment of the plant as well as install additional air pollution prevention equipment to reduce the discharge of pollutants and prevent the incidence of safety, environmental and health accidents		
	Long-Term	1. Continue to promote a "circular economy" and strive toward achieving the "zero waste" objective  2. Achieve zero wastewater discharge		



## 2018 Achievements

1. In 2018, FPC continued to promote waste recycling. For example, the Mailiao Complex applied for the reuse of inorganic sludge (salt mud) and sought to recycle waste catalyst.
2. The Mailiao Complex has set a goal of reducing waste by 3% within three years (6-year average) to strengthen reuse and recycling.

1. FPC continued to implement reliability-based mechanical integrity (RBMI) to strengthen the preventive maintenance and inspection of equipment components and pipeline leakage.
2. For 2019, FPC sets the goals of zero leakage of dangerous fluids and the reduction in the leakage of general fluids by 10% from the average goal in 2018.






In 2018, FPC submitted 318 GHG voluntary reduction projects to the Industrial GHG Voluntary Reduction Information Platform under the Industrial Development Bureau, Ministry of Economic Affairs, which was expected to reduce 73,826 tons of CO<sub>2</sub>. These projects are currently under verification of Taiwan Green Productivity Foundation.

1. Please refer to the section "1.1 Message from the Chairman" for more details of the water and energy conservation performance in 2018.
2. In 2018, water consumption per unit of product across the Company totaled 2.81 tons/ton, a decrease of 1.9% from 2017; electricity consumption per unit of product totaled 287.4 kWh/ton, a decrease of 2% from 2017; steam consumption per unit of product totaled 0.55 ton/ton, a decrease of 1.4% from 2017. The goal of reduction by 5% was not met. Continuous efforts will be made.
3. Storage and utilization of rainwater: In 2018, 82 improvement plans were completed to save 1,754 tons of water every day.

1. In 2018, two sets of FTIR were purchased for on-site monitoring.
2. The Mailiao Complex has set the goal of reducing air pollutants (TSP, SO<sub>x</sub>, NO<sub>x</sub>, and VOC) by 3% within three years (6-year average) to continuously reduce air pollutants.

On January 10, 2019, the "2018 Circular Economy Performance Presentation" was held by FPC and FPG at Ningbo Polytechnic.

1. The Zero Wastewater Discharge Team was established in 2018 to be in charge of urging the each complex to reduce wastewater discharge. The Renwu Complex is the first to implement wastewater discharge reduction.
2. At the preliminary stage, the Renwu Complex reduced wastewater discharge from the source and has proposed 28 improvement plans that are expected to reduce wastewater discharge by 2,504 CMD. In 2018, 19 improvement plans were completed to reduce estimated wastewater discharge by 1,711 CMD. The remaining 9 improvement plans are ongoing.

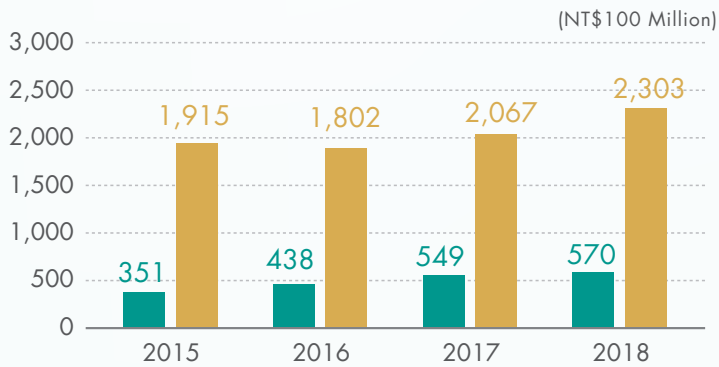
Social	    	
Commitment	Promoting Sustainability	2018 Achievements
1. Strengthen neighborhood relations 2. Deepen local connections 3. Actively participate in community service 4. Promote harmonious relations	Short-Term	1. Integrate FPC's resources and seek active cooperation between the academic and industrial sectors to bolster employment opportunities  FPC has launched the industry-academia program in cooperation with Ming Chi University of Technology, Chung Yuan Christian University, National Yunlin University of Science and Technology, and National Siluo Agricultural Industrial High School. In 2018, 132 people participated in the program. Please refer to the section "6.3.5 Industry-Academia Cooperation Program" for more details.
		2. Continue to promote various neighborhood and social charity events  Please refer to "Chapter VI Builders of Shared Development" for more details of community relations and charitable activities in 2018.
		3. Continue to organize dialogues and forums for new employees to actively care for employees and offer assistance in overcoming difficulties to ensure talent retention  In 2018, FPC organized six forums and attracted 348 participants. Individual dialogues with employees totaled 721 times.
		4. Establish a corporate social responsibility website  FPC's corporate social responsibility website has been launched in February 2019 and is continuously being optimized.
	Medium-Term	1. Establish a chemical engineering environment protection exhibition experience hall at the Renwu Complex  In 2018, 7 rounds of science summer camp were organized to attract 460 teachers, students and parents to participate. If the science summer camp achieves good results in the following 2–3 years, FPC will further evaluate the establishment of a chemical engineering environment protection exhibition experience hall.
		2. Continue to pay attention to issues related to the development of industries and propose suggestions to the government in a timely manner to increase the overall competitiveness of the country  Related suggestions for industry development have been proposed to the Chinese National Federation of Industries and included in the "2018 White Paper of Chinese National Federation of Industries".
		3. Preserve cultural assets  Please refer to the section "6.3.3 Preservation of Cultural Assets—Establishing the Wang Yung-Ching and Wang Yung-Tsai Park in Kaohsiung City" for more details.
		4. Promote traditional art  Please refer to the section "6.1.3 Community Relations" for more details.
	Long-Term	1. Gradually improve the CSR governance framework, and establish a designated organization to coordinate CSR performance to advance progress  FPC has established the CSR Task Force to be in charge of implementing CSR activities and disclosing related results.
		2. Improve information transparency in areas including corporate governance, environmental sustainability, workplace environment and social welfare to strengthen communications with stakeholders  In addition to FPC's official website, in the annual report of the shareholders' meeting and this Report, information on corporate governance, environmental sustainability, workplace environment and social welfare has been disclosed on our CSR website.

Note: Short-term refers to 1–3 years; medium-term refers to 3–5 years; long-term refers to more than 5 years.

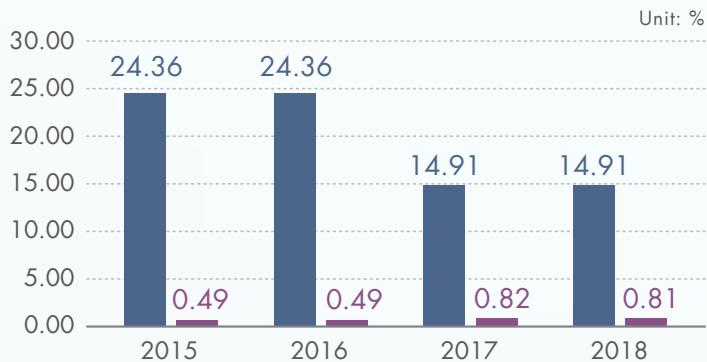
# 2018 CSR Highlights



## 1. Economic



Consolidated revenue:  
 NT\$ **230.3** billion  
 net profit before tax:  
 NT\$ **57** billion

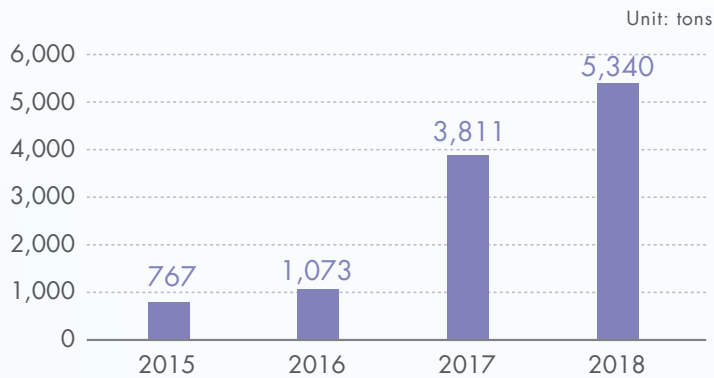


Shareholding of directors:  
**14.91%**  
 percentage of pledged  
 shares: **0.81%**

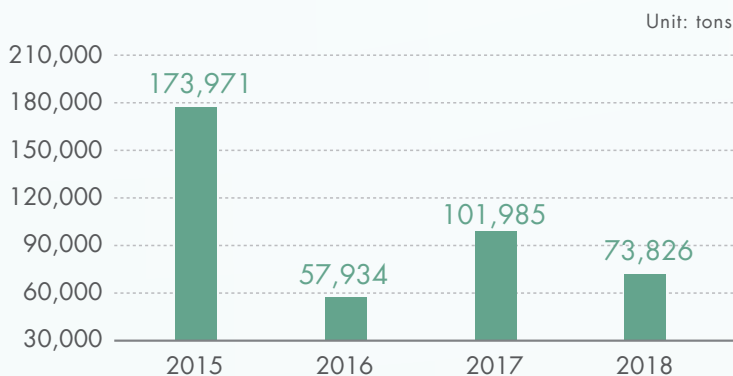
## 2. Environmental



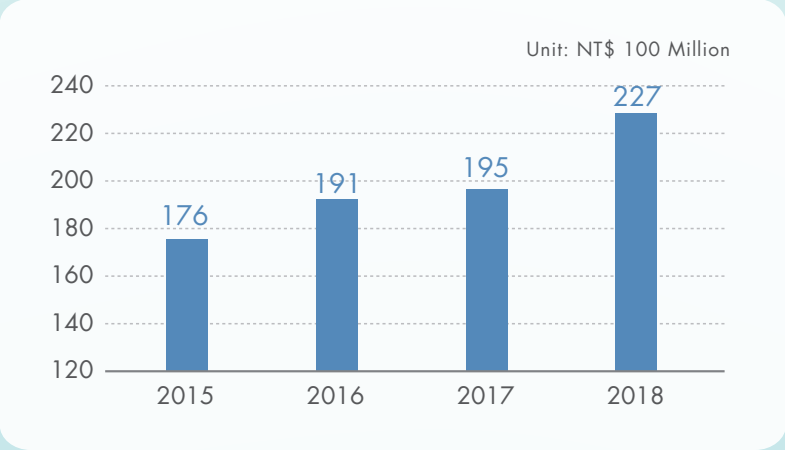
- Since 2015, all FPC's complexes (a total of 6 complexes, including the Mailiao Complex, Renwu Complex, Linyuan Complex, Hsinkang Complex, Tungshan Complex, and the 4th Complex) have successfully obtained several certifications, including **ISO 14001** Environment Management System, **OHSAS 18001** Occupational Health and Safety Management System, and **CNS 15506** Taiwan Occupational Safety and Health Management System.



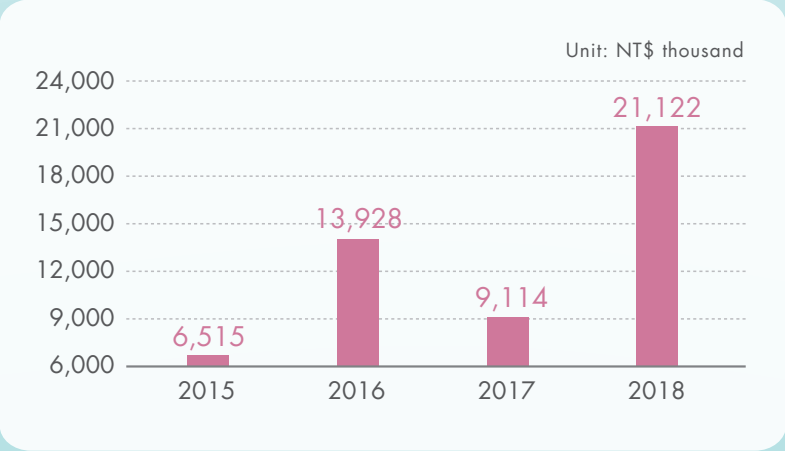
Daily amount of water conserved: **5,340** tons



Annual GHG reduction: **73,826** tons



Investment in industry safety,  
environmental protection,  
and firefighting:  
NT\$ **22.7** billion



Amount of green procurement:  
NT\$ **21,122** thousand



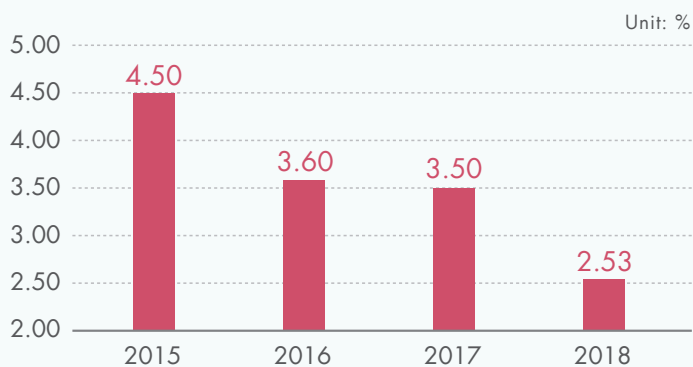
### 3. Social



- Accumulated investment in social welfare: NT\$ **55.4** billion
- Percentage of regular employees in 2018: **96.7%**
- Employee turnover rate in 2018: **2.53%** only



Percentage of regular employees in the past four years: more than **95%**



Annual average employee turnover rate in the past four years: less than **4.5%**  
employee turnover rate in 2018: less than **3%**



# Award-Winning Performance in 2018

102-12

Category	Awarding Organization	Award	Awarded Department
S	Ministry of Labor, Executive Yuan	Excellent Occupational Safety and Health Department	Mailiao HDPE Plant
S	Yunlin County Government	Five-Star Excellent Occupational Safety and Health Department Award	Mailiao PVC Plant
S	Yunlin County Government	Excellent Occupational Safety and Health Department	Mailiao AN Plant
S	Yunlin County Government	Excellent Occupational Safety and Health Department	Mailiao MMA Plant
S	Yunlin County Government	Excellent Occupational Safety and Health Department	Mailiao LLDPE Plant
S	Ministry of Health and Welfare	Healthy Workplace Creative Gold Award	Renwu Complex
S	Ministry of Health and Welfare	Healthy Workplace Creative Gold Award	Mailiao Complex
E	Environmental Protection Bureau, Kaohsiung City Government	Excellent Cross-Sector Collaborative Reduction Department	Linyuan Complex
E	The Ministry of Economic Affairs	Energy Conservation Benchmark Gold Award	Linyuan PP Plant
E	Department of Environmental Protection, Taipei City Government	Outstanding Green Procurement Enterprise	FPC

Note: "S" refers to social awards; "E" refers to environmental awards.



Deputy Minister of Economic Affairs Tseng, Wen-Sheng Granted the 2018 Energy Conservation Benchmark Gold Award



2018 Energy Conservation Benchmark Gold Award

Healthy Workplace Creative Gold Award-Renwu Complex



FPC Wins the 2018 Healthy Workplace Creative Gold Award

Healthy Workplace Creative Gold Award-Mailiao Complex



# 1



## Builders of Innovative and Sustainable Future

1.1	Message from the Chairman	18
1.2	About FPC	20
1.3	Stakeholder Identification and Communication	23
1.4	Identification of Material Issues	25

## 1.1 Message from the Chairman 102-12 102-14

Greetings to all our partners who have supported us throughout in the development of FPC and cared for its growth.

In 2018, the global economic market was in a turmoil. The strong economic growth momentum in the first three quarters led to an increase in demand for petrochemical products. With the Organization of Petroleum Exporting Countries (OPEC) and Russia reducing their oil production, the international crude oil prices increased sharply by 24%. The global automotive, construction, e-commerce, and home appliances industries continued to boom, driving the demand for alumina, paper, home appliances, and epoxy resin. The production was reduced by our peers due to the annual maintenance, equipment malfunction, or environmental protection issues, so there was a decrease in market supply, which pushed up the prices of our caustic soda, acrylonitrile (AN), methyl methacrylate (MMA), and epichlorohydrin (ECH) products, further widening our spreads. However, in the fourth quarter, due to the market uncertainties brought about by the China-US trade war, the global economy and international trade went down. To boost the growth of the U.S. economy, and with the intention to stop the oil price increment, President Trump substantially increased crude oil production, causing crude oil prices to collapse by nearly 40%, along with the sharp decrease in ethylene, propylene, and petrochemical products. Downstream customer purchases turned conservative, resulting in a decrease in sales volume and spreads.

Overall, we achieved the annual capacity of 42,000 tons at the polypropylene (PP) plant in Ningbo and improved the equipment safety management to maintain the stable production. The operating rate in 2018 was better than that in 2017. We also distributed markets and differentiated sales of products with high unit prices, resulting in consolidated revenue of NT\$230,370,000,000, an increase of 11% compared to 2017. Together with cash dividends of Nan Ya Plastics Corp., Formosa Chemicals & Fibre Corp., and Nan Ya Technology Corp. and income of Formosa Petrochemical Corp., Formosa Plastics Corporation, U.S.A., and Formosa Sumco Technology Corp., consolidated income before tax reached NT\$57,020,000,000, hitting a record high over the past 64 years since its establishment. This remarkable success was based on the support and encouragement from all our shareholders, colleagues, customers, and partners.

Looking back at 2018, we continuously improved our profitability as a builder of a prosperous economy in pursuit of sustainable development with our stakeholders. In addition, we also adopted the UN's Sustainable Development Goals (SDGs) as the long-term goal of sustainability strategy while pursuing sustainable development, happy talent, a safe and healthy workplace, and shared development. In 2018, we continuously ranked in TWSE Taiwan High Compensation 100 Index, Taiwan Employment 99 Index, and Corporate Governance 100 Index; besides, nine departments and five employees received commendation and recognition from the competent authorities in terms of occupational safety and health, energy conservation, carbon reduction across departments, and workplace safety and health. As our efforts have been widely recognized, we are more confident of continuously improving the sustainable development and fulfilling our commitment to stakeholders in the future.

Furthermore, we are committed to creating an excellent living environment and better and sustainable future for the Earth. As of 2018, we have invested a total of NT\$22.7 billion in pollution prevention, energy conservation and carbon reduction, GHG reduction, and occupational safety and fire protection. For water and energy conservation and GHG reduction, a total of 460 improvements were made in 2018, which conserved 5,340 tons of water per day and reduced 73,826 tons of GHG emissions per year. Besides, 345 ongoing improvements will be completed, which are estimated to further conserve 3,375 tons of water per day and reduce 168,124 tons of GHG emissions per year. To further reduce the environmental impacts caused by the plant operations, we strengthened the control over leaks of equipment components, monitored air quality instantly through the Fourier-transform infrared spectroscopy (FTIR), and improved the white smoke elimination project at the Renwu and Linyuan Utility Plants; in addition, we have established a designated team to be in charge of wastewater reduction and targeted zero wastewater emissions.

As of 2018, the seven charitable trust funds and foundations established by the two founders of Formosa Plastics Group (FPG) have invested NT\$55.4 billion in social welfare organizations to benefit education, medical services, elderly welfare, inmate support, women and children's welfare, sports and culture, and people with disabilities. Additionally, in line with the Kaohsiung City Government's policy of developing urban tourism while preserving the historic relics of Taiwan's petrochemical industry, 13 buildings, including the two founders' office in Kaohsiung Plant, the birthplace of FPG, have been registered as historic buildings by the Kaohsiung City Government. We, along with Nan Ya Plastics Corp., Formosa Chemicals & Fibre Corp., and Formosa Petrochemical Corp., have invested in a foundation to establish the Wang Yung-Ching and Wang Yung-Tsai Park at the 2.5-hectare site of the Kaohsiung Plant as a tourist attraction featuring historic relics, entertainment, and education, which can motivate the economic development of Kaohsiung City.

Looking forward to 2019, in the face of global climate change and environmental issues, we, as the leader in Taiwan's petrochemical industry, will strive to achieve a breakthrough based on the business philosophy of "Diligence, Perseverance, Frugality and Trustworthiness; Aiming at the Sovereign Good; Perpetual Business Operation; Dedication to the Society." In addition to improving operational performance, given the fact that artificial intelligence (AI) is the key to future growth and competitiveness, we will expand the AI applications in the production and sale optimization, distillation tower energy conservation, smart monitoring system maintenance, automated optical inspection (AOI), meter digitization, and defect identification to avoid occupational disasters, ensure the smooth production, improve yield, and reduce energy and material consumption and costs; in addition, we expect to enhance our long-term competitiveness by introducing quick reproduction across plants. Meanwhile, we will improve our R&D capacity for forward-looking products and recyclable and biodegradable plastics and promote circular economy and social responsibility initiatives in the hope of continuously creating value for our stakeholders and becoming a benchmark enterprise that is committed to environmental protection, social prosperity, and economic development on the basis of sustainable management.

Formosa Plastics Corporation  
Chairman

**Jason Lin**

2019

## 1.2 About FPC

102-16

103-2

103-3

### 1.2.1 Management Philosophy

As a member of the Formosa Plastics Group (FPG), Formosa Plastics Corporation (FPC) has undergone more than 60 years of development and has continuously expanded to maintain a global presence in Taiwan, China, the U.S., Vietnam and other countries. FPG's business involvement consists of such industries as petrochemical, plastics, fibers, energy, transportation and steel. The driving force behind the constant expansion, growth and development is the founders, Mr. Wang Yung-Ching and Mr. Wang Yung-Tsai, who have always emphasized and demonstrated the spirit of "Diligence, Perseverance, Frugality and Trustworthiness; Aiming at the Sovereign Good; Perpetual Business Operation; Dedication to the Society."

#### FPG Management Philosophy

##### Diligence, Perseverance, Frugality and Trustworthiness

Apply intelligence to maintain a simple work attitude and work in a practical and realistic way, and inquire into the root of the matter to achieve improvements and rational management.

##### Dedication to the Society

Based on the objective of "what is taken from the society is used interests of the society", FPG emphasizes the development of medical and education-related public welfare establishments, and utilizes corporate resources for the betterment and well-being of the society.

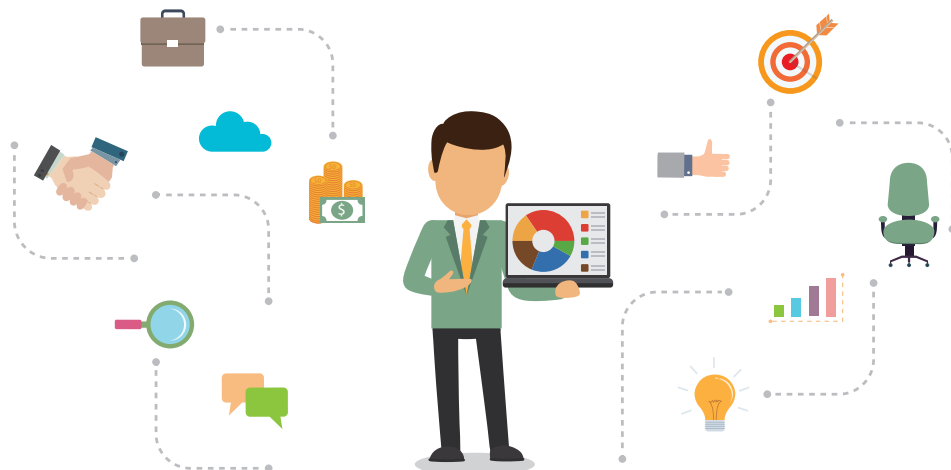


##### Aiming at the Sovereign Good

Due to rapid changes in the objective environment, the rationalization of business management must be constantly advanced in order to achieve breakthroughs, innovation and development through continuous improvement.

##### Perpetual Business Operation

Ensure that all operations are conducted in compliance with regulations and improve work quality and efficiency. Rational management can strengthen long-term profits and potential, as well as provide clients with affordable quality materials, which help achieve mutual benefits and strengthen cooperative relations.



## 1.2.2 Company History

102-1

102-3


102-4

102-5

102-6

102-7

Formosa Plastics Corporation (FPC)	
Date of Founding	November 5, 1954
Date of Listing	July 27, 1964
Business	Plastics, fiber, chemicals and co-generation
Location	Head Office: No. 100, Shuiguan Road, Renwu District, Kaohsiung City Taipei Office: 4th Floor, No. 201, Dunhua North Road, Songshan District, Taipei City
Global Location	Taiwan, Mainland China, U.S.A. and Vietnam
Amount of Capital	63,657,408 (NT\$ thousand)
Consolidated Revenue in 2018	230,370,027 (NT\$ thousand)
Number of Taiwan Employees in 2018	6,132



- 1954** The Company was founded as Fu Mao Plastics Industrial Corporation, with a capital amount of NT\$5 million, and built a PVC plant in Kaohsiung City.
- 1957** The plant began operation in April, and the Company's name was changed into Formosa Plastics Corporation in the same year.
- 1980** FPC invested to establish Formosa Plastics Corporation, U.S.A.
- 1986** FPC was granted approval to build the Sixth Naphtha Cracking Plant.
- 1993** The construction of the Sixth Naphtha Cracking Plant officially began on July 5.
- 2008** The Board of Directors approved to invest in Formosa Ha Tinh Steel Corp. (FHS) in Vietnam. The founder Mr. Wang Yung-Ching passed away.
- 2009** Three independent directors were elected.
- 2012** The Board of Directors approved to establish a joint venture named Formosa Mitsui Advanced Chemicals Co., Ltd. with Mitsui Chemicals, Inc.
- 2013** FPC, along with NPC, FCFC and FPCC, jointly established Formosa Resources Corporation.
- 2014** FPC's original location at No. 39, Zhongshan 3rd Road, Kaohsiung City was moved to No. 100, Shuiguan Road, Renwu District, Kaohsiung City. The founder Mr. Wang Yung-Tsai passed away.
- 2015** The Audit Committee was established to replace supervisors. FPC established a U.S. subsidiary named Formosa Industries Corporation, and began construction of a HDPE plant with an annual output of 400,000 metric tons in Texas, as well as invested in an ethane cracking plant with an annual output of 1.2 million metric tons. FPC, along with Swancor Industries Co., Ltd., jointly invested to establish Sunwell (Jiangsu) Carbon Fiber Composite Co., Ltd.
- 2017** The merger of FPC's five subsidiaries in Mainland China, including Formosa Industries (Ningbo) Co., Ltd., Formosa Acrylic Esters (Ningbo) Co., Ltd., Formosa Polyethylene (Ningbo) Co., Ltd., Formosa Polypropylene (Ningbo) Co., Ltd. and Formosa Super Absorbent Polymer (Ningbo) Co., Ltd., was completed, with Formosa Industries (Ningbo) Co., Ltd. as the surviving company which absorbed the other four companies.
- 2018** FPC entered into the letter of intent with the Kaohsiung City Government for the establishment of the Wang Yung-Ching and Wang Yung-Tsai Park.

Note: For more information, please visit "Memorabilia" on our official website. (<http://www.fpc.com.tw/fpcw/index.php?op=res&id=2>)

As of the end of 2018, FPC's capital amounted to NT\$63.6 billion, and the primary business included the production and sale of plastics, fibers and chemical products, where the current annual production capacity of PVC, VCM, liquid caustic soda and AE, including the production capacity of such products at foreign re-investment companies, made FPC rank among the top five manufacturers in the world. The production capacity of other products also ranked among the top in the world.

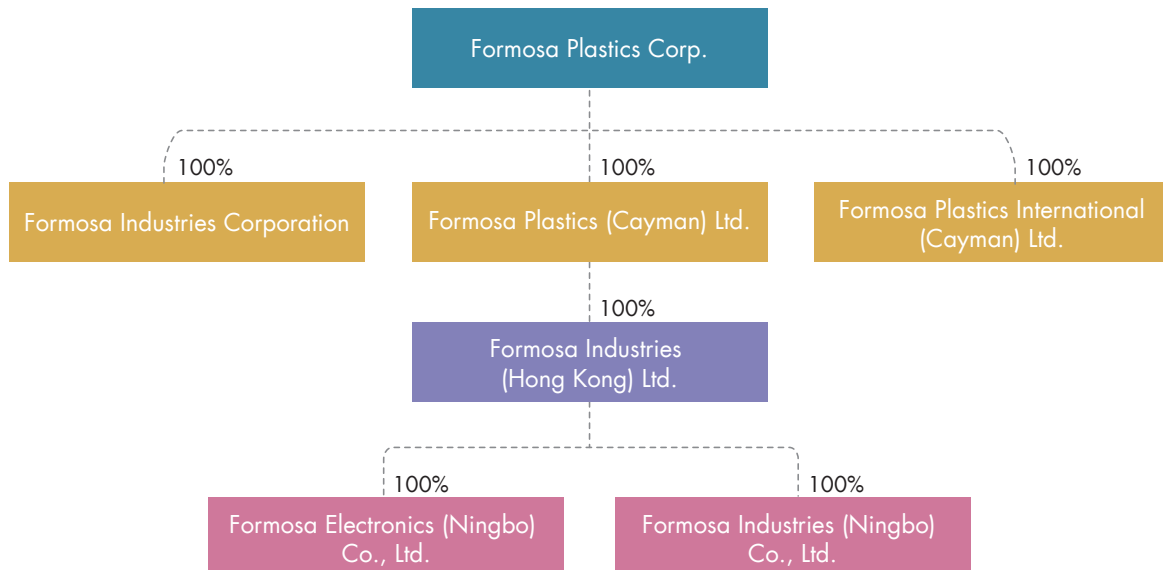
### 1.2.3 Corporate Identity System



The relationship among the companies under FPG is shown in the logo of FPG as a chain of different companies, which illustrates the horizontal and vertical contacts, mutual assistance, cooperation and ultimate harmony among the companies.

The chain is a representation of FPG's consistency and never-ending development capacity. Each icon representing each company borrows meanings from Chinese characters, among which the symbol representing the Company is a transformation of the Chinese character "台," which is kept relatively similar to FPC's logo. The meaning of the icon promotes the qualities of Chinese culture and establishes FPC's uniqueness in the global market. Using simple yet meaningful shapes, the icon strengthens the public image and confidence in FPG.

### 1.2.4 Organization Chart 102-45



# 1.3 Stakeholder Identification and Communication

102-40 102-42 102-43 102-44

Considering the experiences of the various departments and consulting the five major principles of the AA1000 Stakeholder Engagement Standard (SES) (Dependence, Accountability, Influence, Multiple Perspectives, and Degree of Concern), FPC has identified the seven main stakeholder groups, and established a variety of smooth communication channels with the stakeholders according to the nature of each department to learn more about their issues of concern, and obtain their feedback (as shown in the table below). In addition to providing the basis for the preparation of this Report, such feedback will also serve as an important reference for FPC when determining strategies and objectives in the future.



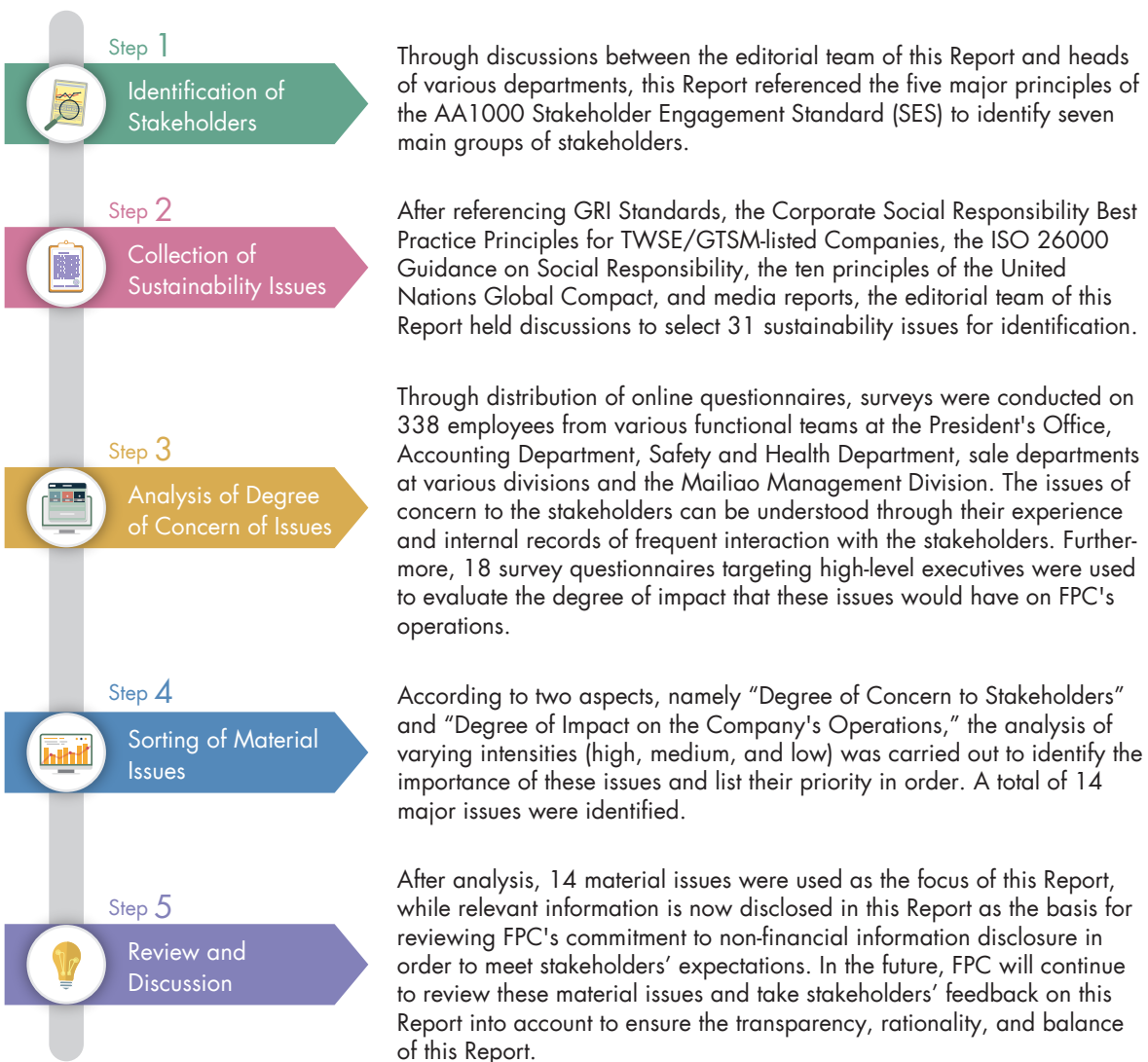
Stakeholder	Importance to FPC	Responsible Department	Communication Channel and Response Method and Frequency	Focus of Communication in 2018
Residents in the Operation Area	Maintaining good interaction with residents in the operation area has always been the focus of FPC's efforts.	1. President's Office at each complex 2. Complex Management Division	1. Neighborhood relations team (at least 1,800 times/year) 2. Village meetings (at least 100 times/year) 3. Town hall meetings (from time to time) 4. E-mails/telephone (anytime)	1. Living environment 2. Air quality 3. Social contribution 4. Community prosperity
Government Agencies	FPC complies with the law and cooperates with the government to promote industrial development.	President's Office	1. Meetings (irregular) 2. E-mails/official documents (irregular)	1. Addition and revision to regulations 2. Formulation, adjustment, and implementation of policies 3. Clarification of discrepancies in 4.9 Environmental Impact Assessment of the Sixth Naphtha Cracking Project
Experts, Scholars, and Environmental Protection Organizations	FPC listens to the voices of experts, scholars, and environment protection organizations in order to spur itself on and work harder in the hope of combining practice and theory to make further progress.	1. President's Office 2. Safety and Health Department	1. Meetings (at least 20 times/year) 2. E-mails/telephone (anytime)	1. Environmental issues 2. Addition and revision to regulations 3. Clarification of discrepancies in 4.9 Environmental Impact Assessment of the Sixth Naphtha Cracking Project

Stakeholder	Importance to FPC	Responsible Department	Communication Channel and Response Method and Frequency	Focus of Communication in 2018
Shareholders and Investors	Thanks to shareholders and investors for their long-term support, FPC will continue to reward the shareholders and investors with continuously stable management results and transparent and honest corporate governance.	President's Office	<ol style="list-style-type: none"> <li>1. Shareholders' meetings (once a year)</li> <li>2. Performance review meetings (once a month)</li> <li>3. Investor conferences (about 50 times/year)</li> <li>4. E-mails/telephone (anytime)</li> </ol>	<ol style="list-style-type: none"> <li>1. Corporate Governance</li> <li>2. Business Performance</li> <li>3. Future Outlook</li> </ol>
Customers	Product quality and customer service must not only meet customer requirements but also exceed customer expectations in the hope of achieving higher customer satisfaction.	Sale departments at each division	<ol style="list-style-type: none"> <li>1. Exhibitions/Product presentations (at least 3 times/year)</li> <li>2. Satisfaction surveys (once a year)</li> <li>3. Providing market information and technical services (anytime)</li> <li>4. Meetings (anytime)</li> <li>5. E-mails/telephone (anytime)</li> </ol>	Products and services
Suppliers and Contractors	FPC requires suppliers and contractors to provide high-quality products and services to create a win-win situation.	President's Office	<ol style="list-style-type: none"> <li>1. Contractor conferences (irregular, at least 3 times/year)</li> <li>2. The Electronic Client Service Center (anytime)</li> <li>3. Meetings (at least 100 times/year)</li> <li>4. E-mails/telephone (anytime)</li> </ol>	<ol style="list-style-type: none"> <li>1. Case contact in procurement/contracting</li> <li>2. Occupational health and safety</li> </ol>
Employees	Employees are FPC's most important asset. Through comprehensive training and career planning, FPC unites the employees and works alongside them to create a sustainable business.	<ol style="list-style-type: none"> <li>1. President's Office</li> <li>2. President's Office at each complex</li> <li>3. Complex Management Division</li> </ol>	<ol style="list-style-type: none"> <li>1. Departmental meetings (daily morning meeting)</li> <li>2. Labor-employee meetings (once every two months)</li> <li>3. The Welfare Committee (once a month)</li> <li>4. Physical/online suggestion mailboxes (anytime)</li> <li>5. "799" Staff Feedback Hotline (anytime)</li> <li>6. FPG bimonthly magazines (once every two months)</li> <li>7. Employee satisfaction surveys (irregular, at least 4 times/year)</li> <li>8. Employee counselors (anytime)</li> <li>9. Face-to-face meetings between high-level executives and union representatives and employees (irregular, at least 6 times/year)</li> </ol>	<ol style="list-style-type: none"> <li>1. Labor/management relations</li> <li>2. Salary and benefits</li> <li>3. Occupational health and safety</li> <li>4. Educational Training</li> </ol>

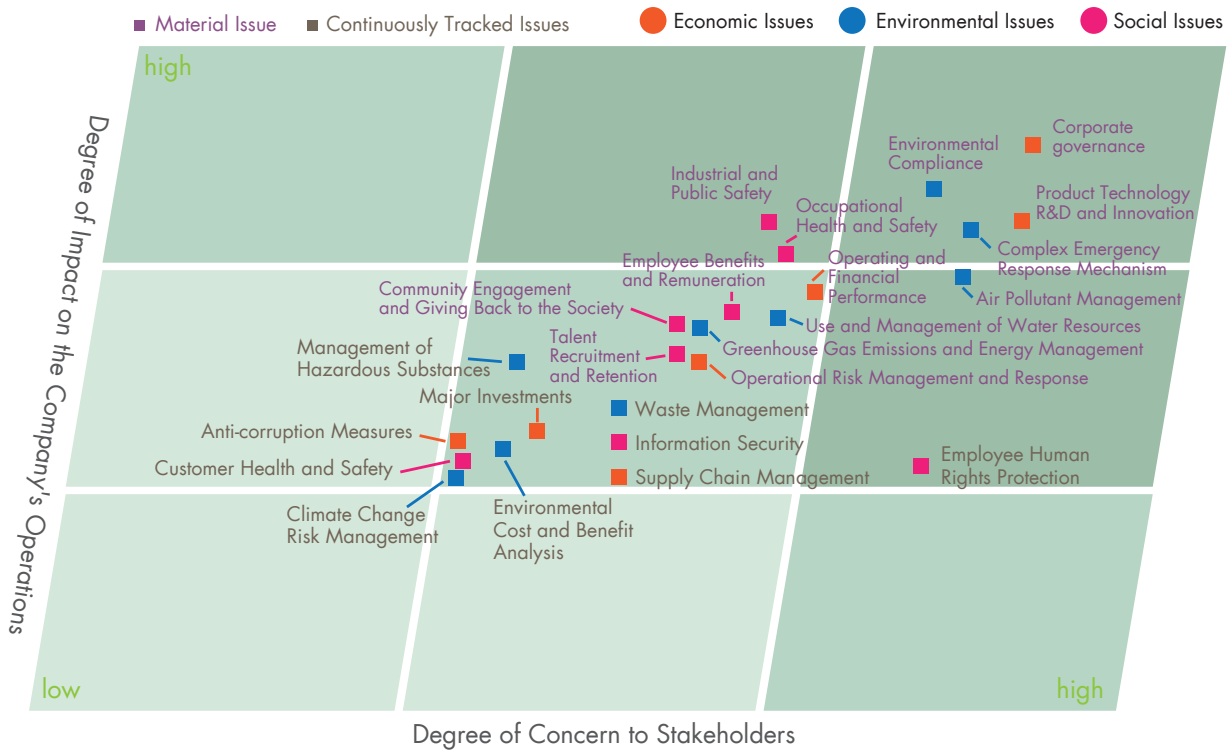
## 1.4 Identification of Material Issues

By analyzing material issues, FPC can understand the issues of concern to the stakeholders and evaluate the impact of these issues as a reference for the preparation of this Report. Hopefully, by openly disclosing information and communicating with stakeholders, FPC can convey its efforts at corporate management, environmental protection and social charity.

### 1.4.1 Analysis Process for Material Issues



## 1.4.2 Materiality Matrix 102-49



To more accurately focus on the issues of concern to stakeholders, the Social Responsibility Promotion Team reviewed the materiality analysis process this year by referencing global trends and clarifying the significance of issues, and added new issues based on industry trends at home and abroad. Adjustments to issues this year are described below:

Aspect	Material Issue	Adjustment Method	Adjustment Description
Economic	Product Technology R&D and Innovation	Listed as a material issue	In the 2018 materiality analysis, this issue was listed as a material issue.
	Operational Risk Management and Response		
Environmental	Complex Emergency Response Mechanism	Newly added	According to Article 4 of the Taiwan Stock Exchange Corporation Rules Governing the Preparation and Filing of Corporate Social Responsibility Reports by TWSE Listed Companies, the chemical industry shall disclose their emergency response mechanisms; therefore, this issue was added this year.
	Greenhouse Gas Emissions and Carbon Issues	Issue title revised	In consideration of the related response of Greenhouse Gas Emissions and Carbon Issues and Energy Consumption and Management, Greenhouse Gas Emissions and Carbon Issues and Energy Consumption and Management were merged into Greenhouse Gas Emissions and Energy Management.
	Use and Management of Energy Resources		
	Waste Management	Listed as a continuously tracked issue	In the 2018 materiality analysis, this issue was listed as a continuously tracked issue.
Climate Change Risk Management			
Social	Information Security	Newly added	This issue was added in consideration of industry and global trends.

Note: In the 2018 materiality analysis, Local Procurement, Gender Equality, Use of Raw Materials, Employee Rights and Protection, Supplier Environmental Impact Assessment, Social and Economic Regulatory Compliance, Career Development and Training, and Biodiversity and Ecological Protection were excluded from the material issues and continuously tracked issues.

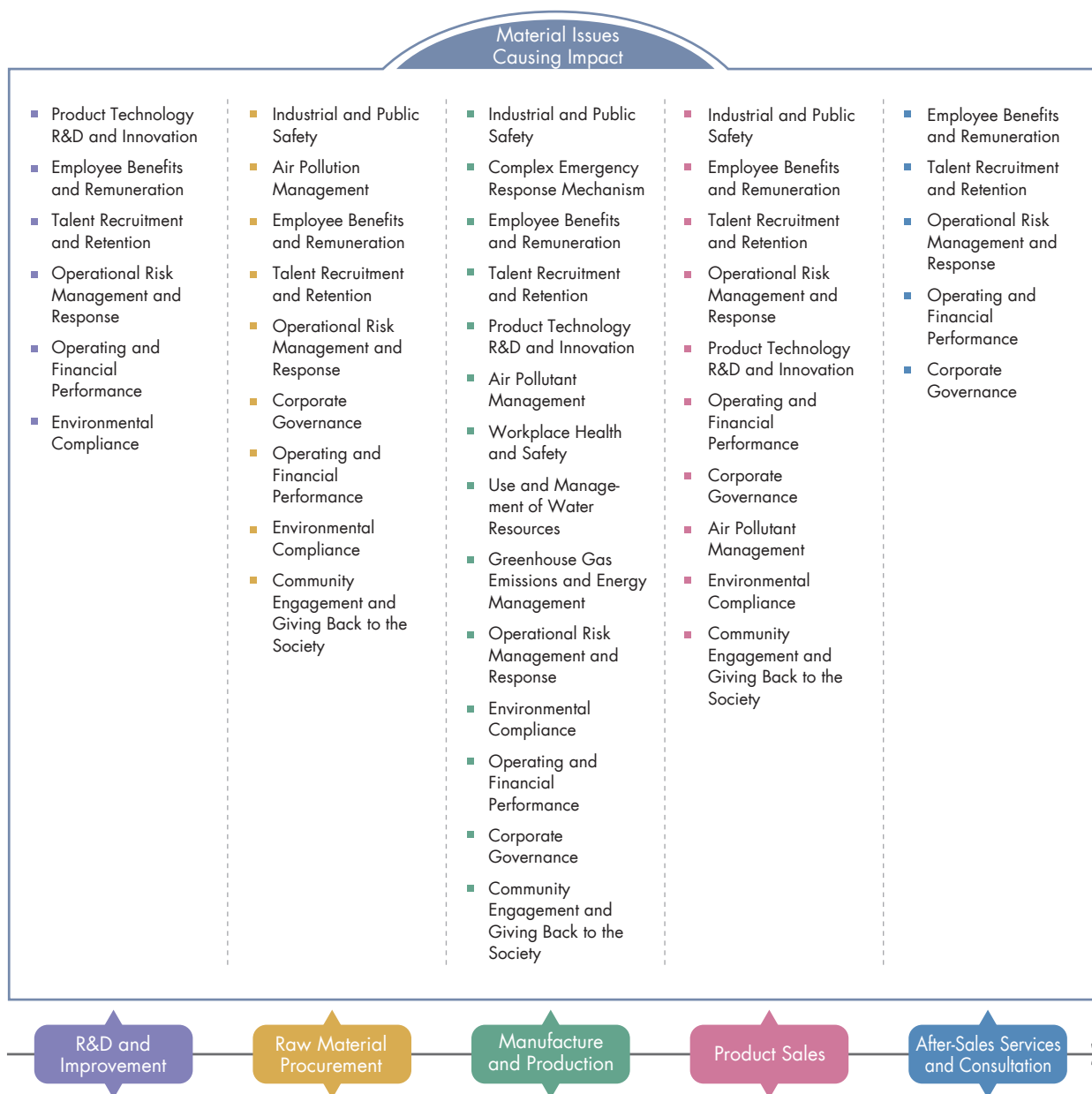
## 1.4.3 Identification of Material Issues and Setting of Boundaries 103-1

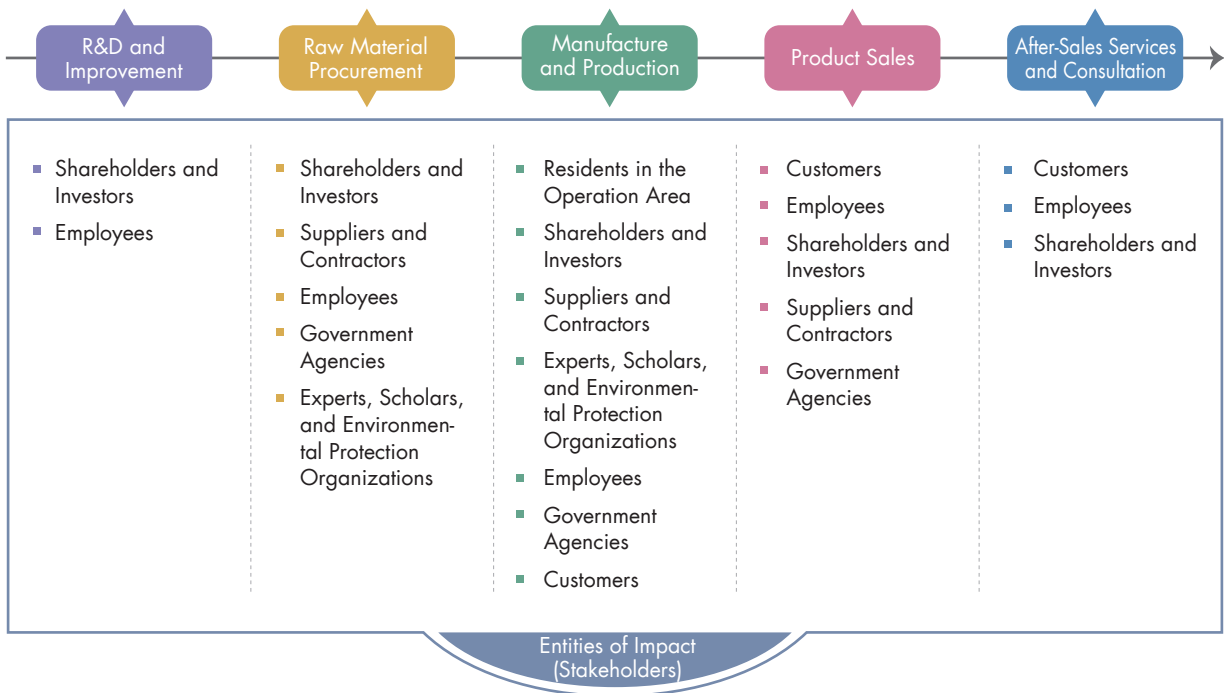
Identification of Material Issues and Setting of Boundaries

Category	Material Issue	Topic in GRI Standards	Corresponding Chapter
Economic	Corporate Governance	102: Governance	2.2 Corporate Governance
	Operating and Financial Performance	201: Economic Performance 203: Indirect Economic Impacts	2.1 Operation Overview
	Product Technology R&D and Innovation	Industry Issues	2.3 Innovative Sustainable Products
	Operational Risk Management and Response	Industry Issues	2.2 Corporate Governance
Environmental	Air Pollutant Management	305: Emissions	3.4 Air Pollutant Management
	Use and Management of Water Resources	303: Water 306: Effluents and Waste	3.2 Use and Management of Water Resources
	Environmental Compliance	307: Environmental Compliance	3.6 Environmental Compliance
	Greenhouse Gas Emissions and Energy Management	302: Energy 305: Emissions	3.3 Greenhouse Gas and Energy Consumption Management
	Complex Emergency Response Mechanism	Industry Issues	5.1.2 Complex Emergency Response Mechanism
Social	Employee Benefits and Remuneration	401: Employment 402: Labor/Management Relations	4.2 Employee Welfare and Care
	Talent Recruitment and Retention	401: Employment 404: Training and Education	4.3 Talent Cultivation and Retention
	Occupational Health and Safety	403: Occupational Health and Safety	5.1 Occupational Health and Safety
	Community Engagement and Giving Back to the Society	413: Local Communities	6.1 Local Community Engagement 6.2 Development and Donations to Local Communities 6.3 Community Engagement in the Operation Area 6.4 Response to Local Community Issues
	Industrial and Public Safety	Industry Issues	5.2 Industrial Safety Management in Supply Chain

	FPC's Internal Boundary	FPC's External Boundary					Experts, Scholars, and Environmental Protection Organizations
		Customers	Residents in the Operation Area	Government Agencies	Suppliers and Contractors	Shareholders and Investors	

## 1.4.4 Identification of Material Issues and Value Chain







# 2



## The Builder of a Prosperous Economy

2.1 Operation Overview	34
2.2 Corporate Governance	37
2.3 Innovative Sustainable Products	50
2.4 Customer Service	63
2.5 Response to Significant Economic Issues	66

## 2.1 Operation Overview



### 2.1.1 Operating and Financial Performance

102-7

103-2

103-3

201-1

#### Material Issue

Operating and financial performance



#### Management Policies

■ **Goals and targets:**

Outstanding and sound financial performance

■ **Commitment:**

The sustainable development is rooted in good financial performance. Only by having a good foundation of management can we achieve the goal of sustainable development, including the pursuit of growth in operating income and profitability, and steadily create a higher economic value for all stakeholders.

■ **Policy:**

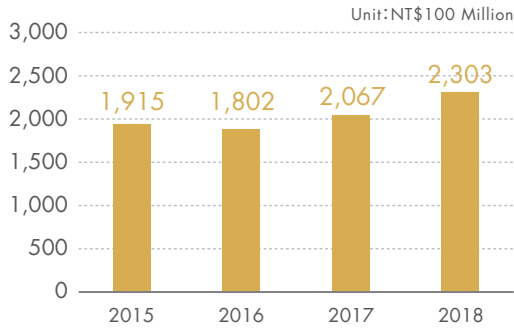
1. We expect to maintain healthy financial performance by reducing the debt ratio and increasing the current ratio and interest coverage ratio.
2. In the most recent four years, we maintained the debt ratio of less than 35%, current ratio of more than 200%, and interest coverage ratio of more than 15 times. We will continuously overcome various business dilemmas and create a new growth momentum.
3. We aim to maintain the long-term credit rating conducted by Taiwan Ratings at "twAA."

■ **Unit in charge:**

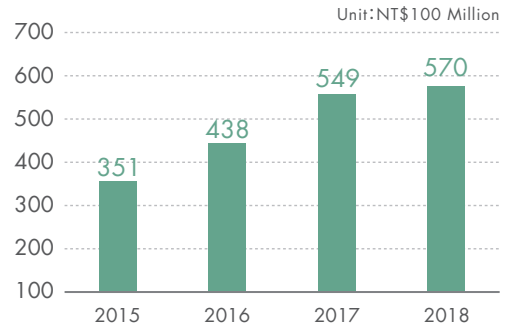
President's Office

According to FPC's consolidated financial statements for the year ended December 31, 2018, the revenue reached NT\$230.3 billion, while the profit before tax was NT\$57 billion. In 2018, FPC was ranked 801st in the World's Largest Public Companies List published by Forbes, moving up 50 spots compared to 2017. This improvement indicates that FPC's performance is on a par with international corporations. The operating revenue, profit before tax, earnings per share and return on equity as recorded in the consolidated financial statements are as follows:

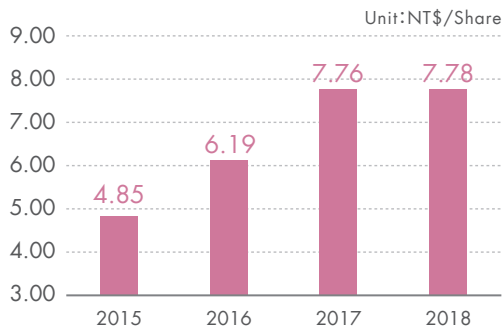
Operating Revenue from 2015 to 2018



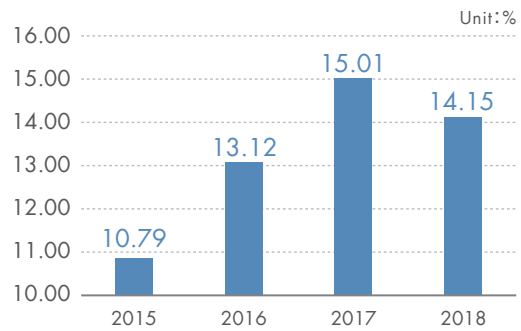
Profit Before Tax from 2015 to 2018



Earnings per Share from 2015 to 2018



Return on Equity from 2015 to 2018



### Contribution to National Finances

- In 2018, FPC paid a total of NT\$6.04 billion in taxes (excluding business tax).
- In 2018, FPC paid a total of NT\$5.499 billion for business income tax.



### Employment Opportunities

- In 2018, FPC recruited a total of 158 new employees.



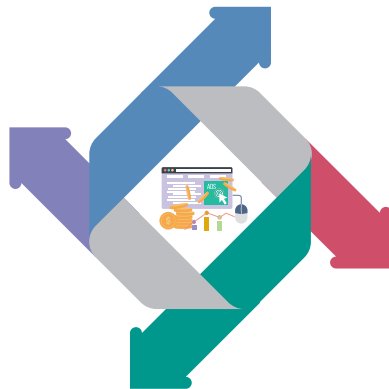
### Contribution to Output Value

- In 2018, FPC's output value was NT\$212.5 billion, accounting for 5.36% of the total output value of the entire petrochemical industry in Taiwan, which was NT\$3.964 trillion.
- FPC promoted the development of the ecological chain of the plastics industry.



### Employee Benefits

- In 2018, FPC offered an increase in salary of 4.0%.



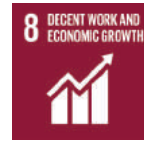
## 2.1.2 Participation in External Associations 102-13

To help improve the overall management of industries in Taiwan, FPC actively participates in various industry associations, and serves as directors, supervisors and representatives of such associations. In particular, Chairman Jason Lin serves as the chairman of Taiwan Synthetic Resins Manufacturers Association. The list of industry associations in which FPC participates is as follows:

Industry Category	Name of Association
Petrochemical and Plastics Industries	<ul style="list-style-type: none"> <li>■ Petrochemical Industry Association of Taiwan</li> <li>■ Taiwan Synthetic Resins Manufacturers Association</li> <li>■ Taiwan Acid and Alkali Industries Association</li> <li>■ Plastic and Petrochemical Industries Association</li> <li>■ Taiwan Institute of Chemical Engineers</li> <li>■ Taiwan Synthetic Resins Manufacturers Association</li> </ul>
Fiber Industry	Taiwan Man-made Fiber Manufacturing Industries Association
Others	<ul style="list-style-type: none"> <li>■ Association of Atmosphere Protection in Taiwan</li> <li>■ Corrosion Engineering Association of the Republic of China</li> <li>■ Taiwan Marble Association</li> <li>■ Chinese Institute of Engineers</li> <li>■ Taiwan-Iran Business Association</li> <li>■ Taiwan-India Business Association</li> <li>■ Taiwan-Turkey Business Association</li> <li>■ Chinese National Federation of Industries</li> <li>■ Taiwan Electrical and Electronic Manufacturer's Association</li> <li>■ Taiwan Battery Association</li> </ul>

In addition to exchanging business experiences with peers through such associations, FPC also jointly organizes various seminars and international conferences to share the latest market developments, changes in supply and demand, and technological information with the industry. At the same time, FPC participates in various international trade negotiations and consultations, in the hope of making contributions to the industry and regularly providing suggestions for the government on international production and business management issues.

## 2.2 Corporate Governance



102-7

102-11

102-18

103-2

103-3

### Material Issue

Corporate governance



### Management Policies

#### ■ Goals and targets:

1. Pursuing excellence in sustainable development
2. Becoming a model for the global petrochemical industry

#### ■ Commitment:

1. Achieving transparent ethical corporate management
2. Complying with laws and regulations strictly
3. Protecting shareholders' legitimate interests
4. Maintaining stakeholders' interests

#### ■ Policy:

1. Improving the corporate governance framework, implementing sustainable governance, and ensuring the transparent disclosure of business information for the long-term interests of shareholders
2. Upholding ethical corporate management and compliance, keeping abreast of laws and regulations relating to corporate sustainability, and communicating with the government about the sustainable development of the petrochemical industry in Taiwan.
3. Adopting thorough internal control and seeking for approaches to value creation and risk mitigation for better business performance
4. Strengthening communication with stakeholders and striving to meet their expectations for corporate sustainability
5. We will appoint a corporate governance officer in 2019 to be in charge of corporate governance affairs. According to the regulations, the corporate governance officer is required to complete 18 hours of training within one year after assuming office. The corporate governance officer is responsible to supervise the operation of corporate governance affairs conducted by the President's Office, and the Legal Affairs Office under the Group Administration Office shall provide related assistance in handling corporate governance affairs, including handling matters relating to the Board meetings and shareholders' meetings according to laws, producing minutes of the Board meetings and shareholders' meetings, assisting in on-boarding and continuous development of directors, furnishing information required for business execution by directors, assisting directors with legal compliance, and handling business registration and registration change.

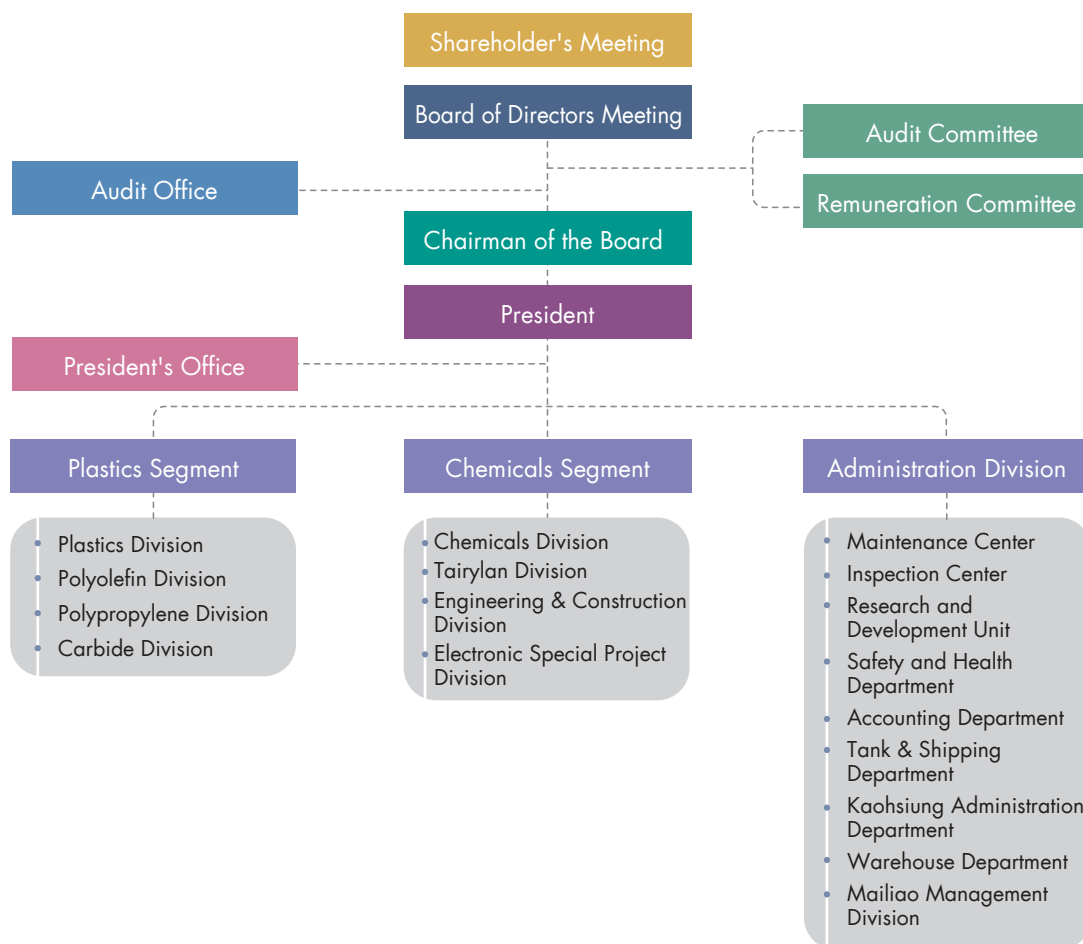
#### ■ Unit in charge:

1. Board of Directors
2. President's Office

## 2.2.1 Corporate Governance Overview

102-22 102-23 102-24 102-25 102-36 405-1

### (1) Governance Structure



### (2) Operations of the Board of Directors

The primary responsibilities of the Board of Directors are to ensure the transparency of corporate information and compliance with the relevant laws and regulations, appoint high-level managerial officers to oversee daily operations, and formulate earning distribution plans.

Since directors are elected via nomination, a list of nominees is first reviewed to ensure that the candidates are qualified before submitting the list to the shareholders' meeting to elect suitable candidates as directors. The term of office for each director is three years, and the most recent re-election was held in June 2018. In principle, the Board of Directors holds a Board of Directors meeting at least once every quarter. At present, the Board of Directors consists of 15 directors who possess professional expertise and broad industrial experience. With their extensive professional and business management skills, these directors will be able to provide the most appropriate strategic guidance for the future development of FPC.



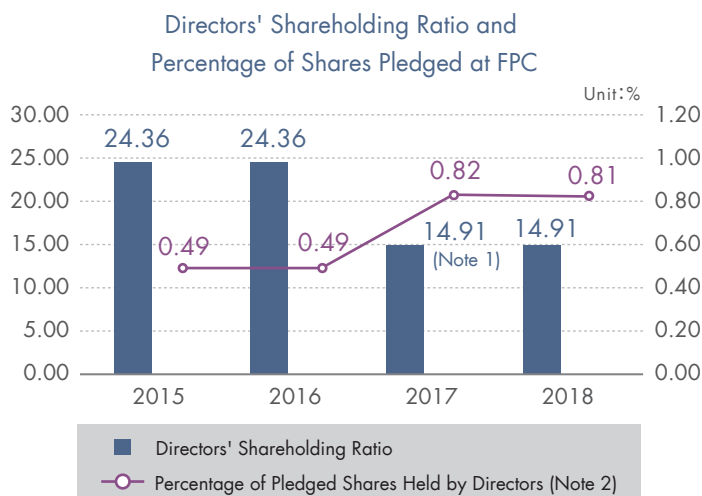
At present, there are 3 independent directors and 2 female directors in the Board of Directors. To maintain the diversity of FPC's Board of Directors and enhance corporate governance, arrangements are made for directors to attend training courses. For more details about the Board members' education background and participation in training courses, please visit the official website (<http://www.fpc.com.tw/fpcw/index.php?op=res&id=3>) and refer to the Annual General Meeting Reports (to obtain further details in the Implementation of Corporate Governance).

#### A Board of Directors Sharing Common Interests with Shareholders

To prevent conflicts of interests between the directors and FPC, the directors will need to notify the shareholders and obtain their consent in accordance with company regulations if they want to lift competition restrictions. Clauses concerning director recusal to avoid conflict of interests have also been stipulated in the Guidelines on Procedure for Board of Directors' Meetings and the Corporate Governance Best Practice Principles. For more details on the recusal agenda, refer to the 2018 Annual General Meeting Report (see the operations of Board of Directors).

#### Directors' Shareholding Ratio and Percentage of Shares Pledged

In 2018, the directors' shareholding ratio was 14.91%, which was significantly higher than the minimum shareholding ratio of 1.6% required by the Financial Supervisory Commission. On the other hand, the percentage of shares pledged was 0.81% only, which indicates that the interests of the directors are very much aligned with those of the shareholders'. This shows that FPC is a good-quality company worthy of shareholders' trust.



Note 1: In 2017, directors' shareholding ratio suffered a decline as a written notice was received from Chang Gung Medical Foundation on December 8, 2017 stating that the Foundation would resign as a juristic person director in the Board of Directors beginning December 11, 2017. FPC announced this major news on the same day of receiving the written notice.

Note 2: Directors' shareholding ratio refers to the ratio of shares held by directors to the number of shares outstanding, whereas the percentage of shares pledged is the percentage of pledged shares held by directors.

### (3) Remuneration Committee

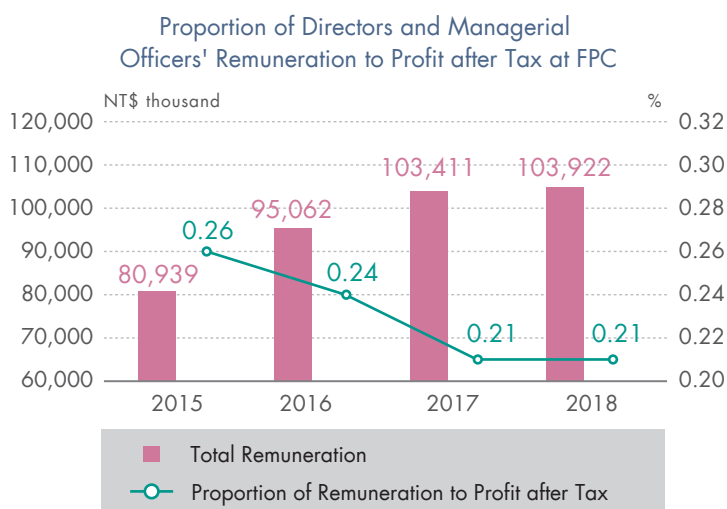
To implement corporate governance and ensure a sound remuneration system for directors and managerial officers, FPC established the Remuneration Committee in August 2011. The Committee is comprised of three independent directors and holds at least two meetings every year. In 2018, a total of two meetings were held with an attendance rate of 100%. During these meetings, remuneration policies and systems for directors and managerial officers were evaluated, and recommendations were submitted to the Board of Directors for deliberation, so as to prevent directors and managerial officers from engaging in conduct that exceeds the risk appetite of FPC due to remuneration policies.



After being submitted to the Remuneration Committee, the remuneration for directors and managerial officers is discussed and approved by the Board of Directors. The remuneration package for independent directors comprises a monthly salary, transportation allowances for attending the Board meetings, and others that are determined, in accordance with the Articles of Incorporation, by the Board of Directors based on the independent directors' participation in and contribution to the business operations and the standards of the same industry.

The annual remuneration package for managerial officers comprises a monthly salary, a full attendance bonus, an annual bonus, executive incentives, monthly contributions to pension funds under the FPC's Pension Regulations (including old and new systems), and benefits. In special circumstances, remuneration, such as pension, severance pay, and relief pay, and transportation allowances for attending the Board meetings shall be paid to managerial officers. During performance appraisal, the Chairman assesses and evaluates managers' overall performance within their scope of duties and the achievement of "annual goals"

for individual managers to ensure that executive-level managers understand and jointly achieve the Company's strategic goals, and link the incentive system to individual managerial performance and the overall performance of the Company.



### (4) Independent Audit Committee

To strengthen the supervisory function of the Board of Directors, FPC established the Audit Committee in June 2015. The Committee is composed of three independent directors and holds at least two meetings every year. In 2018, a total of 5 meetings were held with an attendance rate of 100%. The main purpose of establishing this committee is to supervise the fair expression of financial statements, the appointment (dismissal), competence, independence and performance of CPAs, the effective implementation of internal control, compliance with the relevant laws and regulations, and the control of existing or potential risks to FPC.

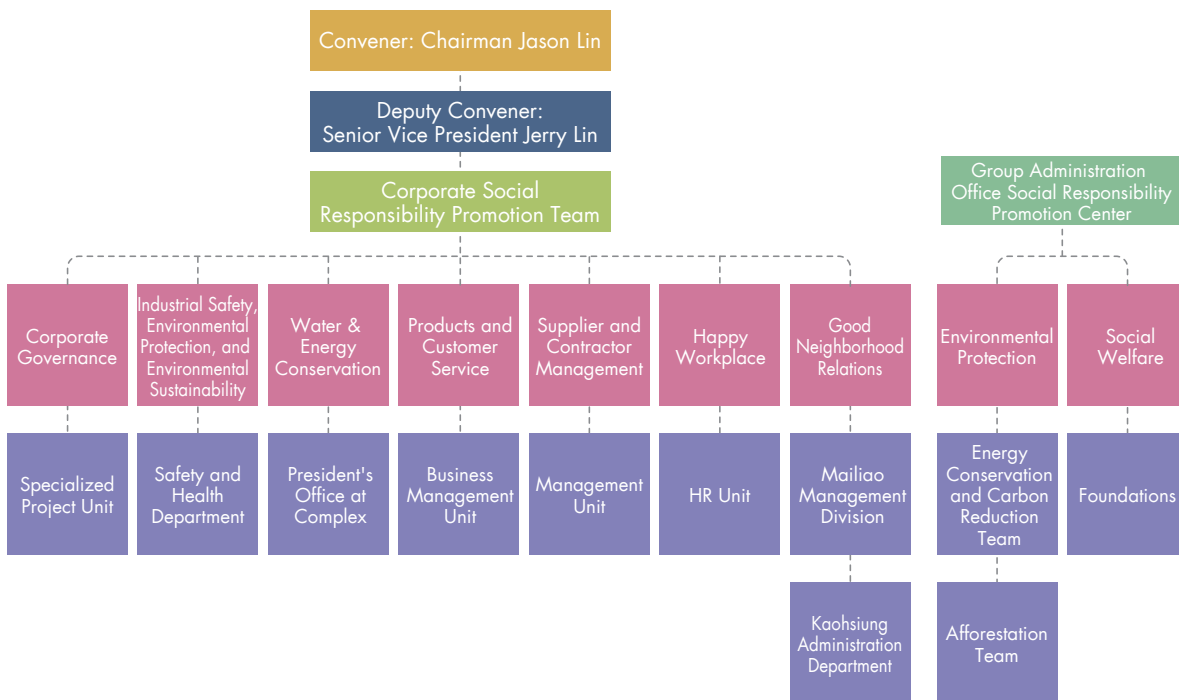


### 2.2.2 Decision-making Departments Responsible for Economic, Environmental and Social Themes 102-22

FPC has appointed Chairman Jason Lin and Senior Vice President Jerry Lin to serve as the convener and deputy convener, respectively, for the promotion of social responsibility operations. They are responsible for developing social responsibility strategies, supervising the performance of these strategies at FPC, and conducting social responsibility work in cooperation with the Social Responsibility Promotion Center.

The order of the themes and issues of this Report were decided in a meeting at the beginning of 2018 by the President Office, Safety and Health Department, Accounting Department, Mailiao Management Division, Kaohsiung Administration Department, and members of the Social Responsibility Promotion Center. The content of this Report was first compiled and submitted to the convener and the deputy convener before being reported to the Board of Directors at least once every year in order to ensure that the issues disclosed in this Report are in line with the needs of stakeholders.

Organizational Structure for Corporate Social Responsibility of FPC



## 2.2.3 Investor Relations

### (1) Shareholder Services

As a bridge between shareholders and the company, the Shareholder Services Department continuously strives to improve the standard of services provided, such as developing a seal verification system and strengthening warehouse security systems. Furthermore, FPC's stocks are now fully computerized to further enhance stock affairs-related operations.

FPC also maintains an "IR section" on the official website to not only answer inquiries from investors and shareholders and disclose sustainable development strategies, but also provide timely disclosures of statistics and data, including information on corporate governance and risk control on the Market Observation Post System (MOPS).

### (2) Relations with Institutional Investors

To maintain good relations with institutional investors, FPC has appointed a spokesperson to serve as a liaison with investing institutions. Since February 2011, we have been conducting monthly performance report seminars to develop a face-to-face communication channel with professional media institutions. Furthermore, we occasionally participate in investor forums organized by domestic or international organizations to provide the latest information on the Company's operations. In 2018, we organized approximately 53 presentation sessions.

## 2.2.4 Internal Control Mechanism 102-15 102-16 205-2

The function of internal control in FPC is to implement internal control mechanisms at each level, and increase operational efficiency and minimize risks through a comprehensive internal control mechanism. Complemented with the implementation of audit management, this mechanism will be able to safeguard shareholders' interests. The internal control mechanism is described as follows:

### (1) Computerization of Six Major Management Functions



## (2) One-day Analysis Demonstrates Efficient Management

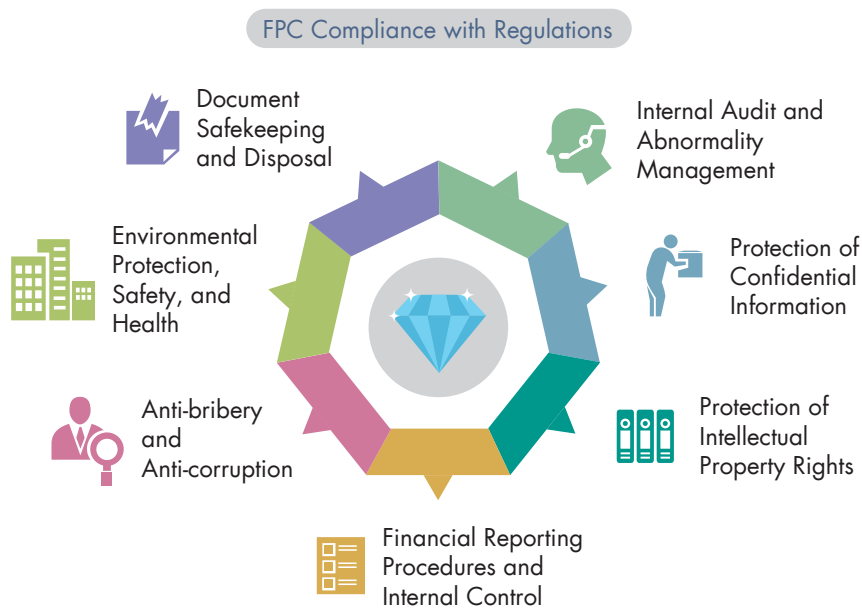
The computerized management system is not only a management tool but also a vital reference for continuous management improvement. FPC achieved the One-day Settlement goal in May 2001. Since then, the management team has been able to efficiently analyze management profits and losses in the morning on the 1st day of each month and use this analysis in the decision-making process. The rapid acquisition of management information upholds the spirit of "rationalization" of the two Founders and sets aiming at the sovereign good as the ultimate goal.

## (3) Professional and Independent Internal Auditing System

FPC has established the Audit Office, which is attached to the Board of Directors, and appointed full-time internal auditors. In 2018, there were a total of 16 internal auditors in FPC, who are required to take audit courses organized by professional training facilities every year. In 2018, the total number of training hours recorded by these auditors was 246 hours. Besides, the internal auditors also carry out independent auditing and supervision of subsidiaries to ensure their management efficiency. The scope of internal audit includes:

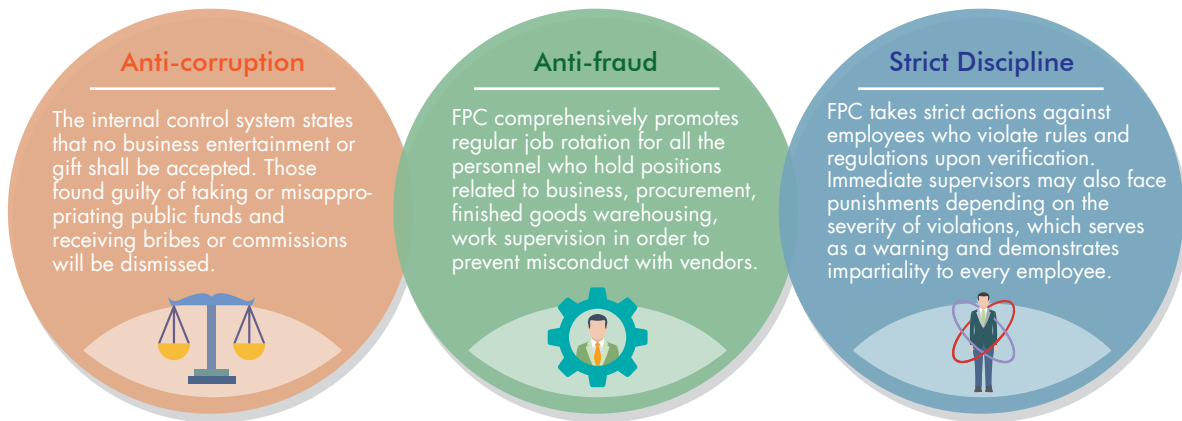
- ✦ Review the reliability and integrity of financial and operational information
- ✦ Review existing systems to ensure compliance with policies, plans, procedures, contracts and regulations
- ✦ Review methods for asset protection
- ✦ Assess the efficiency and effectiveness of resource use
- ✦ Review operational plans or special projects to ensure that their outcomes are consistent with established goals

Internal audit of FPC is not just the responsibility of each independent audit department. Every department should conduct voluntary inspections of specific audit items within a specified period. On the other hand, independent audit departments conduct regular and occasional inspections based on the results of voluntary inspection to ensure that every department implements self-inspections. For more details about the internal audit procedures or other related details, please visit FPC's official website (<http://www.fpc.com.tw/fpcw/index.php?op=res&id=11&c=57#>).



#### (4) Ethical Corporate Management and Anti-corruption

FPC has implemented a stringent code of ethics and expected all employees to comply with code of conduct and ethical standards in a responsible manner, not only in their work, but also in their daily lives, so as to prevent trade secret leaks, misconduct, malpractice or misappropriation of funds, as well as behavior which violates gender equality at work, thereby shaping the corporate culture of “diligence, perseverance, frugality and trustworthiness”. The measures are as follows:



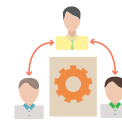
#### Complaint Channels

- Filling out Complaint Forms
- Employee Complaint Guidelines
- Regulations Governing Reporting of Illegal and Unethical Behavior among Internal and External Personnel



#### Self-discipline Documents

- Signing Self-discipline Pledge
- Compliance with the Trade Secrets Act
- Personal Manual of Work Rules
- Principles of Ethical Corporate Management
- Principles of Corporate Governance
- Rules of Personnel Management
- Self-discipline Convention
- Code of Conduct for Directors and Managerial Officers
- Regulations Governing Prevention of Insider Trading



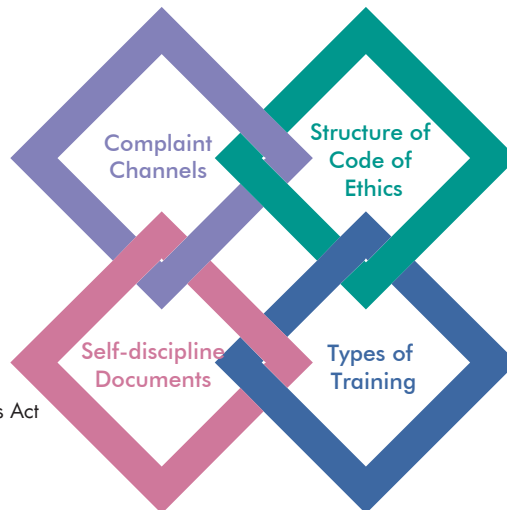
#### Structure of Code of Ethics

- Anti-corruption
- Compliance with Labor Regulations
- Environmental Protection
- Protection of Intellectual Property Rights
- Protection of Personal Information and Privacy
- Gender Equality



#### Types of Training

- New Staff Orientation
- On-the-job Training
- Basic Training
- Professional Training
- Professional Retraining
- Managerial Training
- Top Management Training
- Face-to-face Courses
- Online Courses



### A. Establishment of Systems and Standards

Under the ethics framework, FPC has established systems or standards for different regulatory areas, thereby facilitating the implementation of the ethical standards and the idea of legal compliance. For any violation of code of ethics, FPC adopts the spirit of impartiality, implementing severe disciplinary measures against violators, such as termination of employment or business relations, and taking appropriate legal actions against them.

### B. Signing of Self-discipline Pledge

FPC has also established the Code of Conduct for Directors and Managerial Officers. On the first day of employment, each employee is required to sign a "Pledge," stating that he/she will abide by the Trade Secrets Act, and will also be given a manual of Work Rules. Furthermore, employees can refer to the Principles of Ethical Corporate Management, Principles of Corporate Governance and Rules for Personnel Management, which specify FPC's ethical corporate management policies and unethical conduct, at all times.

Employees who assume positions in areas involving dealings with outside vendors, such as procurement and contracting, must sign the Self-discipline Convention and undergo job rotation regularly, so as to prevent collusive bidding (offers), bribery and fraud.

### C. Education and Training

FPC has long been incorporating various business-related regulations and the concept of rule of law into various types of training courses, including new staff orientation, professional training and managerial training, so that colleagues from the grassroots level to the top management level can integrate the required concept of laws and regulations in various business areas.

In view of the fact that contracting and procurement operations at FPC are performed by the Contracting Center and Procurement Division under the Group Administration Office, FPC also plans online courses on anti-corruption laws for the colleagues at the Procurement Division and the Contracting Center, with the purpose of establishing correct work ethics and nurturing their abilities to identify abnormalities and risks through the promotion of government decrees, such as anti-corruption and confidential information protection, which is combined with real case description.

### D. Complaint Channels

Through an institutionalized "Employee Complaint Guidelines," FPC provides employees with a channel to make internal complaints about illegal conduct. In the event that an employee discovers illegal or inappropriate conduct within the Company that may infringe on the interests of an individual or the Company, or an employee abusing his/her position to obtain improper benefits, the employee can fill out a "Complaint Form" and submit it to the head of the department in which the respondent serves. While handling complaints, the Company and the responsible investigators should carry out investigations and prepare reports in a fair and just manner, and maintain confidentiality throughout the entire investigation process, otherwise they will face punishments.

## 2.2.5 Operational Risk Management and Response

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### Material Issue

Operational risk management and response



### Management Policies

#### ■ Goals and targets:

In the face of risks and challenges, FPC not only follows the laws and regulations, but also controls the uncertainties, such as the global economic situation and industrial development, so as to formulate development strategies and adjust the business model in advance for stable business performance.

#### ■ Commitment:

We pay close attention to global industry trends and timely adjust the short-term, medium-term, and long-term development objectives and business strategies of each product to reduce all potential risks.

#### ■ Policy:

1. In response to operational risks, FPC holds management meetings on a regular basis or from time to time to discuss response measures and adjust the business strategies as advance or timely precautions.
2. FPC has maintained the steady operations and sound finances, and has not engaged in any highly-leveraged investments.

#### ■ Unit in charge:

1. Board of Directors
2. President's Office

Risk Item	Risk Management Unit	Risk Review	Response Measures
Risk of Industrial Changes	Board of Directors, President's Office, the manager's office and sales department of each division	Market condition meetings, production and sales meetings	<ol style="list-style-type: none"> <li>1. Market condition meetings are held every month to analyze the supply and demand and changes in the international raw materials, and finished products and industry dynamics at home and abroad, and to timely adjust the short-term, medium-term, and long-term development objectives and response measures of each product.</li> <li>2. FPC will continuously enhance the equipment safety management to maintain the steady production. In addition, FPC is actively implementing expansion and debottlenecking projects, developing emerging markets, and increasing the sales volume of differentiated products with high unit prices to achieve the goal of independent production and sales.</li> </ol>

Risk Item	Risk Management Unit	Risk Review	Response Measures
Risk of Supply of Raw Materials	President's Office, the sales department of each division, Market Expansion Unit	Production and sales coordination meetings with Formosa Petrochemical Corp., production and sales meetings, market expansion reports, expatriated work reports, product price adjustment reports for domestic sales	<ol style="list-style-type: none"> <li>Ethylene and propylene are mainly sourced from FPCC and CPC Corporation. If these two companies have the annual maintenance or malfunction, FPC is required to have the annual maintenance or reduce the production. Therefore, in addition to signing the ethylene storage tank lease with CPC Corporation, FPC imports ethylene when ethylene is in short supply. In response to the annual maintenance or production reduction at the naphtha crackers of CPC Corporation, FPC applies for the shipping of ethylene from Mailiao to Kaohsiung by foreign carriers or through exchange with trading companies. If petrochemical products are in great demand, FPC will be at the risk of importing high-priced raw materials to maintain the production.</li> <li>Industrial salt is sourced from Mexico, Australia, and other regions to avoid the concentrated procurement.</li> </ol>
Risk of Sales	President's Office, the sales departments, Market Expansion Unit	Production and sales meetings, market expansion reports, expatriated work reports, product price adjustment reports for domestic sales	<ol style="list-style-type: none"> <li>The proportion of export to a single market is reduced to increase the market share in emerging markets, such as South Asia, Southeast Asia, New Zealand, Australia, and Africa.</li> <li>A technical service office, along with resident business and technology representatives, is set up in Vietnam, Germany, Dubai, and India, respectively, to provide technical service, business expansion, and after-sales service for local customers.</li> </ol>
Risk of Changes in Important Policies and Laws	President's Office, Group Administration Office, Legal Affairs Office	Board of Directors, Business Management Committee	FPC closely monitors all domestic and foreign political and economic status, material policies, and regulation changes. We also attach great importance to employees' awareness of laws and regulations. Through training programs, publications, and the official website, we strengthen the conveyance of governmental policies and regulations and related cases to incorporate a corporate culture of compliance into the business operations.
Interest Rate Fluctuations	President's Office, Finance Division	Monthly fund meetings, financial officer meetings	In terms of long-term foreign currency liabilities caused by floating interest rates (including floating interest rate corporate bonds), FPC will carefully assess the financial market situation and sign an interest rate swap contract when the interest rate is relatively low to avoid the risk of interest rate fluctuations. It is expected that the interest rate is lower than the estimated financing cost of the investment plan.

Risk Item	Risk Management Unit	Risk Review	Response Measures
Exchange Rate Fluctuations	President's Office, Finance Division	Monthly fund meetings, financial officer meetings	<ol style="list-style-type: none"> <li>1. In principle, FPC reduces the net exchange rate risk through a natural hedge. Insufficient foreign exchange funds in daily operations are addressed by making spot or forward foreign exchange purchases when the exchange rate is favorable.</li> <li>2. Long-term foreign currency liabilities are addressed by signing long-term forward foreign exchange contracts or exchange rate swap contracts when the exchange rate is relatively low to minimize the impact of exchange rate fluctuations on our revenue and profits.</li> </ol>
Inflation	President's Office, Finance Division	Monthly fund meetings, financial officer meetings	According to the Directorate of Budget, Accounting, and Statistic, Executive Yuan, the annual growth rate of consumer prices in 2018 was 1.35%, and the annual growth rate of core consumer prices was 1.21%. The inflation risk was low and had no significant impact on FPC's profit and loss.
High-risk, Highly-leveraged Investment	President's Office, Finance Division	Monthly fund meetings, financial officer meetings	FPC mainly invests in the petrochemical industry which is a mature and stable industry with low risks. We have always maintained stable operations and a sound financial structure. It does not engage in any highly leveraged investment.
Lending of Capital	President's Office, Accounting Department, Finance Division	Board meetings, monthly fund meetings, financial officer meetings	In principle, FPC only issues loans to companies of FPG. The amount is in accordance with Article 15 of the Company Act and the Procedures for Loaning Funds to Other Parties of the Company, and granted the approval of the Board of Directors. Since the issuance of loans are mostly for short-term funding purposes, and the borrowers are subsidiaries and companies of FPG, no bad debt loss has occurred.
Endorsement/ Guarantee	President's Office, Accounting Department, Finance Division	Board meetings, monthly fund meetings, financial officer meetings	In principal, FPC only endorses and guarantees subsidiaries, companies of FPG or jointly invested companies where all capital contributing shareholders make endorsements/ guarantees in proportion to their shareholding percentages. The endorsement/guarantee is mostly for funding. The endorsement/guarantee is in accordance with the Procedures for Providing Endorsements and Guarantees for Other Parties of the Company and granted the approval of the Board of Directors. FPC has never been at a loss due to endorsements/guarantees.
Derivatives Transaction	President's Office, Finance Division	Monthly fund meetings, financial officer meetings	FPC's derivatives transactions are for the purpose of avoiding market risks caused by fluctuations in exchange rates and interest rates and are not used for arbitrage and speculation. Execution is based on relevant regulations and International Financial Reporting Standards (IFRS) promulgated by the competent authority. It is equally based on the Procedures for Derivatives Transaction Processing and the Foreign Exchange Trading and Risk Management Measures defined by FPG.
Research & Development Plan	President's Office, Technology Department	R&D technology seminars, industry-academia cooperation	FPC builds cooperation between the industry, government, and academia to promote resource sharing and integration, so as to accelerate product development, increase research and development efficiency, and build a digital R&D management system.

Risk Item	Risk Management Unit	Risk Review	Response Measures
Information Security	President's Office, Electronics Unit, Information Department	Information security management review meetings, information security training	<p>To ensure the security and stability of the network, prevent data corruption caused by system malfunction, and protect personal information, FPC has established related policies and guidelines, the Guidelines for Information Security Management, for compliance. Controls and protections for the applications, operating systems, and network have also been set up to control the corporate information system risk and to maintain the business continuity. Specific measures are described below:</p> <ol style="list-style-type: none"> <li>(1) The vertical defense structure covering the intrusion prevention system (IPS), malicious URL filtering, and advanced persistent threat (APT) defense is adopted; controls over internet access, e-mails, and leaks of information are also in place to avoid network attacks.</li> <li>(2) In addition to adopting the audit mechanisms, including access control, login ID verification, password control, access authorization, and vulnerability scanning, FPC also install antivirus software and backup systems, update security patches, and control USB access to strengthen the endpoint protection.</li> <li>(3) FPC organizes information security training for employees every year on a regular basis to strengthen their awareness of information security risks.</li> <li>(4) In addition to reviewing information security protections and regulations, FPC pays attention to information security issues and makes response plans every year to ensure the appropriateness and effectiveness of the protections and regulations.</li> </ol>
Top Management	President's Office, Finance Division, Stock Affairs Office, Legal Affairs Office	Board of Directors, Auditing Office	The shares of FPC are held by companies of FPG and the family members of the founders. The equity is relatively concentrated and stable. We always maintains good business performance and receives recognition and support from shareholders at home and abroad. There is no risk of changes in top management.
Climate Change	SHE Center, Safety and Health Department	Review of the set total amount control of energy conservation and carbon reduction by 2022, on-site visit to the outstanding complex and selection of improvement cases	FPC authorizes BSI and SGS Taiwan to conduct the greenhouse gas inventory on a regular basis, and sets a energy conservation and carbon reduction goal every year.

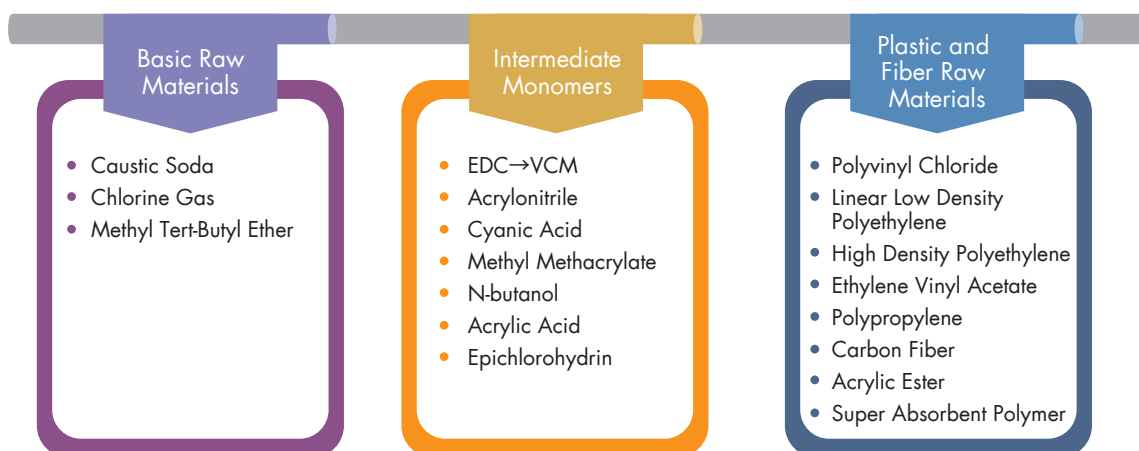
Risk Item	Risk Management Unit	Risk Review	Response Measures
Corporate Image	Group Administration Office, President's Office, President's Office at complex, Mailiao Management Division	Corporate image task force meetings	Adhering to the business philosophy of "Oligence, Perseverance, Frugality and Trustworthiness; Aiming at the Sovereign Good; Perpetual Business Operation; Dedication to the Society," FPC holds corporate image task force meetings with FPG every quarter in the hope of improving corporate image through continuous hard work and striving for excellence so as to make greater contributions to society.
Talent Recruitment and Retention	Group Administration Office, HR Unit under the President's Office	Campus placement, FPG talent recruitment website, talent development plans, employee benefits	<ol style="list-style-type: none"> <li>To improve the efficiency of recruitment, FPC participates in campus placement and offers internship programs to top universities/colleges through a variety of open channels of recruitment.</li> <li>To retain talent, FPC offers a remuneration package better than the industry standards and appropriate, open, and impartial channels of promotion to employees with outstanding performance and handle promotion affairs in an open and fair manner.</li> </ol>

## 2.3 Innovative Sustainable Products



### 2.3.1 Main Product Categories 102-2 102-9

At present, FPC has successfully completed the vertical integration of upstream, midstream and downstream industries in areas such as plastics, fiber and chemicals, and also expanded the economies of scale to reduce production costs in order to satisfy customer needs and enhance market competitiveness. For details about FPC's main products, visit the official website (<http://www.fpc.com.tw/fpcw/index.php?op=proA>).



### 2.3.2 Introduction to the Main Products

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To strengthen the management system, FPC has increased the design capacity of the main products to meet increasing demand from the downstream clients. At present, FPC is one of the best in the global plastics, chemical and fiber industries, ranked among the top ten manufacturers in the world in terms of design capacity for 11 products including PVC resins.

Product	Type	Applications	Production Capacity in Taiwan (Ten Thousand Tons)	Overseas Production Capacity (Ten Thousand Tons)	Local Market Share	Global Ranking
Polyvinyl Chloride (PVC)		Plastic cloth, films, hard tubes, electrical insulation, floor tiles, records, paint, ink, toys, and foam plastic	126.5	193.1	64%	2
High Density Polyethylene (HDPE)		Shopping bags, garbage bags, salad oil bottles, milk bottles, tool boxes, ropes, file folders, fishing nets, woven bags, totes, beer boxes, toys, and steel cables	56.6	84.4	57%	13
Ethylene Vinyl Acetate (EVA)		Foam shoes, cross-linked foam boards, shock-absorbing materials, raincoats, injection foam sports equipment, and flexible objects	24	7.2	4%	28
Linear Low Density Polyethylene (LLDPE)	Plastic	Packaging bags, agricultural films, shopping bags, totes, crispers, greenhouse films, stretch films, and mechanical packaging films	26.4	41.4	42%	11
Polypropylene (PP)		Automobile bumpers and other automobile parts, inner tubes for washing machines and other large and small household appliances, sports equipment, paint buckets, luggage and accessories such as wheel fits and frames, agricultural and industrial woven bags, non-woven materials, scotch tape, stationery, soda bottle caps, cigarette films, garment bags, films for food packaging, tire wraps, laminated films, transparent containers, synthetic paper, etc.	45	140.9	30%	10

Product	Type	Applications	Production Capacity in Taiwan (Ten Thousand Tons)	Overseas Production Capacity (Ten Thousand Tons)	Local Market Share	Global Ranking
Carbon Fiber	Fiber	Sports equipment (bicycle racks and rackets), industries (wind power blades and reinforcement materials for buildings), and aerospace (aircraft structures)	0.875	-	41%	6
Vinyl Chloride (VCM)		Polyvinyl Chloride	164.4	143	自供	2
Caustic Soda		Paper, textile, bleach, neutralizers, dyes, aluminum, and organic and inorganic chemistry	170	106.1	73%	4
Acrylic Ester (AE)		Synthetic fiber, fiber processing agent, synthetic resin, emulsified oil, oil paint, paper processing agent, adhesive, and heat-fixing industrial treatment agent	26.8	40	90%	5
Acrylonitrile (AN)	Chemicals	Acrylic cotton, ABS/SAN resin, home appliances, automobile parts and components, stationery, helmets, luggage, sports equipment, and NBR rubber	28	-	40%	7
Methyl Methacrylate (MMA)		Acrylic sheets, tubes, granules, MBS, transparent grade ABS, adhesives, textile treatment agent, paint, and paper glazing agent	9.8	-	25%	8
Epichlorohydrin (ECH)		Epoxy resin, plasticizer, wet strength agent for paper, dyeing and finishing, and fiber auxiliaries	10	-	67%	4
N-butanol (NBA)		Butyl acrylate, butyl acetate, ethylene glycol butyl ether, and plasticizer raw materials	25	-	93%	7
Super Absorbent Polymer (SAP)		Diapers, sanitary napkins, and nursing pads	11	9	51%	7

In 2018, the main products for which FPC own more than 50 percent of the domestic market share included seven items, PVC resins, liquid caustic soda, acrylic ester, super absorbent polymer, butanol, high-density polyethylene, and epichlorohydrin. At the same time, we have also exported the products to every corner of the world. The revenues in major regions of the world in 2018 are shown in the following table:

Region	Year	Percentage of Revenue in 2017	Percentage of Revenue in 2018	Difference in Revenue between 2017 and 2018
Mainland China		44.6%	46.4%	1.8%
Southeast Asia		14.9%	14.3%	-0.6%
South Asia		16.0%	14.8%	-1.2%
Australia and New Zealand		8.6%	9.3%	0.7%
Other Regions		15.9%	15.2%	-0.7%
Total		100.0%	100.0%	-

Note: Other regions include Northeast Asia, North America, Central and South America, Europe, the Middle East and Africa.

### 2.3.3 Main Brands 102-2 417-1

FPC initially started out with the bulk production of industrial materials. After years of efforts, FPC has established eight product brands (as shown in the following table), including the FORMOLON of the Plastics Division, TAISOX of the Polyolefin Division, YUNGSOX and FORMOCON of the Polypropylene Division, TAIRYFIL, TAISAP and TAIRYSORB of the Tairyln Division, and NANO CALMALON of the Carbide Division, that are used in various aspects of daily lives.

Main Brand	Product	Use
FORMOLON	Suspension PVC	Rubber, construction materials, water pipes, etc.
TAISOX	Polyethylene Ethylene Vinyl Acetate (EVA)	Shopping bags, packaging bags, agricultural films, shoe materials, etc.
YUNGSOX	Polypropylene	Toys, food containers, medical equipment, household products, etc.
FORMOCON	Polyacetal Resin	Electronic, electrical, automotive, transportation machines, general machinery, etc.
TAIRYFIL	Carbon Fiber	Aerospace, automotive, industrial applications, wind turbine blades, sports equipment, etc.
TAISAP	Super Absorbent Polymer	Diapers, urine pads, sanitary napkins, etc.
TAIRYSORB	Super Absorbent Polymer	Water-retaining agents for agriculture and gardening, soil modifiers, etc.
NANO CALMALON	Nano Calcium	Garbage bags, woven bags, injection molding products, extrudates, shopping bags, etc.

## 2.3.4 Raw Material Consumption 417-1

The consumption of main raw materials by FPC (excluding subsidiaries) in 2018 and the suppliers for such materials are summarized below:

Type of Raw Materials	Quantity (Metric Ton)	Amount (NT\$ thousand)	Main Supplier
Ethylene	1,690,378	55,812,545	FPCC, CPC, Marubeni and Mitsubishi
VCM	1,683,851	30,009,925	Self-supplied
EDC	1,544,941	10,277,076	Self-supplied
Salt	2,457,468	2,498,869	Marubeni, Mitsubishi, Mitsui and Sojitz
AN	13,018	772,656	Self-supplied
Propylene	1,099,111	33,308,466	FPCC, CPC and JXTG
Slack Coal	1,262,412	4,558,563	DRAGON, ACCIVA, ULTIMA, SUEK, UNICOAL, CARBO ONE, ROOD, MARS and WEL-HUNT
Alcohol	270,697	4,959,640	Self-supplied, NPC, BP, SABIC, METHANEX, ITOCHU, MITSUI and Mitsubishi



## 2.3.5 Product Technology Development and Innovation

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### Material Issue

Product technology development and innovation



### Management Policies

#### ■ Goals and targets:

Accelerated development of differentiated, high-value, eco-friendly products and technologies in pursuit of better growth and sustainable development

#### ■ Commitment:

1. FPC forges strategic alliances with the industry, government, and academia at home and abroad to promote resource exchange and integration between the R&D and manufacturing sectors, so as to accelerate R&D and commercialization.
2. FPC aims to build a virtual lab and a digital R&D management system to introduce Industry 4.0 and AI to the production, so as to improve competitiveness.
3. FPC masters key technologies and applies for patents at home and abroad to build a patent protection network.
4. FPC participates in product standardization to add R&D capacity to multiple parties, accelerate commercialization, and develop differentiated, high-value, and innovative products.
5. FPC develops technologies, such as CO<sub>2</sub> capture and utilization and water reuse, and eco-friendly green materials to ultimately achieve a win-win situation for the industry and environment.

#### ■ Policy:

1. FPC integrates the R&D capacity of the academia and research institutes, including National Taiwan University, National Tsing Hua University, National Chiao Tung University, National Cheng Kung University, National Taipei University of Technology, Industrial Technology Research Institute, Chang Gung University, National Pingtung University of Science and Technology, Plastics Industry Development Center, Texas A&M University, etc., to develop high quality products on a project basis.
2. FPC shares R&D results with other companies in the industry, such as Chimei Corporation and Mitsui Chemicals Inc., and holds R&D seminars with the Plastics Segment of Nan Ya Plastics Corp. every quarter.
3. FPC invites experts and scholars to lecture, give speeches, and share opinions, such as professors of Texas A&M University, Kyushu University, and National Taiwan University of Science and Technology, Professor Tien-Hao Chang from National Cheng Kung University (lecture on AI), and Professor Kuo-Lun Tung from National Taiwan University (speech on the development trend of thin film water treatment).
4. The Cloud Computing Specialized Project Unit sets up a virtual lab to build the material simulation software module and hardware in cooperation with other units of FPC.
5. FPC grants incentives to encourage the R&D personnel to apply for patents. As of 2018, FPC had 148 valid patents, including 9 patents granted in 2018, and granted the incentives totaling NT\$320,000.
6. The top management organizes internal R&D meetings every half a year.
7. FPC establishes the R&D training team and engages professors to coach; the R&D personnel hold meetings every month to discuss and share opinions, improving their R&D capacity.

#### ■ Unit in charge:

1. Research and Development Unit
2. Technology department of each division

FPC has enabled employees to accumulate R&D experience and professional competencies related to raw materials, product manufacturing and processing applications, using the vertical integration model. Through cross-departmental collaboration and R&D management, FPC regularly holds R&D technical exchange meetings, fully integrates and optimizes the R&D resources, and continuously generates innovative ideas to develop products that meet market demands.

### **(1) Establish a R&D Culture of professional technical services**

In order to promote R&D culture and increase product value, FPC has established a "technical services"-oriented R&D culture, in which every R&D personnel acknowledges that high-performance materials, multi-functional products, and high-order control of processes are vital directions for scientific development.

This culture not only helps to extend the service life of end products and improve the performance of material processing, but also ensures industrial safety among manufacturers, consumer safety, and environmental safety. We particularly expand the functional uses of general-purpose and low-cost materials through continuous improvement and innovation, as well as manufacture and provide products with different appearances and functions to various industries using the most advanced and eco-friendly production system. Besides, to enable manufacturers and consumers to confirm the quality of the products we develop, all R&D results are submitted to third-party accreditation organizations for validation, in the hope of complying with international specifications and quality standards.

### **(2) Implement "Vertical Integration" R&D Management**

To actively develop high-quality, eco-friendly and diversified products for society, FPC not only takes the initiative to invite the government, local and foreign academic institutions, peers, experts, and scholars to organize seminars and technical exchanges to enrich professional competencies, but also holds regular discussions on product technologies, industry analysis and peer comparison, enhancing vertical integration advantage to ensure the complete development of products in the horizontal direction.

To better meet market demands, FPC has gradually adjusted the R&D directions to eliminate the traditional concept of mass production and product sales which was once perceived to be good. Starting from market surveys, FPC carries out R&D with the goal of improving consumer satisfaction, integrating the strengths of its own technologies and production scale to provide customers and the society with the best solutions. In the future, FPC will continue to propose R&D projects in the direction of high performance, ease of processing, durability, non-toxicity and recyclability, cost reduction, light weight and small and short sizes, as well as enhance the overall R&D performance to promote sustainable growth of the businesses.

### **(3) Encourage "Innovative R&D" and Commend the Outstanding Teams**

To encourage R&D operations, both the Group Administration Office and FPC have formulated incentive policies to reward the proposal and certification of patents, as well as key products or patents leading to great benefits. All the companies are regularly invited to attend the annual Formosa Plastics Group R&D Technology Conference to present the results of innovation research, and use this opportunity to commend departments with excellent R&D achievements and award bonuses to them according to the reward system. We have also set up a R&D training team to shorten R&D duration and enhance the Company's R&D capabilities and quality.

To motivate innovative thinking with regard to new products, new businesses, new technologies, and new methods among the colleagues, FPC organized three innovation presentations in 2018, where 247, 339, and 450 people attended the three presentations, respectively. FPC will continue to organize innovation presentations to encourage innovative R&D. At the same time, an innovative platform has been established to enable colleagues to publish and present their new innovative proposals via the FPC App, as well as vote for, comment and discuss these proposals in real time, with a view to creating an innovative environment.



3rd FPC Innovation Presentation Event in October 2018 (National University of Kaohsiung)

#### (4) Develop Advanced Technologies and Green Materials

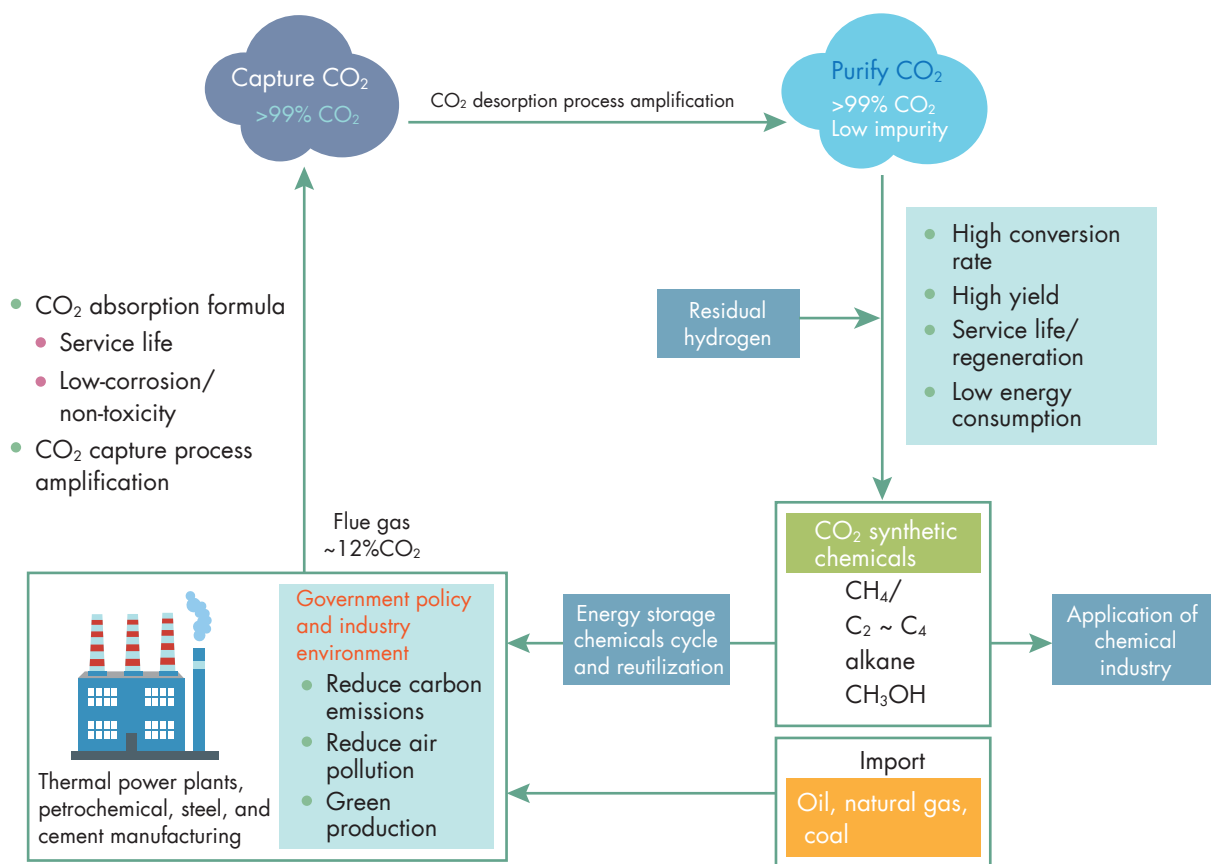
Moreover, FPC continues to improve existing technologies and accelerate the development of high-value products through exchanges and collaborations with the industry, government and the academia locally and abroad. FPC also keeps abreast of industry developments and market demands by participating in scientific and technological innovation research projects supported by the academia, research institutions or the government. Meanwhile, FPC integrates various technologies, including simulation laboratories, automation, big data, Internet of Things, etc., to develop Industry 4.0 and artificial intelligence (AI) through forward thinking and the application of innovative techniques. Specific strategies are also formulated in three major areas, production, sales, and R&D, to enhance international competitiveness and achieve the goal of becoming "number one in the world".

To pursue sustainable management and fulfill corporate social responsibility, FPC focuses on climate and environmental issues caused by global warming, and actively develops R&D technologies and applications, such as the green energy industry, circular economy, and aerospace medical materials.

In order to accelerate the development of green energy technologies and new products, particularly in the green industry, we nurture talent in green energy at the same time, and has long become an "industry strategic partner" with the Industrial Technology Research Institute (ITRI) to develop the third-generation dye-sensitized solar cell technology and its practical applications. In addition, we have also cooperated with the Bureau of Energy to establish the Shalun Smart Green Energy Science City. On October 31, 2017, an agreement was signed with ITRI to jointly set up the mass trial production line for the new eco-friendly dye-sensitized batteries in the hope of enabling this technology to be incorporated into mass production as soon as possible.

In addition, to accelerate the achievement of circular economy and solve current living environment problems efficiently, FPC worked with the Industrial Technology Research Institute and National Cheng Kung University in August 2018 to develop the capture and reutilization of flue gas CO<sub>2</sub>.

## Capture and Reutilization of Flue Gas CO<sub>2</sub>



In 2018, the R&D expense was NT\$2.2 billion, accounting for 1% of the revenue. Such expense primarily covered the development or design of new products, formulation development, process improvement, quality enhancement, energy conservation, carbon reduction, and talent cultivation, with a view to increasing production capacity and reducing costs. In 2018, differentiated products contributed 19.9% of the revenue and 9.0% of the profits, which indicates that FPC has achieved good results in adding value to the products.

Furthermore, a total of seven R&D cases met the requirements of the Statute of Industrial Innovation in 2018; the R&D expenses amounted to NT\$21,161 thousand (including the salary of the R&D personnel).

No.	Developed Product	Description
1	New specification of PVC resin (S-57, polymerization degree: 630)	As low polymerization degree PVC, this product is applied to PVC injection fittings with a diameter of more than 4 inches, and is mainly sold to the Middle East and India.
2	Semi-solid electrolyte of lithium-ion battery	At present, there is a safety concern about liquid electrolyte, which makes the electric vehicle easy to ignite and burn; therefore, solid-state batteries with high safety have gradually been adopted by electric vehicle manufacturers.
3	Introduction of microbial carrier to wastewater treatment to increase efficiency	The volume of wastewater increased due to expansion. The microbial carrier was introduced to improve the effectiveness of wastewater treatment and reduce the amount of waste sludge and the cost of treatment.
4	Dye-sensitized cell (DSC) electric curtain	With the feature of light-driven electricity of dye-sensitized cell, this product does not need to be plugged in, and is easy to install and maintain.

No.	Developed Product	Description
5	Injection & compression cap grade material 8030C HDPE	To assist customers in simplifying material differentiation, the material for injection and compression bottle caps are developed, which is mainly applied to mineral water & beverage bottle caps.
6	High vinyl acetate (VA) & low melt index (MI) grade EVA	This product is applied to high-grade shoe materials and low-smoke, halogen-free outside cable materials.
7	Vinyl ester (VE) compatible carbon fiber sizing	VE carbon fiber composite features low costs and fast forming (saving mold costs). Therefore, VE compatible carbon fiber sizing is developed to expand the carbon fiber market.
8	Carbon fiber reinforced thermoplastic unidirectional sheet (UD sheet)	Carbon fiber/polypropylene (CF/PP) and carbon fiber/polyamide 12 (CF/PA12) UD sheets are developed in order to be applied to oil pipelines.
9	Odorless SAP	Odorless SAP is developed in response to the baby diaper market in Mainland China.
10	Ultra-thin prelaminated diaper SAP	The ultra-thin prelaminated diaper is the main trend in the ultra-thin baby diaper market in Mainland China.
11	Gas phase process 5061 EPP expanded PP bead material	This product is mainly applied to the foaming material market of lightweight beads, such as automotive materials, electronic packaging materials, and children's furniture or toys.
12	3854 high fluidity impact copolymer PP	3854 (MI=85) is high fluidity impact copolymer PP and is suitable for high-speed injection production machines for large automotive materials and plastic products to meet the current customers' need of large scale and complex products.

Exchange with Dr. Shao-Tang Lee, an American expert in polymer foam (October 2018)



Industry-academia exchange with Texas A&M University (June 2018)



Industry-academia exchange with Texas A&M University (November 2018)



## 2.3.6 Product Safety and Health Responsibility

301-3

416-1

FPC pays serious attention to the health and safety of customers, and continuously improves production processes (such as reducing hazardous formulas, improving waste reduction in processes and developing green products) throughout various stages, from raw material procurement to product sales. In line with the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) initiated by the European Chemical Agency (ECHA) in June 2008, we have completed the registration of 17 products. Moreover, FPC is moving toward the trend of producing non-toxic, environmentally-friendly, and green energy products according to market trends and downstream customer demand, which is furthered described as follows:

### A. Non-toxic Products

In conjunction with the implementation of the Restriction of Hazardous Substances (RoHS) Directive by the European Commission, FPC has actively responded to the trend of non-toxic products. For example, while encountering the issue of the dioxin byproduct in halogen combustion, a low-smoke and halogen-free compound for electric wires and cables is developed. Moreover, for food packaging and medical care, the nontoxic and easily recyclable PP foam material is used to replace styrofoam, and the PP material is applied to medical supplies, such as non-toxic and non-woven fabric, syringes, and IV bottles.

Taking PP-1024, a medical grade product, for example, our process has the ability to remove low molecular weight PP, so the product has low precipitation and is suitable for food and medical equipment in contact with human body. It is a special material for medicine bottles featuring high temperature resistance and sterilization, and is certified by United States Pharmacopoeia (USP) Class VI and registered in the Drug Master File by the U.S. Food and Drug Administration. In addition, the registration of the product has been approved by the China Food and Drug Administration (CFDA). Its n-hexane leach is less than 30 mg, lower than the statutory standard (35 mg). The product has been widely recognized by international pharmaceutical manufacturers, and is applied to the most demanding water containers for children's medications.

Safe, lightweight, not-easy-to-break and easy-to-form, medicine bottles made with medical grade PP can replace the traditional soda-lime glass medicine bottles. Traditional soda-lime glass medicine bottles must be de-alkali with ammonium sulfate for surface neutral treatment before use. They are not as safe and convenient as medical grade PP medicine bottles.

Strength of FPC's medical grade product: Low precipitation

N-hexane Leach of 56mg PP Within 24 Hours

Product and Standard	Food and drug standard of CFDA	FPC PP-1024 medical grade	Similar products in the market
N-hexane Leach (mg)	Less than 35	Less than 30	About 50

Medical grade PP-IV Bag and Medicine Bottles



**NAMSA**  
 PEOPLE + MACHINES + SOLUTIONS  
 Test Facility  
 6702 Stone Road  
 Northwood, OH 43061  
 614.886.9455

**TEST ARTICLE NAME**  
 Polypropylene Pellets, YUNGSOX 1024

**TEST ARTICLE IDENTIFICATION**  
 YUNGSOX 1024

**TEST ARTICLE PHYSICAL DESCRIPTION**  
 Polypropylene

**TEST ARTICLE RECEIVED**  
 June 26, 2018

**SPONSOR**  
 PETI PAO  
 FORMOSA PLASTICS CORPORATION, PP DIVISION,  
 NO. 1 HSHAWA 1ST ROAD, LIN-YUAN DISTRICT,  
 KAOHSIUNG  
 KAOHSIUNG, TAIWAN, R.O.C.

**USP Biological Reactivity Tests, In Vivo**  
**USP Plastic Class VI**

**USP Systemic Toxicity Study in the Mouse**  
 The test article was prepared as indicated below and injected into mice. The saline, alcohol in saline, polyethylene glycol 400 and xylene oil extracts did not produce a significantly greater systemic reaction than the blank extracts.

**USP Intracutaneous Toxicity Study in the Rabbit**  
 The test article was prepared as indicated below and injected intracutaneously into rabbits. The saline, alcohol in saline, polyethylene glycol 400 and xylene oil extracts did not produce a significantly greater tissue reaction than the blank extracts.

**USP Mucosa Irritation Study in the Rabbit**  
 The mucous membrane reaction of the test article, implanted in rabbit muscle for 1 week, was not significant when compared to the USP negative control plastic.  
 The test article was prepared at a ratio of 4 g/20 ml, and extracted at 70°C for 24 hours. The test article extracts met the requirements of a USP Plastic Class VI.

**APPROVAL:** *Kuan-Jie Carol Hsueh* 05-15-16  
 Kuan-Jie Carol Hsueh, ALMT Date  
 Technical Reviewer

P.O. No. 187-31352\_01 LAB Number: 187-31352\_01 SERIAL: 01 Page 1 of 1

USP Class VI certification

**Certificate of Drug Master File (DMF)**

**Service Period**  
 June 1, 2018 – May 31, 2019

*This certifies that:*

**Formosa Plastics Corp Polyolefin Div**  
**I Hsin-Hwa 1st Road**  
**Lin-Yuan District**  
**Kaohsiung City**  
**Taiwan**

is a Drug Master File listing with the U.S. Food and Drug Administration pursuant to part 314 of Title 21, US Code of Federal Regulations, such filing having been verified as currently effective on the date listed by Registrar Corp.

**Drug Master File Number:** 34843  
**Status:** Active  
**Type:** III  
**Subject:** YUNGSOX POLYPROPYLENE RESINS 5018, 5068, 5050M, 5090T, 5250T, 5350T, 5050S, 1020L, 1024, 2100M, 5071, 5200XT, 5450XT, 5200M, 1090, 1250D, 5068T, 5090E

*Registrar Corp will confirm that such filing remains effective upon request and presentation of this certificate until May 31, 2019, unless annotated after issuance of this certificate. Registrar Corp makes no other representations or warranties, nor does this certificate make any representations or warranties to any party other than the named certificate holder. For whose sole benefit it is issued. Registrar Corp reserves the right to suspend or revoke its certification with the foregoing. Filing of a Drug Master File does not in any way constitute approval of the drug or its products by the U.S. Food and Drug Administration. Any representation that creates an impression of official approval because of filing of Drug Master File is misleading. The U.S. Food and Drug Administration does not issue a certificate of Drug Master File. Registrar Corp is not affiliated with the U.S. Food and Drug Administration.*

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*Raymond K. Statman*  
 Executive Director  
 Registrar Corp  
 Dated: May 21, 2018

Certificate of Drug Master File (DMF), U.S. Food and Drug Administration

## B. Eco-friendly Products

FPC promotes the use of eco-friendly plastic pallets and molded pallets at the Production Department and to the downstream customers in order to replace traditional wooden pallets, and produce ultra-thin eco-friendly diapers with high-strength SAP to replace the consumption of traditional paper pulp, with a view to prevent excessive logging. Meanwhile, SAP water-retaining agent for agricultural use promotes the water retention rate of soil, thereby improving plant growth and the water retention performance of soil. It is suitable for use in slope planting, prevention of coastal soil erosion, crop cultivation in dry areas, and afforestation efforts.

Taking SAP for agricultural use, TAIRYSORB-AG301, for example, this product has outstanding water absorption and retention feature; it can absorb 500 times its weight, and form a resistant film to prevent moisture spillover and evaporation in a dry environment, thereby improving conditions for plant growth and the water retention performance of soil. It also has good effects on transplanting seedlings and stabilizing soil structure.

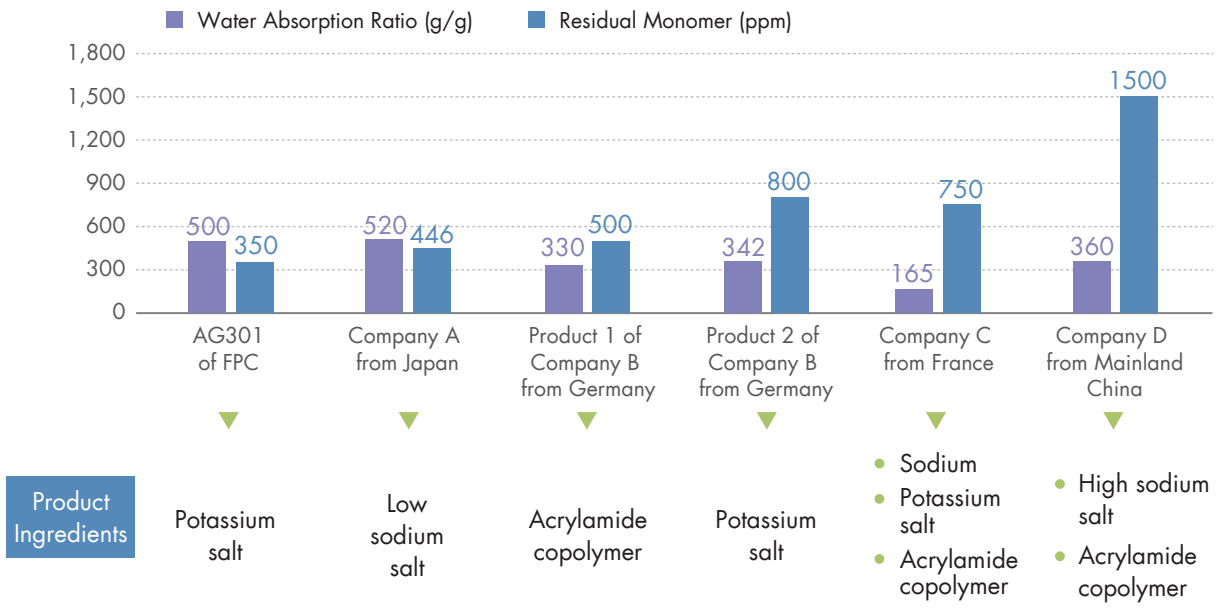
When mixed with soil, it can promote water and nutrient retention in soil and allow the fertilizer to slowly release from the soil. With the feature of water swelling and shrinking without water, this product can also increase soil porosity and prevent soil agglomeration, thereby facilitating root respiration and growth.



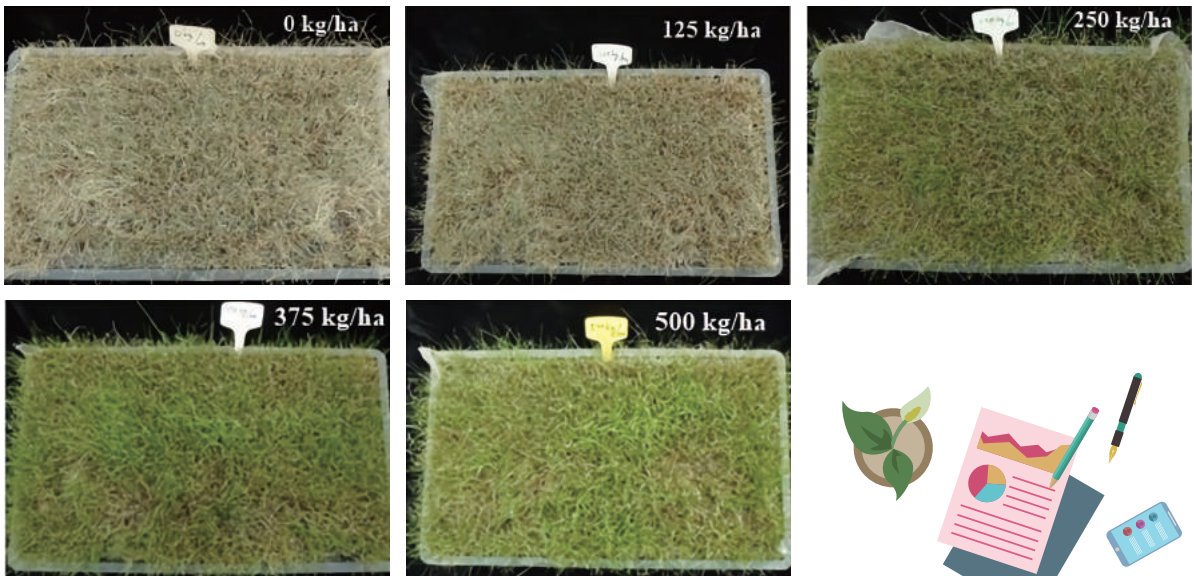
### Characteristics of TAIRYSORB

- Potassium salt product, no soil deposition concerns
- No acrylamide added (carcinogenic substance)
- Low residual monomer, no security concerns
- High water absorption ratio, better performance

### Comparison of Product Properties of TAIRYSORB and Competitors



### Changes in Grass Color after 14 Days without Watering



#### Purpose of test

Compare the changes in the plant (Bermuda grass) using TAIRYSORB-AG301 in persistent water shortage

#### Test method

Add 0 kg, 125 kg, 250 kg, 375 kg and 500 kg of the water-retaining agent to Bermuda grass per hectare of land, irrigate the plant to a relative humidity of 100%, and observe the changes in the plant after 14 days without watering. The test results showed that the water retention was excellent.

### C. Green Energy

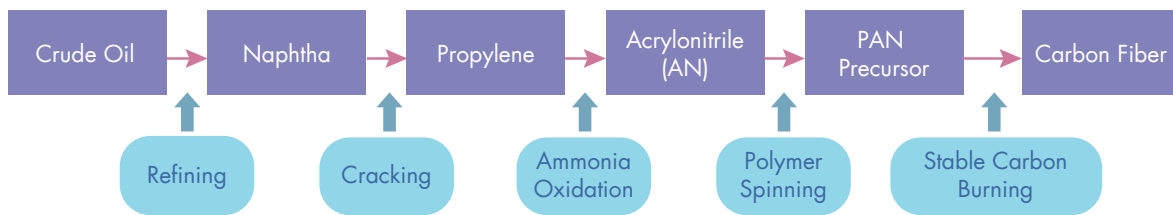
In recent years, FPC has actively invested in green energy application sectors, including wind power, solar power and lithium batteries. In the area of wind power generation, carbon fiber, PVC foam materials and epoxy resins made from epichlorohydrin can be used to produce wind turbine blades. For solar power generation, HDPE black pipe-grade materials can be applied to water-based solar cells. On the other hand, electrolyte products can be applied to lithium batteries so that green energy generated can be converted for storage in batteries.

Take carbon fiber for example, the Taiwan Strait is rated as one of the world's best wind farms for offshore wind power generation. In response to the development of the green energy industry, wind turbine blades have become larger and been designed with carbon fiber to increase the amount of wind power generated. Carbon fiber has good affinity with thermosetting and thermoplastic resins, especially with epoxy resin in terms of adhesion and processability. The Company is one of the major carbon fiber suppliers for wind turbine blades.

#### Strength of FPC's carbon fiber

FPC is the only company in the world that has the advantage of vertically integrated production from crude oil to carbon fiber. It is the world's sixth largest carbon fiber manufacturer with complete product specifications, from small tow to large tow for low cost industrial use (1.5K-48K); in particular, the large tow product has excellent rigidity, and is not easily deformed by rotation on the wind turbine blades with long service life and relatively high power generation efficiency.

Strength of FPC's vertically integrated production:



## 2.4 Customer Service

Maintaining relationships with customers based on mutual growth has always been an important issue FPC strongly emphasizes. Good customer services and increasing customer satisfaction are not only the responsibility of the sales departments but also the aim of all FPC's employees. FPC aims to create a mutually beneficial business environment with the customers. Hence, the feedback and rights of the customers are highly valued. The smooth business development experienced by customers represents their support for and recognition of FPC. FPC anticipates that the efforts will form a virtuous cycle and create a win-win situation for the Company and our customers.

## 2.4.1 Collaborative Relationships with Customers and Customer Privacy

418-1

### Model of Positive Interactions

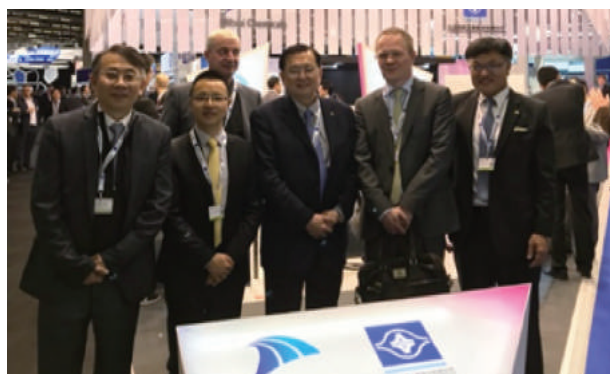
To strengthen relationships with customers and increase customer loyalty, FPC regularly visits customers to exchange opinions and feedback on existing or new products, and provides customer with market information and technical support. Apart from establishing an interactive and timely communication channel, we also participate in product exhibitions and technology seminars, such as the International Exhibition on Plastics and Rubber Industries (CHINAPLAS), the French JEC Composites Show, the China Composites Expo, CIDPEX, and the FPC Product Technology Seminar (Innovation in Plastics) in Mumbai, India, to exchange information about the market and techniques, and receive direct feedback from customers for future improvements. Besides, in order to provide comprehensive customer services, FPC also designates personnel to provide consulting services related to industrial safety and equipment maintenance from time to time in order to promote mutual growth through experience sharing and exchange between both parties.

On the other hand, an internal and external delivery status system is also established, which involves the integration of FPC's ordering systems, factory gate control systems, delivery GPS positioning, and freight tracking information, so that customers can track the location of their goods and cargo and the state of arrival of cargo ships in real time.

CHINAPLAS in Shanghai in April 2018



French JEC Composites Show in March 2018



Invitation Card to FPC Product Technology Seminar in December 2018



FPC Product Technology Seminar in Mumbai, India in December 2018



### Disclosure of Product Information

To enable customers to inquire about the catalogue, features and uses of FPC's products at any time, a quick search feature in the "Product Overview" and "Application Overview" sections is set up under the Product Services categories on the official website. Customers can also obtain information related to certifications and test reports in the "File Download" section.

### Customer Feedback and Response

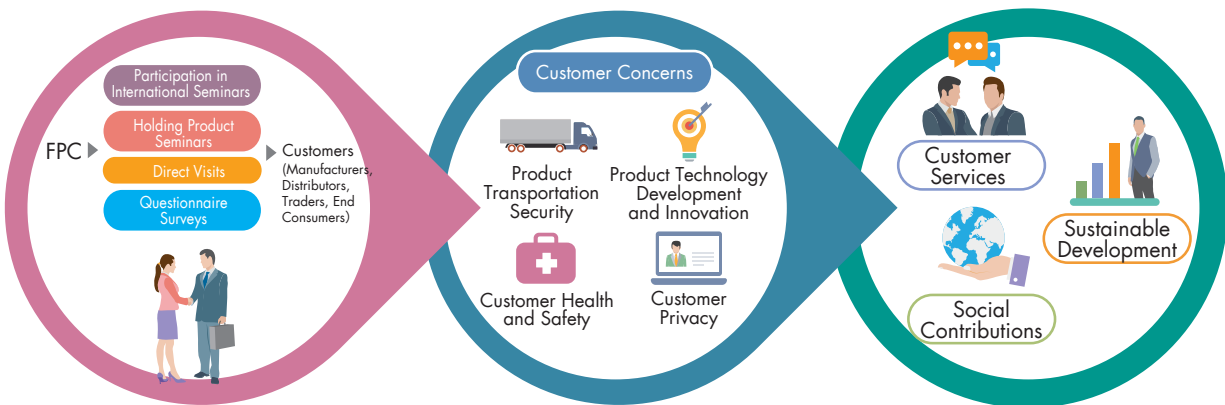
FPC has clearly established and defined customer complaint channels, as well as return and refund procedures, so that customers can express their feedback by filling out the “Customer Feedback Form”. Meanwhile, customer complaints about products are filed by the sales representatives after customers have filled out the “Customer Complaint Form”. The sales representatives will handle return, exchange or refund cases, as well as input the cases into the computer system for tracking and processing purposes.

Another method for customers to make inquiries or comments is to call the telephone number or write to the e-mail address listed on the official website. Comments and suggestions are prioritized according to the level of importance and then forwarded to the relevant departments to ensure that the needs of all customers are addressed.

### Information Protection

FPC has established the Regulations Governing Personal Information Management which requires all relevant departments to list personal data management as a self-inspection item. Only authorized personnel are allowed to check employee or customer information. Any personnel want to get access to such information due to business needs must sign the Application Form for Personal Information Collection, Processing and Use, while verification has to be carried out to ensure that such application complies with the regulations before the personnel can access such information. Besides, the method of using such information will also be strictly regulated. No breaches of information privacy were reported by customers in 2018.

Stakeholder Communication and Feedback Mechanism



### 2.4.2 Customer Satisfaction Survey

To fulfill the requirements of ISO 9001 regarding quality commitment to customers and show FPC's focus on customer satisfaction, a satisfaction survey is conducted among FPC's domestic and foreign customers at least once a year. The survey questions are further modified based on the issues or areas of concern that customers have previously expressed. The questionnaire covers the following themes:

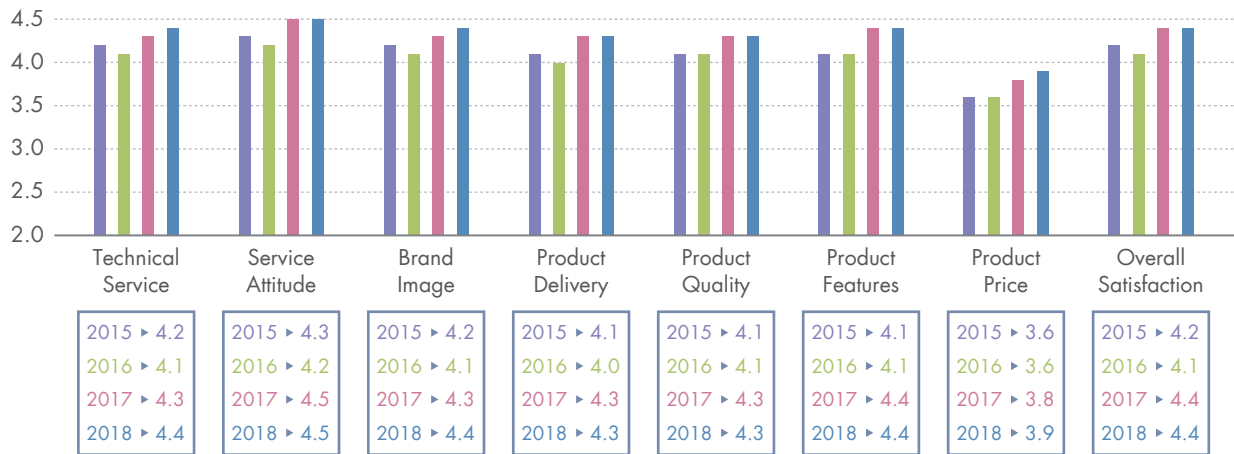
Customer Satisfaction Survey Model



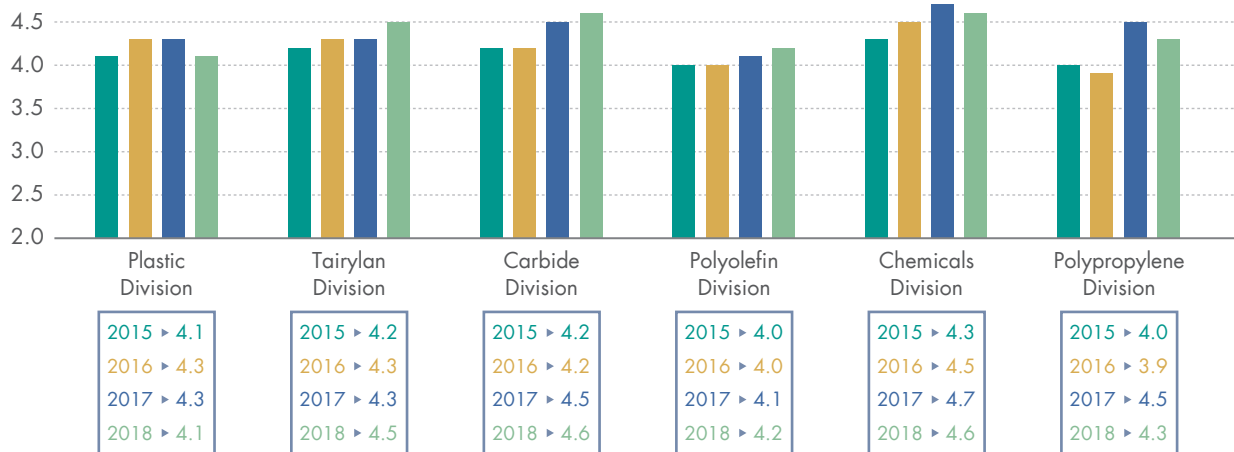
According to the customer satisfaction survey in 2018, FPC's overall performance was 4.4, higher than the benchmark of "Satisfied", with only a few product prices falling short of customers' expectations. This was mainly due to the increase in costs of raw materials, which subsequently led to an increase in product prices.

FPC incorporates customer feedback and suggestions into the operation policies, and strives to continuously improve the professional competencies and service attitude of the sales representatives and technicians to better meet customer expectations.

Customer Satisfaction at Each Division from 2015–2018



Customer Satisfaction at Each Division from 2015–2018



## 2.5 Response to Significant Economic Issues

102-44

102-47

### 1. FPC's Major Investment Plans

To enhance competitiveness, FPC is actively engaging in capacity expansion and debottlenecking projects, including:

- (1) The SAP debottlenecking project with the annual capacity of 10 thousand tons at the Mailiao Complex: The annual production capacity will increase from 60 thousand tons to 70 thousand tons. It is estimated that this project will complete by the end of 2020.

- (2) Construction of the new propane dehydrogenation (PDH) plant with the annual capacity of 600 thousand tons at the Ningbo Complex: It is estimated that this project will complete in the third quarter of 2021.
- (3) The phase 3 Polypropylene (PP) debottlenecking project with the annual capacity of 30 thousand tons at the Ningbo Complex: The annual production capacity will increase from 492 thousand tons to 522 thousand tons. It is estimated that this project will complete in the second quarter of 2019.
- (4) The SAP debottlenecking project with the annual capacity of 10 thousand tons at the Ningbo Complex: The production capacity will increase from 90 thousand tons to 100 thousand tons. It is estimated that this project will complete in the third quarter of 2019.
- (5) The Acrylic acid (AA) debottlenecking project with the annual capacity of 10 thousand tons at the Ningbo Complex: The production capacity will increase from 320 thousand tons to 330 thousand tons. It is estimated that this project will complete in the second quarter of 2019.
- (6) Construction of the new high density polyethylene (HDPE) plant with the annual capacity of 400 thousand tons in Texas, USA: this project is estimated to complete, with the complex beginning operation, in the third quarter of 2019.

For further details, please refer to FPC's 2018 Annual Report (Report to Shareholders).

In response to the urban development of Kaohsiung City, the Dock Tank Complex in Qianzhen is to be relocated to the petrochemical zone of Kaohsiung Intercontinental Container Terminal (ICT) Project Phase 2. In 2014, FPC leased the petrochemical zone land and special dock with Port of Kaohsiung, Taiwan International Ports Corporation, Ltd. The Company will set up 12 storage tanks and 1 salt warehouse, which is scheduled to be completed in the second quarter of 2021.

## 2. Assist in Nurturing Artificial Intelligence (AI) Talents in Taiwan

To enhance Taiwan's international competitiveness in the future, FPC, along with NPC, FCFC and FPCC, jointly donated NT\$30 million in February 2018 to the Taiwan AI Academy established by Academia Sinica. This academy will be responsible for nurturing artificial intelligence (AI) talents in Taiwan.

Three training courses for technical leaders were organized in 2018. FPC assigned more than 31 employees to attend training, who will then serve as the seed leaders in FPC, in the hope of gradually applying AI to each management function to help FPC overcome difficulties in transforming into a smart enterprise.

In addition, FPC set up an AI Studio on the fifth floor of the Renwu Administration Building to encourage employees to think more creatively and get inspired.

AI Studio





# 3

## Builders of Sustainable Environment

3.1 Environmental Management Policies and Strategies	70
3.2 Water Resource Use and Management	75
3.3 Greenhouse Gas and Energy Management	82
3.4 Air Pollutant Management	85
3.5 Waste Management	89
3.6 Environmental Compliance	93
3.7 Response to Material Environmental Issues	94

## 3.1 Environmental Management Policies and Strategies

103-2

103-3



### Material Issue

Climate change risk management



### Management Policies

#### ■ Goals and targets:

For direct and indirect impacts arising from climate change, FPC regularly identifies major risks and opportunities, sets countermeasures accordingly, and supervises and tracks on a regular basis.

#### ■ Commitment:

Exceeding the requirements set by domestic law and referring to the assessment reports of the Intergovernmental Panel on Climate Change (IPCC), FPC reduces greenhouse gas (GHG) emissions and takes appropriate mitigation measures to respond to various climate change risks.

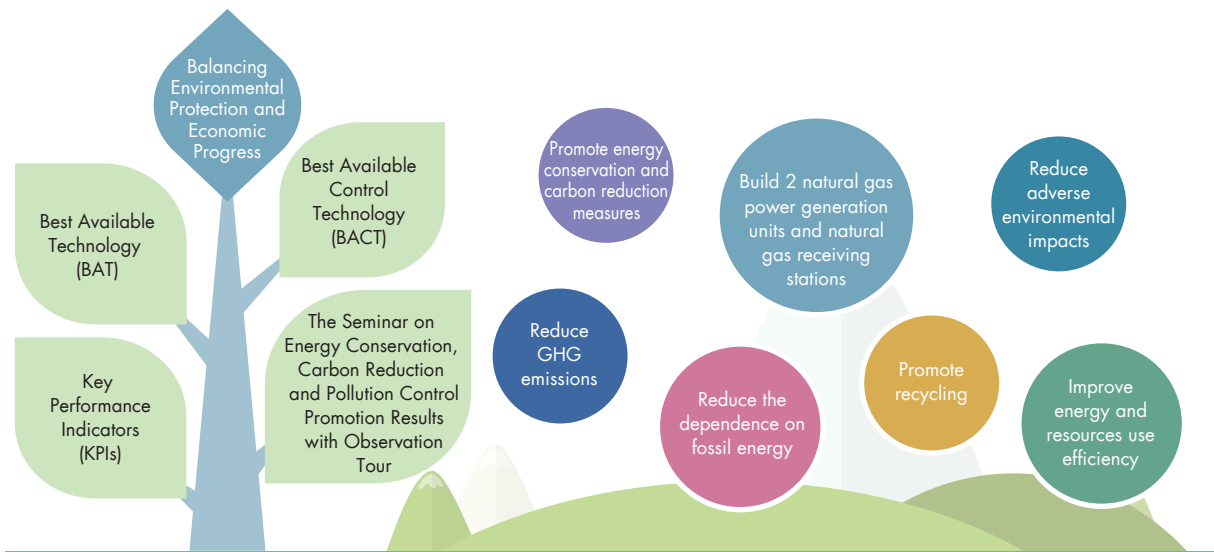
#### ■ Policy:

1. Climate change may result in the shortage of water and other usable resources. Through FPG's strategic thinking, FPC implements resource integration and performance improvement across complexes, and promotes carbon reduction based on the idea of circular economy.
2. The Energy Conservation & Carbon Reduction Task Force has been established to improve the implementation of water and energy conservation and pollution control, so as to ensure successful implementation of carbon reduction.
3. New energy conservation and carbon reduction technologies and plans are proposed on a monthly basis to ensure the achievement of annual targets. Any failure to achieve the annual targets is reviewed and subject to improvement in the next year, and countermeasures for improvement are proposed during improvement.
4. The performance of the Energy Conservation & Carbon Reduction Task Force is reported to the Senior Vice President or above for confirmation on a regular basis and included in the corporate social responsibility reports that are reported in the Board meetings.

#### ■ Unit in charge:

1. Energy Conservation & Carbon Reduction Task Force
2. Safety and Health Department
3. President's Office

To respond to the impacts of climate change and to build sustainable society, the Company has established the Water and Energy Conservation Task Force to perform the following tasks:



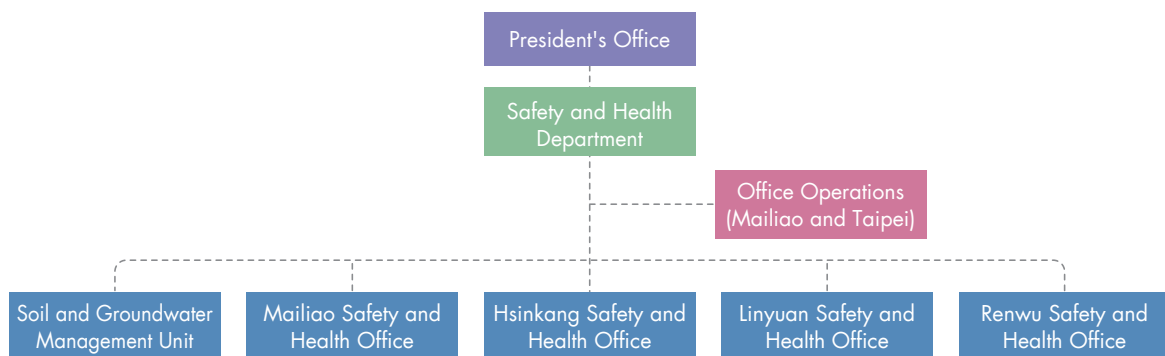
**Case Study**

Taking the n-Butanol plant for example, it reuses CO<sub>2</sub> generated by Nan Ya Plastics Corp. as a by-product and low-end steam from the high absorbent resin plant, and recycles cooling water, based on the idea of circular economy and through equipment investment as well as inter-company collaboration.

### 3.1.1 Structure, Responsibilities and Management System of the Safety, Health and Environment (SHE) Organization 103-2 103-3

The Safety and Health Department, which consists of 55 employees as of 2018 and is placed under the direct management of the President's Office, is responsible for issuing guidelines on overall safety, health and environment policies for the Company and implementing external operations. The Safety and Health Department is supervised, assisted and assessed by the SHE Center. Furthermore, health and safety departments have been established in each industrial complex to promote safe, healthy and environmentally friendly operations.

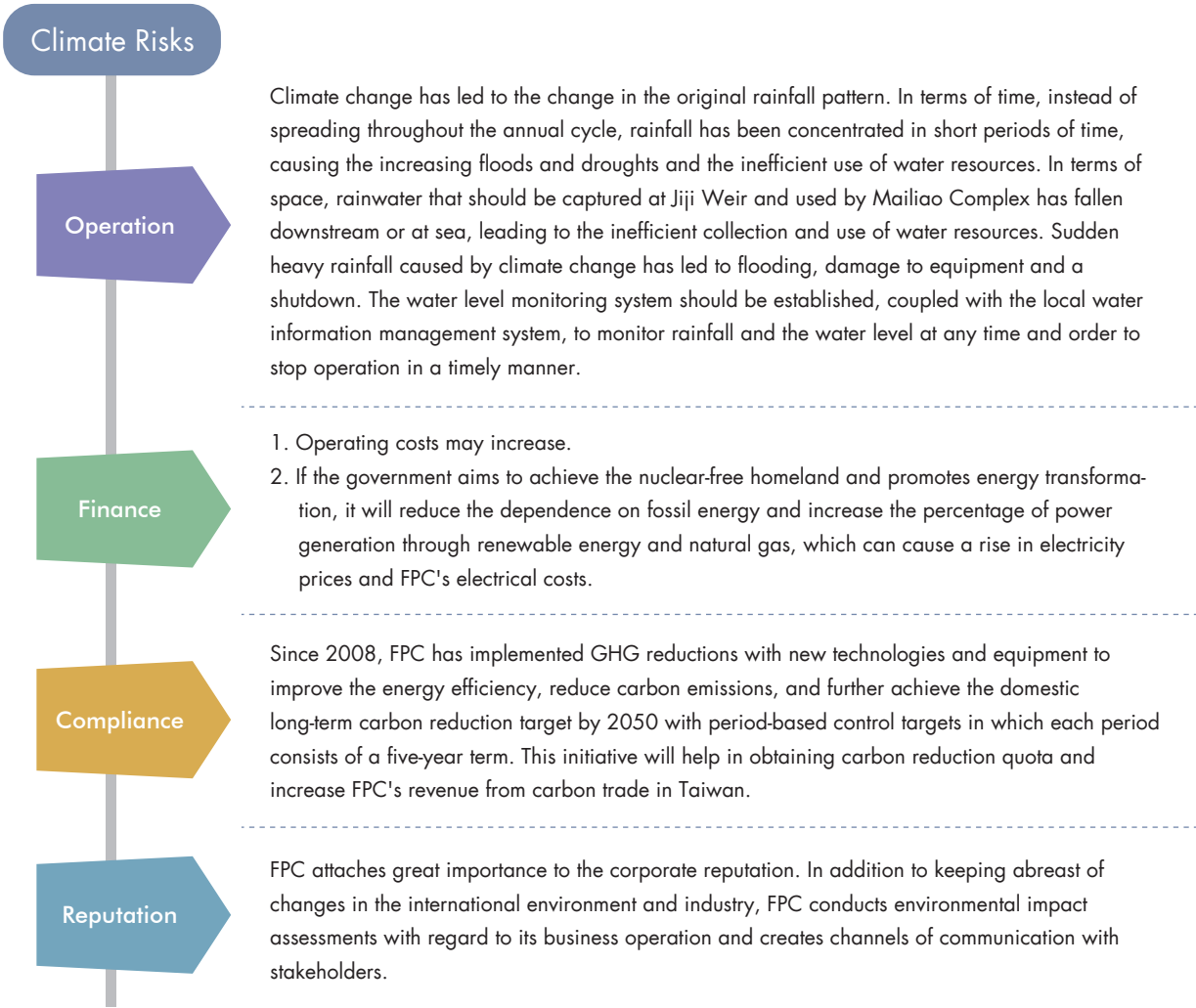
In addition, FPC holds SHE meetings, safety and environment performance review meetings and the Occupational Health and Safety Committee meetings on a regular basis. Top management, plant management, plant supervisors, SHE personnel, and other employees all participate in and conduct reviews, in hopes of achieving zero hazard and zero pollution in the field of health and safety management and environmental protection.

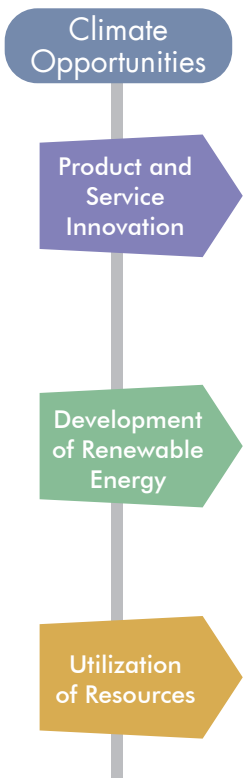


FPC has institutionalized safety and health management requirements for employees and contractors to comply with, and enhance SHE management by formulating safety and health management regulations, which are supplemented by management information and office automation systems. All six of FPC's industrial complexes, including Renwu, Mailiao, Linyuan, Hsinkang, Tungshan, and 4th, have successfully obtained the ISO 14001 Environment Management System Certification, the OHSAS 18001 Occupational Health and Safety Management System Certification, and the CNS 15506 Taiwan Occupational Safety and Health Management System Certification.

### 3.1.2 Risks and Opportunities Arising from Climate Change 102-15

FPC continued to assess potential risks and opportunities arising from climate change in aspects of finance, reputation, global economy, energy cost volatility, and environmental compliance costs, set energy conservation targets and measures, and develop eco-friendly products to keep the business operations stable and competitive.





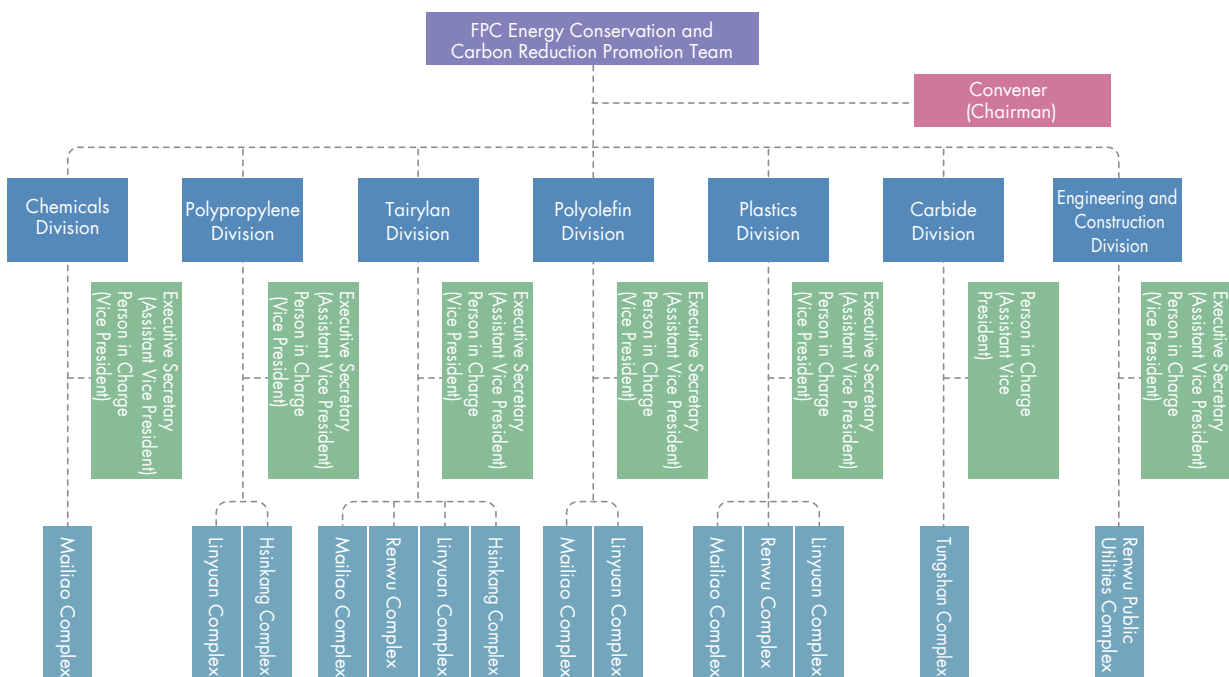
On December 12, 2015, the Paris Agreement was adopted in the United Nations Climate Change Conference, where countries around the world were bound to reduce GHG emissions voluntarily. The world is in a critical era of energy transformation, and green energy will be the new engine that drives economic development in the future. According to the development plans of the offshore wind farms worldwide, it is expected that more than 91% of the world's offshore wind turbines (about 11,028 MW) will be installed by 2020, which will drive the development of the wind power industry. The carbon fiber blades produced by FPC can be used in wind turbines.

FPC is committed to research and development of energy-saving or renewable energy products, such as HDPE black tube grade materials that can be used in offshore solar power equipment and electrolyte products are applied to lithium batteries and can convert green energy-based power to energy storage batteries. FPC has also developed light-driven electricity batteries since 2009 and is currently the only company in the world that is able to develop automated trial mass production.

Each complex of FPC is committed to energy conservation and carbon reduction, resource/energy integration, and waste recycling. In early days, each complex performed the above tasks separately due to the completeness of the original design, the level of the existing technology, and the operating characteristics of the process. Subsequently, integration has been conducted across complexes within the same company. Recently, resources and energy have been integrated across companies to enhance productivity and achieve the objectives of zero waste and zero emissions.

### 3.1.3 The Energy Conservation, Carbon Reduction and Pollution Control Promotion Team 103-2

The Energy Conservation and Carbon Reduction Promotion Team was established in 2006, in which the Chairman assumes the position of convener, while heads of divisions assume the role of person in charge and executive secretary. This team is responsible for integrating company-wide resources to promote various water and energy conservation initiatives.




### 3.1.4 Environmental Accounting

The environmental accounting system was introduced in 2009, and the environmental benefit accounting system was also implemented in 2010. FPG is the first enterprise in Taiwan to directly include environmental benefits into the environmental accounting system. According to the statistics of the environmental costs in 2018, the cost of environmental protection, in terms of operating costs, was NT\$1,648 million, accounting for 66.3% of the total environmental expenditure which was NT\$2,484 million. This indicates that to protect the environment, FPC has invested in preventive equipment and maintenance for substances that may cause environmental pollution during the production process, and engaged in green product procurement, recycling and re-manufacturing or recycling sold products, with a view to reducing indirect environmental impact and effects.

Environmental Costs at FPC in 2018

Unit: NT\$ millions

Category	Item	Amount
 Environmental Costs	Operating costs (Note)	1,648
	Upstream and downstream costs associated with suppliers and customers	15
	Administrative costs	336
	Research and development costs	52
	Social event costs	226
	Loss and compensation	103
	Other expenses, such as fees, various taxes and energy tax	104
	<b>Total</b>	<b>2,484</b>

Note: "Operating costs" in the table above include expenses of green procurement, recycling and re-manufacturing of products manufactured or sold, and expenses caused by product and service for promoting environmental protection.

The effort to promote environmental accounting allows financial information of environmental activities, such as investment, maintenance, research and development, and fees associated with environmental equipment, to be clearly recorded, so that FPC can perform business decision analysis from the perspective of environmental impact of local operations, thereby improving the overall competitiveness.



## 3.2 Water Resource Use and Management

103-2

103-3



### Material Issue

Water resource use and management

### Management Policies



#### ■ Goals and targets:

To continuously reduce water consumption at each department, FPC requires each department to set the annual target 5% less than the average of the previous year based on the following principles:

1. If the department's water consumption rate of the previous year is equal to or more than 100%, the annual target should be the department's net consumption of the previous year  $\times$  95%.
2. If the department's water consumption rate of the previous year is less than 95%, the annual target should be the department's net consumption of the previous year.
3. If the department's water consumption rate of the previous year is equal to or more than 95% but less than 100%, the annual target should be the department's net consumption of the previous year  $\times$  95% or the target of 2019, whichever is lower.

#### ■ Commitment:

1. To confirm the water consumption of each department, FPC reviews the reason for failure to meet the target in the first quarter of every year and requests each department to improve continuously.
2. To control the quality of soil and groundwater, FPC monitors groundwater on a regular basis.

#### ■ Policy:

In line with government regulations and administrative policies, FPC utilizes various existing technologies and professional knowledge, and follows the principles of source management, waste reduction during production processes and end control. First, FPC reduces demand for water resources from source management, then enhances reuse of water resources and accelerates the recycling treatment process. Next, FPC implements waste reduction during production processes to reduce load on treatment facilities. Lastly, FPC decontaminates water resources that can no longer be reused using treatment facilities, and utilizes end control methods to discharge such resources in compliance with regulatory standards so as to minimize its impact on the environment.

#### ■ Unit in charge:

1. Safety and Health Department
2. President's Office at complex
3. To strengthen the performance of energy and water conservation at Mailiao Complex, the President's Office at Mailiao Complex conducts the performance evaluation of energy conservation and carbon reduction every month according to the regulations of FPG and FPC and grants NT\$500/person and NT\$300/person, respectively, to the first place and the second place among departments; for the department with the worst performance, NT\$300/person is deducted from the bonus. In addition, NT\$50,000 is granted to the department with the best performance every year.

### 3.2.1 Water Resource Management Information

FPC sources water from surface water (rainwater, river water, and tap water) and groundwater, and uses it in production as raw materials or solvents, as cooling water for equipment during the process, and as domestic water at the complexes.

In response to the government's environmental policy, each complex continued to implement circular economy by reducing water consumption or reusing water resources, such as improving the steam piping system to reduce wastewater, installing rainwater storage tanks to increase the amount of rainwater collected, improving the cooling system to reduce evaporation, and recycling cooling water to reuse wastewater.

In addition to the technical improvements, FPC continued to save water through the following management approaches:

- 🌿 Hold water and energy conservation meetings every month to review the performance of water and energy conservation at each complex.
- 🌿 Emphasize water conservation and rainwater harvest at each complex.
- 🌿 Set up a water conservation case sharing platform and arrange on-site tours.
- 🌿 Appoint the dedicated person in charge of water conservation at each business unit and complex and set the targets of water consumption and rainwater harvest.
- 🌿 Evaluate the performance of energy conservation and carbon reduction.

Wastewater that cannot be reused is transmitted to the wastewater treatment plant at each complex for proper treatment. Treated wastewater can only be discharged into the river or sea after meeting the statutory environmental standards.

To truly recognize the actual amount of water used in the production, FPC authorized third parties, namely SGS and BSI to conduct the water footprint verification at Mailiao, Renwu, Linyuan, Hsinkang, and Tungshan Complexes from April to July 2018. All verification items, including the source of water, water balance, and emissions, were qualified, and SGS and BSI certificates were obtained on July 25, 2018 and August 14, 2018, respectively.

SGS Water Footprint Verification Opinion Statement



BSI Water Footprint Verification Opinion Statement



### 3.2.2 Statistics of Water Supplied by Jiji Weir 302-2 306-1 306-5

According to the monthly "Jiji Weir Industrial and Public Water Supply Report" of the Ministry of Economic Affairs' Industrial Development Bureau, the annual water supply of Jiji Weir in the past four years (2015-2018) ranges from 247,589 to 572,887 megatons. The average of industrial water consumption accounted for 2.5% of the total water supply, and the water transferred from agricultural water usage only accounted for 1.9% during the past four years. The relevant water consumption is shown in the following table.

Statistics of Water Supplied by the Jiji Weir from 2015 to 2018

Unit: Ten thousand tons

Year	Inflow from the Jiji Weir (A)	Average Water Consumption of Agricultural Irrigation (B)	Industrial Consumption			
			Average Water Consumption (C)	Percentage of Water Consumption to Inflow Percentage (C)/(A)	Water Consumption for Agricultural Purposes (D)	Percentage of Water Consumption for Agricultural Purposes (D)/(B)
2015	247,589	144,380	9,999	4.0%	3,632	2.5%
2016	510,257	227,234	9,976	2.0%	3,317	1.5%
2017	572,887	186,163	10,138	1.8%	3,328	1.8%
2018	307,946	182,450	10,256	3.3%	3,618	2.0%
Average	409,670	185,057	10,092	2.5%	3,474	1.9%

Source: Annual Report of the Jiji Weir Operations, Central Region Water Resources Office, Water Resources Agency, Ministry of Economic Affairs.

Although water consumption at the Mailiao Complex does not supplant other industries and result in competition for water with farmers, in order to effectively utilize Taiwan's precious water resources, FPC not only strives for process improvement, enhancement of equipment effectiveness, optimization of operating conditions, and recycling and reuse of wastewater to increase water use efficiency, but also promotes recycling and reuse of rainwater at the same time.

FPC Water Withdrawal in 2018

Unit: Million liters

Category	Complex						Complex with Water Stress
	Renwu	Linyuan	Tungshan	Hsinkang	4 <sup>th</sup> Complex	Mailiao	
Surface Water (A)	2.91	0	0	41.08	0	17,063.63	
Freshwater	2.91	0	0	41.08	0	17,063.63	Mailiao
Other Water Resources	0	0	0	0	0	0	
Groundwater (B)	10,900.25	0	362.14	0	0	0	
Freshwater	10,900.25	0	362.14	0	0	0	
Other Water Resources	0	0	0	0	0	0	
Produced Water (C)	0	0	0	0	0	0	
Freshwater	0	0	0	0	0	0	
Other Water Resources	0	0	0	0	0	0	

Category	Complex						Complex with Water Stress
	Renwu	Linyuan	Tungshan	Hsinkang	4 <sup>th</sup> Complex	Mailiao	
Sea Water (D)	0	0	0	0	0	0	
Freshwater	0	0	0	0	0	0	
Other Water Resources	0	0	0	0	0	0	
Third-party Water (E)	1,267.17	5,968.14	2.25	1,365.50	26.77	867.24	
Freshwater	1,267.17	5,968.14	2.25	1,365.50	26.77	867.24	
Other Water Resources	0	0	0	0	0	0	
Subtotal (A)+(B)+(C)+(D)+(E)	12,170.33	5,968.14	364.39	1,406.58	26.77	17,930.87	
<b>Total Water Withdrawal</b>	<b>37,867.08</b>						

Note: The amount of water withdrawal in 2018 was compiled by each complex and is yet to be confirmed with the third-party verification. The verification opinion statement is expected to be obtained in August 2019.

### 3.2.3 Water Conservation Performance 303-1 303-2 303-3

The water sources used in FPC's complexes mainly consist of surface water and groundwater. Under the condition of limited water resources, various measures are implemented to optimize and reduce water consumption, including reducing water use in production processes, water conservation, and reducing evaporation loss.

From 2015 to 2018, a total of 312 improvements were implemented, involving a total investment of NT\$344 million, 11,035 tons of water conserved per day, and an annual benefit of NT\$58 million. In the future, 86 improvements are still in progress, involving a total investment of NT\$288 million, 3,375 tons of water conserved per day, and an annual benefit of NT\$14 million. In 2018, 5,340 tons of water were conserved per day, mainly due to the fact that more improvements for wastewater recycling and rainwater reuse were completed.

FPC Water Conservation Performance (2015-2018)

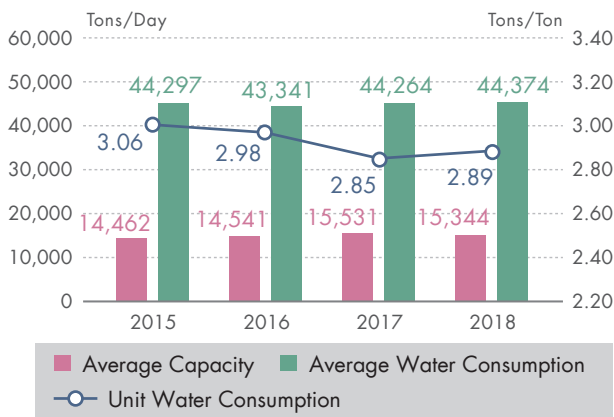
Item \ Year	Completed between 2015 and 2017	Completed in 2018	Cumulative Amount from 2015 to 2018	Ongoing in 2019	Total
Improvement (Cases)	170	142	312	86	398
Volume of Water Conserved (Tons/Day)	5,695	5,340	11,035	3,375	14,410
Investment (NT\$100 Million)	1.67	1.77	3.44	2.88	6.32
Benefit (NT\$100 Million/Year)	0.29	0.29	0.58	0.14	0.72

Note: Data Source: FPG's SHE Database

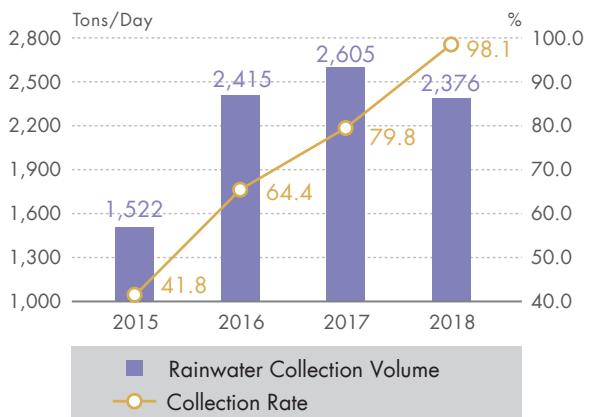
With water consumption at the Mailiao Complex strictly regulated by the environmental impact assessment, the daily water consumption was 44,374 tons/day, while the water usage of unit production was 2.87 tons/ton (total water consumption/total production) in 2018, which demonstrated a better water consumption performance than in 2017. The improvement in water consumption performance was mainly due to the international crude oil price volatility, which eventually reduced FPC's overall production capacity utilization rate.

To improve water efficiency, the Mailiao Complex will continue to strengthen rainwater collection operations. Over the past few years, the rainwater collection rate at the Mailiao Complex is approximately 45% to 70%, while the average rainwater collection is 1,900 tons/day; rainwater has been effectively stored and reused through various methods, such as increasing rainwater collection surface area and modifying rainwater storage tank pipelines. Rainwater collection significantly increased in 2018 with a rainwater collection rate of 98.1% and an average rainwater collection of 2,376 tons/day.

Trend of Annual Production, Water Consumption and Unit Water Consumption at Mailiao Complex (2015~2018)

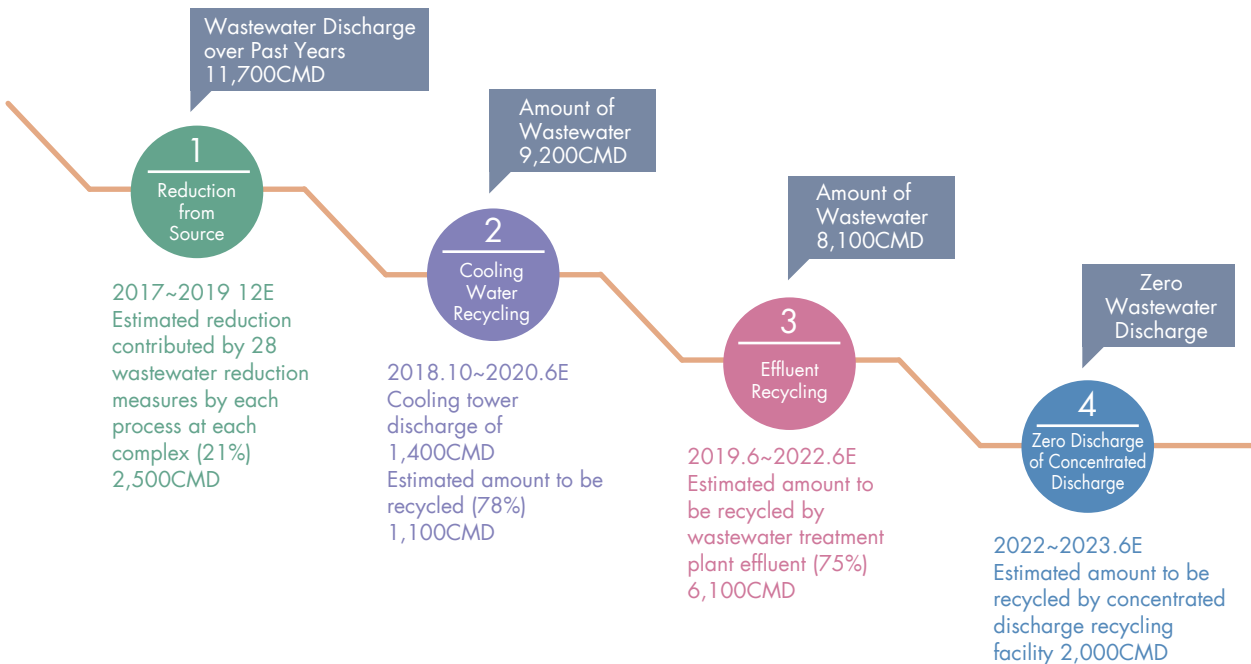


Trend of Rainwater Collection Volume and Collection Rate at Mailiao Complex (2015~2018)



### 3.2.4 Zero Wastewater Discharge

To reuse water required for the production, the Company has established the Zero Wastewater Discharge Task Force under the President's Office. The Zero Wastewater Discharge Task Force is responsible to collect and evaluate new wastewater reduction technologies at home and abroad (including development and introduction), promote wastewater treatment technologies company-wide, develop and promote on-site wastewater treatment, improve internal technologies, and evaluate and audit the feasibility of the zero wastewater discharge plan at each complex. Taking the zero wastewater discharge plan at Renwu Complex for example, Renwu Complex expects to achieve zero wastewater discharge by 2023.



### FPC's Water Discharge Volume in 2018

Unit: Million liters

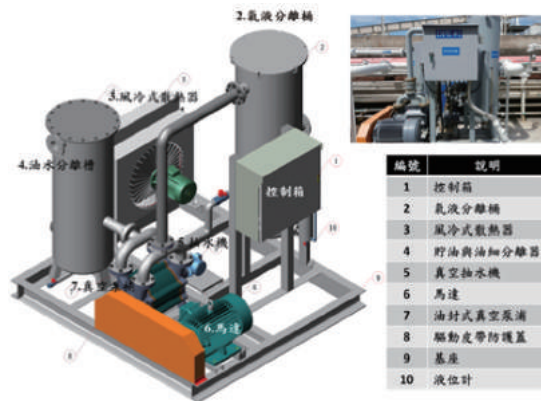
By Destination	Complex					Complex with Water Stress
	Renwu	Linyuan	Tungshan	Hsinkang	Mailiao	
Surface Water (a)	2,015.3	0	341.9	669.3	0	
Groundwater (b)	0	0	0	0	0	
Sea Water (c)	0	0	0	0	0	
Third-party Water (d)	1,788.5	2,785.5	0	0	6,043.6	
Third-party Water for Other Organizations	0	0	0	0	0	
Subtotal (a)+(b)+(c)+(d)	3,803.8	2,785.5	341.9	669.3	6,043.6	
Total Water Discharge	13,644.1					
By Freshwater and Other Water Resources	Complex					Complex with Water Stress
	Renwu	Linyuan	Tungshan	Hsinkang	Mailiao	
Freshwater (e)	2,015.3	0	341.9	669.3	0	Mailiao
Other Water Resources (f)	1,788.5	2,785.5	0	0	6,043.6	Mailiao
Subtotal (e)+(f)	13,644.1					
Total Water Discharge	13,644.1					

### 3.2.5 Soil and Groundwater Management 103-2

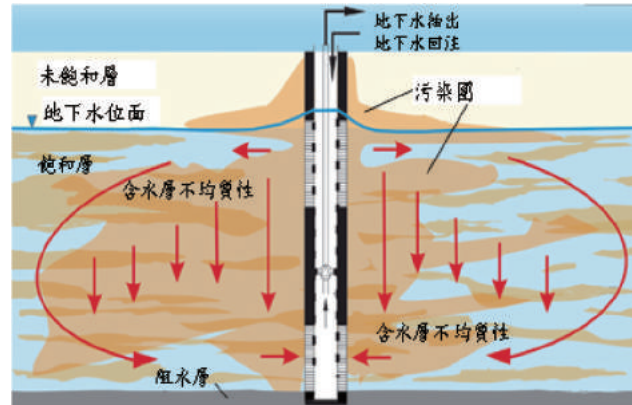
To ensure that leakage accidents can be controlled as soon as possible, FPC has maintained 186 surveillance wells in the Renwu, Linyuan and Hsinkang Complexes. Since 2002, FPG has implemented an overall plan to establish 146 surveillance wells in the Mailiao Complex (20 in FPC's premises). Every year, samples are collected from the wells to analyze the quality of the groundwater to help with groundwater management. Moreover, a water management system has also been set up to raise prevention awareness among operators and avoid soil or groundwater pollution caused by negligence during the production processes.

FPG has also consulted the soil and groundwater prevention procedures established by the Industrial Development Bureau, Ministry of Economic Affairs and a U.S. expert (DuPont Fellow) to develop the "Soil and Groundwater Pollution Control and Inspection Management Plan" in order to handle current and potential pollution situations, and ensure timely control of leakage incidents. In terms of pollution treatment, dual-phase extraction (DPE) is applied mainly to soil remediation with low permeability. During the vacuum extraction, groundwater, gas in the soil, pollutants adsorbed on the surface of the soil or the pores can be simultaneously extracted through DPE, so that the soil and groundwater can be simultaneously treated; groundwater is treated by the groundwater circulation facilities (GCW and PAT) using the internal closed circulation system, coupled with reduced secondary pollutants or waste. The volatile organic gases produced during the improvement process are discharged after being treated by the exhaust gas burner.

Soil - Dual-phase Extraction (DPE)



Groundwater - Groundwater Circulation System



### 3.2.6 Water Pollution Prevention Measures

306-1

With regard to wastewater discharge at each complex, appropriate wastewater treatment facilities have been arranged to accommodate wastewater sources based on their nature in order to ensure that wastewater quality exceeds the national effluent standards. In accordance with wastewater pollution control regulations and the geographical location of the complexes, processed wastewater is discharged into the sea (e.g., the Taiwan Strait from the Mailiao Complex), rivers (e.g., the Kaohsiung Houjin River from the Renwu Complex, the Chiayi Puzi River from the Hsinkang Complex, and the Yilan Tungshan River from the Tungshan Complex), nearby drainage systems or industrial sewage systems (e.g., the sea discharge pipe at the Renwu Complex discharges wastewater into the Ren Da Industrial Park sewage system, whereas wastewater from the Linyuan Complex is processed at the Kaohsiung Linhai Linyuan & Dafa Industrial Parks Combined Wastewater Treatment Plant).

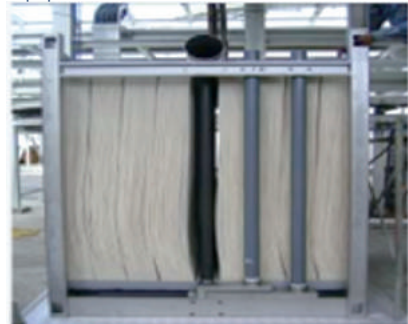
Besides, FPC has set up automatic wastewater inspection (monitoring) and continuous transmission systems, which allow 24-hour surveillance of water volume, temperature, pH value, electrical conductivity, COD, SS, etc., as well as real-time connection to local competent authorities, where 5 complete sets of such facilities have been installed in the Renwu Complex. The water quality monitoring results were better than the regulatory standards. In addition, FPC has further reduced process contaminants in wastewater and increased wastewater recycling. For instance, the installation of ammonia tail gas recovery system and the improvement of wastewater denitrification system at the Renwu Complex were completed in June 2017, have helped the complex achieve the goal of reducing and managing water pollutants.

Regarding wastewater reduction and recovery, we have planned to invest NT\$77 million in the Phase 1 Process Source Reduction at Renwu Complex since 2017. As of the end of December 2018, 19 sets of systems have been completed (leading to a reduction of 1,710CMD); 9 sets (which are estimated to reduce 790CMD) are expected to be completed at the end of December 2019. In 2018, FPC invested another NT\$115 million in the Phase 2 Cooling Tower Effluent Recycling at Renwu Complex. The pilot test is currently ongoing and is expected to complete by the end of 2020.

Waste Water Recycling Technology - RO Equipment



Waste Water Recycling Technology - MBR Equipment



Furthermore, in line with Kaohsiung City Government's policies to build the Houjing River Park and discharge wastewater into the sea, as well as with the release of quota for discharge of wastewater into the sea due to discontinued operation of CPC's Fifth Naphtha Cracking Plant, FPC has applied to add 4 km of sea discharge pipeline to discharge all the wastewater from the Renwu Complex into the sea (with 50% of wastewater at this industrial complex currently discharged into rivers). The relevant cost is estimated to be NT\$140 million, and the pipeline is estimated to be completed by the end of 2019.

## 3.3 Greenhouse Gas and Energy Management



### 3.3.1 Greenhouse Gas and Energy Management Strategies 103-2 103-3

Material Issue

Greenhouse gas emissions and energy management

Management Policies

- **Goals and targets:**  
FPC sets the short-term, mid-term, and long-term reduction targets in accordance with the Greenhouse Gas Reduction and Management Act and the "Guidelines for Staged Greenhouse Gas Reduction Targets and Controls":
  1. Short-term target: GHG emissions in 2020 are 2% lower than those in 2005.
  2. Mid-term target: GHG emissions in 2030 are 20% lower than those in 2005.
  3. Long-term target: GHG emissions in 2050 are 50% lower than those in 2005.
- **Commitment:**
  1. Implementing energy conservation measures, including energy consumption reduction during the process, energy reuse, waste heat reuse, improvement in equipment efficiency, and energy management.
  2. Implementing reductions in accordance with the Greenhouse Gas Reduction and Management Act and the "Guidelines for Staged Greenhouse Gas Reduction Targets and Controls."
- **Policy:**  
Based on the idea of circular economy, FPC aims to maximize the utilization of energy through energy and resource integration across complexes and companies and achieve GHG reductions; the performance of GHG reductions is reported to the Senior Vice President or above for confirmation on a regular basis and included in the corporate social responsibility reports that are reported in the Board meetings.
- **Unit in charge:**
  1. Safety and Health Department
  2. Set and review the annual target of energy consumption: When budgeting, each complex sets the annual target of energy consumption, compares the performance every month, and reports specific energy issues for improvement.
  3. Appoint the dedicated person in charge of process improvement: Each complex continuously improves material and energy consumption.
  4. Encourage creative proposals: FPC has offered incentives to IE improvement proposals from NT\$300 to NT\$30,000 based on the benefits of the proposals.

### 3.3.2 Greenhouse Gas Inventory and Emission Intensity

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FPC promotes greenhouse gas (GHG) emission inventory and investigations in accordance with ISO 14064-1 standards. FPC has also commissioned the British Standards Institution (BSI) and SGS Taiwan to conduct Scope 1 and Scope 2 inventory investigations from 2006 to 2017 to ensure that the GHG emissions comply with the relevant regulations.

#### Our Milestones

Since 2018, FPC conducted the Scope 3 emission inventory, including products and services purchased, upstream transportation and distribution, operating waste generated, travel, employee commuting, and downstream transportation and distribution.

FPC's 2017 Greenhouse Gas Emissions

Unit: 10 Thousand Tons CO<sub>2</sub>e

Scope \ Complex	Renwu	Tungshan	Linyuan	Mailiao	Hsinkang	4 <sup>th</sup> Complex	Total	Percentage (%)
Scope 1	258.6	15.7	71.8	59.1	0.8	0.0	406	43.9%
Scope 2	1.8	1.8	25.2	463.6	25.8	0.2	518.4	56.1%
Total	260.4	17.5	97.0	522.7	26.6	0.2	924.4	100%
Percentage (%)	28.2%	1.9%	10.5%	56.5%	2.9%	0.0%	100.0	—

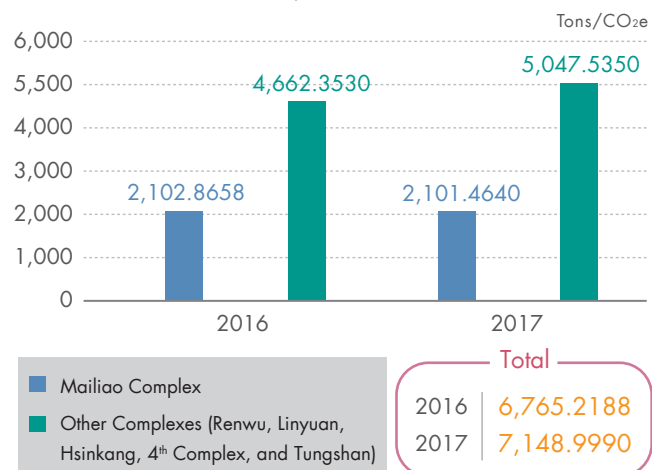
Source: 2017 GHG Verification Opinion Statement. The 2018 verification opinion statement is expected to be obtained in August 2019. The types of GHG emissions in Scope 1 include carbon dioxide, methane, nitrous oxide, and hydrofluorocarbon. The types of GHG emissions in Scope 2 are those of FPC's public utilities plant, FPC's public utilities plant, and Taiwan Power Company. GHG emissions are calculated based on the operational control approach.

Note: According to EPA regulations, the second assessment report released by IPCC is used for inventory data before 2015 (inclusive), whereas the Global Warming Potential (GWP) of the fourth assessment report released by IPCC is used for inventory data starting from 2016. These data have already been certified by a third-party organization (BSI and SGS) while certification with reasonable assurance levels has been issued.

Since 2018, FPC has authorized SGS and BSI to conduct the Scope 3 emission inventory. As the Scope 3 emission inventory covers considerable items, FPC first focused on carbon emissions from waste treatment, business trips (air transport), and employee commuting. The results of the Scope 3 emission inventory are shown in the table below. The Company will continue to evaluate other items of the Scope 3 emission inventory.

To achieve the targets of effective reuse, sustainable development and zero waste, CO<sub>2</sub> generated from the calcium carbonate heating process is used as a raw material in the precipitated calcium carbonate production process at Tungshan Complex, which accounted for approximately 4,567.9 tons of CO<sub>2</sub>e in 2018, to reduce GHG emissions.

FPC's Scope 3 GHG Emissions



Note: The 2018 verification opinion statement of Scope 3 is expected to be obtained in August 2019.

### GHG Emissions at FPC from 2014 to 2017

Unit: Tons CO<sub>2</sub>-e

Year	Scope 1	Scope 2	Scope 3	Subtotal	Emission Intensity (Tons CO <sub>2</sub> -e/NT\$100 Million)
2014	4,407,235	4,656,571	NA	9,063,806	4,909.97
2015	4,322,415	4,857,117	NA	9,179,532	5,724.09
2016	4,061,443	4,871,848	6,765	8,940,056	5,968.29
2017	4,060,474	5,183,854	7,149	9,251,477	5,433.29

Source: Greenhouse Gas Declaration and FPG Greenhouse Gas Inventory Database. The verification opinion statement is expected to be obtained in August 2019.

### 3.3.3 Improvement in Energy Conservation

302-3

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#### Energy Conservation Performance at FPC in 2018

Category \ Item	Amount Conserved	Improvement (Cases)	Investment (NT\$100 Million)	Investment Benefit (NT\$100 Million/Year)	Greenhouse Gas Reduction (Ten Thousand Tons CO <sub>2</sub> -e/Year)	Energy Intensity
Steam	16.68 (tons/hour)	68	0.77	0.98	3.83	0.55 tons/ton
Electricity	5.4 (thousand kWh/hour)	249	3.96	0.92	3.53	287.41 kWh/ton
Fuel	0.01 (tons/hour)	1	0.01	0.01	0.02	-
Total	-	318	4.74	1.91	7.38	-

Source: FPG SHE Database.

Note: Scope 1 covers steam and fuel; Scope 2 covers electricity. The types of GHG emission reduction include carbon dioxide, methane, nitrous oxide, and hydrofluorocarbon.

Completed in 2018	Type	Number of Cases	Electricity Savings (kWh/Hour)	Million Joules
Electricity Savings	Energy management	62	998	31,460,314
	Improvement of equipment efficiency	124	1,941	61,208,222
	Energy consumption savings	63	2,418	76,244,587
	Total	249	5,356	168,913,123

Source: FPG SHE Database.

Since 2019, 259 new improvements have been added, with an estimated amount of 41.27 tons/hour in steam savings, 10.2 thousand kWh/hour in electricity savings, 0.39 tons/hour in fuel savings, and 168.1 thousand tons CO<sub>2</sub>-e/year in GHG reductions. The total amount of investment is NT\$1.886 billion, with an annual benefit of NT\$469 million, where:

- An estimated amount of 5 tons/hour in steam savings can be achieved through "Improvement in Concentrated Section Steam Supply" at the Mailiao MMA Plant.

- 🌿 An estimated amount of 2,935 kWh/hour in electricity savings can be achieved through "Electricity Saving Improvement by Re-coating of IEM-4 Electrolyzer" at the Renwu Caustic Soda Plant.
- 🌿 An estimated amount of 0.34 tons/hour in fuel savings can be achieved through "Energy Conservation Improvement through Replacement Operations at Energy Recovery Sites" at the Renwu Public Plant.

## 3.4 Air Pollutant Management



### 3.4.1 Air Pollution Management Strategies

103-2

103-3

#### Material Issue

Air pollutant management

#### Management Policies



##### ■ Goals and targets:

To prevent air pollution incidents, FPC implements air pollution controls and improvements in the hope of achieving the annual goal of zero pollution.

##### ■ Commitment:

Comply with environmental laws and regulations in Taiwan:

1. Adopting BAT and BACT during the complex design.
2. Strengthening the control over VOCs by implementing the "VOCs Escape Self-detection and Repair Procedures," where each complex is required to check all facilities (including possible leaks of components, welds, and equipment) and repair any abnormal VOCs escape (over 100ppm) immediately and continuously track to avoid recurrences.
3. Arranging each business unit to report the "Short-term, Mid-term, and Long-term Strategies for Improving VOCs Leaks" to the Business Management Committee to reduce abnormal VOC leaks.
4. Adopting the best air pollution control equipment and implementing waste exhaust gas reduction, VOCs reduction, and odor control during production, and stopping the production of CFC-11, CFC-12, and other ozone-depleting substances.

##### ■ Policy:

Upholding the business philosophy of balancing safety, health, and environment and economic development, FPC implements various environmental initiatives in line with the "Safety/Health/Environment Policy" approved by the Chairman, and demonstrates its commitment to a safe and healthy environment to neighboring residents to win the understanding and support from the public. (Company website: <http://www.fpc.com.tw/fpcw/index.php?op=res&id=10&c=8>)

##### ■ Unit in charge:

1. Safety and Health Department
2. To minimize environmental pollution, FPC includes environmental protection in the performance evaluation for each department, and deducts the performance bonus in case of any abnormalities.



Case Study

To strengthen the control over VOCs emissions, the President's Office organized the Seminar on VOCs Emission Management Technology on September 11, 2018 to share opinions on the competent authority's audit highlights, leak prevention technology, and VOCs escape management.

### 3.4.2 Air Pollution Monitoring and Assessment

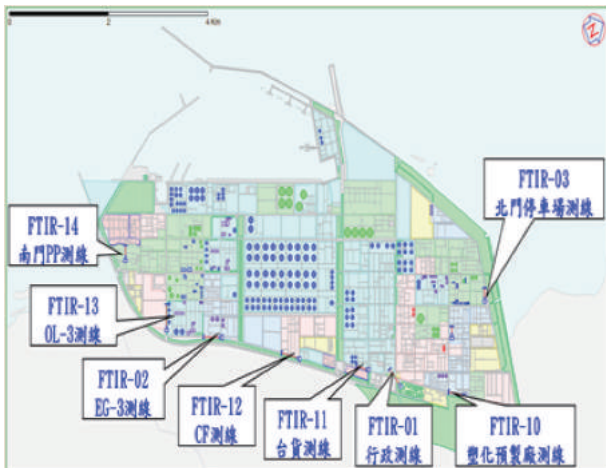
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#### (1) Air Quality

In order to keep abreast of various environmental indicators in real time at the Mailiao Complex, FPC sets out to establish a comprehensive environmental monitoring network, and incorporates eight layers of intensive monitoring control by reference to local prevailing wind directions in order to facilitate the rapid tracking of emission sources, thereby ensuring local air quality.

A total of 8 fixed FTIR monitoring stations were established to control the VOCs concentration in the plant.



Infrared Gas Display Device for Finding Unobvious Leaks



#### (2) Air Quality Impact Analysis

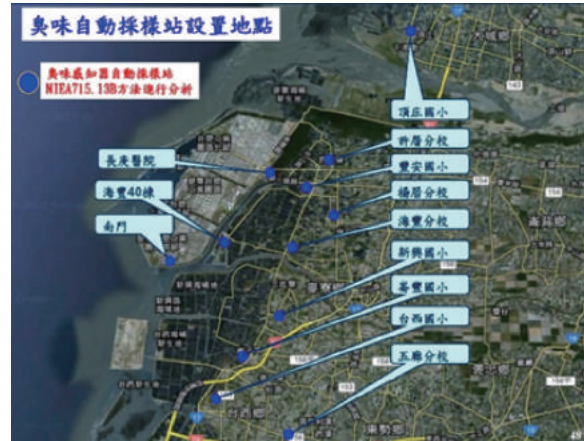
According to more than 3 million sets of statistical data provided by EPA which were collected from air quality monitoring stations in the Tucheng District (New Taipei City), Xianxi Township (Changhua County), Taixi Township (Yunlin County), and Xiaogang District (Kaohsiung City), the trend of air quality in various locations in Western Taiwan is roughly similar; no significant abnormalities were found in the air quality of Yunlin, Chiayi and Tainan.

To prevent odors from affecting neighboring residents, FPG established the Odor Prevention Team on September 17, 2010. The Group Administration Office and four companies, namely FPC, NPC, FCFC and FPCC, have formed the Joint Odor Inspection Team, which conducts daily odor inspections and patrols on the process and in the perimeter of each complex. Besides, the team reports inspection results to the Vice President (or Assistant Vice President) at each complex at 4 p.m. every day, requests complexes with odor incidence to submit proposals for improvement, and supervises the rapid elimination of odors. In 2018, no odors at FPC were reported to affect neighboring residents.

10 Air Quality Monitoring Stations and 1 Monitoring Vehicle



Automatic Odor Sampling Stations



### 3.4.3 Air Pollution Control Measures

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At present, FPC's pollution control results have surpassed national standards and are on a par with the performance of global optimization standards. The performance with regard to exhaust emissions is as follows:



For fuel used in boilers, FPC uses imported coke breeze with a sulfur content of 0.4% to 2.0%. Furthermore, electrostatic precipitators have been installed to remove powder particles, while flue gas desulfurization facilities have been installed to absorb sulfur oxides in exhaust gases. Many other combustion facilities have converted heavy oil into natural gas or process exhaust gas, and coal has been stacked indoors to prevent dust from escaping. In line with the actual preventive maintenance, training and operation, FPC ensures that all the facilities can perform at optimal capacity to control pollution.



FPC continued to promote VOCs reduction improvements by requesting the staff to fix any leaky components detected and log them for follow-up.



In addition to ensuring that various pollutants comply with environmental protection regulations, FPC has also continued to promote air pollution reduction projects.

On January 22, 2019, the Environmental Protection Administration promulgated the "Air Pollutant Control and Emission Standards for Vinyl Chloride and Polyvinyl Chloride Manufacturers" to strictly regulate the equipment components, storage tanks, transportation, and wastewater treatment facilities. The improvement in tank breather valves is expected to complete by the end of December 2019 in accordance with the regulations, while other controlled items have been improved.

## FPC Air Pollution Control Methods

### Discharge Pipes



- Improve process equipment and operating conditions
- Recycle and reuse normal exhaust gas of flare
- Enhance the efficiency of pollution prevention equipment

### Equipment Components



- Reduce the number of equipment components
- Improve maintenance technology
- Improve detection technology - promote GasFindIR detection
- Ensure the quality of detection by manufacturers

### Storage Tanks



- Modify fixed storage tanks or replace them with floating roof tanks
- Seal and collect exhaust gas from storage tanks to combustion equipment for treatment
- Seal and collect exhaust gas from storage tanks to recycling equipment for reuse

### Wastewater Treatment Plants



- Install covers in wastewater treatment plants
- Channel gas emissions from aeration tanks to deodorization towers for treatment
- Channel VOCs in the front-stage wastewater units to control equipment

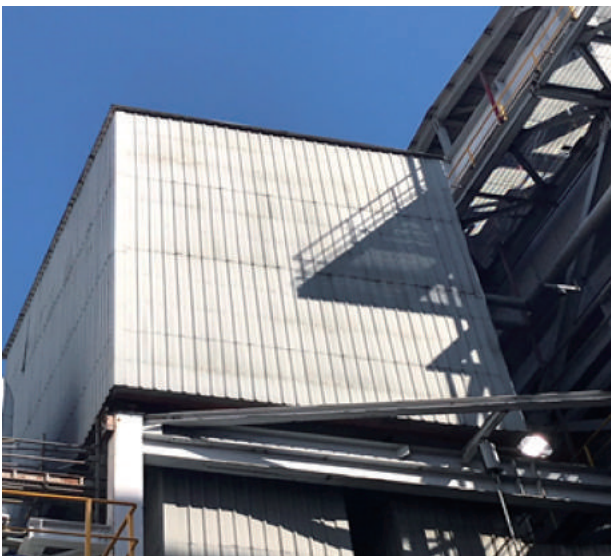
Indoor Coal Yard with Closed Delivery System



Electrostatic Precipitators (EP)



Selective Catalytic Reduction (SCR) System



Flue-Gas Desulfurization (FGD) System



FPC Air Pollutant Emission Statistics in 2018

Environmental Information	Complex						Total
	Renwu	Linyuan	Mailiao	Hsinkang	Tungshan	4 <sup>th</sup> Complex	
Sulfur Oxides (SOx) (Tons/Year)	454.6	167.7	344.0	0.6	1.5	0.0	968.4
Nitrogen Oxides (NOx) (Tons/Year)	963.2	363.0	336.0	0.4	159.9	0.0	1822.5
Volatile Organic Compounds (VOCs) (Tons/Year)	34.3	138.2	244.4	24.4	8.7	11.1	461.1
Total Suspended Particles (TSP) (Tons/Year)	163.2	68.3	44.0	1.7	18.4	0.0	295.6

Source: EPA Air Pollution, Wastewater and Waste Declaration Website.

## 3.5 Waste Management



### 3.5.1 Waste Management Policies

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103-2

#### Material Issue

Waste management

#### Management Policies

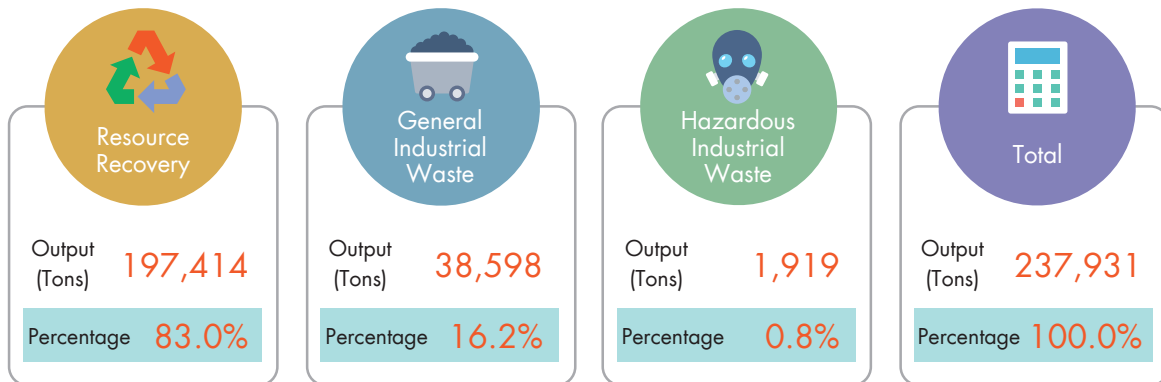


- **Goals and targets:**  
The amount of waste generated by each department in 2019 is 1% less than that in 2018.
- **Commitment:**  
Waste is removed through reuse first to reduce landfill and incineration. Waste for reuse is announced and directly cleared by responsible institutions in accordance with the "Methods and Facilities Standards for the Storage, Clearance and Disposal of Industrial Waste." Related measures should be taken to prevent pollution during transportation, such as scatter, splashes, spills, and odor diffusion.
- **Policy:**  
FPC follows the principles of source management, waste reduction during product processes, and end control. First, FPC enhances the reuse of resources via source management and accelerates the recycling treatment process. Next, waste reduction during production processes is implemented to reduce load on treatment facilities. Lastly, FPC decontaminates water resources that can no longer be reused using treatment facilities, and utilizes end control methods to discharge such resources in compliance with regulatory standards so as to minimize its impact on the environment.
- **Unit in charge:**  
Safety and Health Department

### 3.5.2 Waste Disposal Regulations and Management Information Statistics 306-2

Through operations such as source classification and waste reduction during production processes and recycling, FPC has managed to reduce the amount of incinerated and buried waste. The ultimate goal is to achieve zero waste and zero burying. Regarding outsourced waste treatment, priority is given to recycling before incineration and landfill treatment.

In 2018, FPC has generated 237,931 tons of waste, among which 38,598 tons were general industrial waste that could be incinerated or buried, while 1,919 tons were hazardous industrial waste. After waste classification, recycling and reuse, 197,414 tons were recovered as resources, accounting for 83.0% of the total waste generated. The ways of treatment of industrial waste are as follows:



Source: EPA Waste Declaration and Management Information System.

Unit: Ton

General Industrial Waste	Outsourced Treatment	In-house Treatment	Total	Percentage
Physical Treatment	2,546	191	2,737	7.1%
Landfill Treatment	11,504	0	11,504	29.8%
Incineration Treatment	11,626	5,878	17,504	45.3%
Other Treatments	6,853	0	6,853	17.8%
<b>Total</b>	<b>32,529</b>	<b>6,069</b>	<b>38,598</b>	<b>100.0%</b>

Hazardous Industrial Waste	Outsourced Treatment	In-house Treatment	Total	Percentage
Solidification Treatment	67	326	393	20.5%
Incineration Treatment	1,339	0	1,339	69.8%
Physical Treatment	187	0	187	9.7%
<b>Total</b>	<b>1,593</b>	<b>326</b>	<b>1,919</b>	<b>100.0%</b>

### 3.5.3 Hazardous Waste Disposal Methods and Management Measures

To manage and control the hazardous substances in each complex (including the EPA's controlled chemical substances and hazardous chemical substances), FPC strictly requires all management personnel to obtain professional and technical licenses and the complexes to be equipped with the capability of hazard prevention and resilience, and has detection and alarm systems and emergency response devices in place.

The detection and alarm systems can detect the concentration less than 10 times or above the allowable exposure standard at workplaces. In case of leaks, warning lights are turned on, and the control room also receives an immediate alert message to immediately respond to and handle minor leaks that may occur. In addition, the alarms at Mailiao Complex also connect to the monitoring center to respond immediately in case of an abnormality situation.

In addition to strict management in accordance with laws, FPC evaluates the suppliers of chemical substances to ensure the normal operation and delivery of chemical substances and to reduce hazards.

### 3.5.4 Hazardous Substance Prevention and Emergency Response Drills

In 2018, FPC organized 60 EPA-controlled chemical substance emergency response drills at all complexes (including factory sites and transportation), with a total of 1,259 participants involved. The content of these drills consisted of notification, evacuation, disposal, testing, etc.; the focus was familiarity with emergency response procedures, the use of personal protection equipment, and verifying whether the response equipment was in good condition. Moreover, competent authorities were also invited to provide guidance to improve and enhance emergency response capabilities, and to ensure that emergency situations could be dealt with in the quickest and most appropriate manner, thereby reducing hazard risks. FPC has held three joint drills with competent authorities, as shown in the following table.

Joint Drills between FPC and Competent Authorities in 2018



2018/7/19		2018/7/25		2018/10/23	
Competent Authority	Environmental Protection Bureau, Kaohsiung City Government	Competent Authority	Environmental Protection Bureau, Yunlin County	Competent Authority	Environmental Protection Bureau, Kaohsiung City Government
Complex	Renwu	Complex	Mailiao	Complex	Linyuan
Plant	Caustic Soda Plant	Plant	Caustic Soda Plant	Plant	VCM Plant

#### Emergency response drill

1. People feel unwell when exposed to the leak of the liquid chlorine storage tank caused by the earthquake.



2. The emergency response personnel quickly gather at the upwind site.



3. The fire-fighting squad sprinkles water to prevent chlorine from escape.



4. The rescue squad enters the liquid chlorine storage tank to stop the leak.



5. The Central Region Environmental Accident Technical Team detects the gas concentration at the site.



6. An officer from the competent authority makes comments.



## 3.6 Environmental Compliance

103-2

103-3

### Material Issue

Environmental compliance



### Management Policies

#### ■ Goals and targets:

Environmental protection and pollution prevention are the corporate responsibilities. FPC strictly abides by the environmental laws and regulations to achieve the goal of zero penalty.

#### ■ Commitment:

1. Strictly abiding by the environmental laws and regulations at home and abroad.
2. Inquiring into the roots of environmental violations and improving accordingly, and clarifying possible misunderstanding of environmental issues in accordance with laws.

#### ■ Policy:

Upholding the business philosophy of balancing safety, health, and environment and economic development, FPC implements various environmental initiatives in line with the "Safety/Health/Environment Policy" approved by the Chairman, and demonstrates its commitment to a safe and healthy environment to neighboring residents to win the understanding and support from the public. (Company website: <http://www.fpc.com.tw/fpcw/index.php?op=res&id=10&c=8>)

#### ■ Unit in charge:

1. Safety and Health Department
2. To minimize environmental pollution, FPC includes environmental protection in the performance evaluation for each department, and deducts the performance bonus in case of any abnormalities.

### 3.6.1 Penalties for Violation of Environmental Regulations

306-3

307-1

Belonging to the petrochemical industry, FPC is one of the primary inspection targets of both central and local environmental protection agencies. In 2018, we committed 11 environmental violations, including one major environmental violation (major violations are defined as single events penalized with a fine more than NT\$1 million) (see Section 3.7). Compared to that in 2017, the amount of fines increased in 2018 regardless of fewer cases. In the future, FPC will continue to propose improvement measures in safety, health, and environmental management, in hopes of further reducing the number of environmental violations and the amount of fines.

Number of Environmental Violation Cases and Penalty Amounts at FPC from 2015 to 2018

Unit: Case; NT\$ ten thousands

Type of Environmental Violation	2015		2016		2017		2018	
	Number of Cases	Amount	Number of Cases	Amount	Number of Cases	Amount	Number of Cases	Amount
Air Pollution	3	75	2	20	11	115	6	80
Water Pollution	1	14	0	0	0	0	1	204.6
Waste Pollution	0	0	1	0.15	1	6	3	7.2
EPA-controlled Chemical Substances	1	10	0	0	0	0	0	0
Soil and Groundwater	2	30	0	0	0	0	1	20
<b>Subtotal</b>	<b>7</b>	<b>129</b>	<b>3</b>	<b>20.15</b>	<b>12</b>	<b>121</b>	<b>11</b>	<b>311.8</b>

### 3.7 Response to Material Environmental Issues

102-44

#### (1) Air pollutant emissions in the petrochemical industry were not high in proportion and were not the main cause of serious air pollution

In recent years, a code orange or red air quality alert has frequently been issued in the autumn and winter seasons, indicating a deterioration in air quality in Taiwan. This is usually caused by an increase in the concentration of fine aerosols (commonly known as PM<sub>2.5</sub>). According to the EPA's PM<sub>2.5</sub> emission statistics ([https://teds.epa.gov.tw/new\\_main2-0-1.htm#%E5%88%86%E9%A1%9E%E7%B5%B1%E8%A8%88](https://teds.epa.gov.tw/new_main2-0-1.htm#%E5%88%86%E9%A1%9E%E7%B5%B1%E8%A8%88)) in Kaohsiung City by industry, the PM<sub>2.5</sub> emissions of chemical material manufacturers accounted for only 3.67% of the total PM<sub>2.5</sub> emissions in Kaohsiung City, far below those of the electricity and gas suppliers, basic metal manufacturers, road/water transporters, households, and others. The PM<sub>2.5</sub> emissions of precursors, sulfur oxides (SO<sub>x</sub>) and nitrogen oxides (NO<sub>x</sub>), accounted for only 10.77% and 8.62%, respectively.

PM <sub>2.5</sub> Emissions in Kaohsiung City by Industry	Original PM <sub>2.5</sub>		SO <sub>x</sub>		NO <sub>x</sub>	
	Metric Ton	Percentage (%)	Metric Ton	Percentage (%)	Metric Ton	Percentage (%)
Electricity and Gas Supply	755	7.31	12,047	31.83	16,104	21.74
Petroleum and Fuel Manufacturing	206	1.99	2,710	7.16	4,132	5.58
Chemical Material Manufacturing	380	3.67	4,076	10.77	6,386	8.62
Basic Metal Manufacturing	1,752	16.95	9,749	25.76	9,275	12.52
Road Transportation	1,864	18.03	8	0.02	22,136	29.89
Water Transportation	405	3.91	7,705	20.36	5,462	7.37

PM <sub>2.5</sub> Emissions in Kaohsiung City by Industry	Original PM <sub>2.5</sub>		SO <sub>x</sub>		NO <sub>x</sub>	
	Metric Ton	Percentage (%)	Metric Ton	Percentage (%)	Metric Ton	Percentage (%)
Household	2,137	20.68	91	0.24	5,677	7.67
Others	2,837	27.46	1,463	3.86	4,889	6.61
Total Emissions	10,336	100	37,849	100	74,061	100

## (2) Yilan County Government imposed a penalty on Tungshan Complex

The Environmental Protection Bureau, Yilan County appointed the officers to audit Tungshan Complex on October 8, 2018. The officers found that limestone with lime was piled up in the complex, and wastewater, after being washed by rainwater, was not properly collected and treated before discharge. The wastewater quality did not meet the Effluent Standards, which violated Paragraph 1, Article 7 of the Water Pollution Control Act. The Environmental Protection Bureau imposed a penalty on Tungshan Complex accordingly. The Environmental Protection Bureau also determined that FPC's action to discharge during the rainy days did cause substantial pollution, so the penalty was aggravated.

During lime stove repair construction, Limestone with lime was temporarily placed at the outdoor feed site to be fully used for the lime stove later on to optimize resource reuse. However, the unexpected heavy rainfall in the morning overtook the collection capacity of the wastewater pump. Wastewater was collected and treated at the wastewater treatment plant immediately, and related measures were also taken to improve the water environment and remove limestone. Therefore, the incident only had a temporary impact on the water environment nearby. In response to the extreme weather, FPC has expanded the wastewater collection and treatment capacity of Tungshan Complex and set up the wastewater quality monitoring system at the outlet for real-time monitoring and treatment.

According to the "Regulations of Fines Determination for Water Pollution Control Act," the purpose of aggregated penalties is to punish unscrupulous manufacturers that intentionally discharge untreated or unqualified wastewater without permission or through secret pipelines or bypasses during rainy days. There were underground pipelines near Tungshan Complex. If Tungshan Complex had intentionally discharged through secret pipelines or bypasses, it would have chosen underground pipelines. As a result, Tungshan Complex did not intentionally discharge untreated wastewater or wastewater not meeting the Effluent Standards without permission during rainy days.



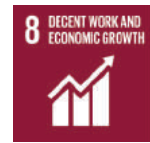
# 4

A circular icon containing a stylized figure of a person standing on a pedestal and holding a trophy aloft with their right arm.

## Builders of Happy Talent

4.1 Human Resource Policies and Employee Composition	98
4.2 Employee Welfare and Care	103
4.3 Talent Cultivation and Retention	109

# 4.1 Human Resource Policies and Employee Composition



## Specific Action

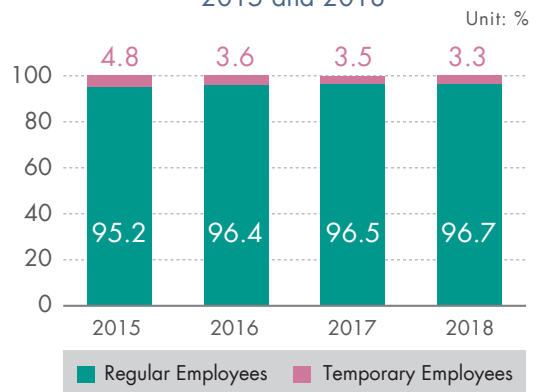
FPC supports and complies with the labor and human rights laws of the Republic of China, including the Labor Standards Act, the Labor Union Act, the Collective Agreement Act, the Act for Settlement of Labor-Management Disputes, the Occupational Safety and Health Act, and the Act of Gender Equality in Employment, and laws and regulations of countries where it operates. FPC also establishes internal policies to protect the rights of existing employees (including contract employees and temporary employees). In addition, FPC expects suppliers and contractors to comply with related principles to maintain human rights. Chairman Jason Lin officially signed the Human Rights Policy in August 2018. For more information, please refer to the Company's official website. (<http://www.fpc.com.tw/fpcw/index.php?op=res&id=11&c=59>)

### 4.1.1 Manpower Structure 401-1 405-1

In 2018, there were 6,132 regular employees at the Company, accounting for 96.7% of the total number of employees. On the other hand, there were 207 temporary employees such as consultants, contract employees, and part-time student workers, constituting 3.3% of the total number of employees. Over the past four years, the annual percentage of regular employees has remained above 95%, while 100% of them were local employees.



Due to the characteristics of the industries to which FPC belongs, the ratio of male to female employees is approximately 10:1. Meanwhile, the average age of employees is 42.9 years old, while the average length of service is 17.06 years. Our employees are mostly in the 30 to 49 years old age group, indicating that our colleagues put their trust in FPC and have grown together with the Company. At the same time, our senior colleagues also play the role of passing on experience, leading and creating, while FPC continues to recruit new employees in order to update and upgrade the organization, as well as practice the spirit of sustainable development through the optimization of manpower structure.

Percentage of Regular Employees and Temporary Employees between 2015 and 2018



## Manpower Structure of FPC in 2018

Unit: Person

Category	Group					Total
		Number of People	Percentage	Number of People	Percentage	
Position	Management Level and Above	3	0.5%	48	0.9%	51
	Management Level 1 and 2	67	12.0%	1,254	22.5%	1,321
	First-Line Supervisor Level	99	17.7%	1,594	28.6%	1,693
	Assistant and Staff Level	389	69.8%	2,678	48.0%	3,067
	Total	558	100.0%	5,574	100.0%	6,132
Location	Northern Taiwan	198	35.5%	443	7.9%	641
	Central Taiwan	131	23.5%	2,474	44.4%	2,605
	Southern Taiwan	222	39.8%	2,524	45.3%	2,746
	Eastern Taiwan	7	1.2%	133	2.4%	140
	Total	558	100.0%	5,574	100.0%	6,132
Age	Under 29	58	10.4%	636	11.4%	694
	30-49	359	64.3%	3,533	63.4%	3,892
	50 and older	141	25.3%	1,405	25.2%	1,546
	Total	558	100.0%	5,574	100.0%	6,132
Seniority	Less than 10 years	160	28.7%	1,952	35.0%	2,112
	11-30 years	253	45.3%	2,794	50.1%	3,047
	More than 30 years	145	26.0%	828	14.9%	973
	Total	558	100.0%	5,574	100.0%	6,132
Education	Doctor's Degree	6	1.1%	32	0.6%	38
	Master's Degree	88	15.8%	766	13.7%	854
	Bachelor's Degree	78	14.0%	966	17.3%	1,044
	Others	386	69.1%	3,810	68.4%	4,196
	Total	558	100.0%	5,574	100.0%	6,132



#### Management Level and Above

President, Executive Vice President, Senior Vice President, Vice President, Assistant Vice President, etc.



#### Management Level 1

Plant Manager (Department Manager), Deputy Plant Manager (Deputy Department Manager), Senior Engineer (Senior Administrator), etc.



#### Management Level 2

Section Chief, Deputy Section Chief, Engineer (Administrator), etc.



#### First-Line Supervisor Level

Junior Engineer (Junior Administrator), Shift Supervisor, Foreman, etc.





#### Assistant and Staff Level

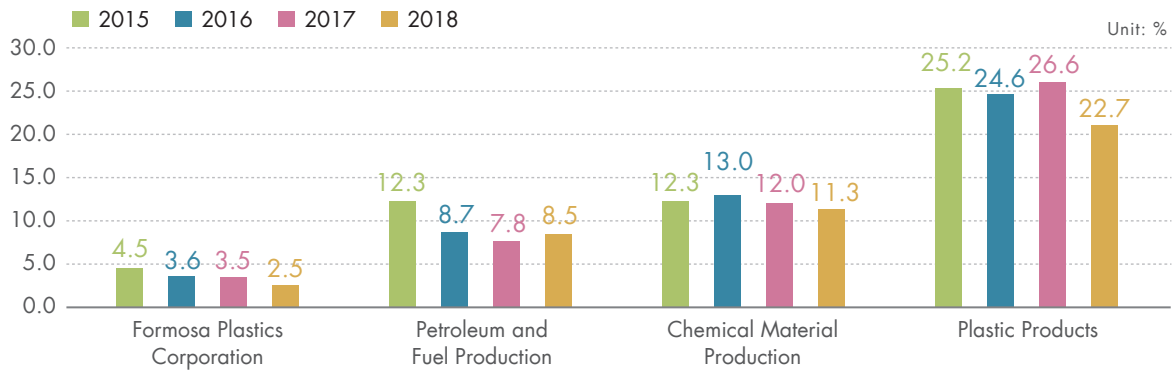
Staff and clerks whose titles are fixed according to their appointments

In 2018, a total of 155 regular employees resigned from FPC, including 52 employees (approximately 33.5%) who retired. Over the past four years, the annual employee turnover rate has remained below 4.5%, which is significantly lower than that of our peers. This shows the effects of our commitment towards employee care and employment security, as well as our colleagues' sense of identity with FPC.

Age and Area Distribution of FPC's Resigned Employees in 2018

Category	Group				
		Number of People	Percentage	Number of People	Percentage
Age	Under 29	5	0.08%	20	0.33%
	30-49	10	0.16%	29	0.47%
	50 and older	2	0.03%	37	0.60%
	Retired	0	0.00%	52	0.85%
Area	Northern Taiwan	3	0.05%	20	0.33%
	Central Taiwan	6	0.10%	34	0.55%
	Southern Taiwan	8	0.13%	80	1.30%
	Eastern Taiwan	0	0.00%	4	0.07%
Total		17	0.28%	138	2.25%
Percentage of Resigned Employees Based on Gender		10.97%		89.03%	

Comparison of Employee Turnover Rate Between FPC and Peer Industries over the Past Four Years



Note 1. Source of industry information: Directorate-General of Budget, Accounting and Statistics (time series data query - exit rate).

Note 2. FPC: Turnover rate = (Retired + Deaths + Layoffs + Others) / Total number of employees at the end of the year.

## 4.1.2 Employee Recruitment 401-1 405-1 406-1

FPC has always complied with human rights policies and carried out its recruitment process based on the principles of fairness, impartiality, and openness. FPC also strictly forbids the use of child labor. Enrollment sources are expanded through multiple channels, and candidates are selected according to performance without differential treatment based on factors like age, ethnicity, gender, sexual orientation, religion, partisanship, birthplace, marriage, appearance, or physical and mental disabilities. In 2018, a total of 158 new employees were recruited, with 122 new employees aged below 29 years old, accounting for 74% of the total number of new employees, to reach the purpose of implementing organizational innovation. No violation of human rights or discrimination was reported in 2018.

Age and Area Distribution of New Employees in 2018

Unit: Person

Category	Group	Female		Male	
		Number of People	Percentage	Number of People	Percentage
Age	Under 30	13	0.21%	109	1.78%
	30-50	8	0.13%	28	0.46%
	50 and older	0	0	0	0%
Area	Northern Taiwan	1	0.02%	3	0.05%
	Central Taiwan	11	0.18%	74	1.21%
	Southern Taiwan	9	0.15%	58	0.95%
	Eastern Taiwan	0	0.00%	2	0.03%
Total		21	0.34%	137	2.23%
Percentage Based on Gender		13.29%		86.71%	

FPC provides appropriate work for people with physical and mental disabilities, and their remuneration standards are the same as those of new employees in the same position to protect their rights and interests. In 2018, the total number of people with physical and mental disabilities employed by FPC was better than the statutory requirements.



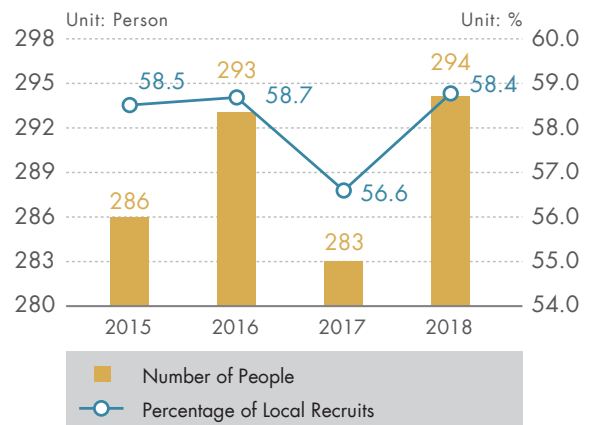
Note 1: According to Article 38 of the People with Disabilities Rights Protection Act, any company whose total number of employees is no less than 67 shall employ people with disabilities with capability to work, and the number of employees with disabilities shall be no less than 1 percent of the total number of the employees (under labor insurance), and no less than 1 person.

Note 2: According to the People with Disabilities Rights Protection Act, when a company employs a person with severe disabilities, the person shall be calculated as two.

### 4.1.3 Local Recruitment 202-2

With the continuous development, FPC has complexes in various areas, including Taipei City, Yilan County, Yunlin County, Chiayi County, and Kaohsiung City. To create job opportunities for the locals, we give priority to local residents in the recruitment of new employees. In addition, we also actively nurture outstanding local supervisors. Hence, the percentage of local residents at a senior management level has remained over 55% over the past four years.

Percentage of Local Residents at Senior Management Level over the Past Four Years



Note: High-level executives refer to the percentage of personnel with positions above Management Level 1 (inclusive) having household registration in the same county/city in which the complex is located.



## 4.2 Employee Welfare and Care

102-41

201-1

201-3

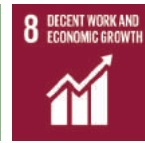
### 4.2.1 Remuneration and Welfare

103-2

103-3

202-1

405-2



#### Material Issue

Employee remuneration and benefits








#### Management Policies

- **Goals and targets:**
  - Attracting and retaining outstanding talents
- **Commitment:**
  1. Providing standard and competitive remuneration packages
  2. Providing a sound insurance system
  3. Offering the same salary conditions based on the spirit of "equal salary for both men and women"
- **Policy:**
  1. FPC takes into consideration the long-term welfare of employees, where the management level of each complex is responsible for implementing various welfare measures in order to improve the quality of life among employees.
  2. FPC adjusts the salaries of employees appropriately based on the overall business performance, price indexes, and scale of pay adjustment in the same industry.
  3. FPC sets the remuneration standards for new recruits based on their education and work experience.
  4. FPC adjusts salaries and promotes employees every year based on the performance evaluation system, and offers remuneration packages corresponding to the nature of work.
  5. FPC contributes to the pension reserve at the prescribed proportion, and grants the pension and souvenirs to employees when they meet the statutory conditions for retirement; in addition, FPC has established a retirement association with other companies of FPG and provided subsidies for member activities in order to thank retired employees for their remarkable contribution.
- **Unit in charge:**
  - HR Unit

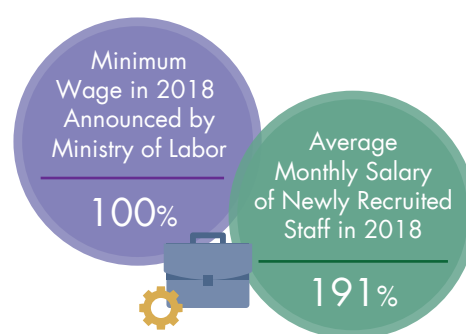
At present, the remuneration paid to male and female employees are as follows:

Remuneration Ratio of Male to Female Employees in Similar Positions and on Similar Ranks at FPC over the Past Four Years

Year	-	2015	2016	2017	2018
Gender					
Management Level and Above	1	0.69	0.75	0.73	0.73
Management Level 1 and 2	1	1.45	1.46	1.41	1.36
First-Line Supervisor Level	1	1.24	1.22	1.19	1.19
Assistant and Staff Level	1	1.22	1.20	1.19	1.17

To recruit outstanding talent, FPC offers competitive remuneration packages in the hope of providing stability and taking care of both employees and their family members. The ratio of the minimum monthly salary to the statutory minimum basic salary for the newly recruited staff is 115%, and may be adjusted based on the education and work experience.

Based on the overall business operation, FPC sets the same standard for the year-end bonus and salary adjustment for all regular employees to encourage the staff to continuously work professionally in order to improve the business performance. The number of regular employees other than managerial officers, average salary, and median salary between 2017 and 2018 are compared below:



Item	2017 (A)	2018 (B)	Percentage (C=B/A)
Number of Regular Employees Other than Managerial Officers	5,914	5,991	-
Average Salary (NT\$)	1,383,659	1,406,379	1.016
Median Salary (NT\$)	1,245,926	1,279,118	1.027

## 4.2.2 Welfare System 103-2 401-2 407-1

FPC has also implemented a number of welfare measures that are superior to the standards stipulated by the law, including:

### A. Employee Welfare

- (A) Cash prizes for Chinese New Year, Dragon Boat Festival, and Mid-Autumn Festival, as well as birthday gifts (vouchers) and scholarships for employees' children, are provided.
- (B) Annual trips for employees are regularly organized, while year-end dinners and other activities are subsidized.

- (C) Cafeterias, dormitories for single employees and dependents, welfare buildings, salons, libraries, and recreational facilities are established for employees at each complex.
- (D) Cash prizes for purchasing stocks of FPG affiliated companies are provided.
- (E) Discounts from partner stores are provided.
- (F) Wedding or bereavement cash/gifts and subsidies are given when employees or their relatives get married or pass away.

#### B. Health Care Benefits

- (A) Routine checkups for employees with more favorable item requirements than that of relevant laws (e.g., oral cancer and carcinoembryonic antigen) are provided. Besides, specialized health checkups are arranged and health management programs are implemented on employees exposed to noise hazards and chemical substances, while also tracking these results according to the law.
- (B) Subsidies are provided for employees and their immediate families receiving medical services and health checkups at Chang Gung Memorial Hospital.
- (C) Fitness and entertainment facilities have been set up at large complexes, such as basketball, volleyball, and table tennis courts, as well as gymnasiums. Various competitions are held regularly and bonuses are regularly paid out.
- (D) Physicians and medical staff are stationed at each complex to provide medical services and counselling, while activities for fitness management, quitting smoking, and preventive health care are organized. We collaborate with the John Tung Foundation to host "Stress Relief Day" (including seminars on various topics such as travel, sports injury prevention, and positive energy).

Founders Commemoration & Family Day



Family Activity Area on Family Day



Morning Running Activity at Complex



Slow Softball Competition



Basketball Competition



Table Tennis Competition



### C. Employee Reward

- (A) Outstanding employees are commended and awarded with medal and cash prizes.
- (B) Commemorative gold coins are awarded to employees for every five years of service

### D. Expatriate Welfare

- (A) Injury insurance and travel insurance are provided for expatriates and business trips.
- (B) Subsidies for family visits, health care, and trips home are provided for expatriates in China and Vietnam.
- (C) Health checkups for expatriates are provided prior to relocation and once every two years thereafter.











A well-organized labor union can express opinions on behalf of employees or members, strive for reasonable employee rights and work environments, highlight the idea that employees are important assets of a company, and contribute to the balanced development of a company's operation. Established on May 15, 1966, FPC's industrial union had five labor unions as of the end of 2018 (including Mailiao Complex Labor Union, Renwu Complex Labor Union, Linyuan Complex Labor Union, Tungshan Complex Labor Union, and Hsingang Complex Labor Union), and approximately 75% of the total number of employees participated in labor unions. Employees who are yet to join labor unions will also have various rights, including salary increment and year-end bonus. All regular employees enjoy similar protections under the labor-management agreement.

## 4.2.3 Unpaid Parental Leave 401-3

With the purpose of implementing the concept of a happy workplace, FPC has not only established breastfeeding rooms at each complex to create a friendly office environment, but also promoted the unpaid parental leave program to provide parental leave so that our colleagues who meet the requirements of the program can adjust their working hours based on their needs. In 2018, a total of 9 employees applied for unpaid parental leave, where 2 employees were actually reinstated in the current year, with a reinstatement rate of 66.7%. In addition, 2 employees were reinstated in 2017, where all of them remained in FPC for more than one year, with a retention rate of 100%.

Unpaid Parental Leave Applications and Reinstatement Rates between 2015 and 2018

Unit: Person

Item	2015			2016			2017			2018		
			Total			Total			Total			Total
Number of Applications for Unpaid Parental Leave by Eligible Employees	34	349	383	27	344	371	17	298	315	18	276	294
Actual Number of Applications for Unpaid Parental Leave	4	1	5	2	0	2	2	1	3	9	0	9
Number of Employees Reinstated in the Current Year (A)	1	0	1	4	1	5	2	0	2	3	0	3
Number of Employees Who Applied for Reinstatement in the Current Year (B)	1	0	1	4	1	5	2	0	2	2	0	2
Reinstatement Rate (B/A)	100%	100%	100%	100%	100%	100%	100%	-	100%	66.7%	-	66.7%
Retention Rate (%)	100%	100%	100%	100%	-	100%	100%	100%	100%	100%	-	100%

Note: "Retention rate" indicates the rate of employees who remain at FPC for more than one year, after taking unpaid parental leave.

#### 4.2.4 Employee Communication and Care 402-1

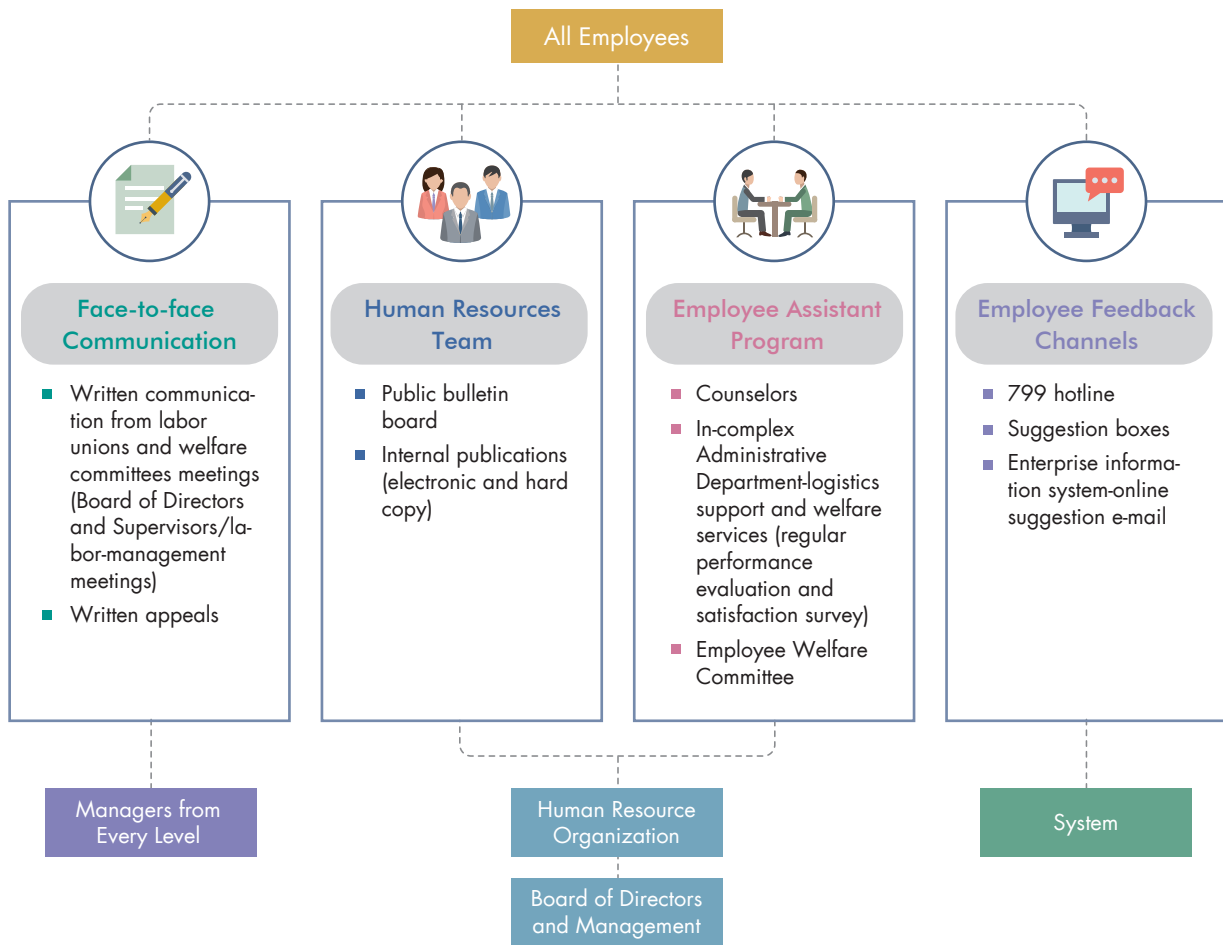
FPC announces its business operations on a regular basis in accordance with laws and regulations for the employees to understand the development of the Company. For a special need, the employees will be informed within the prescribed time limit to implement labor-management communication.

To establish harmonious labor-management relations, FPC has provided multiple channels of communication to encourage employees to come up with innovative ideas. Employees can make recommendations for better living conditions to FPC through labor unions, welfare committees, and labor-management meetings.

Furthermore, we have appointed counselors for newly recruited reserve supervisors or personnel who are under special conditions to regularly provide concerns and help them overcome work and life-related difficulties in order to allow them progress with stability and reduce the rate of staff turnover. In 2018, there were approximately 200 participants in each quarterly interview (forum).

In addition to our colleagues providing opinions and feedback through organizations, such as labor unions and employee welfare committees or regular interviews (forums), we have also installed suggestion boxes in various frequent-visited locations throughout the complexes, established an electronic platform, and set up a "799" hotline for our colleagues to voice various problems, with a view to achieving the objectives of caring for employees and providing multiple channels of communication.

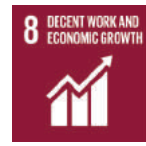
## Internal Channels of Communication at FPC



## 4.3 Talent Cultivation and Retention

103-2

103-3



### Material Issue

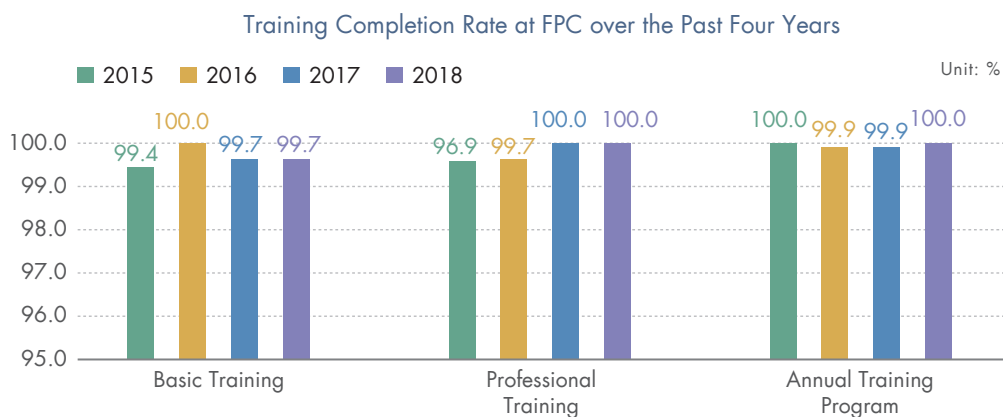
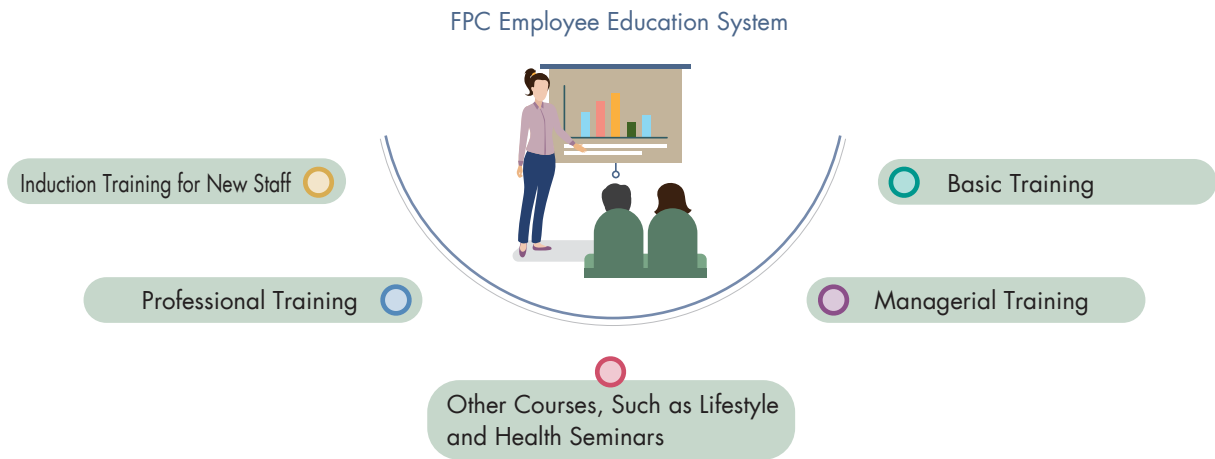
Employee recruitment and retention

### Management Policies

- **Targets:**
  1. Maintaining the most important asset of FPC—employees
  2. Attracting and recruiting outstanding talent
  3. Allowing every employee to work steadily and professionally
  4. Striving to take care of employees, protect their work, and enhance their sense of belonging to FPC
  5. Adjusting the salary every year based on the corporate system and scale of salary adjustment
- **Commitment:**
  1. Providing the basic wages and stable, sound remuneration packages superior than the statutory requirements
  2. Developing expertise and building a complete career development system
  3. Offering diversified benefits to employees and their family members
  4. Providing employees and their immediate family members preferential medical services at Chang Gung Memorial Hospital
  5. Providing a safe and healthy working environment
  6. Providing smooth communication channels
  7. Establishing corresponding training programs and courses based on the functions of positions to strengthen their competence
- **Policy:**
  1. FPC has always valued the human rights policy and carried out its recruitment process through multiple channels and based on the principles of fairness, impartiality, and openness. FPC also strictly forbids the use of child labor; candidates are selected according to performance without differential treatment based on factors like age, gender, sexual orientation, religion, or partisanship.
  2. FPC has a sound training system that arranges courses corresponding to the function of each employee and sets the retraining cycle for the continuous development of employees' competence. In response to AI applications, FPC also assigns employees to participate in external courses, so as to introduce new knowledge and technology that can improve the performance of the Company or each employee.
  3. To retain outstanding talent, FPC offers competitive remuneration and benefits, and regularly provides promotion opportunities, salary adjustment, and performance bonuses based on the corporate system; in addition, a year-end bonus is granted to each employee based on the overall business performance of the Company in order to encourage employees.
- **Unit in charge:**

HR Unit

FPC has developed a set of comprehensive training programs, which can be classified into induction training for new staff, basic training, professional training, and managerial training. Besides, FPC records the process of staff training and related completion dates through the electronic training platform in order to implement the goal of providing all-round training to employees.



Note: 1. Completion rate of basic training (employees whose positions are below first-line supervisor level (inclusive) should receive training within three months of a position transfer (or promotion)): Actual number of employees who have undergone basic training / Number of employees required to undergo basic training.

Note: 2. Completion rate of professional training and annual training program: Actual number of training courses conducted / Number of training courses scheduled.









### 4.3.1 Diversified Education and Training 404-1

Apart from arranging basic training and professional training, as well as advising employees to obtain professional certifications, FPC also irregularly conducts theme-based study courses, such as Business English Class or special lectures on business or industry trends. Furthermore, courses related to the prevention of sexual harassment or the Act of Gender Equality in Employment are also irregularly organized at complexes in order to raise the awareness of human rights among both genders.

In response to the emergence of AI and big data or their applications, FPC has assigned personnel who are familiar with manufacturing processes and software designing to participate in the training courses organized by Taiwan AI Academy established by Academia Sinica and Taiwan Data Science Foundation, so as to strengthen the introduction of AI talent or its applications and further improve the business performance.

Employee Training Hours at FPC over the Past Four Years

Unit: Hours/person

Year	Position	Management Level 1 and 2	First-Line Supervisor Level	Staff Level	Company-Wide Average Hours
2015		21.2	23.9	17.3	18.8
		23.1	47.5	55.2	45.9
	Total	23.1 (Note)	46.2	50.1	43.4
2016		13.5	26.0	18.3	19.3
		29.8	49.3	55.3	48.0
	Total	29.3	47.9	50.4	45.4
2017		13.9	23.2	18.0	18.6
		25.9	46.9	59.8	48.6
	Total	25.3	45.5	54.5	45.8
2018		15.3	32.5	19.4	21.3
		26.3	47.5	56.7	47.2
	Total	25.7	46.6	52.0	44.8

Note: There are fewer female employees at the management level 1 and 2, so the total number of training hours are lower, causing the overall average, after being rounded to the nearest integral, to approach the number of training hours of male supervisors. In addition, since FPC is a petrochemical material manufacturing industry and due to the complicated nature of production equipment and considerations for industrial safety, the training hours of operation staff is higher. On-site operations are mainly conducted by male employees. Therefore, male employees have clocked more training hours than female employees.

### e-learning Platform for Digital Learning and Knowledge Base Management System

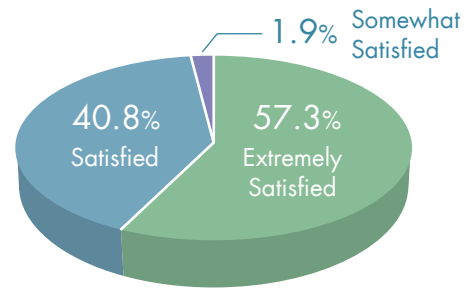
To provide a comprehensive learning channel for the employees, FPC began developing an e-learning system with FPG in 2000. An Employee Learning Website was created to provide employees with a wide range of education and training information through e-courses, articles, books, and lectures, so that employees can conveniently learn and study online.

In addition, the Knowledge Base Management System was launched in 2000 to provide a platform for sharing important information, technical knowledge, and relevant experience in different departments. This tool provides easy access to effectively sharing enterprise knowledge.

## In-depth Seminar Courses for Supervisors and Managers

Other than deepening the professional competencies of employees at all levels, FPC also organized two seminar courses on Design Thinking and Innovation & AI for supervisors and managers in 2018, in the hope of offering new knowledge so as to broaden their perspectives on management, innovation, and decision-making, increase their skills in teamwork and leadership, and optimize our industrial competitiveness of sustainable management.

2018 Management-level Seminar Course Satisfaction Survey



Group Photo (Chairman, President Thu-Hua Liu and the Management)



Lecture by President Thu-Hua Liu, Ming Chi University of Technology



Group Discussion



Chairman and the Management at Trainee Presentation



Award Ceremony



Group Photo (Chairman, the Management, and Trainees)



### 4.3.2 Performance Management 404-3

FPC's performance management system allows managers and colleagues to review their annual work performance. The scope of performance appraisal includes all regular employees. Work performance is regularly assessed every month, which is then used as the benchmark for efficiency bonus. On the other hand, work performance is compiled at the end of the year as a reference for managers to carry out year-end performance appraisal of employees in order to ensure the objectivity of such appraisal. In addition to the regular promotion evaluation, employees with outstanding performance are not only provided with opportunities and channels for promotion and salary increment, but also awarded year-end bonuses based on the business performance of FPC (FPG) and individual employee performance appraisal. Managers link employees and company goals through performance management, as well as monitor and evaluate skills development among employees, thereby creating a win-win situation for both FPC and employees.





# 5



## Builders of a Safe and Healthy Workplace

5.1 Occupational Health and Safety	116
5.2 Industrial Safety Management in Supply Chain	126
5.3 Response to Material Industrial Safety Issues	130

## 5.1 Occupational Health and Safety



103-2

103-3

### Material Topic

Occupational health and safety

### Management Policies



- Goals and targets:
  1. Creating a people-oriented safe culture
  2. Reducing the frequency-severity indicator by 20%, the disabling injury frequency rate from 0.36 in 2017 to 0.29, and the disabling injury severity rate from 1 in 2017 to 0.8
  3. Achieving a long-term goal of zero occupational injuries
- Commitment:

FPC complies with and performs better than the safety and health laws and regulations at home and abroad and is committed to building a safe and healthy work environment where no occupational injuries occur.
- Policy:
  1. Building safe equipment and facilities
  2. Implementing standard operating procedures (SOP)
  3. Building an occupational safety and health management system
  4. Promoting process safety management (PSM)
  5. Strengthening process safety incident management (including risk assessment)
  6. Promoting health care and a healthy workplace for employees
  7. Implementing employee health grading management
- Unit in charge:
  1. Safety and Health Department
  2. After the performance evaluation of occupational safety and health management, rewards are granted to top three departments, and additional bonuses will be offered to plant directors and safety and health management personnel of winning departments for three consecutive times of being the top three; departments evaluated as the last three departments for three consecutive times should propose improvement plans and report to the Chairman in the Business Management Committee meeting.

### 5.1.1 Workplace Safety Management 103-2 103-3

To strengthen the safety and health management and achieve a people-oriented safety culture, FPC sets up a safety and health department (team) under each unit and department, from the highest unit, the President's Office, to business units and complexes, and designates full-time safety and health management officers, process safety management personnel, and fire management personnel to be in charge of implementing safety and health management, process safety management, and fire management. FPC also sets up the safety and health management system to continuously implement safety and health management under the PDCA model.



#### A. Process Safety Management (PSM)

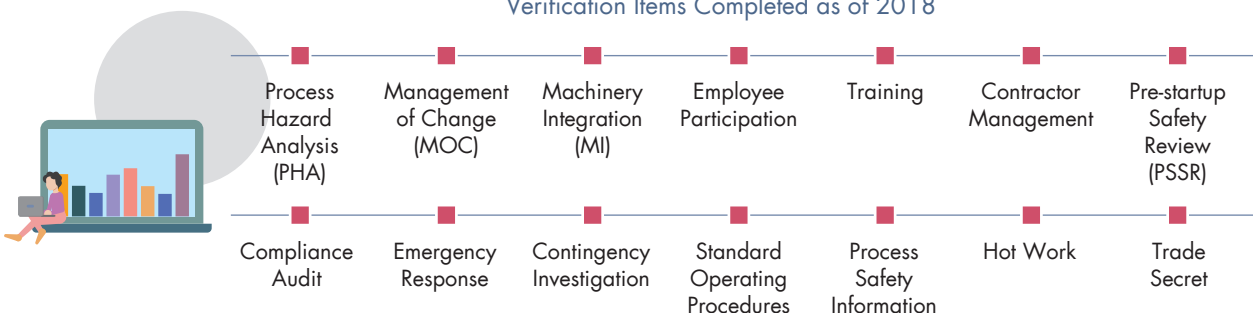
FPC has launched PSM operations with 14 key items according to the regulations of the U.S. Occupational Safety and Health Administration (OSHA), and has appointed 68 PSM-dedicated personnel to promote and control PSM management operations in each department, with a view to maintaining the quality of operations. We have also established strict inspection standards for the comprehensive inspection of all 14 PSM key items in all production plants.

#### Case Study

In 2018, FPC engaged a third party, the Industrial Safety and Health Association of the R.O.C., to conduct the audit of all 14 PSM key items and verify whether FPC's process safety management complies with related requirements at home and abroad. FPC also conducts a PSM seminar every three months and organizes training courses on process safety management for process plant directors.

Furthermore, in order to enhance the professional knowledge and personal qualities of the PSM-dedicated personnel and ensure the effective implementation of PSM operations, PSM-dedicated personnel training and 14 key item verification operations have been promoted since 2013. To ensure each process unit implementing the 14 PSM key items in compliance with the Regulations Governing Management of Process Safety, each of process units is scheduled to participate in the compliance audit held once every three years. Upon completion of the audit process, each audited unit is required to investigate and improve the identified defects, and continuous supervision is required to meet the regulations.

Verification Items Completed as of 2018



## B. Process Hazard Analysis (PHA)

To further improve the evaluation quality of PHA, FPC has commissioned IHS Inc. from the U.S. to assist in training and certifying PHA facilitators since 2011. Currently, we have 14 qualified PHA facilitators, who are now responsible for guiding PHA operations at each industrial complexes.

Moreover, to enable the (semi-) quantitative analysis of high-risk hazardous incidents to follow PHA operations, FPC formulated the Management Guidelines on Layer of Protection Analysis (LOPA) in January 2013, which stipulates that unacceptably high-risk operations, such as those at Class 1 (very high risk) and Class 2 (high risk) operations, have to be further assessed, and established the safety integrity level of the required safety instrumented system to ensure process safety.

## C. Management of Change (MOC)

Regarding MOC quality improvement, PSM facilitators monitor the quality of MOC operations. Furthermore, licensed PHA facilitators provide guidance for each department, which covers three major areas, "MOC Implementation", "Quality Assurance of MOC Evaluations", and "Quality Assurance Before Closing a Case", to ensure that each department correctly understands MOC operation procedures.

FPC has actively guided the practice of MOC at all Taiwan complexes in 2018. The practice of MOC mainly focuses on counseling, which encourages supervisors and employees to engage in discussion and identify potential risks of changes so that changes are implemented correctly and appropriate and systematic solutions can be established to improve overall operation quality.



## D. Pipeline Safety Management

To provide on-site personnel with a safe work environment, guarantee employee rights, and increase workplace awareness, FPC has achieved both national and international standards of chemical product management and provide Chemical Material Safety Data Sheet for employees to read and understand. Furthermore, taking into consideration the many pipelines in production, in order to avoid confusion over identification, we adhere to international regulations and use GHS Hazardous Chemical labels on chemical storage tanks, containers and pipelines so that employees can easily identify the chemicals flowing through each pipeline.

Meanwhile, to provide a clearer and easier identification method of hazardous materials in pipelines for on-site personnel, FPC has adopted international industrial procedures. Since 2014, labeling has been improved for flammable, explosive and toxic materials at the outlet flanges and valves, pipe racks, places of potential splash hazard and other areas that require labeling of pipeline materials in order to enhance employees' ability to identify potential hazards.



## E. AI Applications to Industrial Safety Management

To strengthen industrial safety management through AI, FPC adopts the smart glass system developed by the Electronics Unit, where two access control methods (face recognition and personnel positioning card) are combined to control contractors' operations at the designated sites. Any breaches of access control will be reported immediately; in addition, image recognition for items under smart supervision (such as personal protective equipment and compliance with SOP) is included in the smart glass system for back-end processing to give immediate indication.

The Helmet Detecting System Developed by the Electronics Unit



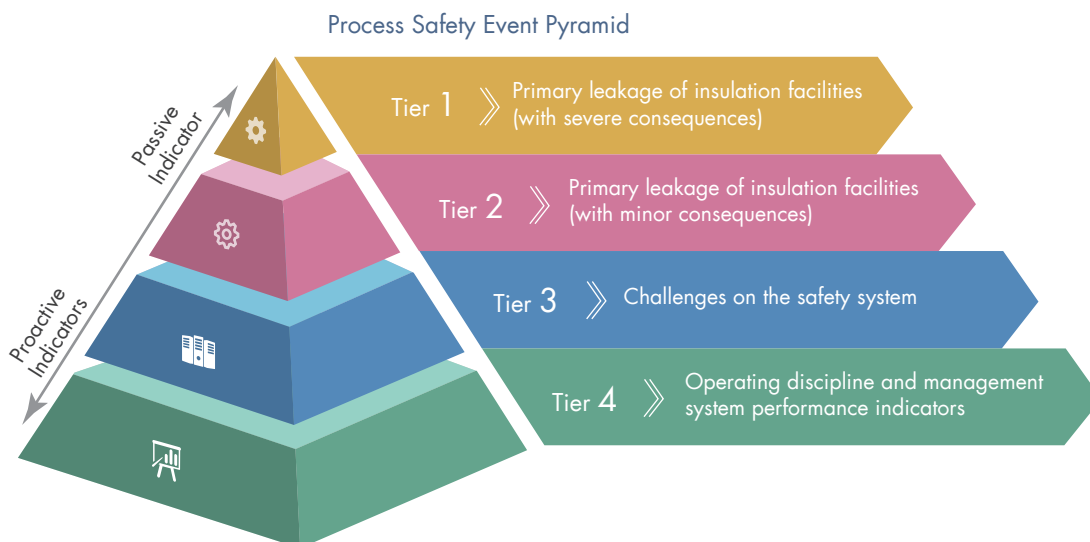
Real-time Indication of Workers Not Wearing a Helmet by the Helmet Detecting System



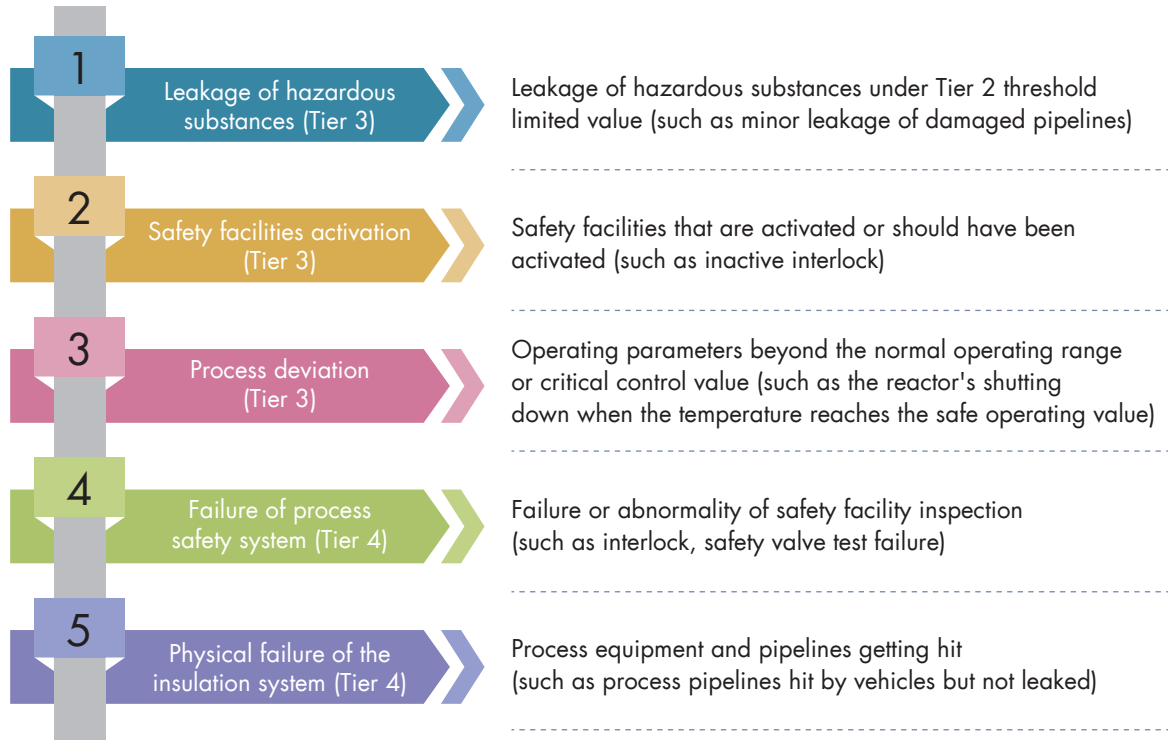
## F. Process Safety Event (PSE) Reporting Promotion

When conducting the total inspection of process safety management at Mailiao Complex in 2018, the Industrial Development Bureau, Ministry of Economic Affairs set process safety events as one of the indicators. When meeting with the executives of FPC in 2018, the Occupational Safety and Health Administration, Ministry of Labor recognized the effectiveness of the process safety management and suggested that FPC strengthen the reporting and management of false alarms to avoid disasters and upgrade process safety management.

Accordingly, FPC divides process safety events into four tiers (see the figure below) according to American Petroleum Institute (API). The first and second tiers are "process safety events" that should be reported publicly. Process safety events refer to unexpected or uncontrollable short-term ( $\leq 1$  hour) leakage of considerable process materials, causing casualties, environmental hazards, and property damage; the third and fourth tiers are "process false alarm events" and "operating discipline and management performance," respectively.



In 2018, FPC explained the judgment principle of PSE, the definition of process false alarm events (including examples), and recommended investigation methods to each complex in Taiwan. In addition to the reporting and improvement of Tier 1 and Tier 2 PSE, FPC will continuously report and improve the following five categories of process false alarm events (including Tier 3 and Tier 4).



## G. Bunker Contractor and Oxygen-Deficient Workplace Management

To strengthen bunker safety management, contractors are required to check in first at the unit in charge and confirm the health conditions of operators, contents of operations, and safety equipment before construction. During operation, operators should follow the standard operating procedures (SOP) or job safety analysis (JSA) and the established operating procedures to reduce the occurrence of occupational injuries.

Bunkers are statutory oxygen-deficient workplaces. Instructions on oxygen-deficient operations should be posted at the entrance of the workplace. Operators should ensure that the respiratory protective gear, ladders, harnesses or lifelines are in place on-site. FPC also strengthens work environment management by installing ventilation equipment at oxygen-deficient sites and instruments measuring the concentration of oxygen, hydrogen sulfide, methane, or other harmful gases in the air or having contractors carry instruments for measuring concentration. FPC also controls the height of coal piles and angle of repose and indicates and monitors the maximum height of coal piles to avoid any collapse of coal piles.

FPC assigns employees to conduct the inspection and audit at the workplaces. Any abnormalities identified in the audit are registered for control or reviewed for improvement and publicized in the daily toolbox talk and monthly organization meeting to avoid reoccurrence.

## 5.1.2 Emergency Response Mechanism at Complexes

103-2

103-3

### Material Topic

Emergency response mechanism at complexes



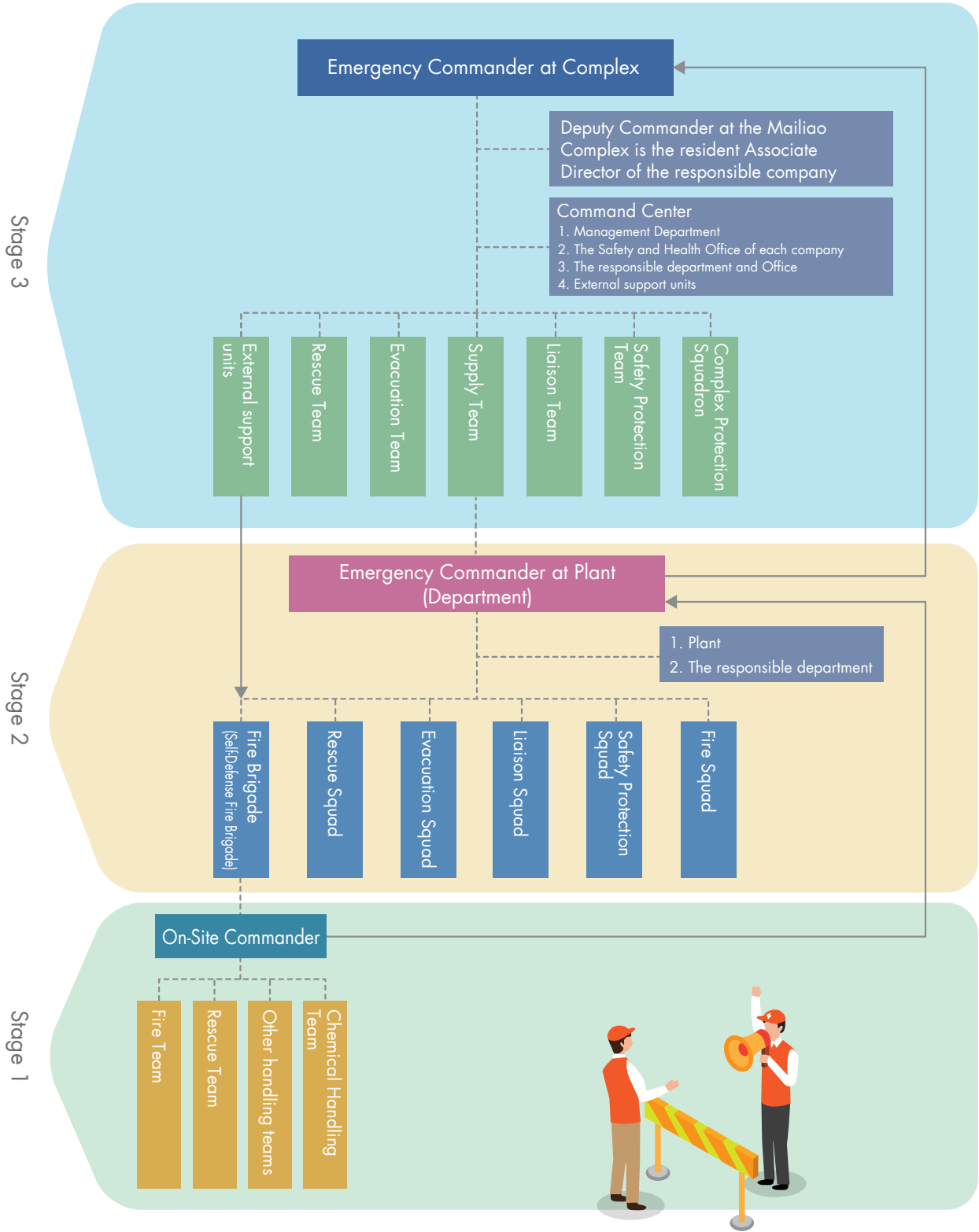
### Management Policies

- **Goals and targets:**  
FPC expects to achieve the goal of zero complaints from stakeholders within five years through the sound emergency response mechanism at complexes.
- **Commitment:**  
Strengthening the emergency response practices at each complex in compliance with the Fire Services Act and the Toxic and Concerned Chemical Substances Control Act to minimize the loss caused by accidents
- **Policy:**
  1. FPC sets up an emergency response organization under each complex management unit and appoints the head of the complex as the emergency commander. Depending on the dynamics of an accident, the emergency response center of each complex may be initiated with emergency response procedures, such as evacuation, rescue, and safety protection.
  2. If the expanded accident may affect the safety of the personnel, the emergency commander will order the evacuation of the dangerous zones and contact the external agencies, such as the fire brigade and disaster response squad.
- **Unit in charge:**
  1. Safety and Health Department
  2. The Safety and Health Department reviews the emergency response plans and drills of each complex on a regular basis and helps set up the pre-plan of the standard procedures for disaster relief.

### Emergency Response Organization

The head of each complex serves as the emergency commander. Each complex conducts drills every half a year based on different situations and organizes firefighting training to minimize the impact of accidents. In case of personal injuries, fires, or explosions caused by chemical leaks, handlers should be fairly aware of responses to chemical disasters.

## Emergency Response Organization at Complex



FPC organizes four rounds of contingency drill in controlled chemical tanker transport every year to improve the capacity of the response personnel and transport team in case of emergencies during transport. Through support from different mutual defense organizations, resources, personnel, and equipment for disaster relief are shared to strengthen the overall capacity for disaster relief.

#### Contingency Drill in Controlled Chemical Tanker Transport



Personnel Wear Grade A Protective Clothing

Stopping Leakage of VCM Tanker

Tank Shift of VCM Tanker

### 5.1.3 Care for Employee Health and Healthy Workplace Promotion

102-12

403-3

FPC is committed to promoting occupational disease prevention and health promotion to ensure that the workplace can become a healthy workplace and nurture employees with good physical and mental health. Employee health management is divided into three categories and five levels. The results of health checkups are analyzed for abnormality rate.

In addition, FPC implements preventive medicine and disease prevention and strengthens employees' knowledge of health to achieve the goal of healthy life and health promotion. FPC has purchased the "ie Health Instrument" to provide free measurement of blood oxygen, electrocardiogram, blood pressure, weight, and body composition for employees. The resident nurse compares measurement data, assesses health risks, and provides health education to manage the health conditions of employees and further urge upon employees personal health improvement. The resident nurse makes referrals whenever necessary and follows up the progress of improvement. Employees may also check their measurement data through "ie Health Instrument" as needed to understand their body composition and health conditions.



ie Health



Height

Blood Pressure

Weight

Blood Sugar

Body  
Composition

Cholesterol

Blood Oxygen

Triglyceride

Electrocardiogram

Uric Acid

## 5.1.4 Prevention of Occupational Injuries and High-risk Diseases

403-2

403-3

To effectively prevent occupational diseases, FPC investigates and controls risks in the operations and develops preventive measures. As for health promotion, we collect and analyze potential health risks of employees through health checkups, employee interviews and care provided by managers, develops health promotion activities, and provides health checkups for employees on a regular basis. In addition to providing appropriate safety protective equipment for employees engaging in health-hazardous operations, we also implement health checkups for specific items and health classification management from Level 1 to Level 4, with a view to preventing occupational diseases and ensuring that employees are healthy and safe.

Taking the Mailiao Complex as an example, the complex arranges for occupational medicine specialists to visit its worksite four times every month to perform four levels of management. Besides, the complex continues to implement hearing protection according to the hearing protection plan formulated and regularly tracks and adjusts its work areas.

Specialized Health Checkup Results of Employees at the Mailiao Complex in 2018

Unit: Person

Specialized Health Checkup Item	Level 1 Management	Level 2 Management	Level 3 Management	Level 4 Management
Noise Operation	297	253	0	1
Ionizing Radiation Operation	100	15	0	0
Carbon Tetrachloride Operation	4	0	0	0
Trichloroethylene and Tetrachloroethylene Operation	56	1	0	0
Dimethylformamide Operation	118	11	0	0
n-Hexane Operation	113	0	0	0
Vinyl Chloride Operation	422	27	0	0
Dust Operation	149	12	0	0
Chromic acid operations	12	0	0	0
Mercury Operation	5	2	0	0
Formaldehyde	41	0	0	0

FPC's employee injury data is statistically analyzed based on important statistical indicators of disabling injuries announced by the Ministry of Labor and GRI Standards, where disabling injury frequency rate (FR), disabling injury severity rate (SR) and absentee rate (AR) have been selected as the main statistical basis (these statistics exclude traffic accidents outside the complex).

In 2018, the disabling injury frequency rate among employees was 0.18 (0.19 for males and 0 for females), while the disabling injury severity rate was 5 (5 for males and 0 for females), where both of these rates were lower than those in the manufacturing industry in the entire country. Besides, no cases of occupational diseases or work-related fatalities were recorded at FPC in 2018.

Employee Injury Indicators in 2018

Item \ Complex	Mailiao Complex		Renwu Complex		Hsinkang Complex		Linyuan Complex		Tungshan Complex		FPC	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Disabling Injury Frequency Rate, FR (%)	0	0	0.58	0	0	0	0	0	0	0	0.19	0
Disabling Injury Severity Rate, SR (%)	0	0	15	0	0	0	0	0	0	0	5	0
Frequency-severity Indicator (%)	0	0	0.09	0	0	0	0	0	0	0	0.03	0
Occupational Disease Rate	0	0	0	0	0	0	0	0	0	0	0	0
Lost Work Time	0	0	51	0	0	0	0	0	0	0	51	0
Absentee Rate (%)	0	0	0	0	0	0	0	0	0	0	0	0
Work-related Fatality (cases)	0	0	0	0	0	0	0	0	0	0	0	0

Note: The disabling injury frequency rate and the disabling injury severity rate are calculated in millions of hours. The absentee rate only includes occupational disease leave and excludes sick leave and menstrual leave.



## 5.2 Industrial Safety Management in Supply Chain

103-2

103-3



### Material Topic

Industrial and public safety

### Management Policies



- **Goals and targets:**  
FPC expects to achieve the goal of zero process disasters and minimize business risks.
- **Commitment:**
  1. Complying with the Occupational Safety and Health Act and the related regulations on process safety management and keeping abreast of and introducing the Process Safety Management Regulations under the US Occupational Safety and Health Administration (OSHA) to FPC's process safety management system
  2. Complying with domestic laws and regulations relating to fire services and hazardous goods in plants in terms of fire safety equipment in plants, and safe distances, structure, and safety equipment of public dangerous goods plants in order to prevent process hazards between sites.
- **Policy:**
  1. Regulating the responsibility for process safety management at each level, establishing work rules and standard operating procedures for all operation tasks, reviewing each unit's monthly performance of process safety management through KPI, and completing the audit of all PSM items within three years to review the implementation efficiency
  2. Making and implementing a test plan based on the pipeline risk level management system to replace risky pipelines and reduce the risk of leakage of hazardous chemicals
  3. Implementing the construction safety and health management system for contractors and evaluating the contractors' independent safety management performance through audit; every quarter, each business unit is responsible to reward outstanding contractors to encourage improvement of their independent safety management and reduce process risks arising from construction.
  4. Setting the KPIs for fire safety management, including regulatory compliance and reduction in operational risks; every quarter, each unit is evaluated, and improvement measures are provided based on the results of the evaluation.
- **Unit in charge:**  
Safety and Health Department

FPC attaches great importance to on-site safety and health management for contractors. To provide the correct knowledge of construction safety and health for contractors, we have established the construction safety and health management system, where contractors are required to accept safety training before construction and additional training hours for high-risk construction projects to get familiar with the work environment and have sound safety protection measures in place beforehand. Work supervisors and safety supervisors are also appointed to provide supervision and guidance.

To ensure that the goal is achieved, FPC implements performance evaluation of contractors' safety and health management every year and grants prizes and medals. In 2018, FPC granted the award of NT\$406,000 to 18 contractors in the hope of encouraging contractors to carry out independent safety and health management properly and achieve the goal of zero accidents.

Assistant Vice President Chen from Safety and Health Department Rewards Outstanding Contractors (Gold Medal)



Assistant Vice President Shih from President's Office Rewards Outstanding Contractors (Gold Medal)



## 5.2.1 Industrial and Public Safety 103-2

FPC is fully aware that the good performance of industrial safety results in good production operations and that on-site processes are important to the safety of employees. To ensure that the goal of zero disasters is met, each complex has established and obtained the certification of OHSAS 18001 Occupational Safety and Health Management System and CNS 15506 Taiwan Occupational Safety and Health Management System under the PDCA (Plan, Do, Check, Act) model to implement safety management and process safety management, in order to identify possible hazards and risks during production and take effective control measures, so as to reduce the overall process risk to an acceptable level and ensure the safety and health of the personnel inside and outside the plants.

## 5.2.2 Supplier and Contractor Management 102-9

FPG employs electronic procurement models to ensure that FPG commissions contractors and suppliers who offer the lowest quotation, fastest delivery and highest quality, and establish a harmonious partnership to achieve the objective of fair and just procurements and commissions. Furthermore, FPG can eliminate substandard contractors and develop long-term, trustworthy contractors through comprehensive partnership management.

- RoHS Compliance
- National industry safety standards
- ISO Compliance
- Apply hazard labels or marks according to the nature of products
- Must comply with fair trade principles
- Must comply with environmental protection, industrial safety and human rights requirements
- Classified based on factories, construction machinery and equipment, industrial safety management, technical competency and contract performance: Category A, Category B and Category C



- Written or on-site evaluation: A manufacture is listed as a cooperating manufacturer upon passing the evaluation.
- Manufacturer's delivery (construction) assessment: A manufacturer whose delivery (project) is overdue, of poor quality or in violation of industrial safety regulations, is automatically placed under evaluation.
- Manufacturers should appropriately recycle used containers or delivery vehicles.
- Prioritize the procurement of products manufactured by the disabled
- Apply non-radioactive labels according to the nature of products
- Including health and safety management costs as necessary expenses in annual budgets
- The quoted amount of health and safety management costs should not be lower than the budgeted amount.
- Must detail contract specifications with regard to health and safety facility projects to be implemented

## (1) Supplier Evaluation

Any supplier who wants to establish partnerships with FPC will have to pass a written evaluation, while an on-site evaluation will be carried out if necessary. A supplier will only be accepted as a cooperating manufacturer upon passing the evaluation. A manufacturer whose delivery (project) is overdue, of poor quality or in violation of industrial safety regulations, will be automatically placed in FPC's manufacturer evaluation mechanism, which screens and selects outstanding manufacturer partners that are suitable for long-term cooperation with FPC.

During procurement, FPC has always required upstream suppliers to meet RoHS, ISO, and related national industrial safety standards, where all goods must be suitably labeled warning signs and labels. Suppliers should also appropriately recycle used containers or delivery vehicles. Products manufactured by the disadvantaged and products with non-radioactive labels are prioritized for procurement. The "Price Inquiries" and "Orders" include requirements for suppliers that they comply with the regulations and fair trade principles. FPC commits itself to ensuring that the partners meet environment protection, industrial safety, and human rights requirements. Non-compliant manufacturers will be rejected and placed under manufacturer evaluation.

In 2019, FPC plans to establish the Supplier Code of Conduct and Risk Assessment Survey and request suppliers to sign and reply in order to cooperate to fulfill corporate social responsibility in line with the requirements for labor, environmental protection, and human rights.

## (2) Contractor Category Management System

FPC has implemented a category management system to classify the contractors into different categories. By collecting relevant information from all types of professional engineering manufacturers, as well as surveying and evaluating factory sites, construction machinery and equipment, site safety management capabilities, technical competencies and actual contract performances, contractors are classified into three categories—A, B, and C, based on their capabilities and actual contract performances.

Furthermore, health and safety management costs will be included as necessary expenses in budgets, while contract specifications with regard to health and safety facility projects, which are to be implemented, should also be detailed. To prevent negligence of health and safety management costs by the Budget Department, the computer system will automatically include this item during budget calculation. During request for quotation, the quoted amount of health and safety management costs should not be lower than the budgeted amount so as to prevent contractors from neglecting health and safety management due to low price bidding.

In 2019, FPC plans to establish the Contractor Code of Conduct and Sustainability Risk Assessment Survey and request contractors to sign and reply in order to cooperate to fulfill corporate social responsibility. FPC will also strengthen the management of high-risk contractors.

### 5.2.3 Contractor Safety Management

When signing contracts with contractors, FPC requires them to comply with safety and health laws and FPG's safety and health regulations in terms of their safety and health management policies and appoint occupational safety and health management personnel to be in charge of implementing safety and health management.

To strengthen the capacity of contractors' occupational safety and health management personnel to further improve their independent management, the Company plans to organize professional training and implement a certification system. Since 2012, the Company has organized the training course on expertise and hazard identification for personnel. Since February 2014, FPC has implemented the certification system and included training and certification in the contractual terms. As of 2018, 4,054 occupational safety and health personnel have passed training, and 2,708 occupational safety and health personnel have been certified.

To allow the safety and health management personnel to take supervisory and management responsibilities, we have also implemented control measures for project irregularities. If many anomalies are found, safety and health management personnel will not be granted entry into the complexes. In addition, through daily construction safety inspections, FPC conducts random inspections around construction areas. Enhanced audits are conducted ad hoc for high-risk construction works, such as construction where accidents occurs frequently and expansion works.

After the audit, anomalies and defects identified and improvement measures are explained item by item to the site managers and safety and health management personnel to help contractors understand the anomalies and defects and find the best solutions. All irregularities are recorded as a reference for future training to, by continuously promoting and training, increase contractors' knowledge of safety and health management and achieve the goal of operational safety.

FPC has also established the incentive system to reward outstanding contractors and encourage contractors identified with safety and health anomalies to take follow-up action and make improvement. By turning penalties into rewards, FPC evaluates the safety and health management performance of contractors on a regular basis and grants rewards based on the results of the evaluation to encourage contractors' independent industrial safety management and raise their awareness of safety.

### 5.2.4 Procurement Process 204-1

Through the Formosa Plastics Group Online Transaction and Procurement System, FPC employs an open tender approach that allows suppliers and contractors to conduct price inquiries, submit quotations, negotiate prices, place orders, and check the delivery of goods and the progress of payments online. Regular meetings with contractors and suppliers are also organized to enhance and encourage two-way communication.

In order to reduce carbon emissions from delivery vehicles, FPC has collaborated with Kerry TJ Logistics since January 2009 to promote the Supplier Collaboration E-System. This system provides on-line shipment service for suppliers, thus enabling a centralized delivery system and reducing the quantity of delivery vehicles needed. According to statistics, in 2018, the percentage of suppliers who make centralized delivery has reached 99.97%.

To further reduce invoice costs and increase the efficiency of invoice management, electronic invoices have been promoted to comprehensively replace traditional paper invoices. In 2018, the use of electronic invoices among contractors reached 84.67%, thereby effectively reducing manual processing time, costs, postage fees, and expenses related to paper use.

The procurement and outsourcing policies mainly revolve around local procurement and outsourcing. FPC only sources goods from overseas and allows bidding from abroad when local suppliers are unable to meet the needs. The rate of local procurement in 2018 was 81%.

## 5.2.5 Green Procurement 102-12

EPA has been strongly promoting the green procurement policy among corporations since 2007. Due to the relatively large amount of purchases made by FPG, green procurement can not only respond to EPA's green procurement policy and implement the idea of "recyclables, low pollution and resource saving" in environmental protection, but also drive suppliers to actively develop green products, thereby enhancing the production level of green products in our country.

FPC has actively promoted green procurement and entered into a commitment to green procurement with Taipei City Government and Kaohsiung City Government. FPC primarily purchases green products, including fluorescent lights, personal computers, and carbon cartridges. In 2018, FPC's procurement of green products acknowledged by the government reached a total of NT\$21,122 thousand, which made us awarded the Green Procurement Outstanding Enterprise by the Department of Environmental Protection, Taipei City Government.

FPC Is Awarded the Green Procurement Outstanding Enterprise by the Department of Environmental Protection, Taipei City Government



## 5.3 Response to Material Industrial Safety Issues 102-44

### (1) Total Inspection by the Industrial Development Bureau, Ministry of Economic Affairs

In view of the fact that the Sixth Naphtha Cracking Plant in Mailiao is already in operation for almost 20 years, and equipment is entering the aging period. To promote residents' health, occupational safety, and industrial efficiency, FPC launched the total inspection plan for the Mailiao Industrial Park in 2018 in the hope of completing the inspection of 14 plants within three years.

This total inspection plan covers three major indicators, environmental protection, energy, and process safety, with 37 indicator items in total (see the table below). According to the results of the total inspection in 2018, no violation of laws and regulations was found. To continuously improve and pursue for excellence, in addition to the total inspection plan, FPC also independently develops medium-term and long-term industrial safety inspection plans and the equipment maintenance and improvement project in order to make improvements in five aspects, namely pipelines, static equipment, rotating equipment, instruments, and electrical equipment, with the total improvement costs estimated to be approximately NT\$3.6 billion.

## Three Major Indicators: Environmental Protection, Energy, and Process Safety

Item	Baseline Indicator	Recommended Number of Items	Adoption Rate	Indicator Item
1	Energy Management	3	100%	Electricity consumption, steam consumption, and energy consumption per unit of product
2	Environmental Protection Management	19	100%	A total of 19 items, including discharge pipeline load, PM <sub>2.5</sub> , greenhouse gas emission, water consumption, waste, sustainable development goals, and environmental protection incidents, etc.
3	Occupational Safety	15	100%	A total of 15 items, including 14 PSM key items and major anomaly cases

**(2) Large-scale Petrochemical Joint Inspection**

According to the official letter from the Industrial Development Bureau, our Ethylene-vinyl Acetate (EVA) Plant with the high-pressure polymerization process was considered to have higher potential for hazards. To urge the EVA Plant to implement public safety management, the Industrial Development Bureau conducted unscheduled inspection on November 26 and December 26, 2018, respectively, to examine the implementation of process safety management in order to prevent accidents.

Audit Team Members		Audit Highlight	Number of People
Industrial Development Bureau, Ministry of Economic Affairs		Large-scale petrochemical joint inspection at EVA Plant, Mailiao Complex	4
Experts and Scholars		Audit of industrial safety, environmental protection, PSM, and fire safety	13
Occupational Safety and Health	Central Occupational Safety and Health Center, Occupational Safety and Health Administration	Audit of process safety, PSM, and MI implementation	3
Environmental Protection	Environmental Protection Administration, Executive Yuan (Department of Air Quality Protection & Noise Control, Department of Water Quality Protection, Department of Waste Management, and Toxic and Chemical Substances Bureau)	Audit of air pollution, wastewater, and waste disposal	20
	Central Branch BEI (Bureau of Environmental Inspection)		
	Environmental Protection Bureau, Yunlin County		
Fire Services	National Fire Agency, Ministry of the Interior	Audit of compliance with laws and regulations relating to public dangerous goods	3
	Yunlin Fire-Fighting Department / Third Battalion		
Legislator Su's Office / Environmental Protection Organization		Audit of the Industrial Development Bureau's supervision of the Sixth Naphtha Cracking Plant	1
Total			44

FPC will urge the EVA Plant to improve based on the opinions of the members, and will refer to the results of the inspection when implementing the safety management system to strengthen safety management and prevent any accidents.



# 6

## Builders of Shared Development

6.1 Local Community Engagement	134
6.2 Development and Donations to Local Communities	144
6.3 Community Engagement	146
6.4 Response to Local Community Issues	153

## 6.1 Local Community Engagement



103-2

103-3

### Material Topic

Community Engagement and Social Contribution

### Management Policies

- Goals and objectives:
  1. Maintaining the rights and interests of FPC and communities
  2. Strengthening the relationship between FPC and communities
- Commitment:
  1. Building the sound channels of communication with communities and forming a community support team or volunteer team at each complex in the hope of contributing to society
  2. Promoting community activities
  3. Listening to opinions of the locals
- Policy:
  1. FPC organizes a variety of community activities covering health and care, industry development, care for the disadvantaged and school children, scholarships, gifts for low-income households, and treasuring traditional culture and promoting folk arts to enhance the interaction with communities.
  2. By actively promoting corporate policies to the communities, FPC conveys the business philosophy of perpetual business operation and dedication to the society to communities.
- Unit in charge:
  1. Mailiao Management Division
  2. Kaohsiung Administration Department
  3. President's Office



### 6.1.1 Health Care

203-1

413-1

#### (1) Health Risk Assessment

Since 2009, FPG has commissioned National Cheng Kung University to carry out a health risk assessment program concerning specific types of hazardous air pollutants. A total of 64 specific types of hazardous air pollutants have been assessed for health risks. The initial regions under evaluation encompassed an area of 30km×30km around the Sixth Naphtha Cracking Industrial Park, including Mailiao, Taixi, Dongshi, Lunbei, Baozhong, Tukou, and Sihou Townships in Yunlin County and Dacheng Township in Changhua County.

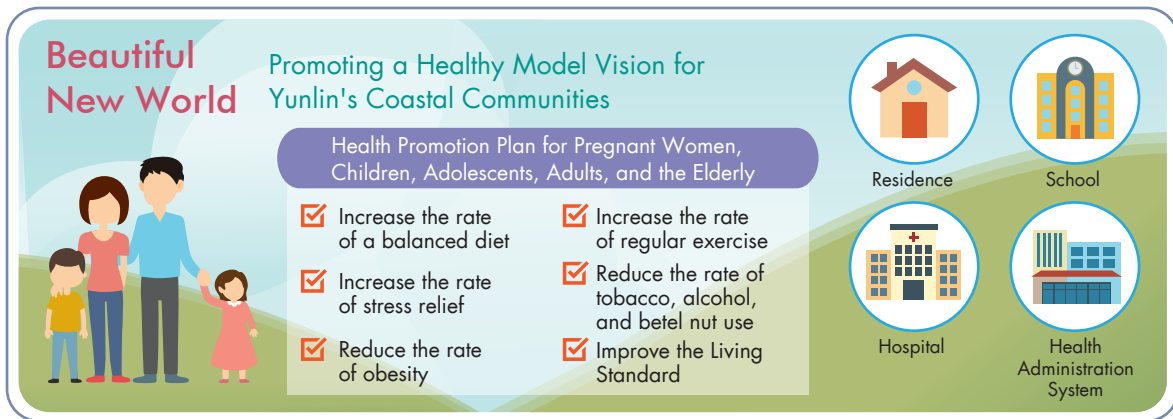
Based on simulation results, the average cancer risk was  $5.07 \times 10^{-7}$ , while the highest cancer risk was  $6.38 \times 10^{-6}$ , with both values lying between  $10^{-6}$  and  $10^{-4}$ . As the maximum non-cancer risk is lower than 1, the impact on human health is considered to be within an acceptable range.



## (2) Health and Care

FPG established Yunlin Chang Gung Memorial Hospital in December 2009 and has been providing local residents with comprehensive medical services. In 2010, FPG integrated the medical and educational resources of Chang Gung Memorial Hospital to promote health education and disease prevention among local residents with hospitals, communities and schools, thereby promoting Mailiao Township as a model of a healthy community.

Community Health Promotion Structure in Mailiao Township



### Health Research

- Establish and maintain a health database
- Analyze health data
- Share results of health research

### Health Examination

- Abnormality control
- Increase revisit rates
- Diagnosis and treatment
- Annual follow-up



### Health Survey

- Trend of residents' health
- Health issues of residents and communities
- Care measures

### Health Care

- Improve medical quality
- Improve residents' health
- Facilitate cooperation between private and public organizations

## A. Improving the Quality of Medical Services in Mailiao Township

Located in Mailiao Township along the coast of Yunlin, where medical resources are the most insufficient, Yunlin Chang Gung Memorial Hospital has been open since December 2009 to offer 24-hour emergency services along the coast. As of 2018, Yunlin Chang Gung Memorial Hospital has a medical team of 300 personnel and 522 hospital beds and offers 25 specialist fields of Western medicine and Chinese medicine outpatient services. In 2018, Yunlin Chang Gung Memorial Hospital offered medical services to 134,279 outpatients and 14,704 emergency patients, with a total of 17,279 hospitalization days. The scope and scale of its services shall continue to expand in order to improve the quality of medical services of Yunlin County coastal regions.

## B. Free Health Checkups for Mailiao Residents

To express our concern and provide medical assistance, FPG Mailiao Industrial Complex has commissioned Yunlin Chang Gung Memorial Hospital to offer free health checkups to the residents of Mailiao and Taixi townships every year since 2010. In 2018, 10,090 residents from both townships participated in these health checkups, with 722 residents exhibiting abnormal health examination results, so that they could understand their health, discover the threats of potential diseases, and receive early treatment.

## C. Health Promotion for Mailiao Residents

Since 2010, FPG Mailiao Industrial Complex has been engaging in health promotion among residents together with Chang Gung University of Science and Technology and Chang Gung Memorial Hospital. In 2018, 10,590 residents participated in community health education; FPG assisted 454 patients with hepatitis C with medical care and organized a tobacco hazard prevention course for 1,372 junior high school students. Residents in the two townships participated actively and improved their bad habits. Health checkup results showed consistent improvement in their health.

## 6.1.2 Local Industry Development 201-1 203-1

The Sixth Naphtha Cracking Industrial Park is located in Mailiao Township, where the residents make a living through agriculture and aquaculture. Mailiao Township has transformed into quality agriculture and exported agricultural and fishery products, such as lettuce, burdock, clams, Yamato clam, eel, oyster mushroom, etc. to Japan. Taking lettuce for example, lettuce grown in Mailiao Township accounts for 70% of Taiwan's export to Japan. It is also supplied to chain stores such as McDonald's, KFC, Mos Burger, and FamilyMart in Taiwan. Only because the Sixth Naphtha Cracking Industrial Park did not affect the local air quality and water quality in Mailiao Township, it was possible to produce quality lettuce for export to Japan. In addition, lettuce is also exported to Korea and Singapore, which proves that the industry and agriculture can coexist and prosper at the same time.

### (1) Agricultural Counseling

#### 1. Quality Improvement of Agricultural Products and Agricultural Strategy Counseling

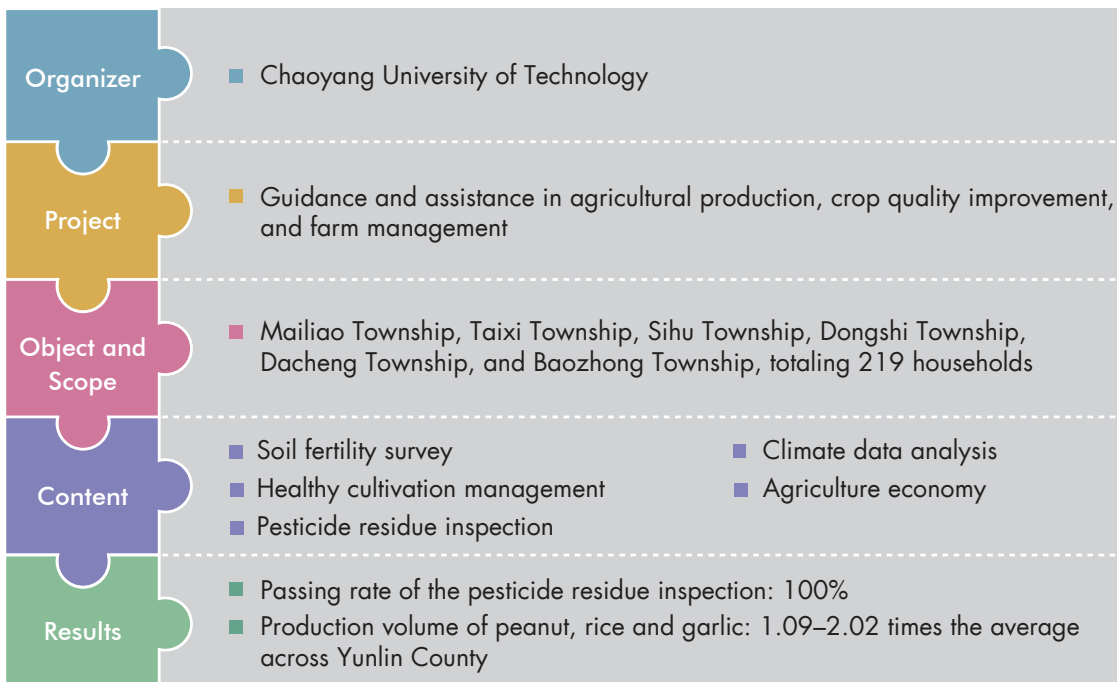
FPG has commissioned Chaoyang University of Science and Technology to implement Quality Improvement of Agricultural Products and Farm Operation Strategy Counseling. The counseling initiative has covered seven townships, including Mailiao, Taixi, Dongshi, Sihua, Baozhong, Dacheng, and Lunbei. As of 2018, which is also the 8th year running, 219 farming households have received counseling and guidance through scientific cultivation techniques to solve their problems with cultivation. Compared to previous years, the production capacity and quality showed improvements after such counseling.

The counseling is conducted through the corporation between the industry and academia; FPG has commissioned Chaoyang University of Science and Technology to implement this integrated initiative based on the five topics, namely soil fertility survey, healthy cultivation management, climate data analysis, pesticide residue inspection, and agriculture economy. Through a science-based approach, the professional team introduces a concept of healthy cultivation with scientific management and less pesticides and less fertilizers to produce quality and safe produce. The team aims to create a brand that can increase the revenue and living environment of farmers.

The counseling team assists farmers in understanding soil fertility through soil fertility testing, recommends the use of organic fertilizers to improve soil conditions, and guides farmers to apply appropriate fertilization by reference to soil fertility. Furthermore, the team has also gradually changed the original farming concept of large-scale fertilization adopted by farmers, through technology improvement methods, such as the use of preventive supplies to reduce the use of pesticides. After such counseling, the yield on crops, along with the quality, was better than the average across Yunlin County.

Apart from recommendations on fertilization, the team has also provided irrigation water quality analysis, text messages on weather information and feedback on economic analysis, enabling farmers to understand and master the environmental conditions during farming, and even to prevent such conditions early. In addition to the improvement of the quality and output of farmers' harvests, the positive results of this counseling initiative are also achieved in terms of the 100% passing rate of the pesticide residue inspection, showing the achievement of safe agriculture.

Besides improving cultivation techniques, this initiative has also assisted farmers in obtaining the organic certification and agricultural product traceability certification in the hope of further increasing their revenue. This year, FPG further contacted farmers under counseling to sell their products through Formosa Environmental Technology Corporation under FPG. In the future, FPG also plans to understand the market demand to guide farmers to grow products needed in the market in order to avoid poor selling.



## (2) Subsidies for Afforestation

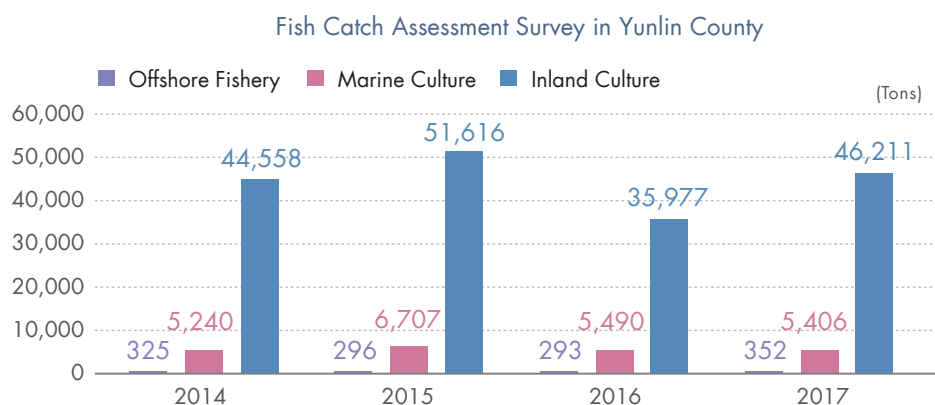
FPG began participating in the Environmental Friendliness Project with Yunlin County Government in August 2010 to provide subsidies in line with the regulations of the Forest Bureau under the Council of Agriculture. Since 2011, we have been offering a 10-year period of subsidies for a reforestation project for up to 2,600 hectares. As of 2018, we have participated in an afforestation area of 1,095 hectares in Yunlin County and has offered NT\$1.119 billion in subsidies.

In 2016, we increased subsidies for various projects in Yunlin County, including afforestation in areas with tillage difficulty, transformation of waste betel nut farms and afforestation on hillsides, in line with the policy of the county government. As of 2018, FPG subsidized an area of 27 hectares, with a subsidy amount of NT\$5.27 million.

## (3) Fishery Counseling

### 1. Fish Catch Assessment Survey

According to the annual fishery report provided by the Fisheries Agency, since the development of Mailiao Complex in 1993, as of 2017, the average weight of fish caught annually is approximately 57,386 metric tons, among which offshore fisheries account for only 0.52% (298 metric tons), marine culture accounts for 11.59% (6,754 metric tons), and inland aquaculture accounts for 87.89% (50,434 tons). The statistics show that the fishery industry in Yunlin County is primarily based on inland aquaculture. The fishery production yield has experienced both decline and growth from year to year. Therefore, the impact of operations of the Mailiao Industrial Complex on fishery activities in the neighborhood has not been significant.

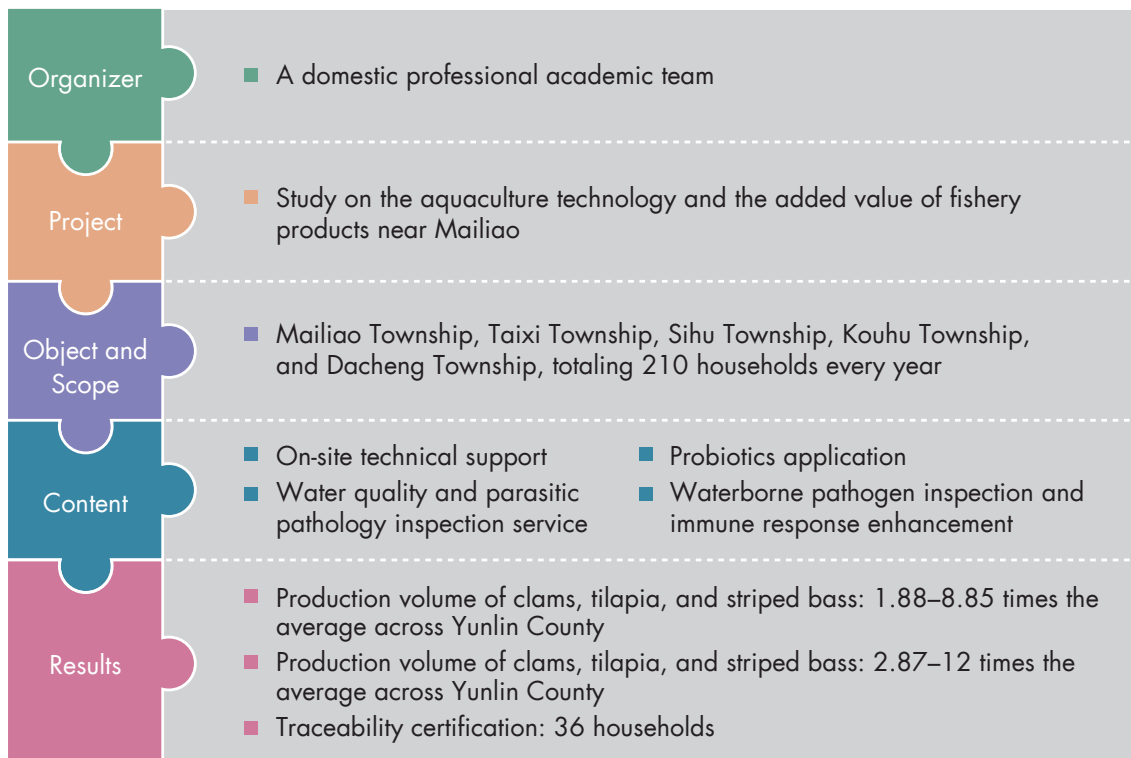


Source: Fisheries Agency Annual Fishery Report in 2017 (2018 statistics yet to be released by the Fisheries Agency).

### 2. Fishery Counseling

Upholding the spirit of local operations and prosperity, we have commissioned domestic professional academic organizations to jointly implement the "Yunlin County Aquaculture Fisheries Technology and Value-Added Fishery Product Improvement Project." In 2018, 210 fishermen received the counseling to stimulate the growth of clams with fermented feed, which increased the survival rate by 20% to 30% and reduced the breeding period by 2 to 3 months.

For fish, the health risk management model was introduced to culture ponds to increase the survival rate of fish, putting the idea of "prevent is better than treatment" into practice. We also guided fishermen receiving the counseling to obtain the national product traceability certification. Furthermore, a total of 36 fishermen successfully obtained the national product traceability certification and passed the drug residue test in 2018, with a passing rate of 100%, demonstrating outstanding aquaculture safety results.



### 3. Release of Fish Fry

To ensure the quality of the neighboring seas and fishery resources during construction and operation, FPG not only continuously monitors the marine environment and ecology, but also releases fish fry into the sea near the Mailiao Complex to enrich local fishery resources. As of 2018, the total number of fish fry released has reached 4,969,300. Furthermore, to actively promote the education of preservation of fishery resources, we have specifically invited marine professors to conduct annual seminars in elementary schools. Through both the preservation of marine ecology and the introduction to fish fry releasing, teachers and students can understand the characteristics of marine ecology, and the overall plan and progress of the release of fish fry, which is for the preservation of marine ecology and fishery resources, in the hope of promoting the idea of preserving fishery resources.

## 6.1.3 Community Relations 201-1

### (1) Promoting Environmental Volunteerism and Keeping the Environment Clean

To maintain close ties with local communities, we continue to promote cleaning the local environment at each complex. At the Renwu Complex, on "Environmental Volunteer Day," an environmental volunteer team consisting of management supervisors and employees uses one hour before work or their free time on weekends to participate in environmental maintenance activities in the community, such as cleaning the streets near the industrial complex, as well as mountain or beach clean-up projects. Mailiao Complex has collaborated with the Mailiao Township Office and a number of partnering manufacturers to jointly clean the environment.

Street Cleaning Activity in the Local Community Organized by Volunteers from Renwu Complex



Each complex carefully improves the cleanliness of surrounding environment, and strengthens its ties with local manufacturers, township offices and residents. Furthermore, each complex has also adopted local open spaces for beautification to provide recreational areas for leisure activities for the community, thereby receiving high praise from local residents.

## (2) Participating in Local Events and Giving Back to the Community

Our management approach is based on the idea of “what is taken from the society is used interests of the society”. We continuously invest in local charity events and engage in community involvement. For large events or charity events organized by nearby organizations and schools, such as county/city sports competitions, competitions and events for the disabled, temple activities, school anniversaries and sporting events, community activities and celebrations, weddings and funerals, we are always willing to provide assistance to maintain our friendly relationship with the community.

Welcome Royal Lord Festival on May 15



Fuxin Temple Pilgrimage Activity at Zhongxing Village on November 14



## (3) Treasuring Traditional Culture and Folk Arts

To promote the features of traditional arts and local culture, under the Taiwan Unique Cultural Development Plan sponsored by Wang Jhan-Yang Charitable Trust Fund, and charity performances have been selectively held in Yilan, Taipei, Changhua, Yunlin, Chiayi and Kaohsiung Plants for 8 consecutive years.

In 2018, FPG worked with Ming Hwa Yuan Arts & Cultural Group, Yiwanran Puppet Theater Troupe, Dalongdong Golden Lion Dance Group, If Kids Theater Troupe, Just Apple Theater Troupe, and Huang, Hai-Tai Wu Zhou Yuan Troupe to offer public performances with a national level to the community while promoting their enjoyment of aesthetics education. Since 2011, as of the end of 2018, more than 330,000 people have enjoyed 334 performances sponsored by NT\$90 million, which have always been met with great enthusiasm and applause.

Ming Hwa Yuan Arts & Cultural Group



Yiwanran Puppet Theater Troupe



Dalongdong Golden Lion Group



If Kids Theater Troupe



Just Apple Theater Troupe



Huang, Hai-Tai Wu Zhou Yuan Troupe



#### (4) Caring for the Disadvantaged and Spreading Love to Every Corner

To further show our concern for the community, give back to local residents, and care for the disadvantaged and underprivileged families (students), 300 Christmas cards made by children at the Taiwan Fund for Children and Families (TFCF) centers are pledged every year in order to raise funds to purchase Christmas gifts for children at TFCF centers, thereby spreading love through practical actions.

Besides, FPG, along with Ching Pao Charitable Trust Fund, have been showing care for the disadvantaged over a long period of time. Since 2012, we have been helping families that are struggling to raise money to cover medical expenses or funeral expenses. As of 2018, a total of 611 cases of emergency aid were assisted, with a total of NT\$30.91 million injected to provide emergency aids. We are committed to restoring families facing immediate struggles to stand on their own feet again by visiting them on the spot to show care and provide financial assistance.

Emergency Aid and Care for the Disadvantaged



### (5) After-School Tutoring for School Children

Since 2012, managers with a bachelor's degree and above at the Mailiao Complex have volunteered to serve as tutors for underprivileged school children who cannot afford to enter cram schools, foreign spouses, and children raised by their grandparents. On average, 18 children are given tuition every year, where these tutors help to answer questions from students who do not fully understand the content of the syllabus taught in schools after school hours, so that elementary and secondary school students who are interested in learning have another option and one more opportunity to make progress in life.



After-School Tutoring



### (6) Nutritional Breakfast with Love

As the saying goes, early bird catches the worm. In view of the situation that underprivileged schoolchildren in the coastal areas often do not have breakfast in the morning, FPG and Wang Jhan-Yang Charitable Trust Fund have provided these schoolchildren with breakfast every day with the help of their schools since 2011, so as to keep these underprivileged schoolchildren energized throughout the day while learning in schools. As of 2018, a total of NT\$41.50 million have been injected into this initiative, benefiting 12,619 schoolchildren.

Subsidized Breakfast for School Children



Subsidized Breakfast



## (7) Scholarships for Students in Mailiao and Taixi Townships

Both FPG and Wang Jhan-Yang Social Welfare Foundation fully understand the impact of urban-rural gap on students with hopes that education can serve as an excellent channel for social mobility. Since 2004, we have offered scholarships to students from different backgrounds. As of 2018, a total of NT\$45.97 million have been contributed to scholarships in order to assist 14,440 school children, with expectations of reducing concerns over education fees and encouraging students to engage in active learning so that one day they can contribute to the society and country.

Scholarship Presentation Ceremony for Outstanding Students in Mailiao Senior High School



Scholarship for Students in Mailiao Township



## (8) Gifts for Low-income Households

FPG, along with the Ching Pao Charitable Trust Fund, visits villages in the seven townships around the Mailiao Complex during Chinese New Year, Dragon Boat Festival and Mid-autumn Festival every year to offer cash prizes and gifts to low-income households. From 2011 to 2018, a total of 26,116 households have benefited from this effort, with the amount donated reaching NT\$85.97 million. In 2018, a total of 3,691 households benefited from this effort, involving an expenditure of NT\$11.07 million. It is hoped that these low-income households can enjoy the same joyful atmosphere with us and feel the warmth of the society.

Inauguration of Dragon Boat Festival Gifts for Low-Income Households



Mid-autumn Festival Gifts for Low-income Households in Taixi Township



## 6.2 Development and Donations to Local Communities

201-1

203-1

### 6.2.1 Charitable Donations

In order to realize the philosophy of our two founders, FPG actively collaborate with the government and private organizations to comprehensively understand society's needs and provide assistance to the disadvantaged. Over the years, FPG has invested approximately NT\$55.4 billion in educational, medical and social welfare charities to continuously provide assistance for those in need.

Summary of Charitable Donations by FPG

Unit: NT\$ hundred millions

Year	Category	Activity	Amount Donated
1960~ 1980	Education	Founding of Ming Chi University of Technology and subsequent donations	279.5
		Founding of Chang Gung University and subsequent donations	
		Founding of Chang Gung University of Science and Technology and subsequent donations	
	Medical	Founding of Chang Gung University of Science and Technology and subsequent donations	28.4
		✦ Assisting the underprivileged with access to medical services	
1990	Care for the Disadvantaged	✦ Assisting indigenous students with receiving education, employment and other subsidies	24.5
		✦ Donating cochlear implants (941 people)	
		Improving the service quality of physically and mentally disabled welfare groups	
2000~ Present	Environmental Care	Welfare of children and women	13.4
		Donations to Taipei, Kaohsiung and Yunlin Second Prisons for the Rainbow Program and drug withdrawal program for inmates with AIDS, and Yunlin Second Prison and Kaohsiung Prison for the Sunny Program for drug abusers	
		Recycling of kitchen waste	
	Caring for the Elderly	Cultivation of organic crops	7.2
		Afforestation	
	Reconstruction of Disaster Zones	✦ Establishment of Chang Gung Health and Culture Village	48.4
		✦ Donations of pneumococcal vaccines to the elderly (1.16 million doses)	
Cultural Promotion	✦✦ Donations for the reconstruction of 76 old and dangerous schools in areas damaged by the 921 Earthquake and Typhoon Morakot, as well as other counties/cities.	0.9	

Year	Category	Activity	Amount Donated
2000~ Present	Sports Promotion	Promotion of sports and training of athletic talents	2.4
	Health Promotion	Health promotion and related academic research	2.5
	Community Investment	A variety of partnerships with neighboring communities around FPG factories to address social issues	135.7
	Others	Chang Gung Social Welfare Fund and other donations	11.3
Total			554.2

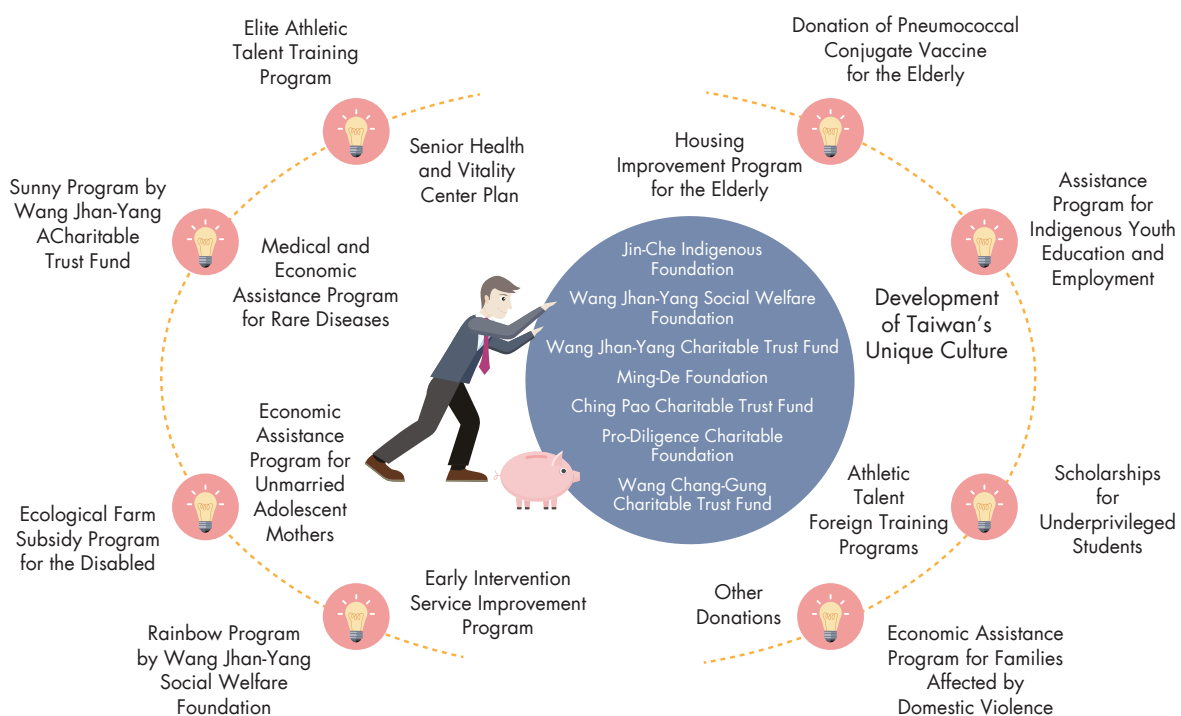
Note: 1. 🏠 denotes donations made from the profits of Chang Gung Memorial Hospital which are not included in the total donation amount.  
 2. 🏠 denotes reconstruction of old and dangerous schools, including those currently under construction.  
 3. This table indicates donations made in Taiwan only.

## 6.2.2 Social Assistance

The two founders of FPG, who actively participated in social welfare work, have established seven charitable trust funds and foundations, and saved personnel and administrative costs as much as possible in order to donate these savings to the disadvantaged and social welfare groups.

These trust funds and foundations work hand in hand with private groups, scholars, and specialists to continuously launch and carry out various public welfare programs in a comprehensive, integrative and systematic manner, and seek to gradually improve the overall operational efficiency of public welfare institutions so as to achieve greater benefits from invested resources. Not only is each project a pioneering work in the country, but can also achieve the objective of comprehensively enhancing service quality and sustainable management.

Seven Foundations, Trust Funds and Projects Elite





### Welfare of Women and Children

- Cumulative donations of scholarships for underprivileged students have reached nearly NT\$92 million, benefiting nearly 7,000 students.
- Cumulative donations of the Diligence Work-Study Program have reached nearly NT\$15 million, benefiting over 400 students.
- Cumulative donations of the Medical and Economic Assistance Program for Rare Diseases have reached NT\$94 million, benefiting nearly 6,400 patients.



### Welfare of the Physically and Mentally Disabled

- We have initiated the first online Early Intervention Exchange Platform with more than 7,000 professional members, where independently developed professional teaching materials were downloaded over 120,000 times.
- We have Initiated the Subsidy Program for the Early Intervention Community with 22 sites in Taiwan in order to balance resources for the disadvantaged.



### Fostering Athletic and Cultural Talents

- We have donated more than NT\$90 million to Taiwan unique cultural troupes, attracting more than 330,000 audience.
- We have donated more than NT\$250 million for nurturing outstanding talent in tennis, table tennis, billiards, badminton, and golf, and collaborated with Chang Gung Memorial Hospital to provide athletes with health examinations and set up an outpatient clinic for sports injuries.



### Assistance for Inmates

- We have offered the Rainbow Program by Wang Jhan-Yang Social Welfare Foundation to counsel inmates with AIDS who are also addicted to drugs in Yunlin, Taipei, and Kaohsiung. The recidivism rate is only about 10%, which is far below the average of 70% to 80%.
- We have provided professional counseling in the Sunny Program by Wang Jhan-Yang Charitable Trust Fund for drug abusers. The recidivism rate is less than 10%, which is far below the average rate of 60% to 70%.



### Welfare for the Elderly

- We have donated a total of 1,160,000 doses to the Pneumococcal Conjugate Vaccine Program for the Elderly Aged over 75 Years Old from 2007 to 2018.
- The vaccine program saved at least NT\$13.6 billion in medical expenses for the government.
- We have promoted the Senior Housing and Home Appliance Improvement Program for Solitary Elderly in 19 cities and counties in Taiwan, with 983 houses repaired so far.

## 6.3 Community Engagement

102-44

201-1

### 6.3.1 Renwu Complex Transformation Plan

FPC's Renwu Complex began operations since 1972, and has been in operation for over 46 years. The annual turnover of Renwu Complex is approximately NT\$37 billion. In response to the issues of environmental protection and climate change due to global warming, we continue to fully exercise our social responsibility as a corporate citizen. In 2018, we drove the transformation of Renwu Complex in three major directions—local industry development, eco-friendliness, and community relations, in the hope of relaunching Renwu Complex and deepening our roots in Taiwan for the new century.

#### 1. Local Industry Development

With the advent of Internet of Things (IoT) which requires a large number of wireless sensors to reduce the inconvenience of replacing batteries, we have initiated fundamental research to study dye-sensitized batteries that can generate electricity through dim light since 2009. In 2011, we collaborated with Industrial Technology Research Institute (ITRI) and obtained a science and technology project from the Ministry of Economic Affairs. At present, we have obtained 9 patents. In December 2018, we worked with the Ministry of Economic Affairs and ITRI to build the one and only automated trial mass production line at the Shalun campus of National Chiao Tung University in Tainan. We will invest another NT\$800 million in building a mass production line with a production capacity of 0.5MW at the Renwu Complex, which is expected to be completed and begin mass production by the end of 2020.

Besides, in order to cater to the future trend of composite materials, we plan to invest NT\$780 million to establish a composite material center focusing on materials including PP, POM, PVC, carbon fiber, PE/EVA and calcium carbonate, with the purpose of developing weather-resistant, eco-friendly, lightweight, high-rigidity and high-impact resistance composite materials. This center is expected to be completed by the end of 2019, with hopes of turning Renwu Complex into a revolutionary R&D and production base for material and energy innovation in a low-carbon and circular economy, thereby attracting the arrival of high-end talent and boosting local employment opportunities.

Furthermore, in response to the rise of innovative technologies such as Industry 4.0 and artificial intelligence (AI), we donated NT\$30 million with NPC, FCFC, and FPCC to Academia Sinica for building Taiwan AI Academy in order to cultivate AI talents and enhance international competitiveness. We will also invest NT\$210 million in building the Industry 4.0 and AI Development Center at the Renwu Complex, where the development of smart manufacturing technology, equipment anomaly alert, smart equipment development, and smart monitoring technology is prioritized. In addition, we plan to expand the scale of the existing assembly plant under the distributed control system (DCS) from the annual capacity of 750 trays to 1,000 trays, which is expected to complete by the end of 2019.

After the expansion is completed, the annual output value of the Renwu Complex is expected to increase by NT\$1.2 billion, creating 240 job opportunities. In response to the industrial transformation, we applied for changing part of the land in the Renwu Complex covering 12.3 hectares from a special type industrial park to a Type A industrial park in September 2018. The application has been reviewed and passed by the City Planning Commission, Ministry of the Interior on March 19, 2019 and is to be promulgated for implementation in June 2019.

## 2. Eco-friendliness

In line with the government's development policy with regard to circular economy and ecological parks, we not only continue to reduce wastewater discharge and greenhouse gas emissions at the Renwu Complex, but also plan to invest NT\$730 million in improving water and energy conservation. This is estimated to save 1,055 tons of water every day, 5.9 tons of steam every hour, 4,500 kWh of electricity every hour and 341 kg of fuel every hour; in addition, we invested NT\$43.87 million in building two sets of solar power generation system with a total of 1,669 solar panels on the rooftop of the Fuli Building and parking, with the annual capacity of 666,000 kWh. As of February 2019, the total capacity reached 991,000 kWh, reducing 549 tons of CO<sub>2</sub>e emissions (calculated based on the approved electricity coefficient, 0.554 kg CO<sub>2</sub>e/kWh, in 2017).

Solar Power Generation System at the Renwu Complex



At the same time, as the sixth largest carbon fiber manufacturer in the world, we have spent two years developing a new type of carbon fiber fan blades for cooling towers, which has a longer service life and higher operating efficiency than traditional glass fiber fan blades. The use of this type of fan blades will be extended to all other 556 cooling towers aged 8 years and above in FPG, where it is expected to further reduce carbon dioxide emissions by 14,000 tons per year.

Low-carbon economy has become a global trend. To eliminate visual pollution among nearby residents, we have invested NT\$190 million in improving on white smoke from chimneys at the public utilities plant in the Renwu Complex and Linyuan Complex. This initiative is expected to be completed by the end of 2019. We also plan to invest NT\$760 million in replacing the use of coal in boilers at the co-generation plant in the Renwu Complex with natural gas, so as to reduce the use of coal. This initiative is expected to be completed by the end of 2024.

### 3. Community Relations

To establish the correct idea about the chemical industry for the public, we organized 7 science summer camps (4 in the Renwu Complex, 1 in the Linyuan Complex, and 2 in the Mailiao Complex) free of charge for Grade 5–6 elementary school students from nearby schools in 2018. A total of 460 teachers and students and parents participated in these camps. Based on the science education, the summer camp designed exciting and interesting activities with materials that were readily available every day and arranged a plant tour, allowing participants to understand that chemistry is inseparable from everyday life and that FPC values both environmental protection and industrial development.

FPC Science Summer Camp in July 2018



Indoor Launch of Compressed Air Rockets



Water Absorption of SAP Sandbag



Hands-on Practice of Power Generation by Lemon





We have very high expectations for the Renwu Complex Transformation Plan because it is not only a commitment to deepening its roots locally, but also touchstone for the transformation of the petrochemical industry. To ensure that the transformation plan goes ahead smoothly, we continuously hold discussions and negotiations with neighborhood residents, with hopes of establishing Renwu Complex as a livable LOHAS ecological park for surrounding neighborhoods and seeking a new sustainable route for the petrochemical industry in Taiwan, thereby setting a new paradigm for the transformation of the petrochemical industry.

### 6.3.2 Renda Special Course on the Kaohsiung Petrochemical Industry at Renwu Senior High School

To support local education, promote local prosperity and regional economy, and reduce the population migration, Renwu Senior High School and various manufacturers in Renda Industrial Park signed a memorandum of cooperation to establish an industry-academia collaboration model and set up the Renda Special Course on the Kaohsiung Petrochemical Industry in 2015.

Every year, 35 students are accepted. Not only do students attend general senior high school courses, but they are also nurtured to possess basic employability competencies by taking the elective course to enhance their fundamental understanding of the petrochemical industry. Scholarships are also provided for 10 outstanding students per class each semester, and priority for employment is given to these outstanding students. In 2018, the amount of subsidies provided by FPC for the Renda Special Course totaled NT\$260,000. As of today, the subsidies have reached NT\$970,000.

### 6.3.3 Preservation of Cultural Assets—Establishing the Wang Yung-Ching and Wang Yung-Tsai Park in Kaohsiung City

FPC's Kaohsiung Complex is the birthplace of FPG, which is composed of 13 buildings, including the office of the two founders of FPG, Mr. Wang Yung-Ching and Mr. Wang Yung-Tsai, and our first generation PVC polymerization tank. To preserve the first industrial site in the plastic industry in Taiwan and to follow the Kaohsiung City Government's policy of developing urban tourism, FPG organized the donation ceremony with Kaohsiung City Government at Kaohsiung Complex on April 13, 2018. In December 2018, Kaohsiung Complex was officially registered as a historical (memorial) building. In the future, the Wang Yung-Ching and Wang Yung-Tsai Park will be established at the original site of 2.5 hectares.

To promote the restoration, management and maintenance of the park, FPC invested in a fund with NPC, FCFC and FPCC in July 2018. In August 2018, we donated part of the land in the park covering 0.355 hectares to Kaohsiung City Government. We further donated the above-ground structures and equipment to the fund in November 2018. After maintenance of the park, we expect to provide a tourist spot with historical culture, recreation and educational significance that can drive the economic development of Kaohsiung City.

To increase the visibility of the park before the opening, FPC organized two reserved guided tours for the retired employees and communities in 2018. FPC will organize guided tours to receive opinions of the public about park planning and reserve volunteers for future needs.

Guided Tour for Retired Employees



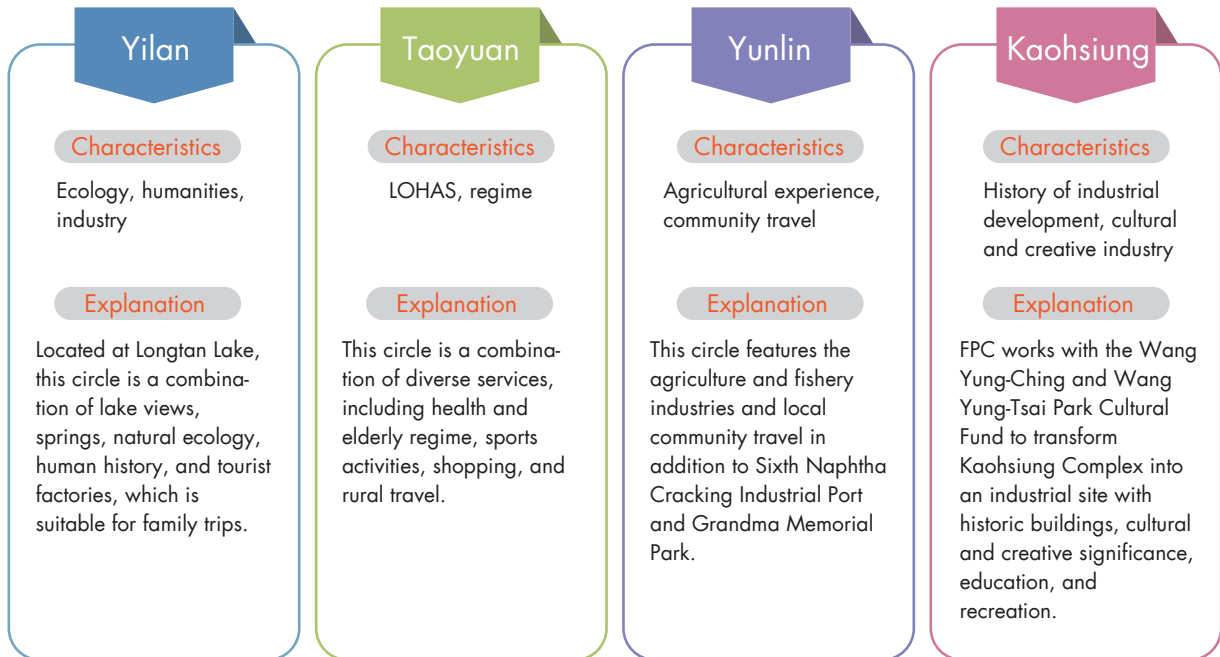
Guided Tour for Local Residents



### 6.3.4 Formosa LOHAS Circle

In the spirit of "what is taken from the society is used interests of the society," FPG has been striving to integrate our existing resources for marketing in recent years, mainly including health, LOHAS, recreation, and regime. With the perspectives of corporate social responsibility, environmental sustainability, and social engagement, FPG has made further efforts to promote the Formosa LOHAS Circle in cooperation with neighborhood communities, manufacturers, small farmers and local governments around the complexes.

#### Characteristics of Formosa LOHAS Circle by Region



## Formosa LOHAS Circle Activities in 2018

Region	Activity	Location	Date (MM/DD)	Number of Participants	Expense (NT\$)
General	Chang Gung Yung-Ching Road Running	Plaza, Office of the President	9/30	400	40,000
	Corporate Sports Competition	Ming Chi University of Technology	11/10	400	80,000
	2018 Healthcare Exposition Taiwan	Taipei Nangang Exhibition Center	11/29-12/2	318	-
Taoyuan	Formosa LOHAS Cup—Taoyuan Road Running	Inotera Memories Inc. Park	5/27	2,500	2,500,000
	Family Zongzi Making Activity	Global Mall A8	6/8	24	10,000
	Little Magician—Hand Wash Mousse DIY	FPG Heritage Museum at Chang Gung Culture and Health Promotion Village, Global Mall A9	10 serial activities (August–December)	243	60,000
Yilan	Formosa LOHAS Cup—Yilan Ecological Road Running	Longtan Lake	12/2	3,800	3,800,000
	Environmental Education		July–December	600	1,900,000
Kaohsiung	Kaohsiung Complex Site Tour	Wang Yung-Ching and Wang Yung-Tsai Park	September–October	60	20,000
Total				8,345	8,410,000

Note: The cost of the Formosa LOHAS Circle is shared by FPC, NPC, FCFC, and FPCC.

Formosa LOHAS Cup—Yilan Ecological Road Running



Formosa LOHAS Cup—Taoyuan Road Running



Little Magician—Hand Wash Mousse DIY



Family Zongzi Making Activity



### 6.3.5 Industry-Academia Cooperation Program



To increase students' practical work experience for future employment, FPC has actively worked with Ming Chi University of Technology or nearby schools to launch industry-academia cooperation programs. The industrial-academia cooperation programs in 2018 are as follows:

Type of Cooperation	School	Number of Participants	Duration
Industrial-academia cooperation	Technological Education Division, Ming Chi University of Technology	71	September 12, 2018–September 11, 2019, one year
FPG Employment Program	Department of Chemical Engineering, Chung Yuan Christian University and National Yunlin University of Science and Technology	11	July 16–July 29, 2018, two weeks
Education cooperation	Night School, National Siluo Agricultural Industrial High School	16	July 21, 2017–July 20, 2018, one year
Summer Work-study Program	-	34	July–August 2018, two months
Total		132	

## 6.4 Response to Local Community Issues 102-44

### Social Engagement—Disaster Relief for Earthquake in Hualien

In February 2018, a strong earthquake hit Hualien. FPC worked with FPG to donate NT\$50 million to help victims rebuild their homeland. In addition, to facilitate the recovery of the tourism industry in Hualien, FPC also provided subsidies for employees and their family members to participate in nine rounds of company trip from April to June. A total of 6,647 people participated and enjoyed the subsidies of NT\$24.56 million.

FPC Holds Company Trips to Hualien to Support Local Tourism







# Appendices

I. Global Reporting Initiative	156
II. Corporate Social Responsibility Best Practice Principles for TWSE/GTSM Listed Companies	162
III. ISO 26000 Guidance on Social Responsibility	163
IV. United Nations Global Compact	165
V. Independent Assurance Opinion Statement	166

## I. Global Reporting Initiative 102-54 102-55

The following indicators refer to the content of this Report in accordance with the 2016 Global Reporting Initiative (GRI) Sustainability Reporting Standards. As indicated in the external audit statement, relevant information has been audited and found to be in compliance with the requirements of GRI Standards with regard to external checklist:

Disclosure Item	Description	Reference Chapter	Note	
GRI 102: General Disclosures				
Organizational Profile (2016 Edition)	102-1	Name of the organization	1.2.2 Company History	
	102-2	Activities, brands, products, and services	2.3.1 Main Product Categories 2.3.2 Introduction to the Main Products 2.3.3 Main Brands	
	102-3	Location of the headquarters	1.2.2 Company History	
	102-4	Location	1.2.2 Company History	
	102-5	Ownership and legal forms	1.2.2 Company History	
	102-6	Markets served	1.2.2 Company History	
	102-7	Scale of the organization	1.2.2 Company History 2.1.1 Operating and Financial Performance 2.2 Corporate Governance 2.3.2 Introduction to the Main Products	
	102-8	Information on employees and other workers	4.1 Human Resource Policies and Employee Composition	
	102-9	Supply chain	2.3.1 Main Product Categories 2.3.2 Introduction to the Main Products 5.2.2 Supplier and Contractor Management	
	102-10	Significant changes to the organization and its supply chain	-	No significant change in 2018
	102-11	Precautionary principles or approaches	2.2 Corporate Governance	
Strategy (2016 Edition)	102-12	External initiatives	1.1 Message from the Chairman Award-Winning Performance in 2018 5.1.3 Care for Employee Health and Healthy Workplace Promotion 5.2.5 Green Procurement	
	102-13	Membership of associations	2.1.2 Participation in External Associations	
	102-14	Statement from senior decision-maker	1.1 Message from the Chairman	
Ethics and Integrity (2016 Edition)	102-15	Key impacts, risks and opportunities	Progress of Corporate Social Responsibility Goals 2.2.4 Internal Control Mechanism 2.3.5 Product Technology Development and Innovation 3.1.2 Risks and Opportunities Arising from Climate Change	
			1.2.1 Management Philosophy 2.2.4 Internal Control Mechanism	
Material Topic: Corporate Governance				
Governance (2016 Edition)	102-18	Governance structure	2.2 Corporate Governance	
	102-22	Composition of the highest governance body and its committees	2.2.1 Corporate Governance Overview 2.2.2 Decision-making Departments Responsible for Economic, Environmental and Social Themes	
	102-23	Chair of the highest governance body	2.2.1 Corporate Governance Overview	
	102-24	Nominating and selecting the highest governance body	2.2.1 Corporate Governance Overview	
	102-25	Conflicts of interest	2.2.1 Corporate Governance Overview	
	102-36	Process for determining remuneration	2.2.1 Corporate Governance Overview	
Management Policies (2016 Edition)	103-2	The management approach and its components	2.2 Corporate Governance	
	103-3	Evaluation the management approach	2.2 Corporate Governance	



Disclosure Item	Description	Reference Chapter	Note	
Communication with Stakeholders (2016 Edition)	102-40	List of stakeholder groups	1.3 Stakeholder Identification and Communication	
	102-41	Collective bargaining agreements	4.1 Human Resource Policies and Employee Composition 4.2 Employee Welfare and Care	
	102-42	Identifying and selecting stakeholders	1.3 Stakeholder Identification and Communication	
	102-43	Approach to communication with stakeholders	1.3 Stakeholder Identification and Communication	
Communication with Stakeholders (2016 Edition)	102-44	Key topics and concerns raised	1.3 Stakeholder Identification and Communication 2.5 Response to Significant Economic Issues 3.7 Response to Material Environmental Issues 5.3 Response to Material Industrial Safety Issues 6.3 Community Engagement 6.4 Response to Local Community Issues	
Reporting Practices (2016 Edition)	102-45	Entities included in the consolidated financial statements	Report Overview 1.2.4 Organization Chart	
	102-46	Defining report content and topic boundaries	Report Overview	
	102-47	List of material topics	2.5 Response to Significant Economic Issues	
	102-48	Restatements of information	Report Overview	No restatement of information
	102-49	Changes in reporting	Report Overview 1.4.2 Materiality Matrix	
	102-50	Reporting period	Report Overview	
	102-51	Date of the most recent report	Report Overview	
	102-52	Reporting cycle	Report Overview	
	102-53	Contacts for questions regarding the report	Contact	
	102-54	Claims of reporting in accordance with the GRI Standards	Appendix I.	
	102-55	GRI content index	Appendix I.	
102-56	External assurance	Appendix V.		
<b>GRI 103: Management Approach</b>				
Management Policies (2016 Edition)	103-1	Explanation of the material topic and its boundary	1.4.3 Identification of Material Topics and Setting of Boundaries	
<b>GRI 200: Topic-specific Disclosures – Economic</b>				
<b>Material Topic: Operating and Financial Performance</b>				
Economic Performance (2016 Edition)	201-1	Direct economic value generated and distributed by the organization	2.1.1 Operating Performance 4.2 Employee Welfare and Care 6.1.2 Local Industry Development 6.1.3 Community Relations 6.2 Development and Donations to Local Communities 6.3 Community Engagement	
Management Policies (2016 Edition)	103-2	The management approach and its components	1.2.1 Management Philosophy 2.1.1 Operating and Financial Performance	
	103-3	Evaluation the management approach	1.2.1 Management Philosophy 2.1.1 Operating and Financial Performance	
Market Presence (2016 Edition)	202-1	Ratios of the standard entry level wage by gender compared to the local minimum wage	4.2.1 Remuneration and Welfare	
	202-2	Proportion of senior management hired from the local community	4.1.3 Local Recruitment	
Indirect Economic Impacts (2016 Edition)	203-1	Development and impact of Infrastructure investments and services supported	6.1.1 Health Care 6.1.2 Local Industry Development 6.2 Development and Donations to Local Communities	
Procurement Practices (2016 Edition)	204-1	Proportion of procurement expenses on local suppliers	5.2.4 Procurement Process	
Anti-corruption (2016 Edition)	205-3	Confirmed incidents of corruption and actions taken	-	No corruption incident in 2018

Disclosure Item		Description	Reference Chapter	Note
GRI 300: Topic-specific Disclosures—Environmental				
Material Topic: Greenhouse Gas Emissions and Energy Management				
Energy (2016 Edition)	302-4	Reduction of energy consumption	3.3.3 Improvement in Energy Conservation Performance	
	305-1	Direct (Scope 1) GHG emissions	3.3.2 Greenhouse Gas Inventory and Emission Intensity	
Emissions (2016 Edition)	305-2	Indirect (Scope 2) GHG emissions	3.3.2 Greenhouse Gas Inventory and Emission Intensity	
	305-4	GHG emission intensity	3.3.2 Greenhouse Gas Inventory and Emission Intensity	
Emissions (2016 Edition)	305-5	Reduction of GHG emissions	3.3.3 Improvement in Energy Conservation Performance 3.4.3 Air Pollution Control Measures	
Management Policies (2016 Edition)	103-2	The management approach and its components	3.1 Environmental Management Policies and Strategies 3.1.1 Structure, Responsibilities and Management System of the Safety, Health and Environment (SHE) Organization 3.1.3 The Energy Conservation, Carbon Reduction and Pollution Control Promotion Team 3.3.1 Greenhouse Gas and Energy Management Strategies	
	103-3	Evaluation the management approach	3.1.1 Structure, Responsibilities and Management System of the Safety, Health and Environment (SHE) Organization 3.1.3 The Energy Conservation, Carbon Reduction and Pollution Control Promotion Team 3.3.1 Greenhouse Gas and Energy Management Strategies	
Material Topic: Use and Management of Water Resources				
Water (2016 Edition)	303-1	Water withdrawal by source	3.2.1 Water Resource Management Information 3.2.3 Water Conservation Performance	
	303-2	Water sources significantly affected by withdrawal of water	3.2.2 Statistics of Water Supplied by the Jiji Weir 3.2.3 Water Conservation Performance	
	303-3	Water recycled and reused	3.2.3 Water Conservation Performance	
Effluents and Waste (2016 Edition)	306-1	Water discharge by quality and destination	3.2.2 Statistics of Water Supplied by the Jiji Weir 3.2.6 Water Pollution Prevention Measures	
	306-5	Water bodies affected by water discharges and other (surface) runoff discharges	3.2.1 Water Resource Management Information 3.2.2 Statistics of Water Supplied by the Jiji Weir	
Management Policies (2016 Edition)	103-2	The management approach and its components	3.1 Environmental Management Policies and Strategies 3.1.1 Structure, Responsibilities and Management System of the Safety, Health and Environment (SHE) Organization 3.1.3 The Energy Conservation, Carbon Reduction and Pollution Control Promotion Team 3.2 Water Resource Use and Management	
	103-3	Evaluation the management approach	3.1.1 Structure, Responsibilities and Management System of the Safety, Health and Environment (SHE) Organization 3.2 Water Resource Use and Management	
Material Topic: Air Pollutant Management				
Emissions (2016 Edition)	305-7	Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions	3.4.2 Air Pollution Monitoring and Assessment 3.4.3 Air Pollution Control Measures	
Management Policies (2016 Edition)	103-2	The management approach and its components	3.1 Environmental Management Policies and Strategies 3.1.1 Structure, Responsibilities and Management System of the Safety, Health and Environment (SHE) Organization 3.1.3 The Energy Conservation, Carbon Reduction and Pollution Control Promotion Team 3.3.1 Greenhouse Gas and Energy Management Strategies 3.4.1 Air Pollution Management Strategies	
	103-3	Evaluation the management approach	3.1.1 Structure, Responsibilities and Management System of the Safety, Health and Environment (SHE) Organization 3.3.1 Greenhouse Gas and Energy Management Strategies 3.4.1 Air Pollution Management Strategies	



Disclosure Item		Description	Reference Chapter	Note
<b>Material Topic: Waste Management</b>				
Effluents and Waste (2016 Edition)	306-2	Waste by type and disposal method	3.5.2 Waste Disposal Regulations and Management Information Statistics 3.5.3 Hazardous Waste Disposal Methods and Management Measures	
	103-1	Explanation of the material topic and its boundary	3.5.1 Waste Management Policies	
Management Policies (2016 Edition)	103-2	The management approach and its components	3.1.1 Structure, Responsibilities and Management System of the Safety, Health and Environment (SHE) Organization 3.2.5 Soil and Groundwater Management 3.5.1 Waste Management Policies 3.5.3 Hazardous Waste Disposal Methods and Management Measures	
	103-3	Evaluation the management approach	3.1.1 Structure, Responsibilities and Management System of the Safety, Health and Environment (SHE) Organization 3.5.3 Hazardous Waste Disposal Methods and Management Measures	
<b>Material Topic: Environmental Regulatory Compliance</b>				
Environmental Compliance (2016 Edition)	307-1	Violation of environmental laws and regulations	3.6.1 Penalties for Violation of Environmental Regulations	
Management Policies (2016 Edition)	103-2	The management approach and its components	3.1 Environmental Management Policies and Strategies 3.1.1 Structure, Responsibilities and Management System of the Safety, Health and Environment (SHE) Organization 3.1.3 The Energy Conservation, Carbon Reduction and Pollution Control Promotion Team 3.6 Environmental Compliance	
	103-3	Evaluation the management approach	3.1.1 Structure, Responsibilities and Management System of the Safety, Health and Environment (SHE) Organization 3.6 Environmental Compliance	
<b>GRI 400: Topic-specific Disclosures – Social</b>				
<b>Material Topic: Employee Benefits and Remuneration</b>				
Employee-employer Relations (2016 Edition)	401-1	New employees and employee turnover	4.1.1 Manpower Structure 4.1.2 Employee Recruitment	
	401-2	Benefits provided to full-time employees (not including temporary or part-time employees)	4.2.2 Welfare System	
	401-3	Parental leave	4.2.3 Unpaid Parental Leave	
Management Policies (2016 Edition)	103-2	The management approach and its components	4.2.1 Remuneration and Welfare 4.2.2 Welfare System	
	103-3	Evaluation the management approach	4.2.1 Remuneration and Welfare	
Freedom of Association and Collective Bargaining	407-1	Operating sites or suppliers who may be facing the risk of freedom of association and group bargaining	4.2.2 Welfare System	
<b>Material Topic: Occupational Health and Safety</b>				
Occupational Health and Safety (2016 Edition)	403-2	Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and the number of work-related fatalities	5.1.4 Prevention of Occupational Injuries and High-risk Diseases	
	403-3	Workers with high incidence and high risk of diseases related to their occupation	5.1.3 Care for Employee Health and Healthy Workplace Promotion 5.1.4 Prevention of Occupational Injuries and High-risk Diseases	
Management Policies (2016 Edition)	103-2	The management approach and its components	3.1.1 Structure, Responsibilities and Management System of the Safety, Health and Environment (SHE) Organization 5.1 Occupational Health and Safety 5.1.1 Workplace Safety Management 5.2 Industrial Safety Management in Supply Chain 5.2.1 Industrial and Public Safety	
	103-3	Evaluation the management approach	3.1.1 Structure, Responsibilities and Management System of the Safety, Health and Environment (SHE) Organization 5.1 Occupational Health and Safety 5.1.1 Workplace Safety Management	

Disclosure Item		Description	Reference Chapter	Note
Material Topic: Talent Recruitment and Retention				
Training and Education (2016 Edition)	404-1	Average hours of training per year per employee	4.3.1 Diversified Education and Training	
	404-3	Percentage of employees receiving regular performance and career development reviews	4.3.2 Performance Management	
Management Policies (2016 Edition)	103-2	The management approach and its components	4.3 Talent Cultivation and Retention	
	103-3	Evaluation the management approach	4.3 Talent Cultivation and Retention	
Employee Diversity and Equal Opportunity (2016 Edition)	405-1	Diversity of the governance body and employees	2.2.1 Corporate Governance Overview 4.1.1 Manpower Structure 4.1.2 Employee Recruitment	
	405-2	Ratio of basic salary and remuneration of women to men	4.2.1 Remuneration and Welfare	
Non-Discrimination (2016 Edition)	406-1	Incidents of discrimination and corrective actions taken	4.1.2 Employee Recruitment	No discrimination incident in 2018
Material Topic: Community Engagement and Giving Back to the Society				
Local Communities (2016 Edition)	413-1	Operations with local community engagement, impact assessments, and development programs	6.1.1 Health Care	
	413-2	Operations with significant actual and potential negative impacts on local communities	3.2.1 Water Resource Management Information 3.4.2 Air Pollution Monitoring and Assessment	
Management Policies (2016 Edition)	103-2	The management approach and its components	6.1 Local Community Engagement	
	103-3	Evaluation the management approach	6.1 Local Community Engagement	
Customer Health and Safety (2016 Edition)	416-1	Assessment of the health and safety impacts of product and service categories	2.3.6 Product Safety and Health Responsibility	
	416-2	Violations of health and safety of products and services	-	No violation of health and safety of products and services in 2018
Marketing and Labeling (2016 Edition)	417-2	Incidents of non-compliance concerning product and service information and labeling	-	No incident of non-compliance concerning product and service information and labeling in 2018
Customer Privacy (2016 Edition)	418-1	Substantiated complaints regarding breaches of customer privacy and losses of customer data	2.4.1 Collaborative Relationships with Customers and Customer Privacy	No breach of customer privacy or loss of customer data in 2018
Socioeconomic Compliance (2016 Edition)	419-1	Non-compliance with laws and regulations in the social and economic area	-	No incident of non-compliance with laws and regulations concerning products and services and their use in 2018



## FPC and Industry Issues

Disclosure Item	Description	Reference Chapter	Note
<b>Material Topic: Product Technology Development and Innovation</b>			
Management Policies (2016 Edition)	103-2	The management approach and its components	2.3.5 Product Technology Development and Innovation
Management Policies (2016 Edition)	103-3	Evaluation the management approach	2.3.5 Product Technology Development and Innovation
<b>Material Topic: Emergency Response Mechanism at Complexes</b>			
Management Policies (2016 Edition)	103-2	The management approach and its components	5.1.2 Emergency Response Mechanism at Complexes
Management Policies (2016 Edition)	103-3	Evaluation the management approach	5.1.2 Emergency Response Mechanism at Complexes
<b>Material Topic: Industrial and Public Safety</b>			
Management Policies (2016 Edition)	103-2	The management approach and its components	3.1.3 The Energy Conservation, Carbon Reduction and Pollution Control Promotion Team 5.1 Occupational Health and Safety 5.1.1 Workplace Safety Management 5.2 Industrial Safety Management in Supply Chain
Management Policies (2016 Edition)	103-3	Evaluation the management approach	3.1.3 The Energy Conservation, Carbon Reduction and Pollution Control Promotion Team 5.1 Occupational Health and Safety 5.1.1 Workplace Safety Management 5.2 Industrial Safety Management in Supply Chain
<b>Material Topic: Operational Risk Management and Response</b>			
Management Policies (2016 Edition)	103-2	The management approach and its components	2.2.5 Operational Risk Management and Response
Management Policies (2016 Edition)	103-3	Evaluation the management approach	2.2.5 Operational Risk Management and Response
<b>Material Topic: Climate Change Risk Management</b>			
Management Policies (2016 Edition)	103-2	The management approach and its components	3.1 Environmental Management Policies and Strategies
Management Policies (2016 Edition)	103-3	Evaluation the management approach	3.1 Environmental Management Policies and Strategies

## II. Corporate Social Responsibility Best Practice Principles for TWSE/GTSM Listed Companies

Main Topic	Content	Reference Chapter	Note
Chapter 1 General Principles	Listing development objectives, applicable targets and principles of practice	About This Report	
Chapter 2 Exercising Corporate Governance	Regulating and implementing the promotion of corporate governance	2.2 Corporate Governance	
Chapter 3 Fostering a Sustainable Environment	Regulating development for a sustainable environment	3. Builders of Sustainable Environment	
Chapter 4 Preserving Public Welfare	Regulating the maintenance of public welfare	6. Builders of Shared Development	
Chapter 5 Enhancing the Disclosure of Corporate Social Responsibility Information	Regulating and enforcing the disclosure of corporate social responsibility information	About This Report 2018 CSR Highlights	
Chapter 6 Supplementary Provisions	Regulating, reviewing, and improving upon the corporate social responsibility established by the Company	About This Report	



### III. ISO 26000 Guidance on Social Responsibility

	Main Topic	Reference Chapter	Note	
Organizational Governance	Decision-making and implementation system in pursuit of goals	2.2 Corporate Governance		
Human Rights	Due diligence in compliance with regulations and not in conflict with human rights issues	4.1 Human Resource Policies and Employee Composition		
	Human rights risk situations	4.1 Human Resource Policies and Employee Composition		
	Avoidance of complicity—Direct, beneficial and silent complicity	4.1 Human Resource Policies and Employee Composition		
	Resolving grievances	4.1 Human Resource Policies and Employee Composition		
	Discrimination and vulnerable groups	4.1 Human Resource Policies and Employee Composition		
	Civil and political rights	4.1 Human Resource Policies and Employee Composition		
	Economic, social and cultural rights	4.1 Human Resource Policies and Employee Composition		
	Fundamental rights at work	4.1 Human Resource Policies and Employee Composition		
Labor Practices	Employment and employment relationships	4.1 Human Resource Policies and Employee Composition		
	Work conditions and social protection	4.1 Human Resource Policies and Employee Composition		
	Social dialogue	4.1 Human Resource Policies and Employee Composition		
	Health and safety in the workplace	5.1 Occupational Health and Safety		
	Human development and training in the workplace	4.3 Talent Cultivation and Retention		
Environment	Pollution prevention	3. Builders of Sustainable Environment		
	Sustainable resource use	3. Builders of Sustainable Environment		
	Climate change mitigation and adaptation	3.1 Environmental Management Policies and Strategies 3.1.1 Structure, Responsibilities and Management System of the Safety, Health and Environment (SHE) Organization 3.1.2 Risks and Opportunities Arising from Climate Change 3.1.3 The Energy Conservation, Carbon Reduction and Pollution Control Promotion Team 3.3.1 Greenhouse Gas and Energy Management Strategies		
		Protection of the environment, biodiversity and restoration of natural habitats	3. Builders of Sustainable Environment 6. Builders of Shared Development	
		Anti-corruption	2.2.4 Internal Control Mechanism	
Fair Operating Practices	Responsible political involvement	2.1.1 Operating and Financial Performance 2.1.2 Participation in External Associations		
	Fair competition	5.2.2 Supplier and Contractor Management		
	Promoting social responsibility of the value chain	1.1 Message from the Chairman 1.2.1 Management Philosophy		
	Respect for intellectual property rights	All employees must sign the Statement on Respecting Intellectual Property Rights to announce FPC's policy and stand against illegal software. Violators will be subject to both legal sanctions and company penalties.		
Consumer Issues	Fair marketing, factual and unbiased information and fair contractual practices	2.4.1 Collaborative Relationships with Customers and Customer Privacy		
	Protecting consumer health and safety	2.4.1 Collaborative Relationships with Customers and Customer Privacy		
	Sustainable consumption	2.3.6 Product Safety and Health Responsibility		
	Consumer service, support, grievance and dispute resolution	2.4.1 Collaborative Relationships with Customers and Customer Privacy 2.4.2 Customer Satisfaction Survey		

	Main Topic	Reference Chapter	Note
Consumer Issues	Consumer data protection and privacy	2.4.1 Collaborative Relationships with Customers and Customer Privacy	No violation of customer privacy or loss of customer data in 2018
	Providing essential services	2.4.1 Collaborative Relationships with Customers and Customer Privacy	
	Education and awareness	2.4.1 Collaborative Relationships with Customers and Customer Privacy	
Community Engagement and Development	Community engagement	6.1 Local Community Engagement 6.2 Development and Donations to Local Communities	
	Education and culture	6.1.3 Community Relations 6.3.2 Renda Special Course on the Kaohsiung Petrochemical Industry at Renwu Senior High School 6.3.3 Preservation of Cultural Assets—Establishing the Wang Yung-Ching and Wang Yung-Tsai Park in Kaohsiung City 6.3.4 Formosa LOHAS Circle	
	Employment creation and skills development	6.1.2 Local Industry Development 6.2 Development and Donations to Local Communities	
	Technology development	6.1.2 Local Industry Development	
	Wealth and income creation	6.1.2 Local Industry Development 6.2 Development and Donations to Local Communities	
	Health	6.1.1 Health Care 6.2 Development and Donations to Local Communities	
	Social investment	6.2 Development and Donations to Local Communities	



## IV. United Nations Global Compact

Category	Principle	Reference Chapter	Note
Human Rights	Businesses should support and respect the protection of internationally proclaimed human rights.	4.1 Human Resource Policies and Employee Composition 5.2.2 Supplier and Contractor Management	
	Making sure their own corporations are not complicit in human rights abuses	4.1 Human Resource Policies and Employee Composition 4.2 Employee Welfare and Care 5.2.2 Supplier and Contractor Management	
Labor	Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.	4.2 Employee Welfare and Care	
	Eliminating all forms of forced and compulsory labor	4.1 Human Resource Policies and Employee Composition	
	Abolishing child labor	4.1 Human Resource Policies and Employee Composition	
	Eliminating discrimination in respect of employment and occupation	4.1 Human Resource Policies and Employee Composition	
Environment	Social investment	6.1 Local Community Engagement 6.2 Development and Donations to Local Communities	
	Businesses should support a precautionary approach to environmental challenges.	2.3.6 Product Safety and Health Responsibility	
	Undertaking initiatives to promote greater environmental responsibility	3. Builders of Sustainable Environment	
Anti-Corruption	Encouraging the development and diffusion of environmentally friendly technologies	2.3.5 Product Technology Development and Innovation 2.3.6 Product Safety and Health Responsibility	
	Businesses should work against corruption in all its forms, including extortion and bribery.	2.2 Corporate Governance	

## INDEPENDENT ASSURANCE OPINION STATEMENT

### Formosa Plastics Corporation 2018 Corporate Social Responsibility Report

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

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

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

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

#### Scope

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

1. The assurance scope is consistent with the description of Formosa Plastics Corporation 2018 Corporate Social Responsibility Report.
2. The evaluation of the nature and extent of the FPC's adherence to AA1000 AccountAbility Principles (2018) in this report as conducted in accordance with type 1 of AA1000 Assurance Standard (2008) with 2018 Addendum assurance engagement and therefore, the information/data disclosed in the report is not verified through the verification process.

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

#### Opinion Statement

We conclude that the FPC 2018 Corporate Social Responsibility Report provides a fair view of the FPC CSR programmes and performances during 2018. The CSR report subject to assurance is free from material misstatement based upon testing within the limitations of the scope of the assurance, the information and data provided by the FPC and the sample taken. We believe that the 2018 economic, social and environmental performance information are fairly represented. The CSR performance information disclosed in the report demonstrate FPC's efforts recognized by its stakeholders.

Our work was carried out by a team of CSR report assurers in accordance with the AA1000AS (2008) with 2018 Addendum. We planned and performed this part of our work to obtain the necessary information and explanations we considered to provide sufficient evidence that FPC's description of their approach to AA1000AS (2008) with 2018 Addendum and their self-declaration in accordance with GRI Standards: Core option were fairly stated.

#### Methodology

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

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

#### Conclusions

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

##### Inclusivity

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



### Materiality

FPC has established relative procedure in organization level, as the issues which were identified by all departments have been prioritized according to the extent of impact and applicable criterion for sustainable development of organization. Therefore, material issues were completely analyzed and the relative information of sustainable development was disclosed to enable its stakeholders to make informed judgments about the organization's management and performance. In our professional opinion the report covers the FPC's material issues.

### Responsiveness

FPC has implemented the practice to respond to the expectations and perceptions of its stakeholders. An Ethical Policy for FPC is developed and continually provides the opportunity to further enhance FPC's responsiveness to stakeholder concerns. Topics that stakeholder concern about have been responded timely. In our professional opinion the report covers the FPC's responsiveness issues. However, the future report should be further enhanced by the following areas:

- Encouraging to work towards a type 2 of AA1000AS (2008) with 2018 Addendum engagement with a view to providing the reliability of sustainability performance information that stakeholder concerns.

### Impact

FPC has identified and fairly represented impacts that were measured and disclosed in probably balanced and effective way. FPC has established processes to monitor, measure, evaluate and manage impacts that lead to more effective decision-making and results-based management within the organization. In our professional opinion the report covers the FPC's impact issues. However, the future report should be further enhanced by the following areas:

- Encouraging to consider international peers' practices to develop the relevant CSR strategies.

### GRI Sustainability Reporting Standards (GRI Standards)

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

### Assurance level

The moderate level assurance provided is in accordance with AA1000AS (2008) with 2018 Addendum in our review, as defined by the scope and methodology described in this statement.

### Responsibility

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

### Competency and Independence

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

For and on behalf of BSI:

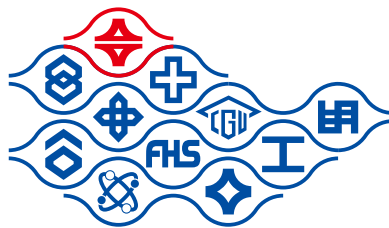
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