## Content



# 3 Navigating a Green Future



Target Readers

- ■ Employee/Labor Union
- ■ Direct Customer
- ■ Government
- ☐ Business Partner (Supplier/Contractor)
- ■ External Audit Agency/Media
- ■ Shareholder/Investor/Financial Institution
- ☐ Industry Association
- ■ Local Resident and Organization

# 2021 Highlight

FENC Pledges to
**Net Zero Emissions** by
**2050**

Energy Comsumption per Unit Production
**↓3%**

**86** Energy Saving Projects
GHG Emissions Avoided
**114,048** $tCO_2e$

GHG Emission per Unit Production
**↓5%**

Power Generated at Solar Power Station
**133.9** GWh

Solar Power Capacity
**12.4** MW

OPTC Plant 2 Passing External Verification on
**ISO 46001 Water Efficiency Management System**

Non-recycled and Non-reused Waste per Unit Production
**↓23%**

Water Withdrawal per Unit Production
**↓5%**

**6%**
of Total Water Withdrawal
Water Saved Through Water Conservation Projects

**98%**
Water Recycling Rate

Water Consumption per Unit Production
**↓7%**

# Targets and Progress

| | Reducing Energy Consumption per Unit Production | Reducing Water Withdrawal per Unit Production | Reducing Waste (Non-Recyclable and Non-Reusable) |
|---|---|---|---|
| 2030 Target | Reducing 25% | Reducing 30% | Reducing 30% |
| 2025 Target | Reducing 15% | Reducing 20% | Reducing 20% |
| 2022 Target | Reducing 9% | Reducing 14% | Reducing 14% |
| 2021 Target | Reducing 7% | Reducing 12% | Reducing 12% |
| 2021 Progress | Reducing 9% | Reducing 1% | Reducing 50% |
| | Completed | | Completed |
| Action Plan | • Optimize production and facilities.<br>• Incorporate innovative management approaches. | • Continue with efforts in reducing water withdrawal at the source.<br>• Increase percentage of recycled water utilized. | • Optimize waste recycling and classification.<br>• Enhance waste recycling and reuse. |
| Target Base Year | 2017 | 2017 | 2017 |
| Base Year Data | 2.99 GJ / metric ton of product | 3.11 GJ / metric ton of product | 19,206 metric ton |

Note: The scope of the 3 goals listed on this page covers 17 production sites, including OPTC Plant 1, OPTC Plant 2, OPSC, Hsinpu Chemical Fiber Plant, Kuanyin Chemical Fiber Plant, FEFC, FEIS, WHFE, Hukou Mill, Kuanyin Dyeing and Finishing Plant, OTIZ, FEIW, FEDZ, FEAZ, FEAV, Neili Texturizing Plant and FEIZ. However, the last 2 plants are excluded from the scope of this report since operation discontinued in 2019 and 2018 respectively, making the scopes differ from that of this report.

# Targets and Progress

| | Reducing Total Air Pollution | Greenhouse Gas Reduction (NEW) | Increasing Installed Capacity of Renewable Energy (NEW) |
|---|---|---|---|
| 2030 Target | Reducing 35% | Reducing 40% | Increasing 400% |
| 2025 Target | Reducing 30% | Reducing 20% | Increasing 300% |
| 2022 Target | Reducing 24% | — | Increasing 70% |
| 2021 Target | Reducing 22% Completed | New Goals | New Goals |
| 2021 Progress | Reducing 27% | New Goals | New Goals |
| Action Plan | • Monitor and control air pollution.<br>• Replace outdated equipment. | • Improve energy efficiency.<br>• Develop renewable energy.<br>• Transform raw material use.<br>• Seek low-carbon fuels.<br>• Utilize CCUS technology. | • Build additional solar stations and biogas generators.<br>• Collaborate with other renewable energy suppliers. |
| Target Base Year | 2017 | 2020 | 2021 |
| Base Year Data | 1,833 metric ton | 2,432 $ktCO_2e$ | 12,417 kW |

Note: The scope of reduction targets for the total air pollution covers 17 production sites, including OPTC Plant 1, OPTC Plant 2, OPSC, Hsinpu Chemical Fiber Plant, Kuanyin Chemical Fiber Plant, FEFC, FEIS, WHFE, Hukou Mill, Kuanyin Dyeing and Finishing Plant, OTIZ, FEIW, FEDZ, FEAZ, FEAV, Neili Texturizing Plant and FEIZ. However, the last 2 plants are excluded from the scope of this report since operation discontinued in 2019 and 2018 respectively, making the scopes differ from that of this report. The scope of the targets for greenhouse gas reduction and increasing installed capacity of renewable energy is identical to that of this report.

# Material Topics

## Elevate Energy and Resource Efficiency

### Significance and Purpose of Management for FENC

FENC regards natural resources as shared resources. Our goal is to improve the efficiency of energy and resource use to avoid depletion due to over consumption.

### Management Approaches and Effectiveness Evaluation Mechanisms

- Establish targets for reducing energy and resource use.
- Appropriate budget and establish intercompany authority.
- Implement reduction projects and regularly performance tracking.
- Obtain international certifications such as ISO 14001 and ISO 50001.

### Authority

- Energy Task Force
- All production sites

## Respond to Climate Change

### Significance and Purpose of Management for FENC

FENC evaluates the risks and opportunities posed by climate change, proposes corresponding strategies and implements GHG emission avoidance projects as contributions to slow down global warming.

### Management Approaches and Effectiveness Evaluation Mechanisms

- Conduct R&D on products that mitigates effects of climate change.
- Utilize alternative fuels.
- Continue to expand the scope and category of GHG inventory.
- Increase the use of renewable energy.
- Obtain international certifications such as ISO 14064-1.

### Authority

- Energy Task Force
- All production sites

## Prevent and Control Environmental Pollution

### Significance and Purpose of Management for FENC

FENC cherishes natural habitat and resources. We are dedicated to keeping pollutants from damaging local environment. By recycling and upcycling land and ocean waste, we prolong the life cycle of natural resources, and safeguard biodiversity and environmental sustainability.

### Management Approaches and Effectiveness Evaluation Mechanisms

- Establish pollution reduction targets.
- Introduce innovative production and facilities.
- Environmental impact assessment for new plant locations
- Establish corporate authority to track progress.

### Authority

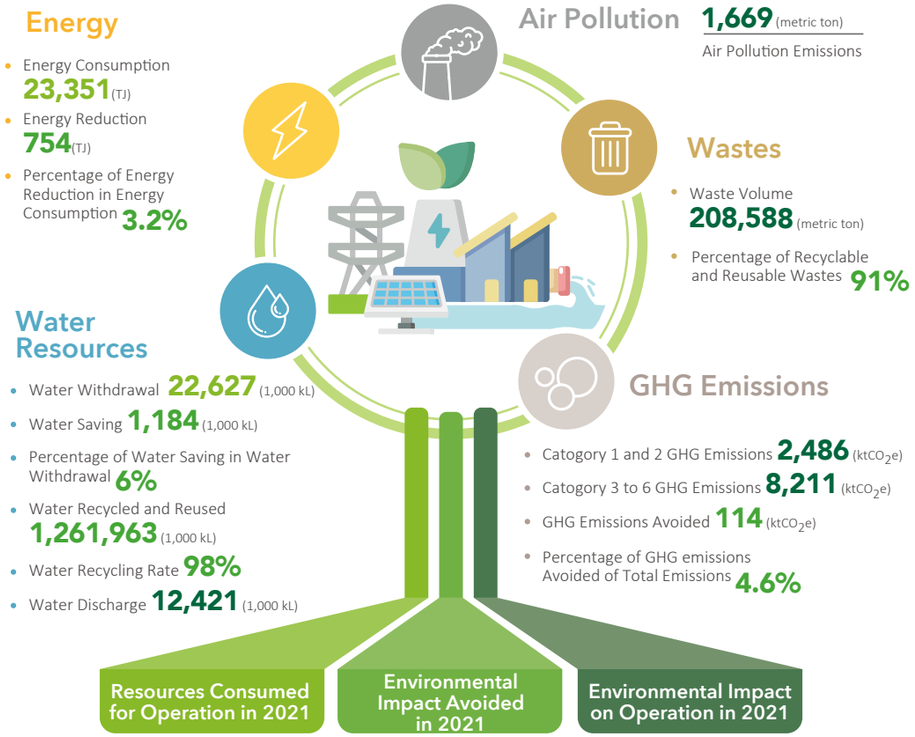
- Energy Task Force
- All production sites

## Content



## Overview of Environmental Performance

FENC has a consistent track record in fostering environmental sustainability. With source reduction and recycling as the two major strategies, the goal is to enhance efficiency in resource consumption and mitigate effects of climate change and environmental pollution. It is our unwavering commitment to preserve the beauty of mother nature for our future generations.




Note:
1.Please refer to the chapter content for details.
2.The proportion of avoided GHG(%) is the denominator of category 1 and category 2 GHG emissions.

### Strategies and Guidelines on Environmental Sustainability

**Source Reduction** | **Recycling and Reuse**

**System Establishment and Management**
- Establishing management goals and tracking completion rate
- Optimizing management and introducing international certification systems
- Training and education

**Incorporation of Innovative Technology and Facilities**
- Applying AI in production management
- Optimizing production and facilities

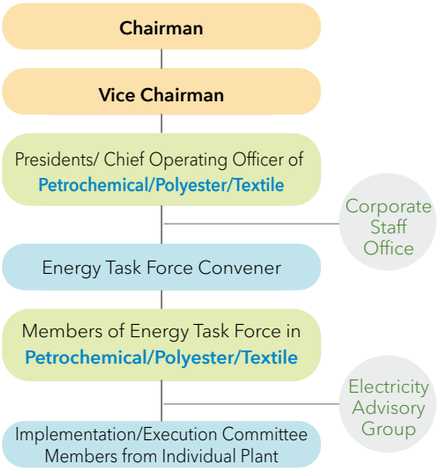
**Value Chain Collaboration**
- Influencing suppliers, carriers and customers and combining forces in environmental protection

**Avid Support for Governmental Policies**
- Joining the government in the implementation of management projects

### Environmental and Energy Management Authority – Energy Task Force

FENC established the intercompany and interdepartmental Energy Task Force in 2010. As the Company expands its territory, the Energy Task Force has also expanded its scope of management to cover production sites in Taiwan, Mainland China, Vietnam, Japan, the U.S. and Malaysia. As environmental sustainability gains traction, management issues also arise and require attentions. To implement energy management and operation, FENC production sites conduct energy management meetings at the plant level each month. The Energy Task Force consolidates the outcome from the plant meetings and presents it at the formal monthly energy management meetings. Every September, a special presentation on energy and carbon reduction is conducted with corporate executives such as the Chairman, Vice Chairman and President of each Business in attendance. As an effective means to regularly track and evaluate performance on environmental protection, FENC built the online database, Management Platform of Energy Conservation, Carbon Reduction and Circular Economy to systematically collect environmental data and implement internal environmental audits. In 2018, FENC established company-wide reduction targets. With 2021 as the year for the kickoff of GHG reduction campaigns, the Company has set carbon strategies and explored optimal pathways to reach them.

### Organizational Structure



◉ Scope of Management for Energy Task Force


### Special Budget for Energy Reduction and Environmental Protection

To promote implementations that help FENC fulfill environmental sustainability, all production sites set special budgets for energy conservation and environmental protection purposes. In 2010, NT$2 billion was appropriated as the special budget for energy conservation. In 2017, another NT$2 billion was appropriated to provide opportunities and resources for production sites to generate innovative energy conservation initiatives. Since 2018, the second special budget has infused NT$1.94 billion into 212 projects. In addition to the special budget, production sites also appropriate annual budget specifically for energy conservation and environmental protection. The 2021 energy conservation budget reached NT$1.28 billion, among which, NT$690 million are for new projects and NT$590 million are for continuation of existing projects. For details on the special budget for energy conservation and implementation, please refer to 3.1.1 Energy Management- Measures and Performance in Energy and Carbon Reduction. The 2021 environmental protection budget reached NT$460 million, among which, NT$410 million are for new projects and NT$50 million are for continuation of existing projects. For details on the implementation, please refer to 3.3 Preventing and Controlling Environmental Pollution.

### Training for Comprehensive Environmental Data Collection

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To refine the quality and efficiency of environmental data collection in 2021, FENC Sustainability Team joined forces with Energy Task Force, the designated agency for environmental and energy management. The two task forces conducted 5 training sessions for 92 employees on collecting and filling out environmental data for production units at 20 production sites. The course content reiterates the objective and standards on the collection of environmental data, stressing the importance of data to internal management and external communication. Currently, 70% of FENC's environmental data has been collected through Management Platform of Energy Conservation, Carbon Reduction and Circular Economy. The training also focuses on system operation as well as regular tracking and management.

### Building Green Factory with Smart Carbon Reduction

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE 12 RESPONSIBLE CONSUMPTION AND PRODUCTION 13 CLIMATE ACTION

OPSC adopted ISO standards and principles of DuPont Safety Excellence since its inauguration. When production began in 2006, the plant established Energy Conservation Committee to promote energy-saving tasks and implement Regulations Governing Proposal Improvement to encourage employees to present proposals for energy conservation. In addition, the plant bettered the adjacent environment by eliminating odors, reducing noises and installing online detector for volatile organic compounds (VOCs). Corporations have the undeniable responsibility to treat industrial waste. OPSC commissions reputable waste management companies for recycling and treatment while reducing waste through avoidance. The plant has obtained multiple environmental certifications, including cleaner production evaluation in 2009; ISO 9001/14000/45001 certifications in 2010; Water-saving Enterprise in Shanghai in 2017; ISO 50001 energy management system certification and the 4th round of designation of National Green Factory in 2019. At the end of 2020, OPSC answered the government's call for green development and launched ISO 14064-1:2018 certification process on GHG inventory to strengthen carbon emission monitoring during the production cycle to track carbon footprint and enhance energy and carbon reduction.

In terms of technological development, OPSC is aided by the sophistication of an experienced team, which has been with OPSC since the very beginning. The team was involved in the plant design stage and improved upon issues often confronted in other plants. After production began, the team engaged in the optimization of production process as well as energy conservation and consumption reduction. In addition, the team improved the dry scrubber system, recycled methyl acetate and enhanced energy efficiency at the pump. These projects greatly reduced energy consumption per unit production. The team also helped incorporate AI systems such as APC, electronic permit to work (PTW) system, energy management dashboard and real time display of energy consumption per unit production. With smart inspection, data collected from the meters on-site undergo big data analysis to ensure proper operation. To enhance reliability and issue maintenance notifications in advance, the team installed online sensors on 93 critical equipment beginning in 2019 to monitor the operation in real time. The sensors successfully provided advanced warnings when irregularities occurred at the dryer and the mixer for the oxidation reactor, and prevented equipment failure and unplanned downtime. The exceptional performance has helped OPSC reach the annual governmental targets on energy consumption and intensity dual control, hence winning the title, National Green Factory.

Unity is Strength – OPSC's Green Momentum

# 3.1 Elevating Energy and Resource Efficiency

## 3.1.1 Energy Management

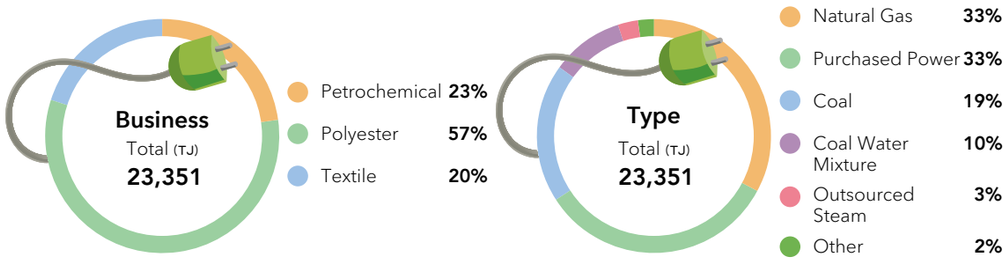
### Management Guidelines and Measures

**System Establishment and Management**
- Expanding ISO 14001 and ISO 50001 management systems
- Optimizing management system and Energy-saving performance included in the reward system
- Conducting training and promotion

**Incorporation of Innovative Technology and Facilities**
- AI applications are adopted for energy management
- Development of alternative fuel sources is ongoing
- Energy and carbon reduction projects are implemented

**Avid Support for Governmental Policies**
- Achieving 1% annual energy saving rate, which exceeds governmental requirement
- Green energy establishment and purchasing guidelines under Renewable Energy Development Act

### 2021 Energy Consumption




The overall energy consumption in 2021 increased by 4% compared to 2020. The main contributing factors are the pent-up demands as the impact of the COVID-19 pandemic eased around the globe, as well as production increase from Polyester and Textile Businesses. Despite of the overall increase, energy consumption per unit production reduced by 3% compared to 2020, which demonstrates the effectiveness of energy management at FENC.

Renewable energy consumption at FENC in 2021 accounts for 1.1% of total energy consumption and 3.4% of total electricity consumption. The calculation of renewable energy consumption takes into account the percentage of renewable energy consumption within the energy mix of purchased power as well as the consumption of renewable energy generated in-house by FENC. Total renewable energy consumption in 2021 is 246 TJ.

### Energy Consumption

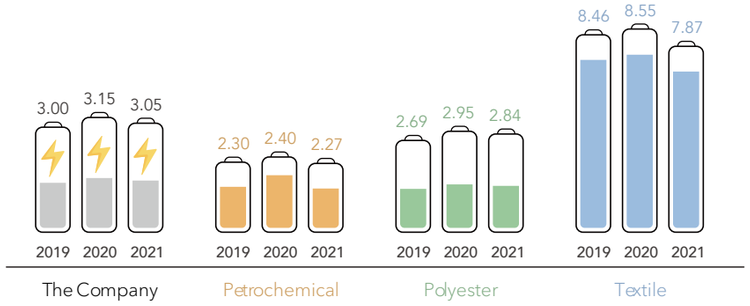
Unit: TJ

| | | Petrochemical | | | Polyester | | | Textile | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2019 | 2020 | **2021** | 2019 | 2020 | **2021** | 2019 | 2020 | **2021** | 2019 | 2020 | **2021** |
| Power | Purchased Power | 1,234 | 1,274 | **1,124** | 3,685 | 4,285 | **4,574** | 2,012 | 1,763 | **2,090** | 6,931 | 7,322 | **7,788** |
| | Purchased Green Power | 0 | 0 | **0** | 1 | 0 | **0** | 0 | 0 | **0** | 1 | 0 | **0** |
| | Self-generated Green Power | 2 | 3 | **3** | 6 | 12 | **12** | 29 | 32 | **33** | 37 | 47 | **48** |
| | **Electricity** | **1,236** | **1,277** | **1,127** | **3,692** | **4,297** | **4,586** | **2,041** | **1,795** | **2,123** | **6,969** | **7,370** | **7,836** |
| Natural Gas | | 4,645 | 4,398 | **4,248** | 1,663 | 2,226 | **2,445** | 1,015 | 833 | **944** | 7,323 | 7,457 | **7,637** |
| Heavy Oil | | 0 | 0 | **0** | 240 | 266 | **285** | 60 | 43 | **3** | 300 | 309 | **288** |
| Fuel Oil | | 0 | 0 | **0** | 0 | 3 | **4** | 0 | 0 | **0** | 0 | 3 | **4** |
| Coal | | 0 | 0 | **0** | 2,566 | 3,241 | **3,323** | 973 | 1,081 | **1,154** | 3,539 | 4,322 | **4,477** |
| Coal Water Mixture | | 0 | 0 | **0** | 2,257 | 2,246 | **2,299** | 125 | 103 | **144** | 2,382 | 2,349 | **2,443** |
| Outsourced Steam | | 0 | 0 | **0** | 341 | 323 | **299** | 520 | 375 | **367** | 861 | 698 | **666** |
| **Total** | | **5,881** | **5,675** | **5,375** | **10,760** | **12,602** | **13,241** | **4,734** | **4,230** | **4,735** | **21,375** | **22,507** | **23,351** |

Note:
1.The statistics take into account energy consumed during the production process only.
2.The calorific value is based on the factors of calorific value from all production sites.
3.External energy consumption is not taken into account.
4.Data collection on energy management accounts for 100% of the production sites within the scope of this report.

### Energy Consumption per Unit Production

Unit: GJ/metric ton of product




Note: The Textile Business does not include FEAZ, FEAV and FENV.

### System Establishment and Management

FENC has been expanding the coverage of ISO 14001 and ISO 50001 on environmental and energy management systems as it expands its business frontiers. The Company devotes ongoing efforts in the optimization of management systems to enhance energy and carbon reduction. Starting in 2016, a number of production sites have established Regulations Governing Energy Efficiency Rewards, which officially incorporates energy conservation performance into the evaluation criteria in the bonus system.

- Internal Energy - Saving Incentives

To excel further in energy management, FENC is aware of the need to encourage collaborations among its affiliates. By learning from one another, these corporate entities may acquire energy conservation approaches that will inspire technological advancement and increase energy efficiency. Far Eastern Group started presenting Far Eastern Energy Conservation Award in 2005. The award recognizes and encourages technology and practices that enhance energy conservation within the Group, which continues to implement energy conservation projects to control energy costs.

- Household Energy Conservation Contest

Taiwan is facing the predicament of power shortages as impacts of global warming grow devastating. Therefore, energy saving cannot wait. To help employees develop the practice of conserving energy, FENC held the very first household energy-saving contest in 2021, calling for all employees to love and protect the environment and the earth.


### Environmental and Energy Management Certification Passed at Production Sites

| Certification Standards | Sites with Certifications | | Coverage Rate of Production Sites |
|---|---|---|---|
| ISO 14001 Environmental Management Systems | • OPSC<br>• Hsinpu Chemical Fiber Plant<br>• Kuanyin Chemical Fiber Plant<br>• OGM<br>• FEIS<br>• WHFE<br>• Polyester Plant of FEPV<br>• FIGP | • Kuanyin Dyeing and Finishing Plant<br>• OTIZ<br>• FEDZ<br>• FEAV<br>• FENV<br>• Textile Plant of FEPV<br>• Headquarters | 68% |
| ISO 50001 Energy Management Systems | • Plant 2 of OPTC, OPSC<br>• Hsinpu Chemical Fiber Plant<br>• Kuanyin Chemical Fiber Plant<br>• FEFC NEW | • FEIS<br>• Kuanyin Dyeing and Finishing Plant<br>• FEIW<br>• Headquarters | 41% |

### Environment and Energy Management Certifications for Headquarters

To fully implement FENC's environmental and energy management policies, Headquarters introduced ISO 14001 and ISO 50001 systems on environmental and energy management in 2016 and the systems are audited by external agencies. The Company has also been refining and reviewing the system each year. In 2019, Kind Management Consulting Co. is invited to provide coaching for FENC, and the Company passed the external audit conducted by TÜV NORD Taiwan in October 2019. As of 2021, the Company continued to pass the subsequent external verifications, effectively preventing and controlling environmental pollution and increasing energy and resource efficiency.

## Content



### Incorporation of Innovative Technology and Facility

The age of AI is progressing at an unprecedented pace and FENC continues to embrace advanced technology. The Company has devoted considerable efforts into developing AI applications. To implement digital transformation, Industry 4.0 was incorporated with a smart platform as the core. With a smart platform as the core, the system is part of a brand new smart factory. Its production process entails VR training; smart electronic inspection; smart logistics management; electronic safety and energy bulletin; wall screen surveillance system. The plant also utilizes AI to improve quality forecast and energy efficiency.

### Sustainable Development of Renewable Energy through Electricity Management Platform

7 AFFORDABLE AND CLEAN ENERGY 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE 13 CLIMATE ACTION

Hsinpu Chemical Fiber Plant, Kuanyin Chemical Fiber Plant, FEFC, OGM and FEIS under Polyester Business constructed an electricity management platform to implement electricity management and promote renewable energy generation. Each month, the plants conduct meetings to share and explore case studies on the implementation of energy conservation plans and electrical safety; communicate on technology for solar power generation; improve management efficiency to achieve vertical integration with horizontal utilization. During the regular monthly meetings, reviews and exchanges are conducted on energy conservation measures, unit price of electricity, energy consumption, demand response from Taiwan Power Company and electrical safety.

### Smart Manufacturing Reward for Smart Machine Shop

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE 12 RESPONSIBLE CONSUMPTION AND PRODUCTION

The local authority in Suzhou established industrial enterprise transformation and upgrade guiding fund to foster high-quality industrial development, elevate smart manufacturing upgrade as well as amplify the support for corporate transformation and innovative development. OTIZ carefully reviewed the application materials, consulted with governmental agencies and completed the application after assessing actual plant operations.

1. In 2021, OTIZ devoted NT$1.3 million to transport the residual gas from the cryogenic nitrogen generator from North Plant to South Plant. South Plant was able to operate with one less nitrogen generator, which reduced energy consumption by 820 MW, carbon emission by 577 $tCO_2e$ and energy costs by NT$2.41 million per year.
2. OTIZ spent NT$4.12 million to replace the dated 400kW rotary screw air compressors with the 250 kW models. Under the premise of maintaining consistent production, the plant reduced the compressor pressure from 14K to 12.5K. The pressure reduction lowered energy consumption by 520 MW, carbon emission by 365 $tCO_2e$ and energy costs by NT$15.4 million per year.

In sum, OTIZ put in a total of approximately NT$5.42 million into energy conservation projects in 2021, which reduced energy consumption by 1,340 MW, carbon emission by 942 $tCO_2e$ and energy costs by NT$3.95 million per year.

OTIZ beat the competitions to represent Wuzhong District in the municipal and provincial level competitions. The plant ultimately stood out among the competitors with its smart machine shop, winning the title of Advanced Transformation and Upgrade Enterprise of Manufacturing Industry during the assessment conducted by Suzhou Engineering Technology Research Center. Accompanying the title is a NT$27.6 million reward. In 2022, the plant continues to devote approximately NT$170 million to smart transformation endeavors to continue serving as the role model of smart manufacturing plant.

### Avid Support for Governmental Policies

Bureau of Energy, Ministry of Economic Affairs mandates 1% energy saving rate for major energy users. This mandate has been extended to 2024. Production sites in Taiwan have abided by this requirement, and in the past 7 years, their energy saving performance have exceeded government expectation.

### Energy Saving Rate at Production Sites in Taiwan

| | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|---|
| Energy Saving Rate | 1.9% | 2.3% | 2.0% | 2.0% | 2.1% | 1.4% | **1.4%** |

### Measures and Performance in Energy and Carbon Reduction

FENC continues implementing energy conservation and carbon reduction measures. In 2021, the Company implemented 86 such projects. The main focus on energy conservation is refining the production process and reducing purchased power.

### 2021 Energy and Carbon Reduction Projects

**18** — Production Improvement

production parameters, such as temperature, pressure and operating period.

**50** — Facility Improvement

Optimizing, upgrading and updating air conditioning, air pressure, boilers, power generators, motors, lighting as well as production equipment. Projects implemented include the replacement of low liquor ratio dyeing machine and improvement of air blowers for wastewater treatment.

**18** — Energy Management

Revamping inverter air compressor, improving cooling system, adjusting operating hours and discontinuing operation.

### 2021 Energy Conservation and Carbon Reduction Project

| | | Energy Conservation (TJ) | GHG Emissions Avoided ($tCO_2e$) | |
|---|---|---|---|---|
| | | | Category 1 | Category 2 |
| Project | Improvement on Production Process | 570 | 119 | 88,605 |
| | Improvement on Equipment | 57 | 0 | 7,673 |
| | Energy Management | 127 | 0 | 17,651 |
| Business | Petrochemical | 14 | 0 | 2,011 |
| | Polyester | 531 | 119 | 77,775 |
| | Textile | 209 | 0 | 34,143 |
| | **Total** | **754** | **119** | **113,929** |

Note:
1. The estimate of energy efficiency is compared against the energy consumption with original production process and equipment prior to project implementation.
2. The calculation of calorific value is based on the factors of calorific value from all production sites.
3. GHG emission factors: GHG emission factors in Taiwan are based on "GHG Emission Factors" version 6.0.4 from Bureau of Energy, MOEA and Environmental Protection Administration. The GHG emission factor is 0.502 t-$CO_2e$/1000 kWh for electricity and 3.02468 t-$CO_2e$/t for heavy crude. Calculation of GHG emission factors for electricity in Mainland China is based on the local electrical grid and calculated at 0.7035 $tCO_2e$/1000 kWh.
4. Natural gas is the source of category 1 (scope 1) emission and purchased power for category 2 (scope 2) emission.
5. GHGs include $CO_2$, $CH_4$, $N_2O$, PFCs, HFCs, $SF_6$ and $NF_3$.

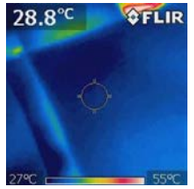
### Energy Conservation and Carbon Reduction Projects in the Past Three Years

| | 2019 | 2020 | 2021 |
|---|---|---|---|
| Actual Investment (NT$1,000) | 127,361 | 61,959 | **268,365** |
| Savings (NT$1,000) | 50,078 | 40,958 | **85,467** |
| Energy Conservation (TJ) | 498 | 557 | **754** |
| GHG Emissions Avoided ($tCO_2e$) | 74,151 | 78,955 | **114,048** |

### Electricity

| Production Site | Project | Detail | Performance |
|---|---|---|---|
| OPTC Plant 2 | Heat recovery project from condensate with addition to slurry preheater | A heat exchanger is added to the preheating stage during production to recuperate residual heat from the condensate on the exterior of the preheater, increase the slurry temperature and reduce the consumption of high pressure stream in the downstream preheater, which will in turn reduce the loading of the boiler and natural gas consumption. | The project reduces 39,200T/h of high-pressure steam, approximately NT$28.5 million in costs and 4,730 $tCO_2e$ of carbon emission per year. |
| OPTC Plant 2 | Water pump modification project at the cooling tower | Cause and effect analysis and data collected from ultrasonic flowmeters show that the total flow of cooling water exceeds the design capacity, and therefore indicating the possibility of energy conservation. To reduce electricity consumption, hydraulic and energy calculations were performed with improvements to be conducted in 3 phases, including adjusting the outlet valve of the pump, trimming the pump impeller and using an energy efficient pump. | The project reduces 10,848,800 kWh of electricity consumption, approximately NT$69.757 million in costs and 4,595 $tCO_2e$ in carbon emission per year. The energy saving rate reached 39.7%. |
| OPSC | Ceramic coating project for efficiency improvement at water cooling pump | Water cooling pump is a critical link in the cooling water circulation system at the plant. Its high flow is powered by high energy consumption. Long-term wear and tear and internal erosion created cavitation damages which lowered the efficiency. Therefore, an anti-erosion ceramic coating is applied to the pump. The ceramic material is highly adhesive, chemical resistant and hard. Coating the impeller and volute of the pump with this material will improve its efficiency, repair the rugged surface, ensure hydraulic stability, conserve energy and prolong the equipment life cycle.  | Two pumps were modified in June and December 2021 for this project. Without adjusting the water flow and hydraulic head, the efficiency has been improved by 3.7%. The project reduces 92 kWh of electricity per hour, approximately NT$2.236 million in costs and 289 $tCO_2e$ in carbon emission per year. |

### Natural Gas

| Production Site | Project | Detail | Performance |
|---|---|---|---|
| FEDZ | Stenter cooling project | The average temperature of a textile stenter could reach 69°C during operation. Without cotton insulation, the heat emitted from the machine would elevate the room temperature throughout the entire plant. Therefore, carbon fiber and aluminum silicate insulations are installed on the top of the stenter and the vent duct is wrapped with aluminum sheet as well as aluminum silicate insulation. The insulation has the benefit of maintaining the temperature increase inside the machine from natural gas combustion, preventing heat loss while reducing the temperature of the conduits to 28.2°C, which is close to the ambient temperature of 26.9°C. The temperature decreased by 80% compared to the previous room temperature within the plant.   | The project reduces 24,575$m^3$ of natural gas consumption, approximately NT$360,000 in costs and 53 $tCO_2e$ of carbon emission per year. |
| OTIZ | Drying area improvement project at impregnation line | Discussions were conducted with suppliers regarding actual production conditions and the structure above the drying area for the impregnation line. The plan is to enclose the roller at this location. The plan to add the fume hood, oil-water separator, vent duct and exhaust vent was canceled. The aluminum plated insulator will be added, and the loop around the roller will be supported partially through the exhaust fan. While reducing the fuel consumption during production, the project also eliminates accumulation of combustible debris at the exhaust fan and conduits, hence clearing fire hazards.  | Post-improvement: The project reduces unit consumption of natural gas from 245$m^3$/metric ton to 230$m^3$/metric ton. Based on the annual production, the project reduces NT$1.5 million dollars in costs and 1,093 $tCO_2e$ in carbon emission per year. |

### 3.1.2 Raw Material Management

FENC devotes ongoing efforts in monitoring raw material usage while improving the production process and technology. By incorporating innovative technology and systems, the Company reduces raw material consumption while increasing the recycling rate. With standards more rigorous than the industry norm, the selection of raw material suppliers strictly follows the internal procurement management process and operational guidelines. FENC forms partnerships with those who abide by governmental regulations and sustainable guidelines, and commissions independent testing companies to examine the raw materials. To stabilize product supply, FENC procures raw materials from multiple suppliers, which ensures agility amid the capricious market conditions. Meanwhile, the Company interviews the suppliers and collects market information to assess their operational conditions and stay ready to respond swiftly in times of change.

Packaging materials are tailored based on production, marketing, customer types and delivery approaches. Priority consideration is given to packaging materials or operations that involve recycling, reuse or less material consumption. Safety is also assured in terms of management. The recycling quantity, recycling rate and completion rate are tabulated monthly. Unmet goals are examined. Managing the recycling of packaging materials may extend material life cycle while reducing consumption, costs and waste. In addition, FENC combines forces with suppliers and customers, working together and expanding our influence to create optimal packaging design that promotes recycling.

#### Raw Material Management Guidelines and Measures

**System Establishment and Management**

- Trainings are conducted on raw material management
- System is in place to manage hazardous materials
- Recycling targets are established for packaging materials with regular statistics on completion rate
- Improvement system is in place for the use of raw materials

**Incorporation of Innovative Technology and Facilities**

- Smart scheduling system is incorporated to reduce wear and tear with optimized scheduling
- AI quality forecast model is established to reduce defect rate
- Real-time production management data is established with optimized warehouse product management system
- Automated warehouse system is adopted for raw material storage

**Value Chain Collaboration**

- Supplier evaluation is implemented to improve the quality of raw materials
- Packaging materials and design are reinvented
- Dialogues with customers are conducted to reach consensus on simplifying product packaging
- Success stories on the recycling of packaging materials are shared with customers and suppliers

#### Management Procedure for Raw and Packaging Materials

**Quality Control for Raw Materials**

1. At the end of each year, all units establish quality control goals for the following year. Monthly reviews are conducted with at least one management review meeting a year.
2. Monitoring raw material quality and reduce sub-standard products, which would lower the yield rate.
3. Raw material packaging is reduced.

**Training and Inspection**

1. Annual policy regarding raw material management is announced in the beginning of each year.
2. At least once a year, training on raw material management is conducted in accordance with Company policy.
3. During the mid-year mark, training results are examined.
4. Quality control units conduct random inspections on packaging materials and improve the size and method of packaging.

**Supply Chain Communication**

1. Planning and preparation of packaging materials are based on customers as well as the discussions from sales and marketing meetings.
2. Packaging materials are prepared with safety, environmental protection, quality assurance and efficiency as the principles.
3. Sales engage in communication with customers on packaging reduction.

**Packaging Material Recycling**

1. Recycling and reuse are implemented on-site.
2. Packaging materials are recycled from domestic customers.
3. Qualified suppliers are commissioned for off-site recycling.

FENC has long been recycling packaging materials such as pallets, paper tubes and pegboards through continuous dialogues with customers to establish a robust recycling mechanism and management system. In 2021, 65% of the packaging materials at all production sites are recycled. The recycling rate from participation in external organization is 45%.

**Raw Material Recycling**

- In 2021, FEFC adopted TIBICO, a data visualization system, to manage the collection and classification of recycled yarns. The system allows the plant to quickly assess the progress towards reaching monthly goals, compare past production status and analyze the collection and distribution of unspun yarn.

**Paper Tube**

- Recycled paper tubes are susceptible to seasonal changes in humidity. The varied lengths of the tubes also cause rotary table failure and defects at the ends of the filament. FEFC requests that the suppliers adjust the tubes based on local climate during production to reduce such risks. The longer tubes are grinded down to reduce costs and maintain quality.
- The entire staff at the OTIZ machine shop collaborated on promoting the recycling and reuse of paper tubes. The continuous improvement is evident in the 15% increase in the recycling rate compared to 2020.

**Packaging Bag**

- OGM ships products in bulk bags or tank trucks, and provides assistance for customers to recycle and reuse the bulk bags. In 2021, approximately 28% of the bulk bags from downstream suppliers are recycled. Those that are too worn to be reused are stored separately and collected by qualified waste management companies for recycling and reuse.

**Pallet**

- In 2021, OGM eliminated the use of pallets by 100%. This policy increased the shipping capacity of the tank truck and reduced the use of packaging bags. FEIS recycles the pallets and repairs damaged pallets onsite for reuse. The plant did not purchase any new pallets in 2021.

### Value Chain Collaboration

OGM works with Foundation of Taiwan Industry Service and inspects the recycled PET bales from suppliers on Wednesdays and Fridays in accordance with regulations established by Environmental Protection Administration on subsidy requirements for recycling businesses. The regulation stipulates that if the bales contain more than 1% impurities, the subsidy shall be deducted proportionately. The regulation aims to maintain the quality of the bale, preventing recycling businesses from mixing non-PET materials into the bale. OGM also discusses the testing results with suppliers, seeking to reduce impurity in raw materials and the scrap rate.

### Conserving Fabric by Maximizing Marker Planning

In order to reduce fabric waste and determine the most efficient pattern layout, the Marker Planning Section at FEAZ has been setting annual goals on the percentage of fabric utilized while simultaneously making internal and external improvements.

- Internal improvements:
  1. Experiment with multiple pattern layouts: Identify the most efficient use of fabric and apply the pattern towards mass production.
  2. Visualize target for utilization rate: Visualization allows cross comparison at any time. Patterns not meeting the target are modified through ratio adjustment or allowing additional time for marker planning.
  3. Maximize efficiency based on fabric width: Create patterns based on the actual width provided by the quality control staff.
  4. Skill training: Conduct training and regular evaluation for marker planning staff. Categories evaluated include the marker length, marker specification by brand and marker planning for special fabric.
  5. Flexible and optimal use of marker width: Experiment with marker areas for different apparel products such as t-shirts, jackets and pants are tested to select the optimal standardized measurement.
- External improvements:
  1. Conduct skill training for cutting and spreading staff with regular evaluation.
  2. Invite top performing cutting staff to share their experience.

With these improvements, the utilization rate of marker planning reached 82.6% in 2021, exceeding the annual goal of 82.4%.

## 3.1.3 Water Resources Management

### Water Resources Management Guidelines and Measures

**System Establishment and Management**
- Tiered water recycling and reuse are implemented
- Implementing rainwater recycling and reuse
- Monitoring water quality and preventing leakage
- Wastewater treatment, recycle and reuse
- Reducing water consumption with enhanced recycling
- Risk management of water source

**Incorporation of Innovative Technology and Facilities**
- Application of AI
- Incorporating energy saving equipment such as low liquor ratio dyeing machine

**Value Chain Collaboration**
- Tracking water conservation performance with brand owners

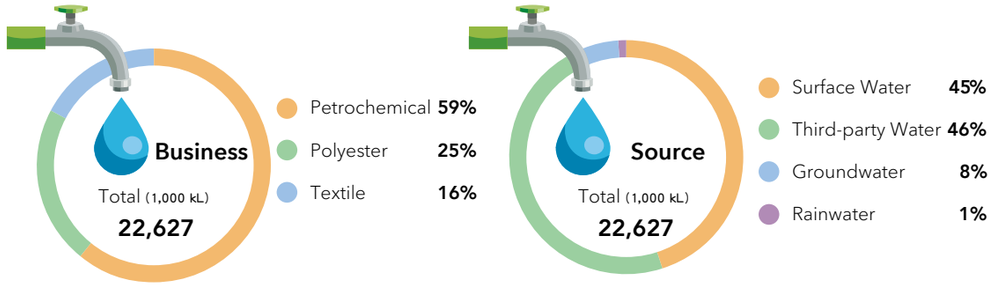
**Avid Support for Governmental Policies**
- Committing to including domestic reclaimed water as source of water withdrawal
- Switching to smart meter to provide real-time data on water resources

In 2021, the overall water withdrawal increased by 2%, and total water consumption by 1%. Despite of rising demand amid production increase, water conservation measures have delivered a significant 5% reduction in water withdrawal per unit production compared to 2020, demonstrating the Company's noteworthy efforts in water conservation.

FENC regards water as a shared resource. We value local water resources and their surrounding environment at all production sites. We have established reduction goals and continue to reduce water withdrawal and consumption per unit production. Working with our customers, we strive to mitigate the depletion of water resources. When planning for water withdrawal, we take governmental policies, corporate development and industry evolvement into account. We also carefully consider the needs of local residents, managing and distributing water resources in a reasonable and effective manner. We aim to reduce the use of resources as a means to maximize the efficiency of water storage and water consumption.

In terms of the quantity and approach of water withdrawal, there are no negative impacts on local residents and habitats. No quarry water, seawater, or water that enters an organization's boundary as a result of extraction (e.g., crude oil), processing (e.g., sugarcane crushing), or use of any raw material, and has to consequently be managed by the organization is used at any of the FENC production sites. In 2021, OPTC Plant 2 started using the water recycled by OPTC Plant 1 (174 kL), which is categorized under wastewater from external organization.

### Water Withdrawal in 2021




### Water Withdrawal and Water Consumption

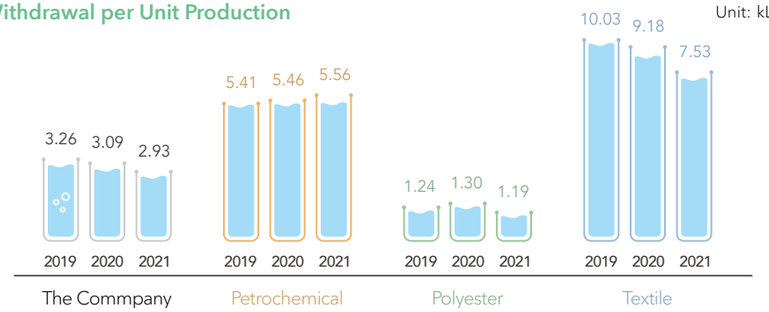
Unit: 1,000 kL

| | Petrochemical | | | Polyester | | | Textile | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 |
| Surface Water | 7,526 | 6,812 | **6,560** | 1,404 | 2,013 | **2,098** | 3,124 | 2,406 | **1,583** | 12,054 | 11,231 | **10,241** |
| Third-party Water | 6,292 | 6,077 | **6,570** | 1,793 | 1,856 | **1,924** | 1,191 | 1,127 | **1,979** | 9,276 | 9,060 | **10,473** |
| Groundwater | 0 | 2 | **54** | 1,776 | 1,703 | **1,565** | 121 | 68 | **89** | 1,897 | 1,773 | **1,708** |
| Rainwater | 13 | 13 | **12** | 143 | 144 | **144** | 68 | 28 | **49** | 224 | 185 | **205** |
| Total Water Withdrawal | **13,831** | **12,904** | **13,196** | **5,116** | **5,716** | **5,731** | **4,504** | **3,629** | **3,700** | **23,451** | **22,249** | **22,627** |
| Total Water Consumption | **7,483** | **6,859** | **6,985** | **2,357** | **2,840** | **2,691** | **1,226** | **566** | **530** | **11,066** | **10,265** | **10,206** |

Note:
1. Surface water includes water from the rivers, lakes and streams as well as wastewater from external organizations. Third-party water mainly refers to tap water. Groundwater includes well water.
2. The difference between water withdrawal and effluent discharge is considered water consumption, which is mainly the result of evaporation at the cooling tower. Loss during production is a minor contributor.
3. The concentration of total dissolved solids (TDS) across the water withdrawal categories are under 1,000 mg/L.
4. Data collection on water resources management accounts for 100% of the production sites within the scope of this report.

### Water Withdrawal per Unit Production

Unit: kL/metric ton of product




Note: The Textile Business does not include FEAZ, FEAV and FENV.

## ISO 46001 Water Efficiency Management System

6 CLEAN WATER AND SANITATION 12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Water scarcity is an increasingly dire issue. In addition to increasing water recycling and reuse, effective management systems can play an essential role in promoting water conservation. In light of the fact, OPTC Plant 2 implements water efficiency management system based on ISO 46001. In 2021, the plant applied for third-party ISO 46001 verification. In February 2022, the plant passed on-site verification and received the certification in March, making OPTC one of the top 10 entities to receive such certification in Taiwan.


1. As environmental impacts from industrial activities grow, so grows the concern for future sustainability. OPTC Plant 2 is shifting more focus on water efficiency in its activities, products and services, including measuring water footprints and efficient use of water resources. To improve water efficiency, production units must commit to systematic approaches and comply with the standards set forth in ISO 46001 to continue refining water efficiency.

2. The core of ISO 46001 encompasses responses and actions to address water risks and opportunities; water efficiency objectives and planning to achieve them, which include regulatory and other requirements, water use review, definition of activity indicators, decision on water efficiency indicator, baseline definition for water efficiency indicator as well as targets and action plans; operational plan as well as control, design and procurement of water use services/products/equipment; maintenance and inspection.

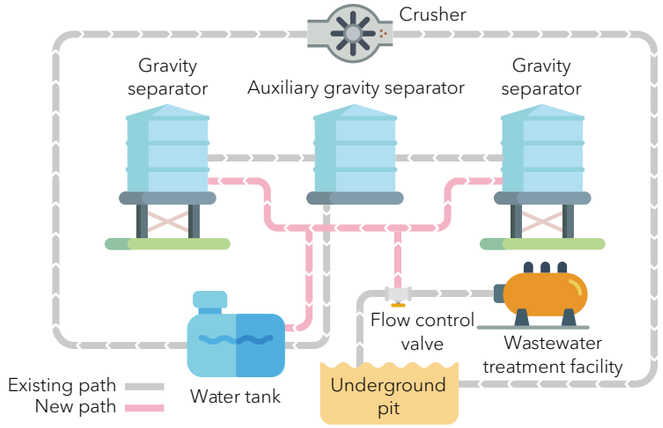
3. Operation of ISO46001 involves the iterative process of plan-do-check-act (P-D-C-A). The outcome of this cycle is confirmed through internal self-audits and review meetings conducted at the executive level. During the review meeting, discussions and reviews are conducted over water efficiency policy, indicators, performance, targets, improvements, action plans and results of self-audit on system operation. The overall water efficiency management, goals and performance are also reviewed.

Making Sustainable Vision a Reality with SGS Verification on ISO 46001 at OPTC (Chinese)

## Water Conservation with Gravity Separator

6 CLEAN WATER AND SANITATION 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

When the second plant of FIGP began production, the loading for wastewater treatment increased significantly. The plant addressed the issue by rerouting wastewater from the scrubber. Instead of discharging it for wastewater treatment, the wastewater is recycled, processed and reused. After going through oscillation, filtering and sedimentation, the wastewater is then reused by other equipment. By controlling the flow through globe valves, the water is mostly pumped back to the gravity separator to be used during flotation and for the crusher to conserve water. Monthly water conservation is estimated to be 2,000 kL, saving approximately NT$51,000.




Water conservation efforts at FENC focus on reducing water loss caused by the wind drift and evaporation at the cooling tower. With production management and control, the Company aims to increase the concentration of recirculating cooling water, reduce water consumption and construct water recycling and reuse systems to achieve water conservation.

### Outcome of Water Saving Project in 2021

| | Investment (NT 1,000) | Water Saved (kL/year) | Percentage to Water Withdrawal |
|---|---|---|---|
| Petrochemical | 122,534 | 140,832 | 1% |
| Polyester | 3,949 | 285,754 | 6% |
| Textile | 33,992 | 757,681 | 26% |
| **The Company** | **160,475** | **1,184,267** | **6%** |

Note: Water saved is calculated by before the project with the same facility and same production procedure.

## Water Recycling and Reuse

FEAV recycles rainwater during the rainy season in Vietnam and recycled 2,070 kL of rainwater in 2021. OGM recycles the water circulated through the flotation area, which is collected in the water tank and redirected to the flotation tanks of the primary and then secondary lines. The water is then collected again and looped back to the crushers and bottler washers in the primary and secondary lines, and finally discharged to the wastewater treatment facility. The plant is currently able to recycle and reuse 100% of the water reclaimed from the production process.

### Water Recycled and Reused

Unit: 1,000 kL

| | | Petrochemical | | | Polyester | | | Textile | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 |
| Circulating Water | Cooling Water | 774,541 | 728,309 | **704,250** | 403,432 | 476,094 | **502,117** | 34,732 | 34,858 | **33,106** | 1,212,705 | 1,239,261 | **1,239,473** |
| | Others | 0 | 10,994 | **10,935** | 974 | 893 | **836** | 0 | 0 | **0** | 974 | 11,887 | **11,771** |
| Recycled Water | Recycled Water Excluding Reclaimed Water | 288 | 4,922 | **5,478** | 725 | 896 | **741** | 1,865 | 997 | **1,054** | 2,878 | 6,815 | **7,273** |
| | Reclaimed Water | 1,988 | 2,083 | **1,782** | 182 | 154 | **178** | 1,322 | 928 | **1,220** | 3,492 | 3,165 | **3,180** |
| | Others | 667 | 292 | **266** | 85 | 0 | **0** | 0 | 0 | **0** | 752 | 292 | **266** |
| **Total Water Recycled and Reused** | | **777,484** | **746,600** | **722,711** | **405,398** | **478,037** | **503,872** | **37,919** | **36,783** | **35,380** | **1,220,801** | **1,261,420** | **1,261,963** |

Note:
1. Recirculating water refers to water that cannot be discharged after being used within a water unit, and is recirculated within the same water unit for reuse.
2. Recycled water refers to water units recycled after being used, discharged and recycled.
3. Other recirculating water includes water from the boiler, production process, turbine condensate and low pressure condensate. Recirculating water at Hsinpu Chemical Fiber Plant and OPTC is from the boiler. At OPTC and WHFE, the recirculating water is recovered from the production process. At OPSC, the turbine condensate and low pressure condensate are the sources of recirculating water.
4. The "Other" category includes produced water which enters the company premise as a result of the production process.

### Water Recycling Rate

| | 2019 | 2020 | 2021 |
|---|---|---|---|
| Petrochemical | 98% | 98% | **98%** |
| Polyester | 99% | 99% | **99%** |
| Textile | 89% | 91% | **91%** |
| **The Company** | **98%** | **98%** | **98%** |

Note: Water recycling rate = total water recycled and reused ÷ (total water withdrawal + total water recycled and reused) × 100%

### Water Recycling Rate (Excluding Circulating Water)

| | 2019 | 2020 | 2021 |
|---|---|---|---|
| Petrochemical | 18% | 36% | **36%** |
| Polyester | 16% | 16% | **14%** |
| Textile | 41% | 35% | **38%** |
| **The Company** | **23%** | **32%** | **32%** |

Note: Water recycling rate (excluding circulating water) = (total water recycled and reused – circulating water ) ÷ (total water withdrawal + total water recycled and reused – circulating water) × 100%

The quantity of recycled water in 2021 remains consistent with that from the previous year. The average water recycling rate across FENC maintains at 98%, and the water recycling rate excluding recirculating water is 32%, which is identical to that from the previous year.

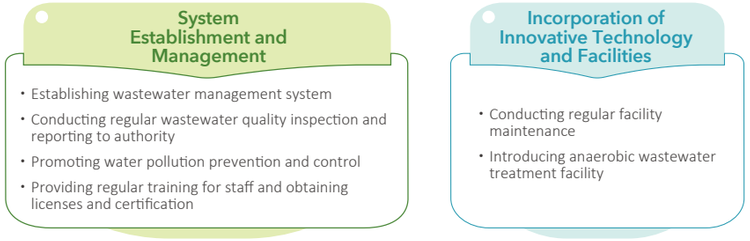
## Effluents Management

The management of wastewater discharge at FENC encompasses 3 aspects:

1. Source management: Modify and optimize the production process to reduce oil and surfactant discharge.
2. Treatment efficiency management: Replace dated equipment and install smart control system.
3. Environmental impact management: Continue to build wastewater treatment facilities that reduce noise, odor and pollution to improve the quantity of recycled water and to actualize the recycling and reuse of natural resources.

The Company has a comprehensive wastewater treatment standards and SOP in place to treat the wastewater discharge. With established treatment procedure, wastewater quality is regularly tested for pollutants to ensure compliance with governmental standards. The Company also obtains industrial wastewater discharge permit prior to discharging into water bodies where permitted. Wastewater from FENC is not utilized by any other organizations.

### Management Guidelines and Measures of Effluents



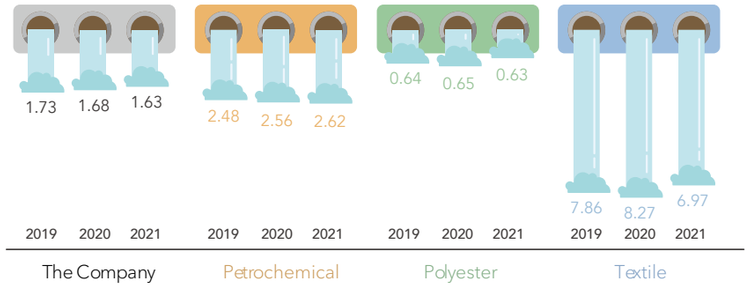

### Wastewater Discharge Volume

Unit: 1,000 kL

| | Petrochemical | | | Polyester | | | Textile | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 |
| Freshwater (≤1,000 mg/L Total Dissolved Solids) | 0 | 0 | **0** | 1,416 | 1,386 | **1,433** | 931 | 727 | **847** | 2,347 | 2,113 | **2,280** |
| Other water (>1,000 mg/L Total Dissolved Solids) | 6,348 | 6,045 | **6,211** | 1,219 | 1,490 | **1,607** | 2,347 | 2,336 | **2,323** | 9,914 | 9,871 | **10,141** |
| **Total discharge water** | **6,348** | **6,045** | **6,211** | **2,635** | **2,876** | **3,040** | **3,278** | **3,063** | **3,170** | **12,261** | **11,984** | **12,421** |

### Wastewater Volume per Unit Production

Unit: kL/metric ton of product




Note: The Textile Business does not include FEAZ, FEAV and FENV.

Total effluent in 2021 rose by 4% compared to 2020 while effluent per unit production reduced by 5% during the same period. FENC production sites have been aggressively increasing water recycling and efficiency. Recycled water is fully utilized to reduce effluent discharge.

### System Establishment and Management

OPSC installed online water quality analyzer at the effluent outlet. The system is connected to the local environmental protection agency, which monitors water quality in real time. The plant collects water samples daily at the sampling points within the wastewater treatment facility and analyze water quality, which allows Irregularities in the system to be spotted and resolved with speed. External outlets are closed immediately when the effluent quality exceeds safety limits, and the water is pumped back to wastewater treatment facilities to be treated again. The plant then conducts reviews to examine the cause and follow up with improvements.

Additionally, stormwater inlets are controlled based on weather conditions. They are open during storm events only. When the water level rises, discharge is allowed only when the safety limit is reached, or the water is pumped back to the wastewater treatment facility. When the stormwater retention pond is contaminated by wastewater during emergency or firefighting, the water is also pumped back to the wastewater treatment facility to prevent contamination of external water bodies.

### Incorporation of Innovation Technology and Facility

FENC reduces effluent discharge by consistently incorporating innovative effluent treatment approaches, such as the use of up-flow anaerobic sludge blanket. The anaerobic system increases the treatment capacity of effluent with higher chemical oxygen demand (COD), which lessens the load for the aerobic system later on to stabilize effluent quality and increase water recycling. In 2021, OGM replaced the membrane bioreactor (MBR) to improve effluent treatment, reduce turbidity in the gray water and increase wastewater recycling. The improvement helps bring OGM closer to its goal in water recycling and reuse.

The polyester plant of FEPV has installed the online effluent COD sensors (optical sensor and reflux method). When exceeding the safety limit, the effluent is automatically pumped back to the temporary storage pond. Once the cause is identified and resolved, the system functions normally and the effluent meets the local standards in Vietnam, the water is discharged.

### Effluents Treatment and Discharge Site

| | Production Sites | Effluents Treatment and Discharge Site |
|---|---|---|
| Petrochemical | OPTC | Wastewater from Plant 1 goes through biotreatment internally (anaerobic and deep shaft aeration). Once reaching effluent standards, it is discharged into Shulin River. Wastewater from Plant 2 goes through biotreatment internally (anaerobic and high efficiency aeration). Once reaching effluent standards, it is discharged into the wastewater treatment facility within the industrial park, and then into Shulin River. |
| | OPSC | Wastewater is treated internally until reaching the required standards, and then discharged through the municipal pipelines to Fengxian District East Wastewater Treatment Plant. Once fully treated, the wastewater is discharged into Hangzhou Bay. |
| Polyester | Hsinpu Chemical Fiber Plant | Wastewater goes through biotreatment internally. Once reaching effluent standards, it is discharged into Fengshan River. |
| | Kuanyin Chemical Fiber Plant | Wastewater goes through biotreatment internally. Once reaching effluent standards, it is discharged into Shulin River. |
| | FEFC | Industrial and domestic wastewater goes through biotreatment (contact oxidation) and sedimentation internally. Once the water reaches the effluent standards, it is discharged into Shulin River. |
| | OGM | Wastewater is first treated in house. Once reaching the effluent standards, it is discharged to the wastewater treatment plant in the industrial park for further treatment, and then discharged into Shulin and Dajue Rivers. |
| | FEIS | Wastewater is treated internally until reaching the required standards, and then discharged through the municipal pipelines to Fengxian District East Wastewater Treatment Plant. Once fully treated, the wastewater is discharged into Hangzhou Bay. |
| | WHFE | Treated in the internal wastewater treatment facility first, the wastewater then goes through the municipal wastewater treatment facility. Once fully treated, it is discharged into the Yangtze River. |
| | FEPV | Wastewater is treated internally until reaching the required standards (through online testing), and then discharged into ecological pond no. 1 in Bau Bang Industrial Park. Once fully treated, the water is discharged to Thị Tính River. |
| | FIGP | Wastewater is treated internally until reaching the required standards and then discharged to Tone River. |
| | APG Polytech | Wastewater is treated internally until reaching the required standards and then discharged to Ohio River. |
| Textile | Kuanyin Dyeing and Finishing Plant | Wastewater is treated in house, discharged to the wastewater treatment plant in the industrial park for further treatment, and then discharged into Shulin River. |
| | Hukou Mill | Wastewater goes through biotreatment (oxidation and aeration) internally and then discharged into Desheng River. |
| | OTIZ | Wastewater is treated internally until reaching the required standards, and then discharged through municipal pipelines to Hedong Wastewater Treatment Plant. Once fully treated, the water is discharged to the Jing-Hang Grand Canal. Starting in 2019, data collected are actual measurements instead of estimates. |
| | FEIW | Wastewater goes through Wuxi municipal sewage pipelines to the wastewater treatment facility. Once treated, the water is discharged into the Jing-Hang Grand Canal. |
| | FEDZ | Wastewater is treated internally until reaching the required standards, and then discharged through municipal pipelines to Hedong Wastewater Treatment Plant. Once fully treated, the water is discharged to the Jing-Hang Grand Canal. |
| | FEAZ | Wastewater is treated internally until reaching the required standards, and then discharged through municipal pipelines to Chengnan Wastewater Treatment Plant. Once fully treated, the water is discharged to the Jing-Hang Grand Canal. |
| | FEAV | Wastewater is treated at the treatment center within the industrial park and then discharged to Saigon River. |
| | FENV | Wastewater is treated at the treatment center within the industrial park and then discharged to Song Be River. |
| | FEPV | Wastewater is treated internally until reaching the required standards (online monitoring), discharged to the wastewater treatment plant in the the No. 1 ecological pond of Baopeng Industrial Zone, and finally discharged to the Thị Tính River. |

Note:
1. There is no significant impact from wastewater discharge on the water bodies and related habitat.
2. Wastewater at OPSC includes wastewater from the manufacturing process, domestic wastewater, lab wastewater and wastewater from the cooling tower. Wastewater at Hsinpu Chemical Fiber Plant, Kuanyin Chemical Fiber Plant, FEFC and FEIS is from the manufacturing process, cooling tower, domestic wastewater and cleaning water. Wastewater at OGM, WHFE, FEDZ the polyester plant of FEPV and APG Polytech is from the manufacturing process, domestic wastewater and lab wastewater. Wastewater at Kuanyin Dyeing and Finishing Plant, OTIZ and FENV is from the manufacturing process and domestic wastewater. Wastewater at OPTC is from the manufacturing process and the cooling tower. Wastewater at Hukou Mill, FEIW, FEAZ and FEAV is from domestic wastewater. Wastewater at the textile plant of FEPV and FIGP is from manufacturing process.
3. Total wastewater volume includes domestic wastewater. The domestic wastewater was 649,000 kL in 2019, 636,000 kL in 2020 and 739,000 kl in 2021.
4. Calculation of wastewater at Hukou Mill also includes the Biomedical Business Unit of Oriental Resources Development Limited.
5. There is no significant impact caused by the effluent on water bodies and adjacent habitats.
6. Minimum wastewater discharge standards have been established at all production sites in accordance with local regulations and industry characteristics.

## Smart Wastewater Treatment System

At Hsinpu Chemical Fiber Plant, the existing wastewater treatment model relies heavily on manual operation for water level control, equipment operation and meter check. In addition, there are no reference parameters such as the electrical current and voltage for over 90% of the operating equipment. The reference has mainly been from sampling, which lacks the precision needed for system calibration. Hence, the plant modified the meters and pipelines. By adding AI algorithms developed by Industrial Technology Research Institute (ITRI), the plant is able to utilize the data to forecast the efficiency of aeration ponds and treatment performance, which optimizes operational performance and ensures the effluent quality.

Project implementation is conducted in 4 phases:

1. Digitizing – Install electric meters and construct a databank for operational equipment. The phase is projected to conclude in the 4th quarter of 2021.
2. Monitoring – Establish a regional surveillance system and system control platform. The phase is projected to conclude in the 1st quarter of 2022.
3. Automating – Add production monitoring equipment and automatic control logic. The phase is projected to conclude in the 3rd quarter of 2022.
4. Intellectualizing – Build an AI algorithm and effluent COD prediction model. The phase is projected to conclude in the 4th quarter of 2022.

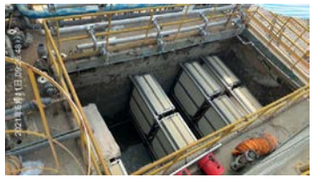

## Wastewater Treatment Improvement

At OGM, the efficiency of the PTEF module at MBR tank A has been declining, hence reducing the daily wastewater treatment efficiency by 50%. To address this issue, the plant replaced the MBR in June 2021 to improve efficiency and reduce COD and suspended solids (SS).

The plant is assessing the improvement of treatment technology at tank B and the feasibility of adding a third tank to improve wastewater treatment efficiency.

### Comparison of Water Quality and Quantity Before and After MBR Improvement

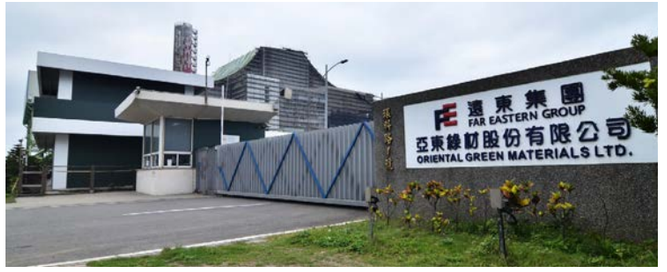
| | Monthly Treatment (kL) | COD (mg/L) | SS (mg/L) |
|---|---|---|---|
| Before | 9,766 | 127 | 16 |
| After | 10,628 | 118 | 8 |



During construction

Completion

Current operation



### Water Risk Management

Climate change has altered the distribution of water resources, and securing the quantity and quality of usable water requires urgent attention from the global community. FENC has taken stock of Company sites exposed to water risks using World Resource Institute's (WRI) Aqueduct Water Risk Atlas, a reliable and publicly available tool which identifies water-stressed and water-scarce regions. The Company also regularly monitors water stress at all production sites. The result shows that 7 of FENC production sites are within water-stressed regions. The Company has enhanced the management at these areas with water management goals, trying to understand and respond to the social and environmental impacts and to protect water resources.

#### Water Risk Regions

| Region | Production Sites within Water Stress Zone |
|---|---|
| Suzhou, Jiangsu Province, Mainland China | OTIZ |
| | FEDZ |
| | FEAZ |
| Bình Phước Province, Vietnam | FENV |
| Bình Dương Province, Vietnam | FEAV |
| | FEPV-Polyester Plant |
| | FEPV-Textile Plant |

Note: Based on WRI's Aqueduct Water Risk Atlas, the 7 FENC production sites are located in areas where the total water withdrawal and supply of usable reclaimed water (baseline for water stress) are both high (high3-4).

#### Water-risk Area Water Withdrawal and Water Consumption

Unit: 1,000 kL

| | 2019 | 2020 | 2021 |
|---|---|---|---|
| Surface Water | 3,381 | 2,873 | **2,010** |
| Third-party Water | 629 | 699 | **1,543** |
| Groundwater | 0 | 0 | **0.1** |
| Rainwater | 68 | 28 | **49** |
| **Total Water Withdrawal** | **4,078** | **3,600** | **3,602** |
| **Total Water Consumption** | **1,252** | **774** | **623** |

Note: The scope of data collection includes 7 production sites within water stress zones. Data on total dissolved solids (TDS) across the water withdrawal categories are under 1,000 mg/L.

#### Water-Risk Area Wastewater Discharge Volume

Unit: 1,000 kL

| | 2019 | 2020 | 2021 |
|---|---|---|---|
| Freshwater (≤1,000 mg/L Total Dissolved Solids) | 330 | 211 | **301** |
| Other water (>1,000 mg/L Total Dissolved Solids) | 2,496 | 2,615 | **2,678** |
| **Total Discharge Water** | **2,826** | **2,826** | **2,979** |

Note: The scope of data collection include 7 production sites within water stress zones. Wastewater from these production sites is treated through internal wastewater treatment and discharged into municipal sewage systems after meeting discharge standards. The wastewater is then discharged to water bodies after public sewage treatment.

Water withdrawal in areas within water stress zones in 2021 is similar to that in 2020. However, water consumption reduced by 3%. FENC aims to maintain high water efficiency and enhance sustainability by using and allocating water resources more efficiently and reasonably.

- FEAV

  Water resources management at FEAV targets further division of water supply zones with additional water meters, which monitor and control water use. The plant also installed the water conservation equipment and rainwater recycling system. The recycled water is used towards irrigation and cleaning, which minimizes water use. Regarding the water supply, public utility units conduct regular inspection and maintenance. The underground conduits are replaced with transparent pipes to allow easy access during inspection, maintenance and repair, which helps avoid wastefulness.


- FEAZ

  Water consumption at FEAZ is mainly for employees' domestic use. Therefore, the plant called for all employees to participate in the water conservation campaign. Plant Affairs and Equipment Energy Department enhanced the inspection to reduce water leakage. Each month, FEAZ meets with FEAV and FENV to discuss and share experiences in improvements and water conservation measures.

- FEPV

  The polyester plant of FEPV recycled the condensate from air compressors and air conditioning units for the water cooling tower in 2021. The plant also increased the concentration of plant-wide recirculating cooling water by 10 times, and the concentration of production recirculating cooling water by 6 times. The plant has effectively reduced water consumption by recycling and reusing the water discharged from the cooling tower.

• OTIZ

OTIZ combines water conservation with pollution prevention and control. While both focus on the protection of water resources, water conservation emphasizes the quantity while pollution prevention and control emphasizes the quality, which are complementary. The plant is managing the effluent through science and governance.

Water conservation efforts place an emphasis on avoidance, recycling and treatment. Avoidance strategies include increasing condensate concentration, reduce the frequency of water softening and reclamation and adjusting the time setting for sand filtration and softening. Recycling and treatment entails recycling and reuse of RO concentrate, enlarging rainwater recycling pipes, increase rainwater recycling during flood seasons and achieve zero discharge for production wastewater.

OTIZ received the titles, Provincial Level Water-saving Enterprise in 2019 and Suzhou City Water Efficiency Leader in 2020, with a total of NT$210,000 in prize. With these encouragements, the plant is even more energized to improve water conservation technology for the future.

### Zero Production Wastewater

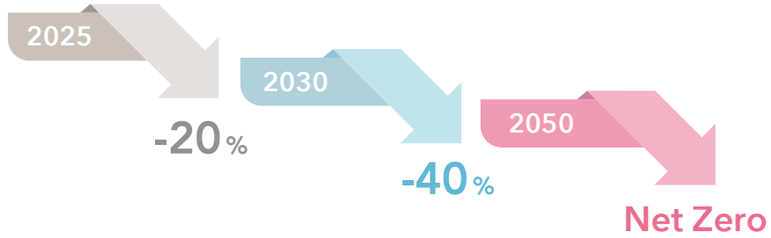
OTIZ installed a new wastewater system to eliminate wastewater discharge from the production process. The system directs wastewater to the biotreatment and the water reclamation system. After satisfying required standards as usable water, it is recycled for the machine shop to replace tap water used for scrubbers. After communicating with governmental agencies, including the environmental protection department, OTIZ received approval to collect and send production wastewater from South Plant to be treated at North Plant. The design optimized system efficiency and made zero wastewater discharge a reality. The new system reduced water withdrawal by 26,712 kL, which saves approximately NT$476,000 in water withdrawal fees and approximately NT$1 million in wastewater discharge fees paid to suppliers. Most importantly, the system achieves the ultimate goal of protecting the environment.

## 3.2 Responding to Climate Change

The impacts of climate change and global warming have grown severe. To mitigate and adapt to the climate crisis, FENC implemented the project on TCFD Climate-related Financial Disclosure in 2019, using the TCFD framework to evaluate financial impacts on FENC sites due to climate change. For details on this assessment, please refer to 1.3.4 Climate Risk Management.

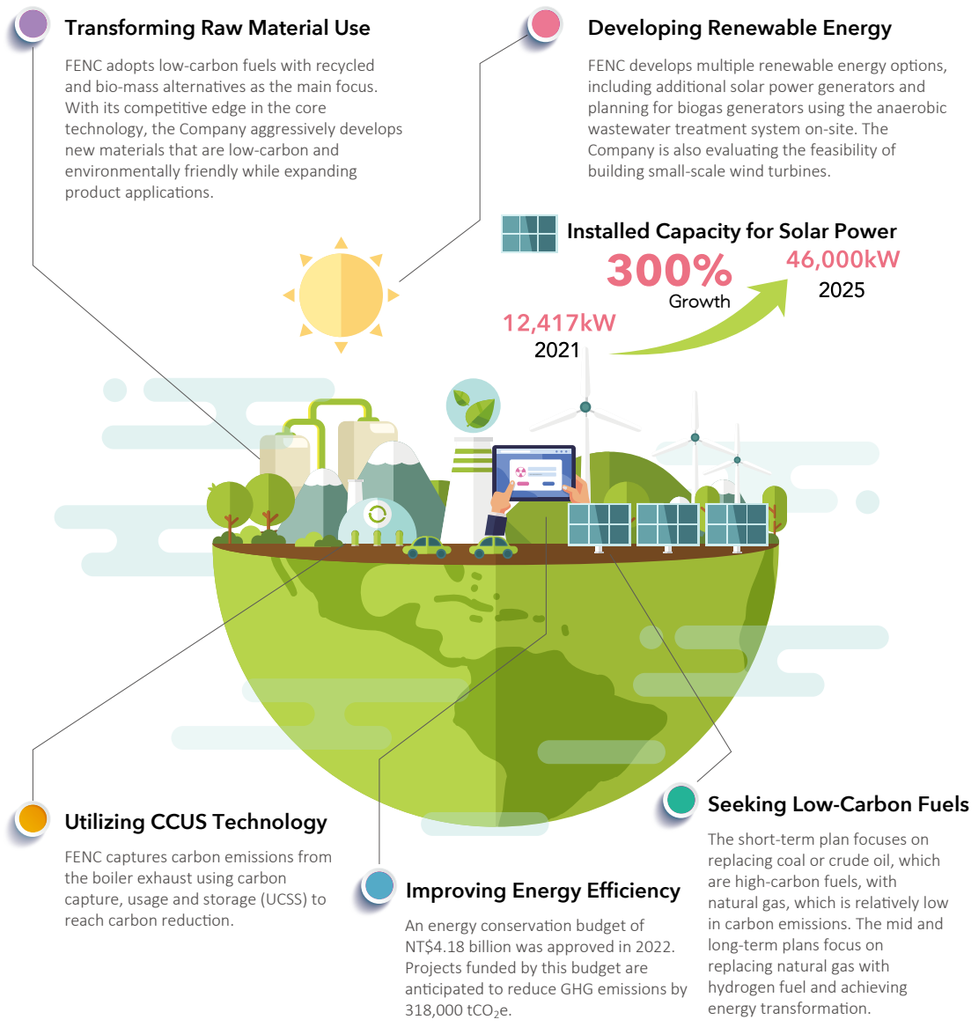
FENC has dedicated long-term efforts in corporate sustainability, advocating and implementing GHG inventory control with site-specific reduction targets. In 2021, company-wide short, mid and long-term GHG reduction targets have been established while the use of renewable energy is increased step by step to mitigate global warming caused by GHG emissions and ensure the sustainability of natural habitats on earth. For details, please refer to Special Report 3. The Path to Net Zero Through Low-Carbon Transformation.

◉ GHG Reduction Targets at FENC




Note: The year 2020 is the base year for categories 1 and 2 (scopes 1 and 2) emissions disclosed in this report.

### GHG Reduction Strategies




## 3.2.1 GHG Inventory

### GHG Management Guidelines and Measures

**System Establishment and Management**

- Conducting GHG emissions inventory check in accordance with ISO 14064-1 or local regulations
- Major indirect GHG inventory
- Inspecting GHG emissions regularly and reporting to authority
- Establishing GHG reduction targets

**Incorporation of Innovative Technology and Facilities**

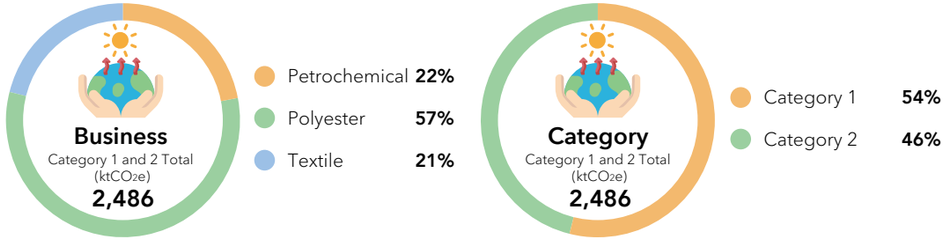
- Constructing solar power stations
- Installing biogas generator

**Avid Support for Governmental Policies**

- Increasing use of renewable energy
- Compliance with Climate Change Response Act and Renewable Energy Development Act in Taiwan
- Complying with the carbon credit requirements set forth in Trial Procedures of Shanghai Municipality on Carbon Emission Administration

Note: Environmental Protection Administration of Executive Yuan issued a notice on October 21, 2021 on the upcoming amendment to Greenhouse Gas Reduction and Management Act and the renaming of the act to Climate Change Response Act.

### GHG Emissions in 2021




Note: Data collection on categories 1 and 2 (scopes 1 and 2) accounts for 100% of the scope of this report.

In 2021, direct and indirect (categories 1 and 2) GHG emissions increased by 2%. The increase is mainly attributed to the increase in production. However, GHG emission per unit production dropped by 14% compared to the previous year, which is a testimony to the Company's dedication in GHG reduction implementations.

### Direct and Energy Indirect GHG Emissions

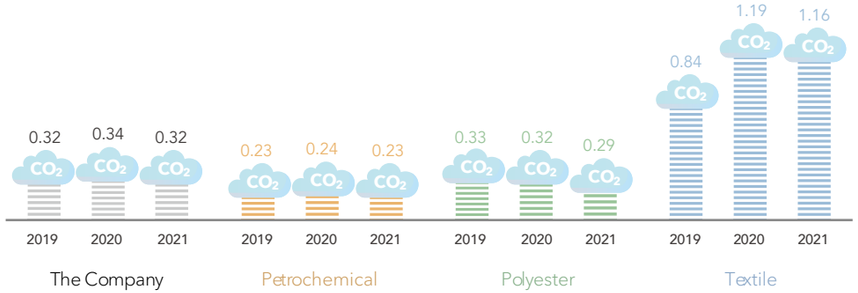
Unit: $ktCO_2e$

| | | Petrochemical | | | Polyester | | | Textile | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 |
| Direct Emissions | Category 1 | 391 | 364 | **389** | 470 | 771 | **785** | 45 | 137 | **167** | 906 | 1,272 | **1,341** |
| Energy Indirect Emissions | Category 2 | 203 | 195 | **151** | 570 | 655 | **620** | 288 | 310 | **374** | 1,061 | 1,160 | **1,145** |
| Total | | **594** | **559** | **540** | **1,040** | **1,426** | **1,405** | **333** | **447** | **541** | **1,967** | **2,432** | **2,486** |

Note:
1. GHGs include $CO_2$, $CH_4$, $N_2O$, HFCs, PFCs, $SF_6$ and $NF_3$. ISO 14064-1:2018 categorizes emission sources into direct (category 1, emission source from directly owned or controlled by the organization) and indirect (category 2, indirect GHG emissions from imported energy such as electricity, heat and steam).
2. The scope of data collection for 2019 includes 15 production sites in Taiwan, Mainland China and Vietnam. Starting in 2020, 6 additional production sites are incorporated into the scope of data collection. Totaling 21 production sites, the data collection accounts for 100% of the scope of this report.
3. In 2019 and 2020, OPTC, Hsinpu Chemical Fiber Plant, Kuanyin Chemical Fiber Plant, OPSC and FEIS completed GHG inventory in accordance with ISO 14064-1. GHG inventory from other production sites have passed internal audits.
4. In 2021, 100% of the GHG emission data passed the internal audit. Once the Company obtains third-party verification, which is scheduled to be completed by the 3rd quarter of 2022, the data will be disclosed in 2022 Sustainability Report.
5. In 2021, direct and indirect (Category 1 and 2) GHG emissions from the 4 FENC production sites in Taiwan amount to 793 $ktCO_2e$.

### Direct and Energy Indirect GHG Emissions per Unit of Production

Unit: $tCO_2e$ / metric ton of product




Note: The Textile Business does not include FEAZ, FEAV and FENV.

### System Establishment and Management

All FENC production sites must comply with ISO 14064-1 standards as well as local regulations on GHG inventory and quantification. In addition, third-party verifications must be conducted once every 3 years. In 2020, FENC launched comprehensive GHG inventory initiatives covering 20 production sites in Taiwan, Mainland China, Vietnam, Japan and the U.S. The inventory is conducted following the 6 categories of emission sources from the latest ISO 14064-1:2018 and categories 3 to 6 (scope 3) in GHG Protocol issued by World Council for Sustainable Development (WBCSD). The scope of the inventory covers the entire organization, including all departments and supply chain, taking into account direct emission sources as well as 15 indirect GHG emission sources such as imported energy, transportation and products used. In 2022, the 20 production sites are scheduled to complete external verification in accordance with ISO 14064-1:2018.

To implement company-wide GHG inventory, FENC held the kickoff meeting at the end of 2020. In 2021, 3 stages of trainings were conducted, including 24 sessions with 672 employees in attendance. Among them, 332 have been qualified as ISO 14064-1:2018 internal auditors.

The inventory helps the Company identify carbon emission hotspots. The information serves to support FENC's 5 major carbon reduction strategies. With regular monitoring and testing as well as timely adjustments, FENC is on track to achieve its GHG emission reduction targets.

### Other Indirect GHG Emissions in 2021 (Category 3 to 6)

Unit: $ktCO_2e$

| | Petrochemical | Polyester | Textile | Total |
|---|---|---|---|---|
| Purchased Goods and Services (Category 4) | 2,206 | 4,137 | 804 | **7,147** |
| Capital Goods (Category 4) | 4 | 41 | 10 | **55** |
| Fuel- and Energy-related Activities (Category 4) | 131 | 411 | 204 | **746** |
| Upstream Transportation and Distribution (Category 3) | 17 | 53 | 10 | **80** |
| Waste Generated in Operations (Category 4) | 6 | 13 | 17 | **36** |
| Business Travel (Category 3) | 0.03 | 0.45 | 0.36 | **0.84** |
| Employee Commuting (Category 3) | 0.22 | 3 | 3 | **6.22** |
| Upstream Leased Assets (Category 4) | 2 | 0.48 | 2 | **4.48** |
| Downstream Transportation and Distribution (Category 3) | 20 | 65 | 50 | **135** |
| Downstream Leased Assets (Category 5) | 0.10 | 0.10 | 0.10 | **0.30** |
| Franchises (Category 5) | 0 | 0 | 0 | **0** |
| Investments (Category 5) | 0 | 0 | 0 | **0** |
| **Total** | **2,386** | **4,724** | **1,101** | **8,211** |

Note:
1. The classification is based on GHG protocol.
2. FENC focuses on the production of polyester and raw materials with an array of terminal applications. The GHG emission generated from the processing, use and end-of-life treatment of sold products must be calculated based on specific scenarios. Due to the lack of objectivity and reference value, the data is excluded.
3. Category 3 to 6 account for 95% of the production sites within the scope of this report. FEAZ, which is in the process of relocating and excluded from the scope of disclosure, did not conduct the GHG inventory.

### Avid Support for Governmental Policies

The enactment of Trial Procedures of Shanghai Municipality on Carbon Emission Administration in 2013 puts a cap on carbon emission for OPSC and FEIS. The two subsidiaries ensure regulatory compliance by formulating various carbon reduction and monitoring measures, and establishing energy conservation and carbon reduction goals at each year end for the coming year. The progress is reviewed monthly during energy conservation meetings, where improvement measures are also proposed with designated lead agency for action. Each day, staff track the fluctuation of carbon pricing and report the observation during monthly meetings.

The Chinese government mandates corporate efforts in carbon reduction through Carbon Emission Trading System. The carbon quota allocated in the system has been decreasing by the year. With increasing production scheduling at FEIS in 2021, its carbon emission exceeded the cap by a slight margin. Therefore, FEIS must replenish the quota with unused carbon emission balance. FEIS also installed the solar power generator and hybrid power station using cogeneration technology to reduce carbon emission. OPSC installed the rooftop solar power station and will optimize boiler operation with AI to reduce the use of natural gas as boiler fuel. The measures will cap the carbon emission under the decreasing carbon quota.

#### Carbon Quotas and Emissions of OPSC and FEIS

Unit: $ktCO_2e$

| | | 2019 | 2020 | 2021 |
|---|---|---|---|---|
| OPSC | Quota | 166 | 161 | **139** |
| | Actual Emissions | 161 | 150 | **145** |
| FEIS | Quota | 324 | 328 | **319** |
| | Actual Emissions | 325 | 309 | **334** |

Note: The Quota in 2021 were estimated emissions; the actual quota is yet to be verified by the government. The Quota in 2020 were revised to actual number, which approved by government.

## 3.2.2 Renewable Energy Use

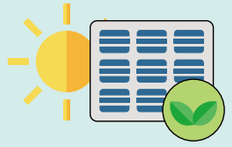
FENC supports the use of renewable energy with actions. The Company reduces GHG emissions and minimizes environmental impact induced by production activities. Since 2016, the Company has been building solar power stations at production sites in Mainland China, accumulating 54.65 million kWh of solar power generated in-house. In 2021, solar power generated by FENC sites in Taiwan, Mainland China and Vietnam reached 13.39 million kWh, among which, 83% is for internal use. Hsinpu Chemical Fiber Plant, Hukou Mill, Kuanyin Dyeing and Finishing Plant as well as FENV are also starting to build their first solar power stations. Production sites with existing solar power stations are planning for future expansions. It is projected that by 2025, the total installed capacity will reach 46,000 kW, which triples the capacity from 2021. Starting from 2026, the installed capacity will increase by 1,000 kW each year.

According to Renewable Energy Development Act, major energy users must incorporate 10% of green power in the energy mix. In addition to continuing adding solar power generators, the Company also evaluates the purchase of renewable energy. OPTC Plant 2 will also generate biogas using wastewater in its effort to increase the use of green power.

FENC has been purchasing green power since 2015. When the trading of Taiwan Renewable Energy Certificate (T-REC) started in 2018, FENC purchased T-REC from the Southern Region Campus of ITRI in 2019. In 2020, FENC accumulated 1.19 million kWh of T-REC with additional purchase from National Penghu University of Science and Technology. In 2022, OTIZ purchased 20 million kWh of wind power from China Resources Power Holdings Company Limited. The addition brings the total purchased green power to 21.19 million kWh, showing FENC's swift actions towards energy transition.

#### Scheduling and Planning for Construction of Solar Power Station

Total **12,417kW**



| | | | | |
|---|---|---|---|---|
| FEDZ 1,538 kW | FEIW 3,428 kW | OTIZ 3,406 kW | | |
| OPSC 300 kW | FEIS 1,473 kW | OPTC Plant 2 499 kW | | |
| FEFC 434 kW | Kuanyin Chemical Fiber Plant 488 kW | OGM 491 kW | FEAV 360 kW | |

### Construction of Biogas Generator

Major energy users must incorporate 10% of green power in the energy mix in accordance with Renewable Energy Development Act, and OPTC Plant 2 is planning to build a solar power system and biogas power generator. The plant exercised strategic foresight and planned to complete the installation before the end of 2023. The two options provide 4,300kW of renewable power, of which 2,400 kW are installed capacity from biogas generator and 1,900 kW total capacity from solar power.

The biogas power generation system utilizes biogas generated from the anaerobic wastewater treatment within the plant. In 2021, the plant commissioned ITRI to measure the biogas from OPTC and ITRI estimated the power generation capacity at 2,200 kWh. Since the approval of an environmental impact assessment (EIA) was required during the initial plant construction, modifications made to the production process also require the approval of EIA. After undergoing design, application and review, the plant finally passed the committee review on August 31st, 2021, and received the approval in December 2021. The project is scheduled to be completed and start generating power during the 3rd quarter of 2023.

## 3.3 Preventing and Controlling Environmental Pollution

### 3.3.1 Air Pollution Management

#### Air Pollution Management Guidelines and Measures

**System Establishment and Management**

- Establishing air pollution control targets
- Conducting regular air pollution inspection and reporting to authority
- Promoting air pollution prevention and control
- Conducting regular training for staff and obtaining licenses and certifications

**Incorporation of Innovative Technology and Facilities**

- Investing in Selective Catalytic Reduction (SCR) System for denitrification
- Switching to natural gas boilers
- Installing smoke purification system for the forming machine

**Avid Support for Governmental Policies**

- Complying with air quality indicators released by the government with proper responses

Total emission of air pollutants increased by 4% in 2021. Production increase is the main contributing factor for the slight increase. Among the Businesses, emission of VOCs from Petrochemical Business rose by 25%. OPSC has been examining and monitoring changes in the catalyst activity and operational conditions. Improvements have delivered results in the 4th quarter, which will likely lower pollutant emissions. Company-wide air pollutant emission per unit production declined by 3%. Air pollutant emission per unit production under Petrochemical Business went up by 6% compared to the previous year. The main cause is an additional 49 days of downtime at OPSC Plant 1 in 2020. Though without productivity during this period, the operation of natural gas boilers is needed to supply steam for the wastewater treatment plant. For Polyester Business, the air pollutant emission per unit production declined by 27%. Hukou Mill has ceased using boilers and OTIZ switched to a more precise form of measurement, from permitted emission to annualized sampling value, which contributed to the decrease.

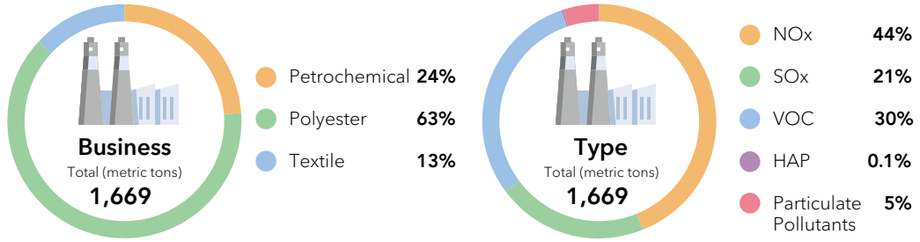
#### Air Pollution Emissions

Unit: metric tons

| | Petrochemical | | | Polyester | | | Textile | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2019 | 2020 | **2021** | 2019 | 2020 | **2021** | 2019 | 2020 | **2021** | 2019 | 2020 | **2021** |
| NOx | 143 | 155 | **150** | 629 | 454 | **473** | 121 | 126 | **119** | 893 | 735 | **742** |
| SOx | 74 | 70 | **64** | 285 | 182 | **216** | 76 | 83 | **69** | 435 | 335 | **349** |
| VOC | 96 | 141 | **176** | 321 | 246 | **317** | 7 | 11 | **9** | 424 | 398 | **502** |
| HAP | 0 | 0 | **0** | 0.5 | 0.5 | **1** | 0 | 0 | **0** | 0.5 | 0.5 | **1** |
| Particulate Pollutant | 7 | 12 | **10** | 50 | 97 | **46** | 80 | 27 | **19** | 137 | 136 | **75** |
| **Total** | **320** | **378** | **400** | **1,286** | **980** | **1,053** | **284** | **247** | **216** | **1,890** | **1,605** | **1,669** |

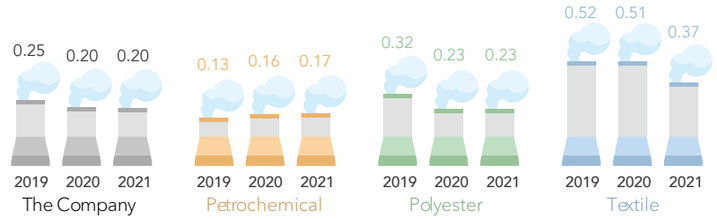
Note:
1. Only emitted gases are listed.
2. Particle pollutants include suspended particle matters (PM), dust and smoke.
3. The collected data covers 3 categories, actual measured value, annualized sampling value and estimates. In 2021, actual measured values are collected at Hsinpu Chemical Fiber Plant (NOx, SOx, particle pollutants), Kuanyin Chemical Fiber Plant (NOx, SOx, particle pollutants), FEFC (NOx and SOx), polyester plant of FEPV, OPTC Plant 2, OPSC (NOx and SOx), WHFE, Kuanyin Dyeing and Finishing Plant, FEIW, FEDZ, FEAZ, FEAV and FENV. Annualized sampling values are collected from OPSC (VOCs), FEIS, OTIZ and the textile plant of FEPV. Estimates are collected from OPSC Plant 1, Hsinpu Chemical Fiber Plant (VOCs), Kuanyin Chemical Fiber Plant (VOCs), OGM, FEFC (particle pollutants), Hukou Mill, APG Polytech and FIGP.
4. Data on hazardous air pollutants (HAP) are collected at APG Polytech in the U.S. and FIGP in Japan. The 3 HAPs identified at APG Polytech are ethylene glycol, acetaldehyde and 1,4-Dioxane, which are regulated by U.S. Environmental Protection Agency. Acetaldehyde, which is on the list of HAPs regulated in Japan, is identified at FIGP.
5. Data collection on air pollutant management accounts for 100% of FENC production sites in the scope of this report.

### Air Pollution Emissions in 2021




### Air Pollution Emissions per Unit Production

Unit: KG/metric ton of product




Note: The Textile Business does not include FEAZ, FEAV and FENV.

### Air Pollution Emissions per Unit Production in 2021

Unit: KG/metric ton of product

| | Petrochemical | Polyester | Textile | The Company |
|---|---|---|---|---|
| NOx | 0.06 | 0.10 | 0.20 | **0.10** |
| SOx | 0.03 | 0.05 | 0.12 | **0.05** |
| VOC | 0.07 | 0.06 | 0.02 | **0.05** |
| HAP | 0.00 | 0.01 | 0.00 | **0.01** |
| Particulate Pollutants | 0.01 | 0.01 | 0.03 | **0.01** |
| **Total** | **0.17** | **0.23** | **0.37** | **0.22** |

Note: The Textile Business does not include FEAZ, FEAV and FENV.

FENC consistently introduces technology that enhances air pollution prevention and control, and examines existing facilities and production process regularly. The boilers and exhaust pipes are also inspected on a regular basis to ensure regulatory compliance and reach reduction targets.

### System Establishment and Management

- Management of Gas Pollutants

To stabilize the production process, OPTC Plant 2 sends the parameters required on the operating permit for stationary pollution source to the central control for real time management. When changes occur during production, operational parameters for the prevention and control facilities can be adjusted immediately. The environmental protection units examine the parameters daily to ensure normal operation of all functions as well as effective and consistent removal of air pollutants.

OGM adjusted the air-fuel ratio inside the boilers, which refers to the ratio between the gasoline and combustion supporting gas inside the burner to ensure complete combustion. The plant is able to increase combustion rate without adding new facilities, which prevents furnace damage, extends the life cycle of the boilers and reduces NOx and SOx.

- Management of Particulate Pollutants

Taking Petrochemical Business as an example, the delivery of PTA starts with the storage tank, and the finished product is unloaded through back flow or filling equipment. The process constitutes the main source of particle pollutants. By improving unloading equipment and delivery conduits, production units may shorten the unloading period while effectively collecting dusts scattered during the process to reduce Particulate Pollutants.

- Management of VOCs

1. Equipment involving VOCs are visually inspected and documented weekly.
2. Production sites commission qualified testing agencies to conduct regular inspections quarterly and special inspections bi-annually on equipment components as stipulated in Regulations Governing Emission of Volatile Organic Compounds. Immediate measures are taken to address any insufficiencies, and VOC reports are filed with the authority on a regular basis.
3. Production sites conduct training for production staff on equipment operation and install VOC detectors to enable staff to check equipment with possible leakage to make more accurate determinations and repair in time.

• Management of Other Air Pollutants

1. Production sites install continuous emission monitoring systems (CEMS) to conduct relative accuracy test audit (RATA). Data collected is in compliance with regulatory requirement.
2. Production sites establish irregularity reporting mechanism to facilitate immediate reporting when irregularities occur with gas emission at the plant.
3. Production sites complete irregularity reporting procedure and training for staff.
4. Production sites provide air pollution related training for or dialogues with the supply chain, including customers and suppliers. For instance, WHFE has adopted the following measures in 2021:
   - Approve critical procurement details and communicate with suppliers on FENC's philosophy on environmental protection. The focus in 2021 was on air pollutant control and prevention.
   - Each year, the Company conducts 2 on-site evaluations. The evaluation panel includes auditors, site engineers and quality control supervisors. Environmental management and control is among the evaluation categories.
   - In 2021, 5 suppliers signed the statement of environmental management and control on air pollution.

### Incorporation of Innovation Technology and Facility

1. To reduce air pollutants, Hsinpu Chemical Fiber Plant and Kuanyin Chemical Fiber Plant installed the selective catalytic reduction (SCR) equipment, which utilizes catalysts to reduce the NOx and ammonia mixture to nitrogen and water, 2 harmless substances. The equipment removes 80% of the NOx in the water slurry boiler. Kuanyin Chemical Fiber Plant has finished installing 4 sets of SCRs and commissioned SGS Taiwan to test the NOx concentration on September 1st, 2021. The concentration level dropped below 100 ppm. The 6 SCRs at Hsinpu Chemical Fiber Plant will be installed by June 2022.

2. OTIZ installed 5 regenerative thermal oxidizers (RTO) to treat waste gas. The oxidizer turns the combustible waste gas into corresponding oxides and water. While the waste gas is purified, thermal energy released during oxidization is captured. The equipment breaks down over 99% of the VOCs with over 95% heat capturing efficiency.

3. FEIS retrofitted the dryer for staple fiber. The plant reduced VOCs with a significant 16% drop by increasing the exhaust volume at the cooling area. The plant also modified the low nitrogen burner at the boiler, which reduces the NOx concentration from 110 mg/m³ to 40 mg/m³. The impressive 64% reduction is helping the plant reach its long-term target for 2030 in advance.

4. FEDZ installed 2 new smoke and exhaust purification devices for the stenter, which is projected to reduce air pollutants by 50%. The total investment amounts to approximately NT$28 million.

### VOCs Improvement

OPSC added VOC prevention and control facilities in 2021. With the use of catalytic oxidation, the waste gas is pumped into the new system through suction ventilator. With added pressure and oxygen, the waste gas goes through the steam heater, plate heat exchanger and electric heater to reach the desired temperature. The catalyst transforms the VOCs into $CO_2$ and water. The purified waste gas is sent to the alkali washing tower to be scrubbed and emitted after secondary purification. After the oepration began in 2021, the concentration of VOCs has dropped considerably. In 2021, the air pollutants emitted reduced by 13% compared to 2020, keeping the emission far below regulatory limits. Total investment for this project amounts to NT$73 million.

### Incorporation of Innovative Technology and Facility

Seasonal weather tends to take the air quality at FENC production sites for a downward spin in autumn and winter. Thus we strictly comply with all government mandates on air pollution and control. When Hsinpu Chemical Fiber Plant receives notice from the Environmental Protection Administration about deteriorating air quality, the plant activates tiered response based on the severity, including checking boiler operation, activating prevention and control facilities and reducing material feed to keep air quality from deteriorating. OPSC and FEIS responded to the government mandate by scheduling the annual maintenance in November, and reducing operations and transport vehicles that are prone to generate dusts.

Environmental Protection Administration of Executive Yuan held the 3rd Environmental Impact Comparative Analysis Report for Change in Taoyuan Technological Industry Park Development Plan in 2020. The maximum limits for air pollutants, wastewater and regular industrial waste are reduced to comply with the requirements for Phase II of the development plan for Taoyuan Technological Park. On October 4th, 2021, the EPA issued a notice on the reduction of permitted pollutant emission. OGM responded by constructing incinerators, capturing the thermal (steam) energy and applying it towards the production process to reduce the use of natural gas boilers. The improvement enhanced the efficiency of air pollution prevention and control facilities, bringing the plant up to code.

## 3.3.2 Waste Management

FENC continues to optimize waste management at all production sites. The Company increases the efficiency of production resources with avoidance and reuse while promoting waste classification and recycling to create circular utilization of resources. The Company chooses licensed waste management companies to ensure the recycling and reuse of valuable waste, and that valueless waste is properly disposed of to prevent pollution. About upstream waste management mechanism, suppliers are monitored through inspections and the signing of Supplier Corporate Social Responsibility Statement. In 2021, there were no leakages of raw material, oil, fuel, packaging material, chemical and waste at FENC.

### Waste Classification and Impact Assessment

Waste materials generated from the business activities at FENC can be broken down into 92% regular industrial waste and 8% hazardous industrial waste. The hazardous industrial waste includes used chemical bottles for testing, lubricant/oil and light tube/electrical batteries, which are processed by qualified waste management companies. To reinforce the requirement on hazardous waste management, the Company tracks the type, quantity, destination, storage, usage and treatment of the waste processed through these companies to ensure regulatory compliance. In 2021, waste treatment at FENC did not pose any major substantial impacts to the environment.

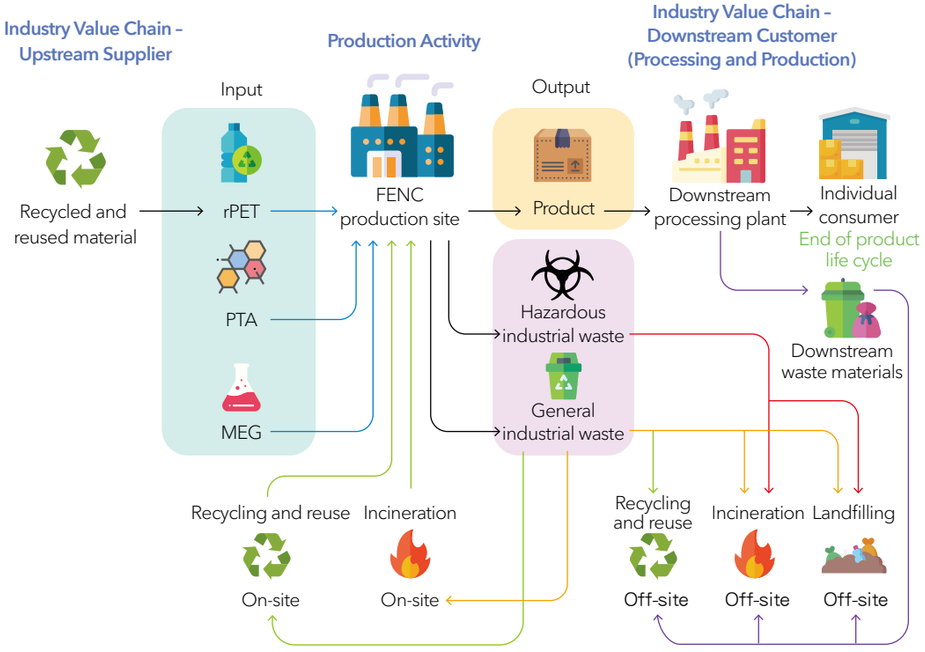
### Waste Management Guidelines and Measures

**System Establishment and Management**
- Comply with ISO 14001 Environmental Management System
- Reducing waste at the source
- Recycling, classifying and reusing waste
- Selling valuable waste to businesses for recycling and reuse
- Commissioning licensed waste management companies to dispose valueless waste

**Incorporation of Innovative Technology and Facilities**
- Incorporating smart waste management system
- Introduce waste-to-energy technology
- Installing sludge treatment facilities

**Value Chain Collaboration**
- Scrutinize credentials of waste management companies
- Track waste treatment with GPS
- Randomly inspecting waste disposal practices

### Waste Treatment Process



Total waste materials generated in 2021 increased by 21% compared to the previous year. The main contributing cause is the higher overall production. However, the Company tackles waste management aggressively, turning waste into usable resources, which leads to a 27% increase in the total recycling and reuse materials compared to 2021. Non-reused and recycled waste reduced by 17%. Reused and recycled waste accounts for 91%, which increased by 4%. Compared to the previous year, there is a 13% increase in waste per unit production, which is attributed to modifications made to the production process. These waste materials are recycled and reused on-site.

### Data of Waste

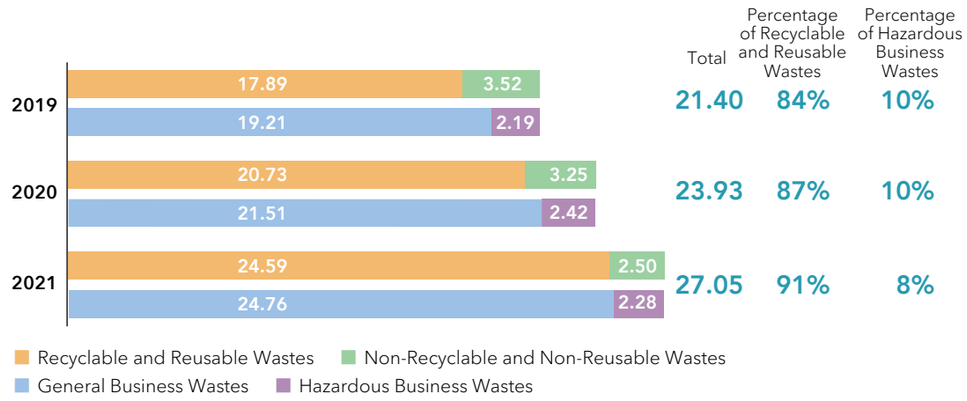
Unit: metric tons

| | | | | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|---|
| Recyclable and Reusable Wastes | General Business Wastes | Manufacturing Process Wastes | On-Site Recycling and Reuse | 64,170 | 73,860 | **103,991** |
| | | | Sold | 24,799 | 25,394 | **25,709** |
| | | | Off-Site Processing | 27,396 | 36,420 | **42,943** |
| | | Domestic Wastes | On-Site Recycling and Reuse | 2 | 3 | **2** |
| | | | Sold | 199 | 167 | **155** |
| | | | Off-Site Processing | 1,706 | 1,390 | **1,242** |
| | Hazardous Business Wastes Total | | On-Site Recycling and Reuse | 0 | 0 | **0** |
| | | | Sold | 527 | 719 | 740 |
| | | | Off-Site Processing | 11,307 | 11,574 | 14,536 |
| | **Total Recyclable and Reusable Wastes** | | | **130,106** | **149,527** | **189,318** |
| Non-Recyclable and Non-Reusable Wastes | General Business Wastes | Manufacturing Process Wastes | Energy Uses | 4,079 | 1,337 | **1,604** |
| | | | Incineration | 9,747 | 8,876 | **7,488** |
| | | | Landfilling | 926 | 343 | **134** |
| | | | Other Treatment Methods | 1,036 | 2,265 | **2,553** |
| | | Domestic Wastes | Energy Uses | 367 | 373 | **361** |
| | | | Incineration | 1,089 | 1,014 | **1,187** |
| | | | Landfilling | 2740 | 2661 | **2249** |
| | | | Other Treatment Methods | 1178 | 1340 | **1491** |
| | Hazardous Business Wastes Total | | Energy Uses | 132 | 0 | **53** |
| | | | Incineration | 3692 | 4,939 | **2,085** |
| | | | Landfilling | 2 | 2 | **0.3** |
| | | | Other Treatment Methods | 39 | 88 | **65** |
| | **Total Non-Recyclable and Non-Reusable Wastes** | | | **25,027** | **23,238** | **19,270** |
| **Total Wastes** | | | | **155,133** | **172,765** | **208,588** |

Note:
1. Waste materials are classified based on local governmental regulations. For instance, sludge generated from wastewater treatment is deemed hazardous industrial waste based on the definitions of Chinese and Vietnamese governments while it is deemed as general industrial waste in Taiwan.
2. Non-reused and recycled waste treatment are handled off-site by qualified waste management companies.
3. The data collection on waste management accounts for 100% of FENC production sites in the scope of this report.

### Percentage of Waste Volume per Unit Production

Unit: KG/metric ton of product




Note: The Textile Business does not include FEAZ, FEAV and FENV.

### Incorporation of Innovative Technology and Facility

#### The First Waste to Energy PET Bottle Recycling Plant in Taiwan

To reduce air pollution and to seek alternative approaches amid the lack of incinerator capacity, OGM has constructed heat recovery boilers to fulfill its mission of sustainable development. It is also the first PET bottle recycling plant in Taiwan to construct a waste-to-energy (WtE) facility. The project commenced in June 2020 and is schedule to be completed in 2022 for production. The thermal energy produced may replace the use of natural gas boilers.

Once completed, the boilers could incinerate 7,280 metric tons of waste materials, including plastics and organic sludge. The thermal energy generated during incineration could replace the use of natural gas as the fuel source, which is projected to help avoid 1,547 $tCO_2e$ of carbon emission from natural gas per year.

## Turning Waste to Treasure at OPSC

After working for nearly a year, OPSC finally concluded the used palladium on carbon (Pd/C) catalyst recycling project. The project reduced nearly NT$4.3 million worth of inventory, turned waste into treasure and brought in NT$260 million in revenue. OPSC staff have worked tirelessly with dedication and focus during the process. Kueiyen Enterprise Co., Ltd. from Yunnan Province, OPSC's partner in this endeavor, even joked that the company no longer wishes for future collaborations.

The recycling of Pd/C involves unique and complex procedures. In the past, finding a supplier capable of recycling and processing Pd/C had been challenging. The recycling and processing were therefore handled separately by Sabin Metal Corporation in the U.S. and Chimet, respectively. OPSC worked to locate a domestic company capable of handling Pd/C and palladium trading to sell the metal after recycling. After rounds of discussions and reviews, Kueiyen Enterprise Co., Ltd. was chosen to take on the task.

Due to the scale of the procurement, Plant Affairs Section led a team of staff to supervise the entire process, including transport, pre-processing, bowl milling, soluble acid treatment, weighing and sampling, which are all critical links during the palladium recovery process. OPSC staff learned from Kueiyen Enterprise Co., Ltd. while applying their strengths at opportune moments. They demonstrated strong team spirits. After two batches of recycling, a total of 11,562g of palladium was recovered, exceeding the expectation by 15%.

While onsite supervision over the entire operation has helped ensure a high recycling rate, trading palladium at good selling points was the final touch. As advised by Finance Department from the headquarters in Taipei, the palladium was to be sold in separate trading at ideal price ranges. Kueiyen Enterprise Co., Ltd. agreed to set the price for 70% of the palladium. Vice plant manager Chun-Hui Liu and senior vice president Chuan-Gui Sun monitored the palladium trading and market news daily. When the price hit or exceeded the selling price range, a sell order was issued to Kueiyen Enterprise Co., Ltd. on the next business day. On the second business day upon receiving the sell order, the palladium is to be sold on the London Metal Exchange (LME) at the closing price. Though metal trading is completely foreign to Mr. Liu and Mr. Sun, they dealt masterfully, trading the palladium at ideal price ranges and bringing in high returns for the plant.

Turning Waste to Treasure at OPSC

## Sludge Reduction Project

The wastewater generated at FEIS still retains 70% of moisture content after going through the frame filter, and produces approximately 200 metric tons of sludge per year that require NT$14.85 million in processing fees. Therefore, the plant installed the sludge drying system, which utilizes low-temperature heat pump dryer to avoid waste gas. The outlet is connected to the sludge bag, which captures the small amount of waste gas generated for central processing and emission. This design helps reduce the moisture content in the sludge to less than 30% while conserving energy and protecting the environment. Meanwhile, the sludge drying system further reduces the moisture content to approximately 20%. In 2021, FEIS has reduced waste materials by 10%.

### Value Chain Collaboration

At Hukou Mill, cotton scraps are a byproduct of the production process. In the past, recycling and reuse were not an option. In 2021, however, the plant located qualified suppliers to process the scraps with composting, turning waste into resources.

FEAZ inspects waste management suppliers on-site twice every year. FEIS conducts training for waste management companies and downstream suppliers once each year to explain management policies and guidelines for optimization. In 2021, 8 suppliers took part in the training.

The polyester plant of FEPV enacted Waste Treatment Manufacturers Sustainability Leap Project to monitor off-site locations of waste materials with more precision, enhance the efficiency of inspections on waste management companies and ensure that waste materials are properly cleared and transported. The plant established comprehensive supplier selection procedures starting with the introduction of new suppliers. An interdisciplinary team consisted of procurement, waste management, environmental protection and safety as well as legal units conducts document review on the scale of waste management companies, risk assessment as well as permits and certifications. The team also conducts on-site inspections to select qualified suppliers. Companies that pass the selection process shall go through weekly and monthly document review as well as quarterly and yearly on-site inspection based on Waste Treatment Manufacturers Review Criteria. The review covers 166 criteria under 8 categories. The criteria and scoring are modified yearly based on regulatory changes with coaching programs that are also changed accordingly. Each year, the team replaces the suppliers based on 3 major evaluation categories set forth in Waste Treatment Corporation Annual Evaluation.

### Nike Environmental Team visiting FEAV for Waste and Energy Reduction Project

FEAV is a supplier for Nike, a brand known internationally for sportswear products. To address Nike's requirement on waste management, FEAV had been targeting production waste under the general waste category with avoidance as well as increasing recycling and remanufacturing rate as the goal. The principles governing waste management is "classification to reduction; waste to earnings; earnings to valuables." Production units must strictly adhere to the implementation of waste classification. Waste materials with value shall be sold through procurement units as well as recycled and reused through external organizations or suppliers. Waste without values will be processed through qualified waste management companies.

In September 2020, Nike requested that all waste materials must be processed through means other than incineration and landfill. FEAV held training and presentation for waste management suppliers and formed collaborations in the quest for alternatives. The proposal was completed in February 2021 and confirmed by Nike. In March 2021, waste materials are processed by qualified waste management companies, hence reaching 100% recycling and reuse of waste materials.

In the past, Nike required that suppliers classify waste into 21 categories. Since August 2021, 17 additional classifications have been added, bringing the total to 38 categories. To meet this requirement, FEAV dedicated tremendous time and efforts, and was able to satisfy Nike within a short period of time.

FEAV conducts self-evaluation on the waste management system. Nike's Vietnamese team made a site visit to inspect plant conditions in 2021 and acknowledged FEAV for its hard work with approval.

## 3.3.3 Ecological Protection

It is our pledge to devote every effort possible to keep production activities from impacting local biodiversity. All FENC production sites underwent multiple assessments in accordance with environmental regulations during the planning stage. Sites chosen are located within industrial zones permitted by the local governments. None of the properties are located within wildlife preservation areas or reserves, and no animals on site are listed on the IUCN Red List of Threatened Species or national conservation lists.

### Biodiversity Management and Measures

| System Establishment and Management | Value Chain Collaboration | Avid Support for Governmental Policies |
|---|---|---|
| • Conduct environmental impact assessment at the plant location | • Upcycle land and ocean waste into brand new products | • Ensure compliance with governmental regulations regarding air pollution and wastewater discharge<br>• Promote waste management and reduction<br>• Support initiatives protecting marine habitat |

### System Establishment of Management

The construction of OPTC Plant 2 required the EIA approval. Therefore, any modifications made to the production process would require further rounds of environmental impact review and approval. The construction of biogas power generator went through the design, application and review processes. On August 31st, 2021, the EIA was approved by the review committee, and permit for modifying the EIA was granted in December 2021.

FIGP is planning to expand the rPET plant in Himeji, which is located in Hyōgo Prefecture in Japan. Commercial operation is set for 2023. To comply with local regulations and protect the local residents and environment, an EIA was conducted in accordance with the regulatory requirements. During the first stage of the assessment, current on-site conditions were surveyed to determine levels of air pollution, noise, vibration, odor and water quality, including BOD, COD and SS. For the second stage, the EIA on air pollution, noise, vibration, odor and water quality including BOD, COD and SS targeting design capacity and equipment are to be conducted. The EIS report is scheduled to be completed at the end of June 2022.