Content

3 Navigaing a Green Future

Target Readers:

- ■ Employee/Labor Union
- ■ Direct Customer
- ■ Government
- □ Business Partner (supplier/contractor)
- ■ External Audit Agency
- ■ Shareholder/Investor/ Financial Institution
- □ Industry Association
- ■ Local Resident and Organization

3 GOOD HEALTH AND WELL-BEING
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
15 LIFE ON LAND

3

2019 Highlights

Reduction in **Air Pollution** Per Unit Production ↓17%

6% ↓ **Waste** Reduction Per Unit Production (non-recyclable and non-reusable)

11.15 million kWh Renewable Energy Use

↓3% Reduction in **GHG Emissions** Per Unit Production

Water Recycled **98%**

Recycled and Reused Water Increase in ↑18%

Reduction in **Water Withdrawal** Per Unit Production ↓3%

↓3% **Wastewater Discharge** Reduction Per Unit Production

Introducing **AI Quality Forecast and Energy Management Systems**

74 Energy Conservation Projects

GHG Avoided **74,151** t-CO_2e

8 **Solar Power Stations** 4 New Stations in 2019

3

Targets and Progress

	Reducing Energy Consumption Per Unit Production	Reducing Water Withdrawal Per Unit Production	Reducing Waste (Non-recyclable and Non-reusable)	Reducing Total Air Pollution	Refining Indirect GHG Management	Increasing Renewable Energy Use
2030 Target	Reducing 25%	Reducing 30%	Reducing 30%	Reducing 35%	Further reducing indirect GHG emissions	Incorporating additional renewable energy sources
2025 Target	Reducing 15%	Reducing 20%	Reducing 20%	Reducing 30%	Inventory and verifying major indirect GHG sources at all production sites	Increasing solar power generation
2020 Target	Reducing 5%	Reducing 10%	Reducing 10%	Reducing 20%	Identifying major indirect GHG sources at all production sites	Building solar power stations in Vietnam
2019 Progress	Reducing 7% Ahead of Schedule	Introducing low liquor ratio dyeing machine for further reduction	Reducing 31% Ahead of Schedule	Reducing 30% Ahead of Schedule	Completing business trip and waste disposal inventory at 15 Sites	Adding 4 solar power stations
Action Plan	• Optimize production and facilities. • Incorporate innovative management approaches.	• Continue with efforts in reducing water withdrawal at the source. • Increase percentage of recycled water utilized.	• Optimize waste recycling and classification. • Enhance waste recycling and reuse.	• Monitor and control air pollution. • Replace outdated equipment.	• Expand the scope of inventory and category of indirect emissions. • Implement GHG reduction programs.	• Build solar power station. • Form partnerships with providers of additional forms of renewable energy.
	7 AFFORDABLE AND CLEAN ENERGY, 12 RESPONSIBLE CONSUMPTION AND PRODUCTION, 13 CLIMATE ACTION	6 CLEAN WATER AND SANITATION, 12 RESPONSIBLE CONSUMPTION AND PRODUCTION	3 GOOD HEALTH AND WELL-BEING, 12 RESPONSIBLE CONSUMPTION AND PRODUCTION, 13 CLIMATE ACTION	3 GOOD HEALTH AND WELL-BEING, 12 RESPONSIBLE CONSUMPTION AND PRODUCTION, 13 CLIMATE ACTION	12 RESPONSIBLE CONSUMPTION AND PRODUCTION, 13 CLIMATE ACTION	7 AFFORDABLE AND CLEAN ENERGY, 12 RESPONSIBLE CONSUMPTION AND PRODUCTION, 13 CLIMATE ACTION

Note: The first 4 targets are set with 2017 as the base year. The targets are applicable to 17 production sites, which differ from the scope of this CSR Report.

3

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

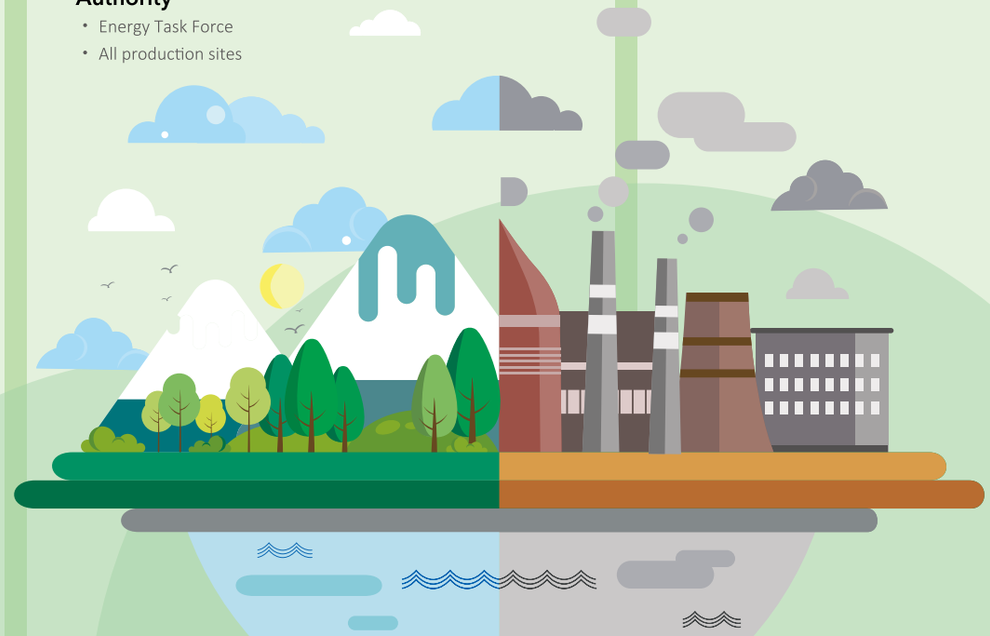
FENC evaluates the risks and opportunities brought by climate change, responding with strategies and implementations that avoid GHG emissions and slow down global warming.

Management Approaches and Effectiveness Evaluation Mechanisms

- Conduct R&D on products that mitigates effects of climate change.
- Continue to expand the scope and category of GHG inventory.
- Increase the use of renewable energy.

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 preserve environmental sustainability by preventing damages to our surrounding environment from pollution.

Management Approaches and Effectiveness Evaluation Mechanisms

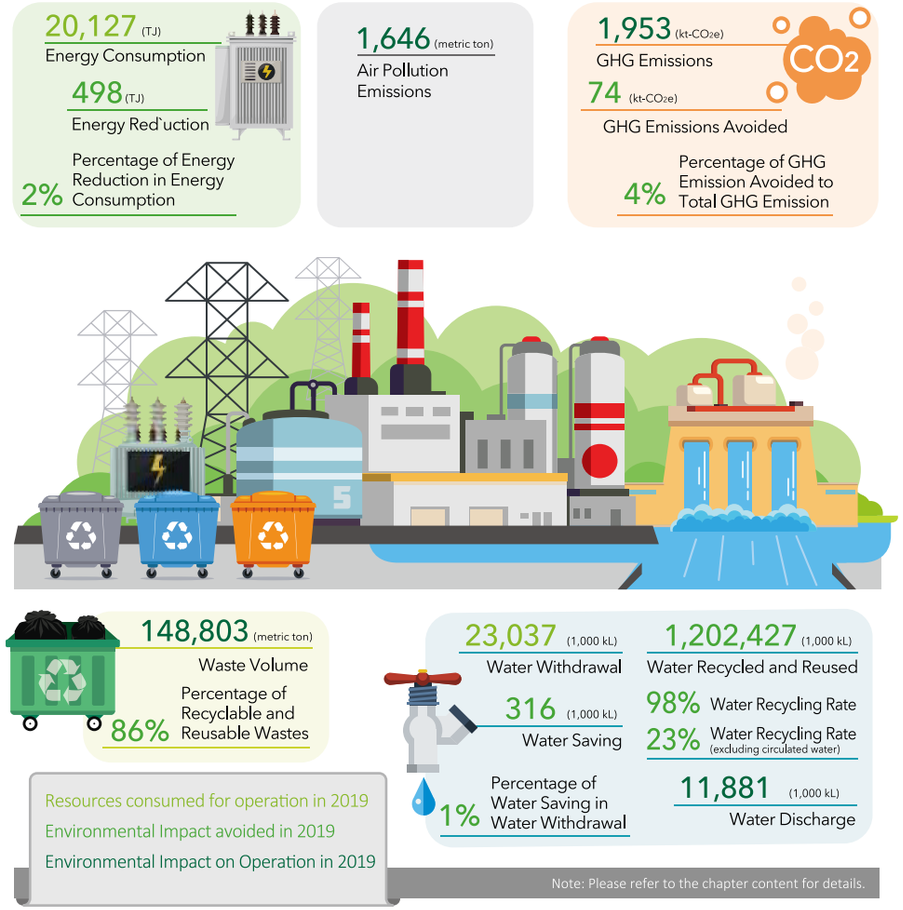
- Establish pollution reduction targets.
- Introduce innovative production and facilities
- Establish corporate authority to track progress

Authority

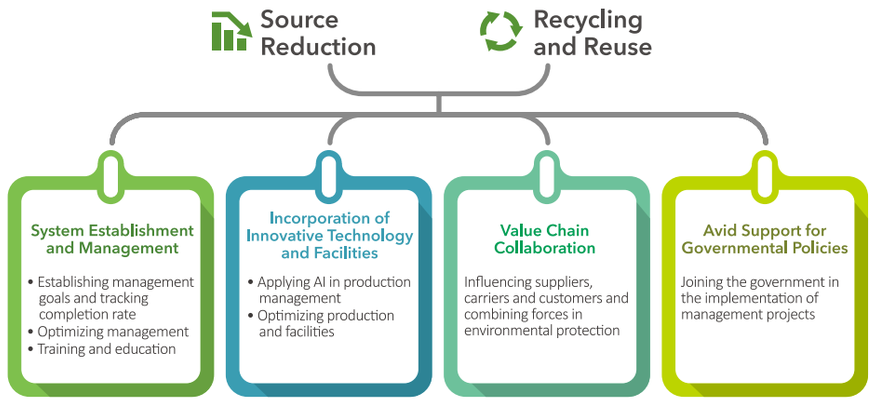
- Energy Task Force
- All production sites

Overview of Environmental Statistics

Being fully aware of the scarce nature of natural resources, FENC regards protecting the environment as its undeniable responsibility. We tackle environmental protection from two fronts, source reduction as well as recycling and reuse. It is our attempt to achieve higher efficiency in energy and resource use and to mitigate climate change and pollution, preserving the beauty of mother nature for the future generations.



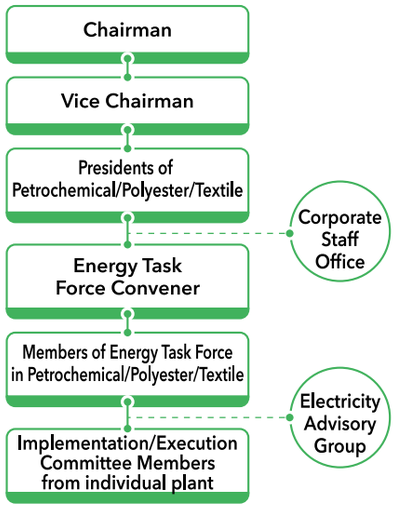
Strategies and Guidelines on Environmental Sustainability



Energy Task Force – Intercompany Management Authority

FENC established the intercompany and interdepartmental Energy Task Force in 2010, and its scope of management has been expanding since then. Aside from energy management, the task force currently oversees the management of water resources, air pollutants and waste. To track performance regularly, FENC built an online database, Management Platform of Energy Conservation, Carbon Reduction and Circular Economy. In 2018, FENC established company-wide reduction targets. As the Company expands its territory, the Energy Task Force have also expanded its scope of management from production sites in Taiwan and China to Vietnam, Malaysia, Japan and the U.S.

Organizational Structure



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• Special Budget for Energy Reduction and Environmental Protection

To implement projects on energy reduction and environmental protection and to fulfill environmental sustainability, FENC sets special budgets aside to further the cause. In 2010, NT$2 billion was appropriated for the special energy reduction budget. In 2017, another NT$2 billion was appropriated. In 2018 and 2019, NT$330 million was appropriated to give production sites opportunities to propose environmental protection initiatives through innovative means. For more details on the performance of the special budget, please refer to the section on "Measures and performance in energy and carbon reduction" under 3.1.1 Energy Management.

• Dialogue and Exchange

FENC's conglomerate spans across petrochemical, polyester and textile industries with production sites in Taiwan, China, Vietnam, Japan and the U.S, giving us the advantage of integrated efforts on energy and resource reduction from the up, mid and downstream. The Energy Task Force conducts weekly, monthly and quarterly internal meetings to review policy updates, business development and quantified results. The task force also reports to the presidents of each Business on a semi-annual basis and presents to the highest governing entity yearly during energy-themed meetings. Additionally, the task force conducts transnational meetings to encourage brainstorming and collaboration among production sites through technological exchange, and to review performance and improvements at each site. Industry experts are invited to the exchange meetings to share the latest trends and their experience in energy reduction so that the task force may seek opportunities to introduce cutting edge technology or replicate the success stories. Eleven industry experts were invited to the exchange meetings in 2019 with 420 employees in attendance.

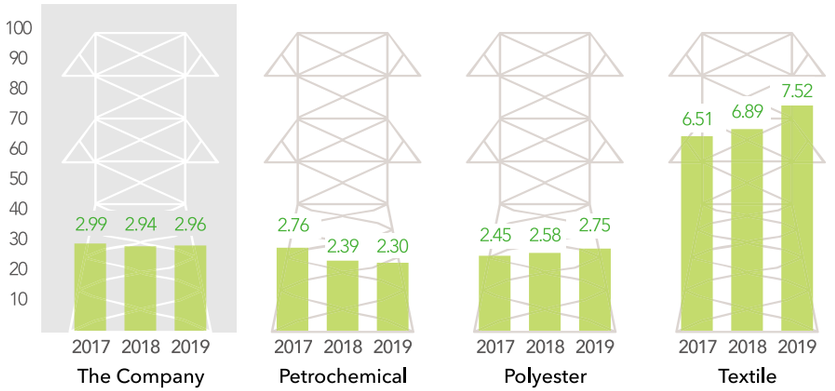
3.1 Elevating Energy and Resource Efficiency

3.1.1 Energy Management

Energy consumption in 2019 saw an uptick of 1% mainly due to product restructuring in Polyester and Textile Businesses. Total energy consumption has been increasing since 2018 mainly because of the incorporation of new production sites in the scope of this report.

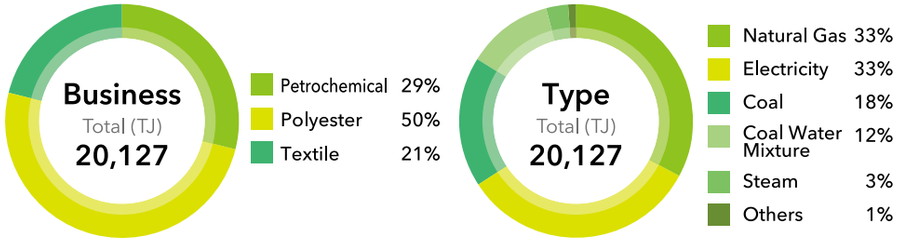
Energy Consumption Per Unit Production

Unit: GJ/metric ton of product



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

2019 Energy Consumption



Energy Management Guidelines and Measures

System Establishment and Management
- Expanding ISO 14001 and ISO 50001 management systems.
- Optimizing management system.
- Conducting training and promotion.

Incorporation of Innovative Technology and Facilities
- Applying AI toward energy management.
- Constructing new cogeneration plants.
- Implementing energy and carbon reduction projects.

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.

3

Energy Consumption

Unit: TJ

Business / Year / Energy Type	Petrochemical			Polyester			Textile			Total		
	2017	2018	**2019**	2017	2018	**2019**	2017	2018	**2019**	2017	2018	**2019**
Purchased Power	1,046	875	**1,234**	2,841	2,965	**3,421**	2,097	2,006	**1,919**	5,984	5,846	**6,574**
Purchased Green Power	0	0	**0**	1	1	**1**	0	0	**0**	1	1	**1**
Self-generated Green Power	0	0	**2**	5	4	**5**	19	30	**29**	24	34	**36**
Electricity	**1,046**	**875**	**1,236**	**2,847**	**2,970**	**3,427**	**2,116**	**2,036**	**1,948**	**6,009**	**5,881**	**6,611**
Natural Gas	2,913	3,264	**4,645**	1,396	1,341	**1,248**	1,146	810	**789**	5,455	5,415	**6,682**
Heavy Oil	0	0	**0**	284	397	**240**	57	72	**60**	341	469	**300**
Fuel Oil	0	0	**0**	0	0	**1**	6	0	**0**	6	0	**1**
Coal	0	0	**0**	990	1,071	**2,566**	81	339	**976**	1,071	1,410	**3,543**
Coal Water Mixture	28	11	**0**	2,212	2,285	**2,257**	140	106	**125**	2,380	2,402	**2,383**
Steam	0	0	**0**	394	337	**331**	423	400	**277**	817	737	**608**
Total	**3,987**	**4,150**	**5,881**	**8,123**	**8,401**	**10,071**	**3,969**	**3,763**	**4,175**	**16,079**	**16,314**	**20,127**

Note: 1. Above figures are energy consumption for production procedure. 2. Heating value is based on heating value coefficient at each production site. 3. Energy consumption outside of the organization is not included. 4. The scope of this CRS report covers 19 production sites in Taiwan, China and Vietnam.

• System Establishment and Management

As FENC expands, so does the coverage of ISO 14001 and ISO 50001 on environmental and energy management systems. Hsinpu Chemical Fiber Plant established a reward system to incentivize energy conserving practices, encouraging staff to shift peak hour electricity consumption in summer. The plant rewards the top 3 performers with bonuses as a way to reduce energy use during peak hours.

Environmental and Energy Management Certification Passed at Production Sites

Certification Standards	Sites with Certifications
ISO 14001 Environmental Management Systems	Hsinpu Chemical Fiber Plant, Kuanyin Chemical Fiber Plant, OGM (NEW), Kuanyin Dyeing and Finishing Plant, OPSC, FEIS, WHFE, OTIZ, FEDZ, FEAV, FENV (NEW), The polyester plant of FEPV (NEW), The textile plant of FEPV (NEW), Headquarters
ISO 50001 Energy Management Systems	The second plant of OPTC, Hukou Mill,OPSC (NEW), FEIW, Headquarters

Measures and Performance in Energy and Carbon Reduction

FENC's efforts in energy and carbon reduction continues in 2019 with 74 special projects aiming at facility improvement and targeting conservation of electricity.

2019 Energy Conservation and Carbon Reduction Projects

14 Production Improvement
Modifying production parameters, such as temperature, pressure and operating period.

47 Facility Improvement
Optimizing, upgrading and updating air conditioning, air pressure, boilers, power generators, motors, lighting as well as production equipment, such as installing low liquor ratio dyeing machine and replacing single-screw extruder with twin-screw extruder.

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

2019 Energy Conservation and Carbon Reduction Performance

Type \ Performance		Energy Conservation (TJ)	GHG Emissions Avoided (t-CO_2e)	
			Scope 1	Scope 2
Project	Improvement on Production Process	129	3,839	13,497
	Improvement on Equipment	321	0	49,399
	Energy Management	48	0	7,416
Business	Petrochemical	107	0	15,944
	Polyester	344	3,839	46,419
	Textile	47	0	7,949
Total		**498**	**3,839**	**70,312**

Note:
1. Performance on energy conservation is an estimate derived from comparison to pre-project energy conservation with original production process and equipment.
2. The calculation of heating value is based on the heating value coefficients 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. GHG emission factor for electricity is 0.554 t-CO_2e/1000 kWh, 0.4066 t-CO_2e/t for steam and 1.5682 t-CO_2e/t for coal water slurry. Calculation of GHG emission factors for electricity in China is based on the local electrical grid. The GHG emission factor in China for electricity is 0.7035 t-CO_2e/1000 kWh, and 0.3070 t-CO_2e/t for steam
4. Scope 1 includes coal water slurry; Scope 2 includes purchased electricity and purchased steam.
5. GHG includes CO_2, CH_4, N_2O, PFCs, HFCs, SF_6 and NF_3.

Energy Conservation and Carbon Reduction Performance

Performance \ Year	2017	2018	**2019**
Actual Investment (NT$1,000)	239,134	454,498	**127,361**
Savings (NT$1,000)	106,466	143,379	**50,078**
Energy Conservation (TJ)	1,422	659	**498**
GHG Emissions Avoided (t-CO_2e)	153,751	89,195	**74,151**

- 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 5 years, their energy saving performance have exceeded government expectation.

Energy Saving Rate at Production Sites in Taiwan

Year	2015	2016	2017	2018	**2019**
Energy Saving Rate	1.9%	2.3%	2.0%	2.0%	**2.1%**

The 2019 Renewable Energy Development Act in Taiwan stipulates that major energy users must adopt green power. Back in 2015, long before the enactment of this regulation, FENC has started purchasing green power from Taiwan Power Company. At production sites in China, energy policies comply with the 13th Renewable Energy Five Year Plan, and construction of solar power stations have begun. In Vietnam, as energy demand rises and the government enacts green energy policies, production sites will also start adopting green energy. (Please refer to 3.2.2 Renewable Energy Use for details.)

We embrace changes, instigating breakthroughs in energy efficiency with state of the art technology. Hsinpu Chemical Fiber Plant and Kuanyin Chemical Fiber Plant lead the way with smart energy management system to monitor energy efficiency at all production units. In 2019, our worldwide production sites initiated the incorporation of AI in the production process, and Hsinpu Chemical Fiber Plant constructed a new cogeneration plant inaugurated in 2019 to achieve higher fuel efficiency.

Winning National Green Factory with Green Production

7 AFFORDABLE AND CLEAN ENERGY
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13 CLIMATE ACTION

OPSC was awarded the title, Green National Factory in 2019, which is a recognition for the its dedication to green production. The selection process for National Green Factory is based on the plant's response to Paris Climate Agreement and Made in China 2025. Corporations are encouraged to establish green factories and lead the way for transformation and advancement. To qualify, candidates must submit self-evaluation with testimonies from suppliers, verification agencies and experts, and obtain approval from Shanghai Municipal Commission of Economy and Informatization.

OPSC

OPSC is recognized by experts from Ministry of Industry and Information Technology for the incorporation of advanced production technology and facilities, implementation of smart manufacturing measures, and devotion to recycling, reuse, energy efficiency and robust management.

Active Energy Management with AI

7 AFFORDABLE AND CLEAN ENERGY · 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE · 12 RESPONSIBLE CONSUMPTION AND PRODUCTION · 13 CLIMATE ACTION

OPTC is equipped with information platforms monitoring energy consumption for steam, natural gas and biomass energy. The plant establishes Energy Baseline (EBL) with AI and machine learning to justify energy consumption with real-time monitoring. When energy consumption deviates from the tolerance interval, the system immediately identifies the equipment in question and production staff would be notified to address the issue as opposed to past practices of reviewing and mitigating after the fact. The project has been completed in 2019 and the model has reached 98% to 99% accuracy.

Data Visualization for Cooling System

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The principle behind the operation of a cooling system is heat transfer. Residual heat carried by cooling water goes through the cooling tower and is eventually emitted into the atmosphere. The process involves the use of cooling fan and water pump, which are energy intensive. In the past, staff rely on experience and limited data to make judgement calls when operating the system. However, error in judgement tends to occur during seasons when temperature changes drastically, resulting in excessive energy consumption.

Visual interface for the cooling system

FEFC makes facility improvements by applying the concept of overall perceptions. The plant installs wet-bulb thermometer, monitors the inlet and outlet temperature at the cooling tower and incorporates smart meter, which instantly transforms data into visualized form. Staff make sound and accurate decisions based on analysis reflecting cooling effects and air conditions provided by the technology. To further reduce energy consumption, the plant switched to inverter motor for the cooling pump. Overall, this entire project conserved 1 million kWh of electricity per year, which is approximately NT$2.1 million in costs.

Individual Spindle Monitoring System

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

Fiber breakage during production is a key factor influencing material and energy consumption as well as labor costs for the Textile departments. In the past, workers must manually inspect each spindle for breakage, a time and labor intensive process that does not deliver efficiency. FEIW installed the individual spindle monitoring system, which locates sensors and stop feed devices by each spindle. The system is able to detect irregularities immediately during yarn feeding and activates warning signal located at the individual spindle and the machine panel. Meanwhile, the yarn feeder is stopped to reduce any waste, thus improving efficiency during production. The system collects data from each machine, conducts energy consumption analysis and then adjusts the strength based on the number of breakages to optimize energy use.

Interface for individual spindle monitoring system

Spinning machines at FEIW

Improving Energy Efficiency with New Cogeneration Plant

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

The cogeneration plant at Hsinpu Chemical Fiber Plant was built in 1985. After 32 years of non-stop operation, the plant is left with dated equipment that is prone to malfunctioning and energy waste, which lowers boiler efficiency. To address this issue, Hsinpu Chemical Fiber Plant decided to invest in a new cogeneration plant, which will lower operational costs and increase energy efficiency with its innovative technology and energy conserving facilities. The new plant started operating in September 2019. It is designed with 30,400kW in capacity and generates 50 metric tons of steam per hour during production. As we head into the future, the plant will continue to improve efficiency in power generation, enhance soundproofing, protect the environment, while incorporating AI to optimize production management.

3

3.1.2 Raw Material Management

FENC continues introducing innovative technology and systems. Improvements on production are ongoing to reduce raw material consumption, increase recycling rate and ensuring secure storage. In addition, we combine 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 Maintenance

- Conducting training on raw material management.
- Establishing management system regarding hazardous materials.
- Setting recycling targets for packaging materials and regularly monitoring completion rate.

Incorporation of Innovative Technology and Facilities

- Incorporating smart scheduling system and reducing wear and tear with optimized scheduling.
- Building smart quality forecast model with AI to reduce defect rate.

Value Chain Collaboration

- Implementing supplier evaluation to improve the quality of raw materials.
- Reinventing packaging materials and design.
- Coordinating with customers on ways of simplifying product packaging.
- Sharing success stories on the recycling of packaging materials with customers and suppliers.

We regard safety in the use of raw materials with utmost emphasis and avidly promote the recycling of packaging materials. In 2019, there were no occurrences of oil, fuel or waste chemical leakage. We have long been recycling packaging materials such as pallets, paper tubes and pegboards through product discounts and continuous dialogues with customers to establish a sound recycling mechanism and management system. In 2019, 64% of the packaging materials at all production sites are recycled. Starting in 2019, OGM ships products in bulk bags only in order to reduce the use of packaging materials, eliminate the use of pellets and increase the shipping capacity of the tank truck. The polyester plant of FEPV switched to anti-static packaging and reduced the use of dust bags. The textile plant of FEPV enhanced the recycling of paper tubes. The ultimate goal is to recycle 100% of the paper tubes.

Embracing Recycling and Reuse with Customers by Replacing Wooden Planks with Galvanized Pipes

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In the past, export cargos from OPTC were fastened with wooden planks, which must be smoked to prevent pests for quarantine purposes. The bottom portion of the planks are prone to damages during unloading, and to dispose them, customers would require professional help. To minimize packaging materials, OPTC partly switched to galvanized rectangular pipes fastened with tetoron ropes in 2019. Customers can recycle and reuse the pipes. This packaging method is so successful that our customers inquired about it and replicated it at their end.

Improving Paper Tube Recycling and Reuse with Suppliers

12 RESPONSIBLE CONSUMPTION AND PRODUCTION
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17 PARTNERSHIPS FOR THE GOALS

Each year, FEFC goes through approximately 3.5 million paper tubes. Once utilized, some are recovered by the plant and some are recycled from customers. Approximately 1.6 million paper tubes, which is 46%, are recycled each year. However, the lengths of the recycled paper tubes vary due to fluctuation in moisture content in the air, which tends to result in turntable failure or broken ends. To address the problem, FEFC works with the suppliers to seek solutions, and proposes that the suppliers consider climate factors during product design to maintain consistent quality and recycling rate. The adjustment significantly improves the quality of the paper tubes, which the suppliers may also supply to other customers, creating wide-reaching influence on recycling and reuse.

Establishing AI Quality Forecast Model

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Conventional quality control involves mitigation after the fact with testing and analysis on product quality. However, the time-consuming testing and random sampling make it difficult to facilitate real-time quality monitoring. When irregularities occur, quality downgrade continues. The second plant of OPTC has constructed a real-time quality forecast model, which is able to make quality forecast 2 to 3 hours in advance comparing to the conventional model, and make swift parameter adjustments accordingly. If production proceeds at the rate of 200 metric tons per hour, detecting irregularity 3 hours in advance may prevent approximately 600 metric tons of defective products, which translates to approximately NT$15 million in possible loss. Minimizing loss due to product downgrading may increase the efficiency in raw material use and avoid waste. The current model delivers approximately 95% accuracy.

1. Establishing Quality Forecast Model: Four AI algorithms are conducted using historical data for training on modeling, including deep neural network, support vector machine, random forest and convolutional neural network.

2. AI Model Verification: The best quality forecast model is verified and selected using actual data.

3

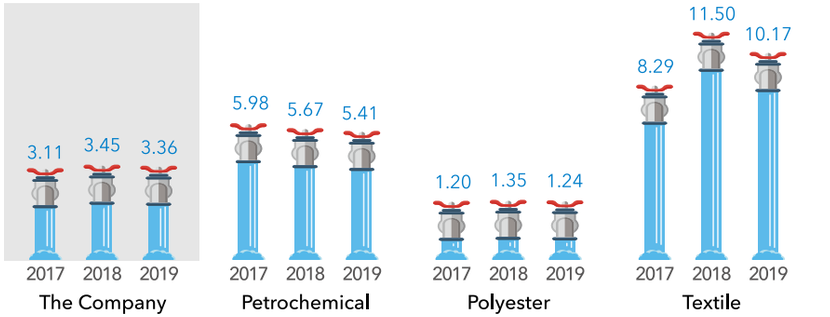
3.1.3 Water Resources Management

The 3 Businesses under FENC saw a noteworthy effort in water withdrawal in 2019 with an overall reduction of 3%. Comparing to the previous year, the total water withdrawal and water consumption increased due to higher production as well as the induction of additional production sites in this report. Among them, the textile plant of FEPV, a new member of Textile Business, began production in July 2018. However, FEDZ has dramatically decreased water withdrawal with the use of low liquor ratio dyeing machine, and therefore reduced the total water withdrawal for Textile Business in 2019.

FENC regards water as a precious resource shared among all of us. Therefore, we value water resources and their surrounding environment at all production sites. Working with our customers, we strive to lower the consumption 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 for the reduction of water withdrawal per unit production as a means to decrease consumption. In terms of the quantity and approach of water withdrawal, there are no negative impacts on local residents and habitats.

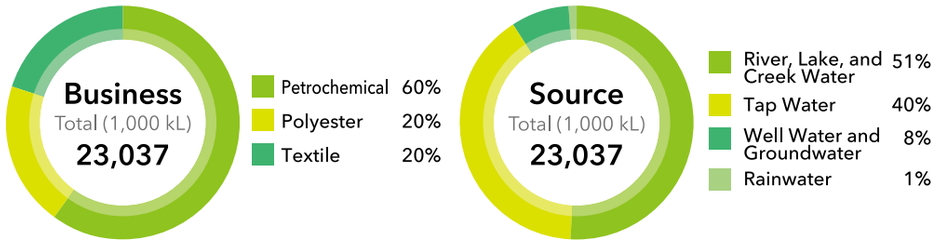
Water Withdrawal Per Unit Production

Unit: kL/metric ton of product



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

Water Withdrawal in 2019



Water Withdrawal and Water Consumption

Unit: 1,000 kL

Type \ Business / Year	Petrochemical 2017	Petrochemical 2018	Petrochemical 2019	Polyester 2017	Polyester 2018	Polyester 2019	Textile 2017	Textile 2018	Textile 2019	Total 2017	Total 2018	Total 2019
River, Lake, and Creek Water	1,316	3,467	**7,526**	880	1,027	**1,280**	2,388	3,096	**3,124**	4,584	7,589	**11,930**
Tap Water	7,099	6,340	**6,292**	1,735	1,880	**1,788**	1,486	1,481	**1,191**	10,320	9,701	**9,271**
Well Water and Groundwater	0	15	**0**	1,516	1,682	**1,634**	257	201	**121**	1,773	1,898	**1,755**
Rainwater	209	22	**13**	0	0	**0**	47	137	**68**	256	159	**81**
Total Water Withdrawal	**8,624**	**9,844**	**13,831**	**4,131**	**4,589**	**4,702**	**4,178**	**4,915**	**4,504**	**16,933**	**19,348**	**23,037**
Total Water Consumption	**5,022**	**5,356**	**7,484**	**2,052**	**2,318**	**2,443**	**1,033**	**1,637**	**1,229**	**8,107**	**9,311**	**11,156**

Note:
1. Water consumption refers to the difference between water withdrawal and wastewater discharge. The main cause for water consumption is evaporation at the cooling tower. Additonally, water consumption also occurs during the production process. (Please refer to 3.3.2 Wastwater Management for details.)
2.The scope of this CRS report covers 19 production sites in Taiwan, China and Vietnam.

Water Resources Management Guidelines and Measures

System Establishment and Management
- Implementing tiered water recycling and reuse.
- Implementing rainwater recycling and reuse.
- Monitoring water quality and preventing leakage.
- Treating and reusing wastewater.
- Reducing water consumption with enhanced recycling.

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

Value Chain Collaboration

Installing the latest water-free dyeing machine.

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.

Outcome of Water Saving Project in 2019

Business \ Outcome	Investment (NT 1,000)	Water Saved (kL/year)	Percentage to Water Withdrawal
Petrochemical	12,520	76,434	1%
Polyester	7,898	197,069	4%
Textile	5,750	42,840	1%
The Company	**26,168**	**316,343**	**1%**

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

Water withdrawal at FENC is mainly for production purposes. The wastewater generated is either recycled and reused or treated and discharged out of the plant. The difference between water withdrawal and wastewater discharge is considered water consumption, which mostly comes from evaporation at the cooling tower with a minor portion resulting from the production process. To reduce such evaporation and water loss, FENC makes various attempts to minimize water consumption. Take OPTC for instance, the plant installed the de-fogging system for the cooling tower. Through the holes drilled on the wall, the system introduces cold air that mixes with hot air to form droplets and reduce the moisture content in the air, thereby preventing fogging. The condenser then collects the droplets to be reused. The system was installed on one cooling tower in 2018, and it has collected 42,336 kL of water within one year, at 8% recycling rate. The system also reduced fogging by 50%. Five additional sets of de-fogging system have been installed in 2019, and they are currently under testing.

Water recycling rate in 2019 stays on par with 2018 at 98%. This calculation does not include the recycling rate for circulated water, which is 23%. The 7% drop from the previous year is the result of newly added production site. The textile plant of FEPV is still at its initial operation stage and will improve its water recycling rate in the foreseeable future.

Water Recycled and Reused

Unit: 1,000 kL

Type \ Business / Year		Petrochemical			Polyester			Textile			Total		
		2017	2018	**2019**	2017	2018	**2019**	2017	2018	**2019**	2017	2018	**2019**
Circulating Water	Cooling Water	462,145	568,526	**774,541**	371,316	396,051	**381,224**	34,470	36,156	**31,148**	867,931	1,000,733	**1,186,913**
	Others	15,957	12,853	**7,527**	1,434	1,238	**974**	0	0	**0**	17,391	14,091	**8,501**
Recycled Water	Recycled Water Excluding Reclaimed Water	391	376	**288**	612	690	**650**	3,169	3,115	**1,831**	4,172	4,181	**2,769**
	Reclaimed Water	1,184	1,377	**1,988**	268	186	**182**	1,762	2,249	**1,322**	3,214	3,812	**3,492**
Others		162	433	**667**	13	0	**85**	35	0	**0**	210	433	**752**
Total Water Recycled and Reused		**479,839**	**583,565**	**785,011**	**373,643**	**398,165**	**383,115**	**39,436**	**41,520**	**34,301**	**892,918**	**1,023,250**	**1,202,427**

Note:
1. Circulating water refers to used water that is not discharged, but applied back to the original circulation and reused.
2. Recycled water refers to used water that is discharged out of the original circulation, but then recovered and reused.
3. Other circulating water includes water from the boiler, production process, turbine condensate and low pressure condensate. The circulating water at Hsinpu Chemical Fiber Plant and OPTC is from the boiler; circulating water at OPTC and WHFE is recovered from the production process; turbine condensate and low pressure condensate are sources of circulating water at OPSC.
4. The "Other" category includes produced water which enters the company premise as a result of the production process.
5. The scope of this CRS report covers 19 production sites in Taiwan, China and Vietnam.

Maintaining Groundwater Sustainability with Smart Meter

6 CLEAN WATER AND SANITATION
12 RESPONSIBLE CONSUMPTION AND PRODUCTION

To maintain groundwater level and protect this scarce resource, FEFC installed smart water meter and wireless transmission to enable the monitoring of water pump with mobile devices. Automatic alert will be sent out in the case of malfunctioning or when the pumping volume reaches the maximum to provide real-time updates.

Water Recycling Rate

Business \ Year	2017	2018	**2019**
Petrochemical	98%	98%	**98%**
Polyester	99%	99%	**99%**
Textile	90%	89%	**88%**
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)

Business \ Year	2017	2018	**2019**
Petrochemical	17%	18%	**18%**
Polyester	18%	16%	**16%**
Textile	54%	52%	**41%**
The Company	**31%**	**30%**	**23%**

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%

Content

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Improving Water Consumption Efficiency with Enhanced Classification System

6 CLEAN WATER AND SANITATION
12 RESPONSIBLE CONSUMPTION AND PRODUCTION

In order to improve water consumption efficiency, Hsinpu Chemical Fiber Plant has been promoting wastewater classification, which separates wastewater and reuse purposes based on water quality, including production, onsite cleaning, domestic use and irrigation. In 2019, Hsinpu Chemical Fiber Plant recycled water from the cogeneration plant and reused it to replace clean water as the water source for the desulfurication tower. This practice conserves 20,829 kL of water per year, which translates to NT$51,239 in saving.

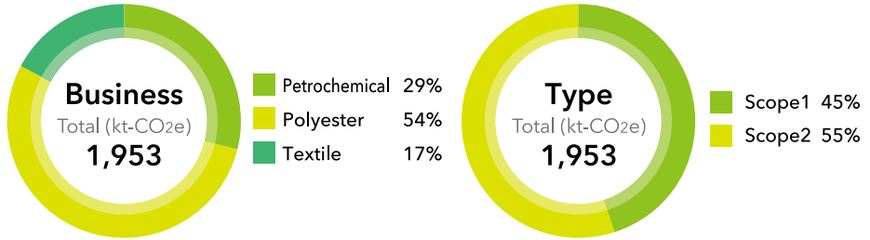
3.2 Responding to Climate Change

To mitigate risks associated with climate change, FENC conducts climate-related risk assessment with comprehensive inspection on GHG emissions, establishes reduction targets tailored to each production site and increasingly implements the use of renewable energy.

3.2.1 GHG Inventory

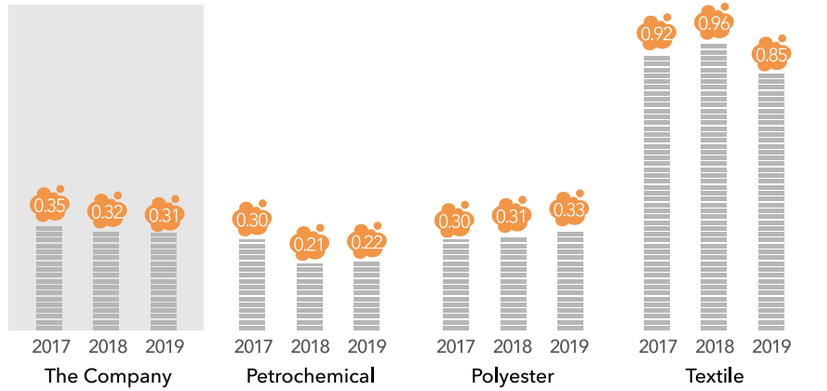
The total GHG emissions increased in 2019 due to higher production in Petrochemical Business. However, analysis of the GHG emissions per unit production indicates a 1% decrease for the entire Company comparing to the previous year. The Textile Business delivered a remarkable 11% reduction mainly because of the use of low liquor ratio dyeing machine at FEDZ, which significant lower energy use. Meanwhile, OTIZ adjusted its product structuring and also resulted in lower GHG emissions.

GHG Emissions in 2019



GHG Emissions Per Unit Production

Unit: t-CO2e/metric ton of product



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

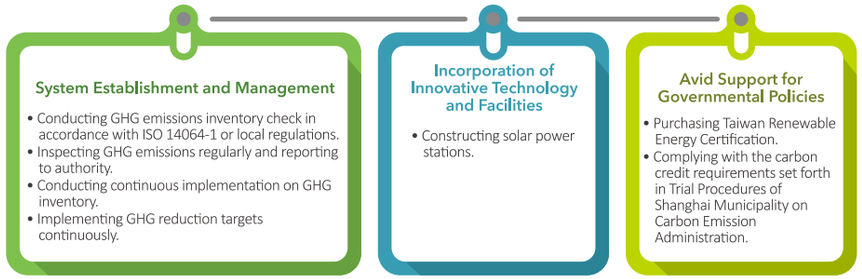
GHG Emissions

Unit: kt-CO2e

Business / Year / Category	Petrochemical			Polyester			Textile			Total		
	2017	2018	**2019**	2017	2018	**2019**	2017	2018	**2019**	2017	2018	**2019**
Scope 1	250	222	**366**	433	427	**469**	70	48	**45**	753	696	**880**
Scope 2	179	149	**204**	592	609	**575**	370	337	**294**	1,141	1,096	**1,073**
Biofuel CO_2 emission	18	13	**15**	0	0	**0**	0	0	**0**	18	13	**15**
Total	**429**	**371**	**570**	**1,025**	**1,036**	**1,044**	**440**	**385**	**339**	**1,894**	**1,792**	**1,953**

Note:
1. Scope 1: direct emission includes CO_2, CH_4, N_2O, PFCs, HFCs, SF_6 and NF_3; scope 2 indirect emission includes CO_2, CH_4, and N_2O; total emission does not include CO_2 emission from biofuel.
2. OPSC and FEIS conform to SH/MRV-004-2012, which only CO_2 emission is calculated.
3. The scope of this CRS report covers 15 production sites in Taiwan, China and Vietnam.
4. Production sites which have completed ISO 14064-1 standards for GHG inventories in 2017 included: Oriental Petrochemical (Taiwan), Hsinpu Chemical Fiber Plant, Kuanyin Chemical Fiber Plant, Kuanyin Dyeing and Finishing Plant, OPSC, FEIS, FEIW, OTIZ, FEDZ, FEAZ and FEAV
5. Production sites which have completed or were in progress of ISO 14064-1 standards for GHG inventories in 2018 included: Oriental Petrochemical (Taiwan), Hsinpu Chemical Fiber Plant, Kuanyin Chemical Fiber Plant, Far Eastern Fibertech, Hukou Mill, OPSC, FEIS and WHFE
6. Production sites which have completed or were in progress of ISO 14064-1 standards for GHG inventories in 2019 included: OPTC, Hsinpu Chemical Fiber Plant, Kuanyin Chemical Fiber Plant, OPSC and FEIS
7. The total emission in 2019 for FENC's 5 production sites in Taiwan is 725 kt-CO_2e

GHG Management Guidelines and Measures



• System Establishment and Management

All production sites under FENC establish GHG inventory and calculation in accordance with ISO 14064-1 for greenhouse gas emissions or local regulatory standards, and must complete third-party auditing once every 3 years. Currently, 16 production sites in Taiwan, China and Vietnam have completed GHG emission audit by the third party.

Production sites under FENC establish individual reduction targets specific to the industry and local governmental regulations. FEIW aims for 1% annual reduction in GHG emission; Hsinpu Chemical Fiber Plant and Kuanyin Chemical Fiber Plant aim for reaching 2%; the target for Kuanyin Dyeing and Finishing Plant is 2.5%; WHFE is striving for 3%. FEIS sets 2015 as the base year with the target of 15% reduction by 2020 and 35% by 2030.

FENC has established the inventory of indirec t GHG emissions. Currently, staff business trips and waste treatment are included in the calculation. The scope of staff business trip covers the mileage of air travels from and to production sites in Taiwan and China. Calculation of carbon emission between the departure and arrival points is based on the air travel carbon calculator established by International Civil Aviation Organization (ICAO). The 2019 carbon emissions generated during staff business trips by air travel is 1,108 t-CO_2e. The calculation for carbon emissions from waste disposal covers 15 production sites from Taiwan, China and Vietnam. The calculation of carbon footprint per ton per kilometer for waste disposal at production sites in Taiwan is based on the carbon footprint emission factors released by the Environmental Protection Administration. Calculations for production sites in China and Vietnam are based on the carbon footprint coefficient issued by State Administration for Industry and Commerce's website on carbon trading. In 2019, the annual CO2 emission for waste disposal is 1,808 t-CO_2e.

• 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.

Carbon Quotas and Emissions of OPSC and FEIS

Unit: kt-CO_2e

Production Sites and Item \ Year		2017	2018	2019
OPSC	Quota	144	173	**168**
	Actual Emissions	157	159	**160**
FEIS	Quota	366	344	**324**
	Actual Emissions	328	331	**323**

Note: The Quota of OPSC in 2018 was corrected from estimated emissions to government approved quota. The Actual Emission of FEIS in 2018 was corrected to certified quota.

3.2.2 Renewable Energy Use

FENC supports the use of renewable energy with actions. We reduce GHG emissions and minimize environmental impact induced by production activities. Since 2016, we have been building solar power stations at production sites in China. So far, we have completed the stations at OPSC, FEIS, OTIZ, FEDZ and FEIW. Production sites in Taiwan started to follow suit in 2019. Stations at FEFC, OPTC and Kuanyin Chemical Fiber Plant, which is located in Kuanyin Industrial Park, Taoyuan City, are completed the operation has begun. In 2019, the solar power stations in Taiwan and China produced a combined total of 10.11 million kWh of power in 2019. Hukou Mill, Kuanyin Dyeing and Finishing Plant, OGM and production sites in Vietnam are also in the process of evaluating the construction of solar power stations.

Solar panels are installed on the rooftop, making onsite inspection a dangerous operation. However, information provided by the supplier does not offer status update on the operation of individual panels. Therefore, the IT Department at FENC developed AISolar, the information management platform for the solar power system, which is capable of detecting malfunctions instantaneously using big data analysis. The system reduces the need for onsite inspection and therefore keeps staff out of harm's way. Equipment efficiency is also improved as a result.

Since 2015, FENC has been purchasing green energy from Taiwan Power Company. When the trading of Taiwan Renewable Energy Certificate (T-REC) started in 2018, FENC has purchased a total of 1.04 million kWh from the Southern Region Campus of Industrial Technology Research Institute. We will continue the purchase in 2020.

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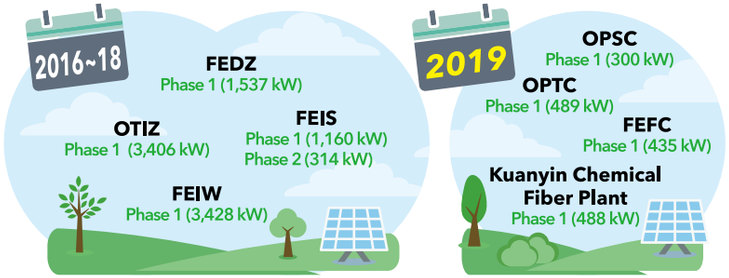
Scheduling and Planning for Construction of Solar Power Station



3.3 Preventing and Controlling Environmental Pollution

Rising environmental awareness around the world gave way to the enactment of a series of environmental regulations in a concentrated period. FENC has taken aggressive measures to prevent and control pollution as a show of support to the government and environmental causes. In 2018, China started the investigation on soil pollution. OPSC and FEIS responded by launching the special project on soil pollution prevention and control, and OTIZ launched the project in 2019.

Soil Investigation and Self- inspection

OTIZ conducts soil investigation and self-inspection on soil quality in compliance with governmental requirements. The plant has been conducting self-inspeciton on a regular basis since 2019 and ensuring regulatory compliance by analyzing historical data and promptly establishing prevention and control measures. OTIZ conducts a comprehensive assessment on the current soil conditions in the vicinity of the plant to identify possible pollution source, followed by formulating soil monitoring plans to pinpoint the degree of contamination and decide whether soil restoration is necessary. The investigation and self-inspection are scheduled to complete in 2020.

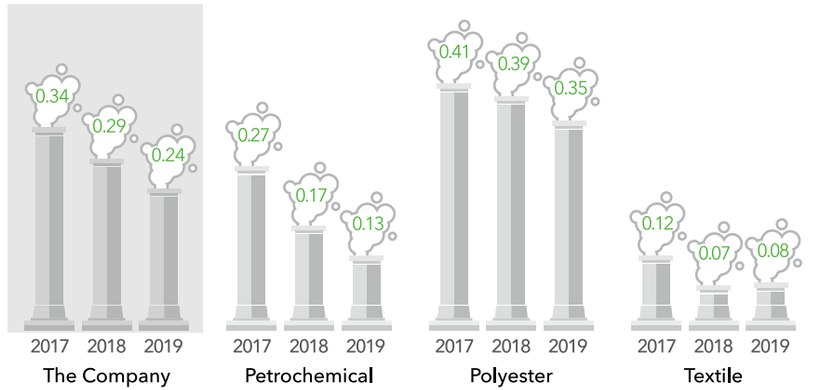
Management Approach / Survey Investigation	Monitoring Station	Sample Collection	Establish Monitored Checkpoints
Soil	13 stations	36 stations	18 checkpoints/ monitoring stations
Groundwater	8 stations	8 stations	17 checkpoints/ monitoring stations

3.3.1 Air Pollution Management

The increase in production and incorporation of new production sites led to an increase of air pollution in 2019 comparing to the previous year. However, air pollution per unit production reduced by 17% (equivalent of 0.05 kg/metric ton), which is remarkable for 2019. The Petrochemical Business reduced air pollution per unit production by 24%. The main contributing factor is the increasing use of NOx reducing agent at OPSC. Polyester Business saw a 10% reduction (equivalent of 0.04 kg/metric ton) mainly due to the newly added denitrification facility for coal water slurry and the declining use of heavy oil boilers at Kuanyin Chemical Fiber Plant.

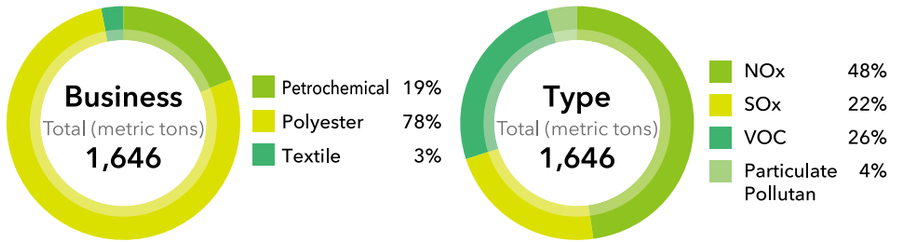
Air Pollution Emissions Per Unit Production

Unit: KG/metric ton of product



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

Air Pollution Emissions in 2019



Air Pollution Emissions

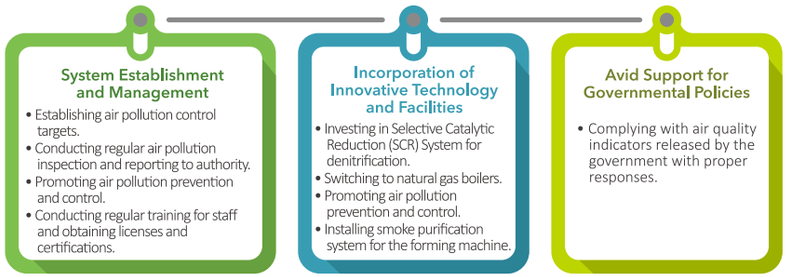
Unit: metric tons

Type \ Business / Year	Petrochemical			Polyester			Textile			Total		
	2017	2018	**2019**	2017	2018	**2019**	2017	2018	**2019**	2017	2018	**2019**
NOx	161	131	**144**	854	713	**628**	26	10	**14**	1,041	854	**786**
SOx	126	56	**74**	153	163	**285**	6	1	**1**	285	220	**361**
VOC	103	109	**96**	324	349	**321**	20	7	**7**	447	465	**423**
Particulate Pollutan	2	3	**7**	38	46	**50**	21	19	**19**	61	68	**76**
Total	**392**	**299**	**321**	1,369	1,271	1,284	**73**	**37**	**41**	1,834	1,607	1,646

Note:
1. Only gases emitted are listed.
2. Particulate matter pollutants include PM, dust and smog.
3. The data includes four types: actual measured values, annualized sample values, calculate values, and permitted amounts of emissions. Actual measured values come from Hsinpu Chemical Fiber Plant (NOx, SOx, particulate pollutant), Kuanyin Chemical Fiber Plant (NOx, SOx, particulate pollutant), FEFC, polyester plant of FEPV, the second plant of OPTC, OPSC (NOx, SOx), WHFE, Kuanyin Dyeing and Finishing Plant, FEIW, FEDZ, FEAZ, FEAV and FENV; annualized sample values are from OPSC (VOC), FEIS and textile plant of FEPV; calculated values are from the first plant of OPTC, Hsinpu Chemical Fiber Plant (VOC), Kuanyin Chemical Fiber Plant (VOC), OGM, FEFC(VOC) and Hukou Mill; permitted amounts of emissions are from OTIZ.
4. The scope of this CRS report covers 19 production sites in Taiwan, China and Vietnam.

FENC continues to introduce new technology on air pollution prevention and control, and examines existing facilities and production process regularly. The boilers and exhaust pipes are also inspected regularly to ensure regulatory compliance and help reach reduction targets.

Air Pollution Management Guidelines and Measures



• Incorporation of Innovative Technology and Facilities

To reduce air pollution, Hsinpu Chemical Fiber Plant and Kuanyin Chemical Fiber Plant invested in Selective Catalytic Reduction (SCR) System for denitrification. SCR allows NOx and ammonia to mix through a special catalyst, and converts the mixture into innocuous nitrogen and water. The system is expected to reduce 70% of NOx in the coal water slurry. The 4 sets of equipment at Kuanyin Chemical Fiber Plant were fully installed and the 6 sets in Hsinpu Chemical Fiber Plant are expected to be installed by 2020. In addition, OPTC, Kuanyin Chemical Fiber Plant and OGM plan to replace coal water slurry or heavy oil boilers with natural gas boilers to reduce emissions. FEDZ installed 2 new smoke purification systems for the forming machine, and has reduced 90% of VOC.

• Improving Air Quality

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. In 2019, Hsinpu Chemical Fiber Plant conducted one drill. In September and October, the plant activated the response measures when receiving notices from the Environmental Protection Administration. 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. OTIZ installed regenerative thermal oxidizer (RTO) to reduce air pollutants.

Air Pollution Self-monitoring Program

3 GOOD HEALTH AND WELL-BEING
12 RESPONSIBLE CONSUMPTION AND PRODUCTION

OPSC launched a series of air pollution self-monitoring programs in 2019 and record the data online. When irregularities occur, staff seek the cause and solutions immediately, and make sure annual emissions meet regulatory requirements. According to the test results from 2019, all indicators are in compliance with one exception. The odor concentration within the premise exceeded the maximum due to regional atmospheric influence rather than resulting from plant emissions.

Apple Daily Reports

Air pollution from Guanyin Industrial Park endangers the health of local residents. List of factories fined includes FENC subsidiary, OPTC, which was cited 9 times and fined NT$871,000.

(July 6th, 2019)

Clarification

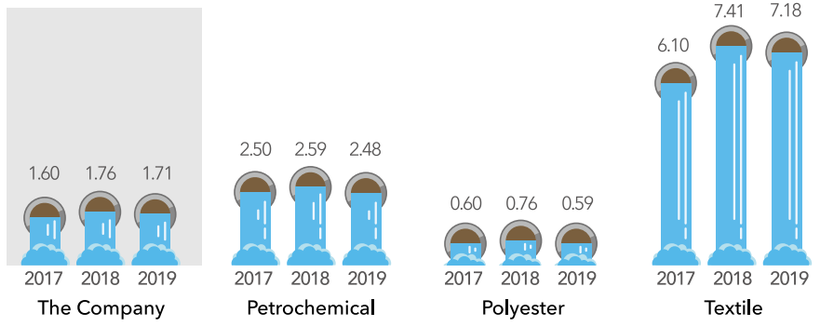
OPTC was founded in 1989 in Taiwan. For the past 3 decades, the plant received 9 citations for violations against Waste Disposal Act, Water Pollution Control Act and Air Pollution Control Act with fine totaling NT$871,000. Among the citations, 5 are for violating Air Pollution Control Act. The only citation OPTC received between 2015 and 2019 is for leakage caused by aging equipment, which was not replaced as required by the standards set forth in the permitting process and caused leakage. The equipment has been replaced and inspected regularly per regulatory requirement.

3.3.2 Wastewater Management

Total wastewater increased in 2019 comparing to the previous year due to production increase as well as the incorporation of new production sites. FEDZ performed exceptionally with 19% reduction comparing to the previous year after the introduction of low liquor ratio dyeing machine, while wastewater per unit production at the plant dropped by 3%, which is a substantial decrease.

Wastewater Volume Per Unit Production

Unit: kL/metric ton of product



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

Wastewater Sites and Volume

Unit: 1,000 kL

Business	Production Site	Wastewater Volume 2017	2018	2019	Wastewater Treatment and Discharge Site
Petrochemical	OPTC	2,179	3,024	**4,898**	Wastewater goes through biotreatment internally (deep shaft aeration and anaerobic treatment). Once reaching effluent standards, it is discharged into Shulin and Dajue Rivers.
	OPSC	1,423	1,463	**1,450**	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.
	Hsinpu Chemical Fiber Plant	907	1,082	**921**	Wastewater goes through biotreatment internally. Once reaching effluent standards, it is discharged into Fengshan River.
	Kuanyin Chemical Fiber Plant	394	430	**447**	Wastewater goes through biotreatment internally. Once reaching effluent standards, it is discharged into Shulin River.
Polyester	FEFC	98	97	**83**	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	-	-	**65**	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	669	650	**579**	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	13	13	**13**	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	-	-	**149**	The wastewater is treated at the treatment center within the industrial park and then discharged to Ben Van River.
Textile	Kuanyin Dyeing and Finishing Plant	497	485	**488**	Wastewater is treated in house, discharged to the wastewater treatment plant in the industrial park for further treatment, and then discharged into Shulin River.
	Neili Texturizing Plant	63	45	**-**	Relocation of the plant commenced in 2019.
	Hukou Mill	72	62	**51**	Wastewater goes through biotreatment (oxidation and aeration) internally and then discharged into Desheng River.
	OTIZ	239	368	**108**	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.
	FEIZ	25	-	**-**	The plant has ceased operation in 2018.
	FEIW	70	63	**62**	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	1,965	1,498	**764**	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	88	85	**79**	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	71	74	**62**	Wastewater is treated at the treatment center within the industrial park and then discharged to Saigon River.
	FENV	54	71	**79**	Wastewater is treated at the treatment center within the industrial park and then discharged to Song Be River.
	FEPV	-	527	**1,583**	Wastewater is treated at the treatment center within the industrial park and then discharged to Ben Van River.
Total		**8,827**	**10,037**	**11,881**	

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 and the polyester plant of FEPV 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 and Kuanyin Chemical Fiber Plant 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 is from manufacturing process.
3. Total wastewater volume includes domestic wastewater. The domestic wastewater was 577,000 kL in 2017, 539,000 kL in 2018 and 636,000 kL in 2019.
4. Calculation of wastewater at Hukou Mill also includes the Biomedical Business Unit of Oriental Resources Development Limited.
5. Minimum wastewater discharge standards have been established at all production sites in accordance with local regulations and industry characteristics.
6. The scope of this CRS report covers 19 production sites in Taiwan, China and Vietnam.

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FENC manages wastewater at the source, focusing on recycling and reuse to increase wastewater recycling. (Please refer to 3.1.3 Water Resources Management). Regarding wastewater discharge, complete guidelines and operational procedure are also in place. Treatment and regular testing on water quality ensure regulatory compliance. The Company also obtains industrial wastewater discharge permit prior to discharging treated wastewater into water bodies where discharge is permitted. Wastewater from FENC is not utilized by any other organizations.

Wastewater Management Guidelines and Measures

System Establishment and Management
- Establishing wastewater management system.
- Conducting regular wastewater quality inspection and reporting to authority.
- Promoting water pollution prevention and control.
- Providing regular training for staff and obtaining licenses and certification.

Incorporation of Innovative Technology and Facilities
- Conducting regular facility maintenance.
- Introducing anaerobic wastewater treatment facility.

• Incorporation of Innovative Technology and Facility

FENC consistently upgrades wastewater treatment with innovative facilities to reduce discharge. In 2018, Kuanyin Chemical Fiber Plant installed modified upflow anaerobic sludge bed (UASB), which is more capable of treating wastewater with higher chemical oxygen demand (COD). UASB lessens the load on the aerobic process that follows, stabilizes discharge quality and increases recycled wastewater. Installation of UASB started at FEIS in 2019 and completion is anticipated in 2020.

Increasing Wastewater Recycling with Modified Upflow Anaerobic Sludge Bed

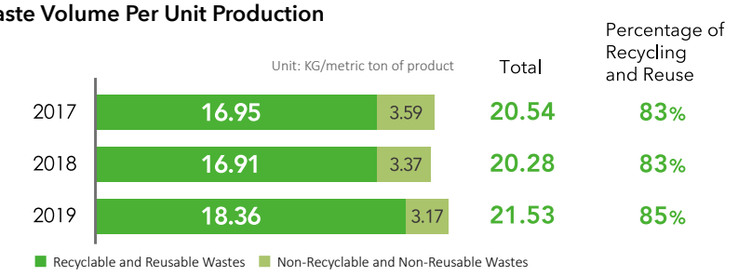
3 GOOD HEALTH AND WELL-BEING
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
14 LIFE BELOW WATER

FEIS installed modified upflow anaerobic sludge bed (UASB), through which organic pollutants are reduced to methane and CO2 by anaerobic microorganisms. UASB lowers the concentration of organic chemicals in wastewater, and helps increase recycled wastewater. In addition, UASB requires less energy, produces less sludge and captures methane for reuse. FEIS is in the process of using UASB to improve the performance of anaerobic treatment and replace the aerobic septic system. The project is scheduled to complete in 2020.

3.3.3 Waste Management

The incorporation of new production sites in this report results in the increase in total waste produced in 2019. Comparing to the previous year, there is also a 6% increase in waste per unit production (equivalent of 1.25 kg/metric ton), which is attributed to changes in product structuring due to the addition of new production sites. There is a more significant decrease in non-recyclable and reused waste per unit production at 6% (equivalent of 0.20 kg/metric ton).

Waste Volume Per Unit Production



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

FENC stays consistent with its efforts to enhance waste management at all production sites. We promote waste recycling and classification, and choose licensed waste management companies to make sure that valuable waste is recycled and reused; valueless waste is properly disposed of to prevent pollution.

Waste Management Guidelines and Measures

System Establishment and Management
- 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.
- Installing sludge treatment facilities.

Value Chain Collaboration
- Scrutinizing the credentials of waste management companies and incorporating GPS tracking.
- Randomly inspecting waste disposal practices.

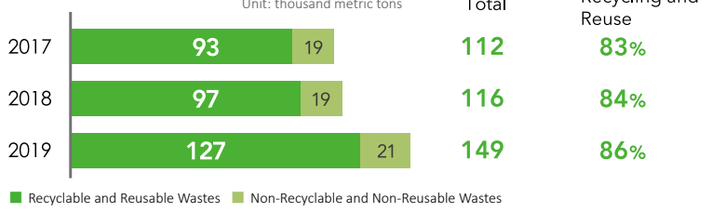
Data of Waste

Unit: metric tons

Type and Treatment Method			Year 2017	2018	2019
Recyclable and Reusable Wastes	General Business Wastes	Manufacturing Process Wastes	86,690	89,485	**117,374**
		Domestic Wastes	2,497	3,314	**1,740**
	Hazardous Business Wastes Total		3,861	3,828	**8,203**
	Total Recyclable and Reusable Wastes		**93,048**	**96,627**	**127,317**
Non-Recyclable and Non-Reusable Wastes	General Business Wastes	Manufacturing Process Wastes – Energy Uses	8,334	5,939	**3,997**
		Manufacturing Process Wastes – Incineration	5,700	6,964	**9,741**
		Manufacturing Process Wastes – Landfilling	475	1,089	**773**
		Manufacturing Process Wastes – Other Treatment Methods	1,151	1,581	**1,036**
		Domestic Wastes – Energy Uses	340	368	**367**
		Domestic Wastes – Incineration	1,369	1,374	**1,201**
		Domestic Wastes – Landfilling	352	438	**387**
		Domestic Wastes – Other Treatment Methods	110	110	**124**
	Hazardous Business Wastes Total	Energy Uses	-	414	**132**
		Incineration	1,267	774	**3,692**
		Landfilling	-	-	**-**
		Other Treatment Methods	109	22	**36**
	Total Non-Recyclable and Non-Reusable Wastes		**19,207**	**19,073**	**21,486**
Total Wastes			**112,255**	**115,700**	**148,803**

Note:
1. Recycling and reuse includes recycling and reuse by the plants, selling of waste materials, and recycling by commissioned contractors.
2. The scope of this CRS report covers 19 production sites in Taiwan, China and Vietnam.

Type of Waste



Turning Waste into Gold with Refined Classification

12 RESPONSIBLE CONSUMPTION AND PRODUCTION
15 LIFE ON LAND

FEDZ has been refining waste classification approaches in an attempt to increase the percentage of recyclable and reusable waste. Initially, valueless waste was processed by outside agencies. Starting in 2019, valueless waste is further classified into 21 categories of production waste and 5 categories of domestic waste, which are then treated and transformed into valuable objects. To motivate staff to improve classification methods, FEDZ conducts training, promotion and monthly competitions to help them understand that sustainability should be a daily practice. In 2019, the project helped FEDZ turn 814 metric tons of valueless waste into valuable objects that can be reused, generating NT$12 million in benefit a year.


Recycling and classification of domestic waste

Reducing Waste at The Source with Enhanced Management

12 RESPONSIBLE CONSUMPTION AND PRODUCTION
15 LIFE ON LAND

At 70%, scraps make up the majority of production waste generated at FEAV. To reduce waste generation at the source, the plant modified the time frame for precut fabric in 2019. Instead of two weeks, the fabrics are precut one week prior to production to minimize scraps resulting from changing orders. This modification reduced total waste at FEAV by an impressive 33%.