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Target Readers:

- ■ Employee / Labor Union
- ■ Direct Customer
- ■ Government
- ☐ Business Partner (Supplier / Contractor)
- ■ External Audit Agency
- ■ Shareholder / Investor / Financial Institution

2022 Highlight

Total Energy Consumption
↓7%

67 Energy Conservation Projects
GHG Emissions Avoided 135 $ktCO_2e$
Best in 5 Years

GHG Emissions
↓11%

Solar Power Installed Capacity
15 MW
Solar Power Generated
14.2 GWh

Total Water Consumption
↓12%

Water Conservation Projects
Saving 6% of Total Water Withdrawal

98%
Water Recycling Rate

Total Air Pollutant Emissions
↓7%

92%
Waste Recycling and Reuse Rate

FEAV and FENV
Production Waste
100%
Recycling and Reuse

Target and Progress

	Reducing Energy Consumption per Unit of Production	Reducing Water Withdrawal per Unit of Production	Reducing Waste (Non-Recycling and Non-Reuse)	Reducing Air Pollutant Emissions	Reducing GHG Emissions	Increasing Installed Capacity of Renewable Energy
2030 Target	↓ 20%	↓ 20%	↓ 20%	↓ 20%	↓ 40%	400 GWh
2025 Target	↓ 10%	↓ 10%	↓ 10%	↓ 10%	↓ 20%	300 GWh
2023 Target	↓ 6%	↓ 6%	↓ 6%	↓ 6%	—	120 GWh
2022 Target	↓ 4%	↓ 4%	↓ 4%	↓ 4%	—	100 GWh
2022 Progress	↓ 0.3%	Completed ↓ 5%	Completed ↓ 32%	↓ 3%	↓ 14%	Completed 110 GWh
Action Plan	• Optimize production and facilities. • Incorporate innovative management approaches.	• Continue with efforts in reducing water withdrawal at the source. • Increase the percentage of recycled water utilized.	• Optimize waste recycling and classification. • Enhance waste recycling and reuse.	• Monitor and control air pollution. • Replace outdated equipment.	• Improve energy efficiency. • Develop renewable energy. • Adopt low-emission fuel alternatives. • Utilize CCUS. • Foster raw material transition.	• Build additional solar stations and biogas generators. • Purchase renewable energy certificates (RECs).
Target Base Year	2020	2020	2020	2020	2020	
Base Year Data	3.07 GJ / metric ton of production	3.15 kiloliter / metric ton of production	23,238 metric tons	1,606 metric tons	2,432 $ktCO_2e$	

Note: The scope of disclosure covers 21 FENC production sites, which accounts for 100% of the production sites covered in this report.

Material Topics

March Towards Net Zero

Significance and Purpose of Management for FENC

FENC evaluates the risks and opportunities brought by climate change and responds with concrete strategies. The Company implements a broad range of projects aiming to avoid GHG emissions. By forging alliances with its global partners, the Company strives to mitigate global warming. Disclosures on GHG management performance include emissions; reduction targets and progress; renewable energy use and implementation; carbon trading; regulatory compliance.

Management Approaches and Effectiveness Evaluation Mechanisms

- Conduct regular evaluation of climate-related financial impacts.
- Establish GHG reduction targets, formulate strategies and track project performance.
- Continue to expand the scope and category of GHG inventory.
- Obtain international certifications such as ISO 14064-1.
- Introduce innovative low-carbon production facility.
- Replace fossil fuels with low-carbon alternatives.
- Increase the use of renewable energy.
- Research and develop green products.

Authority

- Energy Task Force
- All production sites

Elevate Energy and Resource Efficiency

Significance and Purpose of Management for FENC

FENC believes that natural resources are meant to be shared among all humanity, hence regarding energy and resource efficiency as the means to prevent resource depletion. FENC monitors the management approaches, reduction targets, strategies and implementation on the consumption of energy, water and raw materials. All practices are carried out in accordance with regulatory requirements with regular tracking on performance in areas such as energy and water efficiency.

Management Approaches and Effectiveness Evaluation Mechanisms

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

Authority

- Energy Task Force
- All production sites

Steer Environmental Management

Significance and Purpose of Management for FENC

FENC values all beings on Earth. With a strong commitment to protecting natural habitats and resources from pollution, the Company has been introducing innovative products that are made of recycled waste from the land and ocean. The objective is to protect natural resources, ensure biodiversity and safeguard environmental sustainability. Its corporate sustainability disclosure covers data on pollution related to air, soil, noise as well as solid and toxic waste; preventive and control measures; leakage occurrences; targets; implementation; management.

Management Approaches and Effectiveness Evaluation Mechanisms

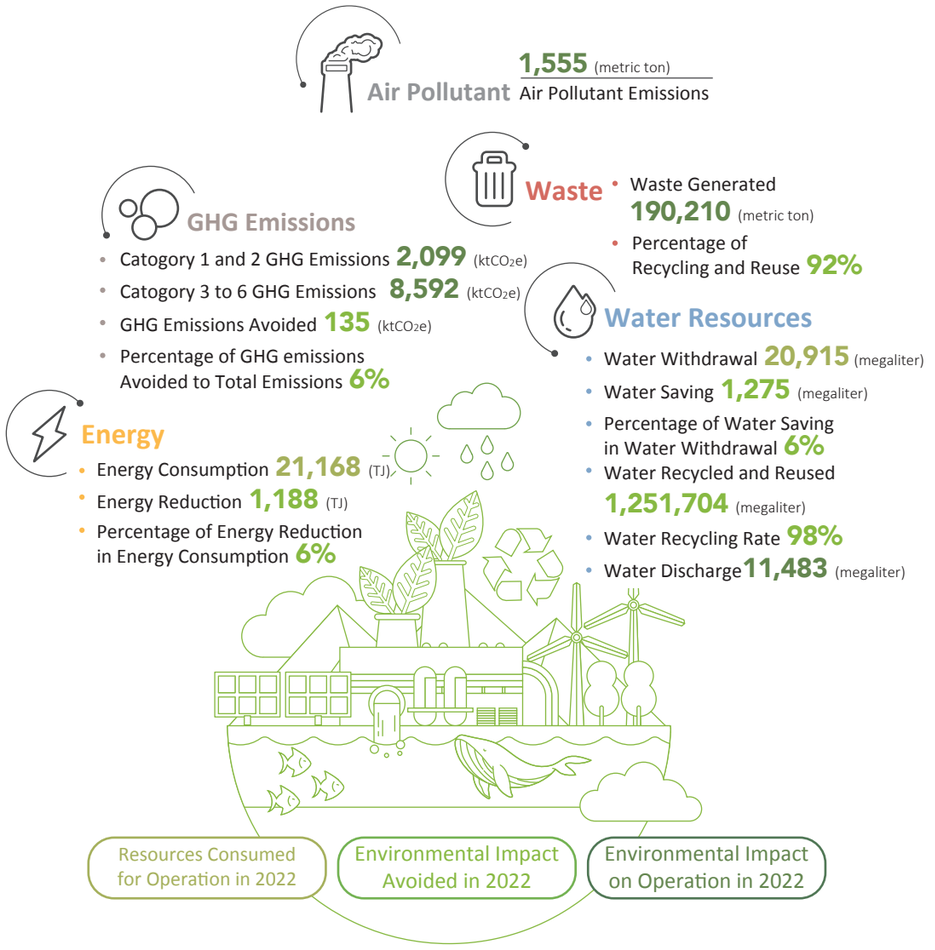
- Establish air pollution and waste reduction targets.
- Introduce innovative production and facilities.
- Conduct environmental impact analysis prior to plant construction.

Authority

- Energy Task Force
- All production sites

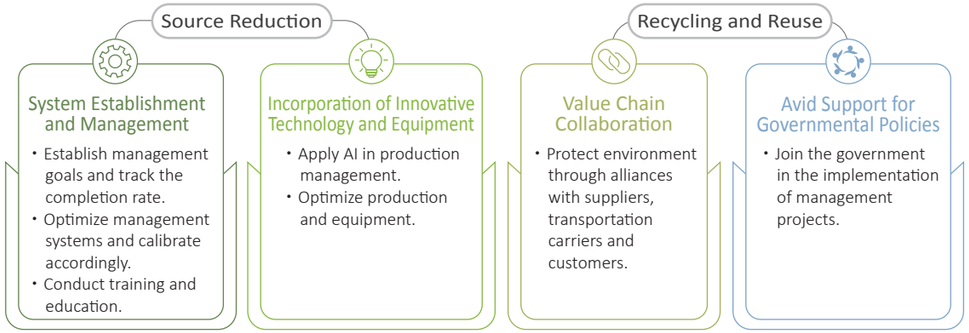
Overview of Environmental Performance

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 the effects of climate change and steer environmental management. It is our unwavering commitment to preserve the beauty of mother nature for future generations.



Note:
1. Please refer to the chapter content for details.
2. The percentage of GHG emissions avoided (%) is calculated based on the total GHG emissions of Category 1 (Scope 1) and Category 2 (Scope 2).

Strategies and Guidelines on Environmental Sustainability

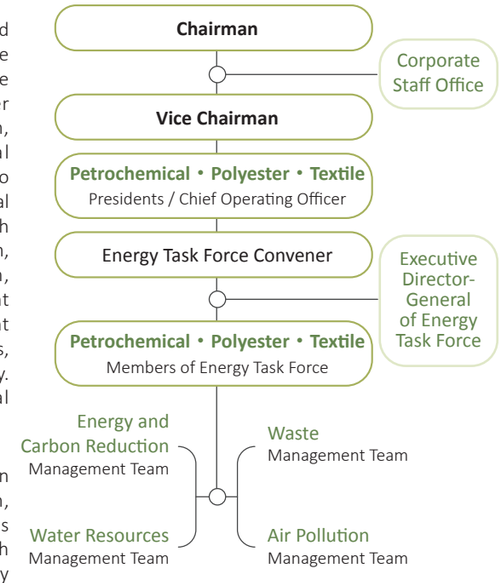


Environmental and Energy Management Authority: Energy Task Force

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 attention. FENC created environmental management teams under each Business to establish the environmental review and management mechanism, including the Water Resources Management Team, Air Pollution Management Team, Waste Management Team and Energy and Carbon Reduction Management Team, which covers the management of GHG emissions, renewable energy and new carbon reduction technology. FENC also reset the company-wide environmental management goals in 2022.

The Company built the Energy and Carbon Reduction Circular Economy Management Platform, an online database that systematically collects environmental data from all FENC production sites, which would be reviewed and tracked during the monthly energy management meetings. Every September, a special briefing on energy and carbon reduction is conducted with the convener and committee members of the Energy Task Force presenting annual performance and future plans to corporate executives such as the Chairman, Vice Chairman and President of each Business in attendance.

Organizational Framework of Energy Task Force



◉ Percentage of FENC Operational and Production Sites With Sustainability-Related ISO Certifications

Certification Standards	Coverage Rate	Verification Agency
ISO 14001	68%	BSI, DNV, SGS, TUV
ISO 50001	41%	BSI, DNV, SGS, TUV
ISO 46001	5%	SGS

ISO Certification Dates and Validity Periods

Special Budget for Energy Reduction and Environmental Protection

Since 2010, FENC has been appropriating budgets for conservation and environmental protection purposes to implement projects furthering the objective of improving environmental performance and fulling its sustainable vision. In 2022, FENC leaped towards the transition for net zero emissions in full force, devoting NT$10.69 billion to energy and carbon reduction and NT$1.44 billion to environmental protection projects between 2023 and 2025.

Regular Environmental Management Meetings with Brand Customers

Customer feedbacks are of paramount value to FENC. The Company engages brand customers regularly through meetings to share its environmental management and performance. FEAZ, for instance, utilizes learning community meetings to share the measures the plant implements on energy efficiency improvement, water resources management and waste reduction. The environmental performance demonstrates FEAZ's commitment to and fulfillment of its sustainable promises to customers.

Green Building Recognitions

In 2022, Plant 2 of OPTC obtained the Bronze certification of Green Building Label awarded by the Ministry of the Interior in Taiwan. The certified project is unique in that the plant renovated an existing building and integrated a smart management system into the existing structure to manage the lighting, air conditioning, fire safety and electricity. After the rooftop solar panels were completed in 2022, the plant's Green Building Label leveled up from the Certified status to Bronze. The certification is the result of hard work and dedication from the entire team, and it brings FENC the second green building recognition since its 2019 Silver certification from Leadership in Energy and Environmental Design (LEED).

3.1 Marching Towards Net Zero

FENC is the leader in the global polyester and textile industries with long-term dedication to corporate sustainability. The Company has been implementing company-wide GHG inventory and control and established the short-, mid- and long-term GHG reduction targets. Pledging to net zero emissions by 2050, FENC went further by establishing five major low-carbon transition strategies – improve energy efficiency; adopt low-emission fuel alternatives; develop renewable energy; utilize carbon capture, utilization and storage (CCUS); foster raw material transition. The aim is to mitigate environmental impacts caused by GHG emissions and preserve the natural habitat and environmental sustainability. Targets and strategies were presented to the Board of Directors in 2022. In March 2023, FENC signed and submitted the Science Based Targets Call to Action Standard Commitment Letter to Science Based Targets Initiative (SBTi), committing to achieve the near-term targets and be net-zero committed. The letter has been accepted by SBTi. For details, please refer to Special Report 2. Reaching Net Zero Through Low-Carbon Transition.

3.1.1 Building Climate Resilience

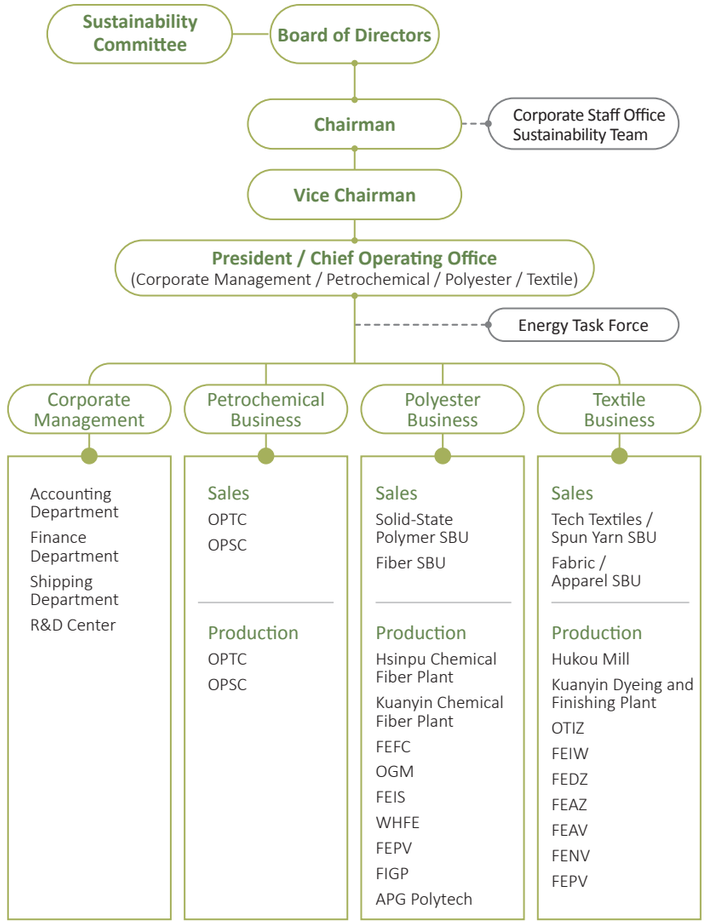
The effects of climate change and global warming are growing severe. To mitigate and adapt to climate risks, FENC adopted the Task Force on Climate-related Financial Disclosures (TCFD) assessment in 2019. Each year, the Company discloses the results in its annual Sustainability Report and on the Company website. In 2023, the Company issued its first TCFD Report. Leveraging the TCFD framework and sustainability disclosure standards from Draft IFRS S2 Climate-related Disclosures, the report is an assessment of climate-related financial risks and opportunities on FENC Businesses and production sites with which the Company wishes to cultivate a resilience mindset.

TCFD Report

Climate Governance

FENC's climate governance is led by the Board of Directors, which oversees the company's climate-related strategies and management guidelines. FENC also set up a functional committee at the Board level, the Sustainability Committee. In addition, the Sustainability Implementation Committee was established under the company's organizational structure, with the President of Corporate Management serving as the convener. The committee consists of representatives from the production sites and business units of each Business, and the administrative department, collaborating to promote the company's climate-related risk mitigation, adaption and low-carbon transition. The Energy Task Force is in charge of matters related to greenhouse gases and energy management. The Sustainability Team of the Corporate Staff Office is responsible for compiling sustainability performance data and reporting to the Board of Directors and the Sustainability Committee. The Presidents, Chief Operating Officers of each Business and the Energy Task Force report to the Board of Directors and internal meetings on a regular basis.

The Organizational Chart of Climate-Related Risk and Opportunity Management



Climate-Related Risk and Opportunity Management System

In order to fully grasp the impact of climate-related risks and opportunities on the company, FENC has established a climate-related risk and opportunity management system. The Sustainability Implementation Committee is responsible for promoting the management of climate-related risks and opportunities and formulating a bottom-up risk and opportunity reporting system to implement a top-down tracking and supervision mechanism by the Board of Directors.

Climate-Related Risk and Opportunity Management Procedure

Identifying Climate-Related Risks and Opportunities

- Research and analyze international scientific reports and relevant laws and regulations of various countries; regularly assess climate risks and opportunities related to the company.
- Cross-functional communication and assessment among business units, production units and administrative departments.
- Identify the company's material risks and opportunities.

Assessing the Extent of Impact and Formulating Management and Response Measures

- Conduct financial impact analysis specific to the top three material risks and opportunities identified.
- Formulate risk and opportunity management strategies and response measures.

Reporting and Tracking

- Regularly report to the Sustainability Committee and the Board of Directors on the outcome of climate-related risks and opportunities identification, impact analysis, strategies and response measures.
- Internal meetings are held regularly to report to members of the Board and senior executives on the management status of climate-related risks and opportunities.

Identifying Climate-Related Risks and Opportunities

Based on the TCFD framework, FENC established a comprehensive workflow to identify climate-related risks and opportunities. First, climate-related issues are collected. The climate risks and opportunities are then identified and screened using the Representative Concentration Pathway 8.5 (RCP8.5) and Net Zero Scenario (NZE) analysis to arrive at 18 that are most relevant to FENC. The risks and opportunities are assessed for impacts based on the time horizon, likelihood of occurrence and degree of impact for the prioritization of major climate risks and opportunities.

Climate-Related Risks and Opportunities Identification Process

Information Gathering on Climate Issues

- Gather information of international reports and create a list of climate issues.

Identifying Material Risks and Opportunities

- Develop an assessment methodology.
- The business units related to any specific issue should conduct internal interviews, collect data through questionnaires, and converge the results.

Completing the Screening of Material Issues

- A Screening process is conducted to determine material issues, based on the likelihood of occurrence and extent of impact.

Scenario for Risks and Opportunities

Scenario	RCP8.5 (Emission Scenario)	NZE (Net Zero Scenario)
Type	Physical risks	Transition risks and opportunities
Detail	The RCP8.5 scenario is presented in the IPCC's Fifth Assessment Report (AR5) under the assumption of absence in climate actions from all countries, which would result in the highest CO_2 concentration. The RCP 8.5 scenario could be regarded as the most stringent climate scenario. Adopting the RCP8.5 scenario would help FENC assess the degree of impacts under the most extreme climate challenges.	The NZE scenario is published by IEA. To limit the global temperature rise to 1.5°C, the NZE scenario represents a path to net zero emissions by 2050 for the world and is considered the most extreme reduction scenario. As the surge of carbon reduction policies sweeps through the world, adopting the NZE scenario would help FENC gain competitive advantages by taking preemptive strikes.

List of Climate-Related Risks and Opportunities

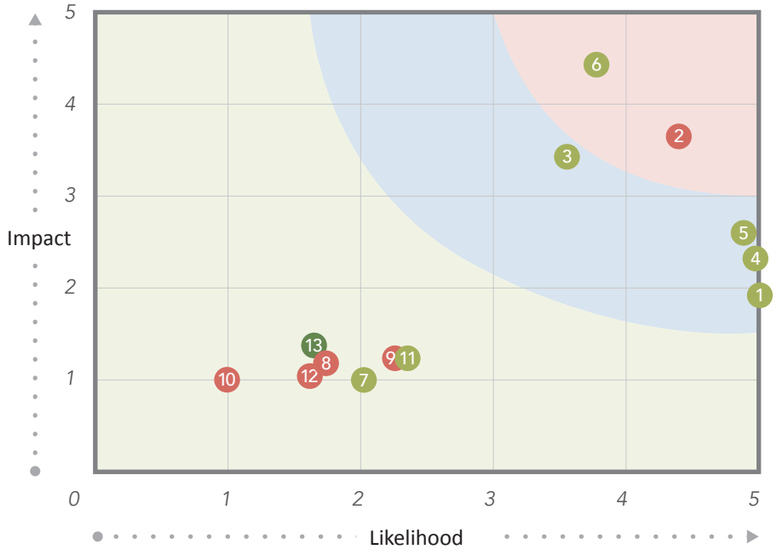
No.	Type	Risk and Opportunity Issues	Potential Financial Impact	Time Horizons
1	Transition Risk	Regulations on greenhouse gas reduction and renewable energy	To meet regulatory requirements, FENC has expanded the deployment of its renewable energy installations, resulting in an increase in operating costs.	Medium term
2	Transition Risk	Carbon pricing mechanism	The regions where the company's production sites are located have implemented carbon pricing policies and imposed carbon fees/taxes on carbon emissions. It is estimated that the rising operating costs from carbon fees or taxes may peak in 2050.	Long term
3	Transition Risk	Carbon border tax	To avoid carbon leakage, countries have formulated carbon border taxes for imported products. FENC's operating costs will rise due to the import duty imposed on its exports.	Medium term
4	Transition Risk	Transition to low-carbon technologies and fuels	In order to achieve low-carbon transition, FENC has replaced existing conventional equipment and machines of high energy consumption and high carbon emissions with high-efficiency and low-carbon ones, resulting in an increase in both capital expenditure and production cost.	Medium term
5	Transition Risk	Research and development in net zero technologies	In the face of market demand, FENC has continued to develop net-zero technologies and green and low-carbon products, resulting in an increase in its R&D cost.	Medium term
6	Transition Risk	Changes in customer behavior	Considering the impact of climate change, customers prefer to use lower-carbon products and demand FENC should reduce carbon emissions. Failure to meet customer requirements may result in customer attrition and revenue loss.	Medium term
7	Transition Risk	Loss of investment attractiveness	Due to the inability to maintain good ESG performance, the willingness of investors to invest (or finance) will be reduced, resulting in a decline in FENC's market value or an increase in funding costs.	Medium term
8	Transition Risk	Industry stigmatization	With the rising awareness of environmental protection, any negative publicity related to carbon emissions may cause government and people living in the surrounding area to demand FENC cut down or even stop production, resulting in reduced production capacity and revenue.	Long term
9	Physical Risk	Increased severity and frequency of extreme weather events such as cyclones and floods	Damage to equipment caused by extreme weather events may reduce production capacity or increase maintenance costs.	Long term
10	Physical Risk	Rising sea levels	Under the impact of climate change, if the company's production site is located in a high-risk area prone to sea level rise, it may cause the assets and equipment to be submerged, leading to asset damage.	Long term
11	Physical Risk	Increased severity and frequency of extreme weather events such as cyclones and floods (supply chain)	The locations of suppliers or the shipping routes are affected by climate change, causing raw materials to not arrive at the factory on schedule, resulting in a reduction in output.	medium term
12	Physical Risk	Rising mean temperatures	Outdoor operations need to be suspended due to high temperatures, leading to prolonged working time and an increase in labor costs.	Long term
13	Physical Risk	Changes in precipitation patterns and extreme variability in weather patterns	Extreme precipitation patterns, such as an increase in consecutive dry days, heighten the risk of water shortages. In order to enhance the resilience of water resources, FENC has invested in water-saving facilities and initiated water conservation measures, resulting in an increase in capital expenditure and operating costs.	Short term
14	Opportunity	Reduced water usage and consumption	When water shortages occur, FENC's water resources management measures with better resiliency, compared to its peers, help to avoid a decline in production output or delayed shipments, thereby increasing sales revenue.	Medium term
15	Opportunity	Use of lower-emission sources of energy	By using renewable energy or other low-carbon energy sources to meet customer requirements, FENC can increase product price bargaining power or order volume, thereby increasing sales revenue.	Medium term
16	Opportunity	Development or expansion of low emission goods and services	The company continues to reduce product carbon emissions, meeting customers' emission reduction requirements, increasing product price bargaining power or order volume, thereby increasing sales revenue.	Short term
17	Opportunity	Development of new products or services through R&D and innovation	Through the research and development of green products, FENC can meet customer requirements, thereby increasing sales revenue.	Short term
18	Opportunity	Access to new markets	As recycling policies are promoted and implemented in various countries, the overall environment is conducive to FENC's expansion of its market for recycled products, thereby increasing sales revenue.	Short term

Note: Short term refers to the period between 2022 and 2025; medium term 2026 and 2030; long term 2031 and 2050.

Identification Outcome of Material Climate Risks and Opportunities

Carbon pricing mechanism, carbon border tax and changes in customer behavior are identified in the assessment as the top three material risks; access to new markets, use of low-emission sources of energy, and development or expansion of low-emission goods and services are the top three material opportunities. FENC conducted quantitative financial analysis targeting the six issues and formulated management strategies with implementation measures to galvanize FENC's climate resilience.

FENC Climate-Related Risk Matrix



- Short-term Risks
- Medium-term Risks
- Long-term Risks
- Low Impact
- Medium Impact
- High Impact

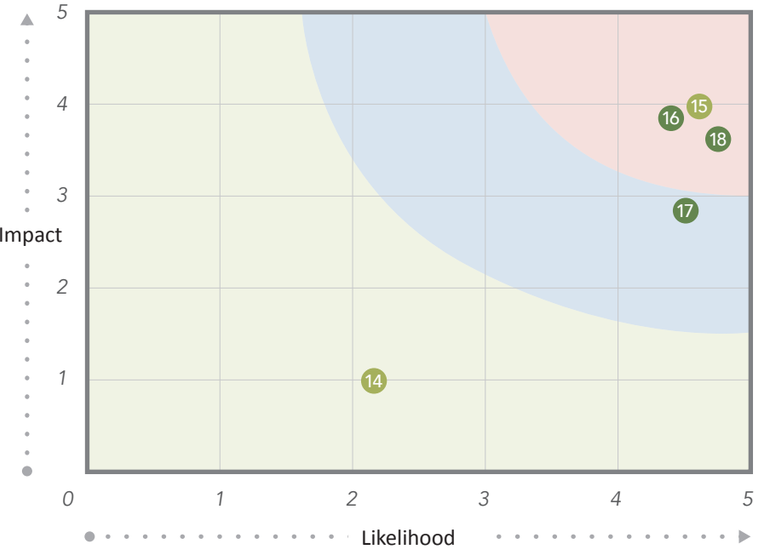
Transition Risks

1. Regulations on greenhouse gas reduction and renewable energy
2. Carbon pricing mechanism
3. Carbon border tax
4. Transition to low-carbon technologies and fuels
5. Research and development in net zero technologies
6. Changes in customer behavior
7. Loss of investment attractiveness
8. Industry stigmatization

Physical Risks

9. Increased severity and frequency of extreme weather events such as cyclones and floods
10. Rising sea levels
11. Increased severity and frequency of extreme weather events such as cyclones and floods (supply chain)
12. Rising mean temperatures
13. Changes in precipitation patterns and extreme variability in weather Patterns

FENC Climate-Related Opportunity Matrix



- Short-term Opportunities
- Medium-term Opportunities
- Long-term Opportunities
- Low Impact
- Medium Impact
- High Impact

Opportunities

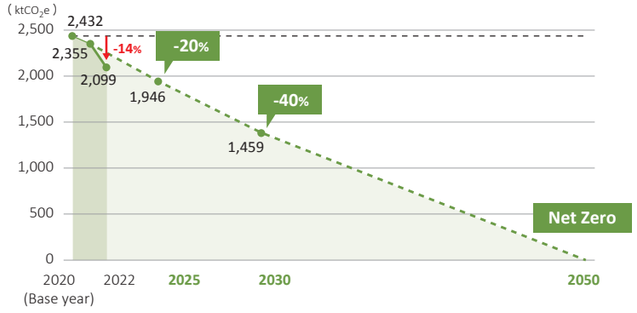
14. Reduced water usage and consumption
15. Use of lower-emission sources of energy
16. Development or expansion of low emission goods and services
17. Development of new products or services through R&D and innovation
18. Access to new markets

Material Climate-Related Risks and Opportunities: Strategies and Response Plans

	Strategies and Response Plans
Carbon pricing mechanism	FENC has launched the ISO 14064-1:2018 GHG inventory, monitored the GHG emissions of each production site, and formulated five low-carbon transition strategies to achieve the GHG reduction goals set by the Company. These strategies include improving energy efficiency, adopting low-emission fuel alternatives, developing renewable energy, utilizing CCUS, and fostering raw material transition. The Company is set to reduce 20% of GHG emissions by 2025, 40% by 2030, and reach net zero emissions by 2050. In addition, FENC continues to analyze and evaluate the trends on international carbon pricing to assess its strategy on internal carbon pricing.
Carbon border tax	The financial impact is positively correlated with the carbon emissions per unit of production. To mitigate the risk, FENC will implement strategies, such as expanding the use of alternative low-carbon materials, improving energy efficiency, adopting low-emission fuel alternatives, and deploying more renewable energy facilities to reduce the carbon footprint of its production processes.
Changes in customer behaviors	In response to customers' demand for low-carbon products in the value chain, we will aggressively reduce GHG emissions per unit of production, and GHG emissions in the production processes by improving energy efficiency, adopting low-carbon fuels, and using renewable energy.
Use of lower-emission sources of energy	FENC continues to deploy renewable energy facilities, including solar, biogas and wind power generation, and collaborates with other renewable energy suppliers. It is estimated that the installed capacity of its solar power facilities will reach 90MW by 2025, a five-fold increase from 2022, and the annual electric output can reach 100 GWh. In addition, starting in 2023, FENC will purchase a minimum of 100 GWh of renewable energy each year, endeavoring to meet the expectations of customers.
Development or expansion of low emission goods and services	FENC continuously promotes the research and development of technologies related to green products, including products which can replace petroleum-based raw materials (Replace), and can be recycled (Recycle), as well as reduce energy and resource consumption (Reduce). FENC has been expanding its green product production capacity to meet the needs of customers in the value chain.
Access to new markets	FENC keeps on researching and developing circular recycling technology and the applications of multiple recycling products, while paying attention to the trend of recycling-related laws and regulations in various countries. It has deployed all-encompassing circular technology on land, ocean and air, and expanded its production capacity of recycling and circular products with optimal capacity planning, aiming to become the World No. 1 in rPET production capacity.

Climate Risk Metrics and Targets

Target and Progress of GHG Reduction



Note: The statistics include category 1 (scope 1) and category 2 (scope 2) emissions of all production sites in this report.

Please refer to 3. Navigating a Green Future – Targets and Progress for additional climate targets and progress.

Five Major Low-Carbon Transition Strategies

1 Improve Energy Efficiency

FENC improves energy efficiency by optimizing the production process, facilities and energy management. Energy projects in the pipeline include a new cogeneration system, capitalizing on thermal and electrical power by recycling and reusing waste heat. Please refer to 3.2.1 Energy Management for details.

2 Adopt Low-Emission Fuel Alternatives

FENC's short-term carbon reduction plans call for replacing high-emission fuels such as coal or heavy oil with low-emission alternatives such as natural gas and biofuels. The mid- to long-term plans are to be fully transitioned, replacing natural gas completely with hydrogen fuels. Please refer to Special Report 2. Reaching Net Zero Through Low-Carbon Transition.

3 Develop Renewable Energy

FENC is investing heavily in renewable energy equipment and increasing the percentage of renewable energy yearly in its energy mix. Please refer to 3.1.3 Renewable Energy Use for details.

- Installed capacity for renewable energy: The 2025 capacity is projected to grow 500% to reach 90MW from the 2022 capacity of 15MW. The projected power generation with this capacity is 100 GWh.
- Purchased renewable energy: Starting in 2023, FENC will purchase a minimum of 100 GWh of renewable energy each year.

4 Utilize CCUS

FENC plans to capture and reuse carbon from the boiler exhaust to reduce carbon emissions.

5 Foster Raw Material Transition

FENC adopts low-carbon alternatives with focuses on recycling and biomass. The Company has been applying its core strengths towards the development of environmentally friendly and low-emission materials and expanding the applications of these innovations. Please refer to 2.2 Developing Green Products for details.

3.1.2 GHG Inventory

GHG Management Guidelines and Measures

System Establishment and Management

- Comply with the ISO 14064-1 and GHG Protocol standards in the development of direct and significant indirect GHG inventory.
- Disclose GHG emissions regularly and report to the authority.
- Set GHG reduction targets and strategies.

Incorporation of Innovative Technology and Equipment

- Construct solar power stations.
- Install biogas generator.
- Build hybrid power stations with a combined cooling, heating and power system.
- Build cogeneration systems.

Avid Support for Governmental Policies

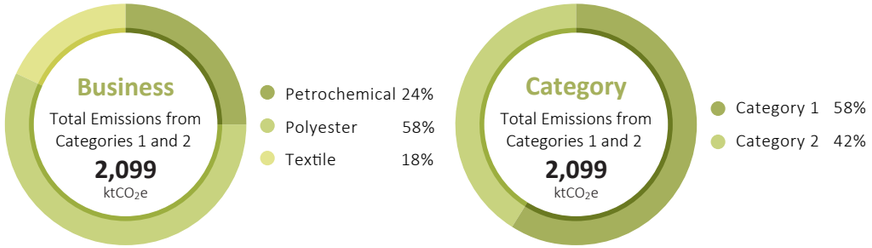
- Increase use of renewable energy.
- Comply with Climate Change Response Act and Renewable Energy Development Act in Taiwan.
- Comply with the carbon credit requirements set forth in Trial Procedures of Shanghai Municipality on Carbon Emission Administration.

System Establishment and Management

All FENC production sites conduct GHG inventory in accordance with the ISO 14064-1:2018 standards. The Company references the GHG Protocol published by World Business Council for Sustainable Development (WBCSD) as the basis for developing emission categories and divides categories 3 to 6 (scope 3 of GHG Protocol) into 15 reporting categories related to indirect emissions, such as purchased goods and services, fuel-and energy-related activities, upstream and downstream transportation and employee commuting. The next phase entails more frequent third-party verifications, up from once every three years to annual verifications to ensure the credibility of the inventory.

The results are analyzed to identify emission hot spots to be monitored regularly, and FENC adjusts its carbon reduction approaches accordingly to reach the reduction goals. Additionally, the Company is in the process of introducing internal carbon pricing as a management tool. Currently, the focus is on studying global trends as well as internal and external carbon costs in order to determine appropriate internal charges for carbon emissions. Aside from being an incentive for carbon reduction, the measure will support special projects that further the cause and R&D in new technologies that will lead FENC forward on its carbon reduction pathway.

GHG Emissions in 2022



Note:
1. Data collection on categories 1 and 2 (scopes 1 and 2) accounts for 100% of the scope of this report.
2. Category 2 emissions are accounted according to the market-based method.

Direct and Energy Indirect GHG Emissions (Market-Based)

Unit: $ktCO_2e$

		Petrochemical			Polyester			Textile			Total		
		2020	2021	**2022**	2020	2021	**2022**	2020	2021	**2022**	2020	2021	**2022**
Direct Emissions	Category 1	364	389	**352**	771	805	**742**	137	146	**124**	1,272	1,340	**1,218**
Energy Indirect Emissions	Category 2	195	152	**150**	655	537	**484**	310	326	**247**	1,160	1,015	**881**
Total		**559**	**541**	**502**	**1,426**	**1,342**	**1,226**	**447**	**472**	**371**	**2,432**	**2,355**	**2,099**

Direct and Energy Indirect GHG Emissions (Location-Based)

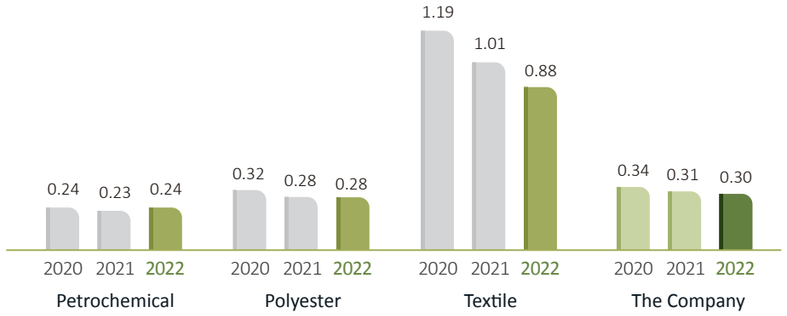
Unit: $ktCO_2e$

		Petrochemical			Polyester			Textile			Total		
		2020	2021	**2022**	2020	2021	**2022**	2020	2021	**2022**	2020	2021	**2022**
Direct Emissions	Category 1	364	389	**352**	771	805	**742**	137	146	**124**	1,272	1,340	**1,218**
Energy Indirect Emissions	Category 2	195	152	**150**	655	537	**500**	310	326	**247**	1,160	1,015	**897**
Total		**559**	**541**	**502**	**1,426**	**1,342**	**1,242**	**447**	**472**	**371**	**2,432**	**2,355**	**2,115**

Note:
1. The scope of data collection covers 21 production sites, which account for 100% of the production sites included in this report. The consolidation approach for emissions is operational control.
2. 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).
3. In 2020, 100% of the emission data passed the internal audit; 66% passed the third-party verification for the ISO 14064-3 standards or local regulations, including Hsinpu Chemical Fiber Plant, Kuanyin Chemical Fiber Plant, OPTC, OPSC and FEIS.
4. In 2021, 100% of the emission data passed the internal audit and third-party verification for the ISO 14064-3 standards.
5. In 2022, 100% of the emission data passed the internal audit; 71% passed the third-party verification for the ISO 14064-3 standards, including Hsinpu Chemical Fiber Plant, Kuanyin Chemical Fiber Plant, Hukou Mill, Kuanyin Dyeing and Finishing Plant, OPTC, FEFC, OTIZ, the polyester plant of FEPV and the knitting and dyeing plant of FEPV.
6. In 2022, the total direct and indirect emissions (categories 1 and 2) from four FENC production sites in Taiwan are 713 $ktCO_2e$.

Direct and Energy Indirect GHG Emissions per Unit of Production

Unit: tCO_2e / metric ton of production



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

Direct and energy indirect emissions (categories 1 and 2) in 2022 dropped by 11% compared with the previous year, which is a testimony to the performance of the FENC's GHG reduction projects. Through energy conservation measures and increase in renewable energy use, energy indirect emissions were cut by 134 $ktCO_2e$ in 2022. Direct emissions were also down by 120 $ktCO_2e$ due to equipment improvements and the switch to alternative fuels.

Other Indirect GHG Emissions in 2022 (Category 3 to 6)

Unit: $ktCO_2e$

	Petrochemical	Polyester	Textile	The Company
Purchased Goods and Services (Category 4)	2,484	4,382	692	**7,558**
Capital Goods (Category 4)	20	34	3	**57**
Fuel- and Energy-related Activities (Category 4)	89	259	70	**418**
Upstream Transportation and Distribution (Category 3)	66	40	6	**112**
Waste Generated in Operations (Category 4)	7	4	3	**14**
Business Travel (Category 3)	0.04	0.86	0.28	**1.18**
Employee Commuting (Category 3)	0.47	19	11	**30**
Upstream Leased Assets (Category 4)	2	0.51	0.48	**3**
Downstream Transportation and Distribution (Category 3)	74	294	30	**398**
Downstream Leased Assets (Category 5)	0.10	0.06	0	**0.16**
Franchises (Category 5)	0	0	0	**0**
Investments (Category 5)	0	0	0	**0**
Total	**2,743**	**5,033**	**816**	**8,592**

Note:
1. The scope of data collection covers 21 production sites, which account for 100% of the production sites included in this report. The consolidation approach for emissions is operational control.
2. Significant indirect GHG emissions are identified in accordance with ISO 14064-1:2018 and divided into 15 reporting categories based on the GHG Protocol.
3. 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.
4. FENC production sites do not engage in franchising or investment activities, thus without GHG emissions under the two categories.

FENC-wide GHG emissions per unit of production were further reduced and the Textile Business cut GHG emissions per unit of production by 12% from 2021. The use of electricity generated through renewable energy is the main contributing factor to the decrease.

Other Indirect GHG Emissions (Category 3 to 6)

Unit: $ktCO_2e$

	2021	**2022**
Purchased Goods and Services (Category 4)	7,754	**7,558**
Capital Goods (Category 4)	53	**57**
Fuel- and Energy-related Activities (Category 4)	431	**418**
Upstream Transportation and Distribution (Category 3)	239	**112**
Waste Generated in Operations (Category 4)	12	**14**
Business Travel (Category 3)	1.66	**1.18**
Employee Commuting (Category 3)	24	**30**
Upstream Leased Assets (Category 4)	50	**3**
Downstream Transportation and Distribution (Category 3)	429	**398**
Downstream Leased Assets (Category 5)	0.07	**0.16**
Franchises (Category 5)	0	**0**
Investments (Category 5)	0	**0**
Total	**8,994**	**8,592**

Note:
1. The scope of data collection covers 21 production sites, which account for 100% of the production sites included in this report. The consolidation approach for emissions is operational control.
2. Significant indirect GHG emissions are identified in accordance with ISO 14064-1:2018 and divided into 15 reporting categories based on the GHG Protocol.
3. 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.
4. FENC production sites do not engage in franchising or investment activities, thus without GHG emissions under the two categories.
5. In 2021, 100% of the emission data passed the internal audit and third-party verification for the ISO 14064-3 standards.
6. In 2022, 100% of the emission data passed the internal audit; 71% passed the third-party verification for the ISO 14064-3 standards, including Hsinpu Chemical Fiber Plant, Kuanyin Chemical Fiber Plant, Hukou Mill, Kuanyin Dyeing and Finishing Plant, OPTC, FEFC, OTIZ, the polyester plant of FEPV and the knitting and dyeing plant of FEPV.

Recognition for Excellence in GHG Reduction at Hsinpu Chemical Fiber Plant

To encourage carbon reduction among industries, the Industrial Development Bureau of Ministry of Economic Affairs (MOEA) gives public recognitions to entities for exemplary practices each year. On November 23, 2022, Hsinpu Chemical Fiber Plant was recognized by the Bureau for excellence in GHG reduction.

Hsinpu Chemical Fiber Plant has devoted considerable efforts in carbon reduction with projects ranging from improvements on equipment efficiency, adoption of fuel alternatives and installation of solar power equipment. The plant incorporated the ISO 50001 energy management system and completed 54 carbon reduction projects in 2021, which amounted to NT$28 million in investments and 6,728tCO_2e in annual GHG reduction. By 2025, the plant will complete the construction of solar power facilities with 5,000kW of installed capacity. With NT$170 million in total investments, the project will help the plant avoid 6,250tCO_2e in GHG emissions a year. The recognition is a vote of confidence from the government to Hsinpu Chemical Fiber Plant for its long-term dedication to reducing GHG emissions.

Incorporation of Innovative Technology and Equipment

OGM invested NT$180 million in the treatment of the sludge and waste labels the plant generated. At the end of 2022, OGM constructed the heat recovery boiler plant and began incinerating 450 metric tons of waste labels as well as 140 metric tons of sludge a month. The heat generated during incineration took the place of the natural gas boiler as an alternative energy source. In addition to reducing waste treatment fees, another benefit is that the recovered heat produces steam that can power the plant facilities. In the pipeline for 2023 is the installation of rooftop solar panels with 273kW in capacity, which brings the total installed capacity of solar power to 764kW, taking OGM closer to net zero.

OGM is the first waste recycling plant in Taiwan to install its own solar power facility. By 2025, the plant will reach 1,700kW in installed capacity for renewable energy. On November 16, 2022, OGM received the High Distinction Award for Subsidized Entities as well as the Resource Recycling Label from the Environmental Protection Administration of Executive Yuan!

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 its national emission trading scheme, and the emission allowance allocated in the system has been decreasing by the year. The COVID-19 pandemic prompted OPSC to switch to low-load operation in 2022, resulting in lower residual heat generated and higher demand for boiler steam produced from natural gas. OPSC exceeded the carbon emission cap and had to replenish the allowance with unused carbon balance. OPSC completed the steam turbine retrofitting project during the year and installed a rooftop solar station with 400kW in capacity. OPSC will continue to improve upon its equipment and production while expanding solar power facilities in anticipation of the decreasing carbon allowances the Chinese government will be issuing. FEIS implemented multiple energy conservation projects during this period. The plant reduced carbon emissions through constructing hybrid power stations with a combined cooling, heating and power system and purchasing renewable energy certificates. The plant plans on purchasing renewable energy certificates each year and adding solar power stations with 26,300kW in capacity, which will supply approximately 12% of the total electricity consumed by FEIS.

Carbon Quotas and Emissions of OPSC and FEIS

Unit: ktCO_2e

		2020	2021	**2022**
OPSC	Quota	161	109	**100**
	Actual Emissions	150	115	**118**
FEIS	Quota	328	207	**208**
	Actual Emissions	309	219	**184**

Note:
1. The quota in 2022 were estimated emissions; the actual quota is yet to be verified by the government.
2. The 2021 carbon allowance was updated to reflect the actual allocation by the authority. Actual emissions in 2021 were updated to reflect the data approved by the authority. The 2021 allowance and actual emissions both decreased due to government adjustments on the carbon emission factors for electricity and steam.

3.1.3 Renewable Energy Use

Installation of Renewable Energy Facilities

"Develop renewable energy" is one of the five major strategies propelling FENC forward along its march towards net zero. The Company has been intent on investing in and installing a broad mix of renewable energy facilities. Solar, biogas and wind power generators will be installed in Taiwan, mainland China, Vietnam, Japan and the U.S. FENC is supporting renewable energy use and GHG reduction with actions while minimizing environmental impacts from its production activities.

Since 2016, FENC has been installing solar power stations at its production sites in mainland China, which have generated a total of 69,275 MWh of solar power accumulatively. In 2022, a total of 14,199 MWh of solar power was generated at FENC sites in Taiwan, mainland China and Vietnam, of which 87% was consumed by FENC and a total of 6,876 tCO_2e GHG emissions were avoided. During the same period, Hsinpu Chemical Fiber Plant, Hukou Mill, FEFC, OPSC and FENV added solar power facilities with a total of 2,647 kW in capacity. Additional solar facilities will be added at all production sites, bringing the projected installed capacity FENC-wide to 90MW in 2025, a soaring 500% growth from 2022 that would generate 100 GWh of power annually.

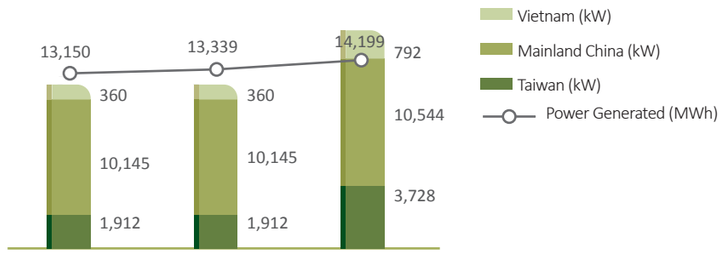
Avid Support for Renewable Energy Development Act

Regulations for the Management of Setting up Renewable Energy Power Generation Equipment of Power Users above a Certain Contract Capacity under the Renewable Energy Development Act mandate that energy-heavy industries in Taiwan must install renewable power generation equipment to supply 10% of their own contract capacity. As a show of support for the government, FENC has been gearing up on the promotion of renewable energy with planning and installing additional facilities. As of the end of 2022, FENC production sites in Taiwan have installed solar stations with 3,728kW in capacity and expansions on the way. It is anticipated that by 2025, the installed capacity for solar power will reach 19MW.

In addition to ongoing installation of solar power facilities, Plant 2 of OPTC will complete the installation of biogas generators in 2024. Utilizing the biogas generated from its own anaerobic treatment system, the plant will generate approximately 16 GWh in total annual capacity, which will satisfy 10% of its electricity consumption. This is a climate action that demonstrates its contribution to mitigating environmental impacts caused by global warming.

Five of the FENC production sites subject to the mandates on energy-heavy industries started to conduct an inventory of areas suitable for building renewable power stations. Considering power generation performance and shading requirements, it was determined that a total of 130,000 square meters would be ideal for rooftop solar panels. By the end of 2022, installation for 10% of the said area has been completed, and installation will continue into the next three years. Early implementation would give FENC the eligibility for discount offered to energy-heavy industries.

Renewable Energy Generation and Installed Capacity



	2020	2021	2022
Total Installed Capacity (kW)	**12,417**	**12,417**	**15,064**

Procurement of Renewable Energy

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 1,190 MWh of T-REC with additional purchase from National Penghu University of Science and Technology. In 2022, five FENC production sites in mainland China and Japan purchased 97.9 GWh of renewable energy certificates and avoided 57,390 tCO_2e of GHG emissions. FENC plans to purchase a minimum of 100 GWh of renewable energy certificates per year in the future to further reduce energy indirect GHG emissions.

FIGP's Renewable Energy Purchase

Electricity use accounts for over 80% of total emissions at FIGP, and therefore, its GHG reduction strategies focus on improving energy efficiency and incorporating renewable energy. Beginning in the second half of 2022, FIGP has been making monthly purchases of certificates of carbon offset from Tokyo Electric Power Company Holdings, Inc. The purchased certificates cover electricity usage for the entire plant and have avoided 11,750tCO_2e in GHG emissions. FIGP will continue its two-pronged approach of purchasing certificates of carbon offset and enough renewable energy to supply the plant-wide electricity usage in the future, making FIGP a net-zero plant.

3.2 Elevating Energy and Resource Efficiency

3.2.1 Energy Management

Energy Management Guidelines and Measures

System Establishment and Management
- Expand ISO 14001 and ISO 50001 management systems.
- Optimize the management system and incorporate energy-saving performance into the reward system.
- Conduct training and promotion.

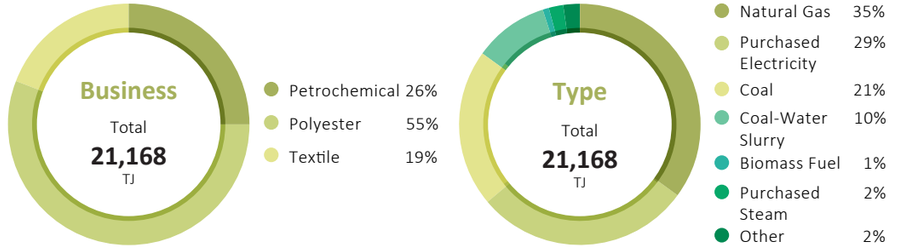
Incorporation of Innovative Technology and Equipment
- Apply AI in energy management.
- Develop alternative fuel sources.
- Implement energy and emission reduction projects.

Value Chain Collaboration
- Collaborate with brand customers on energy and carbon reduction projects.
- Brand customers track energy data and the performance of energy conservation measures regularly.

Avid Support for Governmental Policies
- Achieve 1% annual energy saving rate, which exceeds governmental requirement.

The overall energy consumption in 2022 dropped by 6% from the previous year while the energy consumption per unit of production increased by 4%. The increase is attributed to decrease in production, which led to reduced thermal energy generation during the production process, hence cutting down the thermal energy that could be recycled. FENC plans to continue implementing multiple energy conservation projects to maximize energy efficiency.

Energy Consumption in 2022



Renewable energy consumption at FENC in 2022 accounts for 3.4% of total energy consumption and 6.5% of total electricity consumption. Total renewable energy consumption in 2022 is 466 TJ.

Energy Consumption

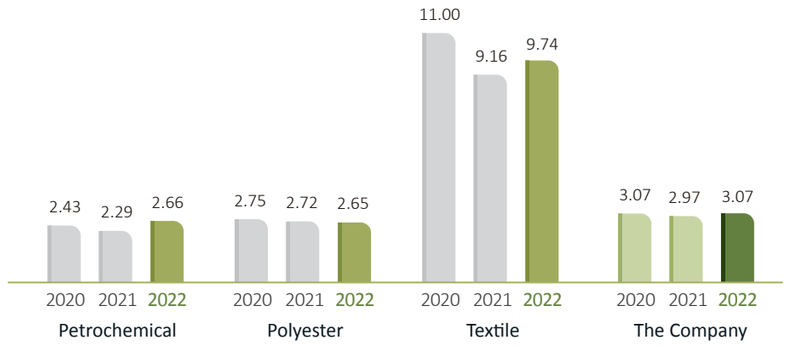
Unit: TJ

	Petrochemical			Polyester			Textile			Total		
	2020	2021	**2022**	2020	2021	**2022**	2020	2021	**2022**	2020	2021	**2022**
Purchased Electricity	1,274	1,137	**1,106**	3,231	3,712	**3,085**	1,642	1,785	**1,522**	6,147	6,634	**5,713**
Purchased Renewable Electricity	0	0	**0**	0	0	**134**	0	0	**218**	0	0	**352**
Self-generated Renewable Electricity	1	1	**4**	6	6	**7**	32	33	**34**	39	40	**45**
Total Electricity Consumption	**1,275**	**1,138**	**1,110**	**3,237**	**3,718**	**3,226**	**1,674**	**1,818**	**1,774**	**6,186**	**6,674**	**6,110**
Natural Gas	4,244	4,079	**4,225**	2,245	2,538	**2,455**	822	809	**738**	7,311	7,426	**7,418**
Heavy Oil	0	0	**0**	309	285	**247**	0	3	**8**	309	288	**255**
Diesel	3	4	**3**	13	9	**13**	0	2	**0**	16	15	**16**
Coal	0	0	**0**	3,722	3,900	**3,445**	1,168	1,216	**1,039**	4,890	5,116	**4,484**
Coal-Water Slurry	0	0	**0**	2,252	2,298	**1,952**	104	144	**111**	2,356	2,442	**2,063**
Biomass Fuel	214	201	**192**	0	0	**24**	0	0	**101**	214	201	**317**
Purchased Steam	2	18	**22**	319	297	**264**	375	246	**219**	696	561	**505**
Total Energy Consumption	**5,738**	**5,440**	**5,552**	**12,097**	**13,045**	**11,626**	**4,143**	**4,238**	**3,990**	**21,978**	**22,723**	**21,168**

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 consumption accounts for 100% of the production sites within the scope of this report.

Energy Consumption per Unit of Production

Unit: GJ / metric ton of production



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

System Establishment and Management

As FENC expands its business territory, it also expands the scope covered by the ISO 50001 energy management system. Following the Plan-Do-Check-Act (PDCA) cycle, the Company implements the following five major energy management policies:

- Implement energy management.
- Continue improving energy efficiency.
- Comply with applicable energy regulations.
- Procure energy conservation apparatus.
- Build consensus on energy and carbon reduction.

1. Internal Energy-Saving Incentives

To excel further in energy management, FENC is aware of the need to encourage collaboration 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. Since 2005, the Far Eastern Group has been presenting Far Eastern Energy Awards to encourage and recognize excellence in improving energy conservation technologies and practices. In 2022, FENC submitted 16 projects, accounting for 37% of the total entries. Implementation of energy conservation projects will be continued to control energy costs.

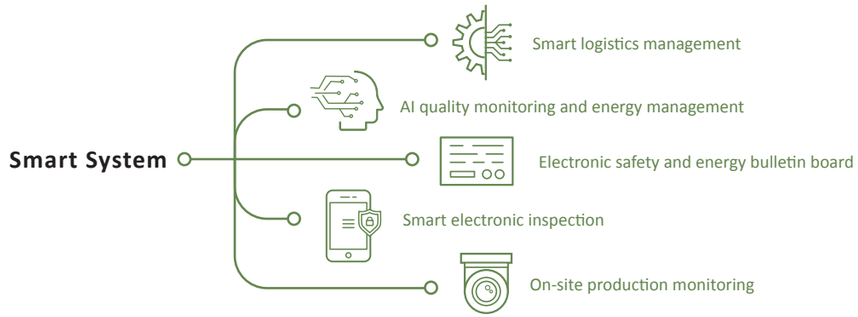
2. Incorporation of Energy-Saving performance Into Remuneration

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.

Incorporation of Innovative Technology and Equipment

As the 5G and AI technologies flourish and the world races towards net zero emissions, digital transformation and smart evolution are inevitable paths ahead of the manufacturing industry. FENC has committed tremendous energy into the development and application of such development. With digital transformation as the strategy, FENC production sites have gradually incorporated Industry 4.0 and used AIoT to elevate the efficiency of quality forecast and energy management to build smart factories.

Smart Manufacturing



1. FEIS utilizes ultrasound to measure air flow. The results are analyzed using AI to detect any gas leak and prevent energy waste. Currently, the plant is in the process of incorporating AI to automatically adjust boiler parameters and optimize boiler combustion control. The technological advancement ensures that the boilers are operating under optimal parameters, thus conserving over 1% in fuel consumption.

2. APG Polytech installed an automatic monitoring device at the boiler to ensure safety. Using a deep believe network, the system monitors the operational status of boilers throughout the heating system in real time, which is highly reliable and effective. Operation began in November 2022. Monthly electricity consumption was down by 39%, saving approximately NT$107.3 million in annual costs. The project also includes the replacement of an air preheater, which improves the combustion efficiency of the natural gas boiler and reduces natural gas consumption by 9%.

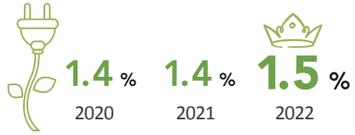
Value Chain Collaboration

The nine production sites under the Textile Business engage brand customers frequently to implement energy and carbon reduction projects and help them achieve GHG reduction targets based on the 1.5°C scenario. Data and progress are reported monthly on the customer platform for project tracking, management and review.

Avid Support for Governmental Policies

FENC production sites subject to the 1% energy reduction mandates for energy-heavy industries from the MOEA have been reporting energy conservation rates on a regular basis. The policy period is extended to 2024. In the past seven years, all production sites have delivered higher energy conservation rates than the regulatory requirements.

Energy-Saving Rate at Production Sites in Taiwan



Note: Since 2015, the annual electricity saving rate has exceeded 1%.

Measures and Performance in Energy and Emission Reduction

FENC continues to promote energy and emission reduction measures with 67 projects completed and 135,168 tCO_2e of carbon emissions avoided in 2022. The 19% jump from 2021 marks a record performance in the past five years. Major project focuses include replacement of dated equipment as well as improvement on energy efficiency and equipment.

2022 Energy and Carbon Reduction Projects

Production Improvement 4

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

Equipment Improvement 44

Optimization, upgrade and replacement of air conditioning, air compressors, boilers, power generators, motors, lighting and production equipment, such as replacing air compressors and retrofitting the energy-efficient blower vacuum for the spinning machine.

Energy Management 19

Revamping of inverter air compressor, improvement of cooling system, adjustment of operating hours and discontinuing operation.

Energy Conservation and Emission Reduction Project in 2022

		Energy Conservation (TJ)	GHG Emissions Avoided (tCO_2e)	
			Category 1	Category 2
Project	Production Improvement	28	0	3,979
	Equipment Improvement	1,013	17,517	93,188
	Energy Management	147	0	20,484
Business	Petrochemical	253	0	34,690
	Polyester	838	17,517	69,757
	Textile	97	0	13,203
Total		**1,188**	**17,517**	**117,651**

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. Natural gas is the source of category 1 (scope 1) emission and purchased electricity for category 2 (scope 2) emission.
4. Emission factors for electricity: The factor for production sites in Taiwan is 0.509 tCO_2e/MWh as published by the Bureau of Energy, MOEA. The factor for production sites in mainland China is 0.420 tCO_2e/MWh, based on the local electrical grid. The factor for production sites in the U.S. is 0.306 tCO_2e/MWh, based on the local electrical grid.
5. Emission factors for natural gas: The factor for production sites in Taiwan is 2.0088 tCO_2e/1000 m^3, measured by mass balance approach. The factor for production sites in the U.S. is 1.9225 tCO_2e/m^3 as published by the local government.
6. GHGs avoided include CO_2, CH_4 and N_2O.

Energy Conservation and Emission Reduction Projects in the Past Three Years

	2020	2021	**2022**
Actual Investment (NT$1,000)	61,959	268,365	**204,725**
Savings (NT$1,000)	40,958	85,467	**64,121**
Energy Conservation (TJ)	557	754	**1,188**
GHG Emissions Avoided (tCO_2e)	78,955	114,048	**135,168**

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
13 CLIMATE ACTION

Retrofitting the Air Compressor System

Air compressors are responsible for the majority of energy consumption at production sites, making it necessary for regular performance check and replacing with under-performing efficiency. To ensure high-efficiency operation, the air and pressure conditions must also be taken into account.

Plant 2 of OPTC puts safety first while prioritizing environmental protection and consistent production. The plant implemented a three-stage production adaptation and equipment replacement project by building the model for the cooling water system, adjusting water consumption and replacing the equipment. In February 2022, the plant retrofitted the water supply system for the air compressors. The project investment amounts to NT$20.33 million, reducing 836 GWh in electricity consumption, NT$20.89 million in electricity costs and 4,253 tCO_2e in carbon emissions, reaching a 23.3% reduction rate.

The energy requirement for air compressors at Hsinpu Chemical Fiber Plant constitutes 11% of the total electricity consumption. By utilizing the online flow meter and electricity meter, the plant is able to monitor the energy consumption per unit of production for the air compressor in real time. In 2022, one of the air compressors was replaced with a newer and more efficient model, reducing electricity consumption by 188 GWh and carbon emissions by 957 tCO_2e annually. Kuanyin Chemical Fiber Plant also replaced one of its air compressors with a more efficient model, reducing electricity consumption by 194 GWh and carbon emissions by 987 tCO_2e annually. FEIS replaced an air compressor with a new one, improving energy efficiency by 12.7%. OTIZ also replaced the old with the new in 2022, reaching 12% in energy efficiency while decreasing electricity consumption by 23 GWh and carbon emissions by 133 tCO_2e annually.

Energy and Emission Reduction Project Highlights

Production Site	Project and Performance
FEIS	Control valve relocation: The control valve for the factional column is relocated. The relocation reduced approximately NT$4.3 million in costs and 813 tCO_2e in carbon emissions annually.
OTIZ	Infrared heating for the extruder screw: The switch to one-way infrared heating increased the thermal efficiently. The project reduced electricity consumption by 128 MWh, reaching 36.4% in energy conservation rate. It also lowers electricity costs by approximately NT$3.5 million and carbon emissions by 744 tCO_2e annually.
OTIZ	Nitrogen supply integration for the north and south plants: Nitrogen pipelines were rerouted to supply nitrogen from the north plant to the south plant. The rerouting saves approximately NT$2.67 million in electricity costs and 500 tCO_2e in carbon emissions annually.
FEDZ	Replacement with new high-efficiency water pump: The new high-efficiency water pump reduced carbon emissions by 300 tCO_2e and water costs by approximately NT$1.33 million annually.
The knitting and dyeing plant of FEPV	Reusing cooling water from the high-temperature dyeing machine: Reusing cooling water from the high-temperature dyeing machine reduces unnecessary energy waste. The energy conserved is the equivalent of 5,414 tCO_2e in carbon emissions.
Hsinpu Chemical Fiber Plant	Energy conservation for the new injection molding machine: A new motor and insulation are added to the drying system to reduce heat loss. The modification saves approximately NT$1.8 million in electricity costs, reduces 650 MWh in electricity consumption and avoids carbon emissions by approximately 329 tCO_2e annually.
Hsinpu Chemical Fiber Plant	Optimization of the cooling system control at the cogeneration plant: The optimization of the cooling system reduces electricity consumption by 170 MWh, electricity costs by approximately NT$4.8 million and carbon emissions by approximately 883 tCO_2e annually.

3.2.2 Raw and Packaging Material Management

FENC devotes ongoing efforts to 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 and Packaging Material Management Guidelines and Measures

System Establishment and Management

- Conduct trainings on raw material management.
- Develop safety management system for hazardous materials.
- Establish recycling targets for packaging materials and regularly track completion rate.
- Establish a proposal Improvement system for the use of raw materials.

Incorporation of Innovative Technology and Equipment

- Incorporate a smart scheduling system to reduce wear and tear with optimized scheduling.
- Establish AI quality forecast mode to reduce defect rate.
- Establish real-time production management data and optimize warehouse product management system.
- Adopt an automated warehouse system for raw material storage.

Value Chain Collaboration

- Implement supplier evaluation to improve the quality of raw materials.
- Improve packaging material selection and package methods.
- Conduct dialogues with customers to reach consensus on simplifying product packaging.
- Share success stories on the recycling of packaging materials with customers and suppliers.

Management Procedure for Raw and Packaging Materials

Quality Control for Raw Materials

1. Establish annual production plans and goals.
2. Reduce waste by conducting regular reviews on consumption rates of primary and secondary raw materials as well as new products and production technology, improving production efficiency as well as recycling and reusing raw materials.
3. Hold a minimum of one management review meeting annually.
4. Evaluate suppliers to ensure material quality and maintain yield rate by reducing substandard products.
5. Reduce packaging for raw materials.

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 Engagement

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. Engage 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 production sites provide estimates of the raw material consumption per unit of production in the annual budget and conduct bi-weekly meetings to review the consumption, adjust production parameters and optimize operation. The production sites also reduce raw material consumption per unit of production through production improvements from the annual capital investment plan. Management approaches are as follows:

1. Routine maintenance and forecast: Regular maintenance and equipment monitoring help ensure proper operation and prevent stop work caused by malfunctioning, which may lead to waste of raw materials.
2. Production management: Production efficiency may be improved through production planning, scheduling and inventory management. Loss resulted from fluctuating raw material costs may also be reduced.

FENC engages customers consistently on recycling packaging materials such as pallets, paper tubes and peg boards to establish a robust recycling management system. In 2022, the average recycling rate for packaging materials from the production sites within the scope of this report reached 80%. The average recycling rate for in-house recycling is 62% while that for recycling through external programs is 99%.

There were no leakages of raw materials, oils or fuels from FENC sites in 2022. One chemical leakage occurred at Kuanyin Chemical Fiber Plant, where 9.73 metric tons of PTA powder leaked out due to tank truck container rupture during an unloading operation that involved the air compressor. PTA is not a hazardous chemical, and the leakage caused no harmful effects. To be more prudent, the plant has modified the standard operating procedure to require that the driver and the transportation personnel go through and sign off on the pre-operation checklist together to avoid future occurrences.

Monitoring Raw Material Use with Visualization Software

FEFC conducts regular reviews on the use of raw materials and strives to improve the production process and technology. Raw material efficiency is improved by recycling and reusing the unspun yarns and packaging materials as well as thoroughly cleaning the spinneret. The plant also incorporates Industry 4.0, using real-time information and the warehouse management system to improve production management. In 2022, FEFC utilized the visualization software, TIBCO, to manage yarn recycling and classification. The smart data analysis tool provides clear data visualization on the usage of unspun yarns and ensures accurate classification. The tool also rapidly cross-checks year-to-year and month-to-month changes. Monthly KPI for yarn recycling is examined and reviewed to improve operational efficiency and reduce raw material waste.

Recycling Measures for Raw and Packaging Materials

Raw Materials	FENV adds long-acting auxiliary into the printing paste to prolong its usage. The mixture can be recycled and reused through filtering on the following day and being added to new pastes. The plant reached a 38% recycling rate in 2022 and the products have been scientifically verified as meeting customer requirements.
Paper Boxes	Hsinpu Chemical Fiber Plant used to place used cardboard boxes from customers in outdoor storage, which damaged some boxes beyond reusable conditions and resulted in a 46% average recycling rate. With efforts in customer engagement in 2022, the plant convinced the customers to store the boxes indoors and arranged for trailer trucks with gull-wing doors to collect them, which increased their reusability and the recycling rate to 86%.
Paper Tubes	Recycled paper tubes are susceptible to seasonal changes in temperatures and humidity. The varied lengths of the tubes tend to cause production issues. FEFC requests that the suppliers adjust the tubes based on local climate during production. The tubes tend to shorten due to high temperatures at the current storage area. FEFC is planning to rearrange the storage for paper tubes to maintain their quality and increase the reusable rate.
Packaging Materials	APG Polytech focuses on the production of PET resins. In the beginning of 2022, the plant had plans for transporting all customer shipments with leased motor trolleys, which would not require any packaging materials, and each trolley could save 107 bulk bags. With ongoing customer engagement, APG Polytech was able to transport 84% of its products through motor trolleys and 14% through packaging-free bulk trucking in 2022. The plant will continue its customer engagement efforts to minimize the use and purchase of packaging materials. When it comes to production and distribution, OPSC's customer engagement focuses on reducing bulk packaging materials by shipping through tank trucks. In 2022, the plant shipped 90% of its products through tank trucks and reduced bulk packaging by 50% from the previous year.
Pallets	Hsinpu Chemical Fiber Plant recycles the wooden pallets and reuses them after inspection and repair. The inspection and repair are performed by specialists, and the pallets are returned to production areas to be reused. FEIS replaced the wooden pallets with plastic ones, which reduced pallet breakage. In 2022, no new pallet purchases were made.

Value Chain Collaboration

OGM values the safety of raw material use and promotes bulk bag recycling, which has also been a long-term focus of its customer engagement. The plant has a reliable recycling mechanism in place, and all secondary materials are currently stored in recycled bags. To reduce the use of packaging materials, the plant increased tank truck shipping in 2019. When the PET resin plant began operation in 2022, 70% of the finished products were stored in the tanks and shipped directly to customers, which drastically cut the use of bulk bags. OGM also monitors the quality of the bales from suppliers and enhances inspection during factory feed. Results are shared during supplier engagement to seek improvements and to reduce impurities in raw materials and production loss. Semi-finished products, which used to be treated as waste or sold as secondary materials, are recycled and reused to reduce raw material loss.

OPTC switched to recyclable square tubes and ropes which can be reused by customers to fasten goods in its cargo containers. The practice is so effective that customers have inquired about the specific approach. OPTC has successfully created a reproducible recycling practice favored by customers.

3.2.3 Water Resources Management

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. FENC has a water resources management plan in place. It includes water recycling and reuse and covers 100% of its production sites. The plan takes governmental policies, corporate development, industry evolvement as well as the needs of local residents into consideration to ensure that water resources are managed and distributed reasonably and efficiently. The Company strives to reduce consumption and maximize the efficiency of water storage and use. At FENC, the approach and quantity of water withdrawal do not pose any significant negative impacts on the local habitat and residents near water sources.

Water Resources Management Guidelines and Measures

System Establishment and Management
- Establish water resources reduction targets.
- Manage risks involving water sources.
- Classify water management by type.
- Monitor water quality and prevent spill.
- Track water consumption and water conservation performance regularly.
- Expand the ISO 46001 water efficiency management systems.

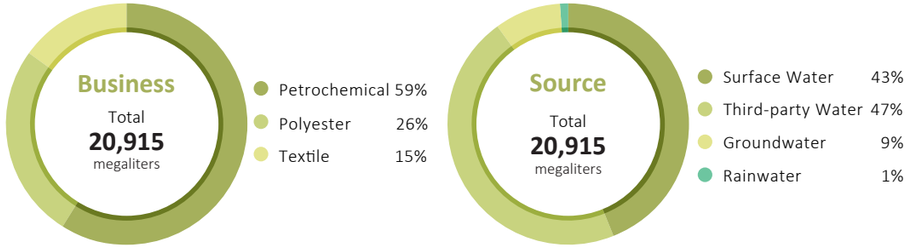
Incorporation of Innovative Technology and Equipment
- Apply AI in water resources management.
- Incorporate energy saving equipment such as low liquor ratio dyeing machine.

Avid Support for Governmental Policies
- Commit to including domestic reclaimed water as source of water withdrawal.
- Switch to smart meter to provide real-time data on water resources.

Water Recycling and Reuse
- Treat, recycle and reuse effluent.
- Optimize the operation of reclaimed water recycling system.
- Increase rainwater recycling.

Water withdrawal dropped by 10% in 2022 compared with the previous year and total water consumption is down by 12%. Water withdrawal per unit of production throughout FENC decreased by 0.7% due to the decrease in production and modification in equipment operation. The Textile Business, however, increased recycled water quantity by installing effluent recycling equipment, reducing water withdrawal by 23% and water withdrawal per unit of production by 14% from the previous year. The Company's water conservation projects have delivered results and implementation will continue to be refined to optimize water efficiency.

Water Withdrawal in 2022



Water Withdrawal and Water Consumption

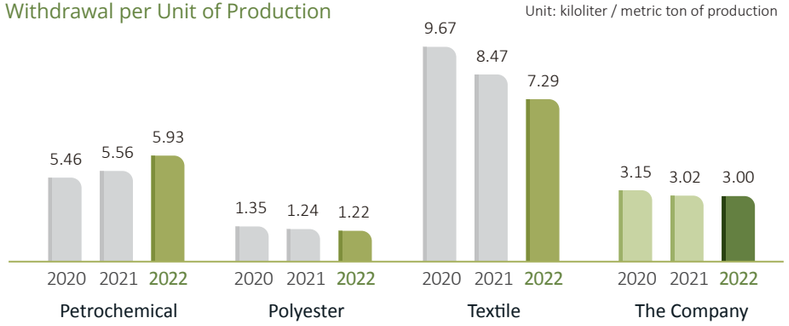
Unit: megaliter

	Petrochemical			Polyester			Textile			Total		
	2020	2021	**2022**	2020	2021	**2022**	2020	2021	**2022**	2020	2021	**2022**
Surface Water	6,812	6,386	**5,932**	1,954	2,047	**1,743**	2,583	1,995	**1,390**	11,349	10,428	**9,065**
Third-party Water	6,077	6,745	**6,417**	1,916	1,976	**1,774**	1,172	1,995	**1,702**	9,165	10,715	**9,893**
Groundwater	2	54	**0**	1,931	1,794	**1,723**	68	89	**81**	2,001	1,938	**1,804**
Rainwater	13	12	**12**	144	144	**122**	28	49	**19**	185	205	**153**
Total Water Withdrawal	**12,904**	**13,197**	**12,361**	**5,945**	**5,961**	**5,362**	**3,851**	**4,128**	**3,192**	**22,700**	**23,286**	**20,915**
Total Water Consumption	**6,859**	**6,986**	**6,109**	**3,069**	**2,921**	**2,656**	**785**	**801**	**667**	**10,713**	**10,708**	**9,432**

Note:
1. Surface water includes water from rivers, lakes and streams. Third-party water refers to tap water as well as wastewater from external organizations. 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. No quarry water, seawater, or produced water that enters an organization's boundary as a result of extraction (e.g., crude oil), processing (e.g., sugar cane crushing), or use of any raw material, and has to consequently be managed by the organization is used at any of FENC production sites.
5. In 2022, OPTC Plant 2 used the water recycled by OPTC Plant 1 (169 megaliters), which is categorized under wastewater from external organization within the third-party water.
6. Data collection on water resources management accounts for 100% of the production sites within the scope of this report.

Water Withdrawal per Unit of Production

Unit: kiloliter / metric ton of production

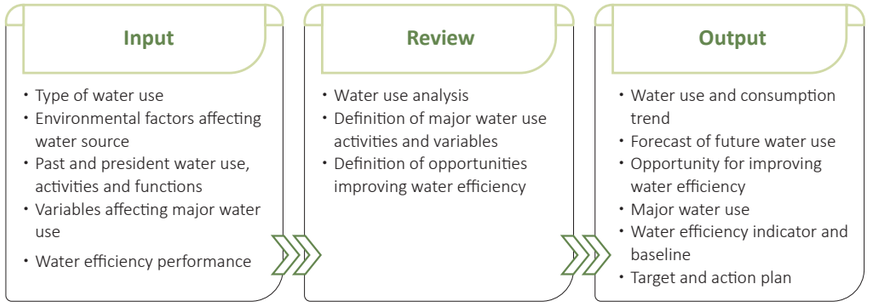


Note: The Textile Business does not include FEAZ, FEAV and FENV.

System Establishment and Management

Plant 2 of OPTC is fulfilling its commitment to improve water efficiency through systematic management. The plant improved its workflow by following the ISO 46001 standards for water efficiency management system and leveraging the PDCA method. It established corresponding strategies and actions targeting water risks and opportunities as well as goals, implementation, operational plans and control for water efficiency. In March 2022, the plant became one of the first ten entities in Taiwan to receive the ISO 46001 certificate. In the future, more FENC production sites will be incorporating ISO 46001, and certification will be expanded.

Water Use Planning Procedure



1. Emergency Water Supply Backup Plan

FENC activates water response measures based on water alerts issued by local authorities, for instance, the Water Resources Agency in Taiwan. All production sites have emergency water supply backup plans in place to keep production activities uninterrupted even when water supply is scarce. In 2022, there were no occurrences of stop work caused by water shortages. FENC's emergency water response measures are as follows:

- Regulate discharge from water towers and air conditioning units to reduce discharge and recharge.
- Recycle effluent and activate the reverse osmosis (RO) membrane system as a backup water supply.
- Activate water supply evaluation for alternative supply (well water or groundwater) within the production site when the water level in the retention pond falls to the lowest point.

Incorporation of Innovation Technology and Equipment

Hsinpu Chemical Fiber Plant is utilizing LoRa, a low-power wide-area wireless communication technology, to transmit electricity and water flow data from the deep-water wells, which are scattered in various outdoor locations, to the database. Different from the manual meter reading practice, LoRa allows remote monitoring and control over the equipment and operation, which helps the plant reduce energy consumption and maintenance costs.

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.

Water Conservation Project in 2022

	Actual Investment (NT 1,000)	Water Saved (kiloliter / year)	Percentage of Water Saving in Water Withdrawal
Petrochemical	28,159	281,388	2%
Polyester	11,554	275,016	5%
Textile	82,996	718,248	23%
The Company	**122,709**	**1,274,652**	**6%**

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

The knitting and dyeing plant of FEPV installed a water recycling system in 2022. The system transforms recycled effluent, which is first treated to reach level A discharge standards, into purified water through the RO system. The purified water is then looped back towards the dyeing and finishing process, which reduces water consumption by 596,848 kiloliters annually.

Kuanyin Dyeing and Finishing Plant replaced five low liquor ratio dyeing machines in 2022. Conventional dyeing machines rely on water circulation to operate. The new smart high-temperature dyeing machine with speed control is powered by conveyer belts, which reduces water and energy consumption. The replacement saves NT$1.57 million in water expenses and conserves 45,828 kiloliters of water consumption annually.

Water Recycling and Reuse

Recycled water quantity in 2022 is consistent with that from previous year at a FENC-wide water recycling rate at 98%.

Water Recycling Rate

	2020	2021	**2022**
Petrochemical	98%	98%	**98%**
Polyester	99%	99%	**99%**
Textile	91%	91%	**93%**
The Company	**98%**	**98%**	**98%**

Note:
1. Water recycling rate = total water recycled and reused ÷ (total water withdrawal + total water recycled and reused) × 100%
2. Data collection on water recycling and reuse accounts for 100% of the scope of this report.

Water Recycled and Reused

Unit: megaliter

		Petrochemical			Polyester			Textile			Total		
		2020	2021	**2022**	2020	2021	**2022**	2020	2021	**2022**	2020	2021	**2022**
Circulating Water	Cooling Water	728,309	704,250	**700,497**	476,094	502,117	**491,854**	34,858	33,106	**39,274**	1,239,261	1,239,473	**1,231,625**
	Other	15,577	16,067	**14,668**	893	836	**859**	0	0	**0**	16,470	16,903	**15,527**
Recycled Water	Recycled Water Excluding Reclaimed Water	359	346	**284**	896	741	**660**	997	1,054	**448**	2,252	2,141	**1,392**
	Reclaimed Water	2,083	1,782	**1,140**	154	178	**210**	928	1,405	**1,548**	3,165	3,365	**2,898**
Other		292	266	**262**	0	0	**0**	0	0	**0**	292	266	**262**
Total Water Recycled and Reused		**746,620**	**722,711**	**716,851**	**478,037**	**503,872**	**491,367**	**36,783**	**35,565**	**41,270**	**1,261,440**	**1,262,148**	**1,251,704**

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.

1. Rainwater Recycling

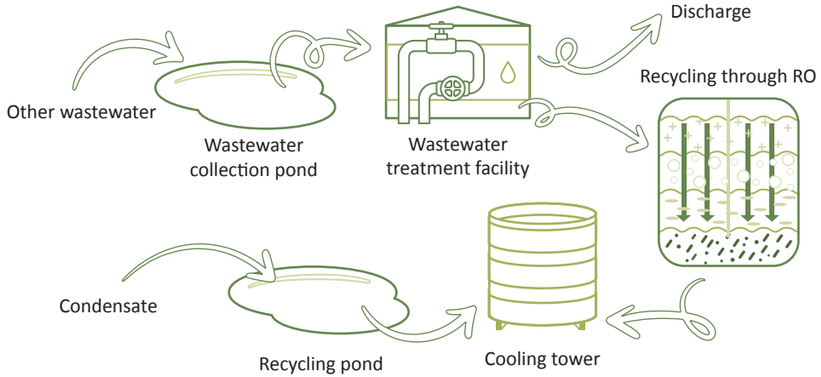
- Plant 1 of OPTC recycles water through the stormwater pond within its when the testing results meet all water quality standards. Water sources for the pond include water overflown from water features and rainwater within the plant, recycled water from rinsing operation during the later production stages and replacement water from the temporary pond. In 2022, water recycled through this stormwater pond reached approximately 199,000 kiloliters.
- OPSC added a rainwater recycling facility which pumps the water collected in the rainwater pond to the in-house wastewater treatment facility for recycling and reuse. The plant recycled approximately 12,900 kiloliters of rainwater in 2022.
- FEAV takes advantage of the six-month monsoon season in Vietnam. With approximately 15 rainy days a month and 23 kiloliters recycled daily, the plant recycled a total of 2,070kiloliters of water in 2022. The plant also installed a rainwater collection pond with 100kiloliters in capacity in September. It is projected that 5,000 to 9,000 kiloliters of rainwater will be recycled in 2023, and purposes for the recycled water include toilet flushing, landscape irrigation and cleaning canteen floors.

2. Recycling and Reuse

- FEIS recycles the condensate from air compressors, air conditioning and steam. Each year, the plant recycles 50,000 kiloliters of the condensate and saves approximately NT$670,000 in water charges.

3. Reclaimed Water Reuse

- OPSC installed a reclaimed water recycling system. The effluent is treated at the in-house treatment facility and then reused as part of the water supply. The system recycled approximately 750,000 kiloliters of water in 2022.
- Kuanyin Chemical Fiber Plant used to collect wastewater through a stage one underground collection pond and discharge it directly to the wastewater treatment plant without recycling or reuse. In 2022, the plant retrofitted the wastewater collection pond, separating the storage tank into a wastewater pond and a recycling pond, where the condensate is recycled and looped back to the cooling tower. The plant recycles approximately 1,095 kiloliters of water annually. Its effluent is treated at the in-house treatment facility and then discharged to Shulin River. When the water quality meets testing standards, the effluent is recycled through the RO system and reused for sanitary purposes and for recharging the cooling tower.



Avid Support for Governmental Policies

To support governmental policies and reduce corporate water consumption, all FENC production sites implement the water resources management system, utilizing water conservation technologies and reusing water resources to help the government achieve water conservation goals. OPTC signed a reclaimed water contract with Taoyuan City Government in support of circular economy. Phase one is scheduled for completion in 2024 and OPTC will be consuming approximately 15,000 kiloliters of reclaimed water daily.

Effluents Management

FENC has adopted a three-pronged approach for effluent management methods and implementation plan:

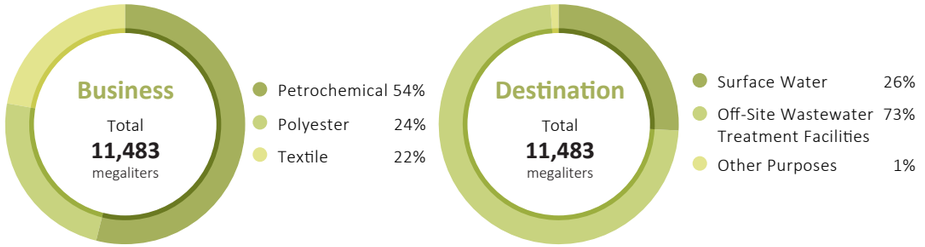
1. Effluent source management: Modify and optimize the production process to reduce oil and surfactant discharge.
2. Treatment efficiency management: Gradually replace outdated equipment, regularly replace filter membranes, and establish real-time management through an intelligent central control system to adjust the operating parameters of wastewater treatment equipment in synchronization with process changes.
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.

Beginning on February 1, 2023, Taiwanese government started issuing water conservation charges for users consuming over 9,000 kiloliters of water during dry seasons. Considering that seven of its production sites in Taiwan will be subject to this policy, FENC will continue to implement water conservation measures, reuse reclaimed water and increase water recycling rates to obtain favorable conditions for reduced charges or deduction.

Total effluent was down by 8% in 2022 compared with the previous year while effluent per unit of production increased by 3%. The main contributing factor is lower production. FENC plans to continue adding effluent recycling and reuse systems to increase water efficiency per unit of production.

Water Discharge in 2022



Water Discharge

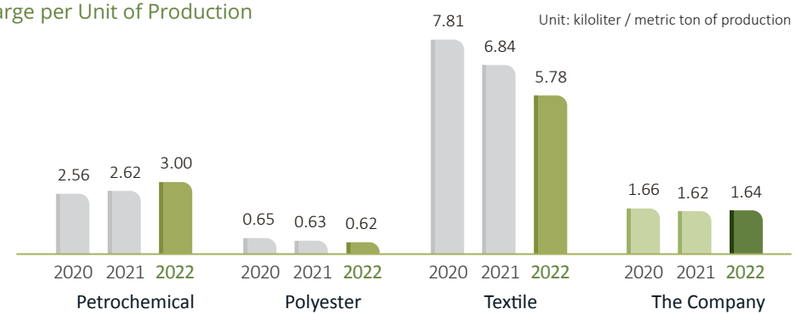
Unit: metric ton

		Petrochemical			Polyester			Textile			Total		
		2020	2021	**2022**	2020	2021	**2022**	2020	2021	**2022**	2020	2021	**2022**
TDS	Freshwater (TDS≤1,000 mg/L)	0	0	**0**	944	966	**889**	727	847	**827**	1,671	1,813	**1,716**
TDS	Other Water (TDS>1,000 mg/L)	6,045	6,211	**6,252**	1,932	2,074	**1,817**	2,339	2,480	**1,698**	10,316	10,765	**9,767**
Destination	Surface Water	1,555	1,253	**1,228**	1,857	2,000	**1,703**	27	34	**32**	3,439	3,287	**2,963**
Destination	Off-Site Wastewater Treatment Facilities	4,490	4,784	**4,855**	1,019	1,040	**1,003**	3,039	3,293	**2,493**	8,548	9,117	**8,351**
Destination	Other Purpose	0	174	**169**	0	0	**0**	0	0	**0**	0	174	**169**
Total Water Discharge		**6,045**	**6,211**	**6,252**	**2,876**	**3,040**	**2,706**	**3,066**	**3,327**	**2,525**	**11,987**	**12,578**	**11,483**

Note:
1. FENC does not discharge effluent directly to the seawater or groundwater / well water. Please refer to the table, Effluent Treatment Methods and Final Discharge Destination.
2. "Other Purpose" refers to: In 2022, Plant 1 of OPTC recycled a portion of the effluent. After being treated at the in-house wastewater treatment facility and meeting water quality standards, the water is supplied to Plant 2 of OPTC.

Water Discharge per Unit of Production

Unit: kiloliter / metric ton of production



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

Effluents Treatment and Final Discharge Destination

Business	Production Sites	Effluents Treatment and Final Discharge Destination
Petrochemical	OPTC	Wastewater at Plant 1 of OPTC goes through biotreatment, including anaerobic and super deep aeration treatments and discharged into Shulin River once it meets the effluent standards. At Plant 2 of OPTC, wastewater goes through biotreatment, including anaerobic and high-efficiency aeration treatments. Once reaching the sewage connection standards, the wastewater is discharged into the sewage system operational center in Kuanyin Industrial Park and finally discharged 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.
	WHEF	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.
	Polytech 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.
	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 634 megaliters in 2020, 739 megaliters in 2021 and 867 megaliters in 2022.
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.
7. The discharge water treatment method and final discharge location have not changed in the past three years.

Effluents Management Guidelines and Measures

System Establishment and Management
- Establish wastewater management system.
- Conduct regular wastewater quality inspection and report to authority.
- Promote water pollution prevention and control.
- Provide regular training for staff and obtain licenses and certification.

Incorporation of Innovative Technology and Equipment
- Conduct regular facility maintenance.
- Introduce anaerobic wastewater treatment facility.

Value Chain Collaboration
- Engage suppliers on product improvements to optimize water efficiency.

System Establishment and Management

OPSC installed online water quality analyzers at the effluent outlets. The devices, which are connected to the network of local environmental protection authority, monitor the water quality in real time. With daily sampling and analysis at multiple points and regular time, anomalies could be addressed immediately. When the water quality fails to meet the standards, connection to discharge pipelines is cut off and the water is returned to the treatment facility. The occurrence would be reviewed to identify the cause and improvement.

In addition, storm sewer inlets are controlled based on weather conditions, open on rainy days and closed on sunny days. Water samples are collected and analyzed when the water level in the retention pond is high. The water is discharged when water quality standards are met. Otherwise, the water is to be treated at the wastewater treatment plant.

The operational department at FEFC inspects wastewater management daily, taking three weekly samples at the wastewater treatment plant, conducting semi-annual water quality testing through external agencies and holding regular testing training to prevent any negative effects to the receiving water body of effluent discharged from the plant.

Incorporation of Innovation Technology and Equipment

FENC continues to incorporate innovative effluent treatment equipment and reduce effluent discharge. Kuanyin Chemical Fiber Plant monitors conductivity at the cooling tower with a conductivity controller, which remotely controls the solenoid valve at the tower. The device provides a time- and effort-saving alternative to manually operating the valve on site and reduces excess discharge and water waste.

The polyester plant of FEPV installed an online effluent chemical oxygen demand (COD) monitor using optical and closed reflux methods. When the readings exceed the permitted level, the effluent will be automatically pumped to a temporary pond. The effluent is to be discharged only after the anomaly is addressed, the system is functioning normally, and the governmental standards are met.

Value Chain Collaboration

OPSC engaged with suppliers of water treatment chemicals in 2022 and discussed approaches to prolong the duration of RO membranes to increase reclaimed water volume.

Recycling Steam Condensate with New Aerodynamic Condensate Pump

OPSC replaced the electric pump with a new aerodynamic concentrate pump in 2022. The machine pumps the steam condensate back to the condensate system for reuse. While the replacement reduces both wastewater and water consumption, the thermal energy is captured and utilized during the process to reduce electricity consumption. The NT$1.16 million investment reduces annual water consumption by 32,000 kiloliters and electricity consumption by 24,000 kWh, which equate to NT$850,000 in annual savings.

New MBR for the Wastewater Treatment System

FEIS revamped its wastewater treatment system in 2022 in hopes of improving the post-treatment COD. A typical approach would be to enlarge the aeration tank and prolong the aeration period. However, an assessment indicates that installation of a membrane bioreactor (MBR) would improve treatment efficiency and performance. Without enlarging the aeration tank, FEIS reduced COD and suspended solids, increasing recycled wastewater by 75,000 kiloliters annually.

Water Risk Management

FENC assessed the water risk levels of areas at which its production sites are located using the Aqueduct Water Risk Atlas developed by the World Resources Institute (WRI). The 2022 results are identical to those from 2021. Seven of the FENC production sites are located within water stress zones. FENC aims to continue enhancing the operation and management of these sites and establish water resources management targets. The Company also aims to gain insight into the local social and environmental impacts, propose corresponding measures and protect the precious water resources.

WRI Water Risk Identification Results

Water Stress Region	Production Sites within Water Stress Zone
Suzhou, Jiangsu Province, China	OTIZ
	FEDZ
	FEAZ
Bình Phước Province, Vietnam	FENV
Bình Dương Province, Vietnam	FEAV
	FEPV-Polyester Plant
	FEPV-Knitting and Dyeing 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).

1. Water Conservation Measures

Domestic consumption from employees constitutes the majority of water consumption at FEAZ. Thus, the plant calls on all employees to join its water conservation campaign. The plant affairs section as well as the equipment and energy section inspect the facilities for any leakage. FEAZ also meets with FEAV and FENV monthly to discuss and share their water conservation approaches and improvements.

OTIZ combines its endeavors in water conservation and pollution prevention and control, conserving the quantity while protecting the quality of water resources. The two goes hand in hand, managing effluent with comprehensive scientific approaches. The first focus for water conservation is avoidance. Strategies include increasing the concentration of cooling water, reducing the frequency of water softening and adjusting the time setting for sand filtration and softening cycles. The second focus is recycling and treatment with approaches such as recycling and reusing RO concentrate, larger pipelines for rainwater collection, increasing rainwater recycling during flood periods as well as recycling and zero discharge of production wastewater.

2. Value Chain Collaboration

In 2022, FEDZ held two meetings with brand customers to share its water conservation performance. Also invited are their suppliers as well as subcontractors and companies from the environmental sector to present the adopted and latest water conservation technologies. Also in attendance are suppliers of dyeing axillaries, with whom conversations were conducted on the use of low-COD and low-alanine chemicals to reduce pollution.

To address water resources management, FEAV installed multiple water meters on the plant-wide water supply system to take sectional readings and control water consumption. The plant also installed water conservation devices and a rainwater recycling system, reducing water consumption by using the recycled rainwater for landscape irrigation and cleaning. The utility department conducts regular inspection and maintenance on the water supply system. The plant even replaced the underground sewage lines with transparent tubes. Increased convenience in making daily inspection and maintenance means repairs can be made in time to avoid waste.

3. Costs of Water-Related Risks

FENC production sites located in water stress zones devoted approximately NT$55 million in water conservation projects in 2022. The projects have delivered NT$5.5 million in benefits from water conservation and reduced water conserved by 710,000 kiloliters.

Reusing Recycled Water from the Cooling Tower

The polyester plant of FEPV reuses water recycled from the cooling tower to reduce water consumption. In the case of high conductivity in cooling tower water or backwashing the sand filter, wastewater is discharged to the treatment facility, put through sedimentation and reused. The plant determined that the recycled water can be used to recharge the scrubbing system of the flue gas desulfurization (FGD) tower to conserve water. To accomplish this, FEPV built the recycling pond and added a water pump with automatic control. Water discharged from the cooling tower would be used to recharge the scrubber in the FGD tower after going through sedimentation. The average monthly water recycled reached approximately 70kiloliters, conserving approximately 840kiloliters of water annually.

Participating in Governmental Water Conservation Management Training

Suzhou City Government requires quarterly water conservation reports and daily water meter readings from corporations. The authority conducted a two-day water conservation management training in 2022 on the subjects of water use audit, water balance, water conservation regulations and water saving techniques. One personnel attended the training on behalf of FEDZ and passed the exam to become certified as a water conservation manager.

Water withdrawal from production sites in water stress zones declined by 15% in 2022 compared with the previous year while water consumption increased by 7%. FENC will persist in the improvement of water efficiency, promoting reasonable distribution and utilization while fulfilling sustainable use and development of water resources.

Water Withdrawal and Water Consumption of Production Sites Within Water Stress Zones

Unit: megaliter

	2020	2021	**2022**
Surface Water	2,996	2,375	**1,709**
Third-party Water	797	1,603	**1,309**
Groundwater	0	0.1	**28**
Rainwater	28	49	**19**
Total Water Withdrawal	**3,821**	**4,027**	**3,065**
Total Water Consumption	**992**	**891**	**714**

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 Discharge of Production Sites Within Water Stress Zones

Unit: megaliter

		2020	2021	**2022**
TDS	Freshwater (TDS≤1,000 mg/L)	211	301	**360**
	Other (TDS>1,000 mg/L)	2,618	2,835	**1,991**
Destination	Surface Water	0	0	**0**
	Off-Site Wastewater Treatment Facilities	2,829	3,136	**2,351**
	Other Purposes	0	0	**0**
Total Water Discharge		**2,829**	**3,136**	**2,351**

Note: The scope of data collection includes 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.

3.3 Steering Environment Management

3.3.1 Air Pollution Management

Air Pollution Management Guidelines and Measures

System Establishment and Management
- Establish air pollution control targets.
- Conduct regular air pollution inspection and reporting to authority.
- Promote air pollution prevention and control.
- Conduct regular training for staff and obtaining licenses and certifications.

Incorporation of Innovative Technology and Equipment
- Invest in Selective Catalytic Reduction (SCR) System for denitrification.
- Switch to natural gas boilers.
- Install smoke purification system for the forming machine.

Value Chain Collaboration
- Include air pollution control in supplier on-site inspection.

Avid Support for Governmental Policies
- Comply with air quality indicators released by the government with proper responses.

Air pollutants emitted in 2022 dropped by 7% from the previous year while air pollutants emitted per unit of production increased by 3%. The main contributing factor to the increase comes from decreased production. FENC aims to strengthen its ongoing efforts in improving air pollution prevention and control with enhanced equipment and facility monitoring.

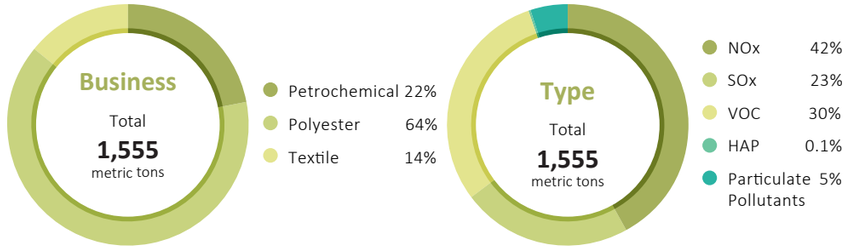
Air Pollutant Emissions

Unit: metric ton

	Petrochemical			Polyester			Textile			Total		
	2020	2021	**2022**	2020	2021	**2022**	2020	2021	**2022**	2020	2021	**2022**
NOx	156	150	**128**	454	473	**431**	126	119	**96**	736	742	**655**
SOx	70	64	**53**	182	216	**223**	83	69	**75**	335	349	**351**
VOC	141	176	**155**	246	317	**303**	11	9	**6**	398	502	**464**
HAP	0	0	**0**	0.5	1	**1**	0	0	**0**	0.5	1	**1**
Particulate Pollutants	12	10	**10**	97	46	**37**	27	19	**37**	136	75	**84**
Total	**379**	**400**	**346**	**980**	**1,053**	**995**	**247**	**216**	**214**	**1,606**	**1,669**	**1,555**

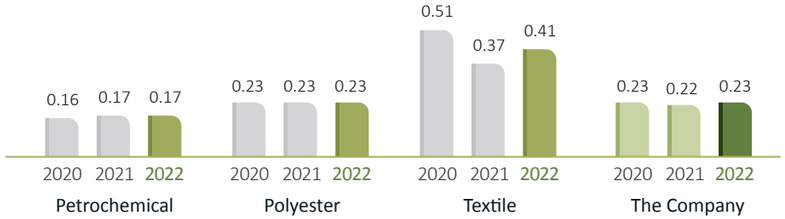
Note:
1. Only emitted gases are listed.
2. Particle pollutants include suspended particle matters (PM), dust and smoke.
3. The collected data covers 3 categories, actual measured value, annualized sampling value and estimates. In 2022, actual measured values are collected at Hsinpu Chemical Fiber Plant (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 Pollutant Emissions in 2022



Air Pollutant Emissions per Unit of Production

Unit: kg / metric ton of production



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

Air Pollutant Emissions per Unit of Production in 2022

Unit: kg / metric ton of production

	Petrochemical	Polyester	Textile	Total
NOx	0.06	0.10	0.19	**0.10**
SOx	0.03	0.05	0.14	**0.05**
VOC	0.07	0.07	0.01	**0.07**
HAP	0.00	0.01	0.00	**0.01**
Particulate Pollutants	0.01	0.01	0.07	**0.01**
Total	**0.17**	**0.23**	**0.41**	**0.23**

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 (NOx, SOx)

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 improves the combustion efficiency inside the boiler furnace by adjusting the air-fuel ratio. The adjustment prevents damages while prolonging the lifespan of the boilers. Furthermore, it reduces the emission of NOx and SOx to the air.

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. Details on tank truck unloading and transport pipeline improvement project at the production units:

1. Bulk bag packaging zone: Secure the bag filter housing with additional supporting legs to prevent the PTA powder spillage due to unstable filters.
2. Tank truck unloading zone: Modify the specifications for the unloading hose and the length of the drop tube to prevent clogging, which would result in PTA powder spillage.
3. Tank truck back blowing zone: Adjust the powder feed system and improve the design of the powder feeding pipeline and bag filter housing to recover the spilled PTA powder.

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. Establish anomaly reporting mechanism and training.

Incorporation of Innovation Technology and Equipment

1. To reduce air pollutants, Hsinpu Chemical Fiber Plant installed the selective catalytic reduction (SCR) equipment, which utilizes catalysts to reduce the NOx and ammonia mixture to nitrogen and water. The equipment removes 80% of the NOx in the water slurry boiler. All 6 sets of equipment has completed in 2022.
2. FEDZ installed low NOx burners for the boilers, which reduced NOx emissions by 66%.
3. Kuanyin Chemical Fiber Plant replaced the heavy oil boilers with natural gas boilers in November 2022 in hopes of reducing the emission of NOx, SOx and particulate pollutants.

Infrared Emission Monitoring System

Low wind speed and mixing layer height are factors hindering the dissipation of air pollutants, hence worsening the air quality or causing odors that lead to grievances from local residents. Without a real-time leakage notification system, factories within the industrial park often have to take the blame from authorities. In light of this, FENC production sites incorporate the continuous emission monitoring system to obtain accurate readings on the types of possible pollutants and trends in their concentration. The data is further analyzed against wind directions to identify the source of air pollutants. In 2022, Plant 2 of OPTC adopted the environmental analysis methods accepted by the Enviornmental Protection Administration and analyzed air pollutant concentration in the vicinity of the plant premise with infrared emission monitoring system. The system collects real-time data on the types and concentration of volatile organic compounds (VOC) as well as wind directions to analyze possible sources of the VOC. When leakage occurs within the plant, data is sent back to the control center for production staff to take immediate mitigation measures. The infrared technology is capable of long-term and continuous monitoring, which helps OPTC determine the types and sources of pollutants and respond swiftly.

Value Chain Collaboration

FENC engages customers and the supply chain and provides air pollution training. For instance, WHFE conveys the Company philosophy on environmental protection through the procurement process. Each year, the plant conducts approximately two on-site visits to evaluate the suppliers. The evaluation team consists of auditors, site engineers and quality control managers. In 2022, nine suppliers signed the air pollution environmental control commitment, which represent 70% of non-raw material procurement.

Avid Support for Governmental Policies

As stipulated in the governmental announcement, Public and Private Premises Requiring Dedicated Air Pollution Control Personnel and Dedicated Health Risk Assessment Personnel Placement, the area where terephthalic acid production takes place at Plant 1 of OPTC is considered a premise requiring designated personnel from the first announcement. On January 5, 2022, the plant added one dedicated personnel and one deputy. Due to the amendment of the Regulations Governing Severe Air Quality Deterioration Announcements and Emergency Prevention and Control on March 3, 2022 and the decrease in overall air pollutant emissions at Plant 1 of OPTC, the plant is no longer regulated under the Prevention and Control Plan for Air Quality Deterioration of All Levels at Public and Private Premises. The boiler production at Plant 2 of OPTC, however, is regulated under said plan and must submit an air pollutant reduction plan. The plant has prepared a prevention and control plan for approval the completed the first drill.

The City of Shanghai, mainland China updated HJ1230-2021 Volatile Organic Compound Leakage, Detection and Repair in Industrial Enterprises, which stipulates the inspection methods for a leak, detection and repair (LDAR) program as well as the selection criteria for inspected locations. FEIS conducts LDAR inspections annually and the 2022 inspection as well as the selection of inspection points were performed in accordance with the updated regulation.

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. There were no waste leakage occurrences at FENC in 2022.

FENC's production waste management aims for boosting the recycling and remanufacturing rates of production waste and for reducing waste through avoidance. Waste treatment and declaration are completed in accordance with regulatory mandates and waste disposal is performed by qualified companies. The principle 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. Waste treatment at FENC sites posed no significant impacts to the environment.

Waste Management Guidelines and Measures

System Establishment and Management
- Comply with ISO 14001 Environmental Management System.
- Reduce waste at the source.
- Recycle, classify and reuse waste.
- Sell valuable waste to businesses for recycling and reuse.
- Commission licensed waste management companies to dispose valueless waste.

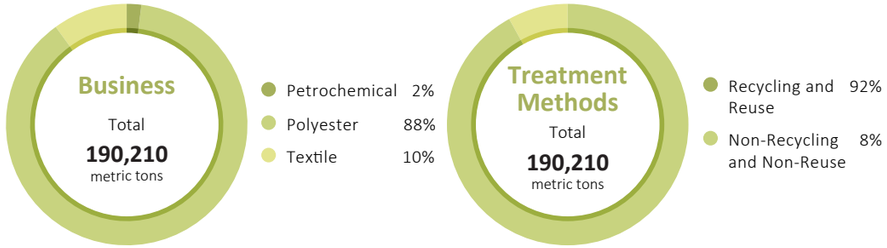
Incorporation of Innovative Technology and Equipment
- Incorporate smart waste management system.
- Introduce waste-to-energy technology.
- Install sludge treatment facilities.

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

Avid Support for Governmental Policies
- Submit the waste disposal plan to local authorities.

Compared with 2021, total waste dropped by 9% in 2022 and the reuse and recycling rate reached 92%, which is up by 1% from the previous year. Total waste generated per unit of production also went up by 1% mainly due to the decrease in production. Total production waste decreased by 7% and total domestic waste increased by 5% in 2022. However, the reuse and recycling rate of this category jumped by 8%. FENC will stay the course on establishing waste reduction and improvement plans, committing to waste reduction and resource circulation through avoidance, recycling and reuse.

Waste Generated in 2022



Waste Generated

Unit: metric ton

		Petrochemical			Polyester			Textile			Total		
		2020	2021	**2022**	2020	2021	**2022**	2020	2021	**2022**	2020	2021	**2022**
Treatment Method	Recycling and Reuse	5,928	4,234	**1,418**	132,327	170,227	**157,202**	11,271	14,857	**15,872**	149,526	189,318	**174,492**
	Non-Recycling and Non-Reuse	3,348	3,660	**2,761**	12,384	9,455	**9,629**	7,506	6,156	**3,328**	23,238	19,271	**15,718**
Type	General Industrial Waste	4,556	4,844	**3,289**	137,141	167,552	**156,880**	13,747	18,712	**17,903**	155,444	191,108	**178,072**
	Hazardous Industrial Waste	4,720	3,050	**890**	7,570	12,129	**9,952**	5,031	2,301	**1,296**	17,321	17,480	**12,138**
Total Waste		**9,276**	**7,894**	**4,179**	**144,711**	**179,681**	**166,832**	**18,778**	**21,013**	**19,199**	**172,765**	**208,588**	**190,210**

Data of Waste

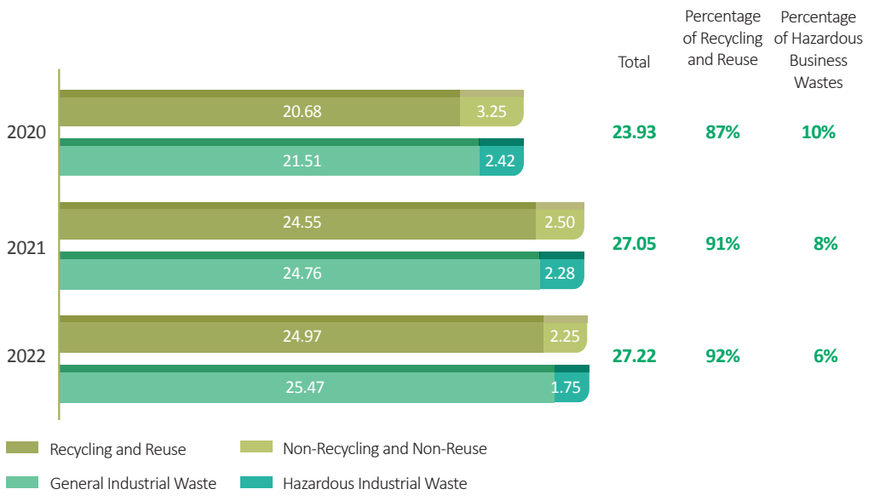
Unit: metric ton

				2020	2021	**2022**
General Industrial Wast	General Industrial Waste	Production Waste	On-Site Recycling and Reuse	73,860	103,991	**96,857**
			Sold	25,394	25,709	**23,309**
			Off-Site Disposal	36,420	42,943	**41,733**
		Domestic Waste	On-Site Recycling and Reuse	3	2	**0**
			Sold	167	155	**411**
			Off-Site Disposal	1,390	1,242	**1,103**
	Hazardous Industrial Waste	Production Waste	On-Site Recycling and Reuse	0	0	**0**
			Sold	719	740	**557**
			Off-Site Disposal	11,574	14,536	**10,522**
	Total			**149,527**	**189,318**	**174,492**
Hazardous Industrial Wast	General Industrial Waste	Production Waste	Energy Use	1,337	1,604	**1,658**
			Incineration	8,876	7,488	**5,063**
			Landfilling	343	134	**0**
			Other Disposal Operations	2,265	2,553	**2,432**
		Domestic Waste	Energy Use	373	361	**215**
			Incineration	1,014	1,187	**1,131**
			Landfilling	2,661	2,249	**2,336**
			Other Disposal Operations	1,340	1,491	**1,824**
	Hazardous Industrial Waste	Production Waste	Energy Use	0	53	**25**
			Incineration	4,939	2,085	**1,007**
			Landfilling	2	0.3	**0.2**
			Other Disposal Operations	88	65	**27**
		Total		**23,238**	**19,270**	**15,718**
	Total Waste			**172,765**	**208,588**	**190,210**

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-recycling and non-reused waste disposal are handled off-site by qualified waste treatment companies.
3. The data collection on waste management accounts for 100% of FENC production sites in the scope of this report.

Percentage of Waste Generated per Unit of Production

Unit: kg / metric ton of production

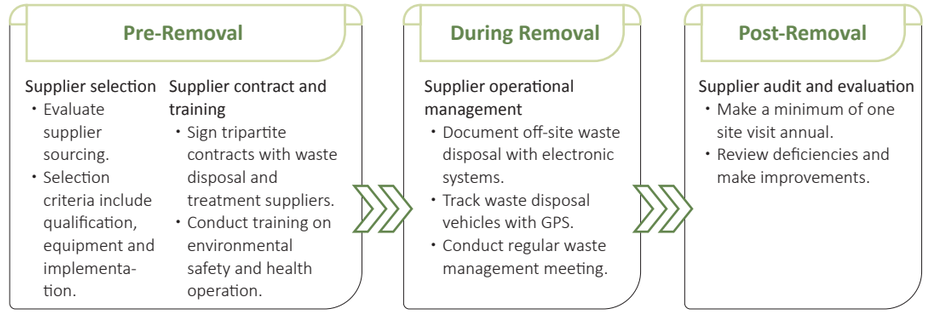


Note: The Textile Business does not include FEAZ, FEAV and FENV.

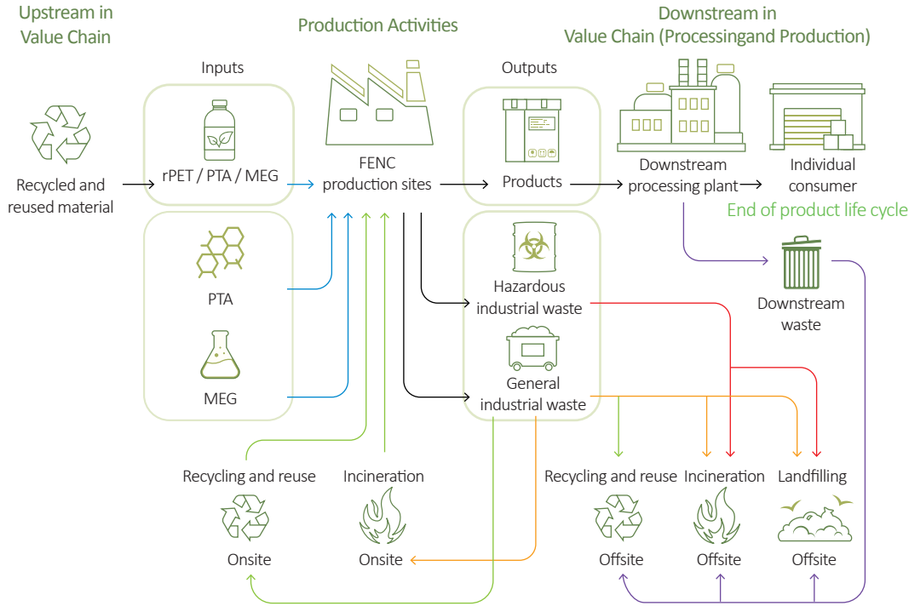
Waste Classification and Impact Assessment

Waste materials generated from the business activities at FENC can be broken down into 94% regular industrial waste and 6% 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. Due to customer demand, toxic chemicals were used to perform assays at Plant 1 of OPTC in 2022. The waste liquids were deemed as hazardous industrial waste, and therefore, the handling and reporting of the chemicals must be conducted in accordance with the Toxic and Concerned Chemical Substances Control Act. The plant filed an amendment to the business waste disposal plan at the EPA and added the code for the disposal of hazardous industrial waste. Waste storage, disposal and treatment are carried out in accordance with the Waste Disposal Act. The plant also sent staff to undergo training and obtain the qualification for Emergency Responders of the Toxic and Concerned Chemical Substances at the awareness level. The permit for handling toxic chemical substances was obtained on September 27, 2022.

Management Procedure for Waste Disposal Suppliers



Waste Treatment Process Flow



Incorporation of Innovative Technology and Equipment

OGM produces rPET from waste PET bottles. However, the non-PET parts such as bottle caps and plastic films are left out of this recycling and reuse cycle. After meeting with the production units and discussing the standards, OGM made gradual improvements on the equipment and provided classification training. The plant forms partnerships with suppliers on recycling and reuse, turning non-PET waste into refuse derived fuel (RDF). In 2022, 4,000 metric tons of non-PET waste were recycled, saving approximately NT$28 million in waste disposal fees and avoiding 1,464 tCO_2e in carbon emissions.

Value Chain Collaboration

Organic sludge and sludge mixtures are considered industrial waste monitored by the authority in Taiwan and should be processed by professional waste treatment plants. OPTC conducts annual site inspections to examine the environmental protection measures implemented at these waste treatment plants, including waste declaration; on-site environmental protection, prevention and control measures for air pollution and water resources; management of waste storage to ensure supplier compliance.

The management and production teams at FIGP audit three waste removal and treatment suppliers each year to ensure compliance in all waste treatment conducts associated with FIGP. In 2022, the plant conducted on-site inspections targeting the sludge and waste plastic treatment suppliers and found no violations.

FEIS conducts two training sessions each year for employees from waste treatment suppliers. A total of eight suppliers took part in the 2022 training. Kuanyin Chemical Fiber Plant conducted site inspections at seven waste treatment suppliers in the same year.

OTIZ provided safety training to general waste treatment suppliers in 2022. The training includes safety precautions during waste loading and plant security management system.

Waste Treatment Manufacturers Sustainability Leap Project

The polyester plant of FEPV implemented the Waste Treatment Manufactures Sustainability Leap Project to trace waste removed from the plant premise with precision, enhance supplier inspection efficiency and fulfill its due care obligation when commissioning waste disposal. The plant established a comprehensive supplier selection process, starting with a paper audit conducted by an inter-disciplinary team of procurement, waste management, environmental safety and legal staff. Credentials reviewed include company scale, risk assessments as well as permits and certificates. Site inspections are also conducted. Qualified suppliers must undergo weekly and monthly record review as well as quarterly and yearly site inspection in accordance with the Waste Treatment Supplier Review Program, which is a standard review system covering a checklist of 166 items under eight categories. The review checklist is updated yearly in response to regulatory changes and with annual review training provided. The suppliers are replaced annually based on Annual Waste Treatment Enterprise Evaluation.

Achieving 100% Waste Recycling

The year 2022 was a year of zero waste to landfill and zero incineration for FENV. All of its production waste was recycled by qualified waste treatment companies. This achievement is accomplished by turning recycled scrap fabrics into rags and cotton cloths; embossed paper, colored nylon, plastic spools and elastic bands into plastic particles; paper tubes and cardboard boxes into recycled paper. FENV has made 100% production waste recycling and reuse a reality.

FEAV partners with brand customers to reduce production waste, setting reduction targets and implementation measures for 2025. In 2022, the plant accomplished 100% recycling and reuse and set new waste reduction targets for domestic waste. The plant stepped up the promotion on avoidance, encouraging staff to dine in the canteen and avoid disposable food containers for takeouts. Waste classification is implemented and waste from the contractors, canteen and concession stand must be 100% recycled.

OPSC commissioned new waste treatment suppliers to process general industrial waste and waste heat insulation cotton in 2022. Prior to commencing the waste treatment operation, OPSC conducted site inspections to assess the supplier's capability and ensure compliance. Once the contract was awarded, OPSC provided environmental safety and plant operation training for the truck drivers and carrier staff. Site audits were also conducted immediately after waste disposal to ensure proper waste management.

Avid Support for Governmental Policies

Waste management is strictly regulated in Japan under Waste Management Act. FIGP's environmental management system has been certified to the ISO 14001 standards. The plant manages all suppliers through a waste contract management table, ensuring that all required permits are valid. The plant also uses an electronic management system to ensure that waste disposal and treatment are completed by suppliers within the mandated periods. FIGP submitted the waste treatment plan to the authority in Ibaraki Prefecture in June 2022, and the total waste generated at FIGP in 2022 is 22% less than the target set for the year.

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 Guidelines and Measures

System Establishment and Management
- Conduct environmental impact assessment at the plant location.

Value Chain Collaboration
- Upcycle land and ocean waste into brand new products.

Avid Support for Governmental Policies
- Ensure compliance with governmental regulations regarding air pollution and wastewater discharge.
- Promote waste management and reduction.
- Support initiatives protecting marine habitat.

System Establishment and Management

FEDZ commissions the soil and ground water analysis annually. All 2022 results are in compliance with the regulatory standards.

FIGP plans to expand its rPET plant in Himeji, Hyōgo Prefecture, Japan and operation is scheduled to begin in 2023. An environmental impact assessment (EIS) was conducted to ensure regulatory compliance and protect the environment for local residents and businesses. The EIS covered existing conditions regarding air, noise, vibration, odor and water pollution, including biochemical oxygen demand (BOD), COD and SS on site. Approval of the EIS was granted in July 2022.

Value Chain Collaboration

FENC purchases waste PET bottles collected from the coastal areas of island nations from Parley for the Oceans. The bottles are compressed into bales and delivered to OGM to be processed into recycled ocean polyester, which can then be used to manufacture high-value products such as athletic footwear and functional apparels.

Avid Support for Governmental Policies

To provide solutions to the growing threats from marine debris and pollution and to increase the efficiency of marine debris recycling and reuse, Taoyuan City Government established the marine debris recycling and reuse system, forming a circular loop to upcycle marine debris. On June 26, 2022, OGM joined six corporations and two professional teams in the signing of the memorandum of understanding for the Taoyuan Blue Ocean Recycling Alliance with Taoyuan City Government. Marine debris collected by the Taoyuan City Government will be reused by the private corporations, including OGM. Plant 2 of OGM will be responsible for cleaning the waste PET bottles for processing and turning them into new jogging suits. The operation creates a win-win for marine conservation and economic development. On July 14, 2022, the Taoyuan Blue Ocean Recycling Alliance was officially founded.

Ocean waste PET bottles

Recycling ocean waste PET bottles for reuse
Give back to Taoyuan City Government
A total of 800 pieces of jogging suits

Jogging suits