

TCFD

Report 2023

Task Force on
Climate-Related Financial Disclosures



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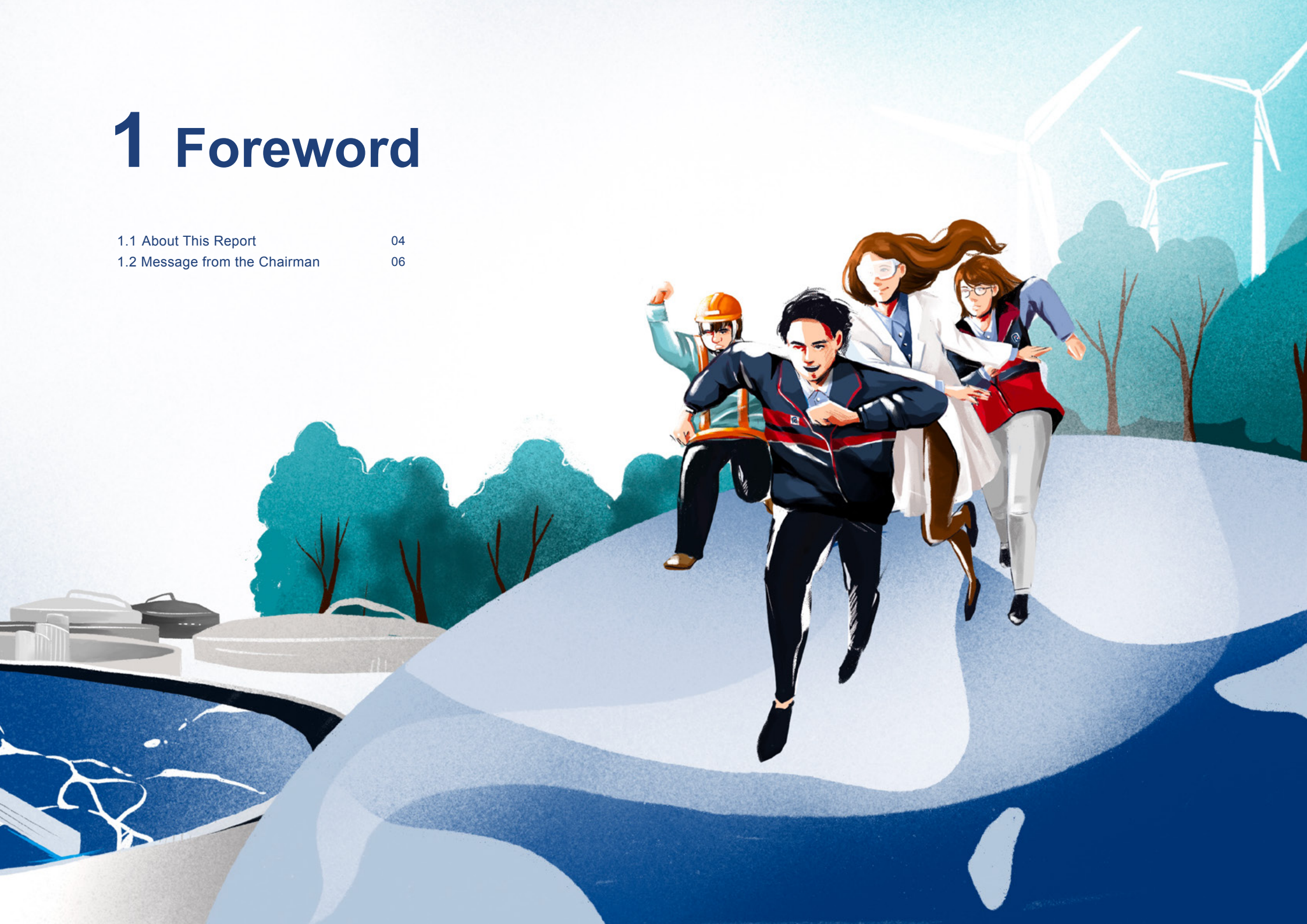
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1 Foreword

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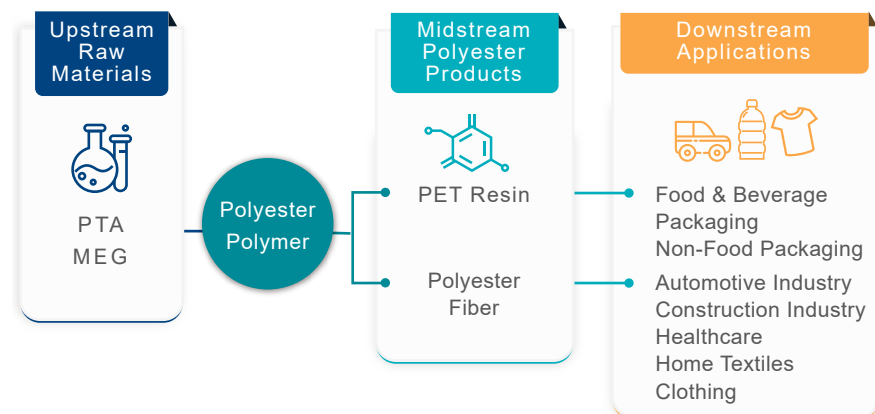
1.1 About This Report

1. Company Profile

Far Eastern New Century Corporation (FENC), is a major manufacturer in the global polyester industry, with a vertically integrated supply and sales chain that incorporates the entire production process from raw materials, manufacturing processes to sales. FENC maximizes the synergy of vertical integration of upstream, midstream and downstream operations. It excels in managing its raw material strategy at the upstream, and maintains its leading position in the global polyester industry at the midstream, as well as serves as a strategic partner of international brands at the downstream. The company has diversified its production sites and established supply chain in Asia and the Americas. Its production sites are located in Taiwan, mainland China, Vietnam, Japan, the U.S. and Southeast Asia. Such a diversification strategy enables FENC to adjust its production capacity according to market supply and demand, and to seize opportunities in supply chain gaps in various regions.

► [FENC Website](#)

Main Products and Value Chain



2. Guiding Principles for This Report

This report has followed the Task Force on Climate-Related Financial Disclosures (TCFD) framework published by the Financial Stability Board (FSB), the Guidelines on Climate-Related Information of Listed Companies issued by Taiwan's Financial Supervisory Commission, and the Sustainability Reporting Standard S2 of the International Financial Reporting Standards (IFRS).

All amounts are in New Taiwan Dollar unless otherwise specified. Currency conversion (including estimated future financial impact valuation) is calculated based on the average exchange rate for the year 2023.

3. Reporting Scope

FENC is comprised of three business arms: production, land development, and investment. The scope of this report covers the production business of the company, which includes the headquarters, research and development units, and 21 production sites, each of which generates annual turnover exceeding NT\$ 2 billion. These operations represent 98% of the operating revenue of FENC's production business in 2023.

Geographical Distribution of the Reporting Scope



Note: OPSC was merged into FEIS on December 31, 2022 and became the latter's petrochemical business.

1.2 Message from the Chairman

According to the World Economic Forum's Global Risk Survey 2024, environmental risks account for half of the top ten risks facing the world in the next decade. Among them, the risk of extreme climate events ranks at the top, indicating that climate risk has become a serious challenge facing the world. The 2023 United Nations Climate Change Conference (COP28), for the first time, included the transition away from fossil fuels in the United Nations resolutions, symbolizing that the global energy transition is urgent. The European Union began to implement the Carbon Border Adjustment Mechanism (CBAM) in 2023. The United States is promoting the Clean Competition Act while Taiwan will implement a carbon fee system. In the face of the upcoming era of carbon pricing, businesses must face squarely and address the impact of climate change and put forward specific response measures. Amid such a turbulent world, FENC must seize the opportunity and pursue excellence in sustainable management.

Aligning With the International Trend of Climate Governance

Businesses must proactively respond to climate change issues, keep abreast of the latest international climate dynamics and net-zero transition. Since 2019, FENC has identified climate change risks and opportunities, and developed response action plans annually, according to the Task Force on Climate-related Financial Disclosure (TCFD) framework, and publicly disclosed them in the Company's Sustainability Report, Annual Report and on its website. On August 21, 2020, FENC became the first traditional manufacturer in Taiwan to sign off and issue a statement, supporting the TCFD. In 2023, the company published its first climate-related financial disclosure report (the TCFD Report), the first such report in Taiwan in compliance with the IFRS S2 Climate-related Disclosures (draft).

Accelerating Net-Zero Transition

FENC formulated short-, medium- and long-term GHG reduction targets for its production business in 2022. Using 2020 as the base year, the short-term goal is to cut down GHG emissions by 20% in 2025. The medium goal is to achieve 40% GHG reduction in 2030. The company will make every effort to strive for net-zero emissions by 2050. In 2023, FENC's 21 production sites reduced Scope 1 and 2 GHG emissions by 25% compared to the base year, significantly surpassing the expected progress and accelerating the transition to net-zero emissions. Additionally, in 2023, the production business adopted an internal carbon pricing

mechanism as a management tool. By incorporating carbon reduction benefits into investment decisions, and considering international carbon price trends, analysis reports, and industry pricing methods, the internal carbon price for developed economies was set at NT\$1,500 per tCO₂e, and for emerging economies at NT\$1,000 per tCO₂e. This pricing mechanism will be implemented from 2024, to help enhance the company's competitiveness in the net-zero era.

Building a Green and Low-Carbon Supply Chain

FENC has formulated five low-carbon transition strategies, including improving energy efficiency, adopting low-emission fuel alternatives, developing renewable energy, utilizing CCUS and fostering raw material transition. The company has taken carbon reduction action with a pragmatic attitude. In 2023, its green product revenue reached NT\$47.7 billion, not only setting a historical high, but also growing by 4% from the previous year, accounting for one-third of the company's production revenue. With the capacity expansion of its overseas rPET production facilities in 2024, further growth and better performance are expected. Developing renewable energy, utilizing CCUS, and fostering raw material transition. FENC has taken action on carbon reduction with a pragmatic approach, aiming at creating a green low-carbon business model.

FENC is actively following the issue of climate change, pragmatically implementing various carbon reduction action plans to mitigate the impact of climate change on the company's operations. At the same time, the company is expanding green business opportunities based on its core business to create a sustainable business model.

Chairman of Far Eastern New Century Corporation

Douglas Tong Hsu

徐旭東



2 Climate Governance

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2.1 FENC Sustainability Strategy Blueprint

Innovation is the cornerstone of FENC's sustainable development. Since FENC was founded, it has adhered to the business philosophy of "Taking from the society, paying back to the society", pursuing profits while taking into consideration the general public's expectations toward corporations. We have demonstrated our commitment to sustainable operations and development of the environment, society and corporate governance. Based on the United Nations Sustainable Development Goals (SDGs), members of FENC's Sustainability Implementation Committee have set out sustainable action plans including four major dimensions (F, E, N, C) to finalize the FENC's Sustainability Strategy Blueprint. In response

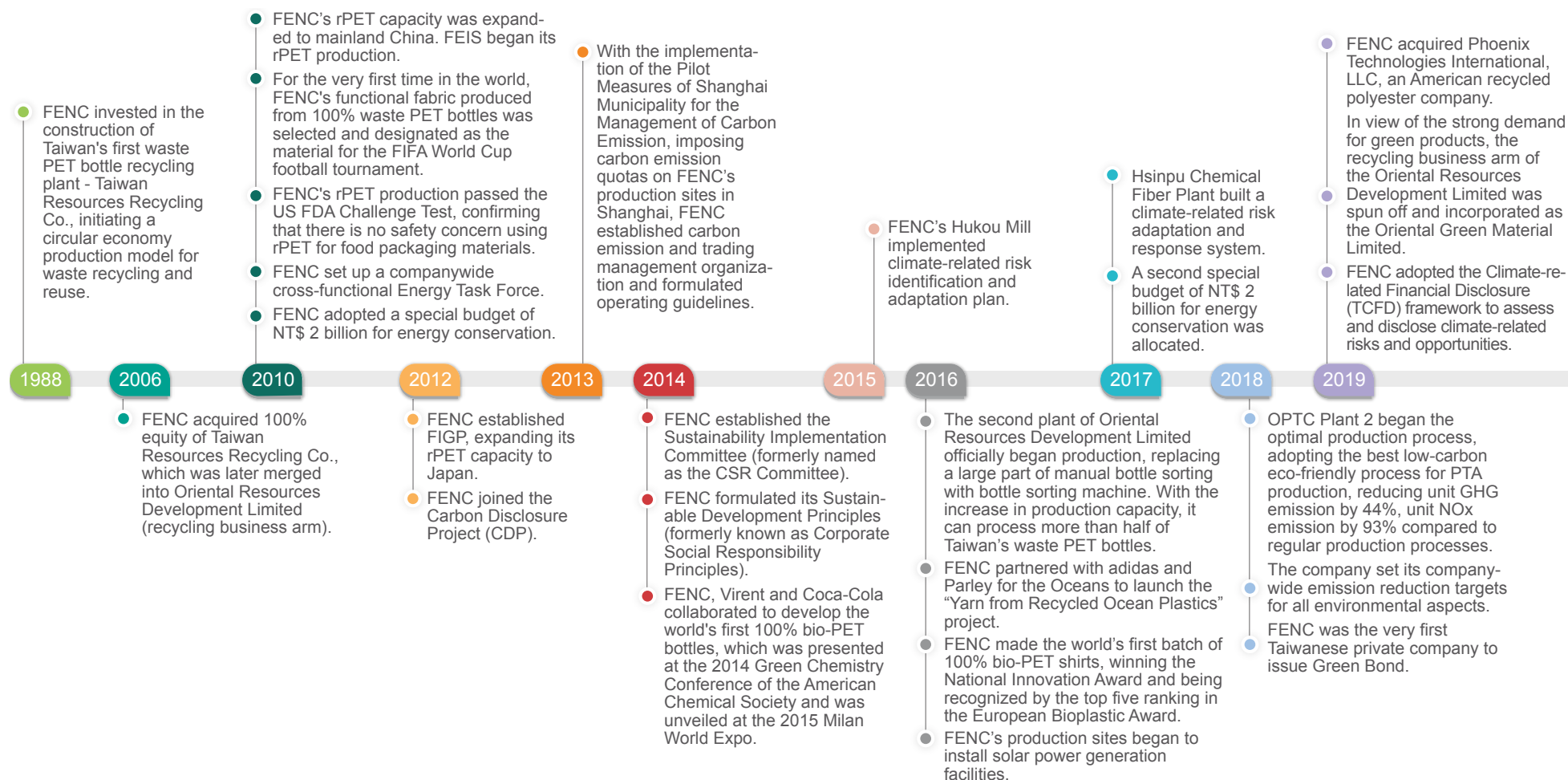
to fifteen SDGs, FENC will continue to work with global partners to achieve sustainable development goals through promoting and implementing various corporate projects on sustainability.

One of the projects is "Navigating a green future" to respond to global carbon reduction vision, tackle climate risks through mitigation and adaptation strategies. The project has initiated a host of carbon reduction actions, to set short-, medium-, and long-term GHG reduction targets for the entire company, and seize the business opportunities in green and low-carbon economy as well as achieve the ultimate goal of sustainable operations and development.



2.2 Key Milestones and Recognition: Transitioning Toward Net Zero

Key Milestones in Zero Carbon Transition



- FENC comprehensively followed the ISO 14064-1:2018 GHG Inventory Standard to identify and calculate direct and significant indirect GHG emissions, and obtained external verification.
- FENC jointly developed industrial waste gas recycling projects, adopted carbon capture and utilization (CCU) technology, and converted captured carbon emissions into polyester materials. FENC won three major international awards in 2022 thanks to such practice and its Nylon 6,6 (Solution Dye) water saving technology.
- OPTC signed the ESG-linked Syndication, the first in Taiwan's petrochemical industry.

- FENC issued 13 sustainable financial products, including green bonds, sustainability-linked bonds and ESG portfolio loans, totaling NT\$23.33 billion.
- FENC published its TCFD Report.
- FENC's rPET plant in the Philippines has started production.
- FENC's polyester business and OTIZ have officially submitted their commitment letters to the SBTi, declaring their dedication to achieving their respective short-term goals and net-zero emissions. With the approval of the commitment letters by the SBTi, FENC will strive alongside other companies worldwide to achieve net-zero emissions.
- FENC adopted an internal carbon pricing mechanism for its production business.

2020

- FENC set up the Board-level Sustainability Committee.
- FENC signed to become a supporter for the TCFD, the first traditional manufacturer in Taiwan to support TCFD and issue a statement.
- FENC signed Asia's first Sustainability-linked Financing and was the first Taiwanese company to issue Sustainable Bond.

2021

2022

- FENC set its short-, medium-, and long-term GHG reduction targets for the whole company and declared its goal to reach net-zero emission by 2050.
- FIGP Kanto Plant became the world's first carbon neutral rPET plant.
- FENC was the first company to be approved by Taiwan's Ministry of Health and Welfare for its rPET pellets production for food-grade containers and packaging materials.
- FENC was the first in the world to make the FIFA World Cup team jerseys using recycled plastic bottles from the ocean. There were nine national teams wearing the ocean recycled anti-bursting jerseys in the 2022 World Cup, including the champion team Argentina.
- FENC signed Taiwan's first Blue Loan, issued Taiwan's first Sustainability Link Bond (SLB), and also issued its second Green Bond. FIGP signed the SDGs Loan.

2023

2024

- FENC's rPET plants in Vietnam and Kansai Japan are expected to start production.
- Phoenix Technologies' rPET plant completed its capacity expansion in the first half of the year.
- The groundbreaking ceremony for the rPET plant in Malaysia has been held, with the production expected to start by the end of 2025.
- The polyester business' SBTi reduction targets are currently under review whereas OTIZ's reduction targets have been approved by the SBTi.

Recognition by International Sustainability Rating



MSCI
ESG Leaders Indexes



FTSE4Good

FTSE4Good
Emerging Indexes



Sustainalytics
ESG Risk Rating
Top 3% of Chemicals
Industry

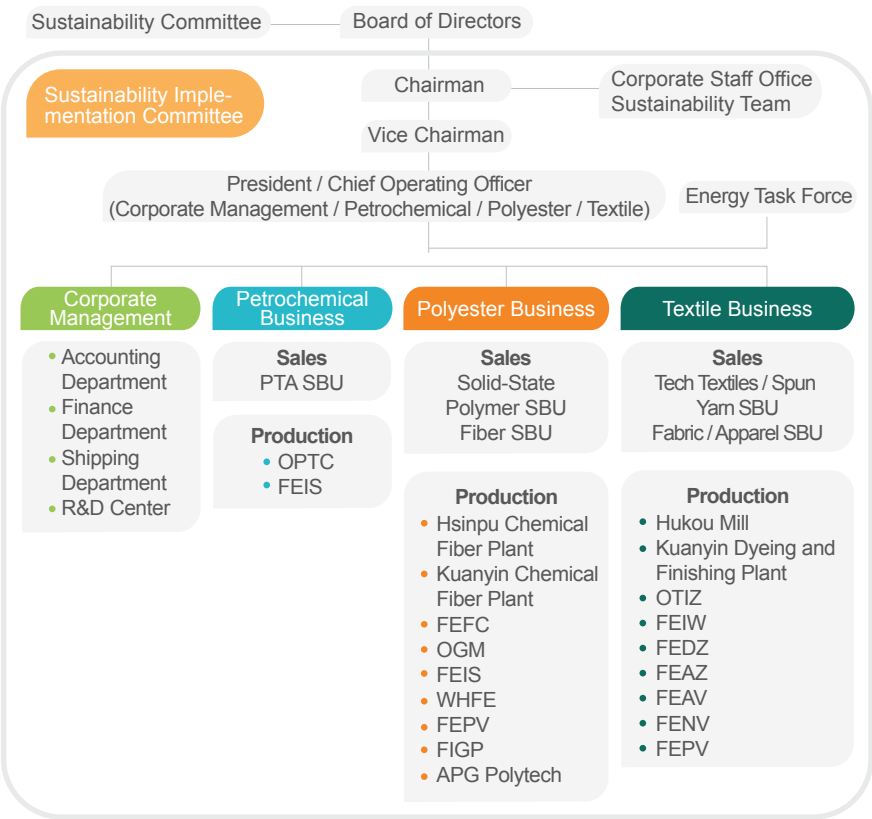
CDP

CDP
Management Level
- Water Security
- Climate Change

2.3 Climate Governance Framework and Oversight Mechanism

FENC's climate governance is led by its Board of Directors, which supervises the company's climate change-related strategies and management guidelines. It has established a functional committee at the board level, the Sustainability Committee. The production business also set up a Sustainability Implementation Committee. According to the company's organization structure, the President of the Corporate Management is the Convenor. Each business' headquarters, production and operation sites, business units and administrative departments work together to mitigate climate risks, adapt, and transition towards low-carbon operations. The Energy Task Force coordinates business related to GHG and energy management. The Sustainability Team of the Corporate Staff Office is responsible for compiling various sustainability performance data and reporting them to the Sustainability Committee and the Board of Directors. The President, Chief Operating Officer and Energy Task Force of each business headquarters regularly report to the Board of Directors on climate change-related issues at the Board of Directors meetings and other internal meetings.

The Organizational Chart of Climate-Related Risk and Opportunity Management



A Dedicated Management Team on Environment and Energy – The Energy Task Force

FENC established the inter-departmental Energy Task Force in 2010. With each FENC Business as the unit, the task force establishes mechanisms for internal environmental audit and review, and charts the operation and planning of environmental and energy management systems. The scope of management covers FENC production sites in Taiwan, mainland China, Vietnam, Japan, Malaysia and the U.S., where teams are established to implement and oversee the management of water resources, air pollution, waste materials as well as energy and emission reduction, which includes the management of GHG, renewable energy and emerging carbon reduction technologies.






A monthly Energy Task Force management meeting is held at all production sites. During the meeting, the environmental performance and responses targeting climate risks and opportunities are reported to high-level executives. Adjustments are made to energy and resource management policies based on actual conditions to fulfill FENC's mission to foster environmental sustainability.

The Energy Task Force systematically collects environmental data from all production sites through an online database. Performance review and tracking are conducted during the monthly energy management meeting. 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 to establish future strategies and plans.










1. Board-Level Oversight Over Climate Change

Per the climate-related risk and opportunity management system, FENC has been conducting risk identification and tracking management. Through regular reporting procedures (please refer to [3.1 Climate-Related Risk and Opportunity Management System](#)), the Board of Directors and the Sustainability Committee oversee the company's strategies, budgets, and action plans related to climate change. The issues on climate change governance discussed and major decisions taken at the regular meetings of the Board of Directors in 2023 include:

-  1. Tracking GHG reduction targets and implementation status
-  2. GHG management and implementation plan
-  3. Budget for research and development of green products
-  4. Implementation plan for expanding green production capacity
-  5. Energy resources management and project execution
-  6. Water resources management and implementation plans

The topics related to climate change governance discussed at the 2023 regular meetings of the Sustainability Committee are as follows:

-  1. Report on the results of the Climate-related Financial Disclosures (TCFD)
-  2. Enhancing the circular economy and developing a circular recycling ecosystem
-  3. Promoting the implementation of internal carbon pricing and the deployment of diverse renewable energy mix
-  4. Developing all-encompassing recycling technology (green product R&D)
-  5. GHG inventory and verification scheduling and implementation progress
-  6. Promoting environmental education programs in elementary schools
-  7. Raising employees' awareness of sustainability

The Key Meetings for the Board's Supervision on Climate Change

Meetings with the Board's Participation	Frequency	Highest Level of Participation
Board Meeting	Four times a year	Chairman
Sustainability Committee Meeting	Twice a year	Directors, including independent directors
Environment Sustainability Themed Meeting	Annually	Chairman

2. Board Remuneration and Performance Evaluation Mechanism

A Board performance evaluation is conducted at least once every three years by an independent external agency or a team of experts and scholars. In 2023, FENC commissioned EY Transaction Advisory Services Inc. to conduct the review, evaluating the Board performance in “structure,” “people” and “process and information.” The ratings the Board received are “advanced,” “advanced” and “benchmark,” respectively.

3 Climate-Related Risk and Opportunity Management

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3.1 Climate-Related Risk and Opportunity Management System

In order to fully grasp the impact of climate change-related risks and opportunities on the company, FENC has established a climate risk and opportunity management system. The Sustainability Implementation Committee is in charge of promoting the management of climate change-related risks and opportunities, and regularly reporting climate risks and opportunities to the governance team. This ensures the implementation of a top-down tracking and supervision mechanism led by the Board of Directors.

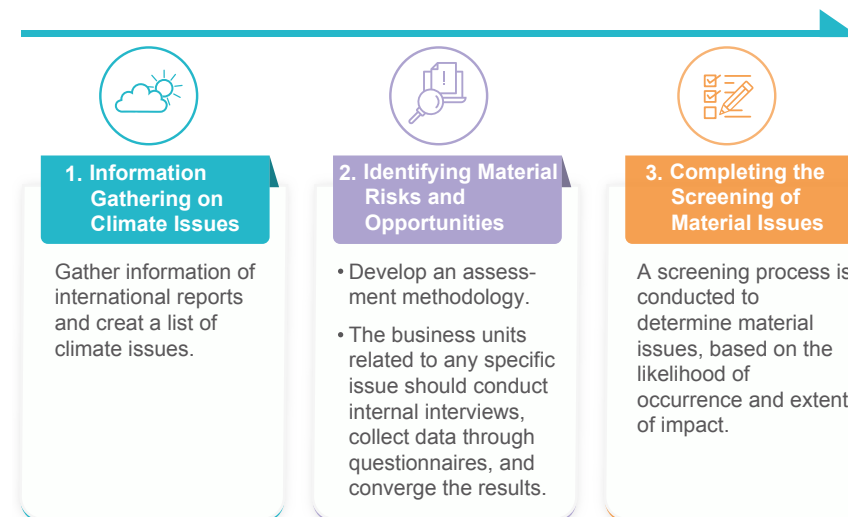
Climate-Related Risk and Opportunity Management Procedure



3.2 Identifying Climate-Related Risks and Opportunities

FENC follows the framework set out by the Task Force on Climate-related Financial Disclosures (TCFD) to establish a comprehensive three-step process to identify climate-related risks and opportunities. The implementation cycle is once every year.

Climate-Related Risks and Opportunities Identification Process



1. Information Gathering on Climate Issues

The company reviewed the scientific reports published by the United Nations Intergovernmental Panel on Climate Change (IPCC) and the International Energy Agency (IEA) to fully grasp transition risks, physical risks and opportunities that may arise from climate change in the future. Furthermore, in order to conduct an in-depth analysis of the actual impact of future climate events on FENC's industrial characteristics, the company also refers to the climate-related financial disclosure recommendations (TCFD Chemical Sector Preparer Forum) set out by the World Business Council for Sustainable Development (WBCSD) for the chemical industry. In addition, FENC has also developed a list of issues on climate-related risks and opportunities specific to its operational characteristics, taking into account the identification outcomes of other industry players home and abroad, as well as aligning with the timeframe for its GHG emissions reduction roadmap, as well as likely transition risks, physical risks and opportunities in the short, medium and long terms.

Transition Risks:

Transition risk refers to the risks involved when countries address the impact of extreme climate change through low-carbon transition. In the process of low-carbon transition, there may be more stringent environment-related policies and regulations, rapid development of low-carbon transition technology, changes in market demand for products, as well as investors' attention to a company's corporate image. If FENC fails to tackle these changes, the company's operations will be dealt with a strong blow in the future. Such impact is related to extreme climate issues, but does not cause direct harm to the company, as extreme climate events (such as floods, torrential rains, etc.) do.

Physical Risks:

Physical risk refers to climate events caused by extreme weather patterns, such as floods, torrential rains, droughts, hurricanes, high temperatures, rising sea levels, etc. Such risks result in direct harm and damage to the company's assets and equipment, supply chain, production lines, and may have an impact on the safety and lives of its employees.

Opportunities:

Companies are faced with transition risks arising from the low-carbon transition and physical risks brought about by extreme climate events. If one can grasp the likely impact and take relevant response measures, such as improving the efficiency of resource use or adopting low-carbon renewable energy to reduce

operating costs, gaining market share by developing low-carbon technologies or providing low-carbon products or improving its climate change adaptability to reduce the impact of extreme climate events, such environment can still bring opportunities to businesses in the context of climate change in the future.

2. Identifying Material Risks and Opportunities

Due to the diversity of climate risks and opportunities, the impact of the related issues on FENC varies. The company has reviewed international scientific reports to understand the risks and opportunities that may arise under different scenarios, and referred to the corporate risk assessment process to gauge the "time horizon", "likelihood of occurrence" and "extent of impact" to assess the impact and consequences arising from these risks and opportunities, as well as to select major issues on material climate-related risks and opportunities.

(1) Scenario Setting for Risks and Opportunities

Issues related to climate change are full of uncertainties. In order to ensure FENC's readiness to cope with the most extreme risks and grasp the greatest potential opportunities, business opportunities included, the company has chosen two extreme scenarios for issue identification of climate-related risks and opportunities, which are SSP5-8.5, the most challenging warming scenario, and NZE, the world's most widely adopted and promoted low-carbon transition scenario. Under these two scenarios, FENC simulated the risks and opportunities that it may encounter, and developed relevant countermeasures and tracking mechanisms, to ensure that FENC still has the capabilities to operate sustainably under the impact of extreme climate events.

SSP5- 8.5:

To evaluate the impact of different climate change scenarios, FENC used the five SSPs (Shared Socioeconomic Pathways) in the AR6 of the IPCC (Intergovernmental Panel on Climate Change): extremely low emission level (SSP1-1.9), low emission level (SSP1-2.6), medium emission level (SSP2-4.5), high emission level (SSP3-7.0) and extremely high emission level (SSP5-8.5). Among them, SSP5-8.5 assumes that no new mitigation actions are taken by any country, leading to a temperature rise of 4.4 degrees Celsius by the end of this century, resulting in the most severe extreme weather conditions. Through the assessment under this scenario, FENC can grasp the likely impact and come up with its response plan in such context, thereby to achieve the goal of sustainable management.

NZE:

As climate change issues become increasingly challenging, the IPCC issued a special report in 2018. To achieve the goal of containing global warming to below 1.5°C, the IPCC urged immediate global action to reduce GHG by half by 2030 and achieve net-zero emissions by 2050. To assess the future development of global energy sector under different scenarios, the World Energy Outlook (WEO) Report published by the International Energy Agency (IEA) in 2023 explored three scenario assumptions, namely STEPS (Stated Policy Scenario), APS (Announced Pledges Scenario) and NZE (Net-Zero Emissions Scenario). NZE represents the scenario where the world achieves net-zero emissions by 2050 and keep global warming within 1.5°C. This is also considered the most aggressive emission reduction scenario. By adopting the NZE scenario to assess climate change risks and opportunities, FENC can prepare its response plan and gain the first mover’s advantage in the face of future vigorous implementation of emission reduction policies across the world.

(2) Materiality Assessment

In the context of the TCFD risk and opportunity identification, FENC classified climate-related risks and opportunities, and studied and analyzed relevant international scenario reports on the essence and potential financial impact specific to different risks and opportunities. A questionnaire and interviews on the likely risks and opportunities were conducted. Based on their roles and professional experiences, senior executives of the related departments can use these tools to assess the time horizon, likelihood of occurrence and extent of impact.

Explanations on How FENC Assesses Time Horizon in the TCFD Framework

<div>Short Term</div> <div>2023 to 2025</div>	<p>FENC aggressively implements GHG reduction measures. Based on the company's self-developed GHG reduction roadmap, 2025 is set to be the timeframe to reach the short-term goal. This will facilitate the rolling modification of the assessment of climate-related risks and opportunities in line with FENC's emission reduction blueprint. Hence, 2023 to 2025 is defined as the short term.</p>
<div>Medium Term</div> <div>2026 to 2030</div>	<p>According to the international reports referenced by FENC in preparing this TCFD report, 2030 is used as the cut-off year for energy transition and reduction path analysis on relevant scenarios. Therefore, 2026 to 2030 is defined as the medium term.</p>
<div>Long Term</div> <div>2031 to 2050</div>	<p>Major international climate-related scientific reports indicate that to attain the goals of the Paris Agreement, net zero emissions should be achieved by 2050, so as to contain global temperature rise within 1.5°C. FENC has followed the international trend on GHG reduction for a long time, and has formulated a multidimensional low-carbon transition plan. To respond to the international decarbonization trend to realize the goal of the Paris Agreement, and to collaborate with its value chain companies by factoring in their 2050 net zero policies, FENC has defined 2031-2050 as the duration for the long term, so as to facilitate the assessment on likely risks and opportunities FENC may encounter against such a backdrop.</p>

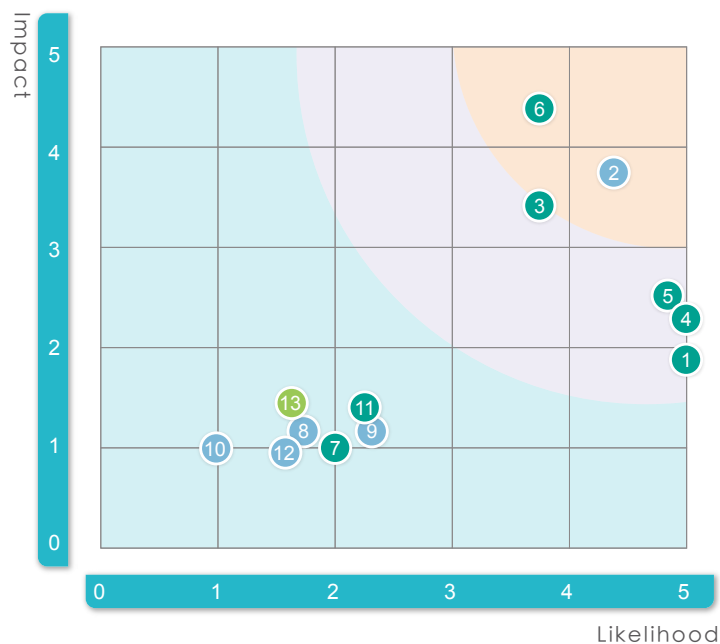
3. Completing the Screening of Material Issues

After information gathering from interviews and questionnaires with each department, FENC estimates and gauges the impact and extent of the related risks and opportunities based on time horizon, likelihood of occurrence and extent of impact. It converges the opinions and issues of different departments using three different levels: high, medium, and low levels to generate the FENC TCFD Climate-Related Risk and Opportunity Matrix.

For issues identified as high-risk issues, the Sustainability Implementation Committee will coordinate across departments to conduct a financial impact assessment. The relevant departments will develop response measures and report to the Sustainability Committee and the Board of Directors.

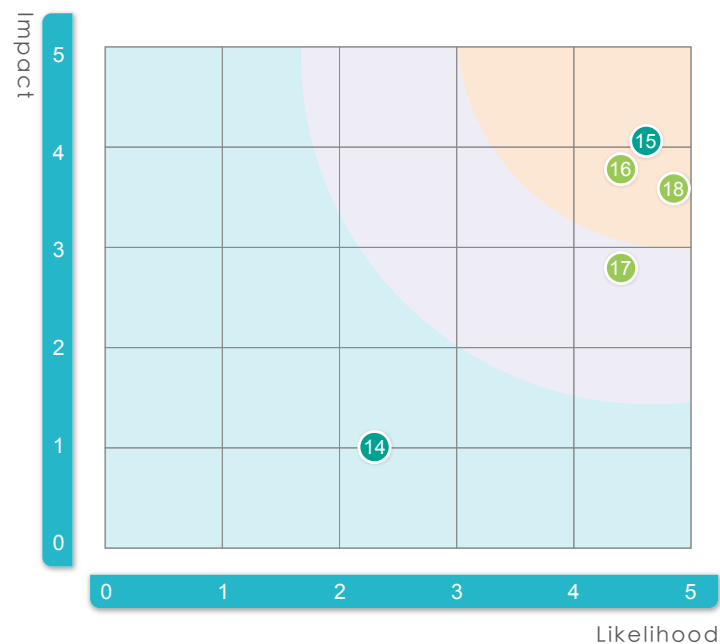
3.3 Identification Outcome of Material Climate Risks and Opportunities

FENC Climate-Related Opportunity Matrix



- 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

FENC Climate-Related Risk Matrix




- 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, floods (supply chain)
 - 12 - Rising mean temperatures
 - 13 - Changes in precipitation patterns and extreme variability in weather Patterns

- 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

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

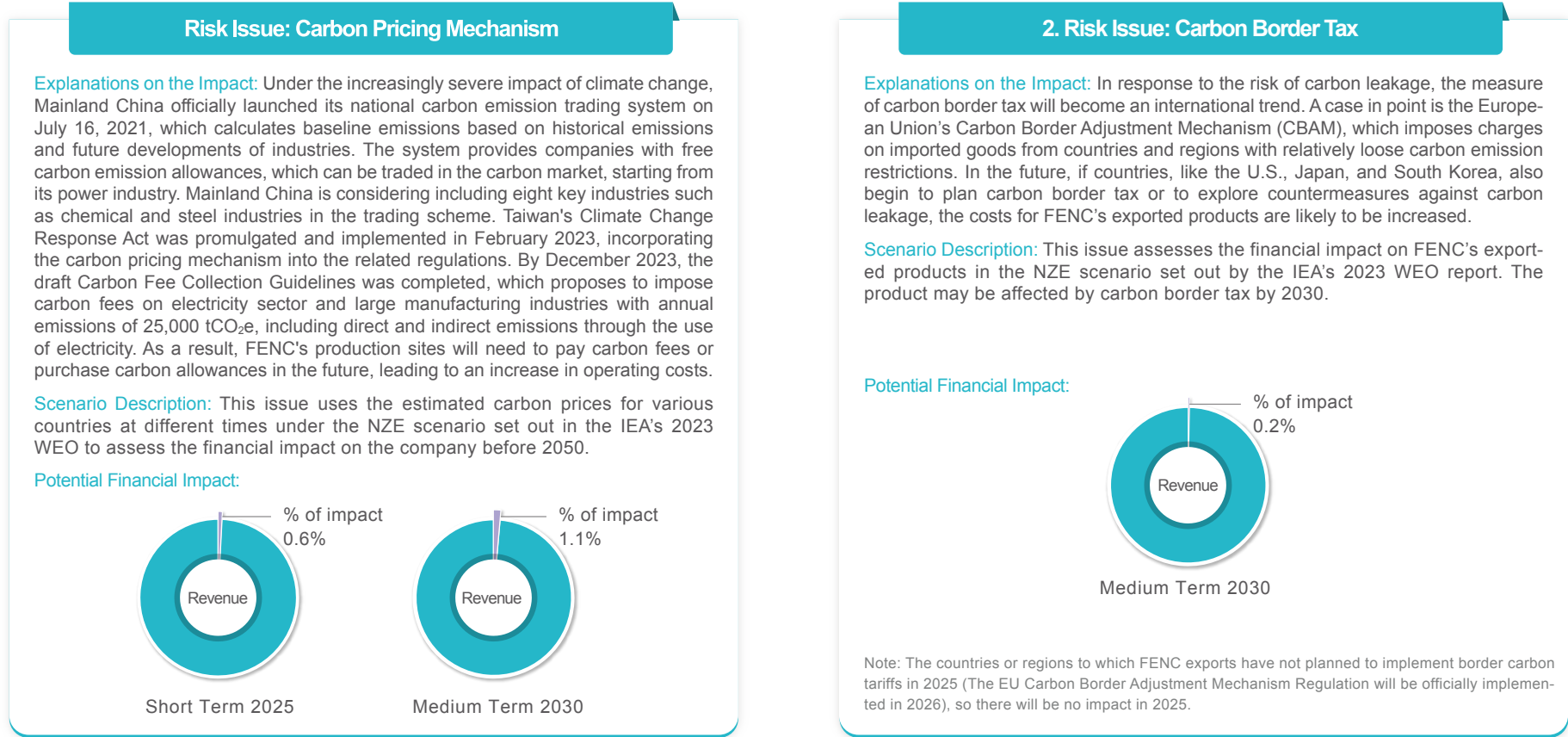
Climate-Related Risk and Opportunity Issues Explanations

Type	Scenarios	Risk and Opportunity Issues	Potential Financial Impact	Time Horizons
 Transition Risk	NZE	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
		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
		Carbon border tax	To avoid carbon leakage, countries have formulated carbon border taxes for imported products. FENC's operating costs will rise due to import duty imposed on its exports.	medium term
		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
		Research and development in net zero technologies	In the face of market demand, FENC has continued to develop net-zero technologies, green and low-carbon products, resulting in an increase in its R&D cost.	medium term
		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
		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
		Industry stigmatization	With the rising awareness on 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
 Physical Risk	SSP5-8.5	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
		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
		Increased severity and frequency of extreme weather events such as cyclones, 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
		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
		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
 Opportunity	NZE	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
		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
		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
		Development of new products or services through R&D and innovation	Through the research and development in green products, FENC can meet customer requirements, thereby increasing sales revenue.	short term
		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

3.4

Financial Impact Analysis on Material Climate-Related Risks and Opportunities

Specific to the top three risks and opportunities based on the outcome from the level of impact identified, FENC conducted a financial impact analysis on the potential climate-related risks and business opportunities to estimate the likely valuation of the financial impact in 2025 to 2030.

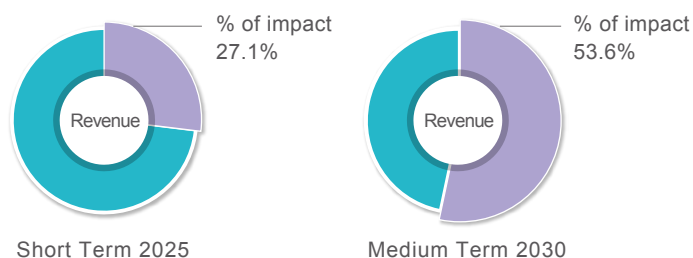


3. Risk Issue: Changes in Customer Behavior

Explanations on the Impact: Net Zero policy has been adopted and implemented across the world. To achieve net zero in value chain, international brands require value chain partners to reduce product GHG emissions year by year, and to develop specific carbon reduction plans to ultimately achieve net zero emissions. FENC is faced with rising sustainability awareness among many downstream customers, and their tendency to source products from companies that actively reduce GHG emissions. If the company cannot continue to cut down GHG emissions in the future, it may lose some customers and market share, thereby affecting its sales revenue.

Scenario Description: This issue uses the NZE scenario set out by the IEA in the 2023 WEO report. Under this scenario, all industry players have activated net zero emission strategies, requiring value chain partners to reduce carbon emissions. An assessment was conducted to evaluate the potential financial impact on FENC before 2030.

Potential Financial Impact:

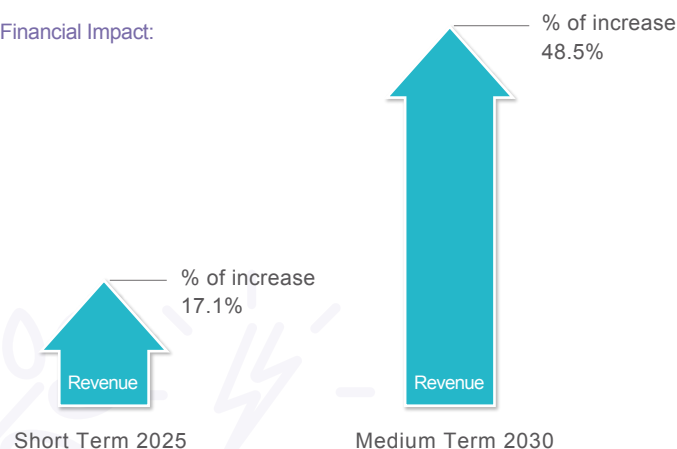


4. Opportunity Issue: Use of Lower-Emission Sources of Energy

Explanations on the Impact: Impacted by the international trend of net-zero emissions, the momentum of a company's green energy policies will gradually move from the company itself to its value chain, requiring value chain suppliers to implement emission reduction measures. By building renewable power generation facilities or purchasing renewable energy certificates, the GHG emitted by the company's electricity consumption can be reduced. According to FENC's 2023 GHG inventory, Scope 2 emissions (indirect GHG emissions from imported electricity, heat or steam) account for about 44% of Scope 1 and 2 emissions from 21 production bases in the production business. FENC continues to build renewable power generation facilities in the future, it can not only meet the requirements of value chain customers and ensure order volume, but also enhance product value by meeting customers' renewable electricity requirements, and thereby increase sales revenue.

Scenario Description: This issue uses the NZE scenario set out by the IEA in the 2023 WEO report. In this scenario, customers will demand the company expand the use of renewable electricity. FENC conducted an assessment on the potential financial impact by 2030.

Potential Financial Impact:

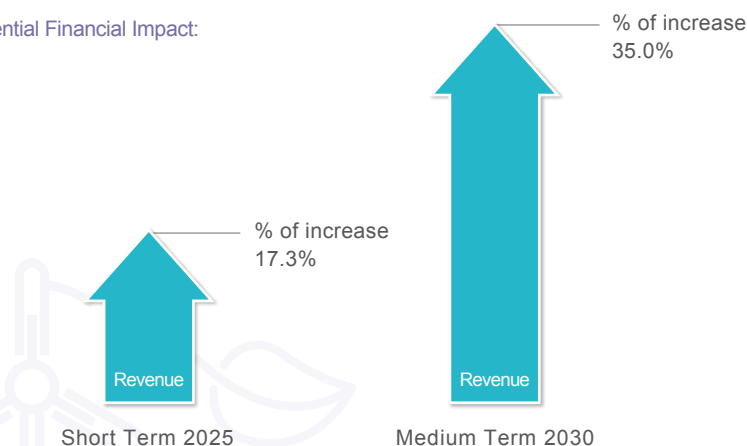


5. Opportunity Issue: Development or Expansion of Low Emission Goods and Services

Explanations on the Impact: The Paris Agreement set the goal of containing global temperature rise within 1.5°C. In order to continuously reduce the intensity of carbon emissions, companies have extended their emission reduction policies from themselves to supply chain companies, requiring the latter to provide products with lower unit GHG emissions. Going forward, if FENC continues to reduce GHG emissions per unit of production, it will be able to secure orders and enhance product value, which in turn will lead to an increase in sales revenue.

Scenario Description: This issue adopts the NZE scenario set out by the IEA in the 2023 WEO report, assessing the potential financial impact on the company before 2030. Under this scenario, customers will continue to increase demand for FENC's green products in order to achieve their net zero goals.

Potential Financial Impact:

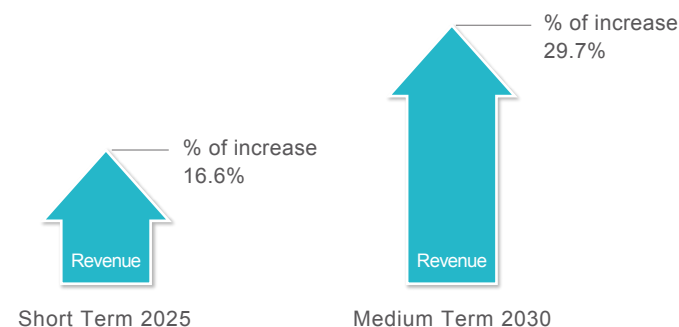


6. Opportunity: Access to New Markets

Explanations on the Impact: In order to reduce the GHG emissions caused by disposable products of chemical industry and achieve the goal of net-zero emissions, several national governments have successively implemented regulations requiring a certain percentage of recycled material in packaging materials or enacting a host of different recycling policies. In April 2022, the UK introduced a plastic tax on plastic packaging containing less than 30% recycled material. Spain began imposing a tax on virgin plastics in 2023, and Italy is expected to implement similar measures in 2025. Additionally, the European Union adopted the Packaging and Packaging Waste Regulation (PPWR) on March 15, 2024, setting targets for the percentage of recycled material in polyester beverage bottles at 30% and non-food beverage bottles at 35%. The U.S. Environmental Protection Agency (EPA) published the National Recycling Strategy in 2021, aiming to increase recycling rate to 50% by 2030. FENC possesses mature recycling manufacturing competitiveness and continues to develop new technologies. It ranks the second largest rPET producer in the world in 2023. Looking ahead, as global recycling rate continues to rise, FENC will increase sales revenue from recycled products if the company continues to expand its production bases.

Scenario Description: This issue uses the NZE scenario set out by the IEA in the 2023 WEO report to assess the likely financial impact on the company before 2030 as customers' demand for the company's recycled products will increase in this scenario.

Potential Financial Impact:



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

FENC has been implementing its strategies to address material climate-related risks and opportunities, as well as its response plan on inventory-taking, tracking, management and evaluation.

Material Climate-Related Risks and Opportunities Issues	Strategies and Response Plans	2023 Management Costs
 Carbon pricing mechanism	<p>FENC monitors the GHG emissions at each production site, and is determined to achieve the short-, medium- and long-term GHG reduction targets set for its production business through the five low-carbon transition strategies, striving to achieve net-zero emissions by 2050. At the same time, the internal carbon pricing mechanism is used as a management tool to increase carbon benefits and enhance carbon reduction incentives when evaluating energy conservation and carbon reduction projects. The company calculates and reflects the carbon costs of each business in monthly management reports as a reference for decision-making. (Please refer to 4.1 Climate Risk Mitigation Management Strategy)</p>	NT\$1,508 million for carbon emission reduction
 Carbon border tax	<p>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. (Please refer to 4.1 Climate Risk Mitigation Management Strategy)</p>	
 Changes in customer behaviors	<p>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. (Please refer to 4.1 Climate Risk Mitigation Management Strategy)</p>	
 Use of lower-emission sources of energy	<p>Renewable electricity will be acquired through means such as long-term electricity purchase agreements. FENC will also continue expanding the installed capacity of renewable energy, such as solar and biogas power, at its worldwide production sites for self-use. It is anticipated that FENC's global renewable electricity capacity will reach 20% of its energy mix by 2025, which also satisfies customers' expectations. (Please refer to 4.1 Climate Risk Mitigation Management Strategy)</p>	NT\$829 million for renewable energy deployment and procurement
 Development or expansion of low emission goods and services	<p>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. (Please refer to 6. Green Product)</p>	NT\$1,359 million for R&D of green products
 Access to new markets	<p>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. (Please refer to 6. Green Product)</p>	NT\$4,805 million for production capacity expansion of rPET products

4 Low Carbon Transition Program

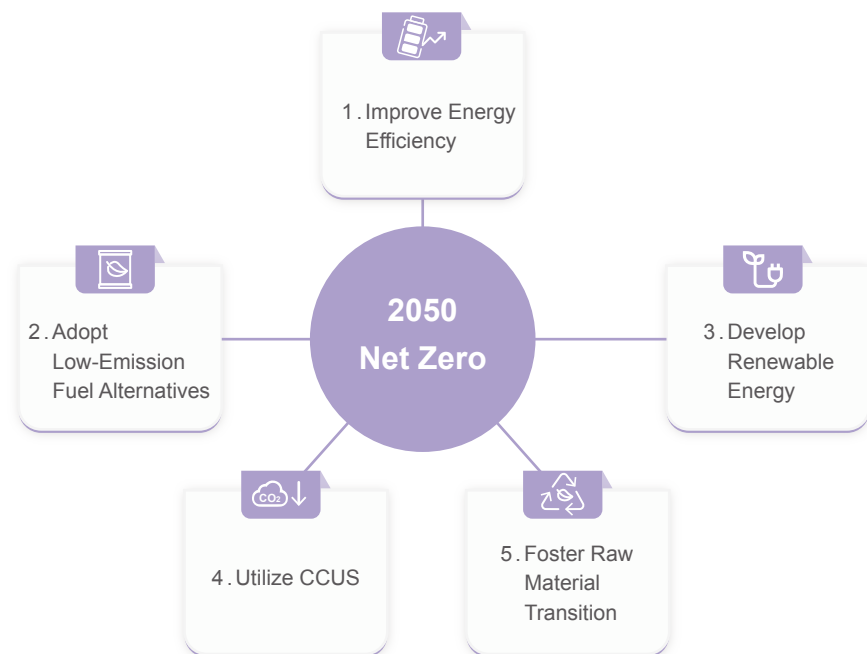
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4.1 Climate Risk Mitigation Management Strategy

In response to the risks and opportunities brought about by extreme weather, FENC responded to the global carbon reduction vision and actively carried out various carbon reduction actions. After approval by the Board of Directors, Production Business of FENC has established short, medium and long-term GHG reduction targets for the entire company and committed to achieving net zero emissions by 2050. Each production site has set up an energy-saving and emission reduction team to carry out the planning of carbon reduction roadmaps with five major strategies. FENC's Energy Task Force, the dedicated management team for environment and energy, is responsible for overall coordination to create a green and low-carbon operation model.

Five Strategies for Low Carbon Transition



To implement projects furthering the objectives of improving environmental performance and fulfilling its sustainable vision, FENC has been appropriating budgets for energy conservation and environmental protection purposes since 2010. In 2023, FENC moved full steam ahead towards the net-zero transition, and appropriated NT\$2.65 billion for energy reduction from 2024 to 2025.

1. Improving Energy Efficiency

FENC established a cross-company and cross-functional “Energy Task Force” to plan four key energy management methods and implementation strategies: system establishment and management, incorporation of innovative technology and facilities, internal incentive system for energy conservation, and active support for government policies. Its energy efficiency has been improved in three directions: production improvement, equipment improvement and energy management.

Implementation Highlights

- 1.The company has applied artificial intelligence (AI) in energy management.
- 2.A 35 MW cogeneration system will be constructed in Vietnam in 2026. The thermal energy produced from the fuel will be captured to generate steam and electricity to improve fuel efficiency.
- 3.Production improvement will be completed at OPTC in 2026. The improvement will allow electricity to be generated during production, which will avert 80,000 tCO₂e in annual carbon emissions.

2. Adopting Low-Emission Fuel Alternatives

Since 2015, FENC's production sites in Taiwan and mainland China have successively adopted natural gas boilers with low carbon emissions to replace coal water slurry and heavy oil boilers, which emit a high level of carbon. In the short term, the company plans to continue to adopt natural gas and evaluate the feasibility of using biofuels. Its medium to long-term plan is to replace natural gas with hydrogen. It is hoped that the relevant hydrogen energy technologies will become more mature and help to achieve energy transition.

Implementation Highlights

- 1.FENC's production sites in Taiwan and mainland China have replaced coal water slurry and heavy oil boilers with natural gas boilers.
- 2.FEPV will increase the use of biomass fuel alternatives.

3. Developing Renewable Energy

As of the end of 2023, 13 FENC production sites in Taiwan, mainland China and Vietnam had installed solar power generators with 18,622 kW in capacity, generated 18,300 MWh of self-use solar power and purchased over 160 GWh of renewable energy. In total, these efforts avoided 90,819 tCO₂e of carbon emissions. In addition, FIGP's Kanto Plant was powered 100% by renewable electricity in 2023. In order to achieve the carbon reduction target, the company actively invests in installing diverse renewable power generation equipment and continues to build more solar and biogas power generation facilities in Taiwan, mainland China, Vietnam, Japan, and the U.S.

Implementation Highlights

- 1.FENC expands the self-generated renewable energy capacity at its global sites for self-use.
- 2.FENC continues to acquire renewable energy through means such as long-term power purchase agreements.

4. Utilizing CCUS

FENC expects to achieve carbon reduction benefits through Carbon Capture, Utilization and Storage (CCUS) technology, mainly through the capture and reuse of carbon from boiler exhaust. The company plans to invest NT\$1.73 billion by 2030 to achieve carbon reduction benefits. A new technology and carbon reduction team has been established to continuously gather and research relevant information and practices. In the future, it plans to directly capture carbon from emission pipelines, and then convert carbon dioxide into chemicals such as methanol.

5. Fostering Raw Material Transition

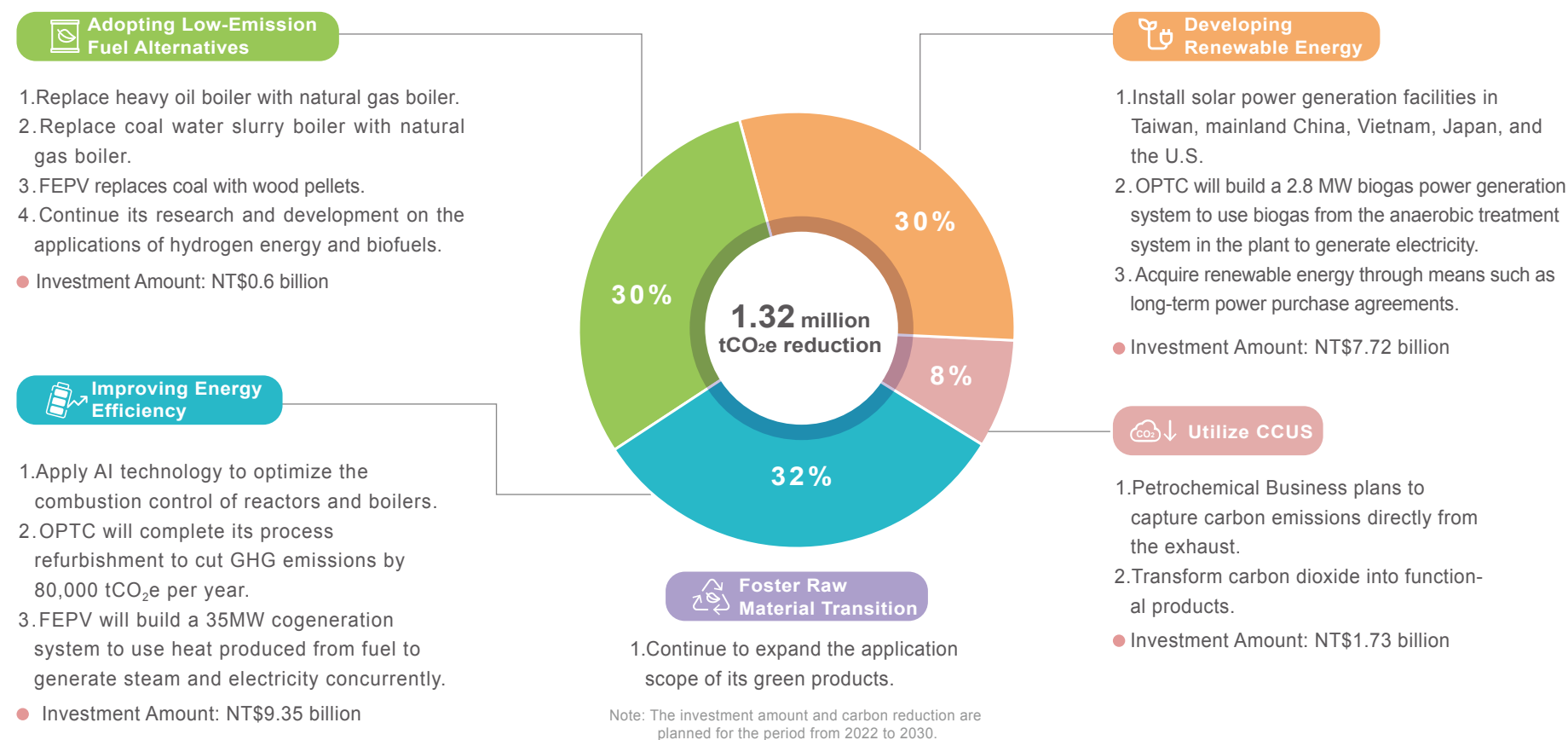
As a leading company in the global rPET production, FENC has been operating in the recycling industry for over 30 years. By utilizing its core technology advantages, the company has been actively developing new materials which are environmentally friendly and emit less carbon. It focuses on two major directions: material recycling and reuse and biomass to expand the application scope of its products. From the concept of product life cycle assessment, rPET made from recycled PET bottles emits 63% less GHG emissions than traditional PET resins made from petroleum. This has contributed to carbon reduction of the industry's value chain (please refer to [6. Green Product](#)).

Implementation Highlights

- 1.Recycled materials:** FENC leverages its integration from upstream to downstream of the polyester industry and the advantages of cross-domain technical cooperation. It has developed various applications in the space of land, ocean and air based on research and development in technologies to create a new model of circular economy and continuously deepen the application scope and impact of material recycling and reuse.
- 2.Biomass materials:** FENC develops bio-based polyester products, using bio MEG extracted from agricultural waste such as sugarcane residue fermentation as raw materials to reduce oil extraction and mitigate environmental impact. The products include bio PET, bio high tenacity polyester yarn, bio PET filament, etc. In 2023, the second plant of OPTC led the industry in Taiwan, to convert Bio-PX into Bio-PTA. It also signed a letter of intent for the supply of biomass raw materials with its suppliers, paving new paths for the biomass supply chain.
- 3.Low-carbon materials:** FENC uses carbon capture technology to recycle industrial waste gas, ferment it into alcohol, convert it into low-carbon ethylene glycol, and further make low-carbon polyester products with excellent carbon reduction benefits.

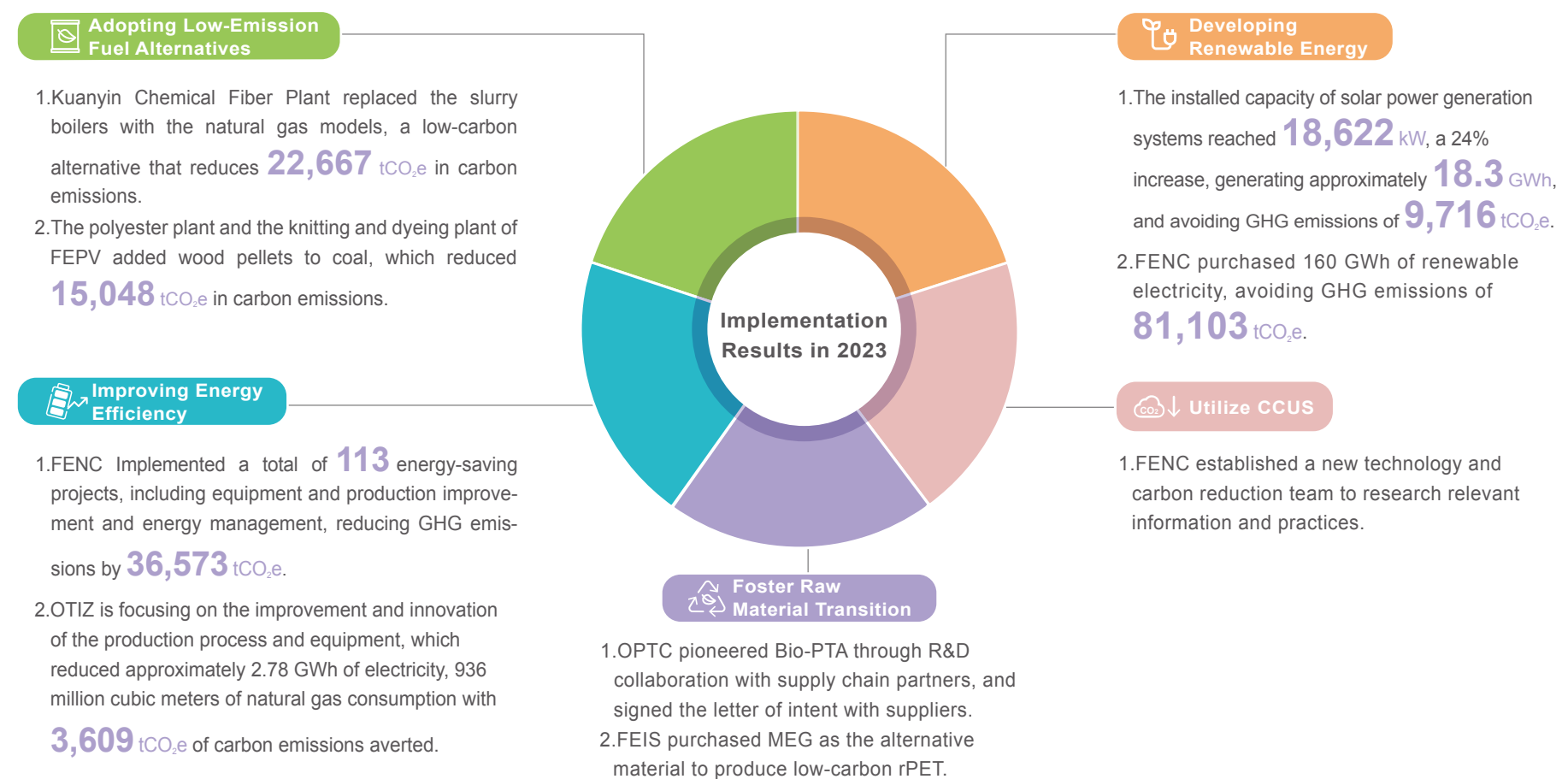
4.2 Commitments and Targets

2030 Action Plans and Emission Reduction Targets of Five Strategies for Low Carbon Transition



4.3 Implementation Results

Implementation Results of Five Strategies for Low Carbon Transition in 2023



Featured Cases

The Outpost of Low-Carbon Transition with All-Encompassing Renewable Energy Deployment

FENC has been investing heavily in renewable energy, building a wide array of power generation facilities and purchasing renewable electricity to phase up the use of renewable electricity each year. The total renewable electricity use in 2023 is approximately 180 GWh, accounting for approximately 11.1% of the total electricity consumption. The target is to reach 20% by 2025.



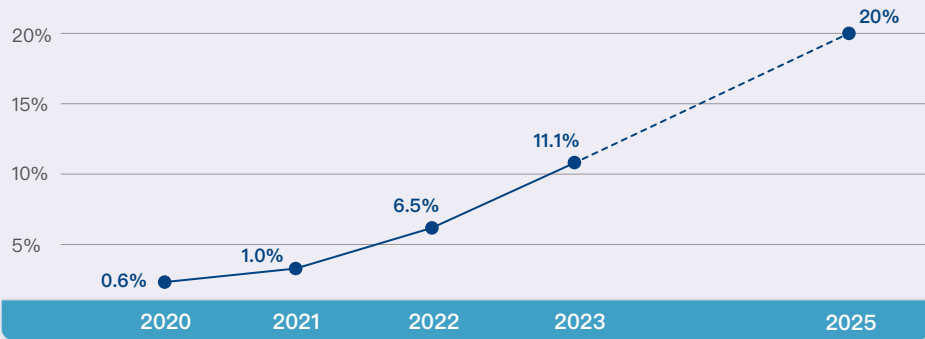
1. Renewable Energy Generators

FENC first built solar power generation stations at its production sites in mainland China in 2016. As of 2023, the accumulated self-generated solar power reached 88.13 GWh. In 2023, the solar power generated of its production sites in Taiwan, mainland China and Vietnam totaled 18.85 GWh, of which 97% was used by FENC. It is expected that by 2025, the installed capacity will reach 111 MW, a fivefold increase from 2023, with an annual power generation of up to 140 GWh. In addition to ongoing installation of solar power facilities, Plant 2 of OPTC will complete the installation of biogas generators in 2024, striving for the eligibility for discount offered to energy-heavy industries. Utilizing the biogas generated from its own anaerobic treatment system, the plant will generate approximately 11 GWh in total annual capacity. This is a climate action that demonstrates its contribution to mitigating environmental impacts caused by global warming.

2. Long-Term Electricity Purchase Agreement

FENC has been purchasing green power since 2015. In 2023, eight FENC production sites in Taiwan, mainland China and Japan purchased over 160 GWh of renewable electricity and avoided 81,103 tCO₂e of GHG emissions. FENC plans to purchase a minimum of 100 GWh of renewable electricity per year in the future to further reduce energy indirect GHG emissions. In addition, FIGP's Kanto Plant was powered 100% by renewable electricity in 2023.

Percentage and Target of Renewable Energy Usage



Featured Cases

Incorporating Internal Carbon Pricing System

To accelerate the pace of decarbonization within the Company and complete the net-zero transition, FENC incorporated the internal carbon pricing system in 2023 as a management tool. FENC reviewed international carbon pricing trends and reports such as “World Energy Outlook” from the International Energy Agency (IEA) and “State and Trends in Carbon Pricing” published by the World Bank, examined internal and external carbon costs from its global production site, and consulted the pricing approaches and strategies within the industry to arrive at NT\$1,500/tCO₂e as the internal carbon pricing for developed economies, and NT\$1,000/tCO₂e for emerging economies, effective in 2024 after the Board review.

The carbon pricing system is implemented through two approaches. First, the system is included as a criterion that improves carbon efficiency during the review of carbon reduction projects to incentivize decarbonization. Second, the system is used to calculate the carbon costs of all Businesses for the monthly management reports as a decision-making reference.

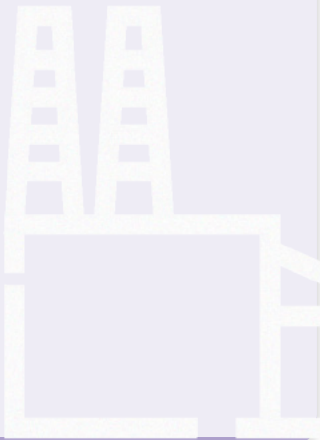


Far Eastern Energy Award for Energy Conservation Improvement of Tire Cord Fabric Production

The production of tire cord fabrics is highly energy intensive. As demand from the automotive market continues to grow, OTIZ is focusing on the improvement and innovation of the production process and equipment to lower the cost and GHG emissions during the manufacturing of this product.

OTIZ began by modifying 26 direct twisting machines to control the yarn feeding speed and reduce energy consumption. Additionally, improvements were made to the dipping process, and the numbers of ovens were reduced during the nylon and polyester production process, cutting the loss of thermal energy by controlling the exhaust during heat treatment.

OTIZ received the Far Eastern Energy Award from Far Eastern Group in recognition of this project, which reduced approximately 2.78 GWh of electricity and 936 million cubic meters of natural gas consumption. The annual net energy savings amounts to NT\$1.86 million with 3,609 tCO₂e of carbon emissions averted.



5 Adaptation Plan











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5.1 Climate Risk Adaptation Strategy

In response to the impact of global climate change, FENC incorporates climate resilience and adaptation into their fundamental operating capabilities. FENC is addressing possible physical risks under climate change, including changes in precipitation patterns and extreme weather events. It has taken measures, such as a series of water conservation projects and related management measures to ensure operation and business continuity and enhance its response capabilities to future extreme climate events, thereby improving overall operational stability. The company's strategies in response to various physical climate risks are characterized as follows:

Climate Risk Adaptation Strategies

Climate Risks	Adaptation Strategies
 Drought  Water Shortage	<ul style="list-style-type: none"> Execute daily water resources management plan to conserve water. Adopt innovative technology and equipment in water conservation practice. Collaborate with value chain to track the performance in water conservation. Actively support government policies on reclaimed water and other related policies. Establish an emergency water supply contingency plan.
 Cyclone  Torrential Rain  Flood	<ul style="list-style-type: none"> Increase wind resistance level of capital equipment. Diversify raw material supply to avoid production interruption caused by climate disasters in supply areas. Regularly inspect roofs and drainage systems in the plant area to mitigate flood risks.
 Rising Mean Temperatures	<ul style="list-style-type: none"> Continuously promote automation of outdoor operations to mitigate the impact of high temperatures.
 Rising Sea Levels	<ul style="list-style-type: none"> Continuously follow and monitor international scientific reports to grasp the areas of potential sea level rise.
 Climate-Related Regulations	<ul style="list-style-type: none"> Actively deploy renewable energy facilities to increase the proportion of renewable energy use. Comprehensively promote low-carbon transition to reduce GHG emissions.
 Changing Customer Behavior	<ul style="list-style-type: none"> Actively research and develop green products to meet customer requirements. Continuously reduce product GHG emissions and mitigate the environmental impact of products.
 Reputation, Stakeholders' Expectations	<ul style="list-style-type: none"> Continuously enhance ESG performance and participate in sustainable finance, which reflects FENC's core values, to meet investors' expectations.



5.2 Resilient Water Resource Management

FENC regularly assesses the level of water risks in areas where FENC production sites are located using the Aqueduct Water Risk Atlas from the World Resources Institute (WRI). The tool assesses the overall water risks, such as water stress, riverine flood risk as well as regulatory and reputational risks. When the overall water risk score is between 3 and 4, which indicates “high risk,” the production site is considered to be located in an area with high water risks.

According to the assessment for the fourth quarter of 2023, 1/3 of FENC production sites are located in high-risk areas. The Company responded by strengthening its adaptation strategies, such as improving water efficiency during production, establishing rainwater harvesting systems and increasing the reclaimed water recovery rate. FENC has set reduction targets for water withdrawal per unit of production and continues to reduce its unit water consumption for production and cooperate with its customers to reduce water resource usage. When the company plans to use water resources, it considers government policies, corporate development, changes in the industry, and the needs of water resource use of the residents living in the surrounding areas. With its strategy to rationally and effectively manage, distribute, and allocate water resources, FENC strives to minimize resource consumption and achieve maximum benefits for water storage and use.

Water Resources Management Strategy

A. Daily Implementation of Water Resources Management Plan to Conserve Water



1. Water recycling and reuse at different levels:

In 2023, the amount of recycled water remained the same as the previous year and its water recycling rate was maintained at **98%**.



2. Rainwater recycling:

The amount of recycled rainwater in 2023 was about **134,000** kiloliters.



3. Effluent treatment, recycling and reuse:

Through source management, treatment efficiency and environmental impact management, FENC's production sites established reclaimed water recycling systems to recycle and reuse effluent after being treated by waste-water treatment plants to replace some raw water. In 2023, the volume of the water recycled and reused stood at **1,155,798** kiloliters.



4. Water resources risk management:

Based on the Aqueduct Water Risk Atlas developed by the World Resources Institute (WRI), FENC identifies the company's production sites located in the areas of water stress, and regularly monitors the status of water stress curves at each production site.



B. Adopting Innovative Technologies and Equipment

1. At OGM, the water used during the rinsing process is filtered through oscillation to remove residues, and stored in the water tank to be looped back to the primary and secondary floatation tanks. The water is then filtered again and stored in a 10-metric-ton water tank as the water supply for shredders. The measure conserved a total of **46,656 kiloliters** of water in 2023.
2. FEDZ increased the cleaning frequency of the ultrafiltration (UF) and reverse osmosis (RO) membranes, which led to a 5% growth in the recycling rate of reclaimed water. The replacement of the filtration membrane also increased the recycling rate by 2%. The measures conserved a total of **30,048 kiloliters** of water in 2023.
3. Kuanyin Dyeing and Finishing Plant purchased three low liquor ratio dyeing machines in 2023, which conserves **45,828 kiloliters** of water annually.



C. Collaborating with Value Chain to Reduce Water Consumption

1. Provided water resource education training and shared water-saving techniques with some suppliers.
2. FEDZ shared wastewater treatment technologies and experiences of using low-polluting chemicals with dyeing auxiliary suppliers, such as chemicals with low chemical oxygen demand (COD) and low aniline.



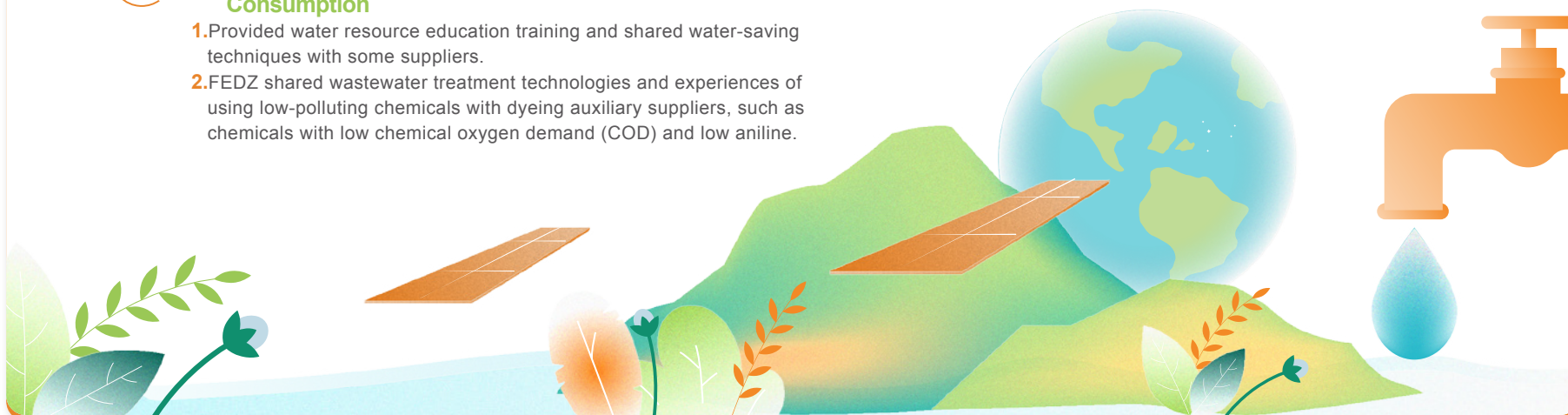
D. Actively Supporting Government's Policy on Reclaimed Water and Other Related Policies

1. Switch to smart water meters for real-time monitoring of water resource data.
 2. OPTC signed an agreement on recycled water use with the Taoyuan City Government. The first phase is expected to be completed in 2024.
- About **15,000 kiloliters** of reclaimed water can be used daily by then.



E. Establishing a Back-up Water Supply Plan During Emergencies

1. Adjust the discharge water and air conditioning water from each water tower to reduce discharge volume and replenishment.
2. Start the operation of reverse osmosis RO/E for recycled effluent as a backup water source.
3. When the water storage facilities reach the lowest water level, activate the production site's backup water source (well water/groundwater) supply assessment mechanism.



5.3 Commitments and Targets



Strategies and Commitments

- 1.Daily implementation of water resources management plan to conserve water: Establish an in-plant water efficiency management plan.
- 2.Adopting innovative technologies and equipment: Apply AI technology in water resource management.
- 3.Collaborating with value chain to reduce water consumption: Collaborate with brand customers to track water conservation performance.
- 4.Actively supporting government's policy on reclaimed water and other related policies: Commit to using recycled municipal water as a water source.
- 5.Establishing a back-up water supply plan during emergencies: Predict and manage water resources risks.

5.4 Implementation Results

	Investment (Unit: NT\$1000)	Water Saved (kiloliter/year)	Percentage to Water Withdrawal
Petrochemical	9,800	303,528	3%
Polyester	5,708	113,952	2%
Textile	12,472	362,220	12%
Total	27,980	779,700	4%

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

Featured Cases

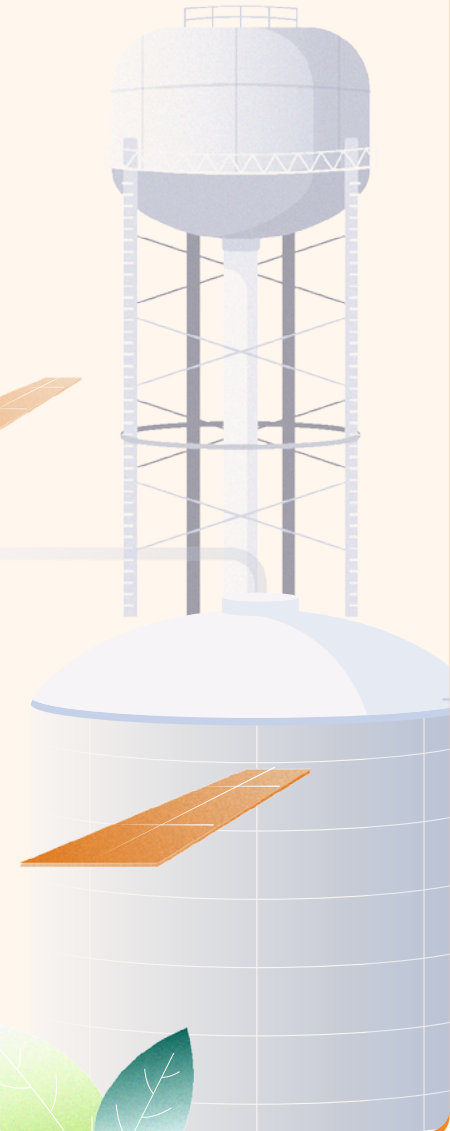
Transforming Effluent Into Purified Water

After going through the water treatment system, effluents from FEIS-Polyester Business meet the quality standards as replenishment for the cooling tower. The demand for water is high in summer but low in winter, therefore, while the treated effluent is fully utilized in summer, the utilization rate drops in winter. In October 2023, the plant launched a project to purify the effluent through ceramic membranes, RO and ultraviolet disinfection, and use it to supply on-site production. FEIS-Polyester Business invested approximately NT\$2 million, and the project conserves 24,000 kiloliters of water annually, equating to approximately NT\$510,000 in financial benefits.



Tap Water Leak Detection

Tap water is the main source of water supply at FEDZ. In 2023, the plant launched a plant-wide tap water leak detection project to take stock of water usage points, prepare the plumbing diagram, classify the tap water usage into production and domestic purposes, and install water meters. The readings are recorded daily to identify points with unusual activities with plans formulated to identify leakage, which is repaired immediately once identified. A plan for system retrofit is also established if immediate repair is not viable. The project identified leakage in the domestic pipelines, of which the majority are underground. The repair was completed at the end of November 2023, and the domestic water consumption went down dramatically by 80%, equating to NT\$1.1 million in annual financial benefits.



6 Green Product

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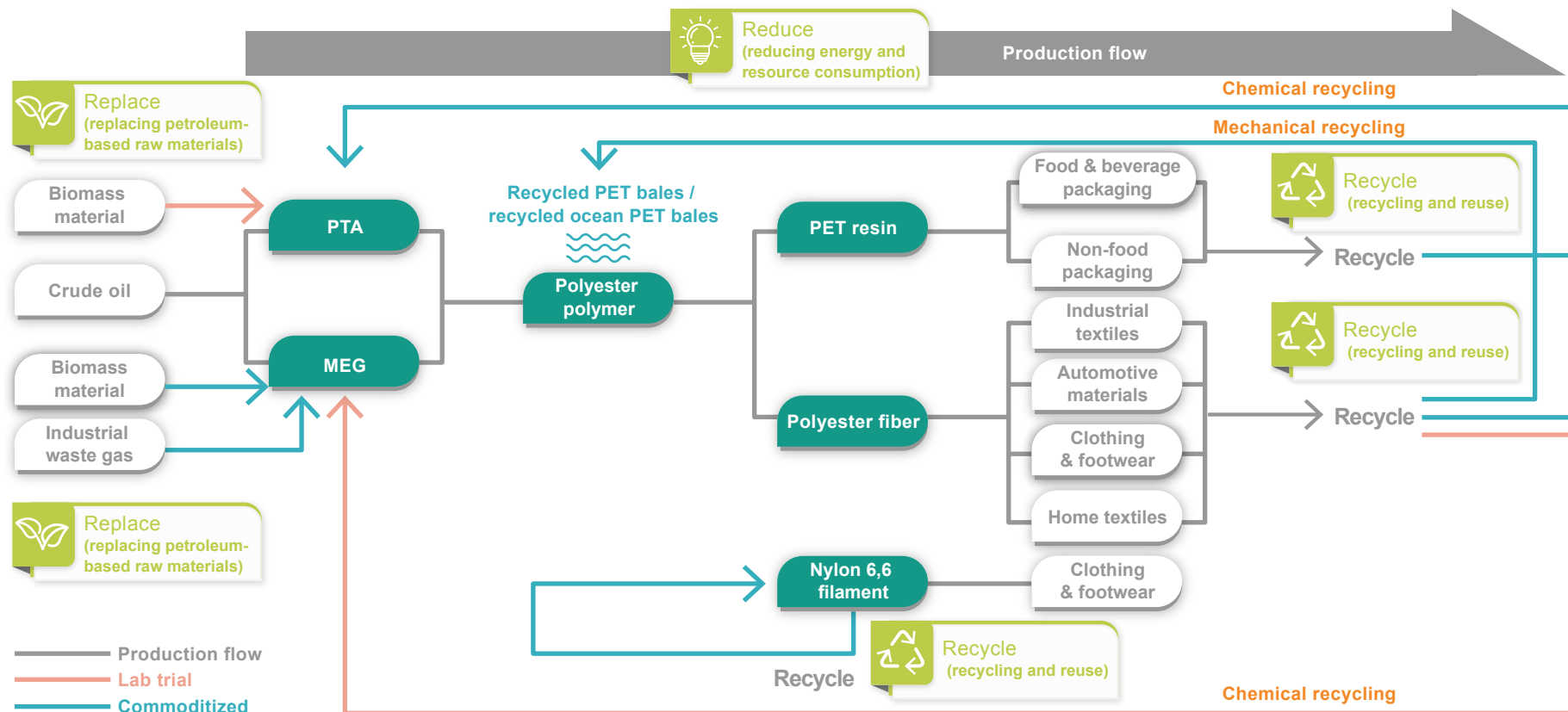


6.1 Climate Change Mitigation Product Management Strategy

In the face of the risks and opportunities brought about by the global extreme climate, FENC applies its core competencies to the development of innovation and recycling technology, including the development of environmentally friendly rPET resins made from recycled PET bottles. Not only can it reduce GHG emissions by 63%, compared to petroleum-based PET, but also create new values by recycling and reusing waste products for food & beverage packaging, non-food packaging, functional clothing, footwear, automotive materials, and household products. FENC has been comprehensively promoting and implementing the

green transformation of its products, adopting the 3R (Recycle, Replace and Reduce) strategy. In addition to "Recycle" (recycling and reuse), the company also focuses on developing green products under "Replace" (replacing petroleum-based raw materials) and "Reduce" (reducing energy and resource consumption). It leverages its 3R strategy to build low-carbon competitiveness, expand business opportunities amid climate change and reduce GHG emissions while increasing revenue growth, thus achieving the goal of mitigating climate change.

Expanding Climate Change Mitigation Products with 3R Strategy



1. Replace (Replacing Petroleum-Based Raw Materials)

To reduce the impact of the petrochemical industry on the earth's resources and continue to contribute to the economic development of human society, FENC has long invested in the research and development of biomass materials to replace petroleum. The most representative product is bio PET and low-carbon polyester.

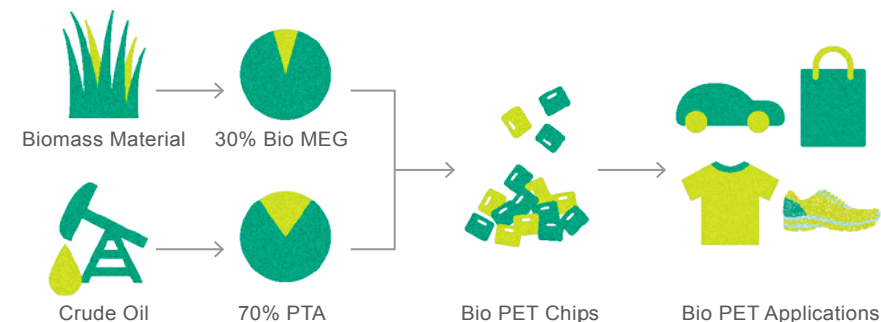
(1) Bio PET

FENC, as the global leader in bio-based polyester, has successfully developed the world's first PET bottle using 100% bio-based materials and the world's first batch of 100% bio PET apparel, leveraging its 40 years of accumulated polyester synthesis technology. FENC® TOPGREEN® Bio PET, the company's bio PET product, contains 30% bio-based ethylene glycol (Bio-MEG) and 70% terephthalic acid (PTA) from petrochemical raw materials. After several years of research and development, Bio-MEG has become economically viable, with raw materials sourced from non-food grade plants, to avoid competition with food sources and at the same time reduce dependence on petroleum.

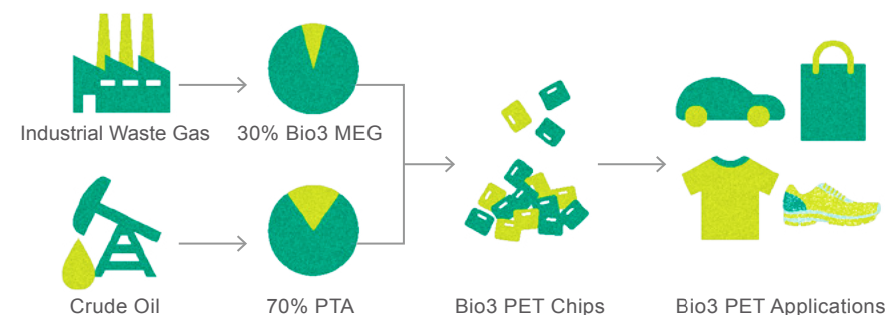
(2) Low-Carbon PET

FENC has partnered with a U.S. biotech company to develop the latest technology FENC® TOPGREEN® Bio3 PET, using carbon capture and utilization technology to gradually convert industrial waste gas into ethylene glycol as raw material for low-carbon polyester filament to replace petrochemical raw materials. This novel raw material not only maintains the same characteristics and properties as petrochemical products, but also reduces GHG emissions by 30% compared to petroleum-based polyester, demonstrating outstanding effect in carbon reduction.

FENC® TOPGREEN® Bio PET



FENC® TOPGREEN® Bio3 PET



Featured Cases

Building Low-Carbon Supply Chains to Co-Create Biomass Raw Materials

In December 2023, FENC's Petrochemical Business signed a letter of intent on the supply of biomass materials with Marubeni Taiwan Co., Ltd. (Marubeni) and Idemitsu Kosan Co., Ltd. (Idemitsu Kosan). The cooperation involves the extraction of Bio-PX from biomass-derived naphtha by Idemitsu Kosan, and Plant 2 of OPTC under FENC converts the Bio-PX into Bio-PTA. Marubeni is responsible for establishing the biomass supply chain and facilitating product sales by coordinating with the upstream and downstream customers. Compared to products made of virgin materials, those produced from biomass materials cut carbon emissions and contribute towards a low-carbon society. FENC strives to create innovative sustainable materials. Plant 2 of OPTC became the first among its peers in Taiwan to successfully develop Bio-PTA. In 2024, the plant is expected to be certified by the International Sustainability & Carbon Certification, ensuring the traceability and sustainability of its biomass materials as well as the supply chain in order to achieve its environmental goals and fulfill its sustainable commitment to stakeholders.

Winning Red Dot with Waste Gas Recycling Technology

FENC manufactures low-carbon polyester using captured waste gas with its ground-breaking technology. The waste gas captured from steel mills is first turned into ethanol through microbial fermentation during a special bio-treatment, and then transformed into PET products. In 2022, FENC® TOPGREEN® Bio3 PET, a product made of recycled waste gas, caused an international sensation, and was recognized with awards such as the Sustainability and Innovation Award from International Textile Manufacturers Federation (ITMF) and the Best Product award from the ISPO Textrends Award. In 2023, FENC was chosen out of over 100,000 global competitors as the Product Design Winner in the Red Dot Design Award, a competition with less than 2% chance of winning. The award-winning design is an innovation inspired by green fashion. With 3D knitting and ingenuity, the fabric creates the effect of sunlight being reflected on the sea. Aside from using waste gas as the material, a water-conserving dyeing technology is incorporated during the production. Both the raw material and production technology are ingrained with the sustainable DNA. This innovation also echoes the concept of sustainable fashion. The quality and sustainability of this green fashion product has attracted brands such as ZARA, H&M and Craghoppers, which have been introducing dresses, functional sportswear and thermal tops made of this material. A partnership with adidas also showcased products made of this material during international sports events, such as tennis apparel for the Australian Open. FENC has set a new benchmark of sustainability in the industry.

2. Recycle (Recycling and Reuse)

By cutting down waste, the global GHG emitted from waste treatment process can be effectively reduced. FENC has been deeply involved in the recycling industry for more than 30 years and has become a global leader in recycling polyester. The most representative products include rPET and its applications, as well as fabrics recycled polyester developed in recent years. In addition to the mechanical recycling technology, FENC has also adopted the more difficult polyester chemical recycling technology to separate waste polyester products mixed with other components through chemical processes, followed by polymerization and other processes to produce new polyester products.

(1) Recycled PET

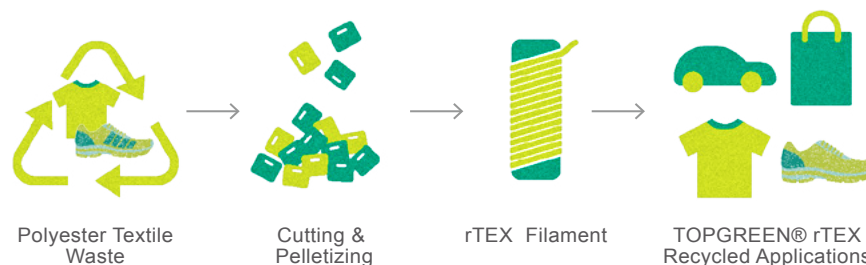
Using recycled PET bottles as raw materials to be further treated through processes such as crushing, cleaning, decomposition, polymerization, and granulation can not only reduce the consumption of petroleum in polyester production process, but also can cut down resource consumption, and further promote resource recycling and reuse. Polyester resins made from recycled PET bottles can reduce GHG emissions by 63% compared to conventional polyester resins derived from petroleum. Based on the rPET production capacity of FENC, the estimation is equivalent to an annual carbon reduction contribution of 650,000 tCO₂e.

(2) Recycled Nylon 6,6 Filament

In response to sustainable development trends and energy-saving and carbon reduction policies, FEFC has been developing recycled filaments since 2014. It uses waste fiber and waste blocks from its own spinning process as raw materials, which are then recycled, sorted and processed through filtering and re-pelletized to produce nylon resins that can be remelted and spun into new fibers. This recycling process can eliminate the polymerization process, thus reducing energy consumption and CO₂ emissions by around 70%, creating environmental benefits of energy saving and carbon reduction.

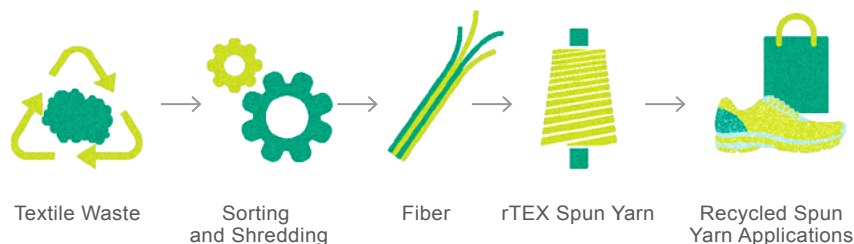
(3) rTEX Filament

Recycled filaments made from waste polyester textiles as raw materials, processed through crushing, melting, granulating, drawing and false twisting, are not only produced in an environmentally friendly process and made from sustainable materials, but also provide a solution for the recycling and reuse of waste textiles.



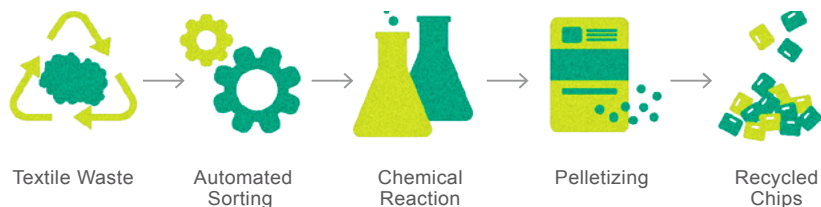
(4) rTEX Spun Yarn

By recycling and reusing waste textile fabrics through physical and mechanical processing, textile waste can be converted into 100% recycled short staple yarn without the need for dyeing, avoiding the use of chemical dyes. This not only gives new life to the waste fabrics, but also embodies the concept of environmental sustainability.



(5) FENC® TopGreen® rTEX Chemical Recycling

Polyester textiles account for 2/3 of all polyester applications. To address the difficulty of recycling textile waste, FENC focuses its R&D efforts on the development of textile recycling technologies. By incorporating both chemical and mechanical recycling, the Company developed the recycled fiber, FENC® TOPGREEN® rTEX. Chemical recycling, a recycling approach with high technological thresholds, is effective in processing waste textiles containing a complex mix of materials and colors. The pilot plant for the chemical recycling segment of FENC® TOPGREEN® rTEX is scheduled to be completed in 2024. Its commercialization and applications will be expanded to meet customer needs and sustainability development goals.



Featured Cases

Ocean Recycled Anti-bursting Jerseys, a Sensation at International Games

Marine plastic pollution is a matter of serious global concern. Back in 2016, FENC began a collaborative endeavor with adidas and the NGO, Parley for the Oceans, to convert ocean recycled PET bottles into brand-new products. FENC pioneered the world's first sports jerseys made of its recycled ocean polyester filament, and the jerseys have been worn by the national teams competing in FIFA World Cup. The Company's proprietary weaving technology creates the most ideal fabric structure that is more malleable and stretch resistant. This eco-friendly and high-performance jersey was chosen by nine national teams at the FIFA World Cup, including the champion team, Argentina. In 2023, FENC's ocean recycled anti-bursting jerseys once again became the focal point at international sports events, including UEFA Champions League and FIFA Women's World Cup. Athletes from 16 national teams competed on the fields wearing the newly upgraded ocean recycled anti-bursting jerseys, including the reigning champion of FIFA Women's World Cup, Spain. During the same year, FENC's rPET chips made of ocean recycled PET bottles was certified by the Ocean Bound Plastic Recycling Standard (OBP). This is a testament to FENC's high-quality standards. Such emphasis on quality also attracted partnership opportunities with additional international brands, including Helly Hansen, the well-known manufacturer and retailer of wear and gear for outdoor activities such as sailing and skiing. The brand is expected to take advantage of FENC's recycled ocean polyester filament for specific sports events, and team up with FENC's downstream textile businesses to develop sustainable products that meet the market demand.



Featured Cases

Developing and Scaling 100% rPET Tire Cord Fabrics

OTIZ focuses on the manufacturing of automotive products. As the world focuses intently on the carbon and environmental issues, the plant is also taking aggressive strides by developing low-carbon automotive yarns and tire cord fabrics. The joint labor of the research and technical teams have borne fruit, delivering high-performance tire cord fabrics using 100% rPET, a product unmatched in the industry. The dimensional stability of the tire cord fabric is recognized by Continental AG in Germany, thus forming a strategic partnership with OTIZ to commercialize the fabric. With repeated testing, modification and verification, OTIZ successfully replaced fossil fuels with 100% post-consumer-recycled (PCR) PET bottles for the production of tire cord fabrics. The new tire cord fabrics perform as well as those made of virgin materials, and more significantly, they cut carbon emissions by 28%. Mass production began in August 2022, and the production and delivery continued to grow in 2023. This innovative and sustainable product has been attracting global attention, pulling in international partnerships with major tire manufacturers from Germany, Italy and Japan. These collaborations are underway and heading towards commercialization. While the product generates corporate profits, it is taking FENC closer to its sustainable development goals.



3. Reduce (Reducing Energy and Resource Consumption)

FENC is also actively improving the efficiency of energy resource utilization in the value chain, reducing energy consumption in the production, processing, distribution, and raw material usage to cut down its products' GHG emissions.

(1) Fast Reheat and Energy-Saving PET Resin

The energy-saving PET resins are produced by adding the far-infrared (FIR) heat in the polymerization process. Far-infrared (FIR) heat emitted by quartz lamp tubes can be absorbed effectively during the PET blowing process, improving blowing efficiency by 20-30% for FENC's customers.

(2) Refillable Bottle

The manufacturing process increases the thickness of bottle body, allowing it to be recycled and filled more than 30 times. This reduces resource consumption and the use of disposable packaging materials, thereby enhancing environmental benefits.

(3) Lightweight Preform

By adjusting the process and raw materials, the stability of bottle blowing production is improved, and the thickness of PET preforms is substantially reduced. This not only cuts down raw materials used, but also reduces the weight of preforms. The weight reduction of preforms of different capacities ranges from 10-20%, achieving environmental benefits of less resource use and low carbon emissions from transportation throughout the product's life cycle.

(4) EZ Dyed CD Filament

This is a low-temperature dyeing process to render bright colors and effectively save energy at the same time. It can be used for materials suitable for low-temperature dyeing such as cotton, wool, nylon, etc.

(5) Dope Dyed Filament

Color particles are added during the spinning process to reduce the use of chemical dyes, auxiliaries, wastewater treatment and toxic substances. This can substantially reduce water use, energy consumption, and CO₂ emissions. Dope dyed filament is a new generation of eco-friendly and energy-saving fibers with bright colors and excellent light and wash fastness.

(6) Digital Print

Different from traditional paper printing, this technology can directly print on various kinds of fabrics, with a faster speed and no limit on colors and patterns, to deliver colorful and detailed rendering. Compared to traditional printing processes, it requires less water, effectively mitigates wastewater problem, and conforms to the market trend of environmentally friendly production.

(7) Sustainable Cotton

Compared to traditional cotton, sustainable cotton is grown using sustainable and scientifically based farming methods, which can not only reduce water use and GHG emissions, but also improve soil health and enhance biodiversity.

Featured Cases







Nylon 6,6 Solution Dyed Filament

The demand for environmentally friendly and energy-saving products in the market remains strong. Dope dyed filament, which replaces traditional water dyeing technology with added color masterbatches, has the advantages of saving water and energy, reducing the use and pollution of dyes and chemicals, and is in line with the trend of environmental protection. It has become the main direction of development and promotion for filament plants at present. Compared with the mature technology of dope dyed polyester filament, the color masterbatches that can be applied to the nylon 6,6 process are limited. In addition, the difficulty and technical threshold of nylon 6,6 spinning are much higher than that of polyester filament. Raw materials need to meet high purity requirement. Any variation will affect the quality and efficiency of spinning. Furthermore, the specifications of nylon 6,6 filament designated by brand customers are much finer than those of polyester filament in the market, and the difficulty of dope dyed nylon 6,6 is increased when specific color requirements are specified. FEFC has collaborated with international material giants to jointly develop color masterbatches for nylon 6,6. Production is based on customer-specified colors, concentrations and hues. With excellent spinning technology, FEFC has successfully overcome the technological bottleneck of production, not only meeting customer requirements for product quality, but also mastering the production technology and capability. As a result, the product shipment doubled in 2022.



6.2 Commitments and Targets

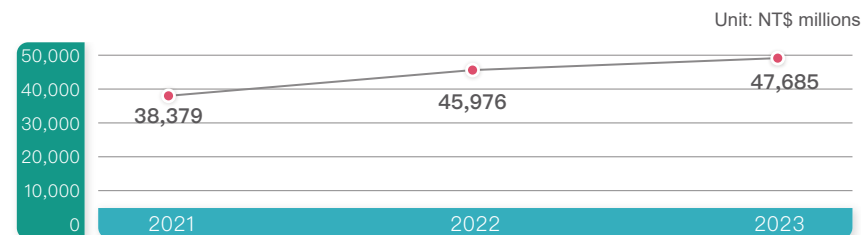
Target and Progress of Growth in Green Product Revenue

2023 Progress	2023 Target	2024 Target	2025 Target	2030 Target
  46%	 40%	 45%	 50%	 70%

Note: The base year for green product revenues has been modified to 2020 with updated target growth rates.

6.3 Implementation Results

Revenue from Green Products



► [FENC Corporate Sustainability Website: Green Products](#)

Global awareness on environmental sustainability is on the rise, and our downstream customers are more inclined towards raw materials with low environmental impact. FENC seeks out green product certifications with high standards and has obtained the following green product certifications.

Green Product Certification

 <p>Global Recycled Standard Version 4.0</p>	 <p>SCS Recycled Content Certification Version 7.0</p>	 <p>Ocean Bound Plastic Recycling Standard (OBP) Version 2.0</p>	 <p>The Association of Plastic Recyclers (APR)</p>	 <p>Taiwan Green Mark</p>
<p>Carbon Footprint of Products ISO 14067 : 2018</p> <p>Based on Life Cycle Assessment ISO 14040 : 2006 ISO 14044 : 2006</p>	<p>Water Footprint of Products ISO 14046 : 2014</p> <p>Based on Life Cycle Assessment ISO 14040 : 2006 ISO 14044 : 2006</p>	<p>Registration, Evaluation, and Authorization of Chemicals (REACH)</p>	 <p>bluesign® Standard</p>	<p>OEKO-TEX® CONFIDENCE IN TEXTILES STANDARD 100</p> <p>OEKO-TEX® Standard 100 Tested for Harmful Substances</p>
 <p>Global Organic Textile Standard (GOTS-NL) Version 6.0</p>	 <p>Organic Content Standard (OCS) Version 3.0</p>	 <p>Regenagri Content Standard (regenagriCS)</p>	 <p>Responsible Wool Standard (RWS) Version 2.2</p>	

7 Metrics and Targets

7.1 GHG Reduction Metrics and Targets

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7.2 Other Climate-Related Metrics and Targets

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7.1 GHG Reduction Metrics and Targets

FENC has long been committed to corporate sustainability action, actively promoted comprehensive GHG emission inventory and control. In 2022, it established short-, medium- and long-term GHG reduction targets for its production business, which were approved by the Board of Directors. The company has gradually increased the use of renewable energy to mitigate global warming caused by GHG emissions.

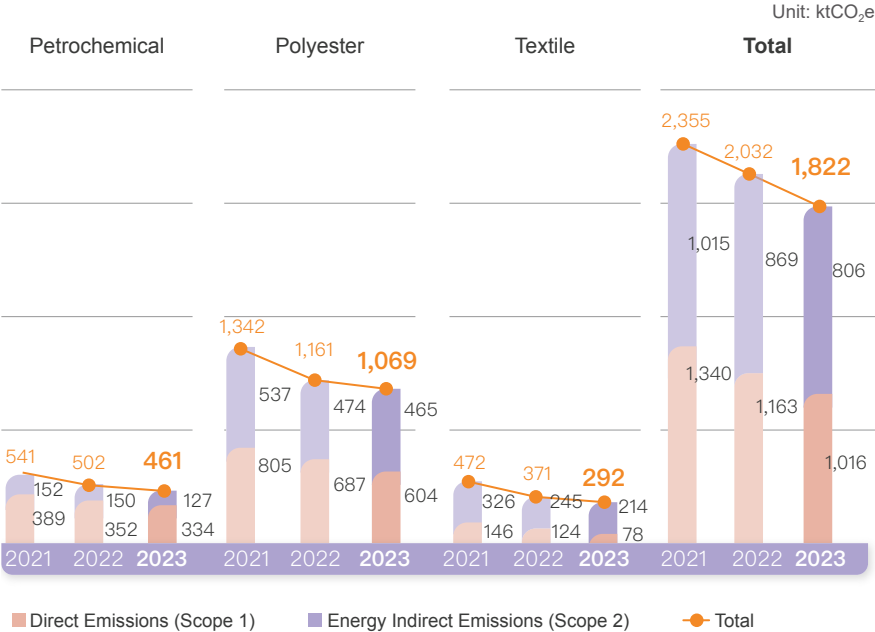
In 2020, the GHG emissions of FENC's 21 production sites were 2,432 ktCO₂e. Through the implementation of five major low-carbon transition strategies, each business unit has demonstrated the effectiveness of GHG reduction. Scopes 1 and 2 GHG emissions reached 1,822 ktCO₂e in 2023, down by 25% from the base year.

Target and Progress of GHG Reduction

2023 Progress	2025 Target	2030 Target	2050 Target	Target Base Year	Base Year Data
<div> <div>Achieved</div> <div>↓25%</div> </div>	↓20%	↓40%	Net Zero	2020	2,432 ktCO ₂ e

Note: The statistics include scope 1 and scope 2 emissions of all production sites.

Direct and Energy Indirect GHG Emissions



- Note:
- Scope: The scope of data collection covers 21 production sites, which account for 100% of the production sites included in this report. Data is compiled using the operational control approach.
 - GHGs include CO₂, CH₄, N₂O, HFCs, PFCs, SF₆ and NF₃.
 - The calculation is based on the ISO 14064-1:2018 GHG inventory standards.
 - In 2021 and 2023, 100% of the emission data passed the internal audit and third-party verification for the ISO 14064-3 standards.
 - In 2022, 100% of the emission data passed the internal audit; 88% 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, plant 1 and plant 2 of OPTC, FEFC, OGM, FEIS-Polyester Business, WHFE, OTIZ, the polyester plant of FEPV and the knitting and dyeing plant of FEPV, FIGP, and APG Polytech.
 - In 2023, the proportion of scope 1 emissions regulated by emissions-related laws and regulations is 77%.

Other Indirect GHG Emissions in 2023 (Scope 3)

Unit: ktCO₂e

Category	Petrochemical	Polyester	Textile	Total
Purchased Goods and Services	2,200	4,467	630	7,297
Capital Goods	17	60	14	91
Fuel- and Energy-Related Activities	82	215	41	338
Upstream Transportation and Distribution	53	151	20	224
Waste Generated in Operations	4	4	2	9
Business Travel	0.07	1.15	0.75	1.97
Employee Commuting	0.43	19.14	6.67	26.24
Upstream Leased Assets	2.20	1.52	0.43	4.15
Downstream Transportation and Distribution	78	290	8	376
Processing of Sold Products	-	2,731	78	2,809
End-of-Life Treatment of Sold Products	-	287	68	355
Downstream Leased Assets	0	0.19	0	0.19
Franchises	0	0	0	0
Investments	0	0	0	0
Total	2,437	8,227	869	11,532

- Note:
- Scope: The scope of data collection covers 21 production sites, which account for 100% of the production sites included in this report. Data is compiled using the operational control approach.
 - Significant indirect GHG emissions are identified in accordance with ISO 14064-1:2018 and divided into 15 reporting categories based on the GHG Protocol.
 - FENC focuses on the production of polyester and raw materials with an array of terminal applications. The GHG emission generated from the use of sold products must be calculated based on specific scenarios. Due to the lack of objectivity and reference value, the data is excluded. The GHG emissions generated from the processing and end-of-life treatment of sold products have been calculated since 2022.
 - FENC production sites do not engage in franchising or investment activities, thus without GHG emissions under the two categories.
 - In 2023, 100% of the emission data passed the internal audit and third-party verification for the ISO 14064-3 standards.







7.2 Other Climate-Related Metrics and Targets

1. Energy Efficiency Improvement

FENC is committed to promoting and implementing energy conservation and environmental protection projects to realize its business philosophy on sustainable development. It has gradually expanded the coverage of ISO 14001 environmental management system standards and ISO 50001 energy management system standards. It continues to optimize management systems and set energy consumption reduction targets per unit of production.

In 2023, the energy consumption per unit of production decreased by 9% compared to the baseline year of 2020. The significant decrease is a testimony to the success in energy management at FENC, which implemented a total of 113 projects for the year to improve energy efficiency. The projects include production improvement, equipment enhancement and energy management. The Company will extend this approach, maximizing energy efficiency through a mix of energy conservation projects.

Target and Progress of Energy Consumption per Unit of Production

2023 Progress	2023 Target	2024 Target	2025 Target	2030 Target	Target Base Year	Base Year Data
  9%	 6%	 8%	 10%	 20%	2020	2.91 GJ / metric ton of production

Energy Consumption in 2023

Unit: TJ

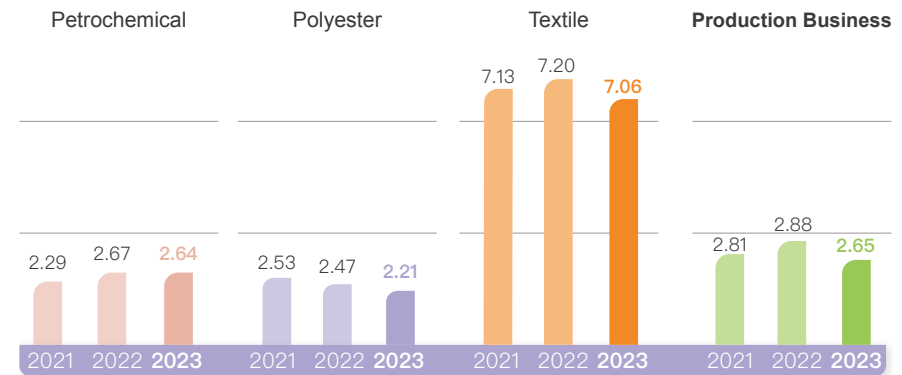
Category	Petrochemical	Polyester	Textile	Total
Purchased Electricity	960	2,944	1,360	5,264
Purchased Renewable Electricity	0	316	273	589
Self-Generated Renewable Electricity	7	22	37	66
Total Electricity Consumption	967	3,282	1,670	5,919
Natural Gas	3,738	2,991	687	7,416
Heavy Oil	0	70	4	74
Diesel	5	28	6	39
Coal	0	2,419	684	3,103
Coal-Water Slurry	0	1,300	90	1,390
Biomass Fuel	141	41	102	284
Purchased Steam	12	285	173	470
Total Energy Consumption	4,863	10,416	3,416	18,695

Note:

1. Energy consumption at FENC, which is mainly for production purposes, covers energy used for the generation of electricity, heat and steam; cogeneration; firefighting pumps; vehicles for internal transport.
2. The calorific value is based on the factors of calorific value from all production sites.
3. External energy consumption is not taken into account.
4. Data collection on energy management accounts for 100% of the production sites within the scope of this report.
5. Percentage of renewable electricity = (purchased renewable electricity + self-generated renewable electricity) / total electricity consumption. In 2023, the percentage of renewable electricity is 11.1%.
6. Percentage of renewable energy = (purchased renewable electricity + self-generated renewable electricity + biomass fuel) / total energy consumption. In 2023, the percentage of renewable energy is 5%.
7. Electricity from the grid (purchased externally) represents 31% of the total energy consumption.

Energy Consumption per Unit of Production

Unit: GJ / metric ton of production









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

2. Water Consumption Reduction

FENC regards water as a shared resource and attaches great importance to water resource management at each production site. Therefore, the company has set targets to reduce water withdrawal per unit of production and continue to reduce water consumption per unit of production. It also collaborates with customers to reduce water resource usage.

Target and Progress of Water Withdrawal per Unit of Production

2023 Progress	2023 Target	2024 Target	2030 Target	2050 Target	Target Base Year	Base Year Data
  13%	 6%	 8%	 10%	 20%	2020	2.98 kiloliter / metric ton of production

Water Withdrawal per Unit of Production



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

Water Withdrawal and Water Consumption in 2023

Unit: megaliter

	Petrochemical	Polyester	Textile	Total	Percentage of the Production Sites Located in Water-Stressed Areas
Total Water Withdrawal	10,750	4,778	2,964	18,492	24%
Total Water Consumption	5,378	2,565	984	8,927	27%


Note:

1. Data collection on water management accounts for 100% of the production sites within the scope of this report.
2. According to the World Resources Institute's Aqueduct Water Risk Atlas, an area is considered under water stress if annual ratio of available reclaimed water supply to total water withdrawal is 40% or higher. The Company has five production sites located in water-stress areas, with their total assets amounting to NT\$35.7 billion, or approximately 7% of the total assets of all the production sites included in the report.

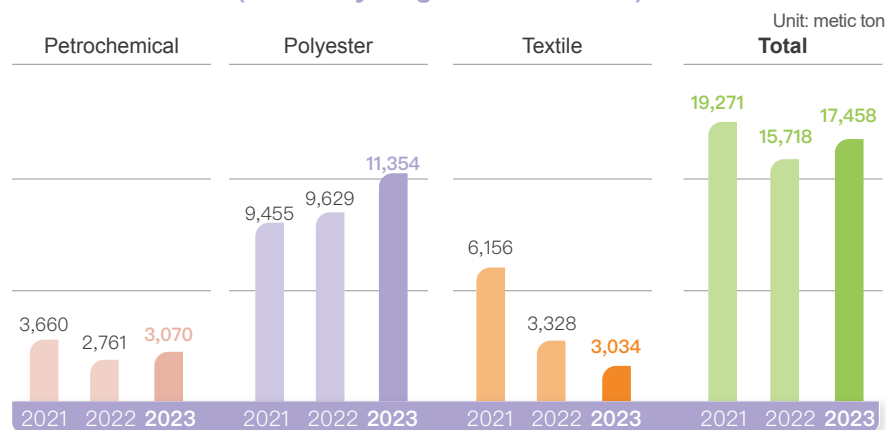
3. Waste to Resource: Recycling and Reuse

FENC has been continuously optimizing its waste management at each production site and set reduction targets. By improving the efficiency of resource utilization in production activities, the company aims to reduce waste at the source and promote the concept of resource circulation through strategies such as waste sorting and recycling.

Target and Progress of Waste Reduction (Non-Recycling and Non-Reuse)

2023 Progress	2023 Target	2024 Target	2030 Target	2050 Target	Target Base Year	Base Year Data
 ↓25%	↓6%	↓8%	↓10%	↓20%	2020	23,238 metric tons

Waste Generated (Non-Recycling and Non-Reuse)




Note: Data collection on waste generated accounts for 100% of the scope of this report.

4. Air Pollution Control

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.

Target and Progress of Air Pollution Reduction

2023 Progress	2023 Target	2024 Target	2030 Target	2050 Target	Target Base Year	Base Year Data
 ↓9%	↓6%	↓8%	↓10%	↓20%	2020	1,606 metric tons

Air Pollutant Emissions



Note: Data collection on air pollutant emissions accounts for 100% of the scope of this report.

8 Appendix

8.1 Climate Change Standards Comparison Table

1. Task Force on Climate-related Financial Disclosures (TCFD)

Core Elements	Recommended Disclosures	Chapter	Page
Governance	Describe the board' oversight of climate-related risks and opportunities.	2.3	11
	Describe management' s role in assessing and managing climate-related risks and opportunities.	3.1	14
Strategy	Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	3.2, 3.3	14, 17
	Describe the impact of climate-related risks and opportunities on the organization' s businesses, strategy, and financial planning.	3.3, 3.4, 3.5	17, 19, 22
	Describe the resilience of the organization' s strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	3.2	14
Risk Management	Describe the organization' s processes for identifying and assessing climate-related risks.	3.2	14
	Describe the organization' s processes for managing climate-related risks.	3.2, 3.5, 4, 5, 6	14, 22, 23, 30, 36
	Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization' s overall risk management.	3.1	14
Metrics and Targets	Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	4.2, 5.2, 6.2, 7	26, 32, 42, 44
	Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	7.1	45
	Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	2.2, 4.2, 4.3, 5.2, 5.3, 6.2, 6.3	09, 26, 27, 32, 34, 42, 42

2. FSC Climate-Related Information of TWSE/TPEX Listed Company - Implementation of Climate-Related Information

No.	Item	Chapter	Page
1	Describe the board of directors' and management's oversight and governance of climate-related risks and opportunities.	2.3, 3.1	11, 14
2	Describe how the identified climate risks and opportunities affect the business, strategy, and finances of the business (short, medium, and long term).	3.2, 3.3	14, 17
3	Describe the financial impact of extreme weather events and transformative actions.	3.3, 3.4	17, 19
4	Describe how climate risk identification, assessment, and management processes are integrated into the overall risk management system.	3.1	14
5	If scenario analysis is used to assess resilience to climate change risks, the scenarios, parameters, assumptions, analysis factors and major financial impacts used should be described.	3.2, 3.3, 3.4	14, 17, 19
6	If there is a transition plan for managing climate-related risks, describe the content of the plan, and the indicators and targets used to identify and manage physical risks and transition risks.	4, 5, 6	23, 30, 36
7	If internal carbon pricing is used as a planning tool, the basis for setting the price should be stated.	4.3	27
8	If climate-related targets have been set, the activities covered, the scope of greenhouse gas emissions, the planning horizon, and the progress achieved each year should be specified. If carbon credits or renewable energy certificates (RECs) are used to achieve relevant targets, the source and quantity of carbon credits or RECs to be offset should be specified.	4.1	24
9	Greenhouse gas inventory and assurance status and reduction targets, strategy, and concrete action plan.	4, 7.1	23, 45

3. IFRS S2 Climate-Related Disclosures

Cross-Industry Metric

Dimension	Disclosures	Chapter	Page
Governance	The objective of climate-related financial disclosures on governance is to enable users of general purpose financial reports to understand the governance processes, controls and procedures an entity uses to monitor, manage and oversee climate-related risks and opportunities. An entity shall disclose information about: the governance body(s) (which can include a board, committee or equivalent body charged with governance) or individual(s) responsible for oversight of climate-related risks and opportunities; management's role in the governance processes, controls and procedures used to monitor, manage and oversee climate-related risks and opportunities.	2.3, 3.1	11, 14
Strategy	The objective of climate-related financial disclosures on strategy is to enable users of general purpose financial reports to understand an entity's strategy for managing climate-related risks and opportunities.	3.2, 3.3	14, 17
Climate-related risks and opportunities	An entity shall disclose information that enables users of general purpose financial reports to understand the climate-related risks and opportunities that could reasonably be expected to affect the entity's prospects.	3	13
Business model and value chain	An entity shall disclose information that enables users of general purpose financial reports to understand the current and anticipated effects of climate-related risks and opportunities on the entity's business model and value chain.	3.3, 3.4	17, 19
Strategy and decision-making	An entity shall disclose information that enables users of general purpose financial reports to understand the effects of climate-related risks and opportunities on its strategy and decision-making.	4, 5, 6	23, 30, 36
Financial position, financial performance and cash flows	An entity shall disclose information that enables users of general purpose financial reports to understand: the effects of climate-related risks and opportunities on the entity's financial position, financial performance and cash flows for the reporting period (current financial effects); and the anticipated effects of climate-related risks and opportunities on the entity's financial position, financial performance and cash flows over the short, medium and long term, taking into consideration how climate-related risks and opportunities are included in the entity's financial planning (anticipated financial effects).	3.4	19
Climate resilience	An entity shall disclose information that enables users of general purpose financial reports to understand the resilience of the entity's strategy and business model to climate-related changes, developments and uncertainties, taking into consideration the entity's identified climate-related risks and opportunities. The entity shall use climate-related scenario analysis to assess its climate resilience using an approach that is commensurate with the entity's circumstances.	4, 5, 6	23, 30, 36
Risk management	The objective of climate-related financial disclosures on risk management is to enable users of general purpose financial reports to understand an entity's processes to identify, assess, prioritise and monitor climate-related risks and opportunities, including whether and how those processes are integrated into and inform the entity's overall risk management process.	3.2, 3.5, 4, 5, 6	14, 22, 23, 30, 36
Metrics and targets	The objective of climate-related financial disclosures on metrics and targets is to enable users of general purpose financial reports to understand an entity's performance in relation to its climate-related risks and opportunities, including progress towards any climate-related targets it has set, and any targets it is required to meet by law or regulation.	7	44

Dimension	Disclosures	Chapter	Page
Climate-related metrics	greenhouse gases	7.1	45
	climate-related transition risks	3.3	17
	climate-related physical risks	3.3	17
	climate-related opportunities	3.3	17
	capital deployment	3.5	22
	internal carbon prices	4.3	27
	remuneration	2.3	11
Climate-related targets	An entity shall disclose the quantitative and qualitative climate-related targets it has set to monitor progress towards achieving its strategic goals, and any targets it is required to meet by law or regulation, including any greenhouse gas emissions targets.	7	44

Metric of Chemical Industry

Topic	Accounting Metric	Chapter	Page
Greenhouse Gas Emissions	Gross global Scope 1 emissions, percentage covered under emissions-limiting regulations	7.1	45
	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	4	23
Energy Management	(1) Total energy consumed, (2) percentage grid electricity, (3) percentage renewable, (4) total self-generated energy	7.2	46
Water Management	(1) Total water withdrawn, (2) total water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress	7.2	46
	Number of incidents of non-compliance associated with water quality permits, standards, and regulations	1 case (APG Polytech's wastewater discharge exceeds the relevant standards. Its improvement will be conducted in two phases. Phase I project is expected to be finished by July 2024, and Phase II optimization will be completed by July 2025.)	
	Description of water management risks and discussion of strategies and practices to mitigate those risks	5	30
Product Design for Use-phase Efficiency	Revenue from products designed for use-phase resource efficiency	6	36

8.2 List of Publishers and Task Force Members

Published by | Far Eastern New Century Corporation

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