

TCFD

Report 2022

Task Force on Climate-Related Financial Disclosures



CONTENTS

1 Foreword

1.1 About This Report	04
1.2 Message from the Chairman	06

2 Climate Governance

2.1 FENC Sustainability Strategy Blueprint	08
2.2 Key Milestones and Recognition: Transitioning Toward Net Zero	09
2.3 Climate Governance Framework and Oversight Mechanism	11

3 Climate-Related Risk and Opportunity Management

3.1 Climate-Related Risk and Opportunity Management System	14
3.2 Identifying Climate-Related Risks and Opportunities	14
3.3 Identification Outcome of Material Climate Risks and Opportunities	17
3.4 Financial Impact Analysis on Material Climate-Related Risks and Opportunities	19
3.5 Material Climate-Related Risks and Opportunities: Strategies and Response Plans	22

4 Low Carbon Transition Program

4.1 Climate Risk Mitigation Management Strategy	24
4.2 Commitments and Targets	26
4.3 Implementation Results	27

5 Adaptation Plan

5.1 Climate Risk Adaptation Strategy	31
5.2 Resilient Water Resource Management	32
5.3 Commitments and Targets	34
5.4 Implementation Results	34

6 Green Product

6.1 Climate Change Mitigation Product Management Strategy	37
6.2 Commitments and Targets	42
6.3 Implementation Results	42

7 Metrics and Targets

7.1 GHG Reduction Metrics and Targets	45
7.2 Other Climate-Related Metrics and Targets	46

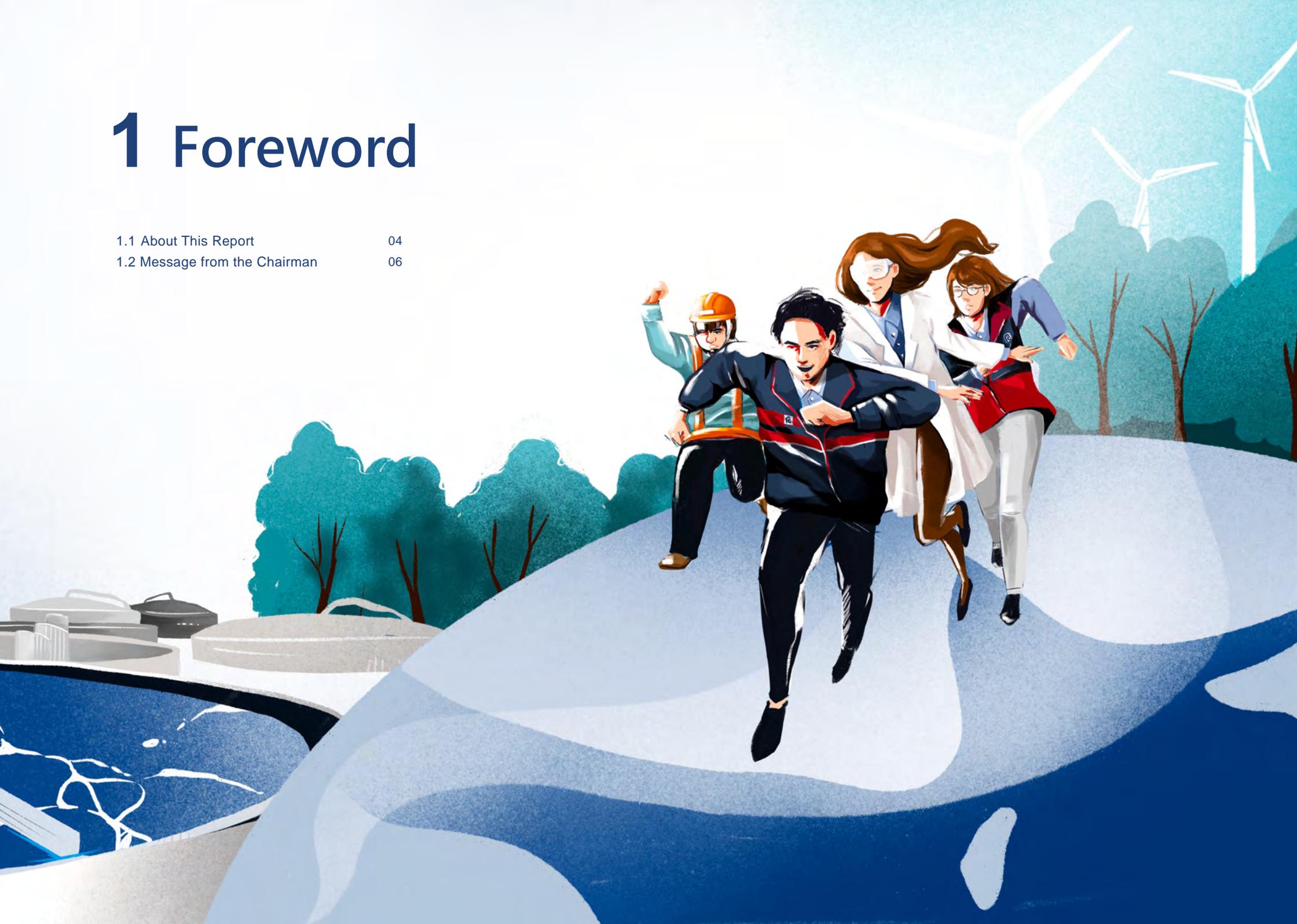
8 Appendix

8.1 Climate Change Standards Comparison Table	50
8.2 List of Publishers and Task Force Members	52



1 Foreword

1.1 About This Report	04
1.2 Message from the Chairman	06



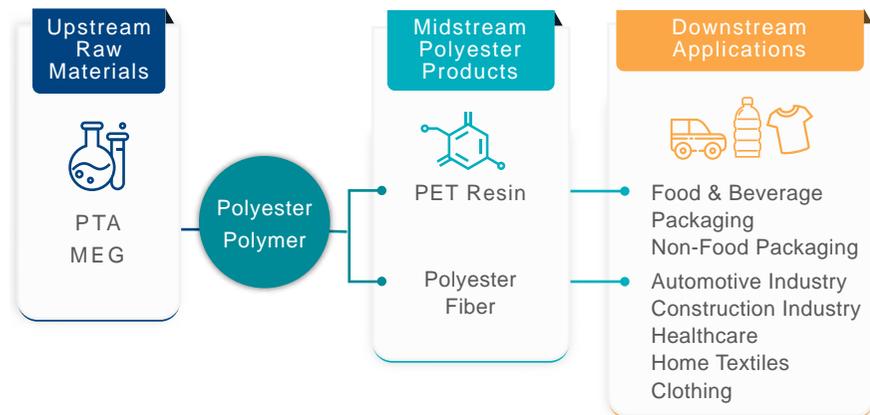
1.1 About This Report

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

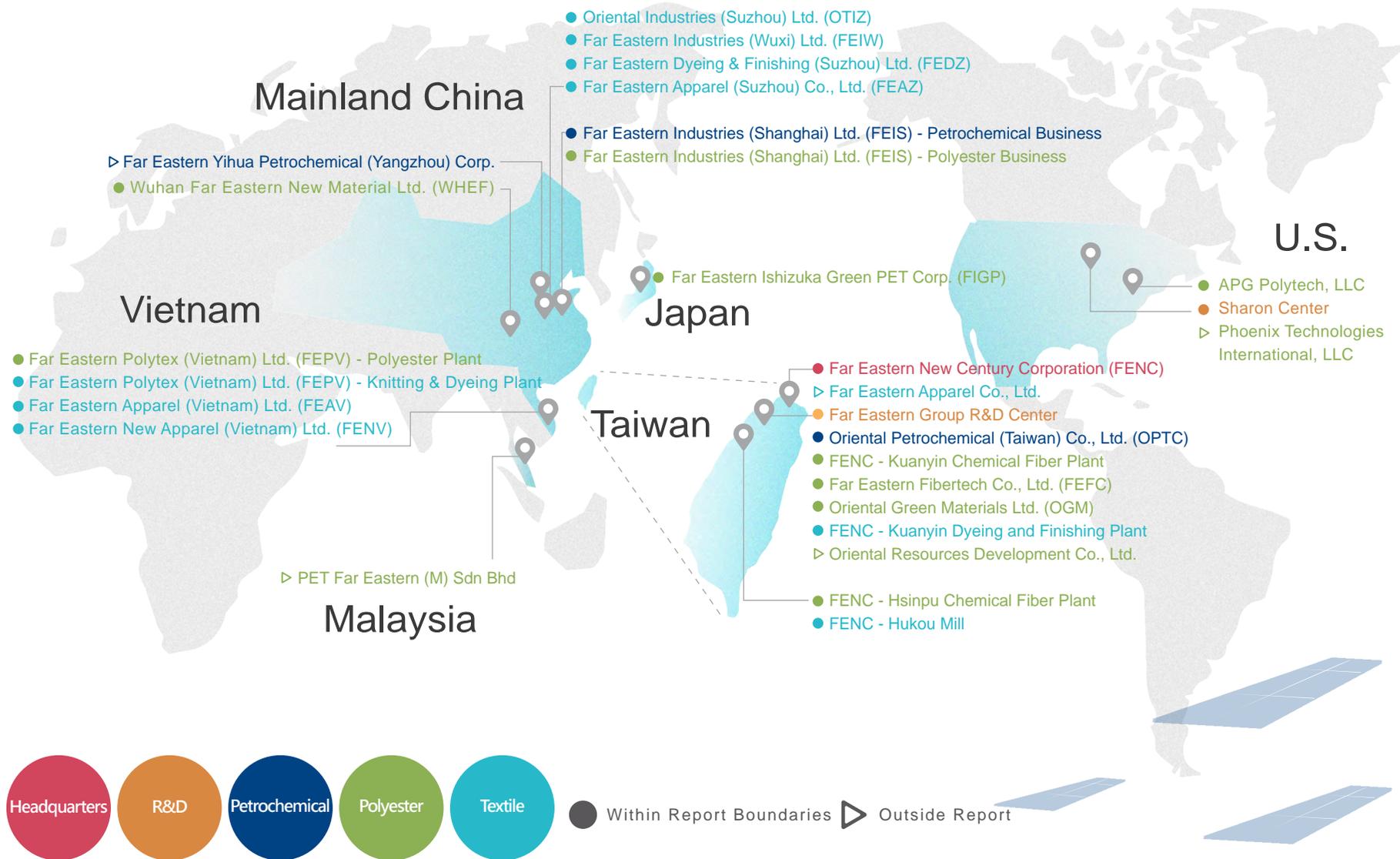
This report has followed the Task Force on Climate-Related Financial Disclosures (TCFD) framework published by the Financial Stability Board (FSB), the Guidelines on Climate-Related Information of Listed Companies issued by Taiwan's Financial Supervisory Commission, and the Sustainability Reporting Standard S2 (draft) 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 2022.

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 99% of the operating revenue of FENC's production business in 2022.

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

In recent years, extreme weather events have resulted in devastating disasters across the world, such as the 2022 heat wave in Europe, floods in Pakistan, hurricanes in Florida, and droughts in the middle and lower reaches of the Yangtze River in mainland China. The report on the top ten most costly climate disasters in 2022 was published by Christian Aid, a UK-based charity, and was cited by the United Nations. In this report, each extreme weather event, including storms, floods, and droughts caused huge financial losses exceeding US\$3 billion. Hurricane Ian alone cost up to US\$100 billion in financial losses. In the face of climate risks, companies must take the impact of climate change seriously and come up with specific response plans. Amid the turbulent world, FENC must seize opportunities and forge ahead to pursue excellence in sustainable management.

Aligning with International Trends

Firstly, companies should always follow international trends, analyze the latest international climate dynamics and actions on net-zero transition, and take proactive measures to respond in a timely manner. On August 21, 2020, FENC demonstrated its support for the Task Force on Climate-Related Financial Disclosures (TCFD) and became the first signatory in traditional industry in Taiwan and issued a statement. Since 2019, FENC has identified climate-related risks and opportunities and implemented corresponding action plans in line with the TCFD framework and publicly disclosed them in its annual sustainability reports, annual reports, and company websites.

Robust Climate Governance

Secondly, a good climate governance framework helps to manage climate-related risks and opportunities. From its Board of Directors to management level, FENC attaches great importance to the impact of climate change on the company's sustainable development. It has established management objectives and action plans, fulfilled its responsibilities of climate leadership and stewardship to reduce risks and expand opportunities, as well as materialize sustainable management.

Transitioning Towards Net Zero

Third, in order to mitigate the impact of climate change, net zero emission is the consensus of most countries in the world. FENC set its short-, medium-, and long-term GHG reduction goals in 2022. The short-term and medium-term goals are to reduce GHG emissions by 20% in 2025, and 40% in 2030 respectively. The company has committed to achieving net zero emissions by 2050. FENC has developed five major emission reduction strategies, including improving energy efficiency, adopting low-emission fuel alternatives, 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.

Leader in Circular Economy

FENC has been deeply focused on circular economy for more than 30 years. It has continued to develop green products and has become a leader in the industry. Leveraging the advantage of the company's core technology, FENC has actively developed novel eco-friendly and low-carbon materials and expanded the scope of its product applications. In the future, as a world class industry leader, it will continue to grasp climate-related risks and opportunities, mitigate impact, strengthen resilience, expand opportunities, and implement a sustainable business model.



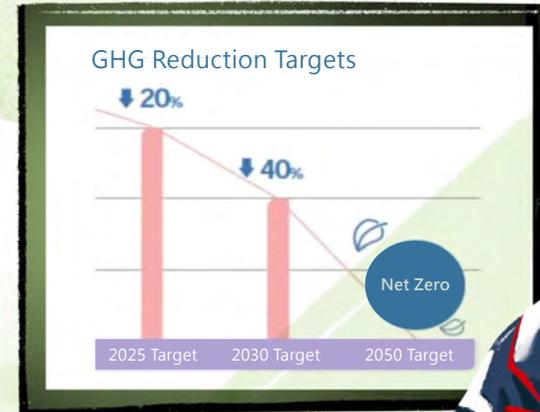
Chairman of Far Eastern New Century Corporation

Douglas Tong Hsu

徐旭東

2 Climate Governance

2.1 FENC Sustainability Strategy Blueprint	08
2.2 Key Milestones and Recognition: Transitioning Toward Net Zero	09
2.3 Climate Governance Framework and Oversight Mechanism	11



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

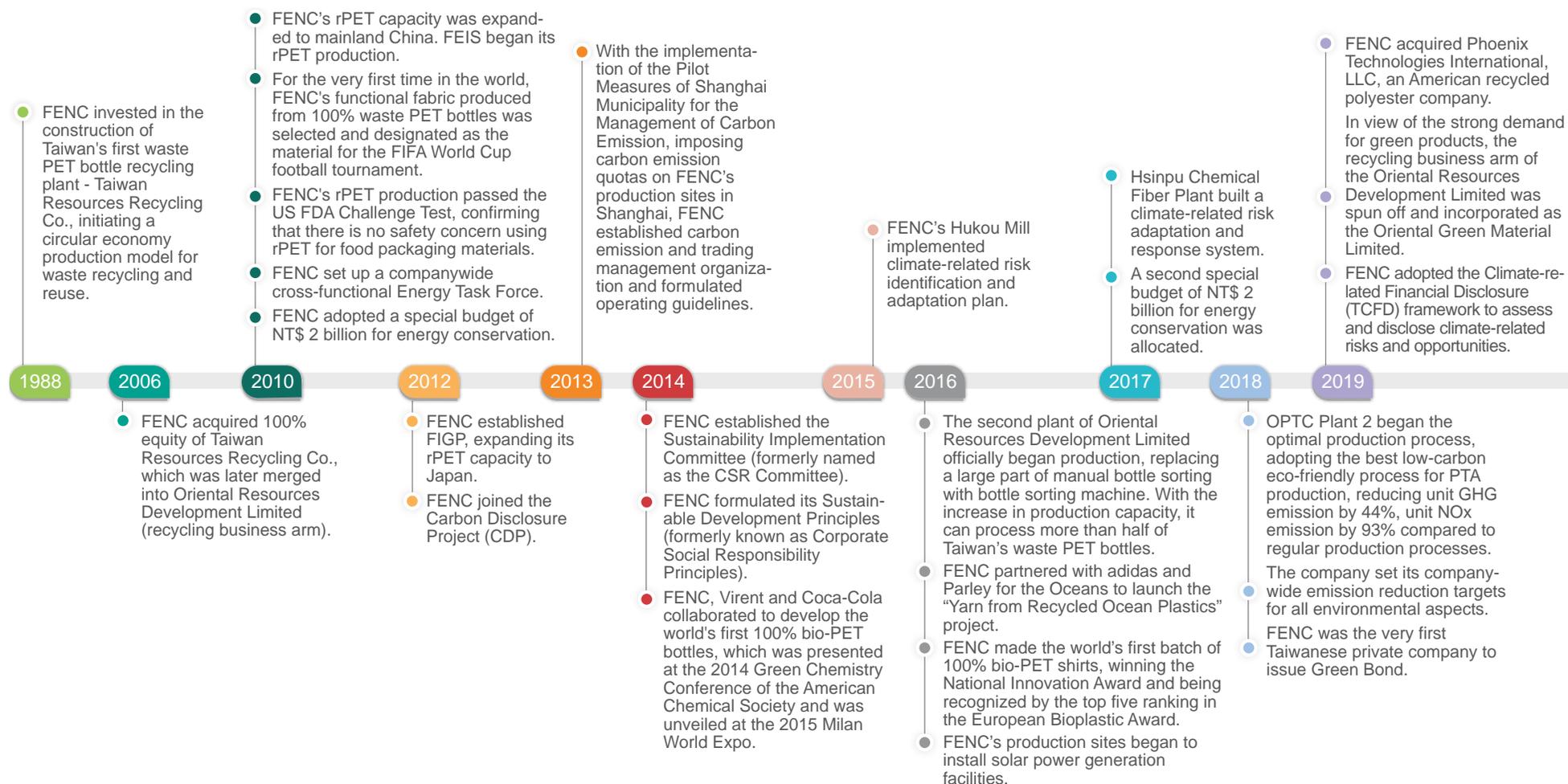
to fifteen SDGs, FENC will continue to work with global partners to achieve sustainable development goals through promoting and implementing various corporate projects on sustainability.

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



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

- 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.

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 rPET plant achieving net-zero emission.
- 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

- FENC published its TCFD Report.
- FENC expanded its rPET production capacity in Japan and the U.S. and for the very first time to Vietnam and the Philippines.
- FENC has formally submitted its commitment letter to the Science Based Targets Initiative (SBTi), declaring that it will achieve its Near-Term Target and Net-Zero Committed goals. With the SBTi's approval of the letter, the company is now in the process of submitting emission reduction targets, joining other global companies to achieve Net Zero.

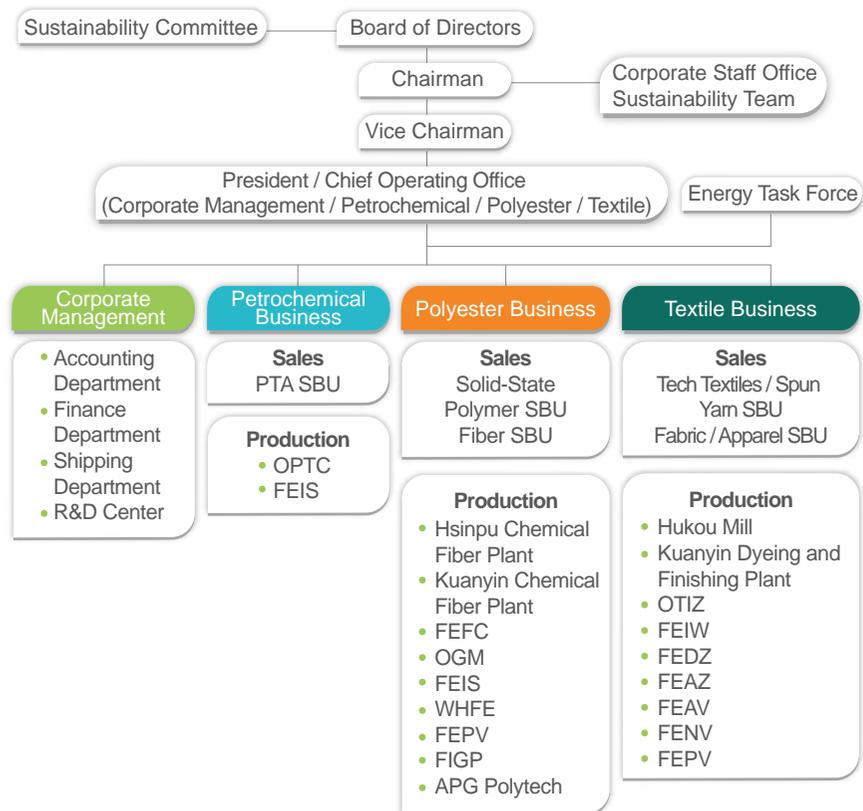
Recognition by International Sustainability Rating

- MSCI ESG Leaders Indexes
- FTSE4Good Emerging Indexes
- Sustainalytics ESG Industry Top Rated
- CDP Management Level - Water Security - Climate Change
- Greater China Business Sustainability Index

2.3 Climate Governance Framework and Oversight Mechanism

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

The Organizational Chart of Climate-Related Risk and Opportunity Management



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

Since 2010, the companywide cross-functional Energy Task Force has managed FENC's production sites in Taiwan, mainland China, Vietnam, Japan, Malaysia and the U.S. With the increasing attention to environmental sustainability, the issues managed by the Task Force have expanded from energy management to include water resources, waste, air pollution, GHG management and renewable energy management over the years. In order to realize proper management and operational practice, each production site holds monthly management meetings and annual energy-saving and decarbonization meetings, with the participation of Chairman, Vice Chairman, and Presidents of each Business to review annual performance and formulate future plans.

In order to track and evaluate management performance more effectively and regularly, FENC has set various short-, medium- and long-term environmental goals, established an online database, Management Platform of Energy Conservation, Carbon Reduction and Circular Economy, to systematically gather all sorts of environmental data, and implement an internal environmental audit mechanism.



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 2022 include:

1. Companywide GHG reduction goals and implementation tracking
2. GHG management and implementation plan
3. R&D budget for green products
4. Energy resource management and implementation plan
5. Water resource management and implementation plan

The following are the issues related to climate change governance deliberated at the regular meetings of the Sustainability Committee in 2022:

1. Enhancing climate-related financial disclosure (TCFD)
2. Deepening circular economy
3. Promoting low-carbon processes and green production to transition towards net-zero emission
4. Developing green products
5. Comprehensive promotion and implementation of GHG inventory and verification
6. Promoting sustainable supply chain training courses
7. Raising employees' sustainability awareness

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

FENC conducts an evaluation on the performance of the Board of Directors, Board members and functional committees every year in accordance with the Board Performance Evaluation Rules. Evaluation by external independent and professional organizations or an independent panel of experts and scholars takes place at least once every three years. The evaluation of Board members covers core competencies and ESG in terms of performance. The evaluation items for environment include setting out and supervising environment-related goals, such as energy and resource management, GHG emission reporting, pollution prevention, and deployment of sustainable production processes. In 2022, all self-evaluation results were rated the highest level "Exceptional". The most recent external evaluation was conducted by Ernst & Young Consulting Services in 2020. The evaluation was based on the three dimensions of structure, people and process and information. The evaluation outcome is "Benchmark", "Advanced" and "Benchmark" for the three dimensions respectively.

3 Climate-Related Risk and Opportunity Management

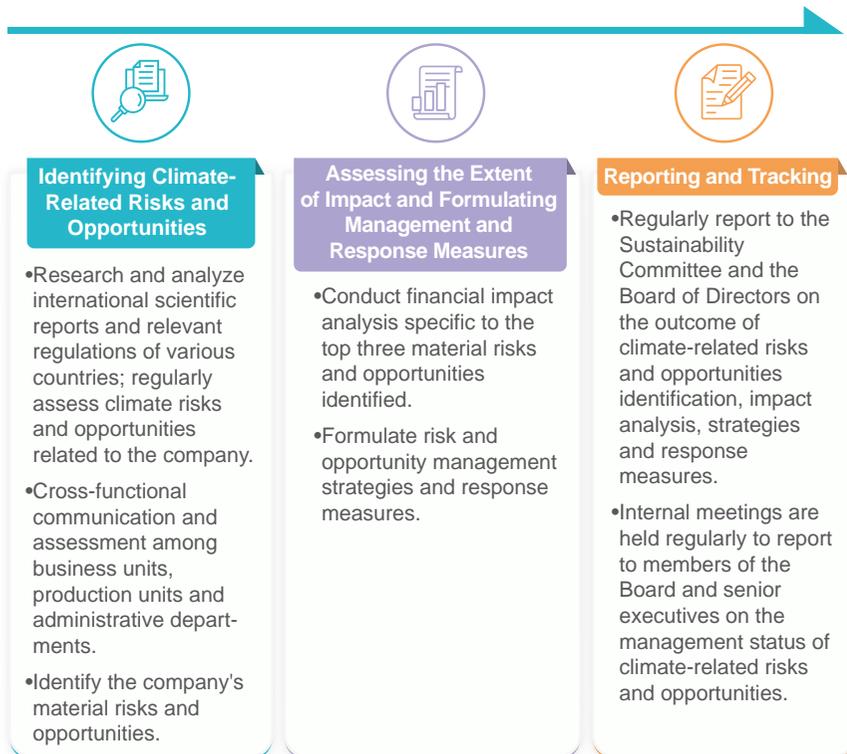
3.1 Climate-Related Risk and Opportunity Management System	14
3.2 Identifying Climate-Related Risks and Opportunities	14
3.3 Identification Outcome of Material Climate Risks and Opportunities	17
3.4 Financial Impact Analysis on Material Climate-Related Risks and Opportunities	19
3.5 Material Climate-Related Risks and Opportunities: Strategies and Response Plans	22



3.1 Climate-Related Risk and Opportunity Management System

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

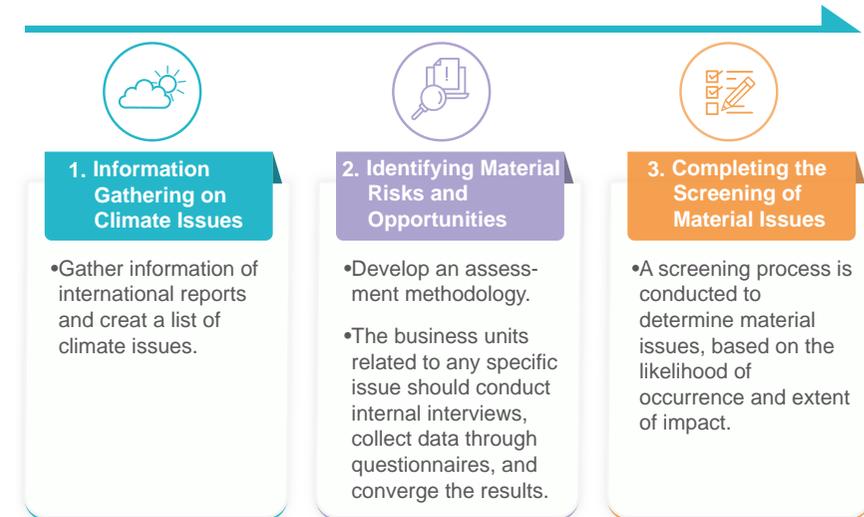
Climate-Related Risk and Opportunity Management Procedure



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 RCP 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.

RCP 8.5:

In order to assess the impact of climate change under different scenarios, the United Nations Intergovernmental Panel on Climate Change (IPCC) used four scenarios representing different GHG concentrations in its Fifth Assessment Report (AR5), which are Representative Concentration Pathways (RCPs), including RCP2.6, RCP4.5, RCP6.0, RCP8.5. In the RCP8.5 scenario, it is assumed that all countries across the world would not take any additional emission reduction measures in the future. As a result, the atmospheric radiation would reach 8.5 Wm⁻² with carbon dioxide concentration exceeding 1370 ppm. This is the worst-case environment among the four scenarios. By adopting the RCP8.5 scenario, we can assess the extent of impact in the face of the worst extreme climate challenges, and to come up with FENC's response plan against such background, so as to realize its goal of sustainable operations and management.

NZE:

How to tackle climate change becomes even more challenging by the day. Against such a backdrop, the whole world has endeavored to keep global temperature rise below 1.5°C. The IPCC issued a special report in 2018, advising that the world should take immediate actions to reduce GHG emissions by half before 2030 and reach net zero by 2050. To assess the future development of the global energy landscape under different scenarios, the International Energy Agency (IEA) published the World Energy Outlook (WEO) in 2021, setting out three scenarios, namely STEPS (Stated Policies Scenarios), APS (Announced Pledges Scenario), and NZE (Net Zero Emissions Scenario). NZE represents the path of each country to achieve net zero by 2050, which can be regarded as the scenario under which the most aggressive emission reduction measures are pursued. Adopting the NZE scenario to identify climate-related risks and opportunities can help FENC to develop a response plan accordingly and seize opportunities in the face of the global trend to aggressively cut down emissions in the future.

(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



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, 2022 to 2025 is defined as the short term.



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.



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.

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.

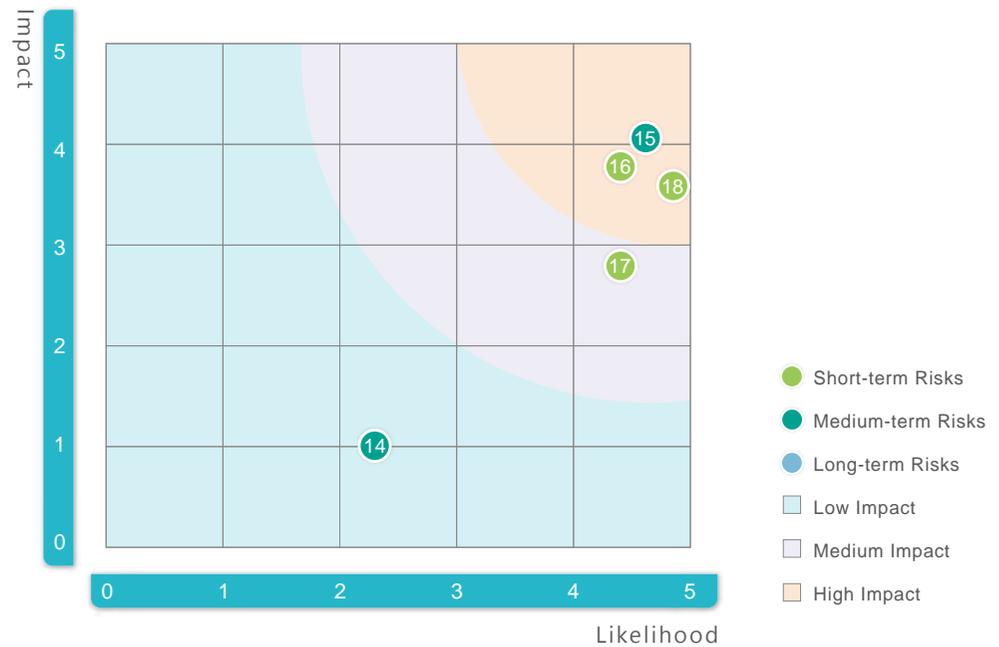
For issues identified as high-risk issues, the Sustainability Implementation Committee will coordinate across departments to conduct a financial impact assessment. The relevant departments will develop response measures and report to the Sustainability Committee and the Board of Directors.

3.3 Identification Outcome of Material Climate Risks and Opportunities

FENC Climate-Related Opportunity Matrix



FENC Climate-Related Risk Matrix



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

Transition Risks

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

Physical Risks

- 9 - Increased severity and frequency of extreme weather events such as cyclones and floods
- 10 - Rising sea levels
- 11 - Increased severity and frequency of extreme weather events such as cyclones, 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

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 adjustment measures 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
 Physical Risk	RCP8.5	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

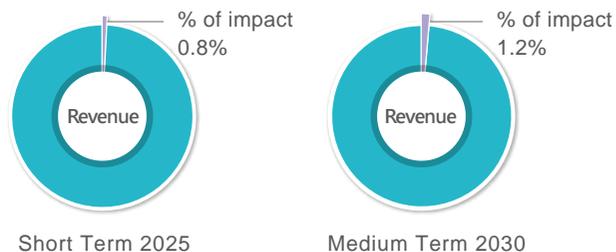
Specific to the top three risks and opportunities based on the outcome from the level of impact identified, FENC conducted a financial impact analysis on the potential climate-related risks and business opportunities to estimate the likely valuation of the financial impact in 2025 to 2030.

1. Risk Issue: Carbon Pricing Mechanism

Explanations on the Impact: Due to the increasingly severe impact of climate change, mainland China officially launched a national carbon emission trading system on July 16, 2021. Based on each sector's historical emissions data and future development benchmarking, free carbon emission quotas are granted to enterprises. Companies can trade these quotas in the carbon market. Starting from the power sector, mainland China is considering to include eight key industries, including chemical and steel industries. Taiwan's Climate Change Response Act was officially promulgated and implemented in February 2023, which incorporates a carbon pricing mechanism into the law. In the future, carbon fees will be levied on high-emitting industries. In summary, all production sites of FENC will have to pay carbon fees or purchase carbon quotas or allowances. All this will result in an increase in operating costs.

Scenario Description: This issue uses the estimated carbon prices for various countries at different times under the NZE scenario set out in the IEA's 2022 WEO to assess the financial impact on the company before 2050.

Potential Financial Impact:

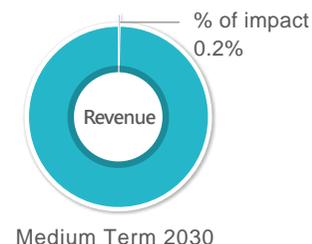


2. Risk Issue: Carbon Border Tax

Explanations on the Impact: In response to the risk of carbon leakage, the measure of carbon border tax will become an international trend. A case in point is the European Union's Carbon Border Adjustment Mechanism (CBAM), which imposes charges on imported goods from countries and regions with relatively loose carbon emission restrictions. In the future, if countries, like the U.S., Japan, and South Korea, also begin to plan carbon border tax or to explore countermeasures against carbon leakage, the costs for FENC's exported products are likely to be increased.

Scenario Description: This issue assesses the financial impact on FENC's exported products in the NZE scenario set out by the IEA's 2022 WEO report. The product may be affected by carbon border tax by 2030.

Potential Financial Impact:



Note: The EU's CBAM will be officially implemented in 2026, so there will be no impact in 2025.

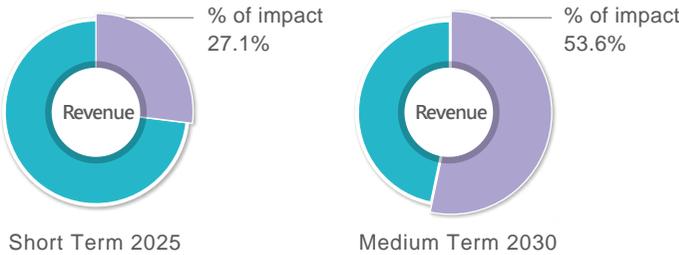
Note: The potential financial impact on revenue of these six issues are related to the overall revenue of FENC's production business. The impacts are presented as a percentage of the revenue of the reporting year.

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 2022 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:

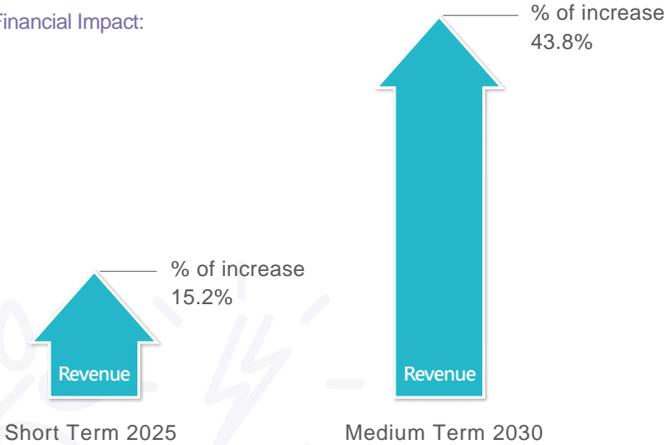


4. Opportunity Issue: Use of Lower-Emission Sources of Energy

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 2022 GHG inventory, Category 2 emissions (indirect GHG emissions from imported electricity, heat or steam) account for about 42% of the company's emissions. If 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 2022 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:

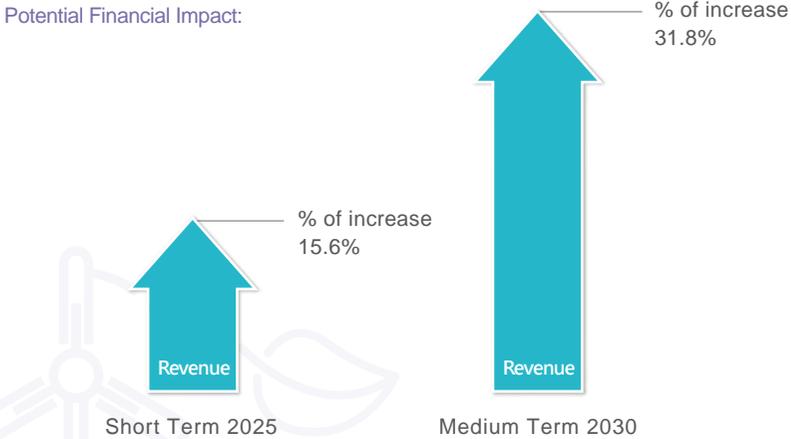


5. Opportunity Issue: Development or Expansion of Low Emission Goods and Services

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 2022 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:

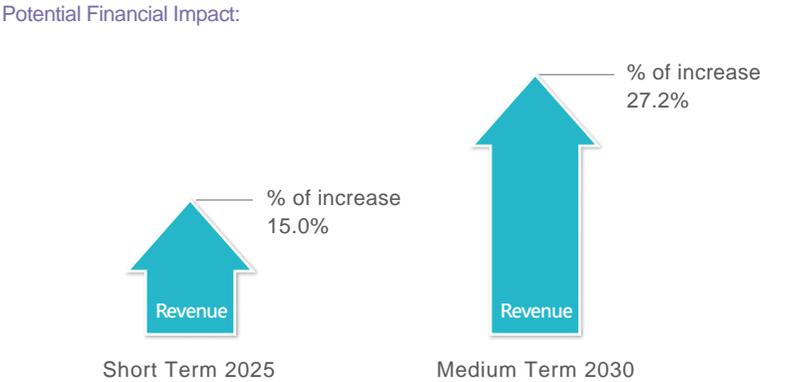


6. Opportunity: Access to New Markets

Explanations on the Impact: In order to reduce the GHG emissions caused by disposable chemical products and achieve the goal of net zero, governments of many countries, one after another, have been enforcing policies that require a certain proportion of recycled content to be used in packaging materials, or implementing various policies on recycling. For example, the European Union promulgated new regulations on the use of recycled plastics in food packaging in 2022, aiming to increase the proportion of rPET beverage bottles to 25% and 30% by 2025 and 2030 respectively. In April 2022, the UK imposed a tax on plastic packaging with less than 30% recycled content. The US Environmental Protection Agency (US EPA) also released the National Recycling Strategy in 2021, with the goal of increasing the recycling rate to 50% by 2030. FENC owns mature and advanced recycling manufacturing technology. Its rPET capacity ranked No. 2 in the world in 2022. Global recycling rates are expected to rise further in the future. If FENC continues to expand its production sites, it will be able to increase its sales revenue of recycled products.

Scenario Description: This issue uses the NZE scenario set out by the IEA in the 2022 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	2022 Management Costs
 Carbon pricing mechanism	FENC has launched the ISO 14064-1:2018 GHG inventory, monitored the GHG emissions of each production site, and reduced GHG emissions across the board through five low-carbon transition strategies, including improving energy efficiency, adopting low-emission fuel alternatives, developing renewable energy, utilizing CCUS, and fostering raw material transition, etc., to achieve the GHG reduction goals set by the company. The short-term goal is to cut GHG emissions by 20% in 2025, and the medium-term goal is to reduce emissions by 40% by 2030, and the ultimate goal is to achieve net zero emissions by 2050. In addition, FENC continues to analyze and evaluate the trends on international carbon pricing to assess its strategy on internal carbon pricing. (Please refer to 4.1 Climate Risk Mitigation Management Strategy)	NT\$ 6,293 million for carbon emission reduction
 Carbon border tax	The financial impact is positively correlated with the carbon emissions per unit of production. To mitigate the risk, FENC will implement strategies, such as expanding the use of alternative low-carbon materials, improving energy efficiency, adopting low-emission fuel alternatives, and deploying more renewable energy facilities to reduce the carbon footprint of its production processes. (Please refer to 4.1 Climate Risk Mitigation Management Strategy)	
 Changes in customer behaviors	In response to customers' demand for low-carbon products in the value chain, we will aggressively reduce GHG emissions per unit of production, and GHG emissions in the production processes by improving energy efficiency, adopting low-carbon fuels, and using renewable energy. (Please refer to 4.1 Climate Risk Mitigation Management Strategy)	
 Use of lower-emission sources of energy	FENC continues to deploy renewable energy facilities, including solar, biogas and wind power generation, and collaborates with other renewable energy suppliers. It is estimated that the installed capacity of its solar power facilities will reach 90MW by 2025, a five-fold increase from 2022, and the annual electric output can reach 120 GWh. By 2030, it is expected to reach 190MW, with a twelvefold increase compared to 2022. FENC will endeavor to meet the expectations of customers. (Please refer to 4.1 Climate Risk Mitigation Management Strategy)	NT\$ 580 million for renewable energy deployment and procurement
 Development or expansion of low emission goods and services	FENC continuously promotes the research and development of technologies related to green products, including products which can replace petroleum-based raw materials (Replace), and can be recycled (Recycle), as well as reduce energy and resource consumption (Reduce). FENC has been expanding its green product production capacity to meet the needs of customers in the value chain. (Please refer to 6. Green Product)	NT\$911 million for R&D of green products
 Access to new markets	FENC keeps on researching and developing circular recycling technology and the applications of multiple recycling products, while paying attention to the trend of recycling-related laws and regulations in various countries. It has deployed all-encompassing circular technology on land, ocean and air, and expanded its production capacity of recycling and circular products with optimal capacity planning, aiming to become the World No. 1 in rPET production capacity. (Please refer to 6. Green Product)	NT\$7,314 million for production capacity expansion of rPET products

4 Low Carbon Transition Program



4.1 Climate Risk Mitigation Management Strategy	24
4.2 Commitments and Targets	26
4.3 Implementation Results	27

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, 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



1. Improving Energy Efficiency

The capital expenditure in energy conservation projects is the most important part of FENC's investment in response to climate change for a long time. The company allocated a special budget of NT\$2 billion for energy conservation in 2010. Another special budget of NT\$2 billion for the same purpose was allocated in 2017, offering each production site the leeway to propose innovation projects. In addition to these special budgets, each production site also allocates an annual budget for energy conservation. From 2010 to 2022, a total of NT\$ 53.8 billion was allocated. The budget for energy conservation and carbon reduction from 2023 to 2025 is approximately NT\$10.7 billion.

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, value chain collaboration, 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. FENC has been executing continued energy-saving and emission-reduction projects, in line with the three major directions of production improvement, equipment improvement, and energy management.
2. The company has applied artificial intelligence (AI) in energy management.
3. FEPV will build a cogeneration plant, using the heat generated by fuel for steam and power generation, thereby improving fuel efficiency.
4. FEIS will construct an all-encompassing energy station with combined heating, electricity and cooling, improving energy efficiency by 27% and reducing GHG emissions by 15%.

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 has mixed wood pellets in the combustion.

3. Developing Renewable Energy

Since 2016, FENC has been installing solar power systems. Thus far, thirteen production sites in Taiwan, mainland China, and Vietnam have installed solar power generation systems. In 2022, the total solar power generation was 14.2 GWh while 97.9 GWh of renewable energy certificates were purchased, totaling more than 110 GWh of renewable energy. 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, biogas and wind power generation facilities in Taiwan, mainland China, Vietnam, Japan, and the U.S.

Implementation Highlights

- 1. Solar power generation facilities:** FENC continues to install solar power generation systems in Taiwan, mainland China, Vietnam, Japan, the U.S. By the end of 2022, the installed capacity of solar power generation systems stood at 15,064kW, with the generation capacity of approximately 14.2 GWh. It is estimated that the installed capacity will reach 90 MW with a 5-fold increase and 190MW with a 12-fold increase by 2025 and 2030 respectively.
- 2. Biogas power generation facilities:** Plant 2 of OPTC is expected to complete the construction of 2.8MW biogas power generation facilities in 2024, using biogas generated by the anaerobic treatment system in the plant for power generation. The estimated annual power generation will reach 16 GWh, which can provide 10% of the plant's electricity consumption.
- 3. Wind power generation facilities:** FENC plans to use renewable electricity generated by wind power generation facilities with an installed capacity of 140MW in mainland China by 2031. In addition, OPTC is also conducting an assessment on constructing small-scale wind power generation facilities by itself.

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\$172.9 million 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

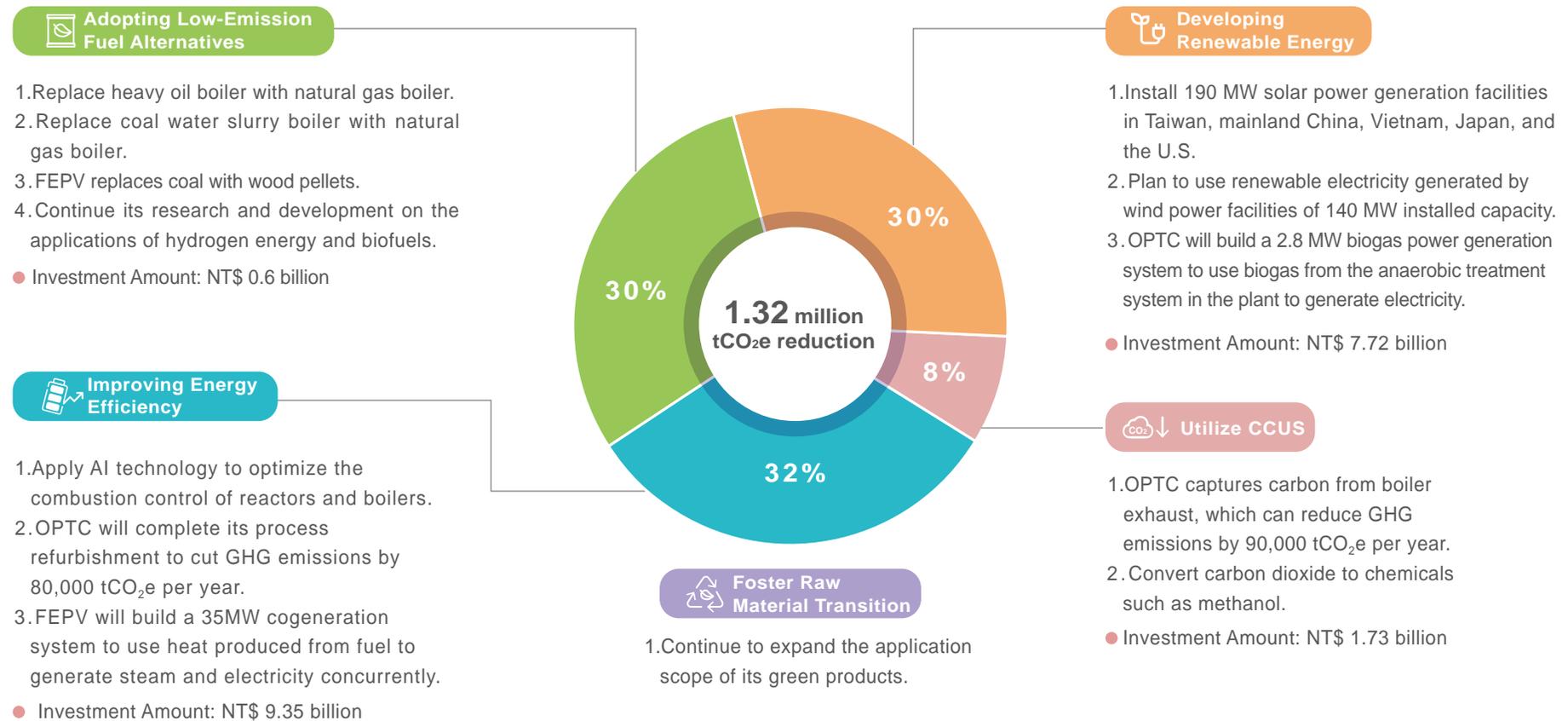
As a leading company in the global rPET production, FENC has been operating in the recycling industry for over 30 years. By utilizing its core technology advantages, the company has been actively developing new materials which are environmentally friendly and emit less carbon. It focuses on two major 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.
- 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.

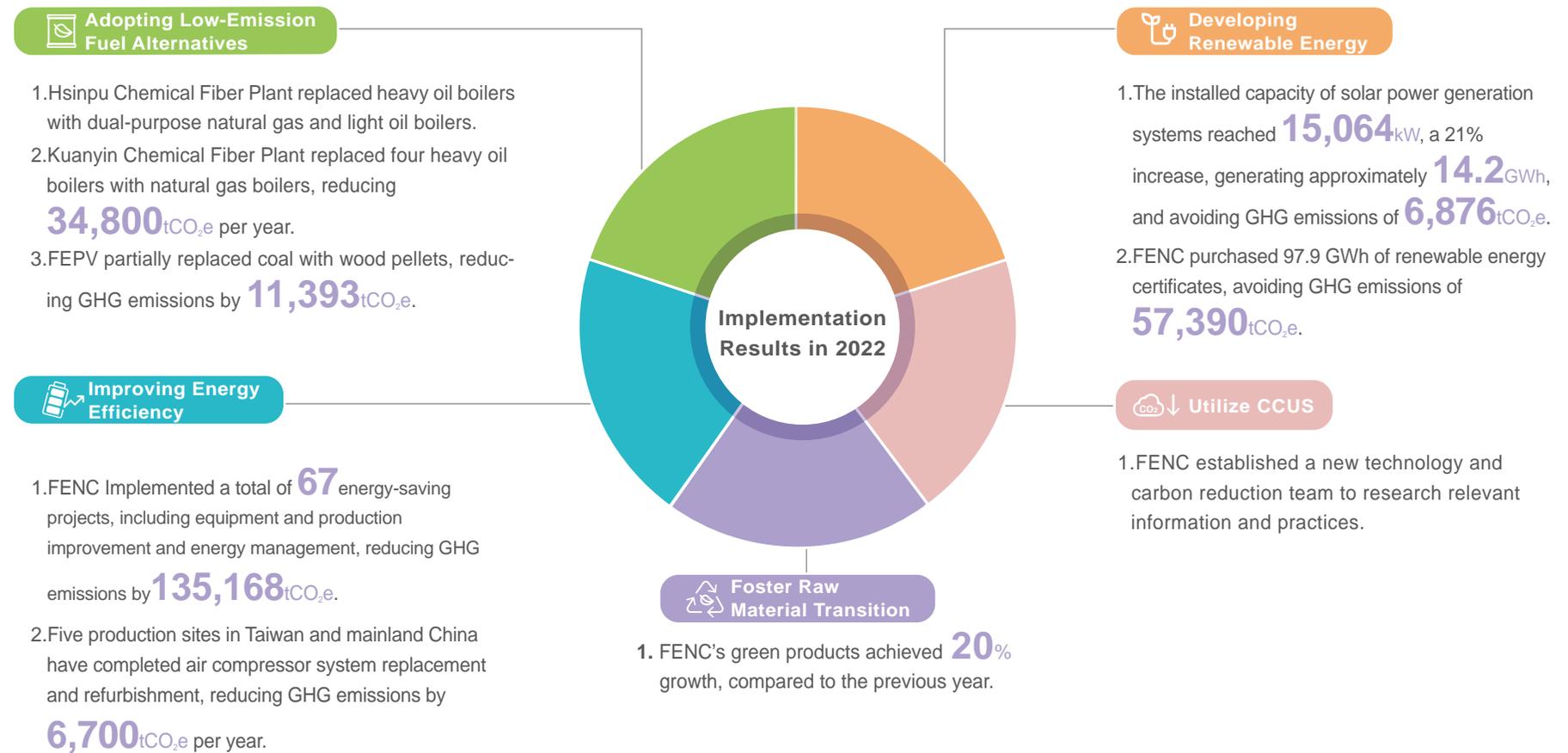
4.2 Commitments and Targets

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 2022



Featured Cases

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

FENC has been actively adopting renewable energy systems and equipment. The installations of solar and biogas power generation systems have been the key projects in the company's renewable energy transition in recent years. In addition, FENC will gradually purchase renewable energy year by year so as to move one step closer to its goal of net zero emissions.



1. Solar Power Generation

FENC first built solar power generation stations at its production sites in mainland China in 2016. As of 2022, the accumulated self-generated solar power reached 68.85 GWh. In 2022, the solar power generation capacity of its production sites in Taiwan, mainland China and Vietnam totaled 14.2 GWh, of which 87% was used by FENC, avoiding GHG emissions of 6,876 tCO₂e. All FENC's production sites will construct more solar power stations. The capacity of the existing solar power installations will also be expanded. It is expected that by 2025, the installed capacity will reach 90MW, a fivefold increase from 2022, with an annual power generation of up to 120 GWh. By 2030, it will reach 190MW, a 12-fold increase from 2022.

2. Biogas Power Generation

Plant 2 of OPTC is planning to install biogas generation equipment, using biogas produced by its anaerobic wastewater treatment system to generate electricity. It is expected to complete the installation and start power generation in 2024. A total of approximately 2.8 MW will be installed, which can generate around 16 GWh, providing 10% of the power consumption for the plant. FENC has taken concrete actions to mitigate the environmental impact caused by GHG emissions.

Renewable Energy Development Planning



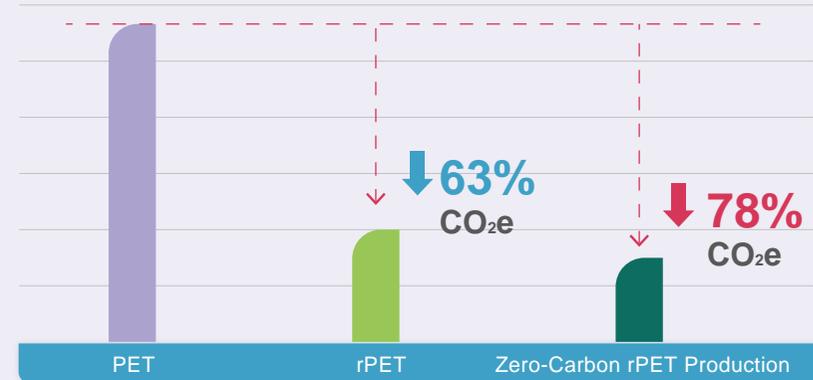
Featured Cases

The World's First PET Bottle Recycling Plant Achieving Net Zero Emissions

FIGP's Kanto Plant achieved net zero emissions in September 2022, leading the industry to become the world's first PET bottle recycling plant with net-zero emissions.

FIGP purchased renewable energy certificates and certificates of carbon offset to achieve net zero emissions and plans to continue purchasing renewable energy certificates to cover the electricity consumption of the entire plant in the future. What is more, its Kansai plant, which is still under construction, will also install renewable energy systems such as solar power and take measures to procure renewable electricity to become FENC's second PET recycling plant with net zero emissions.

Recycled polyester (rPET) made from recycled PET bottles can reduce GHG emissions by 63% compared to the traditional petroleum-based polyester (PET). The zero-carbon rPET production of FIGP can reduce the overall product carbon footprint by 78% GHG emissions and help brand customers and FENC accelerate the path to net zero.



5 Adaptation Plan

5.1 Climate Risk Adaptation Strategy	31
5.2 Resilient Water Resource Management	32
5.3 Commitments and Targets	34
5.4 Implementation Results	34



5.1 Climate Risk Adaptation Strategy

In response to the impact of global climate change, companies are gradually incorporating 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
<ul style="list-style-type: none">  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.
<ul style="list-style-type: none">  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.
<ul style="list-style-type: none">  Rising Mean Temperatures 	<ul style="list-style-type: none"> Continuously promote automation of outdoor operations to mitigate the impact of high temperatures.
<ul style="list-style-type: none">  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.
<ul style="list-style-type: none">  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.
<ul style="list-style-type: none">  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.
<ul style="list-style-type: none">  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 regards water as a shared resource and values the water resource environment of each production site. The company prioritizes the use of the publicly available and credible Aqueduct Water Risk Atlas, a water resource risk assessment tool developed by the World Resources Institute (WRI), to identify locations of the company's production sites that are situated in areas of water stress and assess potential risks that may arise under the impact of future climate change. Through regular monitoring of water resource stress curves at each production site, the company sets reduction targets for water withdrawal per unit of production. FENC will continue 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. It strengthens the companywide water resource management and sets water resources management goals, actively grasps and responds to local social and environmental impacts, and jointly maintains precious water resources to avoid water shortages. FENC has endeavored to comprehensively improve the efficiency of water resource usage through the five major water resources management strategies.

Water Resources Management Strategy

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



1. Water recycling and reuse at different levels:

In 2022, the amount of recycled water remained the same as the previous year and its water recycling rate was maintained at **98%**.



2. Rainwater storage, recycling and reuse:

FENC has installed rainwater recycling facilities. The amount of recycled rainwater in 2022 was about **153,000** kiloliters.



3. Water quality monitoring and spill prevention:

Hsinpu Chemical Fiber Plant has established a Long Range Wide-Area Network (LoRaWAN) for deep-well IoT monitoring throughout the plant, which increases real-time monitoring and control equipment and processes to improve water resources utilization efficiency.



4. 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 wastewater treatment plants to replace some raw water. In 2022, the volume of the water recycled and reused stood at **1,251,704** kiloliters.



5. 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. Add an upflow anaerobic sludge bed (UASB) to achieve the effect of stabilizing the quality of effluent discharge and increasing recovery volume.
2. In 2022, FEIS's polyester business installed a membrane bioreactor (MBR) in its wastewater treatment system to improve the effectiveness of effluent treatment, reduce the turbidity of reclaimed water and increase the amount of wastewater recovery, so as to achieve water resources recycling and reuse.
3. FENC installed an online COD monitoring instrument to monitor the water quality of discharged water.



C. Collaborating with Value Chain to Reduce Water Consumption

1. FEIS's petrochemical business communicated with reclaimed water chemical manufacturers about the operation of RO membranes for recycled water in 2022, to extend membrane usage time and increase the amount of reused water.
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.



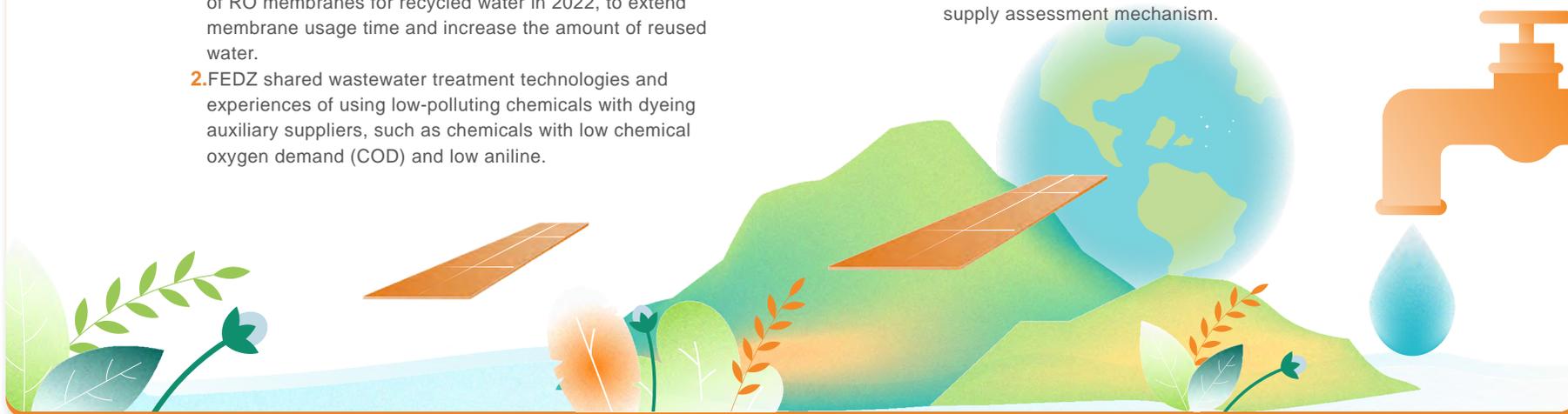
D. Actively Supporting Government's Policy on Reclaimed Water and Other Related Policies

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	28,159	281,388	2%
Polyester	11,554	275,016	5%
Textile	82,996	718,248	23%
The Company	122,709	1,274,652	6%

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

Featured Cases

Implementation of the ISO 46001 Water Efficiency Management System

To enhance the performance of water resource efficiency and make a commitment to a systematic approach, Plant 2 of OPTC was built and deployed according to the ISO 46001 standard for water resource efficiency management system. The ISO 46001 uses the Plan-Do-Check-Act (PDCA) cycle of continuous improvement process to develop response strategies and actions on water use risks and opportunities, water resource efficiency targets, implementation and operation planning, control and management. The plant obtained the ISO 46001 certificate in March 2022, making it one of the first ten certificates issued in Taiwan.



The Refurbishment Project of Wastewater Treatment System with Membrane Bioreactor (MBR)

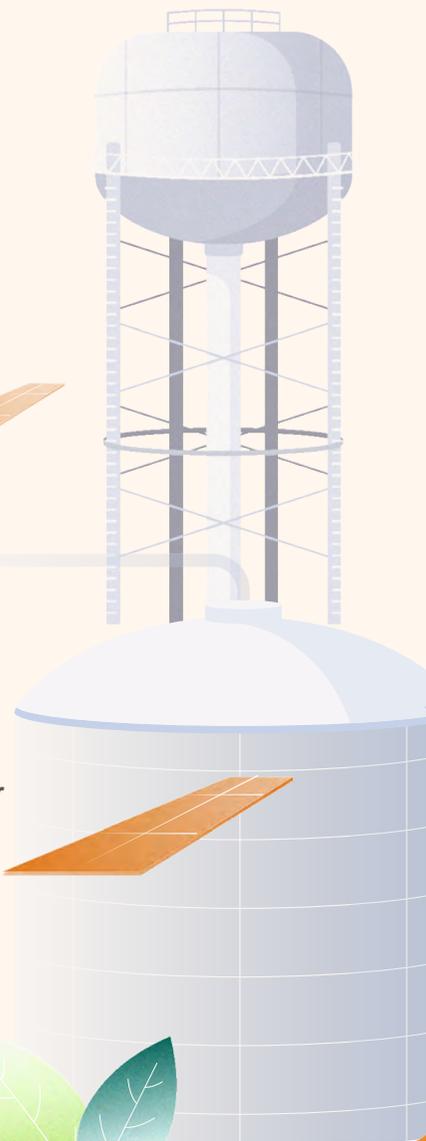
In 2022, FEIS's polyester business implemented a wastewater treatment system refurbishment project to improve the chemical oxygen demand (COD) of treated wastewater. The conventional treatment method is to increase the volume of the aeration tank and extend the detention time. However, after evaluation, it was found that adding a membrane bioreactor (MBR) could improve treatment efficiency, without increasing the volume of the aeration tank. This resulted in a more efficient wastewater treatment process and effectively reduced chemical oxygen demand (COD) and suspended solids (SS) of the treated wastewater, thereby increasing the annual volume of wastewater recycled by about 75,000 kiloliters.

Addition of Pneumatic Condensate Pump to Recover Steam Condensate

FEIS's petrochemical business added a new pneumatic condensate pump in 2022 to replace the original electric pump, to recover all the steam condensate from the methyl acetate unit and send it to the condensate system for recycling and reuse. The discharge of condensate is fully recovered, saving 32,000 kiloliters of water annually, and using the condensate heat energy for energy saving.

Reprocessing Discharged Water into RO Purified Water

The knitting and dyeing plant of FEPV built a wastewater recycling system in 2022 to reprocess discharged water into RO purified water. The treated discharged water, meeting Level A discharge standards, can be reprocessed in a reverse osmosis (RO) filtration system to produce RO purified water for dyeing and finishing processes. This reduces raw water use and saves 596,848 kiloliters of water annually.



6 Green Product

6.1 Climate Change Mitigation-Product Management Strategy	37
6.2 Commitments and Targets	42
6.3 Implementation Results	42

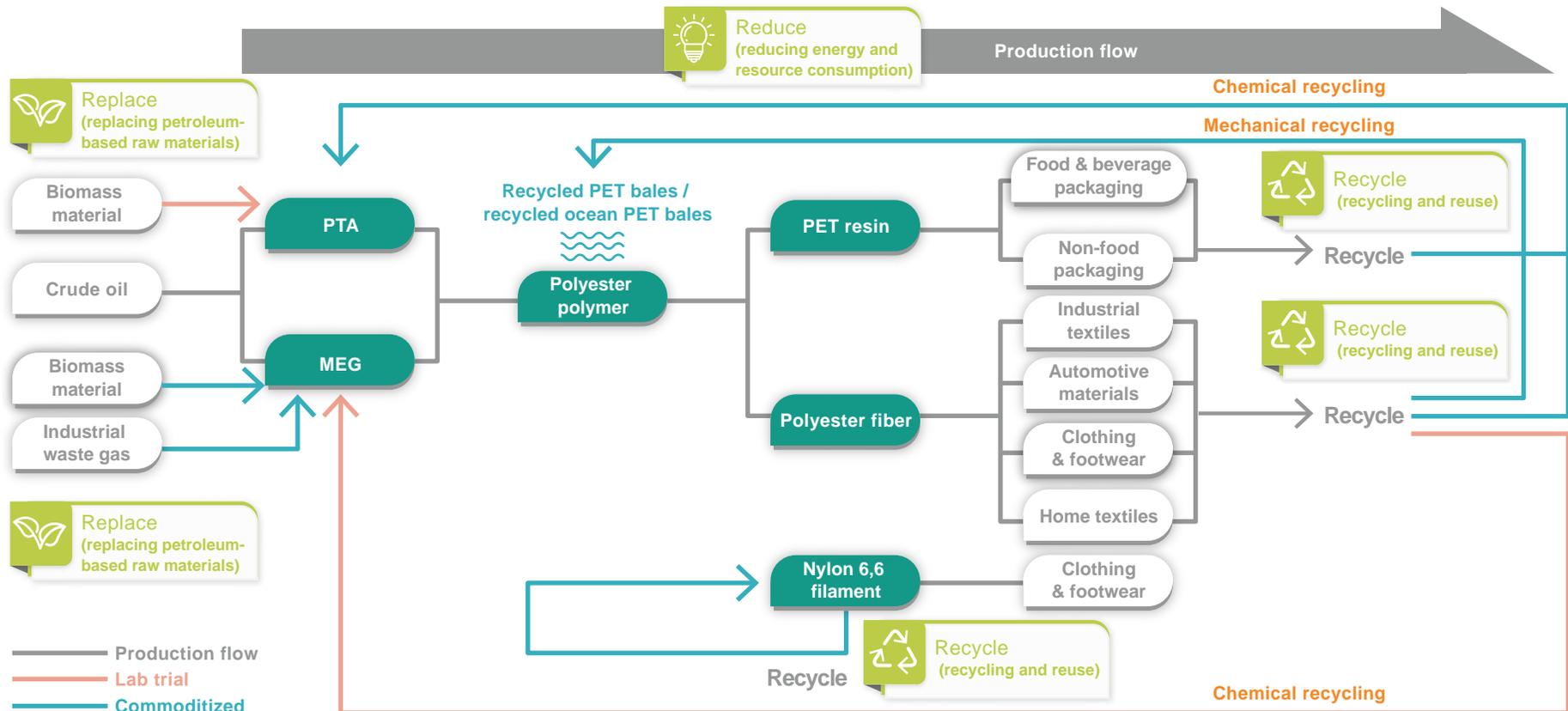


6.1 Climate Change Mitigation Product Management Strategy

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.

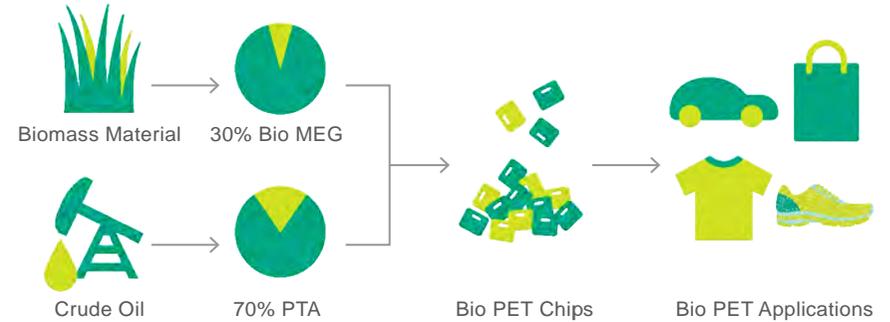
(1) Bio PET

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.

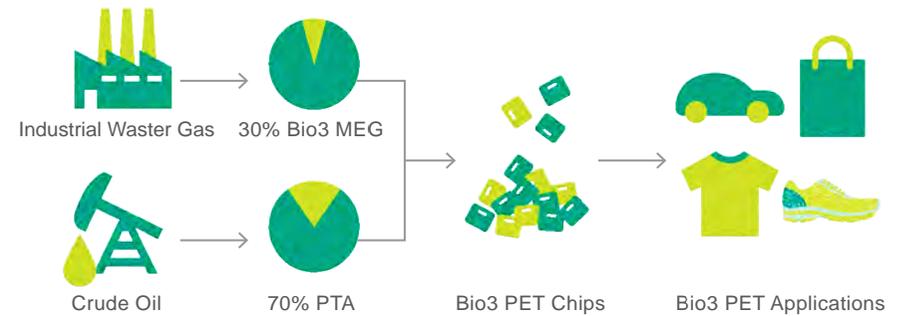
(2) Low-Carbon PET

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

The World's First Polyester Materials Converted from Recycled Industrial Waste Gas

FENC has collaborated with an American biotech company to recycle waste gas emitted by steel plants. Through a special fermentation process using microorganisms, the waste gas can be converted into ethanol, which is further treated, in a chemical process to produce ethylene glycol, the raw material for FENC@TOPGREEN@Bio3 PET low-carbon polyester. In 2021, FENC applied this low-carbon PET to textile fiber specifications and produced the world's first batch of waste-gas-based polyester yarn. In collaboration with lululemon, the international yoga apparel brand, FENC has produced the world's first garment using industrial waste gas. This technology not only reduces the use of petrochemical-based raw materials, but also cuts GHG emissions by 30%. This technology has been designated to make the products of many world-renowned international brands, such as Zara and will be further implemented to produce industrial textiles or PET packaging products.

In 2022, FENC further enhanced the technical benefits of waste gas recycling and reuse, by combining the technology with the Nylon 6,6 solution dye to produce environmentally friendly high-tech fabrics from sustainable raw material sourcing to the production process. In February 2022, FENC stood out from more than 200 material suppliers around the world to win the "Accelerated Eco-Best Product", the ISPO Textrends International Textile Trend Award. In September, it received the "Sustainability & Innovation Award" from the International Textile Manufacturers Federation (ITMF), the world's largest and most representative international forum for textile industries. FENC is the only Taiwanese company to win the award. In December, the company won another award on product innovation at the International Innovation Awards ceremony organized by the Enterprise Asia. FENC unprecedentedly won three international awards in the same year, demonstrating the company's strengths in sustainable products.



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

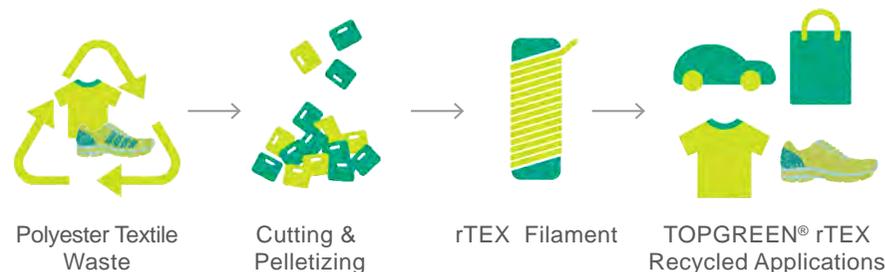
Using recycled PET bottles as raw materials to be further treated through processes such as crushing, cleaning, decomposition, polymerization, and granulation can not only reduce the consumption of petroleum in polyester production process, but also can cut down resource consumption, and further promote 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 production scale of FENC, the estimation is equivalent to an annual carbon reduction contribution of 580,000 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.

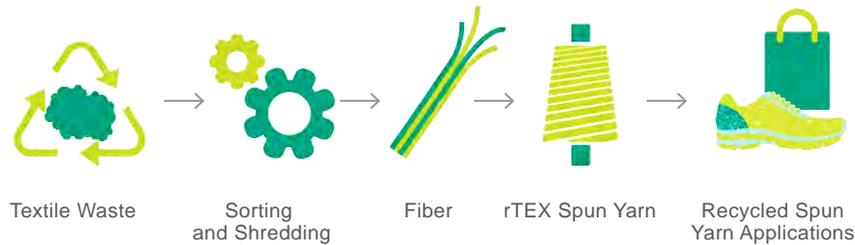
(3) rTEX Filament

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.



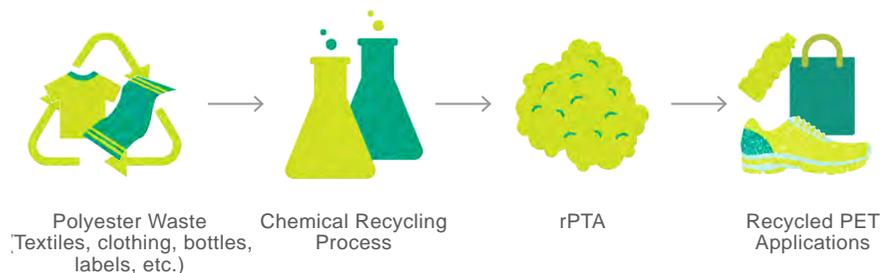
(4) rTEX Spun Yarn

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® ChemCycle

FENC has developed the FENC®TopGreen®ChemCycle, a chemical polyester recycling technology, which can not only recycle polyester bottles with no impurities, but also waste polyester products mixed with other materials, such as textiles and apparel, packaging materials, etc. Through the chemical recycling process, waste polyester can be converted into one of the main raw materials for polyester production, which is rPTA. The quality of rPTA is the same as that of petroleum based raw materials and can be used to produce all polyester products. The technology has been through multiple tests. A mass production line of more than one thousand metric tons annually is currently being planned.



Featured Cases

The Champion of the 2022 FIFA World Cup Wore the Ocean Recycled Anti-Bursting Jersey Made by FENC

The issue of marine plastic waste has drawn global attention. FENC began collaborating with adidas and the NGO organization Parley for the Oceans in 2016 to recycle waste PET bottles from the ocean and turn marine plastic waste into brand new products. Currently, FENC is the world's largest producer of ocean recycled polyester filament. It has successfully intercepted more than 14,000 metric tons of ocean waste plastics by the end of 2022. Due to the high level of impurities in waste PET bottles in the ocean, the process of recycling and reuse is more difficult. FENC has integrated resources and made breakthroughs to overcome technical challenges by using unique polyester synthesis technology to refine PET resins and produce high-strength ocean recycled yarn.

In 2022, FENC was the first to use ocean recycled yarn to make national team jerseys for the FIFA World Cup tournament. It also uses unique weaving technology to enhance the stretchability of the fabric. Through various multi-directional composite stress tests for strength and strict tear tests as well as hundreds of times of real world usages by players in the matches, FENC designed the most suitable fabric surface structure with 12% weight reduction and 400% strength increase, compared to the jersey made by the company for the last FIFA World Cup, making the jersey an integral part of the athletes, and creating high-standard ocean recycled anti-bursting jerseys. In the 2022 FIFA World Cup, a total of nine national teams wore this ocean recycled anti-bursting jersey. Among them, seven teams made it to the round of 32. The champion, Argentina, wore FENC's jersey, which was a strong and important support for the players.



Featured Cases

The First Taiwanese Company Approved by Ministry of Health and Welfare (MOHW) For the Application of rPET Resins in Food Containers

FENC established Taiwan's first PET bottle recycling plant in 1988 and has since developed recycling technology for more than 30 years. Its product line has expanded from basic products to high value added products, such as food-grade packaging materials, functional clothing, and automotive tires. In May 2022, the Taiwan Food and Drug Administration (TFDA) under MOHW referred to international management models in Europe and the U.S. and promulgated the regulations on rPET resins application in food container and packaging. rPET food containers that have been cleaned, chopped, melted and decontaminated can be processed into PET resins and approved for use as raw materials for food utensils, containers and packaging. FENC received approval by TFDA in December 2022, becoming the first Taiwanese company to pass the review in accordance with the regulations on rPET resins application in food containers and packaging. In March 2023, FENC will supply the raw materials for the first batch of drinking water bottles made from rPET in Taiwan, thereby continuing its endeavor to bring sustainable products to people's lives.



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

2022 Progress	2022 Target	2023 Target	2025 Target	2030 Target
 ↑111%	↑65%	↑70%	↑80%	↑100%

Note: Growth in green product revenue is set with 2015 as the base year.

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 (GRS) Version 4.0</p>	 <p>SCS Recycled Content Certification Version 7.0</p>	 <p>Recycled Claim Standard (RCS) Version 2.0</p>	 <p>Taiwan Green Mark</p>
<p>Carbon Footprint of Products ISO 14067 : 2018</p> <p>Based on Life Cycle Assessment ISO 14060 : 2006 ISO 14044 : 2006</p>	<p>Water Footprint of Products ISO 14046 : 2014</p> <p>Based on Life Cycle Assessment ISO 14060 : 2006 ISO 14044 : 2006</p>	 <p>bluesign® Standard</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>The Association of Plastic Recyclers (APR)</p>	<p>Registration, Evaluation, and Authorization of Chemicals (REACH)</p>



7 Metrics and Targets

7.1 GHG Reduction Metrics and Targets

45

7.2 Other Climate-Related Metrics and Targets

46



7.1 GHG Reduction Metrics and Targets

FENC has been committed to corporate sustainable actions for a long time, actively promoting comprehensive GHG emission inventory and control. In 2022, the company set short-, medium-, and long-term GHG reduction goals for the entire company and increased the use of renewable energy step by step, to mitigate global warming caused by GHG emissions.

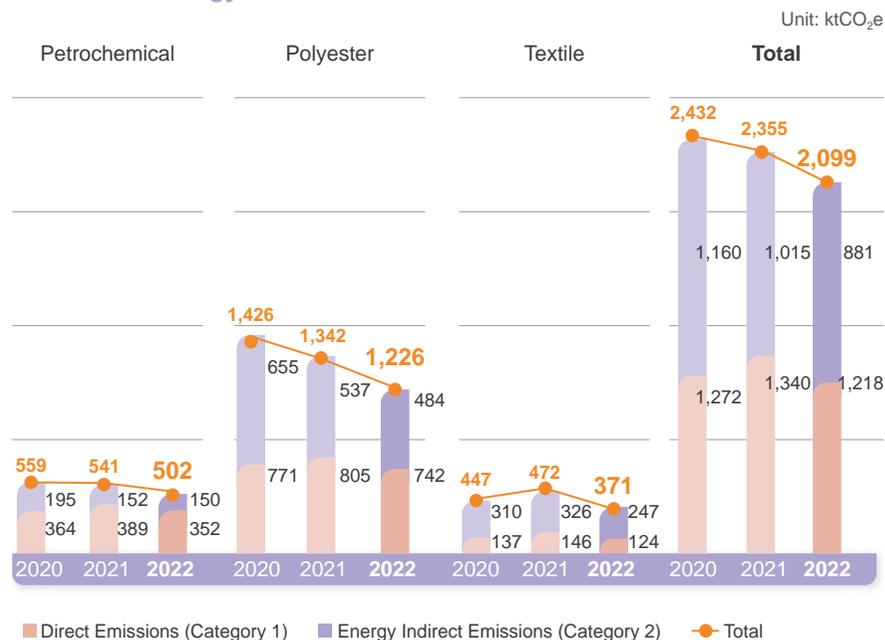
In 2020, the GHG emissions of FENC's 21 production sites were 2,432 ktCO₂e. Through the implementation of five major low-carbon transition strategies, each business unit has demonstrated the effectiveness of GHG reduction. The emissions decreased by 3% and 10% in 2021 and in 2022 respectively. Compared with the baseline year (2020), the company has achieved a reduction of 14%.

Target and Progress of GHG Reduction

2022 Progress	2025 Target	2030 Target	2050 Target	Target Base Year	Base Year Data
↓14%	↓20%	↓40%	Net Zero	2020	2,432 ktCO ₂ e

Note: The statistics include category 1 (scope 1) and category 2 (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. ISO 14064-1:2018 categorizes emission sources into direct (category 1, emission source from directly owned or controlled by the organization) and indirect (category 2, indirect GHG emissions from imported energy such as electricity, heat and steam).
- The calculation of Category 2 emissions in 2020 and 2021 is location-based. Category 2 emissions in 2022 are market-based calculations. The location-based emissions are 2,130 ktCO₂e.
- In 2020, 100% of the emission data passed the internal audit; 66% passed the third-party verification for the ISO 14064-3 standards or local regulations, including Hsinpu Chemical Fiber Plant, Kuanyin Chemical Fiber Plant, OPTC, OPSC and FEIS.
- In 2021, 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; 71% passed the third-party verification for the ISO 14064-3 standards, including Hsinpu Chemical Fiber Plant, Kuanyin Chemical Fiber Plant, OPTC, FEFC, OTIZ, the polyester plant of FEPV and the knitting and dyeing plant of FEPV.
- In 2022, the proportion of scope 1 emissions regulated by emissions-related laws and regulations is 19%.

Other Indirect GHG Emissions in 2022

Unit: ktCO₂e

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

Note:

1. 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.
2. Significant indirect GHG emissions are identified in accordance with ISO 14064-1:2018 and divided into 15 reporting categories based on the GHG Protocol.
3. FENC focuses on the production of polyester and raw materials with an array of terminal applications. The GHG emission generated from the processing, use and end-of-life treatment of sold products must be calculated based on specific scenarios. Due to the lack of objectivity and reference value, the data is excluded.
3. FENC production sites do not engage in franchising or investment activities, thus without GHG emissions under the two categories.

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 2022, the energy consumption per unit of production decreased by 0.3% compared to the baseline year of 2020, mainly due to a decrease in production volume, resulting in less recoverable thermal energy. FENC will continue to plan and implement various energy-saving projects to maximize energy efficiency.

Target and Progress of Energy Consumption per Unit of Production

2022 Progress	2022 Target	2025 Target	2030 Target	2050 Target	Target Base Year	Base Year Data
↓0.3%	↓4%	↓6%	↓10%	↓20%	2020	3.07 GJ / metric ton of production

Energy Consumption in 2022

Unit: GJ

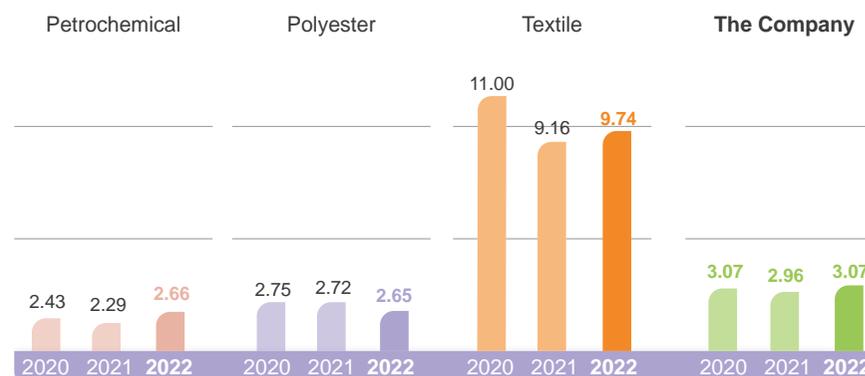
Category	Petrochemical	Polyester	Textile	Total
Purchased Electricity	1,106	3,085	1,522	5,713
Purchased Renewable Electricity	0	134	218	352
Self-Generated Renewable Electricity	4	7	34	45
Total Electricity Consumption	1,110	3,226	1,774	6,110
Natural Gas	4,225	2,455	738	7,418
Heavy Oil	0	247	8	255
Diesel	3	13	0	16
Coal	0	3,445	1,039	4,484
Coal-Water Slurry	0	1,952	111	2,063
Biomass Fuel	192	24	101	317
Purchased Steam	22	264	219	505
Total Energy Consumption	5,552	11,626	3,990	21,168

Note:

- The statistics take into account energy consumed during the production process only.
- The calorific value is based on the factors of calorific value from all production sites.
- External energy consumption is not taken into account.
- Data collection on energy management accounts for 100% of the production sites within the scope of this report.
- In 2022, renewable energy accounts for 3.4% of the total energy consumption of the production sites covered in this report. Electricity from the grid (purchased externally) represents 29% 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

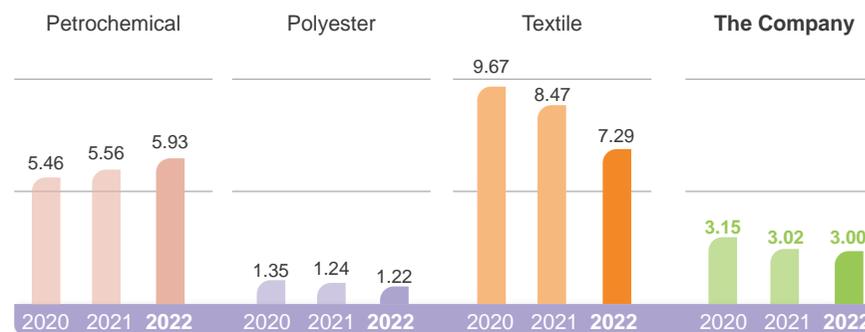
FENC regards water as a shared resource and attaches great importance to water resource management at each production site. Therefore, the company has set targets to reduce water withdrawal per unit of production and continue to reduce water consumption per unit of production. It also collaborates with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

Target and Progress of Water Withdrawal per Unit of Production

2022 Progress	2022 Target	2025 Target	2030 Target	2050 Target	Target Base Year	Base Year Data
 ↓5%	↓4%	↓6%	↓10%	↓20%	2020	3.15 kiloliter / metric ton of production

Water Withdrawal per Unit of Production

Unit: kiloliter / metric ton of production



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

Water Withdrawal and Water Consumption in 2022

Unit: megaliter

	Petrochemical	Polyester	Textile	Total	Percentage of the Production Sites Located in Water-Stressed Areas
Total Water Withdrawal	12,361	5,362	3,192	20,915	15%
Total Water Consumption	6,109	2,656	667	9,432	8%

Note: According to the Aqueduct Water Risk Atlas standard of the World Resources Institute, the company has 7 production sites located in water-stressed areas where the total water withdrawal and annual usable recycled water supply (the baseline for water stress) are both high (High 3-4). The assets of these 7 production sites are valued at NT\$51.7 billion, accounting for about 7% of the total asset value of the production sites covered in this report.



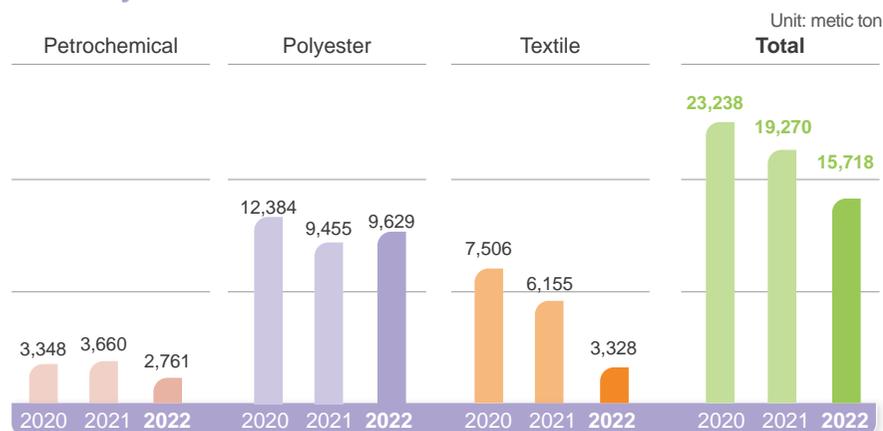
3. Waste to Resource: Recycling and Reuse

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 Water (Non-Recyclable and Non-Reusable Waste) Reduction

2022 Progress	2022 Target	2025 Target	2030 Target	2050 Target	Target Base Year	Base Year Data
Achieved ↓32%	↓4%	↓6%	↓10%	↓20%	2020	23,238 metric tons

Non-Recyclable and Non-Reusable Wastes



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

2022 Progress	2022 Target	2025 Target	2030 Target	2050 Target	Target Base Year	Base Year Data
↓3%	↓4%	↓6%	↓10%	↓20%	2020	1,606 metric tons

Air Pollution Emissions



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

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.	3.5	22
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.	7.1	45

3. [Draft] 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 reporting to understand the governance processes, controls and procedures used to monitor and manage climate-related risks and opportunities. An entity shall disclose information about the governance body or bodies (which can include a board, committee or equivalent body charged with governance) with oversight of climate-related risks and opportunities, and information about management's role in those processes.	2.3, 3.1	11, 14
Strategy	The objective of climate-related financial disclosures on strategy is to enable users of general purpose financial reporting to understand an entity's strategy for addressing significant 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 reporting to understand the significant climate-related risks and opportunities that could reasonably be expected to affect the entity's business model, strategy and cash flows, its access to finance and its cost of capital, over the short, medium or long term. An entity shall disclose information that enables users of general purpose financial reporting to understand its assessment of the current and anticipated effects of significant climate-related risks and opportunities on its business model.	3	13
Strategy and decision-making	An entity shall disclose information that enables users of general purpose financial reporting to understand the effects of significant climate-related risks and opportunities on its strategy and decision-making, including its transition plans.	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 reporting to understand the effects of significant climate-related risks and opportunities on its financial position, financial performance and cash flows for the reporting period, and the anticipated effects over the short, medium and long term—including how climate-related risks and opportunities are included in the entity's financial planning. An entity shall disclose quantitative information unless it is unable to do so. If an entity is unable to provide quantitative information, it shall provide qualitative information. When providing quantitative information, an entity can disclose single amounts or a range.	3.4	19
Climate resilience	An entity shall disclose information that enables users of general purpose financial reporting to understand the resilience of the entity's strategy (including its business model) to climate-related changes, developments or uncertainties — taking into consideration an entity's identified significant climate-related risks and opportunities and related uncertainties. The entity shall use climate-related scenario analysis to assess its climate resilience unless it is unable to do so. If an entity is unable to use climate-related scenario analysis, it shall use an alternative method or technique to assess its climate resilience.	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 reporting to understand the process, or processes, by which climate-related risks and opportunities are identified, assessed and managed.	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 reporting to understand how an entity measures, monitors and manages its significant climate-related risks and opportunities. These disclosures shall enable users to understand how the entity assesses its performance, including progress towards the targets it has set.	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	No violation in the reporting year.	
	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

Publisher | Douglas Tong Hsu

Directors | Johnny Hsi, Peter Hsu

K.S. Wu, Humphrey Cheng, Donald Fan, Judy Lee, B.C. Chang, M.J. Wu, Eric Chueh

Sustainability Implementation Committee Convener | Humphrey Cheng

Task Force | Aileen Hsieh, Alan Yang, Amos King, Angus Chou, Ben Liao, Bi Hwang Lin, CH Liu, Channing Huang, Ching-Feng Chen, Chris Lee, David Chen, Davis Dai, Dawei Chen, Edward Chen, Hans Yu, Janice Lin, Jenny Ho, Jeremy Liao, Jih Shen Yeh, Kent Hu, Mark Wang, Matt Lin, Mauricio Chang, Mike Ho, Rita Liu, Shuangjun Cao, Ying Lu, Ying Zhou, Yi-Ping Huang

(The names are published in alphabetical order.)

Executive Unit | Corporate Staff Office

Allen Sha, Julia Chao, Jonathan Liu, Phoenix Tang, Celeste Wu, Ginny Feng, Hsin He

Publication Date | 2023.06

