

台塑企業
FORMOSA PLASTICS GROUP

2024 Formosa Chemicals & Fibre Corporation

Task Force on Climate-Related Financial Disclosure (TCFD) Report

A CLEAN FUTURE
FOR CHILDREN





TABLE OF CONTENTS

INTRODUCTION ...

02

1

GOVERNANCE

1.1 COMPANY PROFILE ...	03
1.2 ORGANIZATION BOUNDARY ...	03
1.3 ORGANIZATION AND RESPONSIBILITY ...	04

2

STRATEGY

2.1 Energy Efficiency Improvement ...	06
2.2 Energy Transition ...	08
2.3 Circular Economy ...	10
2.4 Additional Supporting Measures ...	15

3

CLIMATE CHANGE RISK AND OPPORTUNITY MANAGEMENT

3.1 RISK AND OPPORTUNITY IDENTIFICATION PROCESS ...	17
3.2 CLIMATE RISK AND OPPORTUNITY ISSUE AND FINANCIAL IMPACT LIST ...	22
3.3 CLIMATE RISK SCENARIO ANALYSIS ...	26

4

METRICS AND TARGET

4.1 CARBON REDUCTION TARGETS ...	29
4.2 GHG EMISSIONS DISCLOSURE ...	30
4.3 OTHER INDICATORS ...	31

APPENDIX

REPORT MANAGEMENT...	32
TCFD INDEX ...	32

Introduction

Global warming driven by greenhouse gas (GHG) emissions has increasingly posed significant risks to global economic development and will continue to impact a growing number of enterprises. However, investors often lack clarity on which companies are vulnerable to climate-related risks, which are well-prepared, and which are actively responding. In light of this challenge, the Financial Stability Board (FSB) established the Task Force on Climate-related Financial Disclosures (TCFD), which, after an 18-month consultation process with global business and financial leaders, released its Recommendations Report in June 2017. This report outlines a comprehensive disclosure framework for companies to transparently communicate climate-related risks and opportunities and their potential financial impacts.

In response to these global trends, Formosa Chemicals & Fibre Corporation (the "Company") has aligned its climate disclosure practices with the TCFD Recommendations. Through this alignment, the Company aims to identify and address climate-related risks and opportunities, demonstrate its commitment to corporate responsibility under the Formosa Plastics Group, and facilitate more rational and effective capital allocation to support its transition toward a low-carbon economy.



Risk Management

- The Company conducts semi-annual collection, analysis, and consolidation of climate-related risk and opportunity information to support the identification and evaluation of climate-related risks and opportunities.
- In accordance with ISO 14001 evaluation procedures, environmental risks and opportunities are identified annually, and specific countermeasures are formulated for each risk scenario.



Governance

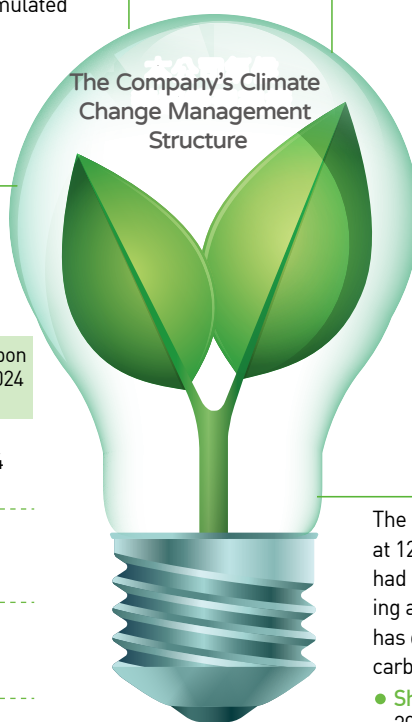
- The Board of Directors has established the Sustainable Development Committee, which is responsible for overseeing and making strategic decisions on the Company's response to climate-related issues.
- An ESG Promotion Working Group has been formed under the Sustainable Development Committee to formulate strategic plans for managing climate-related risks and opportunities and to consolidate corresponding action plans.
- The Company convenes monthly Energy Saving, Carbon Reduction, Circular Economy, and ESG Review Meetings to regularly monitor the progress of climate-related initiatives.
- The Company collects and assesses information on the potential impacts of climate change on financial performance, corporate reputation, global energy supply, economic trends, and regulatory compliance. This assessment informs the identification of risk categories and the development of corresponding response strategies.



Strategy

Based on the environmental assumption scenarios of IPCC AR6 SSP1, SSP2, SSP3, SSP4, and SSP5, "the Company has set a target aligned with the 2°C warming limit and developed four major strategies across short-, medium-, and long-term horizons.

Category	Description	Estimated Carbon Reduction in 2024 (kton CO ₂ e)
Energy efficiency improvement	Optimize production processes to improve overall energy efficiency.	227.4
Energy transition	Shift toward low-carbon energy sources, phase out coal, and expand green electricity use.	81.8
Circular economy	Promote the recycling and reuse of CO ₂ , marine debris, and waste plastics.	41.0
Other measures	Promote low-carbon transportation, implement paperless office initiatives, and develop green products.	9.8
Total		360.0



Indicators and Targets



The Company's greenhouse gas (GHG) emissions peaked at 12.23 million metric tons in 2010. By 2020, emissions had been reduced to 8.54 million metric tons, representing a 30.2% reduction from the peak level. The Company has declared 2020 as the base year for its absolute carbon reduction targets, which are as follows:

- **Short-term target:** Achieve a 10% reduction from the 2020 base year by 2025 (equivalent to a 37.1% reduction from the 2010 peak year).
- **Medium-term target:** Achieve a 25% reduction from the 2020 base year by 2030 (equivalent to a 47.6% reduction from the 2010 peak year).
- **Long-term target:** Achieve carbon neutrality by 2050.

1 Governance

1.1 Company Profile

Formosa Chemicals & Fibre Corporation (FCFC) has a registered capital of NT\$58.61 billion, with a diverse product portfolio spanning petrochemicals, plastics, fibers, and textiles. The Company operates across major global markets and has established cogeneration facilities to provide water, electricity, and steam to support manufacturing processes. In recent years, FCFC has actively advanced circular economy initiatives. In addition to achieving significant progress in energy and water conservation, the Company has invested in the development of waste recycling and reprocessing technologies. FCFC is among the few companies worldwide capable of chemically recycling nylon at a commercial scale.

1.2 Organization Boundary

Location of Headquarters

Changhua County,
Taiwan

Year of establishment

1965

Industry item

Petrochemical, plastic, synthetic fiber,
textile, co-generation power



Consolidated revenue in 2024:

NT\$ **348.6** billion

Number of formal employees in Taiwan in 2024

4,183 people

Changhua Plant

- ▶ No. 359, Section 3, Zhongshan Road, Changhua City
- ▶ 04-7236101

Xingang Plant

- ▶ No. 1, Zhongyang Industrial Park, Zhongyang Village, Xingang Township, Chiayi County
- ▶ 05-3772111

Longde Plant

- ▶ No. 2, Longxiang 10th Road, Daxing Village, Dongshan Township, Yilan County
- ▶ 03-9901621

Mailiao Plant

- ▶ No. 1, Taisu Industrial Park, Mailiao Township, Yunlin County
- ▶ 05-6812345

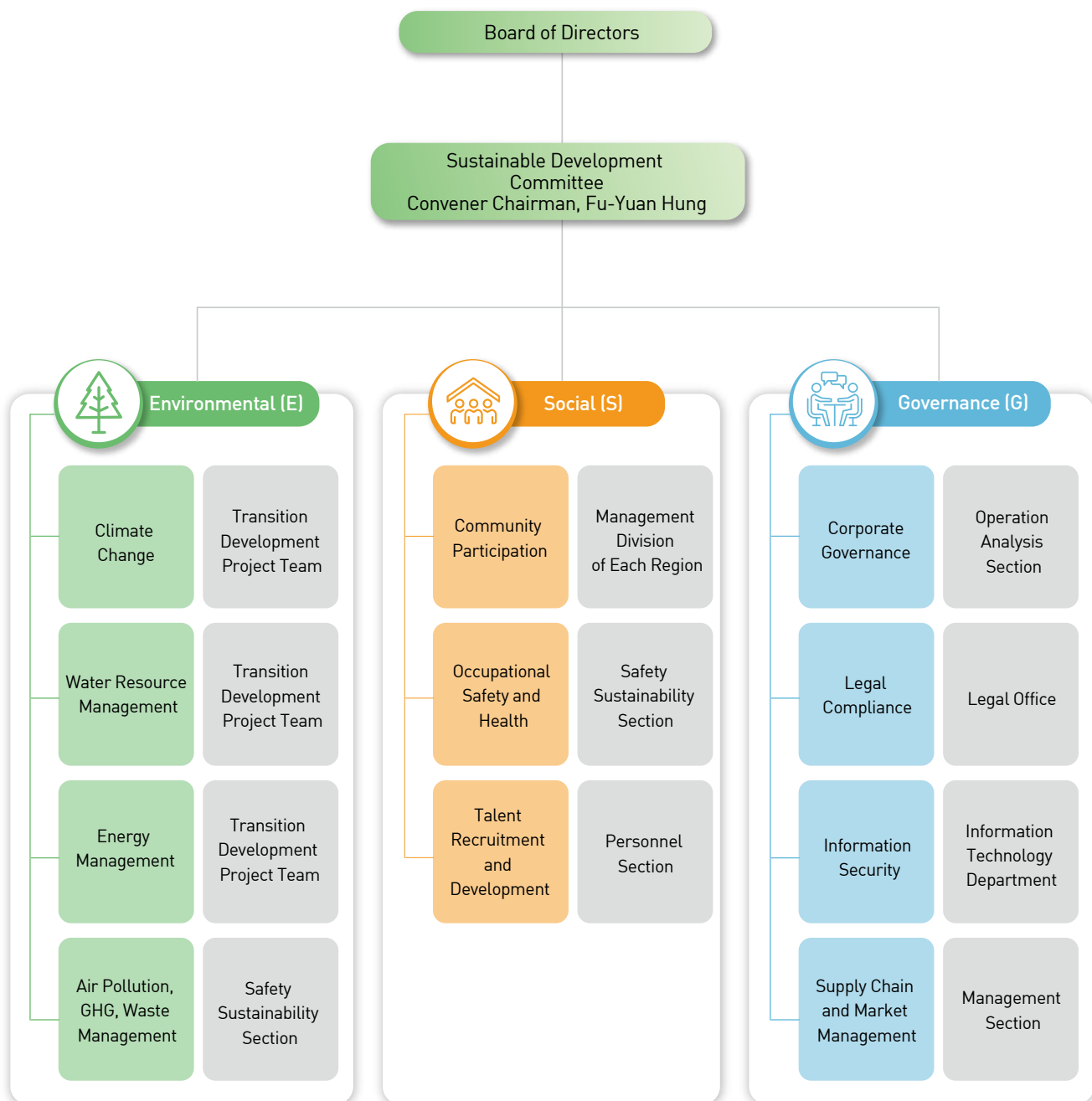
Haifeng Plant

- ▶ No. 23, Taisu Industrial Park, Mailiao Township, Yunlin County
- ▶ 05-6812345

1.3 Organization and Responsibility

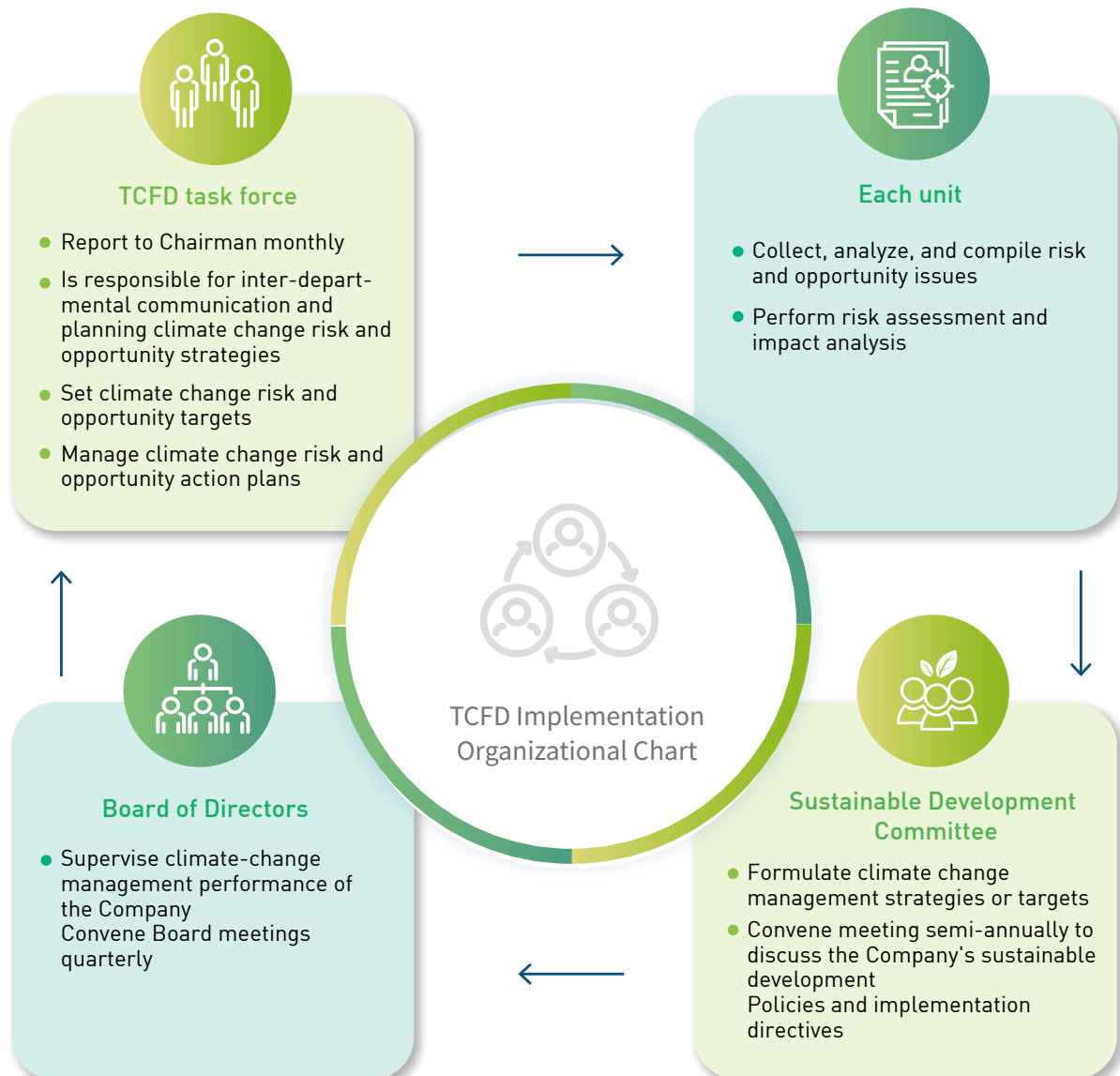
Formosa Chemicals & Fibre Corporation (FCFC) recognizes that Environmental, Social, and Governance (ESG) issues are fundamental to corporate sustainability. To strengthen the Board of Directors' oversight of sustainability-related matters, including climate change, the Company established the Sustainable Development Committee with Board approval on May 6, 2022. The Chairman of the Board serves as the Committee's convener, and the President acts as the deputy convener. The Committee is responsible for formulating corporate sustainability strategies, overseeing performance, promoting social responsibility, and advancing risk management initiatives.

FCFC Sustainable Development Working Group



Climate-related topics are a key ESG focus for the Company. To address this, FCFC has established a TCFD Task Force under the Sustainable Development Committee, responsible for consolidating climate-related risks and opportunities identified by each department, along with their corresponding action plans. Progress on these response measures is monitored through the monthly "Energy Saving, Emission Reduction, and Circular Economy Meeting" and "ESG Promotion Meeting." The outcomes are reported to the Sustainable Development Committee, which in turn provides quarterly updates to the Board of Directors. The Chairman serves as the highest-level executive overseeing climate-related matters and ensuring effective governance.

TCFD Implementation Organizational Chart

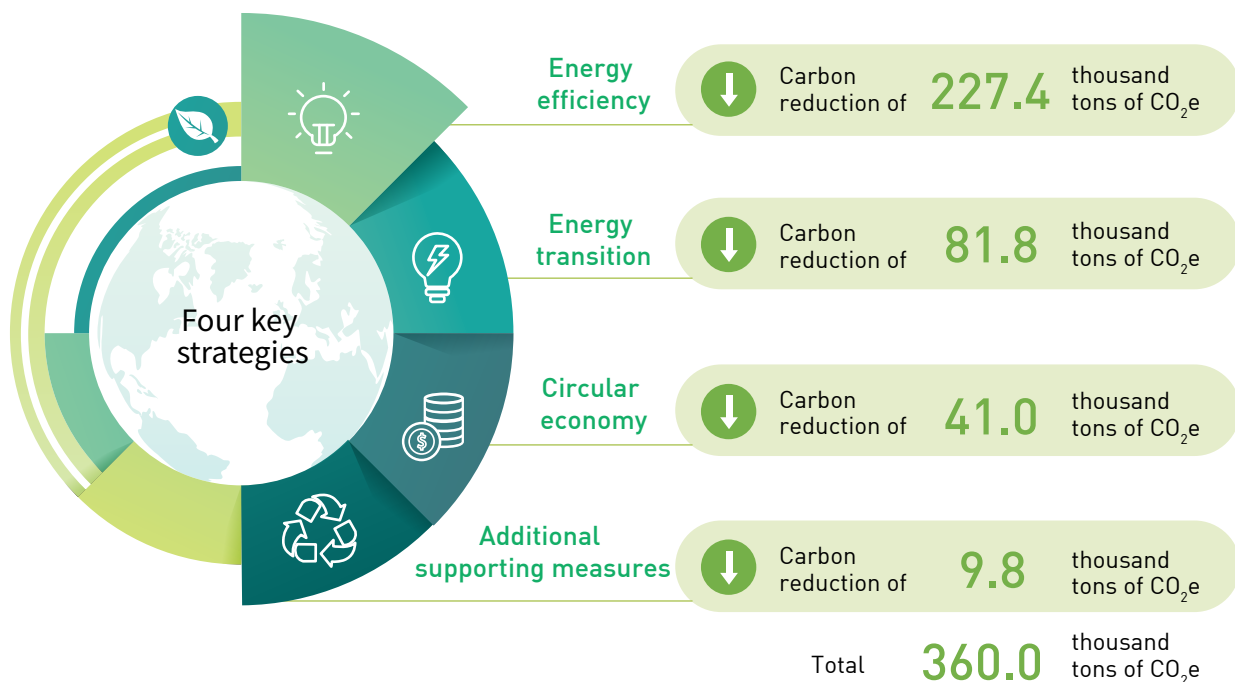


2 Strategy



The Company upholds the philosophy of "Starting from Zero" and actively advances energy conservation, carbon reduction, circular economy, and pollution prevention. Through comprehensive inventories, we have introduced AI to optimize production processes and adopted the best available control technologies to minimize resource input and waste output via source reduction. Guided by a spirit of root-cause analysis and continuous improvement, we are committed to sustainable operations and fulfilling our social responsibility.

In addressing climate change, the Company takes a proactive approach to managing both risks and opportunities. In line with global ESG trends and UN Sustainable Development Goal 13: Climate Action, the Company has set a target to achieve carbon neutrality by 2050. Our sustainability strategy is built upon four key pillars: 1. Energy efficiency improvement, 2. Energy transition, 3. Circular economy, 4. Additional supporting measures.



2.1 Energy Efficiency Improvement

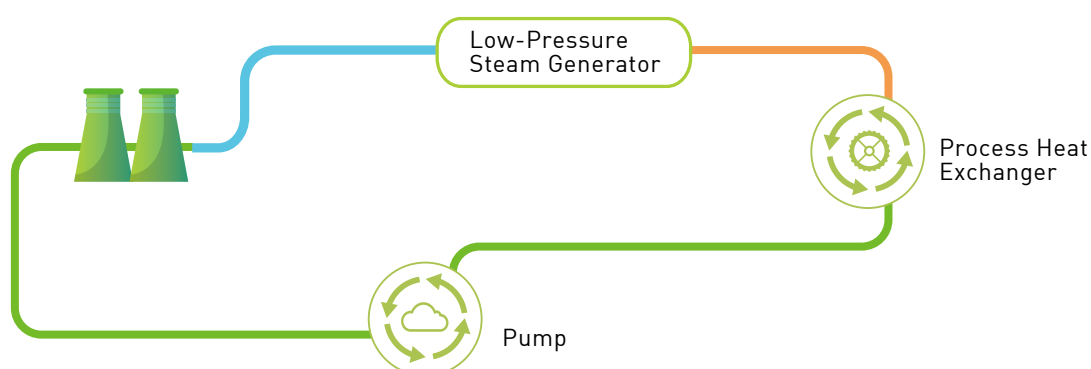
🌱 Completed Executions and Near-term Plans

In 2024, a total of 235 improvement projects were completed, resulting in steam savings of 69.2 tons/hour, electricity savings of 11.0 thousand kWh/hour, fuel savings of 0.1 tons/hour, and an annual carbon reduction of 227 thousand metric tons of CO₂e.

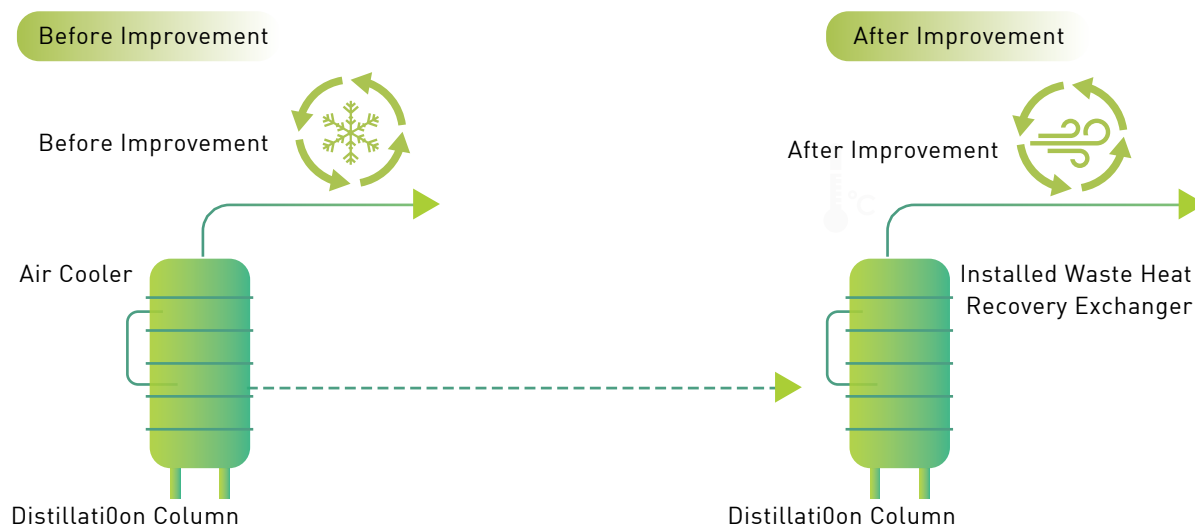
- (1) Introduced Artificial Intelligence (AI) technology to optimize processes and reduce energy consumption at the source.
- (2) Recycled residual heat from processes and implemented heat integration to minimize energy loss.
- (3) Reviewed actual process demands and replaced with appropriate equipment to enhance energy efficiency.

Item	2024 Completed	2025 Estimated
Number of Improvement Projects (cases)	235	212
Steam Savings (tons/hour)	69.2	111.9
Electricity Savings (thousand kWh/hour)	11.0	7.9
Fuel Savings (ton/hour)	0.1	0.1
CO ₂ e Reduction (thousand ton/year)	227	311
Investment Amount (NT\$ billion)	1.31	1.72
Investment Benefit (NT\$ billion/year)	0.66	0.99

Waste Heat Recovery from Process Heater



Overhead Waste Heat Recovery from Distillation Towers



Future Planning

In 2025, the Company plans to implement 212 improvement projects, with an estimated investment of NT\$1.72 billion and an expected annual carbon reduction of 311 thousand metric tons of CO₂e.

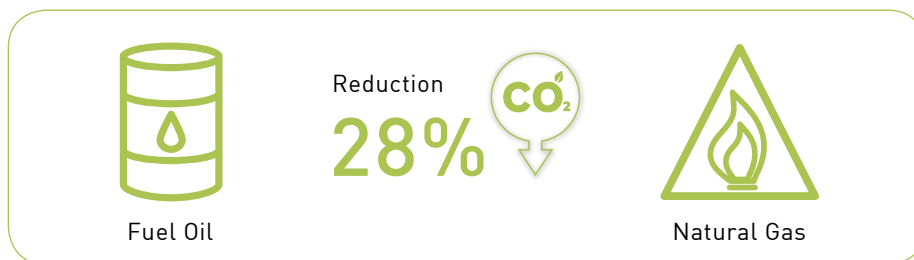
2.2 Energy Transition

Completed Executions and Near-term Plans

[1] **Use of Low-Carbon Energy:** The Company targets to convert all 29 oil-fired boilers to gas-fired boilers by the end of 2025. In 2024, 2 conversions were completed, resulting in an annual carbon reduction of 2,522 metric tons of CO₂e.

Item	Unit	2020	2021	2022	2023	2024	2025 [Estimated]	Total
Completed Units	ST	3	13	4	2	2	5	29
Annual Carbon Reduction	tCO ₂ e/ year	4,355	21,704	128,732	3,527	2,522	1,123	161,963

Comparison of Greenhouse Gas Emission Intensity from Fuel Combustion



[2] **Coal Reduction:** Cogeneration units at plant sites have partially switched fuel to natural gas and adopted steam-dominated operations to reduce on-site coal-fired power generation, while increasing the use of green and low-carbon electricity. As of 2024, the coal reduction strategy has resulted in an average annual carbon reduction of 30,572 metric tons of CO₂e.

Year	2024 Actual	Target (by 2030)
Carbon Reduction (tCO ₂ e/year)	30,572	813,000

Note: The carbon reduction is calculated based on the reduction in coal-fired carbon emissions using 2020 as the base year.

[3] Green Power Development:

Installation Capacity Planning:

- In 2024, newly installed capacity reached 3,797 kW, bringing the cumulative installed capacity to 42,195 kW. Power generation in 2024 was 81,736 thousand kWh, resulting in an annual carbon reduction of 48,678 metric tons of CO₂e.
- By the end of 2030, the Company aims to achieve a total installed green power capacity of 73,251 kW, including:
 - Hydropower: 23,453 kW
 - Solar power: 49,798 kWp

Installed Capacity Planning

Year		2024	2025 (Estimated)	2026 (Estimated)	2027~2030 (Estimated)	2030 (Target)
Hydro Power (kW)	Newly Installed	732	0	180	0	-
	Cumulative Installed	23,273	23,273	23,453	23,453	23,453
Solar Power (kW)	Newly Installed	3,065	15,935	4,941	10,000	-
	Cumulative Installed	18,922	34,857	39,798	49,798	49,798
Total (kW)	Newly Installed	3,797	15,935	5,121	10,000	-
	Cumulative Installed	42,195	58,130	63,251	73,251	73,251

Estimated Green Electricity Generation and Carbon Reduction

Year	2024 Actual	2025(Estimated)	2030(Target)
Hydro Power (thousand kWh/year)	62,396	96,206	97,198
Solar Power (thousand kWh/year)	19,340	42,651	60,578
Total Generation (thousand kWh/year)	81,736	138,857	157,776
Carbon Reduction (tCO ₂ e/year)	48,678	78,812	90,444

New Hydropower Plants in 2024



Installation of hydropower equipment at Shalu Water Distribution Center (plant building)



Installation of hydropower generator at Shalu Water Distribution Center

New Solar Power Installations in 2024



Installation of solar panels on the rooftop of the maintenance plant at the Xingang Plant



Installation of solar panels on the south rooftop of the acetic acid maintenance plant



Installation of solar panels on the rooftop of the carpet finished goods warehouse in the Gungsan Plant

Future Planning

- (1) **Enhancing Energy Efficiency:** After replacing the catalyst in the process with a new model, conversion efficiency improved compared to the old catalyst. This allows for a reduction in hydrogen circulation volume and compressor speed. Since the required circulation flow has dropped below the minimum operating threshold of the current compressor, there is potential for energy savings. The Company is evaluating downsizing the original compressor to reduce power consumption and enhance energy efficiency.
- (2) **Upgrading Low-Grade Energy Use:** Residual heat from low-grade processes is typically unrecoverable and dissipated via air or water cooling. The Company plans to recover this low-grade residual heat to generate low-pressure steam, which is then pressurized using electric compressors. The recovered energy can be used for process heating within the Company or supplied to other plants.

2.3 Circular Economy

Completed Executions and Near-term Plans

- (1) **CO₂ Recycle and Reuse:** CO₂ generated from the acetic acid plant process is recovered and reused in the production cycle, where it can be converted into CO. This enables an increase in CO production capacity without additional naphtha feedstock.

Year	2024 Actual	2025 Estimated	Target by 2030
CO ₂ recovered (metric tons/year)	9,533	8,116	9,400
Carbon Reduction (tCO ₂ e/year)	7,298	6,213	7,196

- (2) **Marine Waste Recycle and Reuse:** Waste fishing nets and discarded oyster ropes—mainly composed of Nylon 6, whose raw material caprolactam (CPL) is primarily derived from petrochemical processes—are fed into the nylon recycling process. Through heating, melting, depolymerization, and refining, the waste is converted back into CPL and then spun into recycled eco-friendly yarns used in products such as outdoor apparel and bicycle tire cords. Carbon reduction in 2024 reached 15,496 metric tons of CO₂e.

Year	2024 Actual	2025 Estimated	Target by 2026
Sales volume (tons/year)	7,239	8,160	15,000
Percentage of total sales volume	14%	16%	30%
Carbon Reduction (tCO ₂ e/year)	15,496	18,197	33,400

Circular Economy

Energy Savings

15%

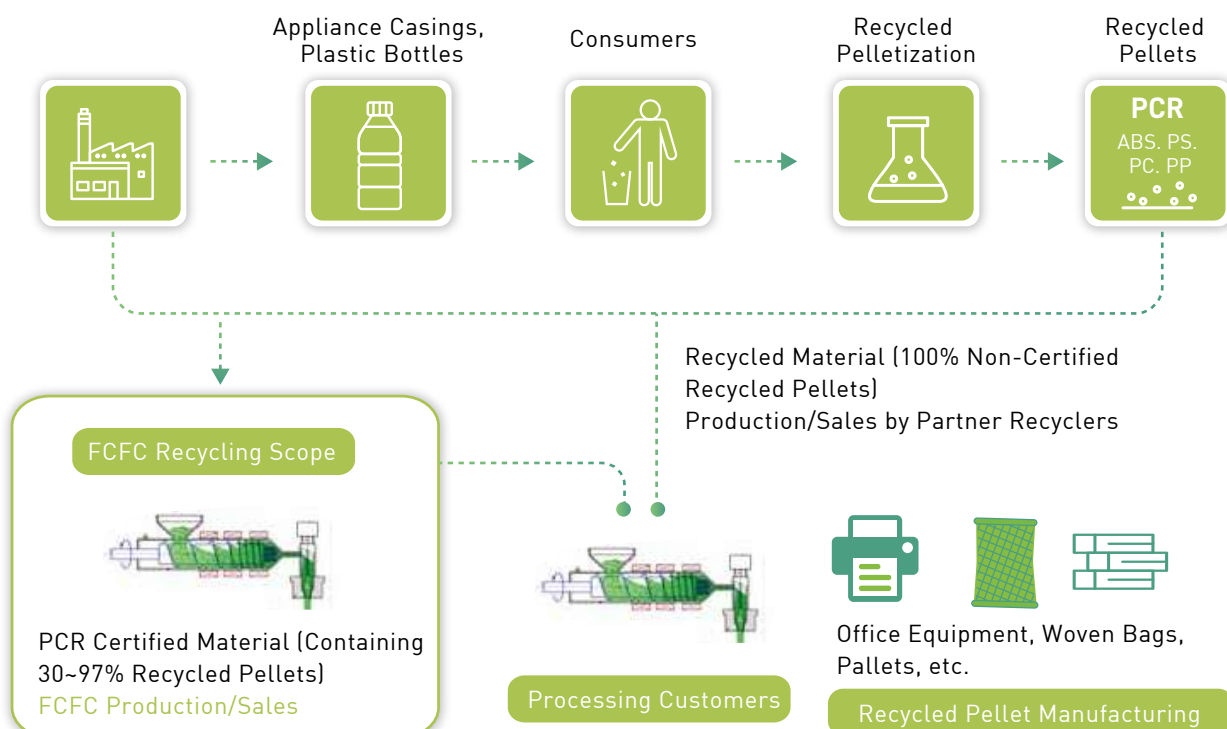
Carbon Reduction Rate

62.5%

(3) **Waste Plastic Recycle and Reuse:** Recycled plastic pellets are promoted for use in products such as ABS, PS, PC, and PP. With increasing commitments from major brands to use recycled materials, the demand for high-quality, stable PCR (Post-Consumer Recycled) materials continues to rise. Since 100% PCR plastic pellets often fall short of customer expectations in terms of physical properties and quality, FCFC leverages its R&D capabilities to tailor formulations that meet customer needs. These products are certified by third-party institutions. Through stable production, stringent quality control, and professional service, FCFC ensures that clients receive PCR eco-friendly pellets that meet required quality standards. Carbon reduction in 2024 reached 6,636 metric tons of CO₂e.

Year	2024 Actual	2025 Estimated	Target by 2026
Sales volume (tons/year)	5,879	10,000	16,000
Share of total hard plastic sales volume	0.8%	1.4%	2.1%
Carbon Reduction (tCO ₂ e/year)	6,636	10,818	17,312

FCFC carries out compounding at its PABS or PP plants to produce plastic pellets with 30–97% recycled content. The recycling process for plastics is illustrated as follows:



- (4) **Eco-Friendly Yarn Products:** Post-consumer PET bottles are recycled and remanufactured into polyester fibers, which are then used in the yarn production process. By blending with various materials such as natural cotton and rayon, the resulting eco-friendly yarns are tailored to meet customer requirements and are supplied to downstream manufacturers for use in everyday apparel and sportswear. In 2024, this initiative contributed to a carbon reduction of 9,974 metric tons of CO₂e.

Year	2024 Actual	2025 Estimated	Target by 2026
Sales volume (tons/year)	4,433	5,321	6,209
Percentage of total sales volume	9.4%	11.3%	13.2%
Carbon Reduction (tCO ₂ e/year)	9,974	11,972	13,970



- (5) **Eco-Friendly Woven Bags and Pallets:** To further reduce environmental impact, the Company has actively developed and promoted woven bags and pallets made from post-consumer recycled (PCR) polypropylene (PP). These eco-friendly packaging materials have been adopted across all product lines in the Plastics Division. In 2024, the use of PCR-based PP woven bags and pallets resulted in a carbon reduction of 1,481 metric tons of CO₂e.

Year	2024 Actual	Target by 2026
Sales volume (tons/year)	710	1,094
Carbon Reduction (tCO ₂ e/year)	1,481	2,282

Eco-friendly PP pallet



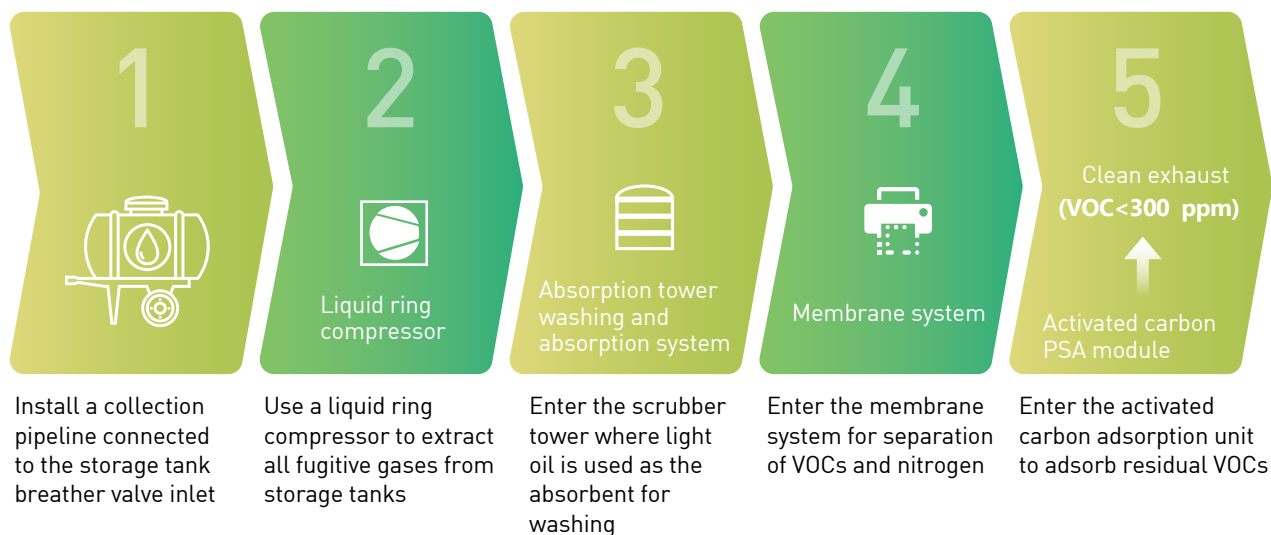
Eco-friendly PP woven bag



- (6) **VOC Recovery from Storage Tanks:** To reduce fugitive emissions, a membrane-based recovery system has been installed to capture volatile organic compounds (VOCs) released through storage tank breather valves. The collected VOCs are treated and recycled back into the production process, thereby minimizing waste gas emissions. In 2024, this initiative is estimated to achieve a carbon reduction of 110.4 metric tons of CO₂e.

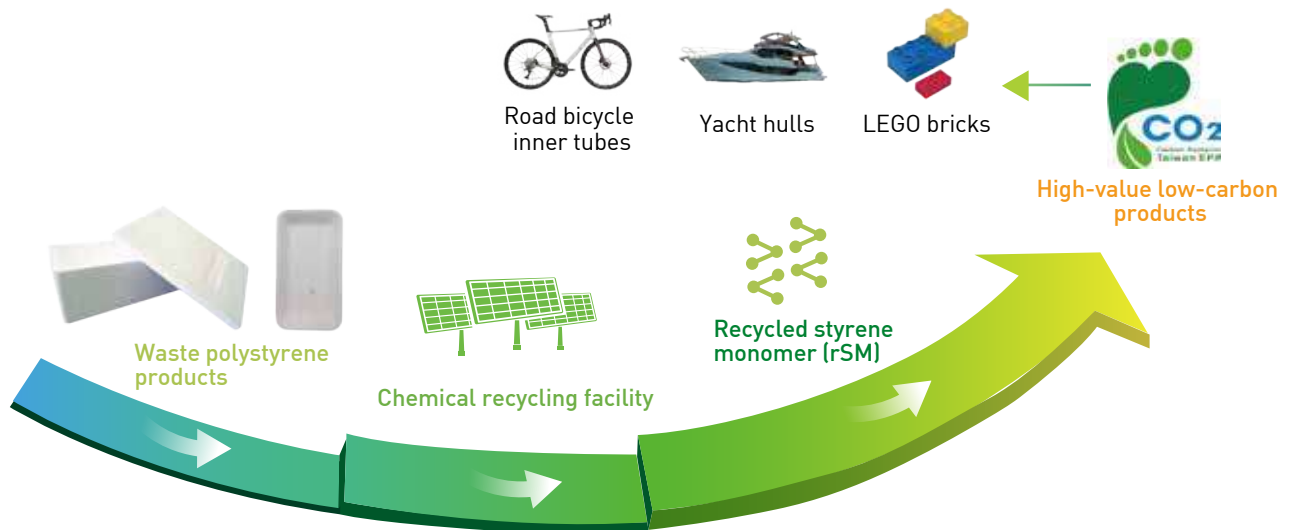
1. Annual carbon reduction:

Year	2024 Actual	2025 Estimated
VOC Reduction (metric ton/year)	114.02	114.02
Carbon Reduction (tCO ₂ e/year)	110.4	110.4



Future Planning

- (1) **Chemical Recycling of Waste Plastics – Pyrolysis Oil:** Mechanical recycling of plastics is often limited by the quality of recycled materials, which may lead to degraded physical properties and unstable processing during re-manufacturing. To address this and align with circular economy principles, FCFC is actively developing chemical recycling technologies for waste plastics. Using pyrolysis, waste plastics are thermally decomposed into oil, which can then be repolymerized into new plastics. This approach maintains product performance equivalent to that of virgin materials, reduces the consumption of petrochemical feedstocks, and lowers carbon emissions.
- (2) In 2024, FCFC launched Taiwan's first pilot plant dedicated to producing recycled styrene monomer (rSM) using advanced chemical recycling technology. This process breaks down polystyrene (e.g., foam containers) into high-purity rSM, which can be used to manufacture high-value, low-carbon products.



2.4 Additional Supporting Measures

Completed Executions and Near-term Plans

- (1) **Low-Carbon Transportation:** To promote low-carbon mobility, the Company provides subsidies for employees to purchase new or replacement electric scooters. A subsidy of NT\$10,000 is offered for new purchases and NT\$16,000 for replacements. In addition, priority is given to the procurement of energy-efficient official vehicles. Fuel-powered vehicles over 11 years old are targeted for replacement, with newly purchased passenger and utility vehicles prioritized to be hybrid or fully electric models. As of 2024, these efforts have resulted in an annual carbon reduction of 41.5 metric tons of CO₂e.

Year		2024 Actual
Electric scooters subsidized (vehicle/year)	Newly Procured	22
	Cumulative Procured	122
Energy-efficient vehicles procured (vehicle/year)	Newly Procured	4
	Cumulative Procured	15
Carbon Reduction (tCO ₂ e/year)	Newly Procured	13.0
	Cumulative Procured	41.5

Notes:

- Emission reduction per electric scooter: Fuel scooter = 55g/km; Electric scooter = 26.5g/km; Annual mileage = 20 km/day × 252 days/year = 5,040 km/year; Carbon reduction per unit per year = 0.144 tCO₂e.
- Emission reduction per hybrid vehicle: Fuel vehicle = 341g/km; Hybrid vehicle = 196g/km; Annual mileage = 10,000 km/year; Carbon reduction per vehicle per year = 1.45 tCO₂e.

Formosa Group Employee Subsidy Program for New or Replacement Electric Scooter Purchase



Replacement Purchase

NT\$16,000

New Purchase

NT\$10,000

- (2) **Paperless Office Initiatives:** To reduce paper consumption and associated emissions, the Company promotes digitalization by replacing meeting documents with iPads and using electronic systems for internal approvals. In 2024, these measures achieved a carbon reduction of 189 metric tons of CO₂e.

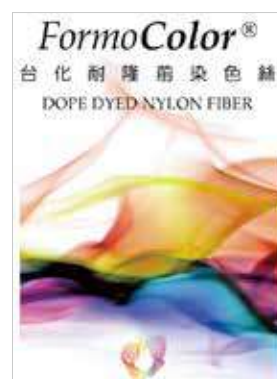
Year	2019	2024 Actual	2025 Estimated
Total paper consumption (thousand sheets/year)	22,255	8,467	7,789
Reduction in paper usage (thousand sheets/year)	Base Year	13,788	14,466
Carbon Reduction (tCO ₂ e/year)		189	198

Note: Emissions per A4 sheet: 7.2 g CO₂e per sheet (paper); 6.48 g CO₂e per sheet (black-and-white printing).



- (3) **Spun-Dyed Yarn:** To meet customer requirements for color while reducing environmental impact, the Company developed spun-dyed yarn. After texturizing (DTY) and weaving, the yarn is directly cut into garments, eliminating the dyeing and finishing processes. This significantly reduces wastewater discharge and dyeing-related emissions, offering a low-carbon, eco-friendly textile product. The carbon reduction in 2024 is estimated at 9,526 metric tons of CO₂e.

Year	2024 Actual	2025 Estimated
Sales volume (tons/year)	5,880	7,140
Carbon Reduction (tCO ₂ e/year)	9,526	11,567

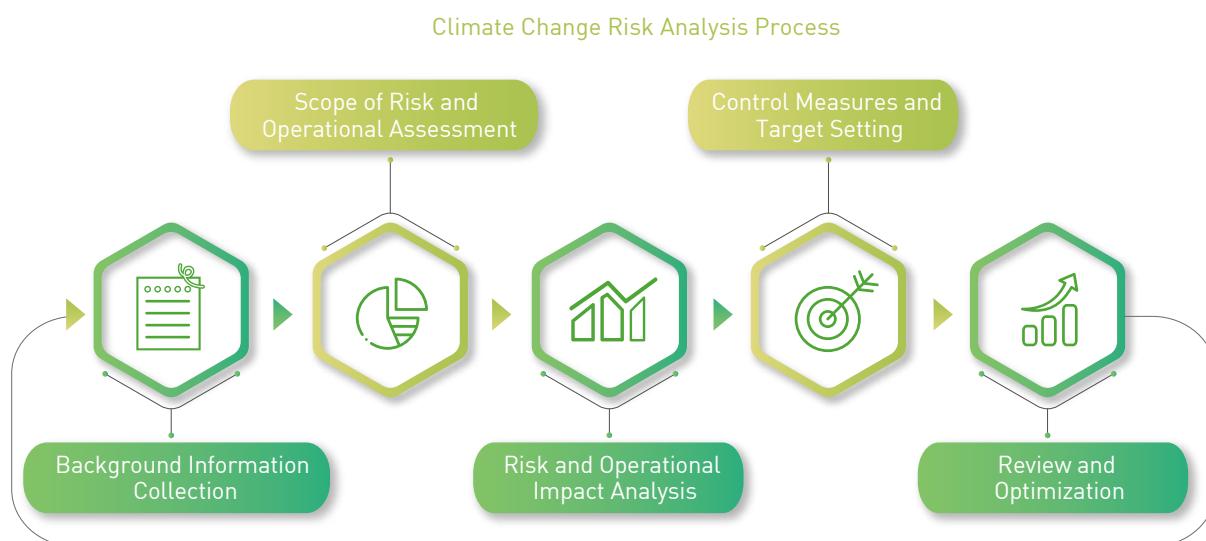


3 Climate Change Risk and Opportunity Management

3.1 Risk and Opportunity Identification Process

In alignment with the Recommendations of the Task Force on Climate-related Financial Disclosures (June 2017), the Company adopts a structured methodology for identifying climate-related risks. Risk scenarios consider both transition risks—including policy and legal, market, technology, and reputational factors—and physical risks, both chronic and acute in nature. For each identified potential event, the analysis includes: the degree of financial impact, the time horizon (short-, medium-, or long-term), the affected segments of the value chain, and the likelihood of occurrence. In parallel, opportunity scenarios are developed by examining aspects such as resource efficiency, energy use, products and services, market trends, and organizational adaptability. Each opportunity is assessed based on: the scale of potential financial benefit, the anticipated timing (short-, medium-, or long-term) the value chain segments positively affected and the likelihood of occurrence.

To ensure the effective internal development of climate risk response strategies, the Company has established a Transition Development Project Team. The climate-related risk and opportunity analysis process is illustrated in the diagram below.

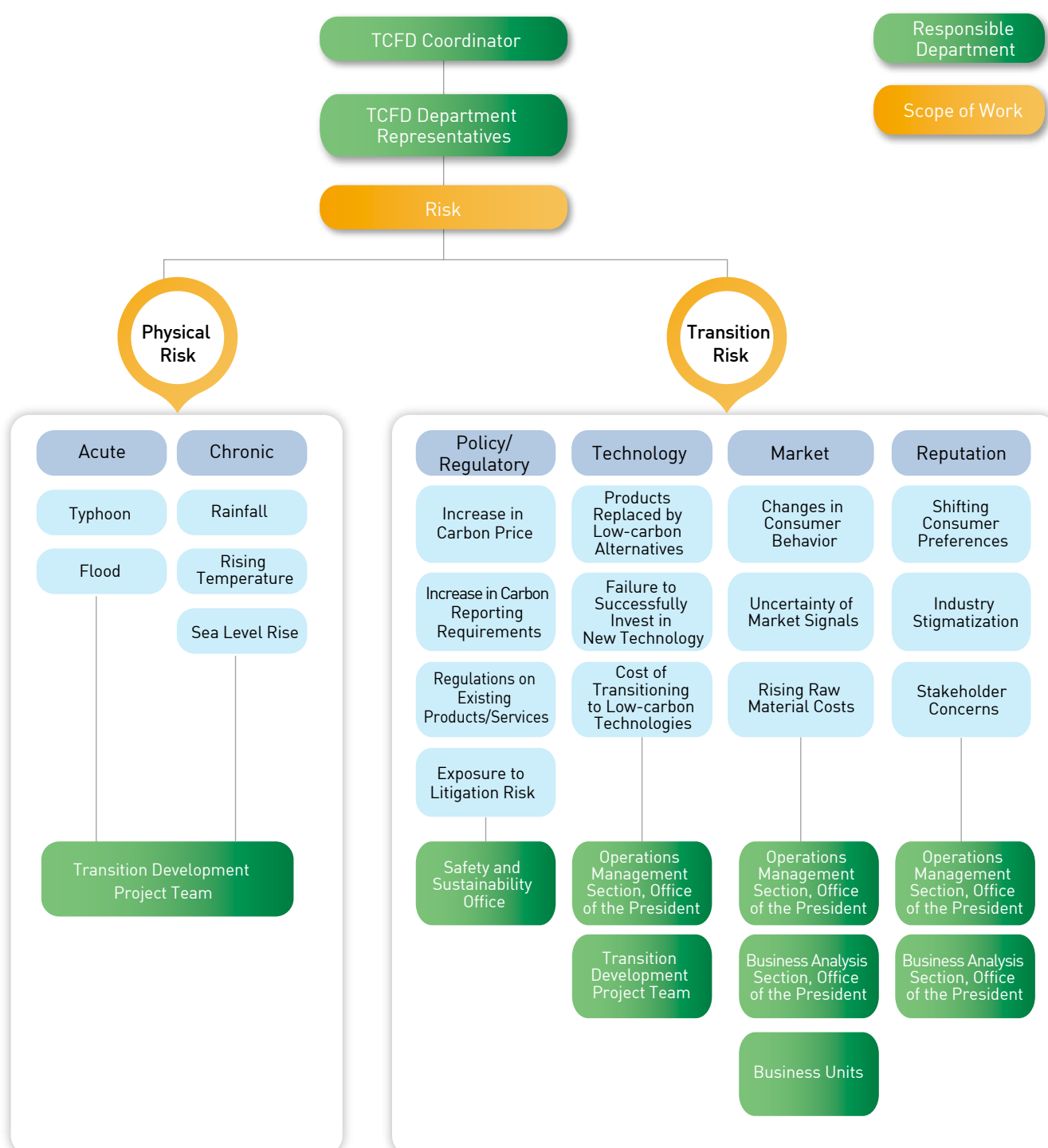


The Transition Development Project Team conducts an annual identification and assessment of climate-related risks and opportunities by compiling an Environmental Risk and Opportunity Inventory Table. For each risk category, a designated responsible person is assigned to systematically collect and manage relevant risk information. Short- to medium-term risks and opportunities (with an estimated impact horizon of less than 10 years) are directly incorporated into the Company's periodic strategic planning process for the development of corresponding response actions. Long-term risks and opportunities (with an estimated impact horizon exceeding 10 years) are reported by the Chairman to the Board of Directors during the annual Business Management Meeting, where dedicated strategic responses are formulated. The Transition Development Project Team monitors the implementation progress of these response strategies through a standing mechanism: the Monthly Energy-Saving, Carbon Reduction, and Circular Economy Meeting.

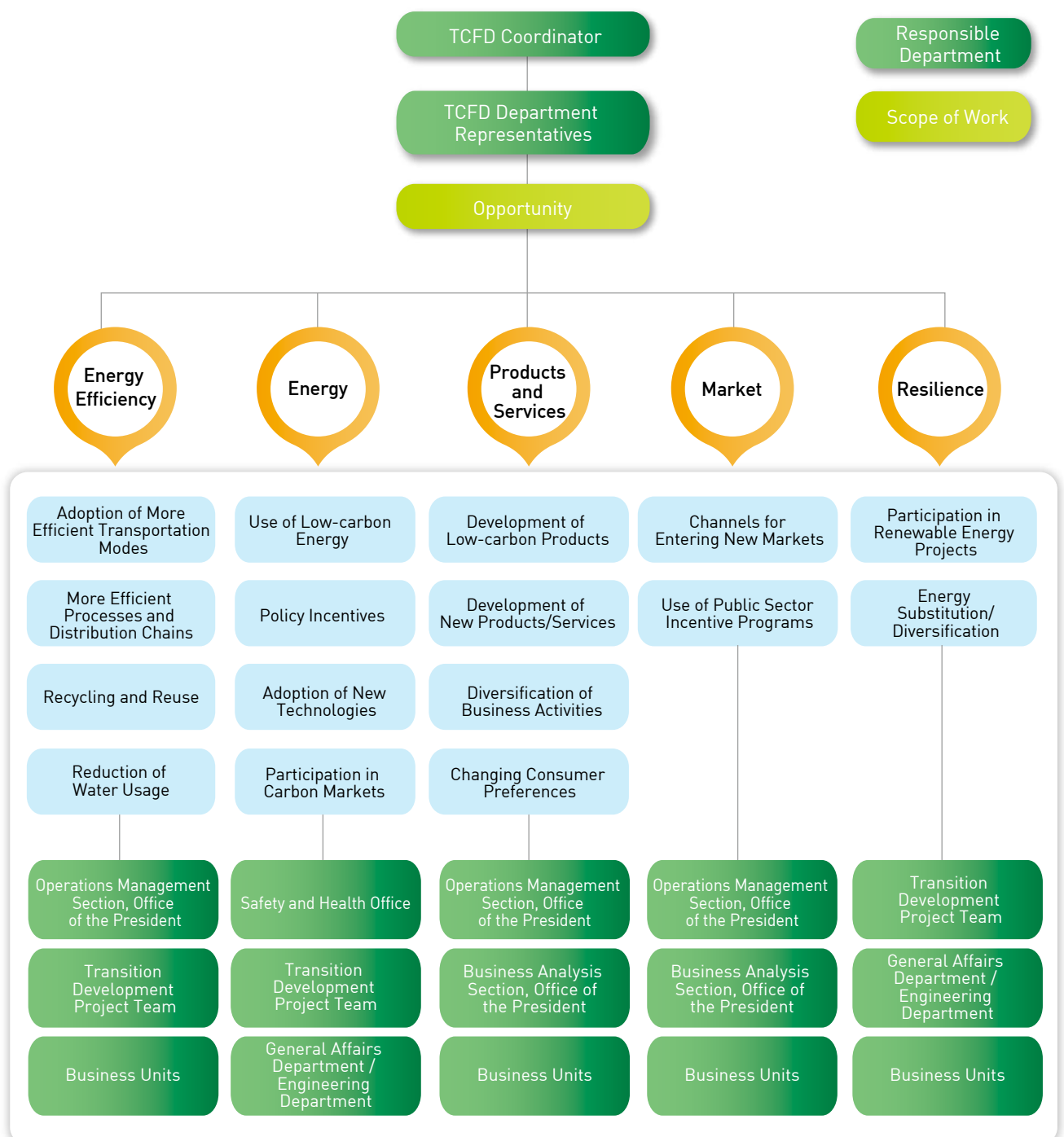
Each production unit, along with the Occupational Safety and Health Department, applies the risk and opportunity matrix defined in ISO 14001 Environmental Management System guidelines to identify and evaluate climate-related risks and opportunities. This includes both transition risks (e.g., environmental policy and regulation, market risks such as transportation, logistics, and energy supply, technological development, and reputational factors) and physical risks (e.g., climate and weather impacts).

Recognizing that rapidly evolving internal and external environments are increasingly impacting corporate operations, the Company is committed to minimizing the negative impact of all identified risks. Any deficiencies in risk management practices may be reported to the Audit Office, independent directors, or the Board of Directors. Each department is responsible for self-assessing its risk identification and mitigation performance, while the Office of the President conducts evaluations and provides guidance to ensure effective risk governance and performance improvement across departments.

Climate Change Risk Identification Roles and Responsibilities



Climate Change Opportunity Identification Roles and Responsibilities



The Company uses a risk and opportunity matrix that evaluates the likelihood of occurrence and the severity of financial impact of each identified climate-related risk and opportunity. Both dimensions—financial impact and likelihood—are categorized into five levels. Each risk and opportunity is scored based on these two criteria, and a weighted matrix score is calculated accordingly.

Climate change financial impact and likelihood matrix

Climate Change Risk Matrix						
Financial impact level	Potential affected amount (New Taiwan Dollars, NTD)	Scoring of corresponding risk				
	Above NT\$8 billion	5	10	15	20	25
	\$4 billion \$8 billion	4	8	12	16	20
	\$500 million to \$4 billion	3	6	9	12	15
	\$50 million to \$500 million	2	4	6	8	10
	\$1 million to \$50 million	1	2	3	4	5
		<20%	20%<X<50%	50%<X<75%	75%<X<95%	>95%
Likelihood of occurrence		Rare	Unlikely	Possible	Likely	Almost certain

In line with the Company's climate-related risk assessment process, a financial impact exceeding NT\$1 million is considered material.

Based on the final matrix score, risks and opportunities are classified into three levels for action planning and monitoring:

**Score 15–25:
High risk/opportunity**

Requires prioritized development of corresponding response measures.

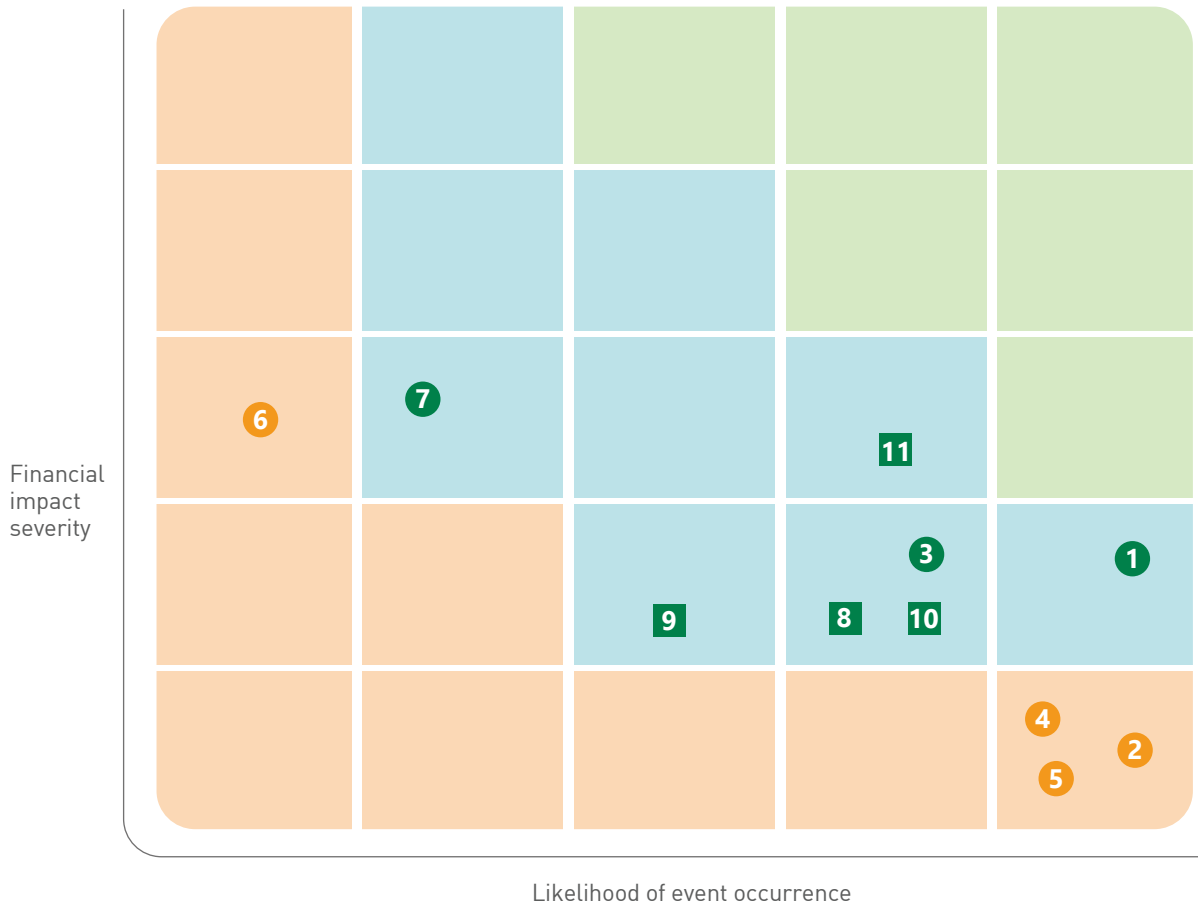
**Score 6–14:
Moderate risk/opportunity**

Does not currently require immediate action but should be continuously monitored.

**Score 1–5:
Low risk/opportunity**

Acceptable and does not require further action at this time.

Each business unit conducts climate risk and opportunity assessments. Results are then consolidated into the Company-wide climate risk and opportunity matrix, which guides strategic planning and mitigation/adaptation measures.



- Major Risk ■ Major opportunity
- Medium Risk ■ Medium opportunity
- Low Risk ■ Low opportunity

- 1 Proposed implementation of carbon fees
- 2 Introduction of a water usage fee
- 3 Imposition of carbon border adjustment tax
- 4 Impact associated with high-carbon products
- 5 Negative impact on corporate reputation
- 6 Flooding of facilities due to strong winds or typhoons
- 7 Water shortages or droughts

- 8 Use of recycled materials in products
- 9 Customer demand for low-carbon products
- 10 Use of low-carbon fuels or renewable energy
- 11 Diversification of product applications

3.2 Climate Risk and Opportunity Issue and Financial Impact List

List of Risk and Opportunity Issues

	Risk/Opportunity Issues	Description	Level of Impact (High, Medium, Low)
1	Risk / Policy and Regulations Imposition of Carbon Fees	On February 15, 2023, the "Climate Change Response Act" was passed, designating manufacturers with annual greenhouse gas emissions exceeding 25,000 metric tons of CO ₂ e as liable for carbon fees. The collection of carbon fees will begin in 2025, resulting in increased operational expenditures.	Medium
2	Risk / Policy and Regulations Introduction of "Water Usage Fees"	Starting February 1, 2023, the government imposed a water usage fee on large water users with monthly consumption exceeding 9,000 tons. The standard rate is NT\$3 per ton. To encourage water conservation, users who meet specified water recycling rates may qualify for a reduced rate of NT\$2 or NT\$1 per ton.	Low
3	Risk / Policy and Regulations Implementation of Carbon Border Tax	Starting in 2026, the European Union will implement the Carbon Border Adjustment Mechanism (CBAM), initially targeting direct emissions associated with five key sectors: electricity, cement, chemical fertilizers, steel, and aluminum. This regulation may result in increased carbon-related costs for products exported to the EU.	Medium
4	Risk/Technology Impact Caused by High-Carbon Products	As customer awareness of sustainable consumption continues to grow, the demand for environmentally friendly products is rising. When evaluating product life cycles and value chains, products with high carbon intensity are likely to face reduced market competitiveness and diminished customer acceptance, potentially impacting the Company's revenue and market share.	Low
5	Risk /Reputation Negative Impact on Reputation	With the global emphasis on ESG, financial institutions increasingly incorporate ESG criteria into their investment and lending decisions. Companies that fail to meet ESG expectations risk reputational damage, which may in turn affect investor confidence and access to capital.	Low
6	Physical Risk / Chronic Flooding of Facilities Due to Strong Winds or Typhoons	In response to extreme weather events such as strong winds or typhoons, FCFC has adopted precautionary measures including plant shutdowns to prevent process-related hazards. Additionally, heavy rainfall and flooding could lead to operational disruptions and unplanned shutdowns, posing a significant risk of revenue loss.	Low
7	Physical Risk / Chronic Water Shortages or Drought	Using 1986–2005 as the baseline, climate projections for 2016–2035 indicate that the plant site may experience water shortages or drought conditions for approximately two months each year. Such extreme weather events pose a risk of revenue loss due to potential disruptions in operations.	Medium
8	Opportunity/Technology Use of Recycled Materials in Products	FCFC is actively developing low-carbon products by incorporating circular economy principles—utilizing recycled raw materials and transforming marine plastic waste collected from end customers into new products. These efforts reduce production costs and promote the sustainable use of resources.	Medium
9	Opportunity / Resource Efficiency Customer Demand for Low-Carbon Products	In response to increasing brand customer requirements for products containing post-consumer recycled (PCR) materials, FCFC leverages its advanced technology to offer PCR-based solutions ahead of competitors. This first-mover advantage creates opportunities to grow revenue through enhanced product offerings.	Medium
10	Opportunity / Resource Efficiency Use of Low-Carbon Fuels or Renewable Energy	To comply with Taiwan's Renewable Energy Development Act, FCFC has implemented on-site renewable energy systems, including solar and hydroelectric power, along with energy storage solutions to improve power stability and resilience at its facilities.	Medium
11	Opportunity/Technology Diversification of Product Applications	With the rapid expansion of renewable energy infrastructure, FCFC's products are increasingly integrated into green energy systems such as solar power and energy storage. This alignment with policy-driven demand allows the Company to capitalize on emerging market opportunities and increase revenue.	Medium

Impact Scope Legends: ▲ Upstream ● Operation ▼ Downstream

Financial Impact of Risk Issues

Risk Category / Risk Issue	Scope of Impact	Magnitude of Impact	Issue Analysis		
			Description	Potential Financial Impact	Management Strategy (Risk Avoidance / Risk Mitigation / Risk Retention)
1 Risk / Policy and Regulations / Imposition of Carbon Fees	●	Medium	The "Climate Change Response Act" was passed in 2023, and the collection of carbon fees is scheduled to begin in 2025. The fee will apply to companies in the electric power and manufacturing sectors whose annual greenhouse gas (GHG) emissions exceed 25,000 metric tons.	Scenario Assessment FCFC's total GHG emissions amount to approximately 7.625 million metric tons. After deducting emissions from externally purchased steam, externally supplied electricity, and emission allowances, the payable emissions are estimated at 4.6 million metric tons. Estimated Financial Impact The annual carbon fee cost is expected to increase, with its potential financial impact assessed as medium.	1. Conduct annual GHG inventories to identify emission sources. 2. Promote energy-saving improvements and energy transition initiatives to reduce emissions. 3. Establish carbon reduction targets and strategies, and develop voluntary reduction plans to qualify for preferential carbon fee rates. 4. Implement energy-saving technologies and apply for government subsidies under carbon reduction programs. 5. Adopt internal carbon pricing as a key performance indicator for operational efficiency, investment evaluation, and product strategy, thereby enhancing competitiveness. 6. Allocate approximately NT\$1.72 billion for energy efficiency investments in 2025.
2 Risk / Policy and Regulations / Introduction of "Water Usage Fees"	●	Low	Starting February 1, 2023, the government began collecting a water usage fee from large water users whose monthly consumption exceeds 9,000 cubic meters. The standard rate is NT\$3 per cubic meter. To encourage water conservation, preferential rates of NT\$2 or NT\$1 per cubic meter are available to users meeting specified recycling benchmarks. Until June 30, 2025, large water users are eligible for a 50% discount on the water usage fee.	Scenario Assessment During the dry season, excess water usage is charged at NT\$3/m ³ . In 2024, FCFC has paid NT\$2.21 million in water usage fees. Estimated Financial Impact The estimated annual water usage fee is NT\$6.16 million for 2025 and 2026, increasing to NT\$12.32 million annually from 2027 onward.	1. Improve recycling rates across all plants to exceed industry benchmarks and qualify for preferential rates of NT\$2/m ³ or NT\$1/m ³ . 2. Provide enhanced support and guidance to plants with below-benchmark recycling performance. 3. Leverage AI technologies to increase company-wide water conservation. 4. Allocate approximately NT\$50 million in 2024 for water-saving investments.
3 Risk / Policy and Regulations / Implementation of Carbon Border Tax	▲ ●	Medium	On July 14, 2021, the European Union announced the Carbon Border Adjustment Mechanism (CBAM). Imports of high-carbon products such as cement, steel, electronics, plastics, petrochemicals, and related goods into Europe must disclose the product's embedded carbon emissions and will be subject to a carbon tariff. Formal implementation is expected in 2027. The tariff will be based on the difference between the actual emissions from the production process and the EU's benchmark emission efficiency standards.	Scenario Assessment Based on FCFC's export value to the EU of NT\$2.01 billion in 2024, assuming a 10% increase in costs due to CBAM. Estimated Financial Impact An estimated increase in cost of NT\$201 million.	1. Continue promoting energy conservation, emissions reduction, energy transition, and circular economy practices to reduce carbon emissions per unit of product. 2. Carbon fees paid in Taiwan may be credited against carbon tariffs under CBAM. 3. Allocate approximately NT\$1.72 billion in 2025 for energy efficiency improvements.

Financial Impact of Risk Issues

Risk Category / Risk Issue	Scope of Impact	Magnitude of Impact	Issue Analysis		
			Description	Potential Financial Impact	Management Strategy (Risk Avoidance / Risk Mitigation / Risk Retention)
4 Risk/Market/ Customer Demand for Emissions Reduction		Low	Some textile customers require that, by 2025, more than 50% of the raw materials used in their finished products must be derived from recycled content.	Scenario Assessment The market is currently saturated with short-staple fiber 'eco-yarn' products claiming carbon reduction, with an estimated volume of 568 tons. Estimated Financial Impact The estimated impact on 2025 revenue is low.	1. Incorporate circular economy principles by using recycled waste as raw material and develop high-value, low-carbon products to reduce the product carbon footprint. 2. Allocate approximately NT\$6 million in 2024 for related investment costs.
5 Risk / Reputation/ Negative Impact on Reputation		Low	Financial and investment institutions increasingly incorporate ESG performance assessments into their financing and investment decisions.	Scenario Assessment Based on FCFC's 2024 standalone financial statements, total liabilities amounted to NT\$118.02 billion. Estimated Financial Impact For every 0.01% change in interest rates, the Company's annual interest expense would change by approximately NT\$11 million.	1. Participate in carbon disclosure initiatives such as CDP, and align with TCFD and SBTi frameworks to demonstrate carbon reduction achievements. 2. Secure favorable interest rates through sustainable finance instruments, such as the "Sustainability-Linked Loan" from Bank of Taiwan.
6 Acute Physical Risk/ Flooding		Low	Climate-related extreme rainfall or flooding events may result in plant shutdowns due to water ingress.	Scenario Assessment Based on FCFC's 2024 standalone financial statements, total annual revenue was NT\$217.59 billion. Flooding that causes a production shutdown could result in significant operational disruptions. Estimated Financial Impact Each day of production halt due to flooding is estimated to result in a revenue loss of approximately NT\$595 million.	1. Conduct monthly monitoring of water consumption at all plants. 2. Upgrade infrastructure by raising flood channel embankments, and installing flood barriers and water pumps across facilities.
7 Chronic Physical Risk / Drought		Medium	Abnormal climate conditions may lead to water scarcity. In the event of water rationing, production will be scaled down. In severe cases, this could result in significant production curtailment or operational shutdowns.	Scenario Assessment According to FCFC's contingency plan for water shortages at the Mailiao plant, in the event of a 10% water supply reduction, production would be reduced primarily at the PTA and PC plants. Assuming a future scenario of 10% water rationing lasting four months. Estimated Financial Impact Revenue loss is estimated at NT\$1.29 billion.	1. Implement emergency water-saving measures, including water recycling initiatives. 2. Construct a seawater desalination plant with a daily capacity of 100,000 tons at the Mailiao site. 3. Allocate approximately NT\$50 million for water-saving investments in 2024.

Impact Scope Legends: ▲ Upstream ● Operation ▼ Downstream

Financial Impact of Opportunity Issues

Opportunity Category / Risk Issue	Scope of Impact	Magnitude of Impact	Issue Analysis		
			Description	Potential Financial Impact	Management Strategy
8 Opportunity/ Technology/ Circular Economy	▲ ● ▼	Medium	Recycling raw materials and reprocessing marine waste into new products contributes to sustainable resource use and reduces dependence on petrochemical feedstocks.	Scenario Assessment FCFC is promoting circular economy practices by increasing the use of recycled materials from marine waste and nylon. The target annual sales volume of such recycled products is 15,000 metric tons. Estimated Financial Impact The estimated annual benefit is approximately NT\$380 million.	1. Continue developing recycled and renewable materials to reduce consumption of virgin petrochemical resources. 2. Allocate an estimated annual average of NT\$270 million to support these initiatives.
9 Opportunity / Resource Efficiency / Use of Recycled Materials	●	Medium	Customers are increasingly requesting that products contain post-consumer recycled (PCR) materials. FCFC maintains a technological advantage in this area.	Scenario Assessment In 2025, the Company expects to sell approximately 10,000 metric tons of environmentally friendly recycled plastic pellets. Estimated Financial Impact Annual revenue is estimated at NT\$500 million.	1. Continue recovering and reusing plastic waste as raw materials in production to improve the efficiency of resource utilization. 2. Allocate approximately NT\$50 million in 2025 to support these efforts.
10 Opportunity / Resource Efficiency / Use of Renewable Energy	●	Medium	The amendment to Taiwan's "Renewable Energy Development Act" was officially passed in April 2019. It requires designated users to install renewable energy facilities or energy storage systems with a contracted capacity equivalent to at least 10% of their contract demand within five years, or alternatively, purchase renewable energy certificates. Failure to comply will result in mandatory compensation payments.	Scenario Assessment Based on current estimates: Solar power capacity of 38,798 kWp is expected to generate an annual benefit of approximately NT\$65.008 million. Hydropower capacity of 23,433 kW is expected to generate an annual benefit of approximately NT\$225.854 million. Estimated Financial Impact The combined annual benefit from renewable energy deployment is approximately NT\$290 million.	1. Solar Power: (1) In 2018, FCFC installed 1,497 kWp of solar PV at the Hsingang plant. (2) As of 2024, a total of 18,922 kWp of rooftop solar has been grid-connected across Hsingang, Mailiao, and Longder plants. (3) An additional 13,935 kWp is under construction or design, and another 6,941 kWp is in the planning stage and scheduled for completion by 2026. 2. Hydropower: (1) FCFC has invested in three reservoir hydropower facilities under Chia Nan Industrial with a combined installed capacity of 22,466 kW. (2) In 2022, a 75 kW mini-hydropower system connected at Hsingang's Lantan pipeline. (3) In December 2024, a 732 kW mini-hydropower system is scheduled for grid connection in Shalu, Taichung. (4) A 160 kW deep ditch mini-hydropower project in Yilan is expected to connect to the grid by July 2026. 3. Outlook: By 2026, FCFC plans to achieve a cumulative installed capacity of 38,798 kWp for solar power and 23,433 kW for hydropower. In addition to selling green power to Taipower and for self-consumption, the electricity can also be traded on the renewable energy market.

Financial Impact of Opportunity Issues

Opportunity Category / Risk Issue	Scope of Impact	Magnitude of Impact	Issue Analysis		
			Description	Potential Financial Impact	Management Strategy
11 Opportunity / Technology/ Diversification of Product Applications		Medium	To strengthen power supply stability and promote renewable energy development, Taiwan's Ministry of Economic Affairs has set three major national targets by the end of 2025: A net increase of over 3,000 MW in power generation capacity Installation of 1,500 MW in renewable energy storage systems	Scenario Assessment By 2026, the demand for plastics used in solar cable trays, energy storage cabinets, and EV charging stations is expected to increase significantly. Estimated Financial Impact The market opportunity is estimated to be approximately NT\$580 million.	1. FCFC's PABS plant under the Plastics Division produces composite materials suitable for applications in solar PV systems, wind power cable trays, conduits, connectors, energy storage cabinets, and EV charging station enclosures.
			Deployment of 20 GW in solar PV and 5.6 GW in offshore wind power These policies are driving accelerated nationwide deployment of green power and storage infrastructure, presenting business opportunities for FCFC.	Scenario Assessment As of 2024, Taiwan's installed solar capacity has reached 14 GW. With a remaining gap of 6 GW to achieve the national target of 20 GW, additional new solar installations present further market potential. Estimated Financial Impact Annual revenue opportunities are estimated at approximately NT\$90 million	2. The Electrical Engineering Department is developing microgrid systems that integrate solar PV, energy storage, and EV charging stations. With the continued growth of renewable energy and government support, this market is expected to offer substantial development opportunities.

3.3 Climate Risk Scenario Analysis

In alignment with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), the Company has incorporated the worst-case scenarios for both transition and physical climate risks into its strategic resilience analysis. For transition risks, the Company references the IEA World Energy Outlook (WEO) 450 Scenario (2016) and the Nationally Determined Contributions (NDCs) adopted by the countries where its manufacturing sites are located. Specifically, Taiwan's 2015 Intended Nationally Determined Contribution (INDC) outlines a target of reducing greenhouse gas emissions by 50% by 2050, relative to the Business-as-Usual (BAU) scenario. Under this scenario, Taiwan's power generation mix in 2025 is projected to consist of 20% renewable energy, 30% coal, and 50% natural gas. Based on this outlook, the Company evaluates potential impacts across market dynamics, technological shifts, reputational factors, financial performance, and operational continuity.

For physical risks, the Company adopts the Shared Socioeconomic Pathway (SSP) framework introduced in the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report (AR6). This includes analysis under five SSP scenarios (SSP1 through SSP5), which represent a range of greenhouse gas emission trajectories and socioeconomic development pathways. The Company assesses projected changes in key climate indicators—such as temperature rise, rainfall variability, flooding, and drought—using data from the World Bank's Climate Change Knowledge Portal, the Taiwan Climate Change Projection Information and Adaptation Knowledge Platform (TCCIP), and the National Science and Technology Center for Disaster Reduction.

Based on the risk assessment, flood risks are identified as high across all plant locations. Drought risks are categorized as medium-to-high at the Mailiao and Hsinkang facilities. Other hazards, such as heat stress and slope disasters, are currently assessed as low to medium risk. High-risk factors have already been incorporated into the Company's risk management framework, while lower-risk issues will continue to be monitored to ensure proactive adaptation to climate change.

A summary table of projected changes under SSP2-6.0 to SSP5-8.5 scenarios for key climate indicators is provided below for reference.



Longde Plant

Shared Socioeconomic Pathways	SSP1-2.6	SSP2-4.5	SSP5-8.5
Maximum Daily High Temperature (Temperature Change, °C)	36	36.2	36.5
Heat Wave Duration Index (HWDI, days)	36.1	41.9	53.1
Total Precipitation (Change Rate, %, baseline: 3,291.2 mm)	0.034	0.052	0.043
Consecutive Dry Days (CDD)	22.9	22.5	22.7



Mailiao Plant

Shared Socioeconomic Pathways	SSP1-2.6	SSP2-4.5	SSP5-8.5
Maximum Daily High Temperature (Temperature Change, °C)	35	35.2	35.6
Heat Wave Duration Index (HWDI, days)	44.1	52.3	70.6
Total Precipitation (Change Rate, %, baseline: 3,291.2 mm)	0.092	0.115	0.117
Consecutive Dry Days (CDD)	71.4	71.1	71.6



Xingang Plant

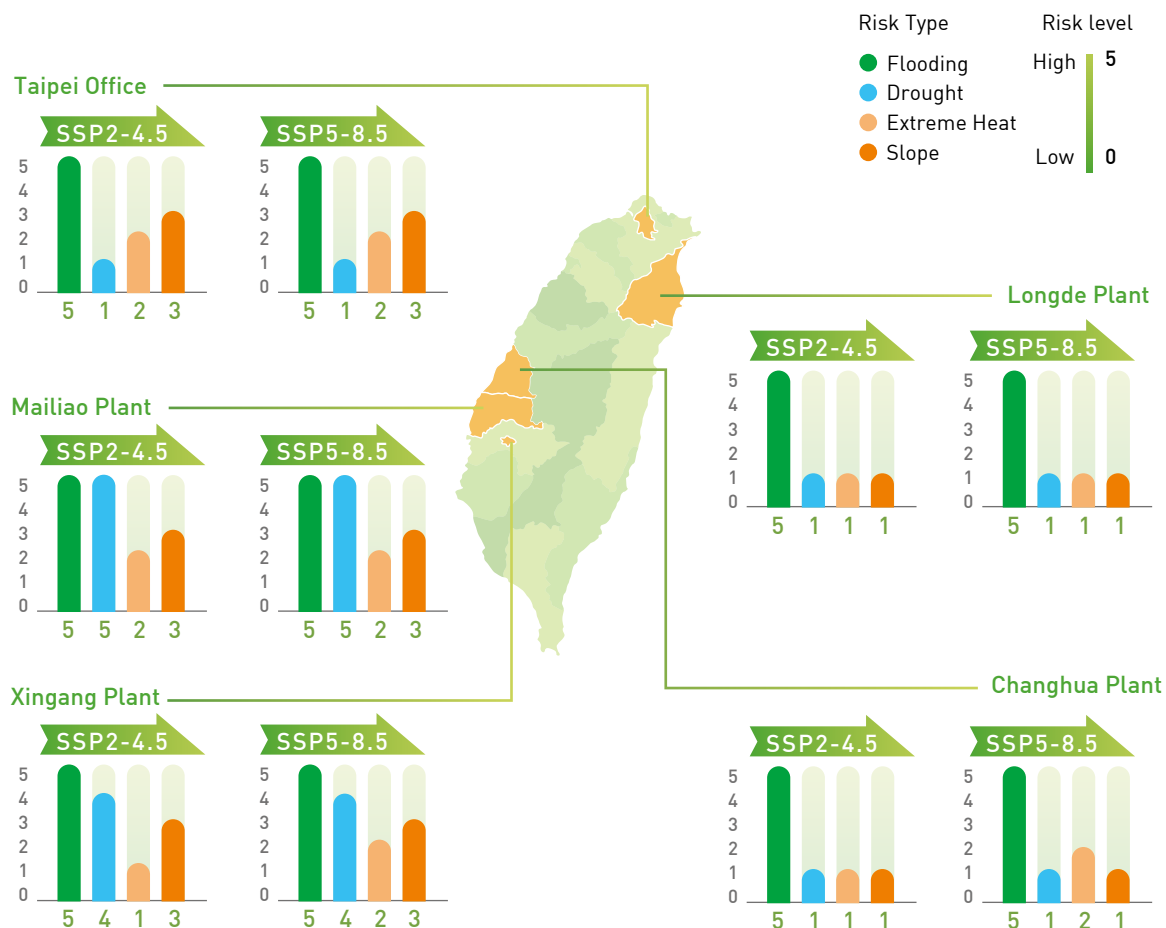
Shared Socioeconomic Pathways	SSP1-2.6	SSP2-4.5	SSP5-8.5
Maximum Daily High Temperature (Temperature Change, °C)	35.7	35.9	36.3
Heat Wave Duration Index (HWDI, days)	41.7	49.7	66.9
Total Precipitation (Change Rate, %, baseline: 3,291.2 mm)	0.063	0.085	0.093
Consecutive Dry Days (CDD)	57.5	56.6	58



Changhua Plant

Shared Socioeconomic Pathways	SSP1-2.6	SSP2-4.5	SSP5-8.5
Maximum Daily High Temperature (Temperature Change, °C)	36	36.1	36.5
Heat Wave Duration Index (HWDI, days)	38.4	46.8	63.1
Total Precipitation (Change Rate, %, baseline: 3,291.2 mm)	0.079	0.097	0.097
Consecutive Dry Days (CDD)	63.8	63.8	64.2

Physical Risk Summary Table under SSP2.6–8.5 Scenarios

TCFD Climate Scenario Analysis – Physical Risk Assessment
Physical Risk Assessment (Mid-Century, 2050)

4 Metrics and Target

4.1 Carbon Reduction Targets

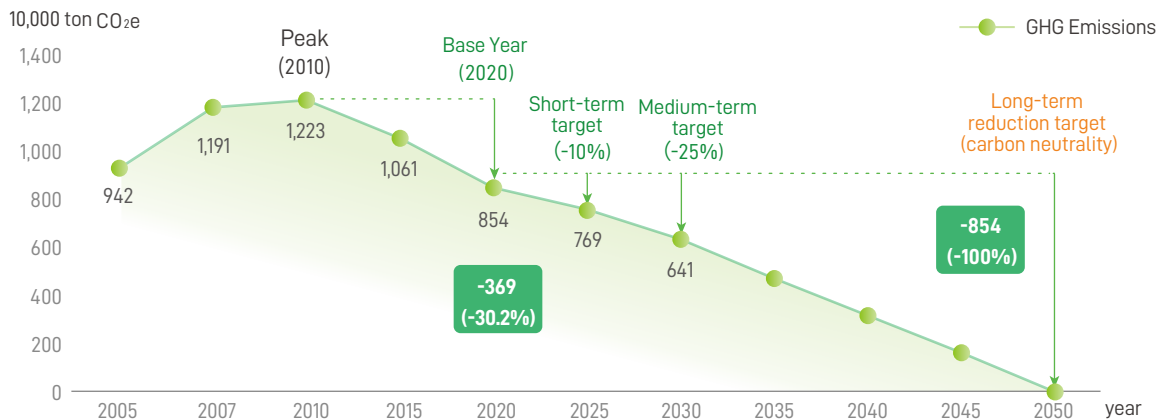
The Company's greenhouse gas (GHG) emissions in its Taiwan operations peaked in 2010. By 2020, emissions had been reduced by 30.2% compared to the 2010 peak. Using 2020 as the base year, the Company has set the following short-, medium-, and long-term carbon reduction targets:

Short-term target (by 2025): Achieve a 10% reduction in GHG emissions from the 2020 base year (equivalent to a 37.1% reduction from the 2010 peak).

Medium-term target (by 2030): Achieve a 25% reduction in GHG emissions from the 2020 base year (equivalent to a 47.6% reduction from the 2010 peak).

Long-term target (by 2050): Achieve carbon neutrality.

Formosa Chemicals & Fibre Corporation
(including Taiwan Vinegar Biomedical Co., Ltd.) carbon reduction roadmap



The Company has committed to the Science Based Targets initiative (SBTi), aligning its emissions reduction strategy with the goal of limiting global temperature rise to no more than 2 ° C. Using 2018 as the base year, the Company has pledged to reduce its combined Scope 1 and Scope 2 greenhouse gas emissions by 22.5% by 2027. As of 2024, the Company's Scope 1 and Scope 2 emissions totaled 10,378,129 metric tons of CO₂e, representing a reduction of 2,306,658 metric tons CO₂e, or 18.2%, from the base year.

Scope	Base Year (2018)			Target Year (2027)	
	Carbon Emissions (Metric tons CO ₂ e)	Carbon Emissions (Metric tons CO ₂ e)	Reduction Rate (%)	Target Carbon Emissions (Metric tons CO ₂ e)	Reduction Rate (%)
Scope 1 and 2	12,684,787	10,378,129	18.2%	9,830,710	22.5%

Note: The reported Scope 1 and Scope 2 emissions include those from all of the Company's facilities in Taiwan and from Formosa Thermal Power (Ningbo) Co., Ltd., a member of the Formosa Plastics Group.

4.2 GHG Emissions Disclosure

Since 2009, the Company has conducted greenhouse gas (GHG) inventories and third-party verifications in accordance with ISO 14064-1. The Yunlin Mailiao plant is verified by the British Standards Institution (BSI), while the Changhua, Chiayi Hsingang, and Yilan Longder plants are verified by SGS Taiwan Ltd. (System & Services Certification). Following completion of the 2023 verification process, the Company will file its GHG inventory on the National GHG Registration Platform by the end of August, in accordance with the "Regulations for GHG Inventory and Registration" issued by the Environmental Protection Administration. The GHG emissions data disclosed in this report reflect 2023 figures for each plant site, as illustrated below:

Unit: Metric tons CO₂e

2023 GHG Emissions

Plants	Mailiao Plant (including Haifeng and Acetic Acid Units)	Xingang Plant	Changhua Plant	Longde Plant	Subtotal by Scope
Scope 1	1,667,186	2,067,217	570.6976	1,408,052	5,143,026
Scope 2	2,976,875	19,357	19,841.7	0	3,016,074
Subtotal by Plant	4,644,061	2,086,574	20,412	1,408,052	8,159,100

The Company also annually assesses the relevance and emissions data of Scope 3 categories, which are verified by a third party. (Please refer to Table 4.2-1 – Scope 3 GHG Emissions in 2023.)

Table 4.2-1 – Scope 3 GHG Emissions in 2023.

Scope 3 Emission Sources	Relevance	GHG Emissions (Metric tons CO ₂ e)	Calculation oundary
Purchased Goods and Services	Relevant and calculated	5,767,403.5318	The inventory boundary for Category 1 (Purchased Goods and Services) includes all procured goods across all FCFC plants in 2023, excluding fuels, energy, and returned items.
Capital Goods	Relevant and calculated	41,985.1861	The boundary for Category 2 (Capital Goods) covers 100% of carbon emissions associated with fixed assets acquired in 2023.
Fuel- and Energy-Related Activities (not included in Scope 1 or Scope 2)	Relevant and calculated	825,524.8562	For Category 3 (Fuel- and Energy-Related Activities Not Included in Scope 1 or 2), the boundary includes 100% of upstream emissions from the extraction and transportation of fuels and energy sources such as coal, light cracking fuel oil, and natural gas.
Upstream Transportation and Distribution	Relevant and calculated	15,734.0892	Category 4 (Upstream Transportation and Distribution) covers 100% of emissions from the transportation of primary raw materials.
Waste Generated in Operations	Relevant and calculated	3,030.6841	Category 5 (Waste Generated in Operations) includes 100% of emissions from the treatment of operational waste.
Business Travel	Relevant and calculated	1,401.5428	Category 6 (Business Travel) covers 100% of emissions from air travel.
Employee Commuting	Relevant and calculated	4,244.8534	Category 7 (Employee Commuting) includes 100% of emissions from company-operated shuttle bus services for employee commuting.
Upstream Leased Assets	Not relevant	-	The Company has no upstream leased assets, thus Category 8 (Upstream Leased Assets) is not applicable.
Downstream Transportation and Distribution	Relevant and calculated	349,765.1718	Category 9 (Downstream Transportation and Distribution) includes 100% of emissions from transporting products to the main customer delivery gates.

Scope 3 Emission Sources Relevance GHG Emissions (Metric tons CO₂e) Calculation boundary

Processing of Sold Products	Relevant and calculated	3,691,358.3652	The boundary for Category 10 (Processing of Sold Products) includes the next-stage primary processing emissions of the top five products by sales revenue in 2023.
Use of Sold Products	Not relevant	-	As FCFC manufactures plastic raw materials and the use phase of sold products does not generate GHG emissions, Category 11 (Use of Sold Products) is considered not relevant.
End-of-Life Treatment of Sold Products	Relevant and calculated	277,313.8818	For Category 12 (End-of-Life Treatment of Sold Products), the boundary includes the carbon emissions from the final disposal of packaging materials used in sold products in 2023.
Downstream Leased Assets	Not relevant	-	The Company has no downstream leased assets, and there were no GHG emissions associated with downstream leased assets in 2023; therefore, Category 13 (Downstream Leased Assets) is not applicable.
Franchises	Not relevant	-	The Company does not operate any franchises, hence Category 14 (Franchises) is not applicable.
Investments	Relevant and calculated	3,662,450.3648	As part of FCFC's GHG emission source assessment, GHG emissions from investees disclosed in the Company's annual report are included under Category 15 (Investments).

4.3 Other Indicators

The Company has established the following additional energy-saving and emissions reduction targets:

1. Water Resource Management

In addition to improving process efficiency, enhancing equipment performance, and optimizing operating conditions, the Company promotes wastewater recycling and rainwater reuse to improve water use efficiency. The goal is to reduce the unit water consumption of products by 2% compared to the previous year's average.

2. Energy Management

Beyond setting carbon reduction targets, the Company has set a plant-wide energy efficiency goal to reduce unit energy consumption by 2.5%, aiming to continuously improve energy performance.

3. Product Carbon Footprint Inventory in 2023

To strengthen carbon management, the Company conducted product carbon footprint assessments in 2023 in addition to its decarbonization targets.

4. 100% Renewable Electricity for Offices and Control Rooms in 2024

To increase the share of renewable energy usage, the Company plans to use self-generated renewable electricity and achieve 100% renewable electricity consumption for office and control room operations across all plants by 2024.

Appendix

Report Management

- The data presented in this report covers the period from January 1, 2024, to December 31, 2024.
- Frequency of Report Publication: Annually
- This report has been prepared primarily in accordance with the Recommendations of the Task Force on Climate-related Financial Disclosures (June 2017).
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TCFD Index

Category	Recommended Disclosures	Page
Governance	Describe the monitoring of climate-related risks and opportunities by the Board of Directors.	P3-P5
	Describe the management's process in assessing and managing climate-related risks and opportunities.	P3-P5
Strategy	Describe the short, medium and long term climate-related risks and opportunities already identified by the organization.	P6-P16
	Describe the climate-related risks and opportunities that cause major impacts to the business, strategy, and financial planning of the organization.	P6-P16
	Describe the organization's strategy resilience incorporating the different scenarios of climate change, including 2° or a more severe scenario.	P6-P16
Risk Management	Describe the processes for the identification or assessment of climate-related risks by the organization.	P17-P28
	Describe the processes for managing climate-related risks by the organization.	P17-P28
	Describe the organization's procedures for identifying, assessing, and managing climate-related risks and how these are integrated and incorporated into the overall risk management.	P17-P28
Metrics and Targets	Disclosure of the indicators used by the organizations for the evaluation on climate-related risks and opportunities complying to their strategies and risk management processes.	P29-P31
	Disclose the emissions and related risks for Scope 1, 2, and 3.	P29-P31
	Describe the organization goals for managing climate-related risks and opportunities and the performance of related goals.	P29-P31



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