

2024 TCFD

Nan Ya Plastics Corporation

Task Force on Climate-related
Financial Disclosures Report



TABLE OF CONTENT

Introduction	2
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Chapter I	Governance	5
1.1	Company Profile	5
1.2	Organization and Responsibility	5
1.3	Organizational Boundary	9

Chapter III	Climate-Related Risk and Opportunity Management	20
3.1	Risk and Opportunity Management Process	20
3.2	Risk and Opportunity Identification	22
3.3	Summary Table of Risks and Opportunities Impacting the Company	23
3.4	Climate Risk Scenario Analysis	28

Chapter II	Strategy	10
2.1	Energy Saving and Carbon Reduction Performance	11
2.2	Water Conservation and Efficiency Improvements	12
2.3	Low-Carbon Product Development and Achievements	13
2.4	Other Energy Saving and Carbon Reduction Projects	16
2.5	Climate Transition Influence	17

Chapter IV	Metrics and Targets	33
4.1	Absolute Carbon Reduction Targets and Emission Indicators	33
4.2	Scope 3 Emission Metrics	35
4.3	Other Metrics and Project Targets	36



Introduction

In recent years, the World Economic Forum (WEF) has consistently identified climate change and related environmental issues as significant long-term global risks. The 2024 Global Risks Report identified extreme weather events as the most critical global risk over the next decade. In response, governments worldwide are setting net-zero targets, and jurisdictions such as the European Union have introduced carbon border adjustment mechanisms to preserve the competitiveness of low-carbon products in international trade.

To align with these global climate action trends and safeguard its long-term competitiveness, Nan Ya Plastics Corporation (NPC) has committed to achieving carbon neutrality by 2050. The Company is implementing four major carbon reduction strategies: low-carbon energy transition; energy conservation, carbon reduction, and circular economy; increased adoption of renewable energy; and deployment of carbon capture technologies. Through the implementation of a structured net-zero transformation roadmap, NPC is enhancing its climate resilience while steadily advancing toward its neutrality goal. At the same time, the Company is actively pursuing new business opportunities arising from regulatory developments and shifting consumer behavior in response to climate change, thereby strengthening its long-term sustainable value.

This report is prepared in accordance with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), structured around its four core elements. NPC discloses in detail the climate-related risks and opportunities that may affect its business and outlines the strategies in place to address them. The Company regularly reviews the progress of each climate-related initiative and updates its action plans as needed to ensure that the target of carbon neutrality by 2050 is achieved as scheduled.

● Nan Ya Plastics Corporation (NPC) Climate Change Management Highlights

Governance	<ul style="list-style-type: none">The Board of Directors is the highest governance body for climate-related issues. Under its authority, a Sustainability Development Committee has been established to strengthen ESG management. In 2024, the Committee convened twice.NPC's ESG Promotion Organization is chaired by the Chairman, with the President serving as Deputy Chair. This body approves ESG strategies and targets — including climate change and risk management — oversees the ESG Task Force in implementing concrete actions, and reports annually to the Board of Directors.																				
Strategy	<table><thead><tr><th>Subject</th><th>Action</th><th>Carbon reduction in 2024 (thousand tons CO₂e)</th></tr></thead><tbody><tr><td>Low-carbon energy transition</td><td>Replacing high-carbon energy sources (e.g., coal, heavy oil) with low-carbon alternatives (e.g., natural gas)</td><td>1,207.85</td></tr><tr><td>Energy saving, carbon reduction, and circular economy</td><td>Promoting process improvements, circular economy initiatives, AI, and digital transformation</td><td>646.56</td></tr><tr><td>Increased use of renewable energy</td><td>Installing solar power generation facilities on plant rooftops across all sites</td><td>50.00</td></tr><tr><td>Application of carbon capture technologies</td><td>Recovering and reutilizing CO₂ generated from chemical processes</td><td>193.21</td></tr><tr><td colspan="2">Total</td><td>2,097.62</td></tr></tbody></table>			Subject	Action	Carbon reduction in 2024 (thousand tons CO ₂ e)	Low-carbon energy transition	Replacing high-carbon energy sources (e.g., coal, heavy oil) with low-carbon alternatives (e.g., natural gas)	1,207.85	Energy saving, carbon reduction, and circular economy	Promoting process improvements, circular economy initiatives, AI, and digital transformation	646.56	Increased use of renewable energy	Installing solar power generation facilities on plant rooftops across all sites	50.00	Application of carbon capture technologies	Recovering and reutilizing CO ₂ generated from chemical processes	193.21	Total		2,097.62
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Risk Management	<ul style="list-style-type: none">Climate-related risks and opportunities are identified and assessed in accordance with ISO 14001 risk assessment procedures.Cross-departmental collaboration is undertaken to evaluate potential financial impacts of identified risks and opportunities and to formulate response strategies.																				
Metrics and Targets	<ul style="list-style-type: none">Climate-related performance indicators and quantitative targets are established, regularly monitored, and publicly disclosed.Medium and Long-term "Scope 1 and Scope 2" targets are set with both external commitments and more stringent internal goals: 1. External commitment (2007 baseline): 20% reduction by 2025, 35% reduction by 2030, and carbon neutrality by 2050. 2. Internal management target (2020 baseline): 12.5% reduction by 2025, 25% reduction by 2030, and carbon neutrality by 2050.																				

◆ NPC Energy Conservation and Carbon Reduction Implementation Timeline

2006

Various improvement measures including water reservation, energy saving and pollution prevention were promoted by the "Energy Saving and Carbon Reduction and Pollution Prevention Promotion Organization".

2008

Expanded the environment-friendly promotion scope by involving energy-saving lamps, environmental accounting, green buildings, etc..

2013-2015

Obtained "Annual Enterprises Environmental Protection Award" for three consecutive years.

2018

- The climate change questionnaire of CDP improved to A- (Leadership Level).
- Some plant area of plastics III and electronic division started to introduce ISO 50001 Energy Management System.

2017

- Participated in Carbon Disclosure Project for the first time, and the climate change questionnaire was listed in B (Management level).
- Plant II of Shulin and CCL Plant I and III of Hsinkang of electronic division obtained the "Green Factory Label".

2019

- "Steam Organic Rankine Cycle Improvement" passed the register of greenhouse gas trade-off project of the Environment Protection Administration.
- The climate change questionnaire of CDP remained at A- (Leadership Level).

2020

- The climate change questionnaire of CDP remained at A- (Leadership Level).
- Reorganized the "Corporate Social Responsibility Promotion Team" as "ESG Promotion Organization"

2021

- Signed to support "TCFD" in December.
- The climate change questionnaire of CDP remained at A- (Leadership Level).
- Declared the goal of "2050 Carbon Neutrality".
- Promotion of renewable energy project.

2023

- The SBT targets were approved by SBTi in March.
- The NPC "Tree-Planting Festival" event was held in March.
- Solar Power Generation Equipment: A total of 8 sites have been completed, with a combined installed capacity of 7,838.55 kW, meeting the 8% early-bird capacity obligation as stipulated by the Large Power User clause.
- The score for the CDP Climate Change Questionnaire has improved to "A" (Leadership level).

2022

- Set up "Sustainable Development Committee".
- Introduced "Internal Carbon Pricing Mechanism".
- Invested "Formosa Smart Energy Tech Corp." (approved by the Board of Directors in May) in accordance with corporate policy.
- Promoted subsidy to employees for replacement of electric motorcycles. The budget is around NT\$ 120-190 million and is expected to reduce 2.5 thousand tons of CO₂e.
- Promoted green transportation project of replacing old and obsolete company vehicles (more than 11 years old) with energy-saving vehicles.
- Solar Power Generation Equipment: 195kW equipment at the Hsinkang Rigid Fabric Plant and 1,500kW equipment at the Hsinkang Switchboard Plant was registered and approved, and applied for the enrollment of renewable energy certification.
- Applied to join "Science Based Targets Initiative(SBTi)".
- The climate change questionnaire of CDP remained at A- (Leadership Level)

2024

- The Mailiao site received the "2024 National Sustainable Development Award" from the Executive Yuan's National Council for Sustainable Development, and the "Water Sustainability Award" from the Ministry of Environment.
- In collaboration with one of Taiwan's circular economy start-up company (ECOCO), NPC deployed advanced smart recycling machines across major retail channels to establish a PET bottle circular recycling system.
- Solar power generation: Completed installation at part of the Hsinkang and Chiayi, with a cumulative installed capacity of approximately 14,713.02 kW. Including Taiwan subsidiaries, the cumulative installed capacity reached approximately 15,060.45 kW, meeting the regulatory requirements for large electricity users.
- In September, NPC participated in the "National Mile-a-Minute Vine (Mikania micrantha) Control Day" campaign.
- NPC maintained a "Leadership Level" rating for both the CDP Climate Change Questionnaire and the CDP Water Security Questionnaire.

◆ Climate-related Performance and Achievements



A -

CDP Climate
Change

CDP Climate Change rating upgraded to "A-," maintaining Leadership level for seven consecutive years.



A

CDP Water
Security

CDP Water Security rating maintained at "A," achieving Leadership level for six consecutive years.



TCFD
Suppter

Supported the TCFD initiative in 2021 and published the 2023 TCFD Report in 2024.



SCIENCE
BASED
TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

SBTi

Obtained approval of Science Based Targets (SBTs) in 2023.



2024 National Sustainable Development Awards Ceremony



100%

GHGS Inventory

Achieved 100% completion of third-party verification of greenhouse gas inventories for all Taiwan sites.



14 production plants obtained the certification

Energy
Management

Fourteen production sites certified under ISO 50001 (energy management system).



Five Green Factory" label

Green Factory

Five production sites awarded the "Green Factory" label.



Nan Ya ICE COOL
heat insulation film

Carbon Reduction
Label

Obtained Taiwan's first carbon footprint and carbon reduction label for window film products.

Chapter I Governance

1.1 Company Profile

Nan Ya Plastics Corporation (NPC), established in 1958, began with secondary plastic processing products such as PVC pipes, rubber sheets, and tapes. Over time, the Company expanded its operations into chemical products, polyester fibers, electronic materials, and electromechanical engineering. Since 1979, NPC has extended its presence internationally, establishing operations in the United States, China, and other regions, and has grown into a diversified multinational enterprise. Further information on the Company's history and development is available in the "Company Profile" section of the official NPC website.



"Company Profile"
on NPC website

Nan Ya Plastics Corporation



Date of Establishment

August 22, 1958



Principal Business Activities

Electronic materials, chemical products, polyester fibers, plastic processing, and electromechanical engineering



2024 Global Workforce

29,108



2024 Consolidated Revenue

NT\$259,608,483,000

1.2 Organization and Responsibility

The Board of Directors of Nan Ya Plastics Corporation (NPC) operates in accordance with applicable regulations and shareholder resolutions, exercising oversight of company management and providing strategic guidance for long-term sustainable development. In addition to supervising major operational strategies, the Board monitors the implementation of corporate sustainability objectives, including environmental protection, social responsibility, and corporate governance. ESG-related topics, including climate-related issues, are reviewed and discussed at least annually. NPC has established an ESG Promotion Organization, chaired by the Chairman and vice-chaired by the President, which is responsible for setting the Company's strategic direction on climate change management. The President's Office and its affiliated departments form the ESG Promotion Team, which executes specific initiatives and provides quarterly progress reports.

To align with global sustainability trends and strengthen carbon reduction efforts, NPC has also formed a TCFD Task Force under the Risk Management Promotion Team. This task force identifies climate-related risks and opportunities and collaborates closely with the ESG Promotion Team and the Energy Saving and Carbon Reduction Promotion Team to formulate adaptation and resilience strategies. Progress on these strategies is monitored and reported to the ESG Promotion Organization.

To enhance Board-level oversight of ESG matters, including climate change, NPC established the Sustainable Development Committee under the Board in June 2022. The Committee is tasked with reviewing sustainability policies, strategies, and management directives, while overseeing the implementation of related initiatives across the Company.

Board of Directors

Provides oversight of the Company's climate change management actions.

Audit Committee

Remuneration Committee

Sustainable Development
Committee

ESG Promotion Organization

- Responsible for the overall planning and establishment of Nan Ya Plastics Corporation's ESG strategic goals and supervising the execution of ESG operations. The duties of the "ESG Promotion Organization" also cover the setting of the Company's risk management strategic goals and supervising the operation of risk management (as an ad hoc group).
- Chaired by the Chairman with the President as Vice Chair, leading the management team in driving ESG initiatives.
- Reports at least once annually to the Board of Directors and the Sustainable Development Committee on ESG progress.
- 2023 ESG Implementation Status (including the TCFD Report and Risk Management) was reported to the Board of Directors for approval in June 2024.
- Reporting the annual ESG implementation status (including the TCFD Report and Risk Management), as well as the greenhouse gas inventory and management status, to the Sustainability Committee in June and December 2024.

ESG Promotion Teams

Comprised of the President's Office and affiliated departments, organized into three functional sub-teams: Environmental (E), Social (S), and Governance (G). Plan and implement ESG initiatives based on the results of risk identification.

To track the effectiveness of climate change response measures, the "Environmental Protection (E) Operations Promotion Progress Review" meeting has been held quarterly since the fourth quarter of 2022. A total of 4 meetings were held in 2024.

Energy Saving and Carbon Reduction Promotion Team

Chaired by the President, with participation from the President's Office, General Affairs, and each business division. Responsible for planning and implementing initiatives such as renewable energy deployment and circular economy projects. Develops and executes response measures based on climate risk assessments.

Convened 16 meetings in 2024.

Risk Management Promotion Team

- Comprised of the President's Office and affiliated departments, organized into three functional sub-teams: Environmental (E), Social (S), and Governance (G). Responsible for identifying risks across all dimensions.
- The Environmental (E) Risk Management Sub-Team oversees the TCFD Task Force.

NPC's 2023 TCFD Report was published in 2024.

Board Oversight Mechanism

NPC is committed to ethical business practices and upholding a sound and effective Board of Directors as the foundation for sustainable development. In alignment with global climate priorities, the Board provides strategic direction on sustainability and climate-related matters. Supporting the Board in this role, the Audit Committee, Remuneration Committee, and Sustainable Development Committee oversee the implementation of climate-related and broader ESG initiatives.

Key Areas of Board Oversight on Climate Change

Board of Directors

Oversees sustainability management strategies and their implementation.

Sustainable Development Committee

- Reviews and monitors overall risk management, including climate-related issues.
- Reviews corporate sustainability policies and management guidelines, supervises the Company's response to climate change and other ESG issues, and evaluates the effectiveness of related initiatives.

Audit Committee

- Oversees overall operational risks, including climate-related risks.
- Reviews NPC's risk management policies, the effectiveness of risk management and controls, and major investment projects.

Remuneration Committee

- Reviews executive compensation, taking into account management performance and comprehensive assessment indicators that incorporate ESG factors, including climate change.
- Ensures that management fulfills its responsibilities in implementing and overseeing ESG and climate-related initiatives.

Management Responsibility

The ESG Promotion Organization, chaired by the Chairman and vice-chaired by the President, serves as the highest governance body for ESG matters, including climate change. It is responsible for setting carbon reduction targets and defining sustainability strategies, with progress reported to the Board of Directors on an annual basis.

Within NPC's sustainability governance framework, the Risk Management Promotion Team identifies climate-related risks and opportunities. Based on these assessments, the ESG Promotion Team and the Energy Saving and Carbon Reduction Promotion Team are tasked with formulating and implementing corresponding action plans to enhance resilience and drive emissions reduction.

ESG Promotion Organization

Chairperson	Chairman of the Board
Members	<ul style="list-style-type: none"> ♦ President serves as Vice Chair. ♦ For the three major aspects – Environmental Protection (E), Social Welfare (S), and Corporate Governance (G) – an executive at the level of President's Office Management Executive or higher is appointed as the person in charge for each. Furthermore, based on the functional attributes of each topic, the responsible party is designated from the President's Office, a directly subordinate department, or relevant business division executives. ♦ Defines ESG strategies and targets, and oversees their implementation. Establishes risk management strategies and supervises their execution as part of a task-based structure.
Review Frequency	Quarterly
Authority and Responsibilities	Led by the Chairman, the management team formulates the Company's ESG vision, risk management strategies, and strategic guidelines. The Organization supervises ESG implementation across all units, embeds a culture of sustainability, and fosters opportunities for business transformation.

ESG Promotion Team

The ESG Promotion Team serves as NPC's internal communication platform for sustainability. Its role is to translate and implement the sustainability policies and guidelines set by the Board of Directors and senior management, while also facilitating cross-departmental communication. Supervised by the three area leaders of the ESG Promotion Organization, the team coordinates the execution of ESG initiatives, leads various working groups, formulates response measures and management approaches for identified material sustainability issues, allocates resources, and tracks project performance to ensure effective implementation of ESG strategies.

Organizational Structure

Supervisors	Leaders of the ESG Promotion Organization (in aspects of Environmental, Social, and Governance)
Members	Representatives appointed from the President's Office and direct departments, based on functional relevance to Environmental (E), Social (S), and Governance (G) issues
Review Frequency	Quarterly
Key Responsibilities	<ul style="list-style-type: none"> ♦ Conduct annual identification of material sustainability issues and formulate response action plans ♦ Facilitate cross-departmental communication and resource integration for ESG initiatives ♦ Monitor implementation performance of sustainability issues across all areas and establish continuous improvement plans ♦ Report progress and work plans to the Chairman on a quarterly basis



2024 Climate-Related Achievements

In line with the FPG policy, NPC continued to advance eight major carbon reduction projects, with notable results including:

- ◆ Publication of the NPC 2023 TCFD Report in 2024.
- ◆ Mailiao site received the "2024 National Sustainable Development Award" from the Executive Yuan's National Council for Sustainable Development and the "Water Sustainability Award" from the Ministry of Environment.
- ◆ Launched an employee subsidy program for the purchase or replacement of electric vehicles, with 63 applications approved in 2024 across NPC and its Taiwan subsidiaries.
- ◆ Achieved a cumulative installed solar power capacity of approximately 14,713.02 kW across Company sites by 2024; including Taiwan subsidiaries, the total capacity reached 15,060.45 kW, meeting regulatory requirements for large electricity users.
- ◆ Collaborated with one of Taiwan's circular economy start-up company(ECOCO) to deploy advanced smart recycling machines across major retail channels, establishing a PET bottle circular recycling system.

◆ Energy Saving and Carbon Reduction Promotion Team

NPC has established the Energy Saving and Carbon Reduction Promotion Team as the organizational body responsible for managing and implementing actions related to climate change risks and opportunities. Chaired by the President, the team formulates management strategies on a quarterly basis, reviews implementation progress, and discusses future plans.

Organizational Structure

Chair	President
Members	<ul style="list-style-type: none">◆ Supervisors: Environmental (E) leaders, including the Executive Vice President and Senior Manager of the President's Office◆ Representatives from the President's Office, General Affairs Department, business divisions, and designated energy-saving and carbon reduction specialists
Review Frequency	Quarterly
Key Responsibilities	<ul style="list-style-type: none">◆ Discuss strategies to address physical and transition risks as well as opportunities arising from climate change◆ Develop management plans, review implementation status, and define future action plans◆ Report progress and work plans to the Chairman on an ad hoc basis

2024 Climate-Related Achievements

In support of the Company's 2050 carbon neutrality goal, NPC continued to advance its four core carbon reduction strategies:

- ◆ Low-carbon energy transition
- ◆ Energy saving, carbon reduction, and circular economy
- ◆ Increased use of renewable energy
- ◆ Deployment of carbon capture technologies



◆ Risk Management Promotion Team

The Risk Management Promotion Team is composed of representatives designated by various organizational units. The team conducts risk matrix assessments based on the frequency of occurrence and potential operational impact of risk events, implements risk control projects, evaluates their effectiveness, and continuously improves management practices. Within the Environmental (E) Risk Management Sub-Team, a dedicated TCFD Task Force has been established to identify climate-related risks and opportunities. The results are then submitted to the ESG Promotion Team and the Energy Saving and Carbon Reduction Promotion Team, which develop and implement risk mitigation strategies.

Organizational Structure

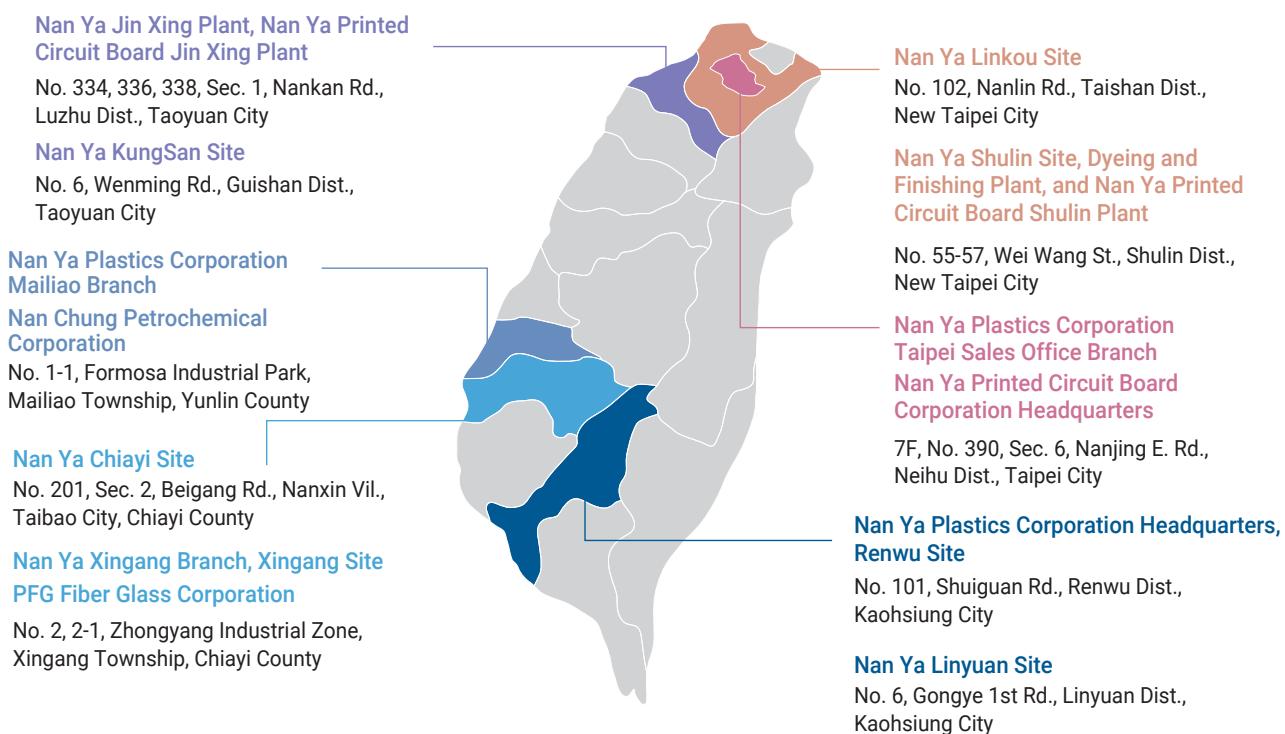
Supervisor	Vice President, President's Office	
Members	Representatives appointed by each organizational unit	
Review Frequency	Annually	
Key Responsibilities	<ul style="list-style-type: none"> ♦ Monitor international ESG risk trends and collect relevant information ♦ Identify ESG risk items, with the TCFD Task Force specifically responsible for identifying climate-related risks and opportunities ♦ Forward identified risks to the ESG Promotion Team and the Energy Saving and Carbon Reduction Promotion Team to develop and implement mitigation measures, thereby strengthening NPC's overall resilience 	

2024 Climate-Related Achievements

- ♦ Identified 16 climate-related risks and opportunities

1.3 Organizational Boundary

This report primarily covers Nan Ya Plastics Corporation (NPC) and its major Taiwanese subsidiaries: Nan Chung Petrochemical Corporation (NCPC), Nan Ya Printed Circuit Board Corporation (NYPCB), and PFG Fiber Glass Corporation (PFG). Other subsidiaries, including Wen Fung Industrial Co., Wellink Technology, and TaiTou, are not included within the current reporting boundary but may be incorporated into future disclosures in alignment with IFRS S1/S2 requirements, subject to shareholding ratios and revenue contributions. Any deviations from this boundary within individual chapters will be specifically noted. For greenhouse gas emissions, data from consolidated subsidiaries has been included in accordance with inventory requirements. This report has been prepared in line with the TCFD framework and presents NPC's 2024 carbon reduction targets, strategies, and the climate-related risks and opportunities identified.



Chapter II Strategy

Since its establishment, Nan Ya Plastics Corporation (NPC) has upheld the principle of balancing industrial development with environmental protection. The Company places strong emphasis on occupational safety, environmental protection, and climate change trends, striving to reduce energy and resource inputs through the adoption of best available control technologies and waste reduction measures at both the source and production stages. Guided by circular economy principles, NPC continually reviews opportunities for resource recovery and reuse. Through stringent operational controls and regular monitoring, emissions of air pollutants are maintained well below national standards. Process optimization and the development of green products are fully integrated into corporate management, supporting both Taiwan's economic growth and social prosperity.

Recognizing climate change as a material issue, NPC actively addresses both the opportunities and challenges it poses to business operations. In response to global decarbonization trends and in support of the United Nations Sustainable Development Goal (SDG) 13 on Climate Action, NPC has set a long-term target of achieving carbon neutrality by 2050. To achieve this goal, the Company is advancing four major carbon reduction strategies, with specific initiatives and projected carbon reduction benefits expected by 2030.

- **Low-carbon energy transition:** NPC is phasing out coal-fired boilers in its utility plants and replacing them with natural gas steam boilers and other low-carbon systems. At the same time, production sites are switching from high-carbon fuels, such as coal and heavy oil, to lower-carbon alternatives like natural gas. These efforts are expected to deliver an annual carbon reduction of approximately 1.21 million tons of CO₂e.
- **Energy saving, carbon reduction, and circular economy:** This strategy focuses on process improvements, circular economy initiatives, and the integration of artificial intelligence and digital transformation to optimize operations. By enhancing energy efficiency and reducing waste generation, NPC expects to achieve an annual carbon reduction of around 650,000 tons of CO₂e.
- **Increased use of renewable energy:** NPC has been installing rooftop solar power generation systems across its sites. By 2024, cumulative installed capacity reached approximately 14,713.02 kW, meeting Taiwan's regulatory requirements for large electricity users. Including Taiwan subsidiaries, the total installed capacity reached 15,060.45 kW. By 2026, NPC and PFG to complete additional installations across remaining sites, increasing cumulative capacity to 56,265.97 kW. Once fully completed, these projects are expected to reduce carbon emissions by approximately 50,000 tons of CO₂e annually.
- **Deployment of carbon capture technologies:** NPC is expanding both electronic-grade and industrial-grade liquid CO₂ plants to capture and reutilize CO₂ generated during chemical processes. These projects are expected to contribute an additional annual carbon reduction of about 190,000 tons of CO₂e.

	Short-Term 2021-2025	Medium-Term 2025-2030	Long-Term 2030-2050
Low-carbon energy transition	Replace coal-fired boilers in utility plants with gas-fired steam boilers. Transition from high-carbon energy sources (such as coal and heavy oil) to lower-carbon alternatives such as natural gas. Monitor developments in hydrogen energy, alternative energy sources, and energy storage technologies, and adopt them at an appropriate time.		Timely introduction of bio-based raw materials to replace natural gas.
Energy saving, carbon reduction, and circular economy	Continue to implement energy-saving and carbon-reduction projects across production processes. Promoting projects such as energy and resource recycling and reuse in accordance with the Circular Economy 4R principles (Reduce, Reuse, Recycle, Recover). Promote AI and digital transformation by introducing intelligent management systems to enhance resource efficiency.		
Increased use of renewable energy	Install rooftop solar power generation facilities across all plant sites, including PFG, with a total planned capacity of 56,265.97 kW. Continue to assess opportunities to apply renewable energy from hydropower, wind power, and geothermal sources.	Review and evaluation of remaining sites at each plant where solar power generation equipment can be installed.	Evaluate the procurement of renewable energy certificates to further increase renewable energy usage.
Deployment of carbon capture technologies	Expand electronic-grade and industrial-grade liquid CO ₂ facilities to capture and reutilize all CO ₂ generated during manufacturing processes. Collaborate with industry and academia to research negative emissions technologies, such as carbon capture and forest-based carbon sinks, and adopt them as they become viable.		Introduce feasible stack emission carbon capture technologies to further reduce carbon emissions.

2.1 Energy Saving and Carbon Reduction Performance

NPC has advanced its four major carbon reduction strategies with notable progress to date. Key examples are summarized below:



Low-carbon energy transition

- Replacement of coal-fired boilers with gas-fired boilers at the Shulin and Chiayi utility plants is estimated to reduce annual carbon emissions by approximately **548,000** tons of CO₂e.



Energy saving, carbon reduction, and circular economy

- In the BPA4 process, the method of recovering phenol from wastewater was improved from azeotrope breaking to extractive distillation, resulting in an estimated annual carbon reduction of **14,818** tons of CO₂e.
- Application of AI technologies has optimized process conditions, reducing raw material and energy consumption. To date, NPC and its Taiwan subsidiaries have achieved savings of **256** tons of water, **345,300** tons of steam, **44.83** million kWh of electricity, and **327.6** tons of fuel annually. These improvements equate to an estimated reduction of **111,590** tons of CO₂e per year.



Increased use of renewable energy

- By 2024, cumulative installed rooftop solar capacity reached approximately **14,713.02** kW, fulfilling Taiwan's regulatory requirements for large electricity users. Including Taiwan subsidiaries, total installed capacity reached **15,060.45** kW.
- By 2030, NPC and PFG plan to complete additional rooftop solar installations across all available plant buildings. Together with completed projects, the cumulative installed capacity is expected to reach approximately **52,265.97** kW, delivering an estimated annual reduction of **53,745** tons of CO₂e.



Deployment of carbon capture technologies

- All CO₂ generated from chemical processes is captured and reutilized.
- NPC continues to evaluate investments in expanding electronic-grade liquid CO₂ facilities.



2.2 Water Conservation and Efficiency Improvements



In 2024, Nan Ya Plastics Corporation and its Taiwan subsidiaries completed **49 water** conservation projects, achieving total savings of **686 tons per day**.

Summary of NPC's Historical Water Conservation Performance

Item	1999-2022 (A)	2023 (B)	2024 (C)	Ongoing (D)	Total (E=A+B+C+D)
Number of projects implemented	808	26	21	33	888
Daily water savings (tons/day)	33,287	6,224	312	2,653	42,476
Investment amount (NT\$ hundred million)	6.7	1.2	0.02	1.5	9.4
Annual improvement benefits (NT\$ hundred million/year)	1.8	0.3	0.01	0.1	2.2

Note: Data sourced from the Formosa Plastics Group Water and Energy Conservation Project Management Database. "Ongoing" refers to projects that are currently being implemented.

Summary of Taiwan Subsidiaries' Historical Water Conservation Performance

項目	1999-2022 (A)	2023 (B)	2024 (C)	Ongoing (D)	Total (E=A+B+C+D)
Number of projects implemented	405	17	28	1	451
Daily water savings (tons/day)	12,072	204	374	2	12,652
Investment amount (NT\$ hundred million)	0.9	0.05	0.001	0.00002	1.0
Annual improvement benefits (NT\$ hundred million/year)	0.5	0.01	0.03	0.0002	0.5

Note: Data sourced from the Formosa Plastics Group Water and Energy Conservation Project Management Database. "Ongoing" refers to projects that are currently being implemented.

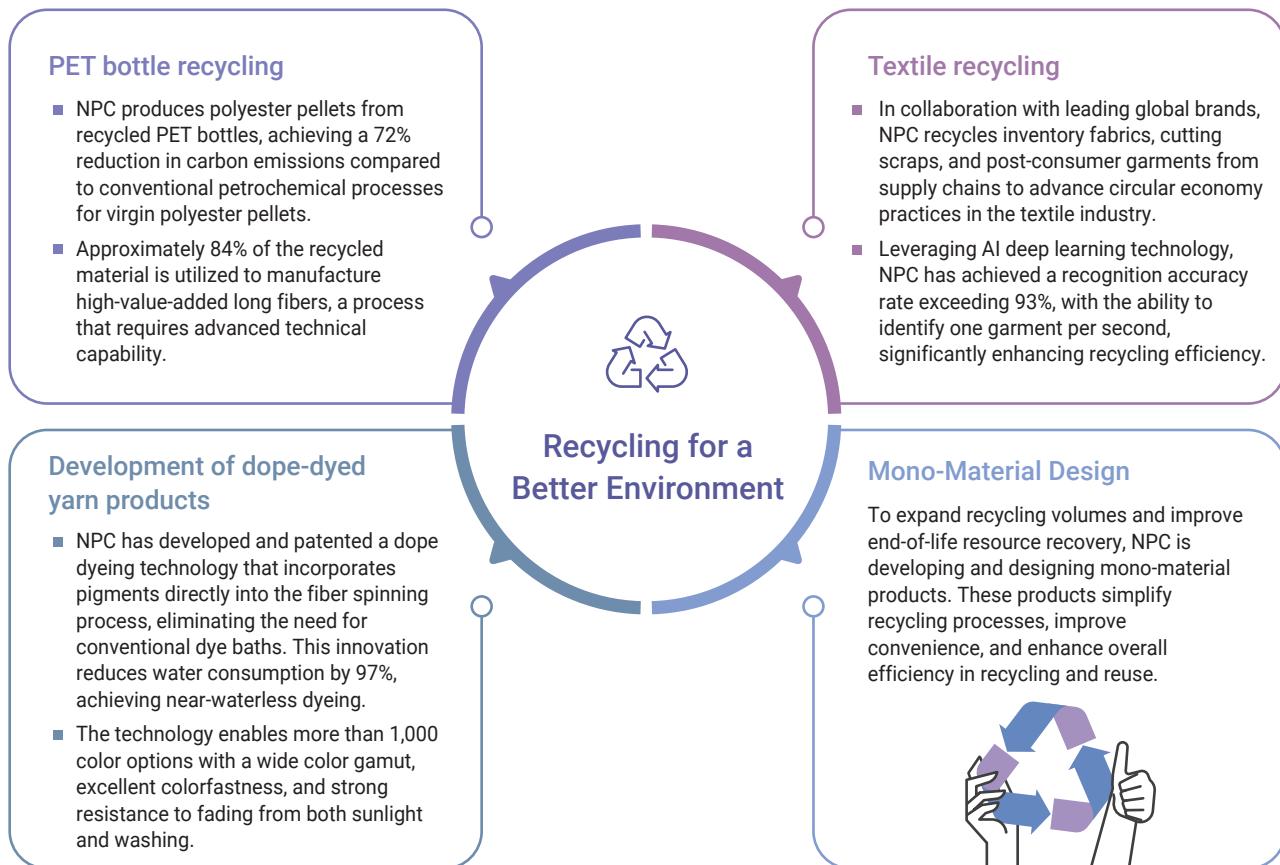
2024 Water Conservation Projects and Results

Project 1	Project 2	Project 3
Cooling tower backwash water discharge reduction at the Iso-nonyl Alcohol Plant	Vacuum pump water-saving improvement on twin-screw extruders at the Release Film Plant	Increased conductivity threshold in cooling towers to reduce discharge at the 1,4-Butanediol Plant
Water Savings 100 tons/day	Water Savings 34.8 tons/day	Water Savings 24 tons/day

2.3 Low-Carbon Product Development and Achievements

● Recycled Plastic Products

At present, NPC's sustainable product development focuses on four key themes: PET bottle recycling, textile recycling, mono-material design, and the development of dope-dyed yarn products. Highlights are outlined below:



At present, NPC's sustainable product development focuses on four key themes:

(1) Mono-Material Design and Development

To support leading international brands across industries, NPC promotes recycling through models such as leasing, product take-back, and replacement programs, ensuring a single-source material stream. By combining marketing and design capabilities with benchmark brands, NPC is driving the sustainable adoption of mono-materials. Leveraging its diversified expertise in plastic processing, NPC is positioned to become Taiwan's first "green gold" regeneration enterprise.

To amplify the circular economy impact across its supply chain, NPC collaborates internally with Formosa Plastics Corporation to secure raw materials, creating a vertically integrated production chain that enhances the sustainable value of recycling. NPC has successfully developed CPP films for retort pouches, BOPE films, and heat-resistant BOPP films with mono-material properties. These products enable customers to use single-material composites for packaging applications, and their adoption continues to expand.

Aspects	Item	Promotion Progress and Approach
Development of Modified Polyester Pellets (Mono-Material)	Curtains	In collaboration with major domestic curtain manufacturers, NPC has replaced non-recyclable materials with modified PET to produce 100% polyester curtains.
	Apparel and Backpacks	Traditional apparel and backpack accessories (such as zippers and buttons) are typically made from non-PET materials that require manual removal during recycling. NPC is developing modified polyester pellets for accessories to achieve mono-material products that are easier to recycle. Product verification for apparel and backpacks is currently in progress.
	All-Polyester Sports Shoes	Conventional sports shoes are manufactured by combining different functional materials using adhesives, making recycling difficult. NPC has developed modified polyester pellets with foaming, heat-bonding, and elastic properties that enable the production of sports shoes made entirely of polyester, facilitating recyclability through existing processes.
	Luggage	Using modified PET pellets to replace commercially available PC and ABS pellets, and utilizing traditional techniques to produce luggage shells. Modified polyester pellets are also used for accessories to completely replace non-PET materials such as zippers, handles, and wheels. Certified by SGS to meet luggage specifications, this design allows the luggage to be easily recycled after removing the aluminum alloy trolley handle.
Mono-Material Packaging Film	Packaging Bags	Functional packaging films typically require high resistance to moisture and oxygen and are produced by laminating multiple materials, creating recycling challenges. NPC has developed mono-material packaging films (high-barrier BOPP and BOPE films), which improve recyclability and enable future reuse.
Expected Outcomes		
The development of mono-material products is expected to enhance the convenience and efficiency of circular recycling across the value chain. Mono-material packaging (such as PP or PE) can be recycled, and initial estimates indicate it could reduce packaging waste by approximately 25%, supporting the circular use of raw materials.		

(2) Recycling of 8 Billion PET Bottles – 72% Lower Carbon Emissions Compared to Virgin Materials

In line with its commitment to environmental protection and sustainable development, Nan Ya Plastics Corporation (NPC) has been actively engaged in the recycling and regeneration of post-consumer PET bottles and other polyester products since 2007. The Company continues to expand its production lines and promote sustainable products. In Taiwan, NPC has set a 2025 target for sales of recycled-content products to reach 79% of the sales volume of products made from virgin PET bottle-grade pellets.

Performance					
In 2024, the recycling of 8 billion PET bottles achieved an estimated annual emissions reduction of 172,000 tons of CO ₂ e.		90% of bottles are reused for high-value-added long fiber production, a process of high technical complexity		Polyester pellets made from recycled PET bottles reduce emissions by 72% compared with pellets produced from virgin petrochemical processes	
Historical Recycling Volume and Carbon Reduction					
2022	2023	2024			
Recycled Volume	Carbon Reduction	Recycled Volume	Carbon Reduction	Recycled Volume	Carbon Reduction
88,140 tons (equivalent to 7 billion bottles)	152,042 tons CO ₂ e	80,904 tons (equivalent to 6.4 billion bottles)	139,559 tons CO ₂ e	99,990 tons (equivalent to 8 billion bottles)	172,483 tons CO ₂ e
Equivalent to circling the Earth 120 times	The annual carbon sequestration of 390 Daan Forest Parks	Equivalent to circling the Earth 110 times	The annual carbon sequestration of 358 Daan Forest Parks	Equivalent to circling the Earth 136 times	The annual carbon sequestration of 442 Daan Forest Parks

Note 1: One ton of recycled products = 80,000 PET bottles.
 Note 2: Carbon reduction = (emissions from virgin pellets – emissions from recycled pellets) × sales volume.
 Note 3: Each ton of recycled PET bottles equals circling the Earth 0.0013596361119351 times. One Daan Forest Park absorbs 390 tons CO₂e/year.

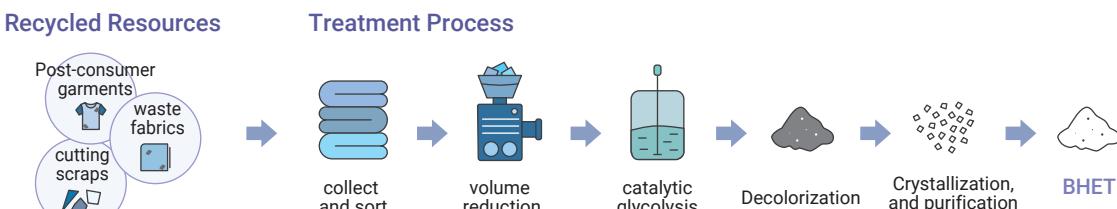
(3) Effective Recycling Across Product Categories – Building a Strong Foundation for Green R&D and Innovation

PP Pallet Recycling

NPC has introduced the use of recycled polypropylene (PP) pellets, sourced both externally and from internal by-products, to manufacture eco-friendly pallets with a significantly lower carbon footprint. In 2024, total production reached **13,644 tons**, representing 100% recycled content. Compared with virgin PP pallets, this initiative delivers an estimated **76%** reduction in carbon emissions, contributing meaningfully to low-carbon product development.

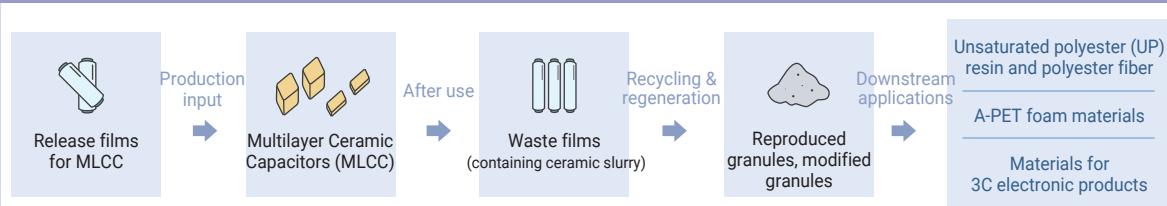
Textile Recycling

NPC has established large-scale recycling technology for pure PET fabrics, finished fabrics, and cutting scraps, enabling the recovery and reuse of textile materials at scale. The Company has built pre-treatment and pelletizing production lines with a monthly capacity of **1,000 tons**. In addition, NPC has developed advanced BHET chemical recycling technology and constructed a pilot plant to demonstrate its potential. These achievements lay the foundation for future expansion into high-end textile recycling and large-scale commercialization.



Release Film Recycling for MLCC Applications

Release films used in multilayer ceramic capacitors (MLCC) and optical applications, previously treated as waste by customers, are now collected and recycled by NPC. The recycled materials are used as inputs in the production of unsaturated polyester (UP) resin and polyester fiber. With a recycling capacity of **600 tons** per month, this initiative not only reduces waste but also creates value-added applications, reinforcing circular economy practices across the electronics and materials sectors.



2.4 Other Energy Saving and Carbon Reduction Projects

In line with the Formosa Plastics Group's overarching energy-saving and carbon-reduction plan, Nan Ya Plastics Corporation (NPC) continues to expand its initiatives from internal management measures to new investment opportunities, strengthening the Company's carbon reduction actions. Key projects are summarized as follows:



Internal Carbon Pricing

To enhance employees' awareness of carbon reduction, NPC continues to implement an internal carbon pricing mechanism. Based on reference carbon fee levels and surcharges for emissions exceeding targets, the associated carbon costs are incorporated into internal management profit and loss statements. This mechanism serves as a foundation for carbon risk management and guides the development of greenhouse gas reduction measures. In addition, the data are treated as key indicators for performance evaluation, product operations, and investment assessments, supporting the Company's long-term competitiveness.



Promotion of Green Transportation

■ Employee Electric Scooter Subsidy Program

NPC provides direct subsidies to employees purchasing or replacing electric scooters, in cooperation with domestic electric scooter manufacturers to jointly promote carbon reduction.

- Subsidy amounts: NT\$10,000 per person for new purchases, NT\$16,000 per person for replacements.
- By 2024, a total of 634 employees had applied for subsidies, resulting in estimated annual emissions reductions of 79.14 tons CO₂e. The program will continue to be implemented.

■ Replacement of Aging Fleet with Energy-Efficient Vehicles

NPC promotes a low-carbon transportation policy by prioritizing hybrid and fully electric vehicles for newly purchased passenger cars and commercial vehicles. Older fuel vehicles over 11 years of age will be gradually phased out according to departmental timelines. The planned investment is approximately NT\$2.16 million, with an expected annual emissions reduction of 3.83 tons CO₂e.



Investment in Green and Renewable Energy Industries

To align with global trends in energy conservation, carbon reduction, and renewable energy development, NPC has integrated its internal resources and expanded its presence in the green energy sector. Together with other group companies, NPC continues to invest in Formosa Smart Energy Tech Corporation.

- Total investment: NT\$7.0 billion in capital, of which NPC contributed NT\$1.75 billion, representing a 25% shareholding.
- Business focus: Formosa Smart Energy Tech Corporation is developing in four core areas: (1) energy efficiency, (2) energy storage, (3) renewable energy, and (4) recycling and reuse.



● Green Procurement

In response to government green procurement policies, NPC has long adopted products certified with labels for energy efficiency, water conservation, environmental protection, carbon reduction, and green building materials (such as air conditioners, toner cartridges, and fluorescent lamps). Since 2022, the Company has also published a quarterly list of eligible green procurement products along with their corresponding corporate material codes, ensuring that all departments are informed and guided to prioritize their use. This approach helps reduce resource consumption, minimize environmental pollution, and mitigate impacts on the planet.

Green Procurement Expenditure (NTD)

2023

130,580,000

2024

112,820,000



2.5 Climate Transition Influence

Nan Ya Plastics Corporation (NPC) actively participates in major domestic and international carbon reduction initiatives, alliances, and media outreach to support climate transition actions and issues. By leveraging collective public engagement, NPC seeks to raise carbon reduction awareness across its value chain, fostering environmental sustainability and shared social prosperity.

● International Initiatives

In addition to setting a long-term goal of achieving carbon neutrality by 2050, NPC strengthens its internal carbon management practices by participating in key global initiatives, including the Carbon Disclosure Project (CDP), the Task Force on Climate-related Financial Disclosures (TCFD), and the Science Based Targets initiative (SBTi). Through these platforms, NPC aligns with international trends, implements and updates decarbonization measures, and conducts regular reviews to ensure steady progress toward low-carbon transition targets.



- Participated since 2017; received a Climate Change score of A- (Leadership Level) in 2024.
- Maintained Leadership Level in CDP Climate Change ratings for seven consecutive years.



- Signed its support for the TCFD initiative at the end of 2021.
- Published NPC's 2023 TCFD Report in both Chinese and English in 2024.



- Applied to the SBTi in 2022 and submitted carbon reduction targets.
- Targets were approved in March 2023, and NPC is actively implementing decarbonization projects in line with these validated commitments.

● ESG Highlights

Case 1 (Public Welfare & Environmental Protection) – Household Food Waste Treatment in Yunlin and Production of “Yun-Gai Fertilizer” (Project awarded the National Sustainable Development Award)

- NPC's Mailiao Food Waste Composting Plant assists Yunlin County in managing household food waste by converting it into high-quality organic fertilizer. In cooperation with the county government, NPC established the proprietary organic fertilizer brand "Yun-Gai Fertilizer," which is provided free of charge to farmers and the general public.
- Dehydrated high-concentration organic food waste liquid is directed to the wastewater treatment facility's anaerobic system, generating biogas as fuel. In addition, thermal energy recovered from the household waste treatment process at the Mailiao complex is converted into "low-carbon steam" for reuse in production processes. These measures achieve an annual carbon reduction of approximately 100,000 tons of CO₂e, realizing a circular economy of "waste-to-energy."
- This project received the "2024 National Sustainable Development Award" from the National Council for Sustainable Development, Executive Yuan.



NPC President Ming-Jen Tsou received the award from the Premier of the Executive Yuan.



Case 2 (Environmental Protection) – Mailiao Complex Awarded the Water Sustainability Award



- NPC's Mailiao Complex has implemented comprehensive wastewater management measures, including total volume control at the source and the installation of effluent recycling systems to purify and reuse water within production processes.
- Through continuous process improvements, wastewater discharge volume has been reduced from 16,550 CMD in 2006 to 3,128 CMD in 2023, representing an 81% reduction. COD load has decreased by 67%, while sludge volume has dropped from 11,171 kg/day to 1,965 kg/day, an 82% reduction.
- NPC invested NT\$283 million to add an effluent purification and recycling system at the Mailiao wastewater treatment facility. Using SUF + RO + AOPs processes, the system generates 3,150 CMD of purified water, which is recycled back into production.
- This project received the first "Water Sustainability Award" from the Ministry of Environment.

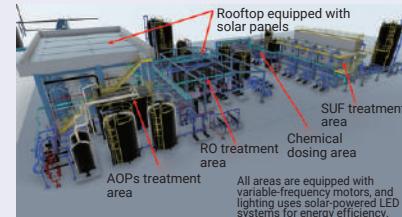


Illustration: SUF + RO + AOPs Process at NPC's Mailiao Wastewater Treatment Facility



The award was accepted on behalf of NPC by Director Lin of the Resource Recycling Division, Mailiao Plant.

Case 3 (Public Welfare) – Sponsorship of the 2024 Taipei 101 Vertical Marathon



- Event Date: May 4, 2024
- Location: Taipei 101 Tower (World Championship event designated by the Towerrunning World Association, TWA)
- Since 2023, NPC has sponsored the Taipei 101 Vertical Marathon annually. The Company provides eco-friendly race shirts made from "SAYA 365" 100% recycled polyester (PET) yarn. Compared to virgin polyester yarn, this recycled fiber reduces carbon emissions by approximately 1.73 kilograms per kilogram of yarn. By supplying these sustainable race shirts, NPC invites participants to join in promoting environmental protection and energy conservation.



Eco-friendly race shirt made from recycled PET yarn for the Taipei 101 Vertical Marathon



NPC Vice President of the Fiber Division, Mr. Chih-Wen Chen, represented the Company at the opening ceremony of the 2024 Taipei 101 Vertical Marathon World Championship.

Case 4 (Public Welfare) – Donation of Reclaimed Water Pipeline to Taoyuan City Government



- To address water demand during low water levels at Shimen Reservoir, NPC's Jin Xing Plant participated in the "Northern Taoyuan Water Resource Recycling Center Effluent Reuse Project." The Company invested approximately NT\$145 million to construct a water intake pipeline (using NPC-manufactured pipes), along with flow meters and water quality monitoring equipment, connecting the Water Resource Recycling Center to the Jin Xing Plant intake point. These facilities were donated to the Taoyuan City Government.



Aerial view of the Water Resource Recycling Center



Ultrafiltration water treatment

- This initiative supports the Taoyuan City Government's efforts to expand water reuse projects, enhancing the allocation and flexibility of regional water resources, mitigating the risks of drought and water shortages caused by extreme climate events, and strengthening climate resilience.

Case 5 (Product Sustainability) – Development of Bio-Based, Eco-Friendly, Safe, and Sustainable Products and a Circular Value Chain



- SAYA Chromuch® Dope-Dyed Yarn: NPC's "SAYA" brand launched Chromuch® water-saving dope-dyed yarn, the first globally and the only product in Taiwan to obtain bluesign® standard certification, confirming that both the process and product comply with international requirements for environmental protection, health, and safety (EHS).
- Circular PET Recycling Collaboration: In partnership with Taiwan circular economy start-up ECOCO, NPC installed advanced smart recycling machines across major retail channels, establishing a closed-loop PET bottle recycling system.
- ISCC PLUS Certification for Bio-Based Products: Starting in September 2024, products such as bisphenol-A, butanediol, and epoxy resin gradually obtained ISCC PLUS certification, ensuring third-party verification of raw material traceability, supply chain emissions, and carbon reduction performance. This enables the application of the mass balance method to produce more sustainable products using bio-based raw materials, thereby reducing product carbon footprints. Beginning in January 2025, NPC entered into collaboration with Mitsui Chemicals, under which Mitsui provides bio-based acetone for NPC's production of bio-based bisphenol-A. This material is then supplied downstream for the development of bio-based resins, including epoxy resins and polycarbonate.



Chromuch® Dope-Dyed Yarn
bluesign® Standard Certificate

External Activities and Participation

In 2024, Nan Ya Plastics Corporation (NPC) was featured in multiple media interviews to share its key actions in addressing climate change. Beyond advancing energy-saving and carbon-reduction initiatives at production sites, NPC integrates ESG-driven circular strategies into its operations and products. By engaging both customers and end consumers, the Company promotes participation in sustainable practices, protecting local environments and fostering a shared sustainable community. Major external communications included:

March 2024

Sponsored eco-friendly race shirts made from recycled polyester for the internationally recognized Taipei 101 Vertical Marathon, an event emphasizing sustainability through the use of circular water cups and other eco-friendly products. NPC has supported this event annually since 2023.

May 2024

Invited by Taipei American School (Elementary Division) to present sustainable textile products and concepts to students as part of a classroom fashion show project, encouraging critical thinking about environmental issues and raising awareness of the importance of sustainability.

June 2024

NPC, alongside Far Eastern New Century and University of Nottingham Professor of Sustainable Fashion, Sajida Gordon, participated in a joint interview with Belgian media outlet Le Soir, covering developments in Taiwan's chemical recycling processes within the textile industry.

May 2024

NPC consultant Tsung-Wen Shih was invited to speak at the "Textile Industry International Sustainability Innovation Salon, Workshop, and Investor Gathering," jointly organized by the New Taipei City Government and venture capital firm Anchor Taiwan. The presentation highlighted the development journey and challenges of the "SAYA Next Generation" initiative, while promoting NPC's sustainable innovation brand and its efforts in textile recycling.

October 2024

Nan Ya's "SAYA" has established a comprehensive fabric recycling production line, with chemical recycling filament mass production fully commencing in 2025. Furthermore, Nan Ya's dope-dyed polyester filament is a global industry leader and has obtained Bluesign® certification, offering consumers sustainable products that meet the highest standards of the new generation's ecological and environmental regulations.

November 2024

The Company has signed a Memorandum of Understanding (MOU) to formally partner with ECOCO in establishing a "New Green Recycling Network for PET Bottle Recycling and Regeneration."

Chapter III Climate-Related Risk and Opportunity Management

3.1 Risk and Opportunity Management Process

Nan Ya Plastics Corporation (NPC) has established a comprehensive risk management culture to ensure effective implementation of risk controls. On December 16, 2020, the Board of Directors approved the "Risk Management Policy," which formally identifies climate change as one of the Company's material risk categories. NPC has integrated climate risk management into its existing ISO 14001 Environmental Management System, embedding it within the Company's overall risk management framework. Climate risk management follows a structured process of identification, analysis and evaluation, control and treatment, monitoring and review, as well as information communication and reporting.

NPC's TCFD Task Force is composed of representatives from the President's Office, direct departments, and business divisions. In alignment with the Recommendations of the Task Force on Climate-related Financial Disclosures (June 2017), the Task Force addresses transition risks, physical risks, and transition opportunities, with responsibilities allocated according to functional expertise. Each year, the Task Force collects, analyzes, and consolidates information on climate- and energy-related risks and opportunities. Following ISO 14001 risk identification procedures, these risks and opportunities are assessed and evaluated. The results are then provided to the ESG Promotion Team and the Energy Saving and Carbon Reduction Promotion Team, which develop corresponding targets and response measures. Progress is reviewed regularly and reported to the ESG Promotion Organization, enabling senior management to oversee and track the effectiveness of project implementation.

TCFD Risk and Opportunity Identification Process of NPC

The TCFD Task Force is responsible for gathering information and identifying climate-related risks and opportunities.

All Taiwan production sites are used as the basis for risk assessment and scenario setting.

A financial impact severity and risk probability matrix is applied to determine material risks.

Control measures and corresponding targets are established to address identified risks.

Step 1
Background Information Collection

Step 2
Scope of Risk and Operational Assessment

Step 3
Risk and Operational Impact Analysis

Step 4
Control Measures and Target Setting

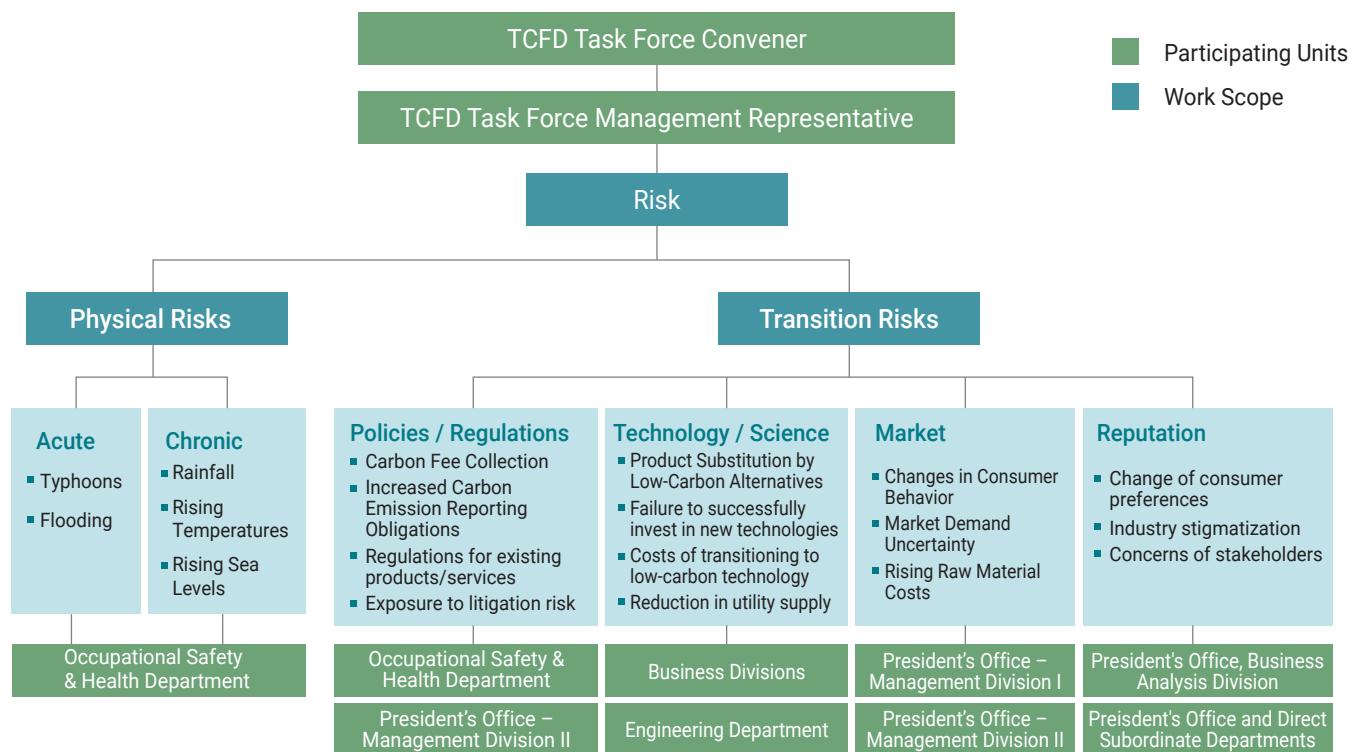
Step 5
Review and Optimization

- Step 1~3: Planning and Implementation
- Step 4~5: Review and Action

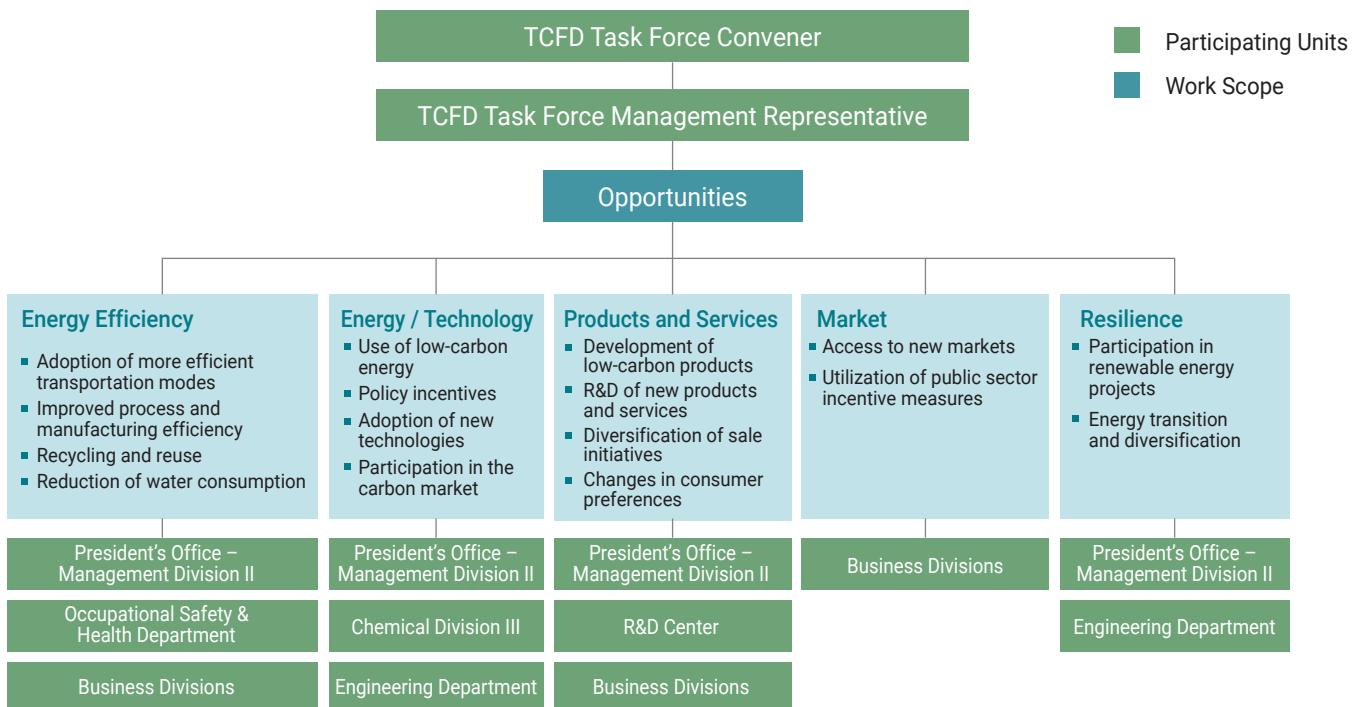
Third-party independent institutions are engaged to verify greenhouse gas inventories. NPC also participates in international initiatives such as the Carbon Disclosure Project (CDP) Climate Change questionnaire.

◆ NPC's TCFD Risk and Opportunity Identification Responsibilities

Division of Responsibilities for Risk Identification



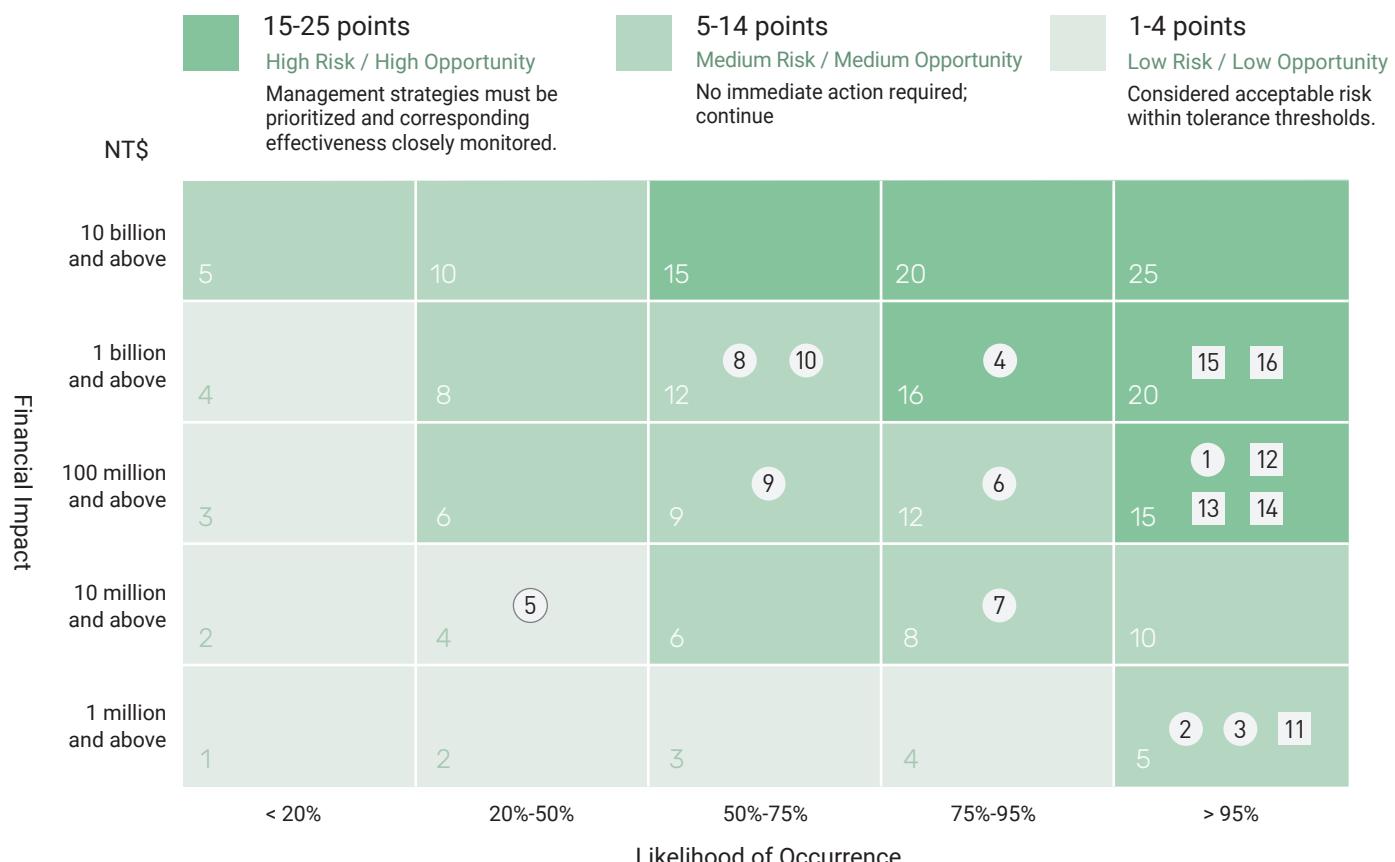
Division of Responsibilities for Opportunity Identification



3.2 Risk and Opportunity Identification

NPC identifies climate-related risks and opportunities with reference to the Recommendations of the Task Force on Climate-related Financial Disclosures (June 2017). When developing risk scenarios, both transition risks (policies and regulations, market, technology, reputation) and physical risks (chronic and acute) are considered, with explanations provided for potential events. Climate-related opportunities are also evaluated across resource efficiency, energy, products and services, markets, and resilience.

A risk and opportunity matrix is applied to assess the likelihood and financial impact of each risk or opportunity. The severity of potential financial impacts and the probability of occurrence are each categorized into five levels. Scores are then assigned according to the level of financial impact and probability. Following assessments conducted by relevant departments, consolidated results are mapped onto the risk and opportunity matrix.



Transition Risks	Physical Risks	Opportunities
<ol style="list-style-type: none"> Regulatory – Risk of carbon tax/fee imposition Regulatory – Risk from "large electricity user" requirements Regulatory – Risk of water usage fees Market – Changes in customer behavior Reputation – Potential for negative feedback affecting corporate image 	<ol style="list-style-type: none"> Chronic – Rising temperatures Chronic – Water scarcity Acute – Extreme weather (heavy rainfall/flooding) Acute – Extreme weather (strong winds/typhoons) Acute – Extreme weather (drought/water shortages) 	<ol style="list-style-type: none"> Energy/Technology- (1) Low-carbon energy transition; (2) Carbon capture, utilization, and storage (CCUS) Resource Efficiency: Circular economy initiatives to reduce costs Resource Efficiency: Improved efficiency in energy and resource use Products and Services: Development of energy-saving products Products and Services: Expansion of recycled product applications Market: Business diversification

● High Risk / ■ High Opportunity ● Medium Risk / ■ Medium Opportunity ● Low Risk / ■ Low Opportunity

Note: Please refer to "3.3 Summary Table of Risks and Opportunities Impacting the Company" for related content and response strategies.

3.3 Summary Table of Risks and Opportunities Impacting the Company

No.	Analysis of Current Risks or Opportunities (Potential Impacts on the Company)	Category	Risk/Opportunity Level	Expected Timeframe of Occurrence/Impact	Response Strategies / Implementation Cases
1	<p>Regulatory – Risk of Carbon Tax/Fee Collection</p> <ul style="list-style-type: none"> Domestic: According to the "Climate Change Response Act" passed by the Legislative Yuan, companies with annual emissions exceeding 25,000 tons CO₂e will be subject to carbon fees. Based on 2024 emission estimates, this is expected to increase operating costs, with an impact equivalent to approximately 0.11% of NPC's and its Taiwan subsidiaries' standalone revenues. International: The European Union announced the Carbon Border Adjustment Mechanism (CBAM) in July 2021, scheduled for formal implementation in 2027. In 2024, NPC exports to the EU accounted for around 1.25% of consolidated revenue, suggesting a limited impact. Furthermore, NPC has actively advanced various carbon reduction measures to mitigate potential tax exposure. 	Transition Risk / Policies and Regulations	High Risk	Medium to Long Term	<ul style="list-style-type: none"> Continuously promoting the four major carbon reduction strategies, including "Low-Carbon Energy Transition" (Medium to Long Term). Promoting Low-Carbon Manufacturing Technology (Medium to Long Term): Continuously adopting Best Available Control Technology (BACT) and process optimization to reduce product greenhouse gas emissions, and promoting the research and development of environmentally friendly products. Enhancing Energy-Saving Improvement Benefits (Medium to Long Term): Continuously promoting various water- and energy-saving improvement projects, utilizing AI technology to assist in identifying reduction plans, increasing raw material conversion rates, and reducing unit consumption. Sharing Excellent Energy-Saving and Carbon Reduction Cases (Short Term): Encouraging participation in internal and external evaluations and observation sessions, learning from excellent cases, providing timely incentives, and enhancing employees' carbon reduction awareness and knowledge.
2	<p>Regulatory – Risk from Large Electricity User Requirements</p> <ul style="list-style-type: none"> Taiwan's Renewable Energy Development Act ("Large Electricity User Clause") came into effect in 2021. As NPC's contracted electricity capacity exceeds the 5,000 kW threshold, the Company is required within five years to secure 10% of contracted capacity (or 8% within three years) from renewable energy, storage facilities, or certificates; otherwise, a compensatory payment would apply. By the end of 2023, NPC's cumulative installed capacity already met the early-bird requirement of 8%, eliminating the risk of compensatory payments. 	Transition Risk / Policies and Regulations	Medium Risk	Short Term	<ul style="list-style-type: none"> In 2024, NPC invested NT\$483 million to install 6,874.47 kW of solar power systems at certain facilities in Chiayi and the Mailiao composting site. By the end of 2024, cumulative installed capacity reached 14,713.02 kW, exceeding the 7,791.6 kW required by the authorities and fulfilling the 2025 target of 12,294.64 kW ahead of schedule. Including Taiwan subsidiaries, cumulative installed capacity totaled approximately 15,060.45 kW by the end of 2024. By 2026, remaining facilities are scheduled for completion, with NPC's cumulative capacity projected to reach 52,996 kW, and 56,265.97 kW including subsidiaries such as PFG(Short Term).
3	<p>Regulatory – Risk of Water Usage Fees</p> <ul style="list-style-type: none"> In January 2023, the Ministry of Economic Affairs announced the Water Consumption Fee Regulations. From February 2023, large water users consuming over 9,000 cubic meters per month during dry seasons are charged NT\$3 per cubic meter, with discounts to NT\$2 or NT\$1 if recovery rates meet stipulated standards. Based on actual 2024 water consumption and recycling rates at NPC and its Taiwan subsidiaries, and factoring in the use of seawater desalination facilities at Mailiao, the estimated water consumption fee is equivalent to only 0.004% of standalone revenues. 	Transition Risk / Policies and Regulations	Medium Risk	Short Term	<p>NPC actively promotes water resource management by regularly monitoring water use at each production site and implementing a range of water conservation measures. Key initiatives include:</p> <ul style="list-style-type: none"> Mailiao Seawater Desalination Project (Formosa Plastics construction): Once completed, this facility will ensure a stable water supply for the Mailiao complex (short term). Jin Xing Plant: Utilization of effluent from the Northern Taoyuan Water Resource Recycling Center as cooling water in production processes (short term). Circular Economy Initiatives: Implementation of rainwater harvesting and other water-saving improvement projects (medium term). AI Applications: Deployment of artificial intelligence to enhance water resource use efficiency (medium term).

No.	Analysis of Current Risks or Opportunities (Potential Impacts on the Company)	Category	Risk/Opportunity Level	Expected Timeframe of Occurrence/Impact	Response Strategies / Implementation Cases
4	<p>Market – Changes in Customer Behavior</p> <ul style="list-style-type: none"> International brand customers increasingly require the use of recycled or eco-friendly raw materials instead of virgin petrochemical-based pellets, or mandate the use of renewable electricity. Failure to meet such requirements could reduce future revenues. NPC's Plastics Division III, Fiber Division, Epoxy Division, and subsidiary Nanya PCB are already facing customer demands to adopt recycled or low-carbon materials, resulting in product mix adjustments and requirements for green electricity usage. For example, fiber products are subject to requirements from Adidas and NIKE to substitute recycled PET pellets for virgin pellets, driving down virgin production. Potential revenue reduction from these customer-driven changes is estimated at 5.82% of standalone revenues for NPC and its Taiwan subsidiaries. 	Transition Risk / Market	High Risk	Long Term	<p>To respond to customer demand for renewable electricity, low-carbon, eco-friendly, and recycled products, NPC and its Taiwan subsidiaries are also strengthening market development and innovation. Leveraging e-commerce and digital marketing, the Company is expanding into premium markets in the U.S. and Japan, as well as high-potential emerging markets, advancing toward a manufacturing-service model while reinforcing R&D capabilities. Major initiatives include:</p> <ul style="list-style-type: none"> Requiring all business divisions to develop and promote environmentally friendly and green products across eight categories, including energy efficiency and emission reduction. Actively developing new applications, materials, and products aligned with environmental trends and specialized specifications. Forming strategic alliances and partnerships with leading domestic and international companies such as Atunas, ECOCO, and The North Face to jointly establish a sustainable recycling value chain(Medium term). Expanding and securing stable sources of recycled materials to ensure reliable production capacity(Long term). Reviewing the installation of renewable energy facilities or the procurement of green energy certificates (RECs) to meet customer requirements for green power in the supply chain (Short term).
5	<p>Reputation – Risk of Negative Feedback</p> <ul style="list-style-type: none"> Under the Financial Supervisory Commission's Sustainable Finance 3.0 framework, financial institutions consider ESG performance when evaluating investments and lending. Failure to meet sustainability requirements may negatively affect corporate reputation, result in higher lending rates, or, in the most severe cases, lead to restrictions on financing for high-carbon industries. NPC estimates that if sustainability-linked loans fail to meet performance targets, the loss of preferential interest rates could equate to approximately 0.05% of standalone revenues for NPC and its Taiwan subsidiaries. 	Transition Risk / Reputation	Low Risk	Medium to Long Term	<p>NPC actively participates in domestic and international energy conservation and carbon reduction initiatives, demonstrating both commitment and tangible progress. Key initiatives include:</p> <ul style="list-style-type: none"> Joining international initiatives such as the Carbon Disclosure Project (CDP), the Task Force on Climate-related Financial Disclosures (TCFD), and the Science Based Targets initiative (SBTi). (Short term) Enhancing information transparency by publishing a Sustainability Report and TCFD Report annually. Improving ESG performance in global evaluations, with NPC earning an A rating in CDP's 2024 Water Security questionnaire(Medium to Long term). Continuing participation in projects such as sustainability-linked loans with financial institutions.
6	<p>Chronic Physical Risk – Rising Temperatures</p> <p>Climate change-driven increases in average temperatures raise demand for air conditioning in offices and production facilities, as well as water consumption. Based on 2024 data, each 1% increase in electricity and water consumption at NPC is expected to raise operating costs accordingly, with a potential impact equivalent to approximately 0.09% of standalone revenues for NPC and its Taiwan subsidiaries.</p>	Physical Risk / Chronic	Medium Risk	Medium to Long Term	<p>To address the potential impacts of rising average temperatures, NPC has introduced the following measures:</p> <ul style="list-style-type: none"> Replacing outdated air conditioning systems with high-efficiency models and designing new plant facilities in line with green building standards (Short term). Driving all sites to obtain ISO 50001 Energy Management System certification (Medium term). Advancing circular economy practices and applying AI technology to improve the effectiveness of water- and energy-saving projects, such as optimizing chilled water systems (Long term).

No.	Analysis of Current Risks or Opportunities (Potential Impacts on the Company)	Category	Risk/ Opportunity Level	Expected Timeframe of Occurrence/ Impact	Response Strategies / Implementation Cases
7	<p>Chronic - Water Scarcity</p> <ul style="list-style-type: none"> According to the Taiwan Climate Change Scientific Report, under the low-emission, sustainable development scenario SSP1-2.6 (RCP2.6), Taiwan's precipitation is predicted to decrease by about 2%. Furthermore, due to global climate change, the temporal distribution of rainfall is changing, with shorter rainy seasons, which could lead to long-term water scarcity. If water scarcity necessitates transporting supplementary water from water-rich areas, the estimated potential increase in operating costs would be approximately 0.07% of the individual revenue of Nan Ya Plastics Corporation and its Taiwanese subsidiaries. 	Physical Risk / Chronic	Medium Risk	Medium to Long Term	<p>To expand water resources, the following measures are planned for implementation:</p> <ul style="list-style-type: none"> Annual water resource risk assessment and management (Short Term). Expanding water sources and implementing various water conservation measures, such as desalination plants, reclaimed water, and the recycling and reuse of rainwater and process water (Medium to Long Term). Promoting water resource sharing and integration across different plants and companies (Medium to Long Term).
8	<p>Acute – Extreme Weather (Extreme Rainfall and Flooding)</p> <ul style="list-style-type: none"> Using climate projections for 1986–2035 under scenarios SSP2-4.5 (RCP4.5) and SSP5-8.5 (RCP8.5), simulation results indicate that the maximum consecutive rainfall period could reach 7.5–7.7 days, with total precipitation of 1,078–1,085 mm – approximately 15% higher than the baseline average. In the event of flooding caused by extreme rainfall, the most severe scenario would require production curtailment or suspension, with a potential revenue impact equivalent to about 0.82% of standalone revenues for NPC and its Taiwan subsidiaries. 	Physical Risk / Acute	Medium Risk	Medium to Long Term	<p>NPC conducts monthly monitoring and management of energy consumption and water use at each production site, while formulating measures to mitigate climate-related risks. Key initiatives include:</p> <ul style="list-style-type: none"> Installing flood-control pumps at the Renwu Plant, with regular inspections, maintenance, and servicing to reduce the likelihood of flooding from heavy rainfall (Short term). Installing flood gates in residential areas managed by the Plant Administration Department (Short term). Conducting annual dredging and desilting of the main drainage channels at the Mailiao Plant to lower flood risks from extreme rainfall (Medium term).
9	<p>Acute –Extreme Weather (Strong Winds and Typhoons)</p> <ul style="list-style-type: none"> Based on climate projections for 1986–2035 under SSP5-8.5 (RCP8.5), the frequency of typhoons in Taiwan is expected to decrease by around 15%, while the proportion of severe typhoons could double, with associated rainfall increasing by about 20%. If NPC's facilities are struck by strong winds or super typhoons, precautionary shutdowns would be necessary to mitigate safety and process risks. In the most severe scenario, this could result in production curtailment or suspension, with a potential revenue impact equivalent to about 0.27% of standalone revenues for NPC and its Taiwan subsidiaries. 	Physical Risk / Acute	Medium Risk	Medium to Long Term	<p>NPC has developed measures to mitigate risks from strong winds and typhoons, with key initiatives as follows:</p> <ul style="list-style-type: none"> Establishing a typhoon response task force with clearly defined responsibilities and emergency training to minimize risks associated with severe typhoons (Short term). Strengthening plant infrastructure by reinforcing doors, windows, and other protective measures ahead of typhoon events (Short term). Maintaining insurance coverage for company assets and equipment to mitigate financial losses in the event of disasters (Medium to Long term).
10	<p>Acute –Extreme Weather (Water Shortages and Droughts)</p> <ul style="list-style-type: none"> Using climate projections for 1986–2035 under SSP2-4.5 (RCP4.5) and SSP5-8.5 (RCP8.5), results indicate that Taiwan could experience two months per year on average under water shortage or drought conditions. If water scarcity due to drought disrupts NPC's plant operations, the most severe case may require production curtailment or suspension, with a potential revenue impact equivalent to about 0.82% of standalone revenues for NPC and its Taiwan subsidiaries. 	Physical Risk / Acute	Medium Risk	Medium to Long Term	<p>NPC also conducts monthly monitoring and management of energy consumption and water use across all production sites, and has established targeted actions to address climate-related risks. Key initiatives include:</p> <ul style="list-style-type: none"> Developing a 100,000-ton seawater desalination project at the Mailiao Industrial Complex (constructed by Formosa Plastics). Utilizing effluent from the Northern Taoyuan Water Resource Recycling Center at the Jin Xing Plant as cooling water in production processes. Advancing circular economy practices, such as installing cooling tower blowdown water recovery systems, to enhance water-saving improvements. Drilling two drought-resistant wells at the Renwu Plant, providing an additional 2,300 m³/day of water supply to reduce the risk of production disruption during droughts. Collaborating with public authorities to develop groundwater resources from the Donggang River and Gaoping River alluvial aquifers to ensure stable water supply.

No.	Analysis of Current Risks or Opportunities (Potential Impacts on the Company)	Category	Risk/ Opportunity Level	Expected Timeframe of Occurrence/ Impact	Response Strategies / Implementation Cases
11	<p>Energy/Technology – (1) Low-Carbon Energy Transition; (2) Carbon Capture, Utilization and Storage (CCUS)</p> <p>In response to the global momentum toward climate transition, many governments have pledged net-zero targets. As part of NPC's decarbonization pathway toward achieving carbon neutrality by 2050, investments in shifting from coal/oil to natural gas and advancing CCUS technologies are critical. These efforts are expected to reduce carbon fee exposure or generate additional revenue, with a potential financial impact equivalent to approximately 0.001% of standalone revenues for NPC and its Taiwan subsidiaries.</p>	Opportunity/ Energy and Technology	High Opportunity	Medium to Long Term	<p>Recent initiatives promoted by NPC are as follows:</p> <ul style="list-style-type: none"> Completed low-carbon transition projects by converting coal-fired boilers to natural gas at the Linkou, Shulin, and Chiayi utility plants (Short term). Captured CO₂ generated from chemical processes and converted it into liquid CO₂ for sale to downstream customers (Medium term). Continued monitoring the commercialization progress of technologies such as flue gas capture, microalgae applications, and hydrogen energy, with plans for timely adoption (Long term). Collaborated with academic institutions and industry partners to research and implement emerging negative-emission technologies (Medium to Long term).
12	<p>Resource Efficiency – Circular Economy to Reduce Costs</p> <p>The 4R principles of the circular economy –① Reduce, ② Reuse, ③ Recycle, ④ Renew – form a cornerstone of NPC's efforts to advance a sustainable recycling value chain. In addition to recycling and reusing process-generated waste gases and materials, NPC incorporates value chain and lifecycle considerations to reduce raw material use, improve processes, and optimize supply chain logistics. These measures contribute to cost savings while promoting sustainable resource utilization. The estimated financial benefit is equivalent to approximately 0.07% of standalone revenues for NPC and its Taiwan subsidiaries.</p>	Opportunity/ Energy Efficiency	High Opportunity	Short Term	<p>Major initiatives undertaken by NPC to advance the circular economy are as follows:</p> <ul style="list-style-type: none"> Expanded the use of in-plant off-spec materials and post-industrial recycled (PIR) resources, including recycled PET off-spec materials, PP recycled pellets, and release film recycling for MLCC applications. Increased the proportion of waste converted into resources through recycling and reuse, such as fiberglass fabric offcuts, sandblasting waste, and SMC waste fiberglass. Enhanced the use of recycled materials to reduce upstream raw material carbon emissions.
13	<p>Resource Efficiency – Improving Energy and Resource Efficiency</p> <p>To improve energy and resource efficiency and achieve water and energy conservation goals, NPC continues to advance toward its 2050 carbon neutrality target through the deployment of AI technologies, installation of advanced energy-saving equipment, and other improvement projects. These initiatives are expected to reduce emissions significantly, with an estimated financial benefit equivalent to approximately 0.58% of standalone revenues for NPC and its Taiwan subsidiaries.</p>	Opportunity/ Energy Efficiency	High Opportunity	Short Term	<p>Measures implemented by NPC to enhance energy and resource efficiency are as follows:</p> <ul style="list-style-type: none"> Applied emerging technologies such as AI to reduce raw material losses in production processes and lower material costs. Advanced energy-saving projects, completing 448 initiatives in 2024, resulting in an annual CO₂ reduction of approximately 245,976 tons. Promoted water conservation projects, achieving an estimated water-saving benefit of 686 tons per day in 2024.

No.	Analysis of Current Risks or Opportunities (Potential Impacts on the Company)	Category	Risk/ Opportunity Level	Expected Timeframe of Occurrence/ Impact	Response Strategies / Implementation Cases
14	<p>Products and Services – Development of Energy-Saving Products</p> <ul style="list-style-type: none"> In recent years, extreme climate conditions and rising global temperatures have heightened consumer demand for low-carbon and energy-efficient products, creating new market opportunities for energy-saving and thermal insulation solutions. NPC continues to develop and expand green and environmentally friendly products such as thermal insulation paints and airtight windows. These initiatives are expected to increase revenues, with a potential financial impact equivalent to approximately 0.53% of standalone revenues for NPC and its Taiwan subsidiaries. 	Opportunity / Products and Services	High Opportunity	Medium to Long Term	<p>NPC has developed a wide range of green products and continues to invest in R&D to align with evolving market trends and expand green business opportunities. Key examples include:</p> <ul style="list-style-type: none"> Cool Roof Paint (Thermal Insulation Paint): Certified by National Taiwan University of Science and Technology, capable of reducing summer air conditioning energy consumption by 31.8%. Energy-Saving Airtight Windows: With an extremely low thermal conductivity – just 1/1250 that of aluminum-steel materials – these windows can reduce energy consumption by more than 20%. ICE COOL Insulating Film: Manufactured with non-toxic materials, offering explosion resistance, high transparency, and strong infrared and ultraviolet blocking properties, helping to lower energy use. Dry-Type Transformers: Featuring an energy efficiency ratio of 99.2, which exceeds the CNS national standard of 98.8 by 4%.
15	<p>Products and Services – Expansion of Recycled Products</p> <ul style="list-style-type: none"> To extend product life cycles and improve reusability, repairability, and recyclability, while maximizing the use of recycled materials in place of primary raw materials, many governments have mandated targets for incorporating recycled content in beverage containers. At the same time, leading global brands such as NIKE, IKEA, and HP have set timelines for adopting recycled materials. To align with these industry trends, NPC actively promotes recycled PET bottle products, eco-friendly films, and textile recycling solutions. These efforts are expected to increase revenues, with a potential financial impact equivalent to approximately 0.81% of standalone revenues for NPC and its Taiwan subsidiaries. 	Opportunity / Products and Services	High Opportunity	Short to Medium Term	<p>Key Focus Areas for Expanding Recycled Products at NPC are as follows:</p> <ul style="list-style-type: none"> Continued expansion of post-consumer recycled (PCR) products, including PET products, eco-friendly films, APET adhesive films, and textile recycling. Proactive development of recycled material sources to ensure stable raw material supply. Development of modified polyester pellets and mono-material packaging films to facilitate subsequent recycling and reuse. Promotion of NPC's recycled product brand, SAYA.
16	<p>Market - Diversified Operations</p> <ul style="list-style-type: none"> Many countries globally have set timetables for banning the sale of internal combustion engine vehicles between 2020 and 2040 to achieve net-zero emission goals. Local consumers will only be able to choose electric vehicles or hydrogen fuel cell vehicles. This policy will drive the vigorous development of industrial chains such as electric vehicles, highway charging stations, hydrogen fuel infrastructure, and the upgrading of old power grids. Nan Ya Plastics Corporation anticipates that the usage of copper foil for lithium batteries will benefit from the rapid increase in market demand and higher sales volume. Therefore, it is expanding its copper foil production lines and investing in the establishment of an NMP recycling and circulation system. Furthermore, by developing wind power material applications, the company is seizing business opportunities in the renewable energy industry, which is expected to increase operating revenue. The potential impact is estimated to be approximately 0.70% of the individual revenue of Nan Ya Plastics Corporation and its Taiwanese subsidiaries. 	Opportunity / Market	High Opportunity	Short to Medium Term	<p>Due to climate change causing changes in the external business environment, the company is actively seeking potential transformation opportunities to strengthen risk resilience. Key examples are as follows:</p> <ul style="list-style-type: none"> Actively investing in the research and development of products related to the electric vehicle (EV) industry. For instance, copper foil, initially used in the electrical and electronics industries, has been developed by Nan Ya Plastics Corporation to possess high heat resistance and high strength. In recent years, some copper foil can be repurposed as electrodes for lithium batteries in electric vehicles, hence the expansion of copper foil production lines. Developing "Multi-axial Fiberglass Fabrics for Wind Power" to expand the application market for wind turbine blades in wind power generation.

3.4 Climate Risk Scenario Analysis

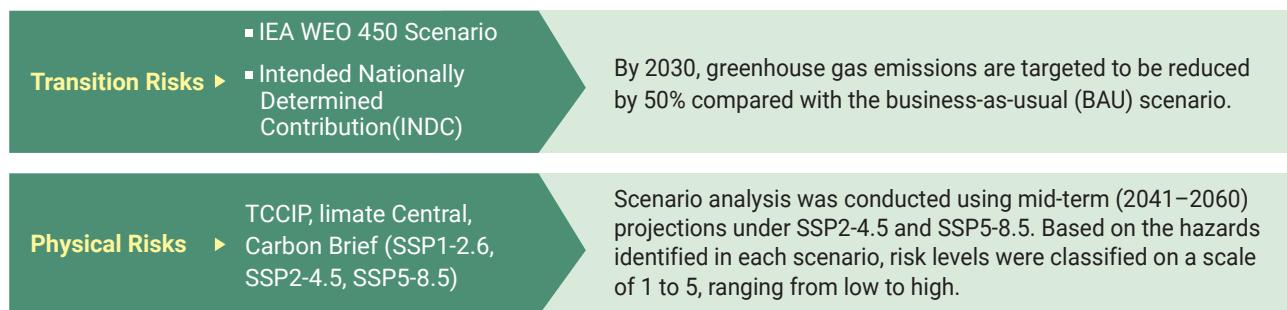
In line with the TCFD recommendations, NPC applies worst-case scenarios for both transition and physical risks and integrates the results into its strategic resilience assessment.

For transition risks, reference was made to the IEA WEO 450 Scenario (2016) and the Nationally Determined Contributions (NDCs) of the regions where NPC's manufacturing sites are located. Taiwan's Intended Nationally Determined Contribution (INDC), published in 2015, set a target of reducing greenhouse gas emissions by 50% below the business-as-usual (BAU) scenario by 2050. Under this scenario, Taiwan's 2025 power generation mix is projected to consist of 20% renewable energy, 30% coal, and 50% natural gas. These parameters were incorporated into NPC's analysis of potential impacts on markets, technology, reputation, finance, and operations.

This report uses the SSP-RCP Integrated Scenarios based on IPCC AR6, where SSP1-2.6 corresponds to the low-emission sustainable pathway, SSP2-4.5 to the intermediate pathway, and SSP5-8.5 to the high-emission scenario. This report uses these to simulate domestic increases in temperature, changes in rainfall, and the risk of drought and flooding. The mid-century (2041–2060) results were selected to align with the government's "2050 Net-Zero Transition" and the Company's "2050 Carbon Neutrality" strategy.

Data sources include the World Bank 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 (NCDR). Based on these scenarios, NPC assessed the hazard levels of climate-related disasters over the analysis period of 2021–2100. In alignment with government policy, NPC places primary emphasis on mid-term (2041–2060) projections under SSP2-4.5 and SSP5-8.5 as the basis for risk evaluation, while short-term (to 2030) risks are monitored and long-term (to 2100) trends are observed.

Based on the analysis results, the Renwu, Hsinkang, Linyuan, and Chiayi plants are classified as high risk for flooding. All facilities are assessed as medium-to-high risk for drought. Risks related to high temperatures and slope-land hazards are generally rated as low-to-medium. High-risk items have already been incorporated into NPC's risk management framework, while medium- and low-risk factors will continue to be closely monitored for potential impacts of climate change. A summary of the physical risk assessment for each plant is shown in the following chart.



● RCP and SSP Scenario Comparison Table

RCP (Previous Pathways)	Description	Corresponding SSP (AR6 Integrated Scenarios)	Description
RCP2.6	Extremely low emission scenario, strong carbon reduction, with temperature rise controlled within 2°C before 2100.	SSP1-2.6	Sustainable development, low inequality, rapid energy transition; low-emission pathway
RCP4.5	Stable emission scenario, Moderate mitigation policies; emissions stabilize before 2100	SSP2-4.5	Middle-of-the-road pathway; continuation of current policies with partial energy transition
RCP6.0	Medium to High emission scenario, Emissions stabilize only after 2100	SSP4-6.0	High inequality, regionally differentiated development; some regions remain highly dependent on fossil fuels
RCP8.5	High emission scenario, Continued reliance on fossil fuels; most severe warming	SSP5-8.5	Fossil fuel-intensive growth; rapid economic expansion with high emissions, representing the "worst-case scenario"

◆ Summary Table of Key Climate Change Indicators for Each Site (Based on combined RCP2.6–8.5 and SSP2.6–8.5 scenario simulations)

According to the SSP-RCP Integrated Scenarios, the expected climate impacts on each plant under different carbon reduction intensities are simulated, where RCP2.6=SSP1-2.6, RCP4.5=SSP2-4.5, and RCP8.5=SSP5-8.5. The key climate change indicators are summarized in the table below:

Jinxing Plant (including NYPCB Jinxing Plant)			
SSP Scenario	SSP1-2.6	SSP2-4.5	SSP5-8.5
Maximum Daily High Temperature (Temperature Change, °C)	37.3	37.5	37.9
Heat Wave Duration Index (HWDI, days)	34.9	40.8	52
Total Annual Rainfall (Change Rate %, baseline: 1,483.7 mm)	6	6.7	6
Consecutive Dry Days (CDD)	33.7	33.6	34.3

Linkou Plant			
SSP Scenario	SSP1-2.6	SSP2-4.5	SSP5-8.5
Maximum Daily High Temperature (Temperature Change, °C)	36.7	36.9	37.2
Heat Wave Duration Index (HWDI, days)	34.4	39.6	50.9
Total Annual Rainfall (Change Rate %, baseline: 1,563.7 mm)	5.5	6.4	6
Consecutive Dry Days (CDD)	30.4	30.2	30.9

Shulin Plant (including NYPCB Shulin Plant)			
SSP Scenario	SSP1-2.6	SSP2-4.5	SSP5-8.5
Maximum Daily High Temperature (Temperature Change, °C)	37.6	37.8	38.1
Heat Wave Duration Index (HWDI, days)	32.7	38.1	49.1
Total Annual Rainfall (Change Rate %, baseline: 2,041.5 mm)	4.7	5.8	5.3
Consecutive Dry Days (CDD)	25.9	25.5	26.7

Mailiao Plant (including NCPC Plant)			
SSP Scenario	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 Annual Rainfall (Change Rate %, baseline: 960.8 mm)	0.092	0.115	0.117
Consecutive Dry Days (CDD)	71.4	71.1	71.6

Xingang Plant & Chiayi Plant (including PFG Plant)			
SSP Scenario	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 Annual Rainfall (Change Rate %, baseline: 1,388.7 mm)	0.063	0.085	0.093
Consecutive Dry Days (CDD)	57.5	56.6	58

Renwu Plant			
SSP Scenario	SSP1-2.6	SSP2-4.5	SSP5-8.5
Maximum Daily High Temperature (Temperature Change, °C)	35.9	36	36.4
Heat Wave Duration Index (HWDI, days)	42.2	52.2	71.8
Total Annual Rainfall (Change Rate %, baseline: 1,685 mm)	4.7	7.9	8.8
Consecutive Dry Days (CDD)	63.6	63.7	65.5

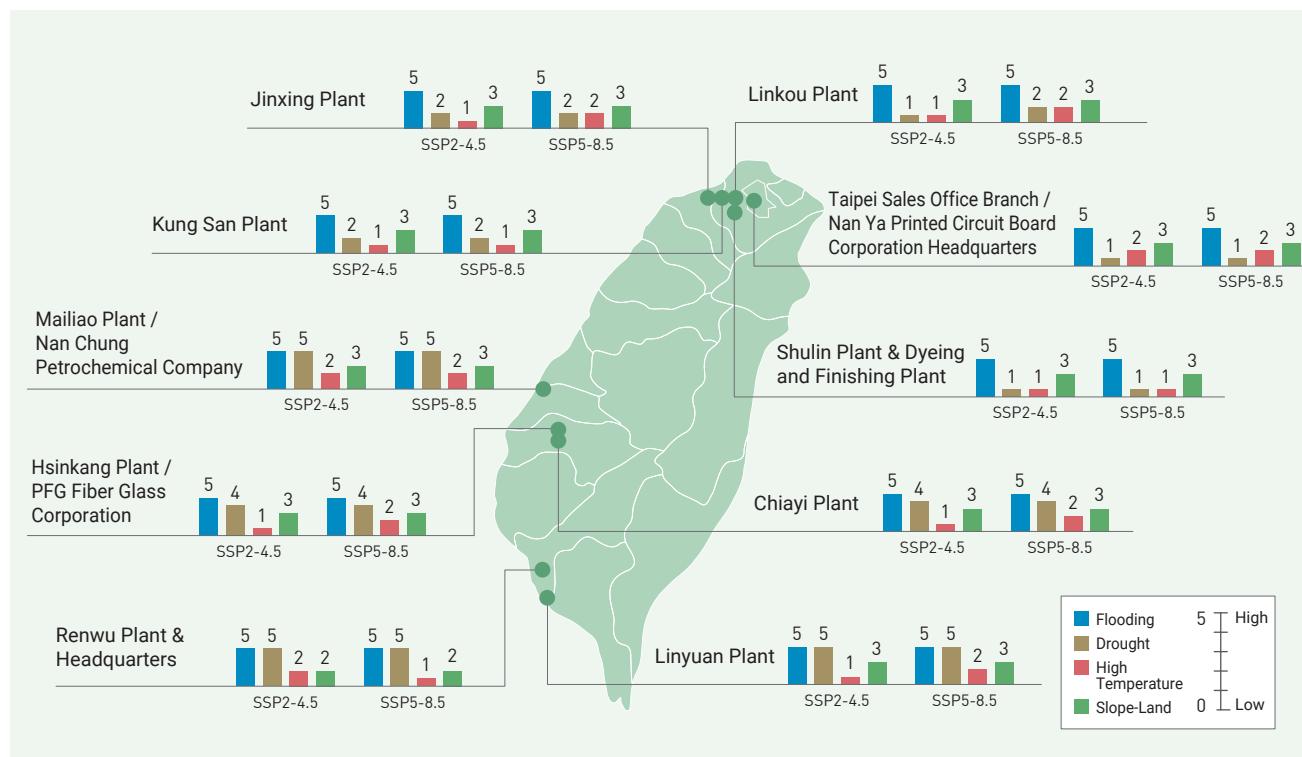
Linyuan Plant			
SSP Scenario	SSP1-2.6	SSP2-4.5	SSP5-8.5
Maximum Daily High Temperature (Temperature Change, °C)	35.4	35.5	35.9
Heat Wave Duration Index (HWDI, days)	39	48.4	68.5
Total Annual Rainfall (Change Rate %, baseline: 1,506.5 mm)	5.3	8.2	9
Consecutive Dry Days (CDD)	64.4	65.9	67.1

Summary Chart of Physical Risks under SSP2.6–8.5 Scenarios

This chart presents projected analyses of future risks related to flooding, drought, high temperatures, and slope-land hazards under different scenarios. Risk levels are classified on a scale of 1 to 5 (low to high) based on the degree of hazard and vulnerability.

NPC and Taiwan Subsidiaries		Flooding			Drought			High Temperature			Slope-Land			
Risk Level		Short term	Medium term	Long term	Short term	Medium term	Long term	Short term	Medium term	Long term	Short term	Medium term	Long term	
NPC-1	NPC Headquarters & Renwu Plant	SSP1-2.6	5	5	5	1	1	1	1	1	1	2	2	2
		SSP2-4.5	5	5	5	1	5	1	1	1	2	2	2	2
		SSP3-7.0	5	5	5	1	5	3	1	2	3	2	1	2
		SSP5-8.5	5	5	5	1	5	3	1	2	4	2	2	2
NPC-2	Taipei Office & NYPCB Headquarters	SSP1-2.6	5	5	5	1	1	1	1	1	1	3	3	3
		SSP2-4.5	5	5	5	1	1	1	1	1	3	3	3	3
		SSP3-7.0	5	5	5	1	2	3	1	2	4	2	3	3
		SSP5-8.5	5	5	5	1	1	3	1	2	5	2	3	4
NPC-3	Xingang Plant & PFG Plant	SSP1-2.6	1	5	5	1	1	1	1	1	1	3	3	3
		SSP2-4.5	5	5	5	1	1	1	1	1	3	3	3	3
		SSP3-7.0	1	5	5	1	1	2	1	1	4	3	3	3
		SSP5-8.5	5	5	5	1	1	2	1	2	4	3	3	3
NPC-4	Mailiao Plant & NCPC Plant	SSP1-2.6	5	5	5	5	5	5	1	1	1	3	3	3
		SSP2-4.5	5	5	5	5	5	5	1	2	3	3	3	3
		SSP3-7.0	5	5	5	5	5	5	1	2	4	2	3	3
		SSP5-8.5	5	5	5	5	5	5	1	2	5	2	3	4
NPC-5	Linyuan Plant	SSP1-2.6	5	5	5	1	1	1	1	1	1	3	3	3
		SSP2-4.5	5	5	5	1	5	1	1	1	2	3	3	3
		SSP3-7.0	5	5	5	1	5	3	1	1	3	3	3	3
		SSP5-8.5	5	5	5	1	5	3	1	2	4	3	3	3
NPC-6	Chiayi Plant	SSP1-2.6	5	5	5	1	1	1	1	1	1	3	3	3
		SSP2-4.5	5	5	5	1	4	1	1	1	3	3	3	3
		SSP3-7.0	5	5	5	1	4	2	1	1	4	3	3	3
		SSP5-8.5	5	5	5	1	4	2	1	2	4	3	3	3
NPC-7	Jinxing Plant	SSP1-2.6	5	5	5	1	1	1	1	1	1	3	3	3
		SSP2-4.5	5	5	5	2	2	1	1	1	2	3	3	3
		SSP3-7.0	5	5	5	1	2	3	1	2	4	3	3	3
		SSP5-8.5	5	5	5	1	2	3	1	2	5	3	3	3

NPC and Taiwan Subsidiaries			Flooding			Drought			High Temperature			Slope-Land		
Risk Level			Short term	Medium term	Long term	Short term	Medium term	Long term	Short term	Medium term	Long term	Short term	Medium term	Long term
NPC-8	Linkou Plant	SSP1-2.6	1	1	1	1	1	1	1	1	1	3	3	3
		SSP2-4.5	1	5	1	2	1	2	1	1	2	3	3	3
		SSP3-7.0	1	5	5	1	2	4	1	1	4	3	3	3
		SSP5-8.5	1	5	5	2	2	3	1	2	5	3	3	3
NPC-9	Kung San Plant	SSP1-2.6	1	1	1	1	1	1	1	1	1	3	3	3
		SSP2-4.5	1	5	1	2	2	1	1	1	2	3	3	3
		SSP3-7.0	1	5	5	1	2	3	1	1	4	3	3	3
		SSP5-8.5	1	5	5	1	2	3	1	1	4	3	3	3
NPC-10	Shulin Plant	SSP1-2.6	1	1	1	1	1	1	1	1	1	1	2	1
		SSP2-4.5	1	1	1	2	1	2	1	2	3	1	2	3
		SSP3-7.0	1	1	1	1	2	4	1	2	4	2	2	3
		SSP5-8.5	1	5	5	2	2	3	1	2	5	1	1	4
NPC-11	Dyeing and Finishing Plant	SSP1-2.6	1	1	1	1	1	1	1	1	1	1	2	1
		SSP2-4.5	1	1	1	2	1	2	1	2	3	1	2	3
		SSP3-7.0	1	1	1	1	2	4	1	2	4	2	2	3
		SSP5-8.5	1	5	5	2	2	3	1	2	5	1	1	4



Note: In alignment with the government's 2050 net-zero policy, this figure presents mid-term (2041–2060) analysis results under the SSP2-4.5 and SSP5-8.5 scenarios.

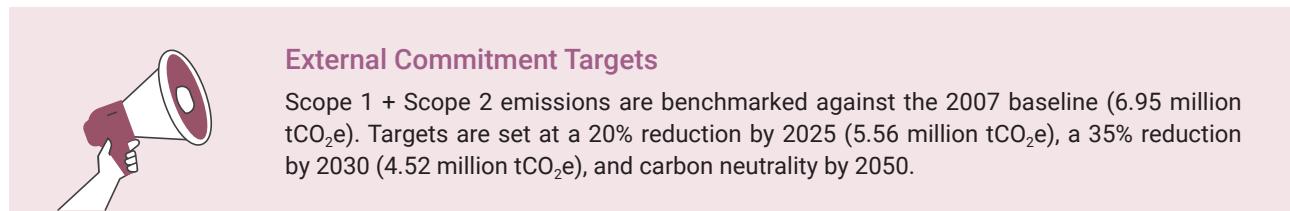
Chapter IV Metrics and Targets

4.1 Absolute Carbon Reduction Targets and Emission Indicators

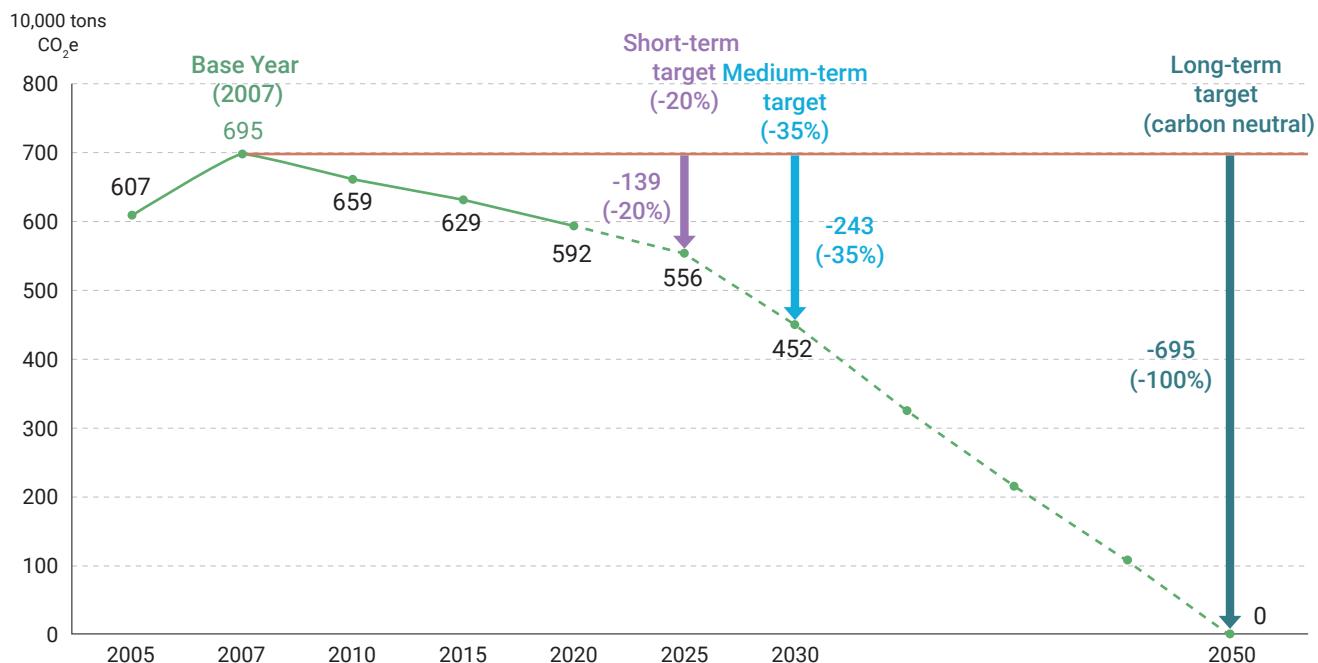
In 2024, NPC completed its greenhouse gas (GHG) inventory, which was verified by SGS Taiwan Ltd. and the British Standards Institution (BSI). In addition, SGS conducted a limited assurance review to ensure the accuracy of the reported data. Starting this year, inventory results also cover consolidated subsidiaries, with findings disclosed in the "Environmental Protection" section of the Sustainability Report. These results serve both as a basis for communication with stakeholders and as an internal performance review tool.

Carbon Reduction Targets

To address different requirements, NPC has established three categories of reduction targets: "External Commitment," "Internal Stringent Management," and "SBTi-Approved." Among these, NPC follows the most stringent reduction pathway to ensure that interim milestones meet or exceed multiple objectives, with the ultimate goal of achieving carbon neutrality by 2050.



NPC Carbon Reduction Pathway – External Commitment Targets

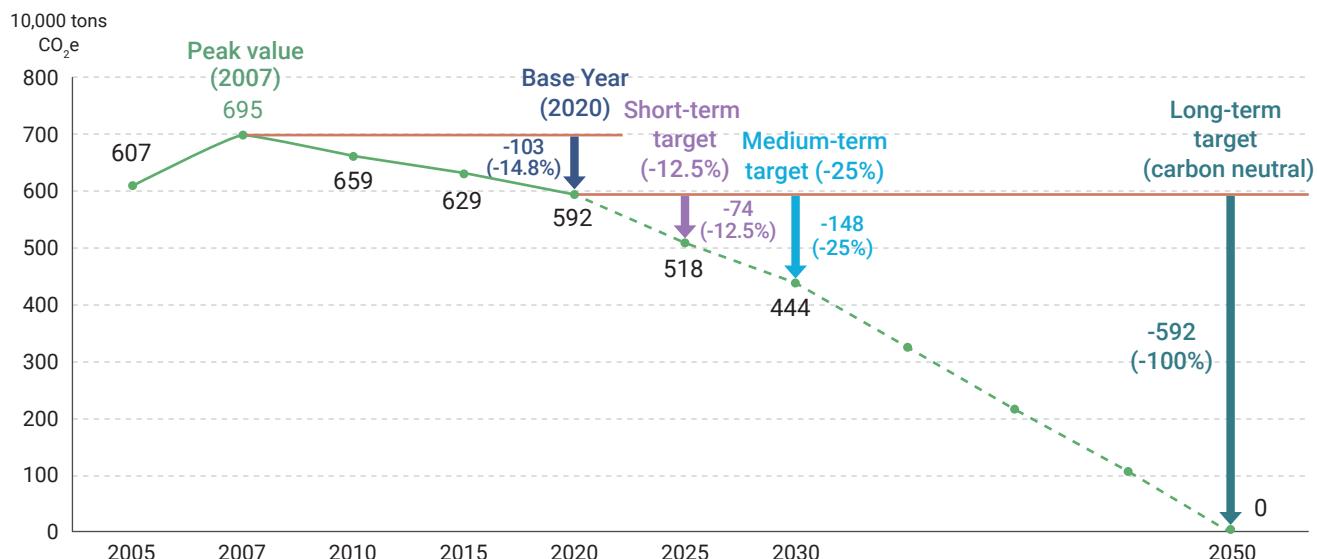




Internal Stringent Management Targets

Scope 1 + Scope 2 emissions are benchmarked against the 2020 baseline (5.92 million tCO₂e). Targets are set at a 12.5% reduction by 2025 (5.18 million tCO₂e), a 25% reduction by 2030 (4.44 million tCO₂e), and carbon neutrality by 2050.

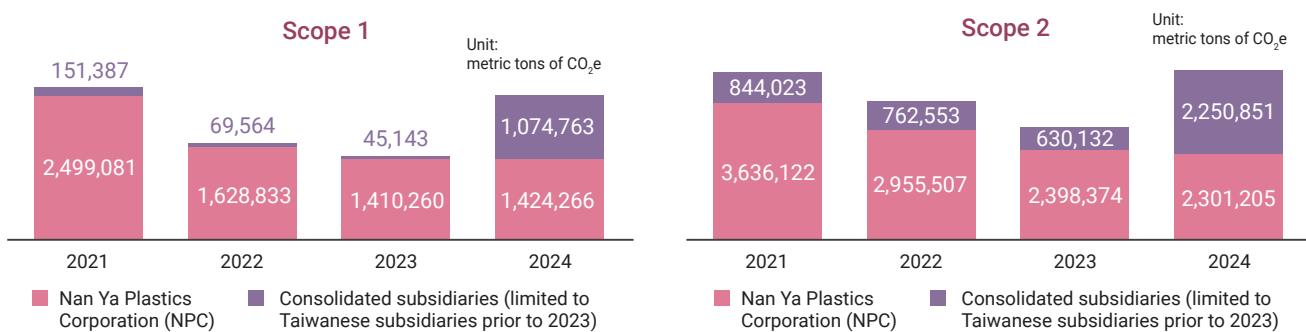
NPC Carbon Reduction Pathway – Internal Stringent Management Targets



SBTi-Approved Targets NPC has formulated reduction targets in line with the requirements of the Science Based Targets initiative (SBTi) application process, as follows:

- Scope 1 + Scope 2: Baseline year 2021, with emissions of 6.14 million tCO₂e. Target: 15% reduction by 2027 (to 5.22 million tCO₂e).
- Scope 3: Baseline year 2021. Target: 7.4% reduction by 2027.

In 2024, NPC reported non-consolidated revenue of NT\$123.2 billion, with total emissions of approximately 3.725 million metric tons of CO₂e, representing a 2.18% decrease compared to 2023. Greenhouse gas emissions intensity was 3.025 kilotons of CO₂e per NT\$100 million, a 3.9% reduction from 3.147 kilotons of CO₂e per NT\$100 million in 2023 (on revenue of NT\$121 billion). These figures demonstrate that the Company's carbon reduction initiatives have yielded significant results.



Note 1: Scope 1 refers to direct greenhouse gas emissions.

Note 2: Scope 2 refers to indirect greenhouse gas emissions.

Note 3: NPC utilized third-party inventory verification data from SGS and BSI for 2021-2022, and SGS assurance data for 2023-2024.

Note 4: From 2016 onward, emission factors were calculated using the Global Warming Potentials (GWPs) from the IPCC Fourth Assessment Report (2007), as mandated by the Ministry of Environment. From 2024 onward, GWPs from the IPCC Fifth Assessment Report (2013) have been applied.

Note 5: 2023 GHG emissions covered NPC and its Taiwanese subsidiaries (Nan Ya Printed Circuit Board, PFG Fiber Glass, and Nan Chung Petrochemical). From 2024, GHG emissions cover NPC and all consolidated subsidiaries.

In addition to continuing to advance its four major carbon reduction strategies and related projects, NPC is committed to embedding a culture of energy conservation, emission reduction, and circular economy practices across all plants. These measures are designed to strengthen the company's capacity and resilience in navigating the transition brought on by climate change.

4.2 Scope 3 Emission Metrics

NPC conducts an annual inventory of Scope 3 emissions and related relevance assessments, with verification by independent third parties. In 2024, total Scope 3 emissions amounted to 11,371,413 tCO₂e, with emission source details summarized as follows:

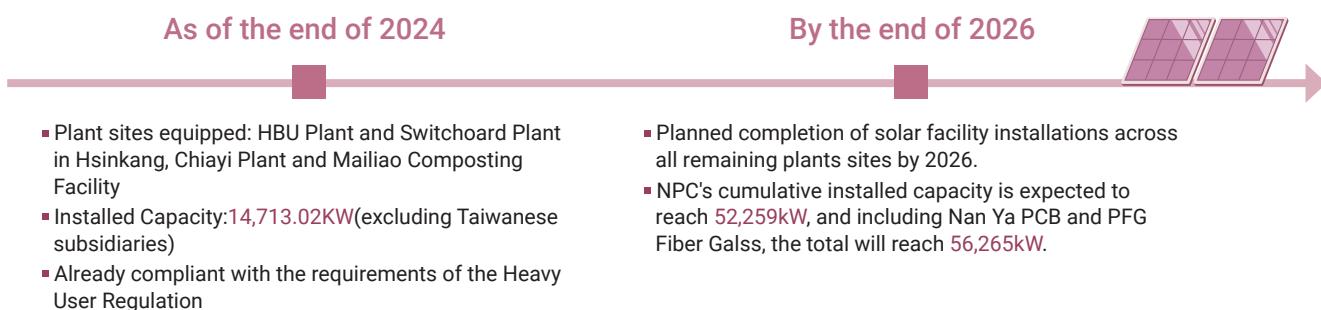
Emission Source	Relevance	Emissions (tCO ₂ e)		
		2022	2023	2024
Purchased goods and services	Relevant, calculated	5,539,058	4,613,425	4,525,275
Capital goods	Relevant, calculated	48,624	39,063	19,775
Fuel- and energy-related activities (not included in Scope 1 or 2)	Relevant, calculated	659,068	561,348	504,753
Upstream transportation and distribution	Relevant, calculated	17,547	16,965	17,833
Waste generated in operations	Relevant, calculated	4,759	1,901	6,055
Business travel	Relevant, calculated	179	1,581	942
Employee commuting	Relevant, calculated	201	7,058	7,245
Upstream leased assets	Not relevant	-	-	-
Downstream transportation and distribution	Relevant, calculated	171,793	217,660	251,272
Processing of sold products	Relevant, calculated	1,071,379	863,410	907,450
Use of sold products	Not relevant	-	-	-
End-of-life treatment of sold products	Relevant, calculated	1,155	363,987	346,875
Downstream leased assets	Not relevant	-	-	-
Franchises	Not relevant	-	-	-
Investments	Relevant, calculated	6,166,696	4,922,474	4,783,938
Total		13,680,459	11,608,872	11,371,413

4.3 Other Metrics and Project Targets

In addition to accounting for greenhouse gas emissions, NPC tracks energy-saving performance related to steam, electricity, and fuel consumption. Detailed results can be found in the company's 2024 Sustainability Report, Section 3.2 Climate Action and Strategy. NPC has also established additional energy-saving and carbon reduction targets, summarized as follows:

◆ Renewable Energy Facility Deployment

To comply with Taiwan's "Large Electricity User Regulation," NPC has planned the installation of solar power generation systems across available rooftop areas at its plant sites. The company's total cumulative installed capacity is expected to reach 52,259.54 kW, and when including subsidiaries Nan Ya PCB and PFG Fiber Glass, the combined capacity is projected at 56,265.97 kW. This will account for approximately 19.3% of the Taiwan Power Company's contracted capacity by 2030, significantly exceeding the government's 10% requirement.



◆ Other Metrics

1. PP Pallet Recycling (NPC)

Year	2024 Actual	2025 Estimate	2026 Target
Sales Volume (tons/year)	13,644	15,000	15,600
Recycled Material Added	92.7%	-	-
Share of Recycled Products in Total Sales	100%	100%	100%
Carbon Reduction (tCO ₂ e/year)	17,642	19,395	20,171

Note: The above table tracks NPC's implementation progress in promoting the recycling of PP pallets. Since the actual sales of recycled products may fluctuate due to market and supply-demand conditions, the target year has been set to 2026. Targets will be adjusted annually on a rolling basis to reflect market dynamics.

2. Green Transportation:

Year	2024 Actual	2025 Estimate	2030 Target
Electric Scooter Subsidies (units/year)	New	63	200
	Cumulative	634	1,800
Energy-Efficient Company Vehicle Procurement (units/year)	New	8	4
	Cumulative	14	44
Carbon Reduction (tCO ₂ e/year)	New	9.14	25.6
	Cumulative	81.38	231.72

3. Paperless Promotion:

Year	2024 Actual	2025 Estimate	2030 Target
Total Paper Consumption (thousand sheets/year)	18,366	17,312	14,839
Reduction Volume (thousand sheets/year)	31,097	33,151	34,624
Carbon Reduction (tCO ₂ e/year)	425.41	453.51	473.66

Note: Reduction volume is measured against the 2019 baseline total paper consumption of 49,463 thousand sheets.

◆ TCFD Appendix Comparison Table

Aspects	TCFD Recommended Disclosure	Corresponding Chapters	Page
Governance	Describe the board's oversight of climate-related risks and opportunities.	1.2 Organization And Responsibility	P.5~9
	Describe management's role in assessing and managing climate-related risks and opportunities.	1.2 Organization And Responsibility	P.5~9
Strategy	Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	3.2 Risk And Opportunity Identification	P.22
	Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	Chapter II Strategy 3.3 Summary Table Of Risks And Opportunities Impacting The Company	P.10~19 P.23~27
Risk Management	Scenario Analysis (Including a 2°C or more stringent scenario).	3.4 Climate Risk Scenario Analysis	P.28~32
	Describe the organization's processes for identifying and assessing climate-related risks.	3.1 Risk And Opportunity Management Process	P.20~21
Metrics and Targets	Describe the organization's processes for managing climate-related risks.	3.1 Risk And Opportunity Management Process	P.20~21
	Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	3.1 Risk And Opportunity Management Process	P.20
	Disclose the alignment of metrics with company strategy and risk management.	4.1 Absolute Carbon Reduction Targets And Emission Indicators	P.33~34
	Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	4.1 Absolute Carbon Reduction Targets And Emission Indicators 4.2 Scope 3 Emission Metrics	P.33~34 P.35
	Describe the management goals and related performance.	4.3 Other Metrics And Project Targets	P.36~37

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