2022 TCFD Nan Ya Plastics Corporation

2022 Task Force on Climate-related Financial Disclosures Report

台塑企業
FORMOSA PLASTICS GROUP

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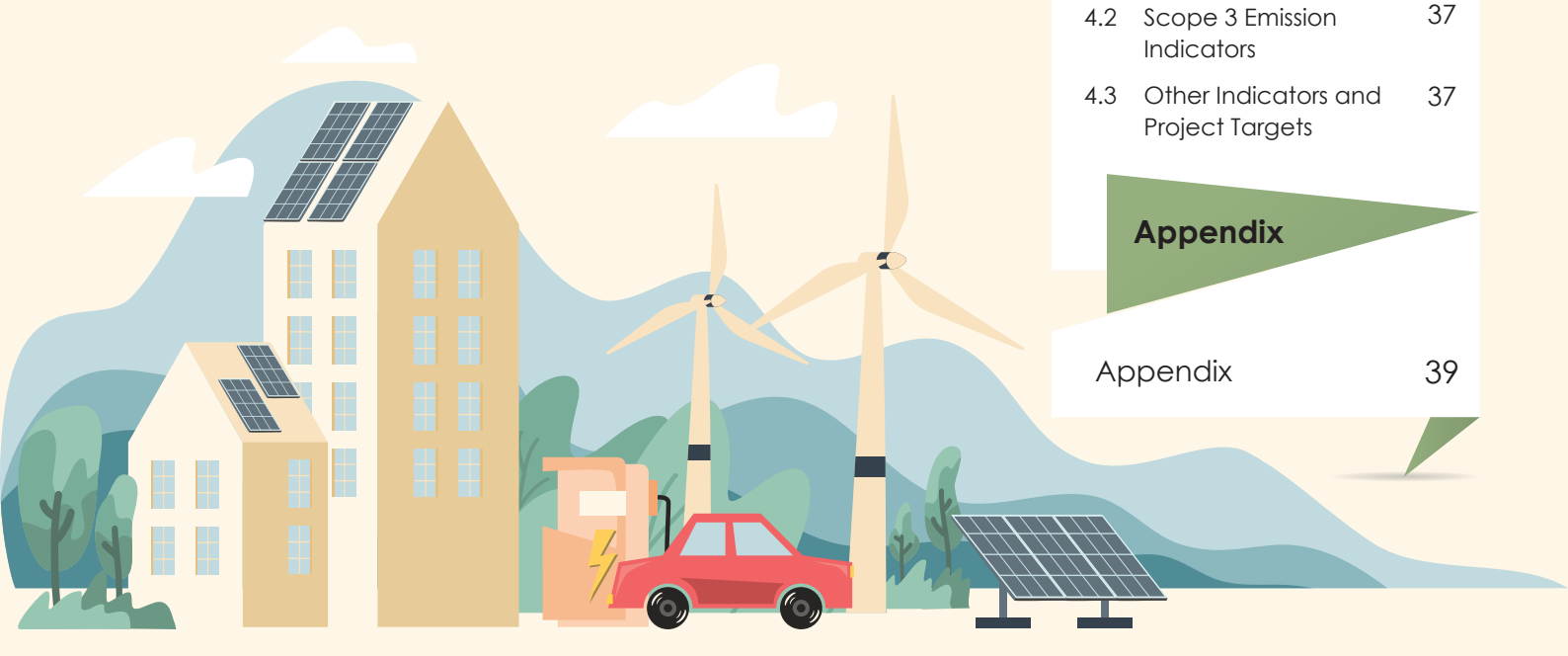


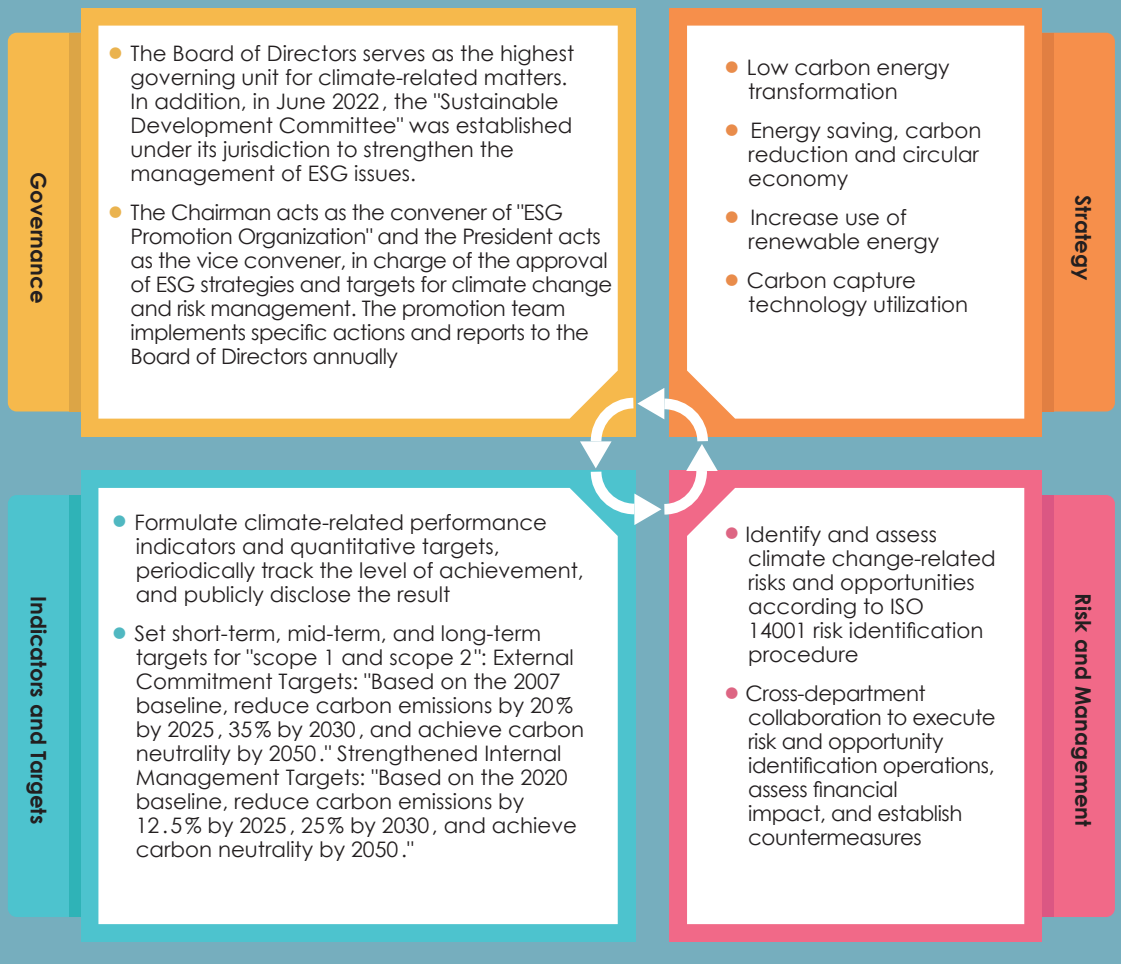
Preamble

In recent years, the World Economic Forum (WEF) has identified "climate change" as a long-term significant risk. In its 2023 "Global Risks Report", the Forum listed "failure of climate action" as the most severe global risk for the next decade. Governments around the world have responded to the issue of climate action by setting net-zero targets. Countries including EU have also implemented measures such as carbon tariffs to ensure the international competitiveness of low-carbon products in their respective regions.

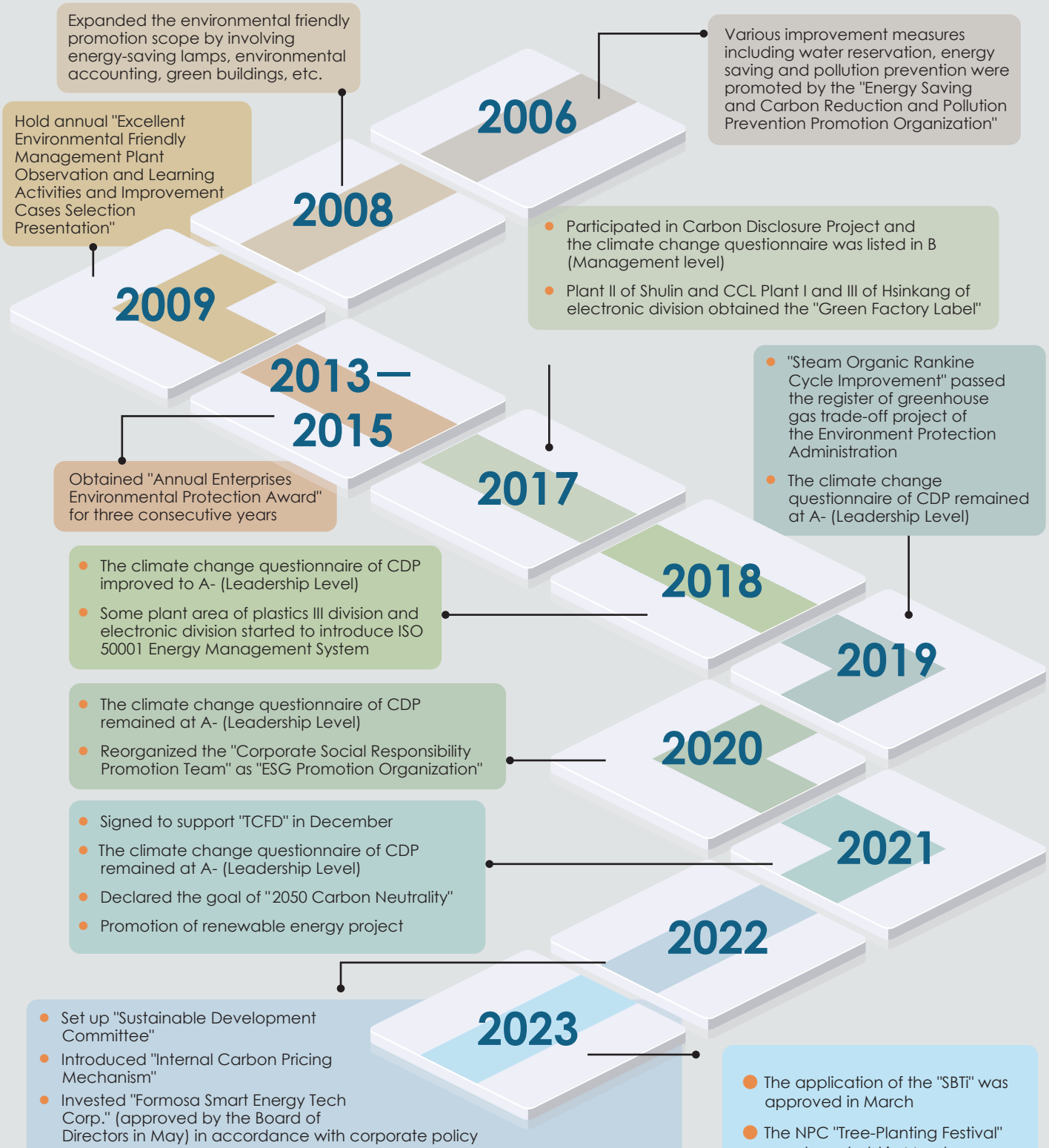
To align with the international climate action trend and ensure competitiveness, Nan Ya Plastics Corporation (hereinafter referred to as "NPC" or "the Company") has set a target of achieving "Carbon Neutrality by 2050". NPC has actively promoted the four major carbon reduction strategies: "low carbon energy transformation," "energy saving, carbon reduction and circular economy," "increase renewable energy consumption" and "carbon capture technology utilization." Following the net-zero transformation roadmap, NPC strengthens climate resilience and steadily progress towards carbon neutrality. We also proactively seize opportunities arising from regulatory changes and shifts in consumer behavior due to climate change, expanding into new business ventures or industries. By doing so, NPC aims to ensure the perpetual flow of its sustainable value.

Further, to facilitate a better understanding of NPC's efforts in addressing climate change among stakeholders, we adopted the four major frameworks provided by the Task Force on Climate-related Financial Disclosures (TCFD). we transparently disclose the risks and opportunities associated with climate change and demonstrate our responsibility and strategies. Additionally, NPC reviews the promotion of various programs annually and makes timely adjustments to our climate action plans to ensure the achievement of "Carbon Neutrality in 2050".

NPC's Climate Change Management Focus



NPC's Energy Saving and Carbon Reduction Promotion Schedule



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

2009

- Hold annual "Excellent Environmental Friendly Management Plant Observation and Learning Activities and Improvement Cases Selection Presentation"

2013—2015

- Participated in Carbon Disclosure Project 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"

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

2017

- "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)

2018

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

2019

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

2022

2023

- 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 CO_2e.
- Promoted green transportation project of replacing old and obsolete company vehicles (more than 11 years old) with energy-saving vehicles.
- Solar Power Generation Equipment: The 195kW equipment at the Hsinkang Rigid Fabric Plant I was given approval in July, and its renewable energy certificate was obtained in December 2022; Installation of 1,500 kW equipment costs Hsinkang Switchboard Plant NT$70 million. The equipment received approval in December 2022, and its renewable energy certificate is under application.
- Applied to join "Science Based Targets Initiative(SBTi)"
- The climate change questionnaire of CDP remained at A- (Leadership Level)

- The application of the "SBTi" was approved in March
- The NPC "Tree-Planting Festival" event was held in March
- Solar Power Generation Equipment: The 195kW equipment at the Hsinkang Rigid Fabric Plant has achieved 23 certificates until January 2023; The renewable energy certificate of the 1500 kW equipment at the Hsinkang Switchboard Plant is under application.

Climate-related Awards

Leadership

CDP Climate Change

The climate change questionnaire of CDP remained at the "Leadership Level" for 5 consecutive years

A

CDP Water Security

The water security questionnaire of CDP reached "A" for 3 consecutive years

TCFD Suppter

Supported TCFD in 2021 and published TCFD report in 2022

SBTi

The "SBTi" was approved in 2023

ISO 14064

100%

GHGS Inventory

The GHGS inventory of Taiwan plants was 100% completed

ISO 50001

ENERGY MANAGMENT

Increase 11 production plants

Energy Management

Plants that have obtained certificate: increased from 3 to 14

綠色工廠

GREEN FACTORY

3 Green Factory Label

Green Factory

3 plants have obtained the "Green Factory Label"

Nan Ya ICE COOL heat insulation film

Carbon Reduction Label

The first domestic heat-insulating film Carbon-Footprint Label/ Carbon-Footprint Reduction Label

1 Governance

1.1 Company Profile

NPC, established 1958, specialized in the production of secondary processing plastic products of PVC pipes, PVC film and PVC leather at the early stage of the company, and then gradually entered the fields of chemical products, polyesters fibers, electronic materials, and electrical and mechanical engineering fields from the original plastic processing field. In addition, since 1979, NPC has started its overseas businesses in the U.S. and China. Presently, NPC has become an international and diverse business entity (please refer to NPC's company website "About Us" for details of the company development history)

"Company Profile" on NPC website

Name of Company	Nan Ya Plastics Corporation
Company Establishment Date	August 22, 1958
Main Business Items	Electronic materials, chemical products, polyester fibers, plastic processing, electrical and mechanical engineering
2022 Global Number of Employees	31,736 people
2022 Consolidated Revenue	NT$ 355,183,300 thousand

1.2 Organization and Responsibilities

The operation of the Board of Directors of NPC complies with relevant laws and the resolutions of the shareholders' meeting to exercise the authority and to supervise the corporate management to ensure the sustainable development of the Company. In addition to overseeing the company's major operational strategies, the Board of Directors also monitors the implementation of sustainable development goals, including environmental protection, social responsibility, and corporate governance. The ESG promotion status is discussed at least once annually, and such discussion also includes climate-related issues.

For NPC's "ESG Promotion Organization", the Chairman acts as the convener, and the President acts as the vice convener, in charge of establishing strategic direction for climate change management. The President's Office and its subordinate departments, including "ESG Promotion Team" is responsible for executing the promotion and implementation of relevant duties, and ESG promotion execution status is reported quarterly.

To cope with the global sustainability trend of carbon reduction, NPC has established the "Risk Management Promotion Team" and the TCFD Task Force has been further established to handle the identification of risks and opportunities associated with climate change, following which the "ESG Promotion Team" and "Energy Saving and Carbon Reduction Promotion Team" discuss and establish the management actions of climate change risk adjustment and enhancement of risk resilience, and periodically tracks the energy saving and carbon reduction promotion of each business department and the relevant unit, as well as submit reports to the "ESG Promotion Organization" timely.

Furthermore, to enhance the Board of Director's supervision and management on ESG matters of the company with respect to climate change, the "Sustainable Development Committee" under the Board of Directors was established in June 2022 to be responsible for the review of sustainable development policies, strategies and management directives, and the supervision of the company in the promotion of sustainable development related matters and execution plans.

Board of Directors

Supervise the climate change management measure of NPC

Audit Committee | **Remuneration Committee** | **Sustainable Development Committee**

ESG Promotion Organization

- Set up the NPC's ESG goals in detail and supervise their implementation. The establishment of strategic goals for risk management at NPC and supervision of risk management operations are two of the duties of the "ESG Promotion Organization" (the organization is a task-based group).
- The Chairman acts as the convener, and the President acts as the vice convener leading the management team to supervise the implementation of ESG

- Report ESG implementation to the Board of Directors and Sustainable Development Committee at least once a year
- The ESG implementation of 2021 (including TCFD report and risk management) has been reported to the Boards of Directors in June 2022
- The management status and inventory results of NPC GHGs have been reported to Sustainable Development Committee in December 2022

ESG Promotion Team

- Composed of President's Office and its subordinate departments and was divided into three promotion teams namely "Environment Protection(E)", "Social Responsibility(S)" and "Corporate Governance(G)" by function. Plan and promote various tasks of ESG according to the result of risk identification

- To track the effectiveness of climate change response measures, quarterly meetings of "Environmental Protection Operation Progress Review" were held since 2022 Q4. In 2022, a total of 1 meeting was conducted.

Energy Saving and Carbon Promotion Team

- Led by President as the convener, the President's Office, Engineering and Construction Department, and various business divisions review and develop plans for energy-saving and carbon reduction initiatives, such as the installation of renewable energy and circular economy practices. Additionally, formulate and promote corresponding measures based on the identification of climate-related risks

- 12 Energy-saving and carbon reduction meetings were held in 2022.

Risk Management Promotion Team

- Composed of the President's Office and its subordinate departments. The team was divided into "Environment Protection(E)", "Social (S)" and "Corporate Governance(G)" by function, in charge of identifying various risks
- The TCFD Task Force was established under the Environment Protection(E) Risk Management Promotion Team

- The 2021 NPC TCFD report was published in June 2022

Supervision Mechanism of Board of Directors

NPC believes that the implementation of ethical management and the construction of a sound and effective Board of Directors serve as the foundation for the sustainable development of the Company. To cope with the global sustainability trend and to focus on the climate change issue, the Board of Directors takes the role of the supervisor and director for sustainable management strategies. In addition, "Audit Committee" and "Remuneration Committee" are further established under the Board of Directors to assist the Board of Directors to exercise its authority to fulfill responsibilities. To further strengthen the supervision of sustainability duties, the "Sustainable Development Committee" was established in June 2022, to assist the Board of Directors to supervise NPC in its implementation and promotion of climate change-related sustainable duties.

Board of Directors' Climate Change Supervision Focus

Board of Directors

Supervise NPC's sustainable management strategy and execution status

Sustainable Development Committee (Established in June 2022)

Review NPC's sustainable development strategy and execution status

Review NPC's sustainable development policies and management directives, supervise NPC's ESG sustainability issues in response to climate change, and outcome of promotion of various affairs.

Audit Committee

Supervise NPC's overall operational risk (including climate change issues)

Review NPC's risk management policy, and company's risk management and control status, as well as company's major investment projects

Remuneration Committee

Review managers' performance and remuneration, including operation and management performance, and comprehensive evaluation indicator (ESG items in response to climate change included)

Review performance and remuneration of managers of the company, supervise managers fulfilling responsibilities of management and execution of ESG sustainable affairs in response to climate change

Management Responsibility

"ESG Promotion Organization" is the highest supervisory and governing unit of NPC among the management for promoting ESG, and the Chairman of the Board acts as the convener, and the President acts as the vice convener, for leading the management team to supervise the promotion of ESG affairs of climate change, to establish NPC's carbon reduction targets and sustainable development strategies, and to report to the Board of Directors annually.

Regarding NPC's sustainable management structure, under the supervision of the ESG Promotion Organization, the "Risk Management Promotion Team" identifies the climate-related risks and opportunities, followed by submitting to the "ESG Promotion Team" and the "Energy Saving and Carbon Reduction Promotion Team" to establish and implement action plans for climate-related issues.

ESG Promotion Organization

Convener	Chairman
Member	• President acts as the vice convener • According to the three main aspects of "Environmental Protection (E)", "Social Welfare (S)" and "Corporate Governance (G)", a supervisor from the President's Office having a job rank above the management head is assigned to act as the responsible person for each main aspect respectively; in addition, according to the functional attribute of each issue, relevant supervisors of the President's Office, direct department or business department shall act as the members • "ESG Promotion Organization" is responsible for the establishment of the ESG strategic targets and the supervision of the execution of ESG affairs. Its responsibilities also include the establishment of NPC's risk management strategic targets and supervision of the risk management operation status (task-based team formation)
Review Frequency	Quarterly
Responsibility	The Chairman leads the management team to establish the company's risk management of ESG vision and strategic directives, and supervises the ESG affairs promotion status of each unit, to strengthen the sustainability culture and to create transition opportunities

ESG Promotion Team

"ESG Promotion Team" is an ESG internal communication platform of NPC. In addition to passing on and implementing the sustainability policies and directives of the Board of Directors and the highest management, it also acts as the lateral communication channel among departments. The responsible persons of the three main aspects of the "ESG Promotion Organization" supervise the execution of affairs and duties, and lead each task force to establish response strategies and management directives according to the major sustainability issues identified, thereby coordinating resource allocation, and tracking the project execution outcome, to ensure the proper implementation of ESG strategies.

Organization Structure

Supervising Head	Responsible persons for three main aspects of "ESG Promotion Organization"
Members	The President's Office and direct departments assign management representatives to take the role of members according to relevant functional attributes of "Environmental Protection (E)", "Social Welfare (S)" and "Corporate Governance (G)".
Review Frequency	Quarterly
Work Items	● Identify major sustainability issues annually, and establish response action plans ● Promote ESG affairs cross-department communication, and integrate resources ● Track the execution performance for each aspect of sustainability issue, and establish continuous improvement plans ● Report execution outcome and work plan to the Chairman quarterly

2022 Climate Change Issue Promotion Outcome

Promoted eight main carbon reduction projects according to the corporate policy.The main outcomes are listed as follows:

- The first NPC TCFD report was published in June 2022
- Implement an "internal carbon pricing mechanism"
- Promote subsidies for employees to purchase or replace electric vehicles, with a total of 309 applications received by the end of 2022
- Solar Power Generation Equipment: The registration of 195kW equipment at the Hsinkang Rigid Fabric Plant was approved in July 2022, and the renewable energy certificate was achieved in December; The 1,500kW equipment at the Hsinkang Switchboard Plant required an investment of NT$ 70 million. The equipment registration was approved in December 2022, and the registration for renewable energy certificates is currently under application.
- Applied to enroll in the "Science Based Targets Initiative" (SBTi), and was approved in March 2023
- The climate change questionnaire of CDP remained at A- (Leadership Level)

Energy Saving and Carbon Reduction Promotion Team

The President acts as the chairperson of NPC's organization of climate change risk and opportunity actions management and execution. Relevant management strategies are established, and execution status and future plans are reviewed quarterly.

Organization Structure	
Chairperson	President
Members	• Supervising head: "Environmental Protection (E)" responsible person (Executive Vice President of the President's Office, and Assistant Vice President of the President's Office) • The President's Office, Engineering and Construction Department and supervising head of each business department, energy saving and carbon reduction officer
Review Frequency	Quarterly
Work Items	• Discuss relevant strategies for physical risks, transition risks and opportunities in response to climate change • Establish management plan, inspect execution status and discuss future plans • Report execution outcome and work plan to the Chairman irregularly

2022 Climate Change Issue Promotion Outcome

Continue to promote the four main carbon reduction strategies to achieve the target of "Carbon Neutrality by 2050":

- Low carbon energy transformation
- Energy saving, carbon reduction and circular economy
- Increase use of renewable energy
- Carbon capture technology utilization

Risk Management Promotion Team

"Risk Management Promotion Team" is formed by representatives assigned by each organization, and it is responsible for conducting risk matrix assessment based on the risk event occurrence frequency and operation impact level, and is also responsible for executing risk control projects, reviewing project outcomes, and performing continuous improvement. In addition, TCFD Task Force Team is established under the "Environment (E) Risk Management Team", to execute the climate change risk and opportunity identification, followed by submitting the identification result to "ESG Promotion Team" and the "Energy Saving and Carbon Reduction Promotion Team" for the establishment and promotion of relevant risk mitigation strategies.

Organization Structure	
Supervising Head	Vice President of President's Office
Members	Formed by representatives assigned by each organization
Review Frequency	Annually
Work Items	• Understand international ESG risk trends, and collect relevant information • Identify ESG risk items; in addition, TCFD Task Force Team is responsible for the identification of climate change risks and opportunities • Submit the risk items identified to the "ESG Promotion Team" and "Energy Saving and Carbon Reduction Promotion Team" to continuously promote risk mitigation measures and to strengthen the risk resilience of NPC

2022 Climate Change Issue Promotion Outcome

Identified 16 climate change risks and opportunities, an increase of 7 compared to the 9 identified in 2021 .

1.3 Organization Boundary

This report is presented by NPC as the reporting entity, following the TCFD framework. It primarily highlights the carbon reduction goals and strategies set in response to climate change in 2022, as well as the identified risks and opportunities.

2 Strategy

Since its establishment, NPC has upheld the philosophy of equal importance for both industrial development and environmental protection. NPC focuses on industrial safety, environmental protection and climate change trends, seeks reduction of energy and resource investment, utilizes the most optimal control technologies, and implements waste reduction at the source and during the production process with the best effort. According to the principle of circular economy, NPC reviews and recycles the use of various resources. Through operation control and periodic monitoring, various air pollutant emissions are superior to the national standards. In addition, optimized process management and green product development are integrated into the company's business management, to contribute efforts to the economic development and social prosperity in Taiwan jointly.

NPC focuses on the "climate change issues" and actively faces the opportunities and challenges associated with climate change in the company's business operation. To cope with the global carbon reduction trend and in response to the UN's Sustainable Development Goals (SDGs) 13 climate actions, NPC has set the long-term carbon reduction goal of carbon neutrality by 2050, and actively promotes the four main carbon reduction strategies. The strategy promotion focuses and carbon reduction benefits expected to be achieved by 2030 are summarized in the following:

1. Low carbon energy transformation: Stop the running of coal-burning boilers at the utility factory, and install gas-burning steam boiler equipment. In addition, all production plants also change to use low-carbon energy (such as natural gas) to replace high-carbon energy sources (such as coal, heavy oil). It is expected to reduce 1.29 million tons of carbon annually.
2. Energy saving, carbon reduction and circular economy: Continue to promote process improvement, circular economy, AI and digital transformation, increase energy use efficiency and reduce waste generation. It is expected to reduce 970 thousand tons of carbon annually.
3. Increase use of renewable energy: Install solar power generation facilities at the plant roof of each plant site in NPC and PFG. By 2024, the installation total capacity will reach approximately 58,365kW and is expected to account for approximately 18.2% of the Taiwan Power Company (TPC) contract capacity, which is higher than the 10% threshold specified in the government's large electricity consumption users regulations (or 8% for the early bird discount over three years).
4. Utilization of carbon capture technology: Expand the construction of electronic-grade and industrial-grade liquid CO_2 factories to recover CO_2 generated during the manufacturing process to achieve resourcezation. It is expected to reduce 240 thousand tons of carbon annually.

	Short-Term 2021 - 2025	Medium-Term 2025 - 2030	Long-Term 2030 - 2050
Low Carbon Energy Transformation	Replace the coal-burning boilers with gas-burning steam boilers of utility factory		Introduce low-carbon(zero-carbon) fuel at a proper time
	Replace high-carbon energy sources (such as coal, heavy oil) with low-carbon energy (such as natural gas)		
	Continue to understand the development trend of hydrogenic energy and alternative energy and storage equipment and introduce at a proper time		
Energy Saving, Carbon Reduction and Circular Economy	Continue to promote improvement projects of energy saving and carbon reduction of production process		
	Promote recycle and reuse projects in accordance with the 4R principle of circular economy		
	Promote AI and digital transformation, introduce intellectual management system, increased resource use efficiency		
Increase Use of Renewable Energy	Install solar power generation facilities at the plant roof of each plant site with a total capability of 58,365kW	Review and evaluate other areas within each plant site where solar power generation equipment can be implemented	Evaluate the procurement of renewable energy certificate
	Continue to assess the renewable energy application of water power, wind power and geo-heat		
Utilization of Carbon Capture Technology	Expand the construction of electronic-grade and industrial-grade liquid CO_2 factories to recover all CO_2 generated during the manufacturing process to achieve resourcezation		Introduce feasible carbon capture technology of Stack Emission to reduce carbon emission
	Co-study technology of negative emissions such as carbon capture, carbon sink in forests, etc. with industry and academia, and introduce at a proper time.		

2.1 Energy Saving and Carbon Reduction Outcome

To date, the four major carbon reduction strategies implemented by NPC have achieved significant progress. The summaries are as follows:

1 Low Carbon Energy Transition

Replaced the coal-burning boilers at the Shulin utility factory and Chiayi utility factory with gas-burning boilers. The 40 tons of oil-burning boiler at the Kung San Site was replaced with gas-burning boilers. The annual carbon reduction is estimated to be approximately 422,000 tons/year.

2 Energy Saving and Carbon Reduction and Circular Economy

- For EG-4 carbon dioxide emission and waste heat, implemented the Organic Rankine Cycle system power generation improvement project. The annual carbon reduction is estimated to be approximately 13,471 tons/year.
- Through AI technology, the process condition can be optimized in order to reduce the raw material and energy consumption: For example, Petrochemical Division II BPA Plant :reduced phenol consumption of 1,650 tons/year, acetone of 660 tons/year; Petrochemical Division III EG Plant: reduced vinyl consumption of 3,867 tons/year.

3 Increase Use of Renewable Energy

- The registration of the 195kW solar power generation equipment at the Hsinkang Rigid Fabric Plant and the 1,500kW solar power generation equipment at the Hsinkang Switchboard Plant were approved. The Rigid Fabric Plant achieved the renewable energy certificate in December, and the registration of Switchboard Plant for the renewable energy certificates is currently under application.
- Promoted Hsinkang Site (Glass Fabrics Cloth Plant I~IV), Chiayi Site, Miliao Site and other sites' solar power generation equipment construction investment project: Expected installation capacity: 56,670 kW.

4 Carbon Capture Technology Utilization

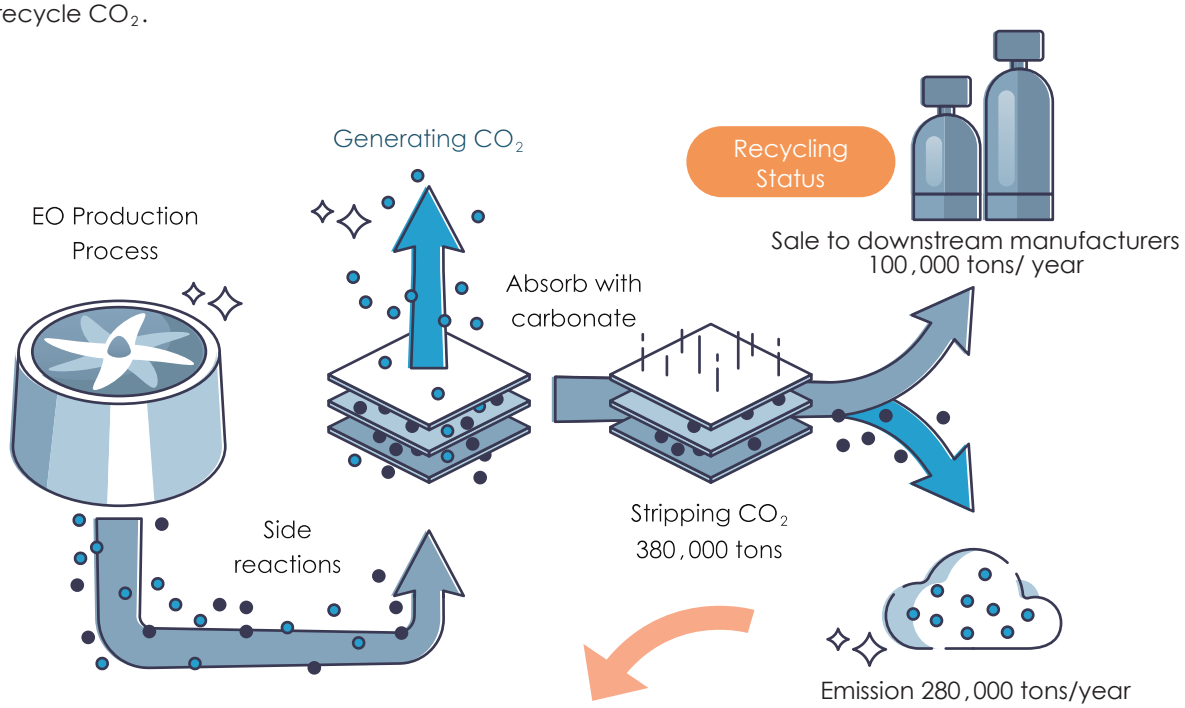
- EG Plant and 2EH Plant continue to provide approximately 100,000 tons of CO_2 to downstream customers as raw materials.
- Reuse: Continue to promote electronic and industrial liquid CO_2 factory expansion and construction project; and 1910 waste gas incinerator carbon dioxide recycling.
- Reduction: Continue to review, and promote the additional installation projects of CO_2 absorption towers, and to increase the catalyst selection rate; and use the catalyst of the highest performance, to reduce side reaction.

【Case Description - Planning for CO_2 Capture and Reutilization in Production Process】

Out of the CO_2 generated by the process reaction of NPC, 100,000 tons are supplied to the downstream manufacturers per year, and 10,000 tons are applied to produce the syngas. In other words, a total of 110,000 tons of CO_2 have been captured and recycled. The recycling and reuse of the other CO_2 is under planning. The goal is achieving 100% recycling.

Taking the EG Plant as an example, out of the 380,000 tons of CO_2 generated through capture of the side reactions in the process per year, 100,000 tons have been recycled to produce acetic acid and liquid carbon dioxide by downstream manufacturers per year.

Besides, the expansion of electronic-grade and industrial-grade liquid CO_2 that under planning, also enables to recycle CO_2.



2.2 Water Reservation and Water Resource Efficiency Improvement Outcome

The number of water reservation improvement projects completed by NPC in 2022 was 33 cases. The investment amount is estimated to be NT$90 million, and it is expected to save 1,868 tons/day of water.

Summary of Water-Saving Implementation Status of the Company

Item \ Year	1999~2020 (A)	2021 (B)	2022 (C)	In progress (D)	Total (E=A+B+C+D)
Improved Items	727	48	33	20	828
Water saved (ton/day)	30,768	652	1,868	1,327	34,615
Amount invested (NT$100 million)	5.2	0.5	0.9	0.5	7.1
Improvement benefits (NT$100 million/year)	1.65	0.02	0.08	0.07	1.82

Source: FPG Water and Energy Conservation Project Database; in-progress projects are counted as ongoing improvement cases for January 2023 statistics.

2022 Water Reservation Improvement Project Description

Project 1

The phase II of wastewater recycling at the Haifeng wastewater treatment plant provides supplementary water for cooling towers in the Haifeng plant area.

Water Saving Improvement Performance

1,400 tons/day

Project 2

The steam condensate in the Plasticizer Plant is recycled and sent to the PA Plant. Improve the recycling process by changing from level control to flow control.

Water Saving Improvement Performance

196 tons/day

Project 3

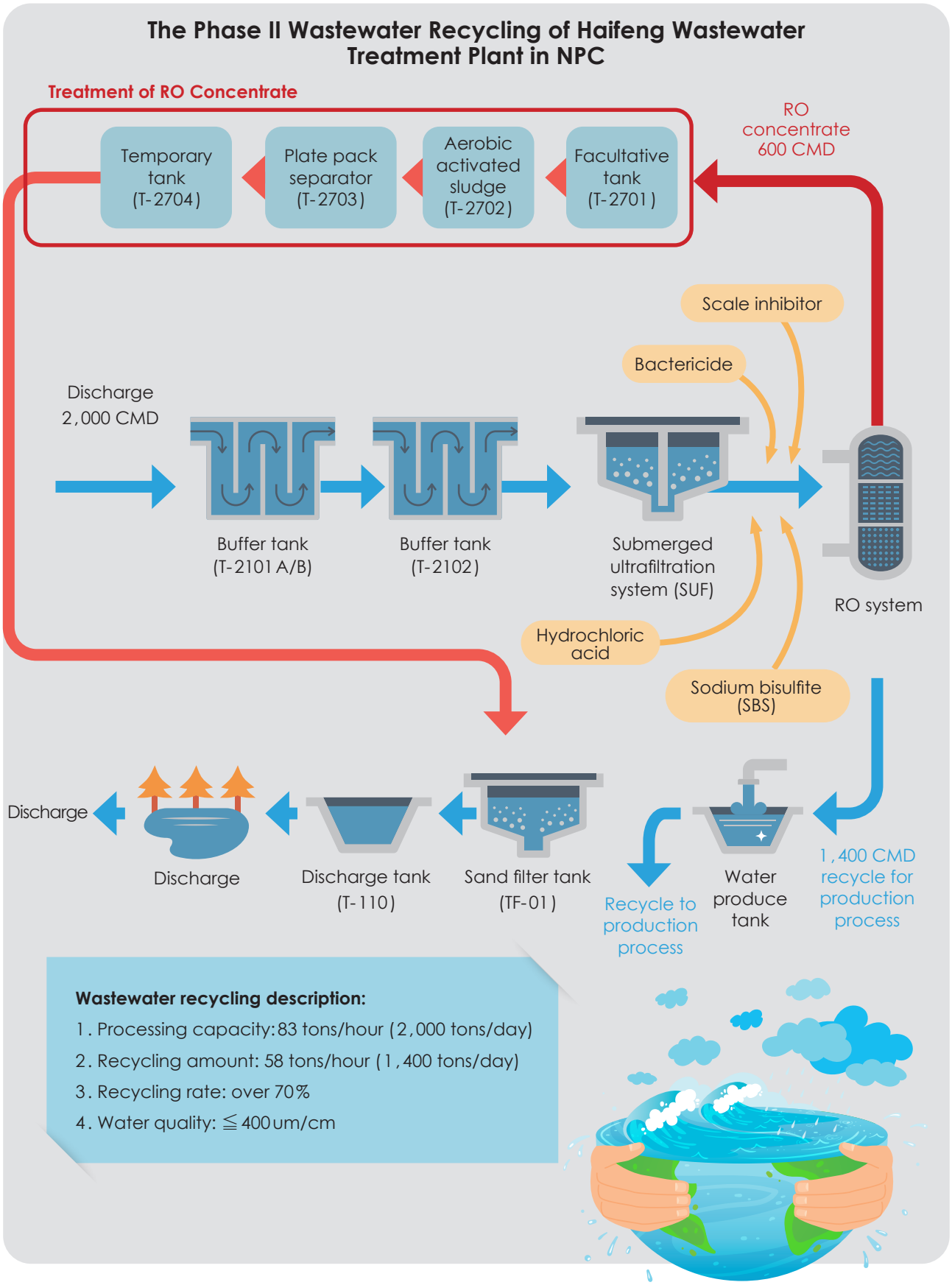
After Dyeing and Finishing Plant use dyes with concentration ranging from 3~5%, use RCO neutral detergent to improve dyeing efficiency, streamline the process and reduce costs.

Water Saving Improvement Performance

33 tons/day

The Phase II Wastewater Recycling of Haifeng Wastewater Treatment Plant

"The Phase II Wastewater Recycling of Haifeng Wastewater Treatment Plant" of NPC in 2022 aims to establish a SUF+RO system with a designed treatment capacity of 2,000 tons/day. The estimated wastewater recycling rate exceeds 70%, and 1,400 tons/day can be recycled in the process.



2.3 Low Carbon Product Promotion Method and Outcome

Recycled Plastic Product

The environmentally friendly and sustainable products of NPC are currently focusing on four themes: "PET bottle recycling", "fabric recycling", "material simplification" and "dope dyed PET product development". The key points are as follows:

PET bottle recycling

When compared to virgin polyester resins manufactured by traditional petrochemical techniques, using recycled PET bottles to produce polyester resins can reduce carbon emissions by 72%.

90% of the recycled material is used in the production of highly technical and high-value-added filaments by the Company.

Fabric recycling

Work together with top brands in the industry to recycle inventory fabrics, scraps and post-consumer recycled (PCR) apparel from their supply chains in order to help the textile industry transition to a circular economy.

With the application of AI deep learning, one piece of old clothing can be quickly identified with a recognition accuracy of over 93%.

Dope dyed PET product development

A new dope dyeing technique has been developed and obtained a patent by the Company. Since the dye is added during the spinning of the fabric, it is possible to achieve almost water-free dyeing by skipping the typical bath dying process later on and saving 97% of the water.

With a wide color gamut, good color fastness, and resistance to fading in the presence of water and sunshine, it can produce over 1,000 different colors.

Material simplification

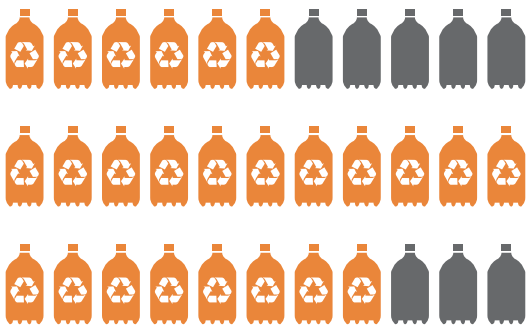
To increase the amount of recycling, the Company develops and designs products with a single material in order to make recycling more convenient and to increase the efficiency of product recycling and reuse.

The promoted items are detailed as follows:

1.PET bottle recycling：

- PET bottles are recycled for polyester resins to replace virgin polyester resins, and the carbon emission can be reduced by 72%.
- From 2020 to 2022, a total of 21.6 billion PET bottles were recycled, reducing carbon emissions by 470,000 tons/year, which is equivalent to the annual carbon absorption of 1,199 Daan Forest Parks.

Total of Recycled Products / Estimated Sales ◆ 1 ton of recycled products = 80,000 PET bottles



2020	74,016 tons 5.9 billion pieces	Could revolve around the 100 times
2021	109,008 tons 8.7 billion pieces	Could revolve around the 148 times
2022	88,140 tons 7 billion pieces	Could revolve around the 120 times

Total CO_2 Emission Reduction

2020 **127,678** ton/year
≒ **327** Daan Park carbon absorption amount

2021 **188,039** ton/year
≒ **482** Daan Park carbon absorption amount

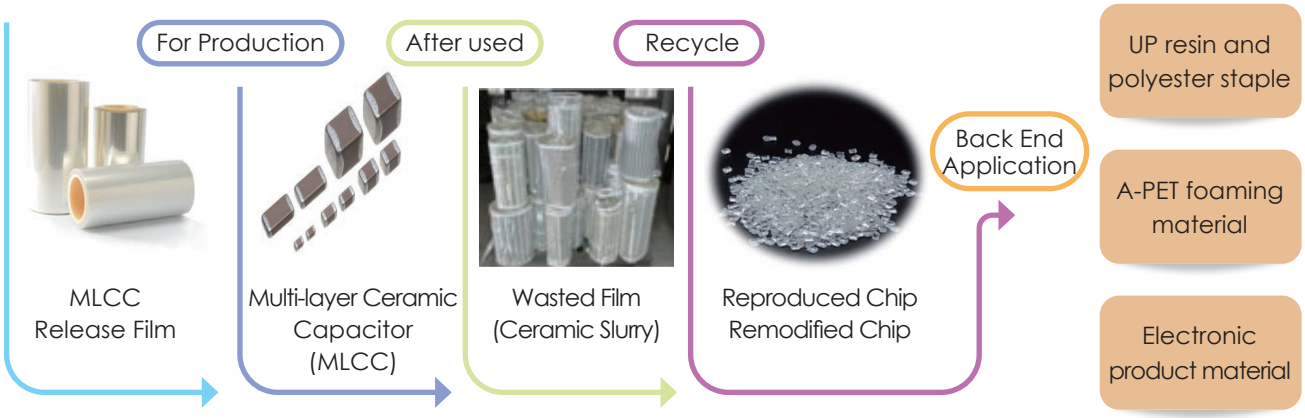
2022 **152,042** ton/year
≒ **390** Daan Park carbon absorption amount

Reduce **72%** carbon emissions of recycled products

- After recycling, 90% is used for the manufacturing of long filaments of relatively higher technical difficulty and high added value. (most general business operators manufacture short filaments and sheets, and only 7.7% uses long filaments.)
- Continue to expand production lines, and the target for the Taiwan region is the recycled resin production capacity reaching more than 75% of the virgin bottle resins.

2.MLCC (Multi-layer Ceramic Capacitor) release film recycling：

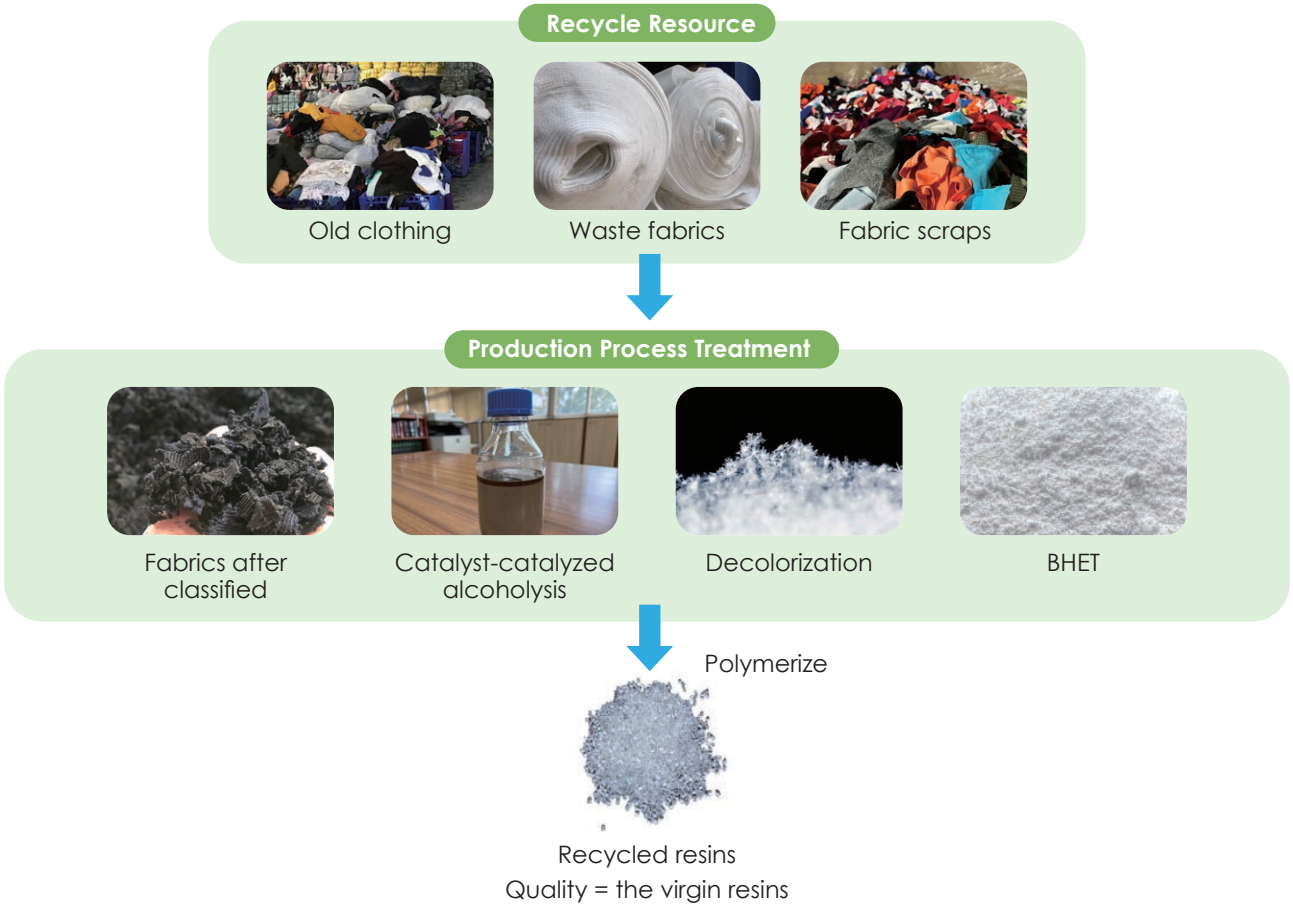
After being used by customers, the release films were originally disposed of as waste. Now, after the recycling and treatment by NPC, they can provide for the manufacturing of the products of UP resin and polyester staple fibers. The recycling capacity is 600 tons/month, and the release films used by domestic MLCC and optical customers can be recycled.



In the past, 3C electronic consumer products mostly use non-PET materials, and after the scrap of such materials, they are not facilitated for recycling. After the modification of the polyester resins industrially recycled, they can also be applied to 3C consumer electronic products, such as notebook computer chassis, television stands, connectors, and cooling fans, etc., thereby increasing the value of the product recycling and reuse.

3. Fiber recycling：

NPC has developed its own recycling technology for pure PET greige fabrics, finished fabrics and fabric scraps, and has also established the pre-treatment and resin manufacturing production line with a monthly production capacity of 1,000 tons. Presently, NPC is currently self-developing high-end depolymerization and recycling technology and will construct a leading factory to serve as the basis for mass production in the future.



4.Replace virgin material with recycled material：

By replacing virgin materials with recycled materials, the carbon emission generated from the raw material end can be reduced. For example, recycled PP resins purchased from outsourced and in-plant non-standard products are used to produce environmentally friendly plastic pallets with low carbon footprints, the output was 11,650 tons (accounting for about 83% of all plastic pallets) in 2022, which can help reduce 76% carbon reduction compared with products produced by virgin resins.

5.Material with homogeneous design：

To further expand the recycling scope and to achieve greater convenience, the design and development of material homogeneous products is the trend for the future. Accordingly, NPC now implements the following development projects:

Development of remodified polyester resins

- Garment and accessory material homogeneity：

Presently, most of the traditional garments and accessories (such as zippers and buttons, etc.) use non-PET materials. After recycling, it is necessary to perform manual removal and selection. By developing modified polyester resins to replace the original garment and accessory materials, it can achieve textile material homogeneity, thereby facilitating the subsequent recycling and reuse.

Recycled and Remodified

RNAA80

Processed and formed

zipper, button, and buckle, etc.

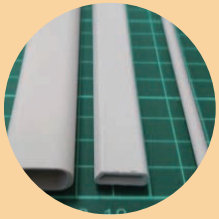
- Curtain material homogeneity：

Presently, venetian blinds and roman blinds are formed by using components and fabric of different materials, such that they are not facilitated for subsequent recycling and reuse.

Parts	Venetian Blind	Beam and Frame of Venetian Blind and Roman Blind	Transparent UV Resistant Exterior Parts	Blade Steering Mechanism and Rope Control Mechanism
Raw Material	Aluminum Sheet and PVC	ABS, PVC	UV Resistant PC	POM

Cooperate with major domestic curtain manufacturers to make all-polyester curtains, replacing other materials that are not appropriate for recycling with modified PET in order to simplify subsequent recycling and reuse.

Develop Lightweight and Environmental Friendly White Film to replace aluminum sheet



Upper and Lower Beams and Wrapped Support Rods of Roman Blind

Full-Polyester (PET) Material

Dimming Diverter of Venetian Blind

Rope Assembly of Venetian Blind

- Full polyester sneakers：

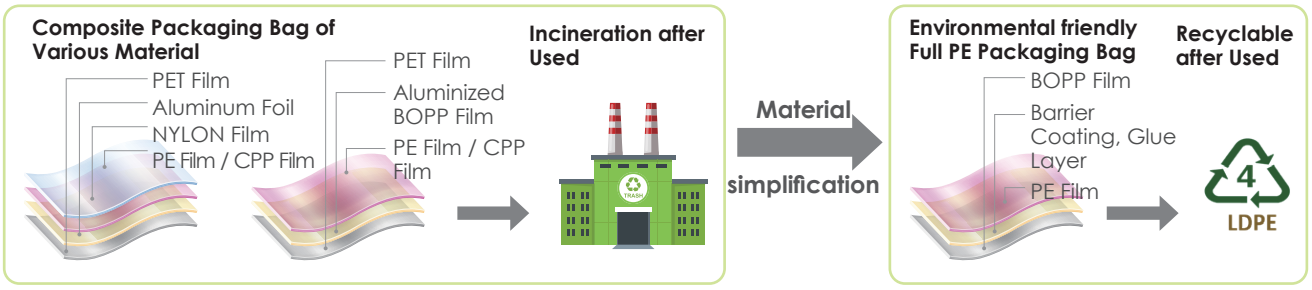
The current manufacturing process of sports shoes combines different functional materials with adhesive materials. Therefore, NPC plans to develop modified polyester resins that can be foamed, bondable with heat, and elastic. By using the existing manufacturing process, the whole shoe is made with polyester to help with recycling.

- Single material luggage：

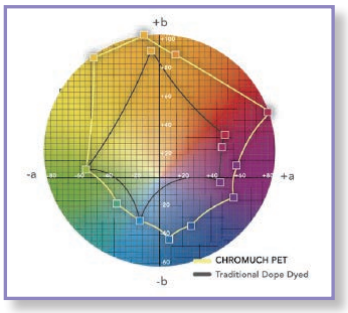
Use modified PET resins to replace the PC and ABS resins on the market currently to produce luggage panels. The modified polyester resins are also used for accessories to completely replace non-PET materials such as zippers, handles, and wheels. Therefore, the luggage is easy to be recycled after removing the aluminum-alloy trolley. It is sold after being certified by SGS for compliance with the luggage specifications.

Develop packaging film of material homogeneity：

Based on the consideration of quality and preservation, functional packaging films are required to have the characteristics of high-water resistance and air resistance and different material plastic films are used for attachment. Consequently, the recycling of such films is difficult. Accordingly, NPC develops the packaging material of material homogeneity (high resistance BOPP, BOPE film) to facilitate future recycling and reuse.

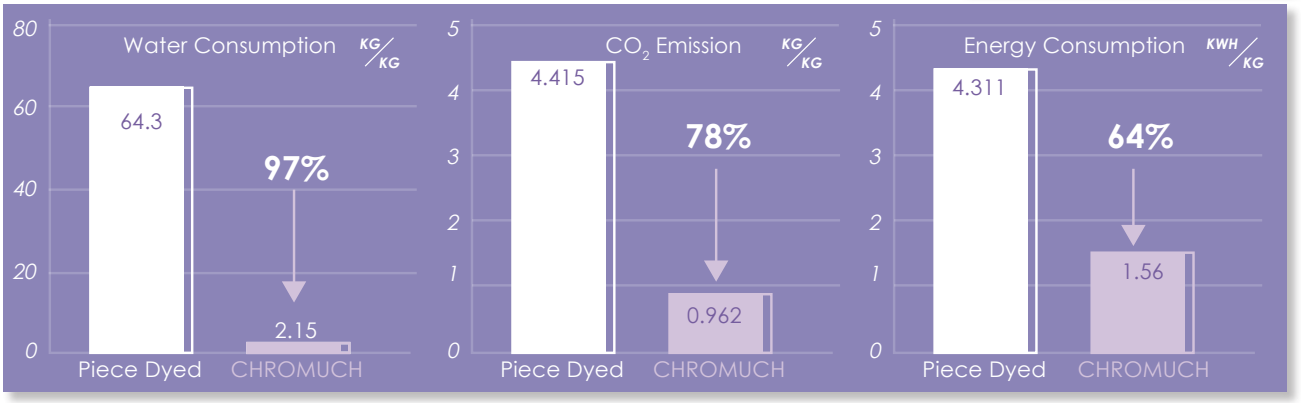


New Dope Dyed Technology- CHROMUCH PET



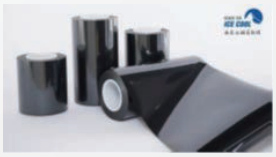
As the traditional bath dyeing process needs to use water for 60 liter/kg, the "dope dyed PET" can save 97% of water, the product features are as follows:

- Satisfied the goal of reducing the water footprint of brand customers
- Provided thousands of colors with excellent colorfastness (grade 4~5)
- SAYA + CHROMUCH = The best solution for eliminating most of the environmental impact posed by PET yarns



Carbon-Footprint Reduction Label- Nan Ya ICE COOL heat-insulation film

Description



- Product name: Nan Ya ICE COOL heat-insulation film
- The achieving date of the Carbon-Footprint Label and the Carbon-Footprint Reduction Label: 2022.05.12
- Unit carbon emission: 10 kg CO_2e/m^2
- Carbon reduction ratio: 42.62% (reduction quantity 7.330 kg CO_2e / baseline of product carbon footprint 17.2kg CO_2e)
- This product uses non-toxic materials. The basic material is PET film. After three coating processes, it becomes a film with high-efficiency anti-sunlight radiation heat function. It is mainly used in automobiles and architectural glass. Due to its explosion-proof, high light transmission, high IR, and UV barrier (anti-ultraviolet rays), it can reduce energy consumption while ensuring the safety of the internal space.
- This product has obtained the first Carbon-Footprint/Carbon-footprint Reduction Label for heat-insulation film in Taiwan. And it was certified by the LCBA (Low-Carbon Building Alliance and the Taiwan Green Productivity Foundation, the product can reduce the electricity consumption of air conditioners by 12.4%~15.2%.

2.4 Joint Promotion of Energy-Saving and Carbon Reduction Projects

To cooperate with the energy saving and carbon reduction projects coordinated and planned by FPG Group, NPC will implement projects comprehensively from management aspect to new investment opportunities in 2022, to enhance the company's energy saving and carbon reduction actions. The summary of each project is described in the following:

Internal Carbon Pricing

To enhance the awareness of all employees on carbon reduction, NPC will implement an internal carbon pricing mechanism in 2022 with reference to the draft of the "Climate Change Response Act" in terms of carbon fees and charges for excessive carbon emissions. Relevant carbon emission costs will be included in the internal management income statement as the basis for the implementation of carbon risk management. In addition to continuing to establish greenhouse gas emission reduction measures, relevant information is also regarded as an important indicator for performance evaluation, products and operations, and investment evaluation, to maintain the competitiveness of NPC.

Green Transportation Promotion

To fulfill cooperate social responsibility and in response to the government's policy, NPC promotes several low-carbon and green transportation projects with hopes to deeply implant the concept of energy saving and carbon reduction in the life of every employee, and establish a carbon reduction culture among all employees.

- **Subsidy Projects of new purchase/replacement of electric motorcycles for employees**

Under the principle of providing the equivalent of the total government subsidy, the project of subsidizing employees to purchase new (replacement) electric motorcycles has been implemented since 2022. We also cooperate with domestic electric motorcycle manufacturers to jointly implement carbon reduction, and relevant descriptions are as follows:

- **Subsidy amount**：NT$ 10,000 for new purchase, and NT$16,000 for replacement
- **Budget**：As of the project planning in November 2021, with an estimated 12,172 employees in NPC, the total subsidy is estimated to be NT$122 million~NT$195 million
- **Estimated effect**：Carbon reduction by 2,533 tons/year.
- **Number of persons applying for subsidy in 2022**：309 persons. NPC will continue to promote the program

The FPG Press Conference "Happy Enterprise, Together Ride to Reduce Carbon"

Formosa Plastics Group subsidizes employees for the purchase (or replacement) of electric motorcycles

(Taking the employees domiciled in Taipei as an example)

Electric motorcycles NT$ 70,000/set

− (Government subsidy + Discount of car dealer + Company subsidy)

= Price for employee

Note: NT$ 70,000 refers to the price of VIVA MIX KEYLESS

Replacement NT$ 31,200 set **55%** ↓

New purchase NT$ 45,500 set **35%** ↓

Government electric motorcycles subsidy program

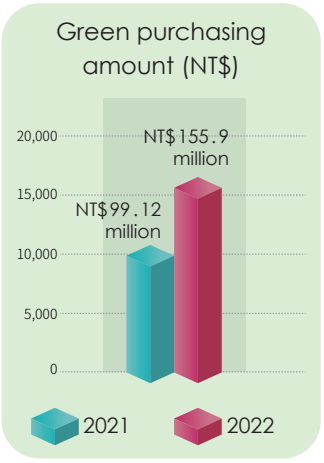
Subsidy item	Type	IDB	EPA	County(city) government
New purchase	Heavy motorcycle	7,000	No subsidy	Subsidizes according to each county(city) government
	Light motorbike			
Replacement	Heavy motorcycle		3,000	
	Light motorbike			

- **Purchase Project of Energy-Saving Vehicles for Old and Obsolete Company Vehicles**

To promote energy saving and carbon reduction, and to fulfill corporate social responsibility, based on the consideration that the carbon emission of energy-saving vehicles is lower than fuel vehicles by more than 20%, NPC is going to promote a low-carbon transportation policy. For newly purchased passenger cars and light trucks, energy-saving vehicle models (hybrid, electric vehicles) will be considered in a priority. In addition, fuel vehicles of age above 11 years old will be replaced. The expected investment amount is approximately NT$2.16 million, and 3.83 tons of carbon emission can be reduced annually.

Green Procurement

In response to the government's green purchasing policy, NPC permanently using products equipped with the logos and marks of "Energy Saving, Water Saving, Environmental Protection, Carbon Reduction, and Green Building Material" (such as air conditioners, carbon cartridges, and fluorescent lamps). Green purchasing products and the corresponding corporate material number have been announced to all departments quarterly since 2022. Besides, green products are notified and forced to be prioritized at every purchase, thereby reducing resource consumption and reducing environmental pollution and impact on the Earth.



The layout of Green Energy-Investment in Formosa Smart Energy Tech Corp.

In alignment with the global energy saving and carbon reduction and new energy development trends, and to promote the transition development of the energy industry, NPC jointly establish "Formosa Smart Energy Tech Corp." with other companies. Formosa Smart Energy Tech Corp. will integrate the energy-related departments within the enterprise to build a layout in the new energy industry.

- **Approval schedule**：The proposal was approved by the Board of Directors in May 2022.
- **Investment amount**：The capital amounting to NT$ 7 billion, in which NT$1.75 billion is invested by NPC, and the shareholding is 25%.

- **Formosa Smart Energy Tech Corp. plans to launch into four major areas**：①Energy saving、②Energy storage、③New energy,、④Recycling。

2.5 Impact Posed by Climate Transition

NPC has participated in multiple important carbon reduction initiatives or alliances at home and abroad, including media exposures, to respond to the climate transition initiative and issues. It expects to urge the chain value to jointly improve carbon reduction awareness, create a sustainable environment, and achieve common prosperity:

International initiatives

In addition to setting the long-term carbon reduction target, "Carbon Neutrality in 2022", NPC also participated in the "Carbon Disclosure Project (CDP)" questionnaire evaluation, "Task Force on Climate-related Financial Disclosures (TCFD)," "Science-Based Targets Initiative (SBTi)" to improve internal carbon reduction management operations. Besides, NPC implemented carbon reduction practices and added (amended) related regulations in response to international trends. We review the execution status regularly and discuss it in a timely manner to ensure the pursuit of carbon reduction and transition.

CDP DRIVING SUSTAINABLE ECONOMIES

- Participated since 2017, and achieved A- (leadership level) in the climate change evaluation in 2022.
- Maintain the "Leadership Level" in the CDP climate change evaluation for five consecutive years.

TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

- Signed and supported "TCFD Initiative" at the end of 2021
- Publish NPC's "TCFD Report" for the previous year in Chinese and English versions since 2022.

SCIENCE BASED TARGETS DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

- Applied for SBTi in 2022 and submit the carbon reduction goals.
- The SBTi application was approved in March 2023. NPC will implement various carbon reduction projects according to the approved goals.

Marine Debris Recycling Coalition

To maintain the marine ecological environment, NPC has been long time recycling waste PET bottles from the ocean, thus mitigating the hazard toward the ocean. Meanwhile, in 2022, NPC joined the Marine Debris Recycling Coalition established by Ocean Conservation Administration, Ocean Affairs Council, to collect waste polyester fishing nets and PET bottles with the Coalition members. By expanding the source of recycled materials, strengthening the cooperation with industries to maintain marine ecosystem and love the earth.

The Marine Debris Recycling Coalition hold its 2022 membership meeting at the Kung San site of NPC

Horizontal Alliance and Co-Building of Recycling Chain

NPC clearly knows that in order to carry forward the ESG sustainable life circle, it needs joint participation by the industry and public to build the "Sustainable New Life." Given this, NPC participates in the horizontal alliance of the recycling chain and works with renowned manufacturers at home and abroad to make the good things of "1+1 achieve sustainable and infinite common good" continue to happen and let every corner of society be full of sustainable influence. The in-progressed cases are as follows:

- Work with Taiwan's well-known outdoor sports brand "ATUNAS", and other like-minded partners from old clothes recyclers, fabric factories, and designers to build the first circular textile demonstration supply chain domestically.
- Work with President Chain Store Corporation to build a "Bottle to Bottle" PET bottle recycling system in Central Taiwan, South Taiwan, and offshore islands and establish a green circulating supply chain.

Media Sharing

Since 2021, NPC has agreed to be interviewed by multiple media to make outsiders understand the Company's primary practices in response to climate change. In addition to promoting energy-saving and carbon-reduction projects in production plants, NPC uses the ESG carbon-reduction cycle strategy on operations and products and invites customers and end consumers to respond to the sustainable cycle, care for the surrounding living environment, and create a sustainable life circle jointly. Based on the same concept, the SAYA brand of NPC provides diversified products, such as "dope dyed PET" and "recycled PET resins". And SAYA will continue to invest in R&D to carry forward the sustainable value.

NPC Chairman Chia-Chau Wu personally introduced the Company's approaches and accomplishments in promoting sustainable products

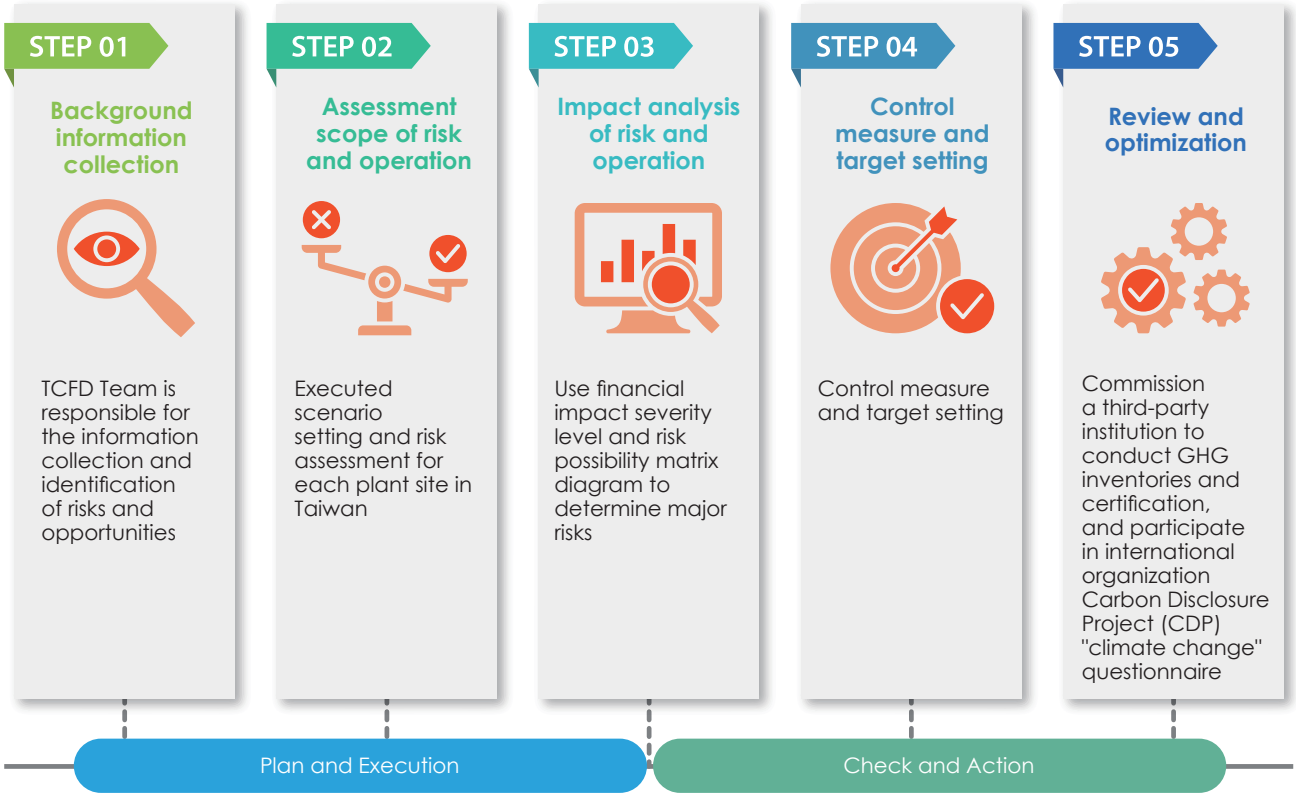
3 Management of Climate Change Risks and Opportunities

3.1 Risk and Opportunity Management Process

NPC has established comprehensive risk management culture to implement risk management. In addition, on December 16, 2020, the Board of Directors approved the "Risk Management", and climate change is explicitly specified as one of the risk items of the Company. Furthermore, in conjunction with currently implemented ISO 14001 environmental management system, risk management procedures such as "identification, analysis and evaluation, control and handling, supervision and review, information communication and report" are incorporated into climate risk management and integrated into the Company's overall risk management mechanism.

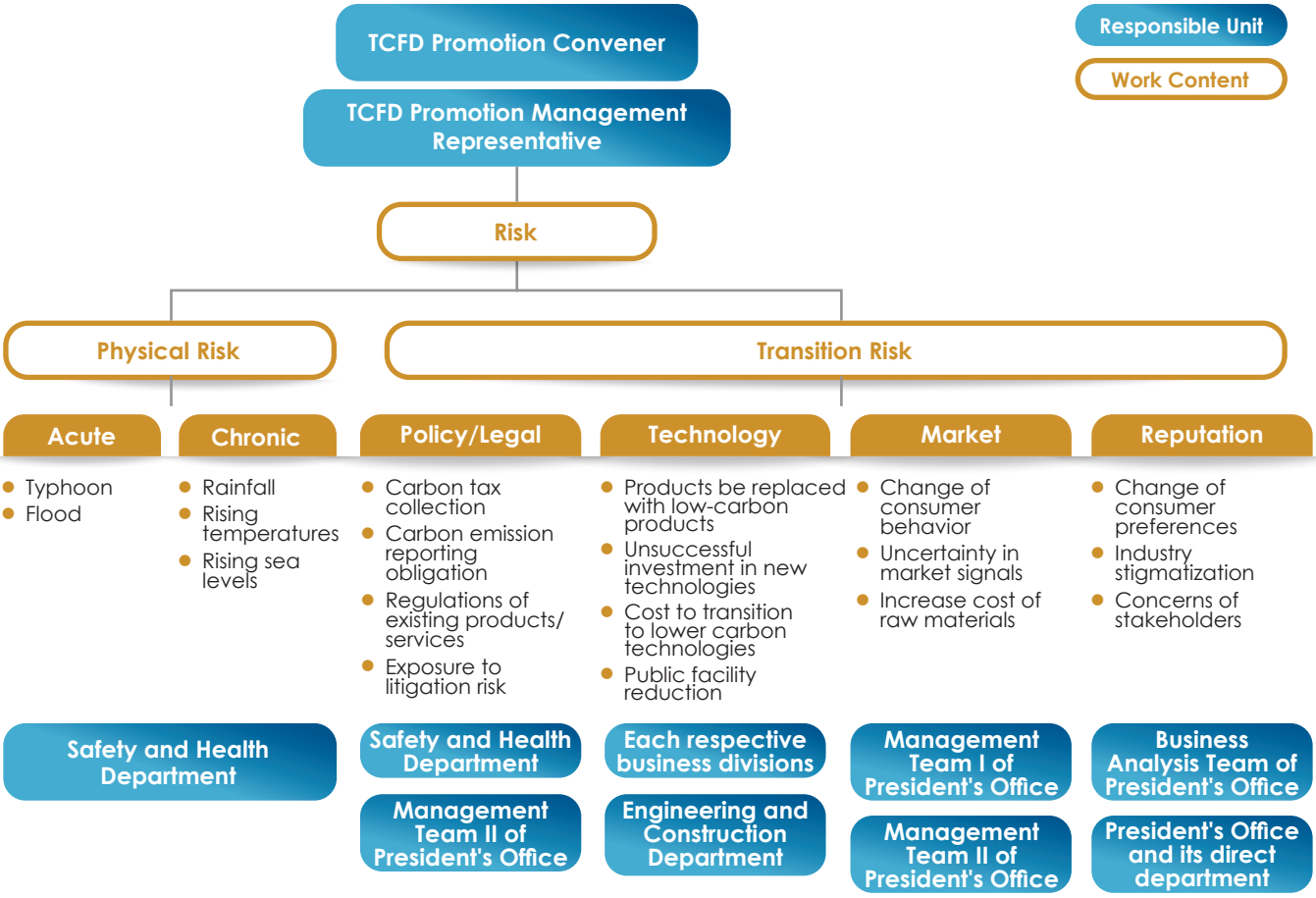
TCFD Team of NPC is composed of the President's Office, direct departments and business divisions and refers to the item attributes such as transition risks, physical risks, and transition opportunities from Recommendations of the Task Force on Climate-related Financial Disclosures (June 2017). In addition, the work is divided according to authorities and functions. Each year, the TCFD Team collects, analyzes, and summarizes information on climate change and energy-related risks and opportunities. The climate change-related risks and opportunities are identified and assessed according to ISO 14001 risk identification procedure, following which the "ESG Promotion Team" and the "Energy Saving and Carbon Reduction Promotion Team" establish targets and response strategies according to the identification result. The promotion outcome is also inspected periodically and reported to the "ESG Promotion Organization", in order to facilitate the management to monitor and track the implementation effect of the projects.

NPC's TCFD Risk and Opportunity Identification Process

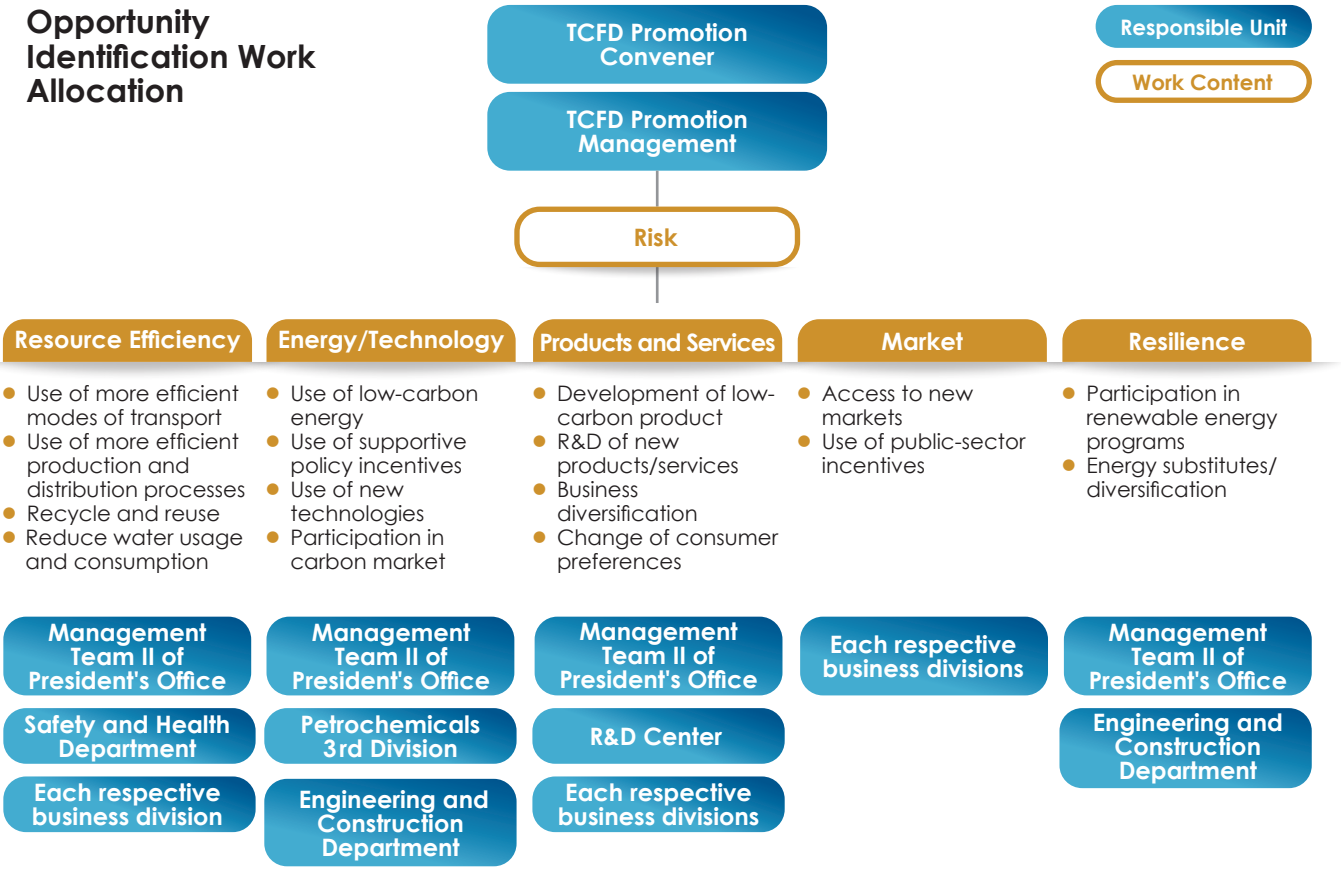


NPC's TCFD Risk and Opportunity Identification Work Allocation

Risk Identification Work Allocation



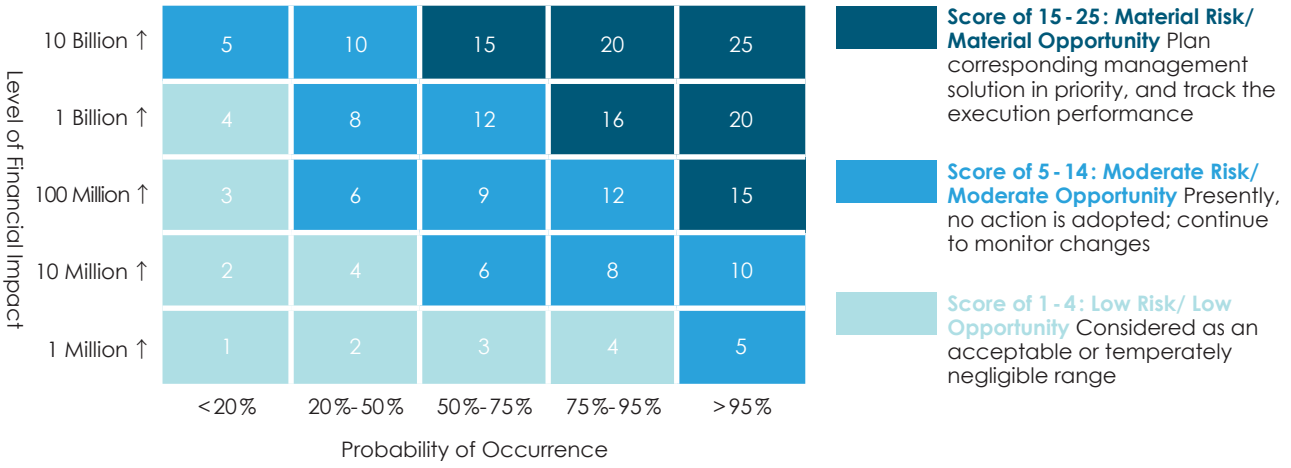
Opportunity Identification Work Allocation



3.2 Risk and Opportunity Identification

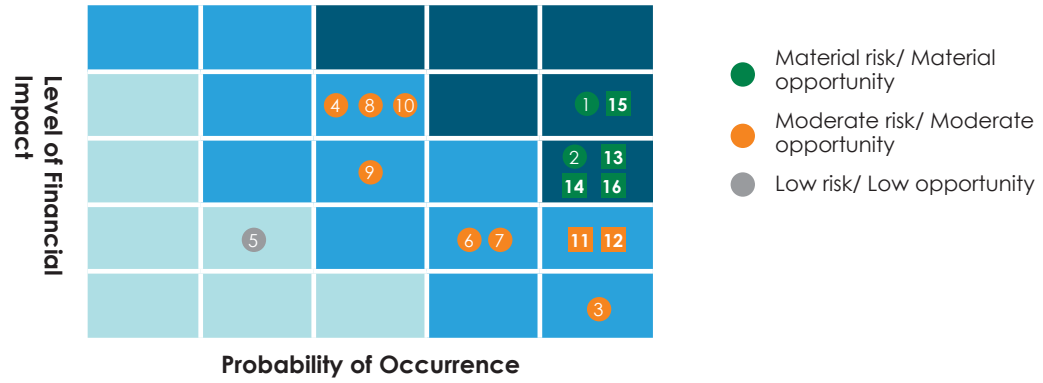
For the climate change risk identification method, NPC follows the Recommendations of the Task Force on Climate-related Financial Disclosures (June 2017) and takes transition risks (policy and legal/market/technology/reputation), and physical risks (chronic and acute) into consideration when establishing risk scenarios. Furthermore, risks are described and explained for possible events.

Factors like the occurrence probability of risks and opportunities and the level of financial impact are taken into consideration in the risk and opportunity matrix. The severity of financial impact and occurrence probability that risks and opportunities may have on NPC are divided into five levels and are scored respectively. The "Materiality Matrix" is as follows:



According to the results of the above risk and opportunity matrix, the risks and opportunities are classified as follows:
Score of 1–4 is defined as low risk/ low opportunity: Level of risk is considered as an acceptable risk or negligible.
Score of 5–14 is defined as moderate risk/ moderate opportunity: No action is required at this time, and changes are continuously monitored.
Score of 15–25 is defined as material risk/ material opportunity: Planning of the corresponding management strategy is prioritized and the performance outcome is tracked periodically.

After the climate change risks and opportunities are assessed by each unit, the risks and opportunities are compiled into a risk-opportunity matrix correspondingly. The risk-opportunity matrix is shown in the figure below:



Transition Risk

1. Policy/legal - Risk of collection of carbon tax
2. Policy/legal - Risk over Clauses for Large Electricity Consumers
3. Policy/legal - Collection of water conservation charg
4. Market - Change of customer behavior
5. Company reputation - Causing negative feedback

Physical Risk

6. Chronic- Increase of temperature
7. Chronic- Shortage of water resource
8. Acute- Acute - Extreme climate (heavy rainfall/flooding)
9. Acute- Extreme climate (storm/ typhoon)
10. Acute- Extreme climate (water shortage/drought

Opportunity

11. Energy/technology - ①Low-carbon energy transformation; ②Carbon capture, storage and utilization
12. Resource efficiency-circular economy and reduction of cost
13. Resource efficiency-improvement of energy utilization efficiency
14. Product and service – R&D on Energy-saving produc
15. Product and service - Development of recycled products
16. Market - Diverse business operation

3.3 Summary Table of Impact of Risks and Opportunities on the Company

No.	Analysis of Current Risk or Opportunity (Possible impact on the company)	Issue Category	Risk/ Opportunity Level	Response Strategy/ Case Sharing
Legal policy - Risk of collection of carbon tax				
1	1. Domestically - Legislative Yuan passed the change of the name from "Greenhouse Gas Reduction and Management Act" to the "Climate Change Response Act" after the final reading in January 2023. NPC will be charged the carbon tax. According to the trial calculation of carbon emissions in 2022, it is expected to increase operating costs and pose an impact on the standalone operating revenue by 0.28%~0.83%. 2. Overseas - The "CBAM" issued by EU in July 2021 is expected to be implemented officially in 2027. In 2022, NPC's export sales to the EU accounted for about 1.62% of the consolidated operating revenue, which posed a minor impact, and the Company has promoted various carbon reduction measures proactively to mitigate possible tax impacts.	Transition risk/Policy and legal	Material risk	1. Continue to promote the four main carbon reduction strategies of "Low carbon energy transformation". 2. Promote low-carbon manufacturing technologies: Continue to adopt optimal and feasible control technologies and process optimization, in order to reduce greenhouse gas emissions of products, and to promote the research and development of eco-friendly products. 3. Increase energy-saving improvement benefits: Continue to promote various water-saving and energy-saving improvement projects. Through the assistance of AI technology, find reduction solutions, improve raw material conversion rate, and reduce unit consumption. 4. Energy conservation and carbon reduction achievement case sharing: Encourage participation in internal and external evaluation and demonstration tours, learn from outstanding case examples, provide incentives timely, and increase employees' carbon reduction awareness and knowledge.
Legal policy - Risk over Clauses for Large Electricity Consumers				
2	Taiwan's "Renewable Energy Development Act (Clauses for Large Electricity Consumers)" came into action in 2021. It is necessary to install 10% of the contracted capacity (or 8% within three years) of renewable energy power generation facilities, storage facilities, or buy renewable energy certificates within five years; otherwise, monetary substitution must be paid. The contracted capacity of 157,655 KW of electricity consumed by NPC is greater than the 5,000 KW required by law. Additionally, based on calculations derived from NPC's contracted capacity for electricity consumption, the monetary replacement contributes to about 0.09% of the Company's revenue.	Transition risk/Policy and legal	Material risk	Prior to 2023, NPC intends to finish the construction planning of the first solar power producing facility. In order to meet regulatory requirements, the Xingang Plant, Chiayi Plant, and Mailiao Composting Plant have solar power production systems of 15,536 KW installed on the facility roofs. This represents 9.9% of the electricity consumption contract capacity.
Legal policy - Collection of Water Conservation Charge				
3	1. Ministry of Economic Affairs promulgated the "Regulations on the Water Conservation Charge" in January 2023. As of February, the large water consumers who consume water of more than 9,000 degrees in a single month during the dry season will be levied the "water conservation charge" at NT$ 3 per degree, provided that if the recovery rate reaches the announced standard, the rate may be reduced by NT$2 or NT$1 as favorable treatment. 2. In terms of the actual water consumption and self-estimated water recovery rate of NPC for November 2021 to April 2022, corresponding to the water consumption rate, and by taking into account the price reduction for seawater desalination equipment of Mailiao factory premises, the water conservation charges are expected to account for 0.001% of the standalone operating revenue.	Transition risk/Policy and legal	Medium Risk	NPC promotes the water resource management and monitors the application of water resource at various factory premises regularly, in order to promote various water-saving measures. The key cases are stated as follows: 1. The seawater desalination plant project of Mailiao Industrial Complex (construction by Formosa Petrochemical Corporation) will ensure the water source of the Mailiao factory premises upon completion of the project. 2. Jinxing Plant uses effluent water of Taoyuan Norther District Water Resource Recycle Center as the process cooling water. 3. Implement circular economy, and promote various water-saving improvement projects including recycling rainwater. 4. Apply AI technology to improve water resource utilization efficiency.
Market - Change of customer behavior				

No.	Analysis of Current Risk or Opportunity (Possible impact on the company)	Issue Category	Risk/ Opportunity Level	Response Strategy/ Case Sharing
4	To satisfy the demands of international brand customers, recycled raw materials are used to replace the virgin pellets manufactured from petrochemical raw materials, or eco-friendly low-carbon raw materials are used. Consequently, the demand for the existing products decreases, and in the future, the risk of a decree in revenue may occur in the future. Presently, some of the products of the Plastics Department III, Department of Fibers and Department of Electronics of NPC have turned to adopt eco-friendly or recycled materials, such that the product profile change occurs. By using the fiber product as an example, customers of Adidas and NIKE request the use of recycled PET pellets to replace the virgin pellets, such that the production volume of the virgin pellets decreases. According to the statistics, the potential risk of revenue decreases due to "Change of customer behavior" is approximately 0.85 % of the Company's revenue.	Transition risk/Market	Medium Risk	In order to respond to customers' needs for low-carbon environmental protection or recycled products, NPC combines e-commerce and online marketing to expand high-end markets and emerging markets, such as the United States and Japan. Accelerating research and development towards manufacturing services, the primary practices are stated as follows: 1. Since 2018, NPC has promoted green solutions and developed eco-friendly products in terms of eight aspects including "energy efficiency," "emission reduction," "waste reduction," "water saving," "non-toxic," "healthy," "recycled products" and "safety," and enhanced technologies and relevant applications. Meanwhile, the green product categories (Type I and Type II environmental labels) were expressly defined in 2021. NPC demands that each of its business departments develops and promotes the products. 2. In response to market demand, NPC researches and develops products for new uses, made of new materials, and in line with the environmental protection trend and special specifications. 3. Strive to engage in cooperation of production and sale, and strategic alliance, with major manufacturers at home and abroad, e.g. PRESIDENT CHAIN STORE CORPORATION and ATUNAS, in order to co-build the "Sustainable Recycling Circular Value Chain." 4. Expand and improve the source of materials for recycled products to stabilize production capacity.
Company reputation - Causing negative feedback				
5	In response to FSC's Sustainable Finance 3.0, investment institutions tend to evaluate clients' ESG performance during the evaluation of investment and loan extension. If a business fails to meet the ESG sustainability requirements, its reputation can be negatively affected, and financial institutions may increase the interest rates on loans or may even refuse to provide loans to industries of high carbon emissions. According to the assessment of NPC, if the sustainability linked loan signed with the financial institutions fails to reach the target, the loss of interest benefit is expected to account for approximately 0.01 %- 0.04 % of the Company's revenue.	Transition risk/ Reputation	Low Risk	NPC actively participates in domestic and foreign energy saving and carbon reduction advocacies. To demonstrate the execution outcome and effort, the promotion case examples are summarized in the following: 1. Participate in the international "Carbon Disclosure Project (CDP)" evaluation, "TCFD Advocacy", "Science Based Target initiative (SBTi)". 2. Improve the information disclosure and issue the ESG report and TCFD report each year. 3. In reference to the international rating standards, such as MSCI ESG, improve the Company's ESG performance (the MSCI ESG rating of NPC upgraded from BB to BBB in 2022). 4. Participate in the sustainability linked loan project of Mizuho Bank Japan and MUFG Bank.
Chronic-Increase of temperature				
6	Affected by climate change, the average temperature increases and thereby causes the increase of temperature, increase in consumption of the air conditioners at the Company's office premises and factory premises, and increase in water consumption. Meanwhile, NPC's operating cost increased whenever its water/electricity consumption increased by 1% in 2022. As a result, it caused the potential impact to the Company's revenue by 0.05%.	Physical risk/Chronic	Medium Risk	NPC plans to promote the following improvement measures in order to deal with the potential impact posed by the increase in average temperature: 1. Replace old air-conditioning equipment, use high-efficiency energy-saving models, and have new factory premises adopt the green building specifications and design. 2. Promote the factory premises to pass the certification of ISO 50001 energy-saving management system, and 14 factories have obtained the certification until 2022. 3. Continue to promote circular economy and apply AI technology to improve the efficiency of water-saving and energy-saving projects, such as optimization of the chilled water host system.
Chronic-Shortage of Water Resource				

No.	Analysis of Current Risk or Opportunity (Possible impact on the company)	Issue Category	Risk/ Opportunity Level	Response Strategy/ Case Sharing
7	According to Taiwan's climate change scientific report, the warming scenario will be more and more serious. For example, the RCP 2.6 scenario forecasts that rainfall will decrease by 2%, and as affected by the global climate change, the original rain season is changed, and becomes shorter, so as to cause a shortage of water resources. Further, based on the estimation of the cost incurred by NPC to carry water from other areas with abundant water sources, the potential cost increase might account for 0.03% of the Company's revenue.	Physical risk/Chronic	Medium Risk	In order to develop the water resource, NPC plans to promote the following measures: 1. Conduct the water resource risk assessment and management each year. 2. Implement measures to expand sources of water and practice various water-saving measures, e.g., desalination plants, reclaimed water, rainwater, process water recovery and reuse, etc. 3. Promote the sharing and integration of water resources across factory premises and companies.
	Acute - Extreme climate (heavy rainfall/flooding)			
8	When taking 1986~2005 as the base period to predict the recent (2016~2035) climate conditions of the plant area, the RCP4.5 and RCP8.5 trajectories indicated that the maximum continuous rainfall is 7.5-7.7 days, 1078 mm-1085 mm, and the total rainfall has increased by 15% compared to the average. Assuming that NPC's factory premises are flooded as a result of heavy rain/flood and need to reduce production/stop work in the worst case, the potential impact posed there for might account for 0.82% of the Company's revenue.	Physical risk/Acute	Medium Risk	NPC periodically monitors and manages the energy consumption and water consumption of each plant site a monthly basis, and has established strategies for mitigating the climate change risk. The key case examples are described in the following: 1. Renwu Plant is installed with the flood control pumps, and inspection, repair and maintenance are performed periodically, in order to reduce the occurrence of flooding in the plant site due to heavy rainfall. 2. For Mailiao Plant, major desilting and dredging operation is performed annually, in order to reduce the probability of flooding in the plant site due to heavy rainfall.
	Acute - Extreme climate (storm/typhoon)			
9	Using the base year from 1986 to 2005 to predict the climate condition in the plant from 2016 to 2035. The RCP8.5 scenario predicts the number of typhoons in Taiwan will decrease by 15%; the rate of strong typhoons will increase by 100%, and the typhoon precipitation will increase by 20%. Assuming that NPC is attacked as a result of a storm or super typhoon and it is necessary to park safely at the factory premises to avoid hazards to labor safety and process and to reduce production/stop work in the worst case, the potential impact posed therefor might account for 0.27% of the standalone operating revenue.	Physical risk/Acute	Medium Risk	In order to mitigate the risks and hazards caused by storm or typhoon to the Company, NPC plans to promote the strategies which are outlined as follows: 1. Set up typhoon prevention groups, define the authority and division of labor, and conduct emergency response training to minimize the risk and hazards caused by strong typhoons to the utmost. 2. Improve the infrastructure of the factory premises, and also the protection of doors and windows before any typhoon arrives. 3. Maintain the insurance for the Company's assets and equipment to mitigate the impact posed by accidents.
	Acute - Extreme climate (water shortage/drought)			
10	The period of 1986~2005 is used as the base period to predict the climate condition of the plant site in the recent period (2016~2035). It is predicted that there will be two months of water shortage or drought every year. Based on the assumption of water shortage or drought that may cause the worst scenario of factory production reduction/suspension of operation, NPC estimates that the potential impact on the Company's revenue is approximately 0.82%.	Physical risk/Acute	Medium Risk	NPC periodically monitors and manages the energy consumption and water consumption of each plant site a monthly basis, and has established strategies for mitigating the climate change risk. The key case examples are described in the following: 1. Corporate Mailiao Industrial Complex 100,000 tons seawater desalting plant project (construction by Formosa Petrochemical Corporation) 2. Jinxing Plant uses effluent water from Taoyuan Norther District Water Resource Recycle Center as the process cooling water. 3. Implement circular economy and promote various water-saving improvement projects proactively, e.g., construction of the cooling water tower discharge water recovery system. 4. To cope with the potential risk of production suspension due to water shortage or drought at the plant site, Renwu Plant has excavated 2 anti-drought wells, and an amount of 2,300 M^3/day water supply can be increased. 5. Cooperate with government departments to develop the subsurface water of Donggang River and Gaoping River, in order to stabilize the water source supply. In addition, assess the development of Huliao River high ammonia nitrogen wastewater treatment, in order to acquire water rights via the reclaimed water exchange method.

No.	Analysis of Current Risk or Opportunity (Possible impact on the company)	Issue Category	Risk/ Opportunity Level	Response Strategy/ Case Sharing
Energy/technology - low-carbon energy transformation ; Carbon capture, storage and utilization				
11	In response to the international climate transition trend, most governments commit to the goal of net-zero emissions. When planning to pursue the carbon reduction roadmap for "Carbon Neutrality in 2050," NPC invested in the low-carbon energy transformation by investing capital in the transformation of coal-burning/ fuel-burning boilers to gas-burning boilers. The R&D and investment in carbon capture technology are more important. Therefore, it is expected to reduce carbon tax and increase operating revenue. The potential impact posed therefor might account for 0 .05% of the Company's revenue.	Opportunity/ Energy and technology	Medium opportunity	NPC has promoted the following projects recently: 1. Continue to promote the low-carbon transformation projects of Shulin and Chiayi public factories, and the conversion of a 40-ton oil-fired steam boiler in the Gong San factory to gas. 2. The CO_2 generated during the process is converted into liquid CO_2 via carbon capture technology for further sale to the downstream customers. 3. Continue to control the commercialization of technologies, such as "flue gas capture," "green algae," and "hydrogen energy," and implement them in a timely manner. 4. Work with academic institutions and other industrial, government, and academic circles to develop & research, and implement emerging carbon-negative technologies.
Resource efficiency-circular economy and reduction of cost				
12	The 4R circular economy principles- ① Reduce, ② Reuse, ③ Recycle, ④ Renew, constitute an important part in NPC's promotion of sustainable circular value chain. NPC recycles and reuses the waste gas and waste goods generated from the process, and also takes into account the product value chain and life cycle to make the improvement from three aspects, namely "reduction of raw material consumption," "improvement of process" and "reduction of transportation in the supply chain," to reduce production costs and take into account the sustainable utilization of resources at the same time. It is expected to reduce the materials and processing costs. The impact posed therefor accounts for 0.02% of the Company's revenue.	Opportunities/ Source of Energy	Medium opportunity	The key cases of NPC to promote circular economy are stated as follows: 1. Continue to expand the recycling of specially recommended products in the factory and PIR recovered outside the factory, including recycling and reuse of PET specially recommended products, PP recycled pellets, and MLCC release films. 2. Increase the proportion of waste resources for recycling and reuse, such as cases of reuse of glass fiber leftover materials, sandblasting waste, and SMC waste glass fiber. 3. Improve the proportion of recycled materials used to reduce carbon emissions at the raw materials end.
Resource efficiency-improvement of energy utilization efficiency				
13	In order to improve the utilization efficiency of resources and achieve the goal for water conservation and energy conservation, NPC is pursuing "Carbon Neutrality in 2050" steadily, and promoting various water-saving and energy-saving improvement projects, including AI applications and implementation of advanced energy-saving equipment, proactively, in order to mitigate the carbon emission. The effect posed by the improvement is expected to account for 0.38% of the Company's revenue.	Opportunities/ Source of Energy	High opportunity	The measures promoted by NPC to improve the utilization efficiency of resources are stated as follows: 1. Apply emerging technologies such as AI to reduce the raw materials consumed in the process and reduce the cost of materials. 2. Promote energy-saving improvement projects: 412 energy-saving improvement projects were completed in 2022, and CO_2 reduction by about 126,830 tons/year. 3. Promote the water-saving improvement projects: In 2022, the water-saving effect is expected to be 1,327 tons/day. 4. Promote the process technology improvement, and replace the traditional street lamps and office lamps of the factory premises in North Taiwan with LED lamps.

No.	Analysis of Current Risk or Opportunity (Possible impact on the company)	Issue Category	Risk/ Opportunity Level	Response Strategy/ Case Sharing
Product and service - Energy saving product research and development				
14	In recent years, due to the global impact of extreme climate, temperature continues to rise, and consumers' demand for low-carbon and energy conservation also increases. Accordingly, there are potential business opportunities for energy-saving and heat insulation products. NPC continues to develop and expand green or eco-friendly products of heat insulation paint and airtight windows, etc. Accordingly, the revenue is expected to increase, and the potential impact is approximately 0.34% of the Company's revenue.	Opportunity/ Product and service	High opportunity	NPC has developed numerous green products. In addition to continuous investment in research and development, NPC will also follow the consumer market trend to expand green business opportunities. The key case examples are summarized in the following: 1. Cooler Paint (heat insulation paint): The product is verified by the National Taiwan University of Science and Technology, and it is able to save 31.8% of air conditioning energy consumption in summer. 2. Energy-saving airtight window: Low thermal conductivity, heat insulation being 1/1250 of aluminum material, and capable of saving energy consumption by more than 20%. 3. ICE COOL (heat insulation paper): Use non-toxic material, and equipped with the characteristics of anti-explosion, high light transmittance and high IR, UV isolation, capable of reducing energy consumption. 4. Dry-type transformer: The energy efficiency ratio is 99.2, higher than the CNS value, 98.8, by 4%.
Product and service - Development of recycled products				
15	In order to extend the product life cycle, make it easier to reuse, repair and recycle the product, and use recycled materials to replace the main raw materials as practical as possible, various countries' governments have expressly set the goal for beverage containers made of recycled materials. Meanwhile, major international brand manufacturers, such as NIKE, IKEA and HP, have set the target schedule for the use of recycled materials. In line with the industrial trend, NPC is promoting the recycling of products, such as PET bottles, eco-friendly film and fabric, proactively. It is expected to increase the operating revenue. The potential impact posed therefor accounts for about 2.75 % of the Company's revenue.	Opportunity/ Product and service	High opportunity	The recycling products developed by NPC are outlined as follows: 1. Continue to expand the PCR products purchased externally, including PET products, eco-friendly film products, APET tape products and fabric, etc. 2. Develop the sources of recycled materials proactively to ensure the safe supply of raw materials. 3. Develop modified polyester pellets and packaging films made of a single material to facilitate following recycling and reuse. 4. Promote recycled products under NPC SAYA brand.
Market - Diverse business operation				
16	Many countries around the world have set a timetable to implement fuel bans from 2020 to 2040, in order to practice the goal of net-zero carbon emission. Local consumers can only procure electric vehicles or fuel cell electric vehicles (FCEV). The policy will drive the booming development of the industry chains, including electric vehicles, highway charging stations, hydrogen fuel infrastructure, and remodeling of old power grids. NPC estimates that the amount of copper foil used in lithium batteries will benefit from the rapid increase in market demand, and the sales volume will increase accordingly. Furthermore, NPC will also research and develop the use of biomass materials to replace the products of petrochemical raw materials. The potential impact accounts for about 0.37 % of the Company's revenue.	Opportunity/ Market	High opportunity	For the external business environmental change due to climate change, to enhance risk resilience, NPC actively seeks and develops potential transition opportunities. The main case examples are summarized in the following: 1. Actively engage in the research and development of electric vehicle industry-related products. For instance, copper foils are initially used in electrical and electronic industries, and NPC has consecutively developed copper foils of high heat resistance and high strength function. In recent years, some of the copper foils can be further used as the electrodes of the lithium batteries of electric vehicles. Accordingly, the copper foil production line is expanded. 2. Develop the "multi-axial fiberglass fabric for wind power" to promote the application market of wind power windmill blades.

3.4 Climate Risk Scenario Analysis

According to the TCFD's recommendations, NPC adopts the worst-case scenarios for the transition and the physical risks and includes the analysis results in the strategic resilience assessment.

Regarding the transition risk, NPC refers to the IEA WEO 450 Scenario (2016) and the Nationally Determined Contribution (NDC) target set by each manufacturing site. In Taiwan's Intended Nationally Determined Contribution (INDC) report (2015), the greenhouse gas emissions are set to be reduced by 50% by 2030 based on the business-as-usual (BAU) scenario. Under such scenario, the power generation structure in 2025 will be 20% for renewable energy, 30% for coals, and 50% for gases. After the above scenarios are implemented, the impact on NPC is analyzed in terms of market, technology, reputation, finance, and operations in the future.

As for the physical risk, we refer to Climate Change Knowledge Portal, Taiwan Climate Change Projection Information and Adaptation Knowledge Platform (TCCIP) and National Science and Technology Center for Disaster Reduction to estimate temperature rise, precipitation, flooding and drought conditions of 2020~2040 for scenarios such as RCP2.6, RCP4.5 and RCP8.5.

Transition Risk

- IEA WEO 450 Scenario
- National determined contribution (INDC)

2030 greenhouse gas emission is estimated based on the business as usual (Business as Usual, BAU) with reduction of 50%

Physical Risk

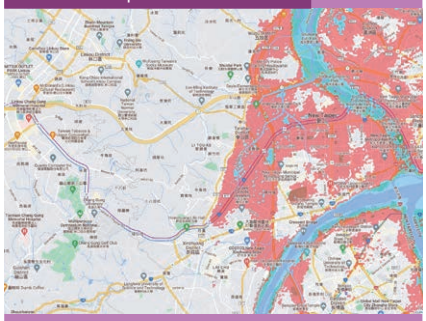
TCCIP、Climate Central、Carbon Brief (RCP2.6、RCP4.5、CP8.5)

Predicted conditions includes 2020-2040 sea level rise, area below-tidal-line, area below the 2050 flood line, temperature rise, average drought length, rainfall variability, maximum number of consecutive days of precipitation and total precipitation

Plant Site	New Taipei	Taoyuan	Yunlin	Chiayi	Kaohsiung
Scenario Analysis	The extreme climate risk assessment is mainly conducted using RCP 8.5 scenarios, with some of the RCP 2.6 and RCP 4.5 scenarios				
Sea level rise (RCP 8.5)	Partially impacted	No impact	Impacted	No impact	No impact
Area Below-tidal-line (risk of flooding) (RCP 8.5)	No impact	No impact	Partially impacted	No impact	No impact
Area Below the 2050 flood line (RCP 8.5)	No impact	No impact	Impacted	No impact	No impact
Temperature rise (RCP 8.5)	1.58	1.63	2.59	2.57	2.54
Average drought length (RCP2.6)	2 months	2 months	2 months	2 months	2 months
Rainfall variability (RCP 8.5)	5%-10%	5%-10%	10%-15%	5%-10%	10%-15%
Maximum number of consecutive days of precipitation (RCP 4.5-8.5)	11.6 days - 11.8 days	9.5 days - 9.7 days	5.9 days - 12.2 days	5.9 days - 12.2 days	12.3 days - 12.4 days
Total precipitation (RCP 4.5-8.5)	2,291 mm-2,306 mm	1,807 mm	1,017 mm-1,041 mm	1,661 mm-1,720 mm	1,755 mm-1,817 mm

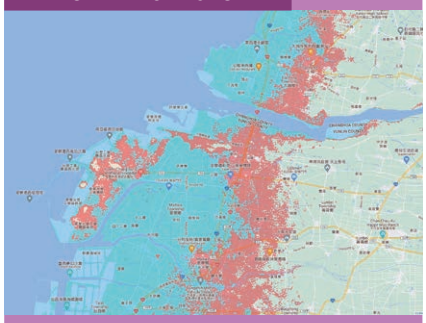
Sea Level Rise

New Taipei Plant Site

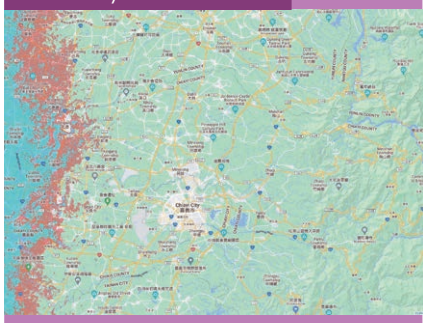


Taoyuan Plant Site

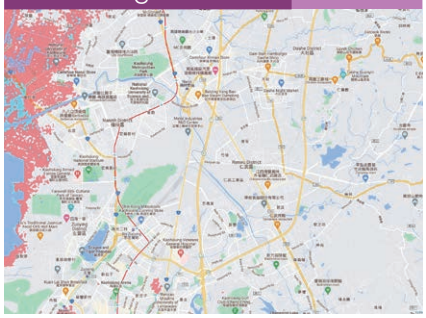
Yunlin Plant Site



Chiayi Plant Site



Kaohsiung Plant Site

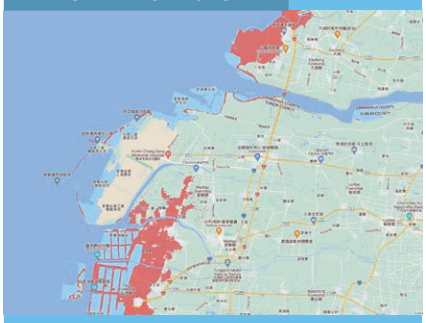


Area Below-Tidal-Line

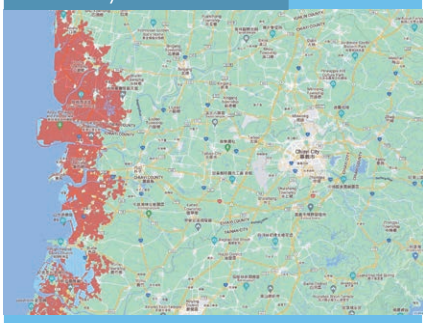
New Taipei Plant Site

Taoyuan Plant Site

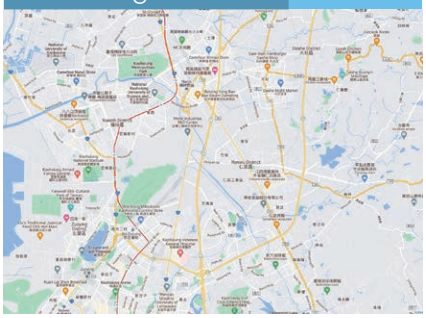
Yunlin Plant Site



Chiayi Plant Site



Kaohsiung Plant Site

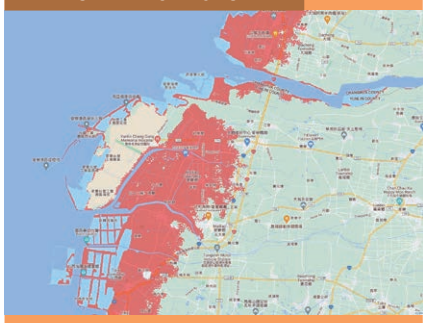


Area Below the 2050 Flood Line

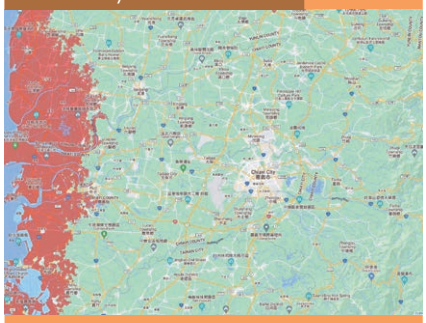
New Taipei Plant Site

Taoyuan Plant Site

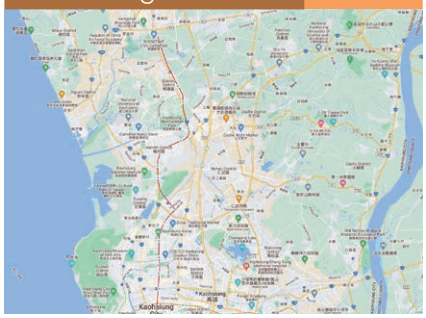
Yunlin Plant Site



Chiayi Plant Site



Kaohsiung Plant Site



RCP 8.5 Scenario Analysis of Future Flood Risk Estimation

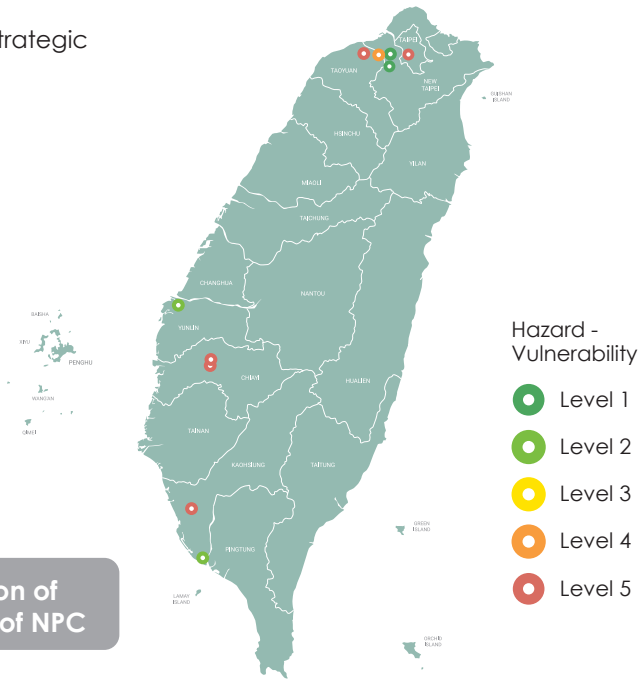
Level of Flooding Risk Assessment

Flooding risk assessment of production site for strategic planning of the organization:
Low to Medium: 4 sites (44%)
Medium to High: 1 site (12%)
High: 4 sites (44%)

Low to Medium
44%

Medium to High
12%

High
44%



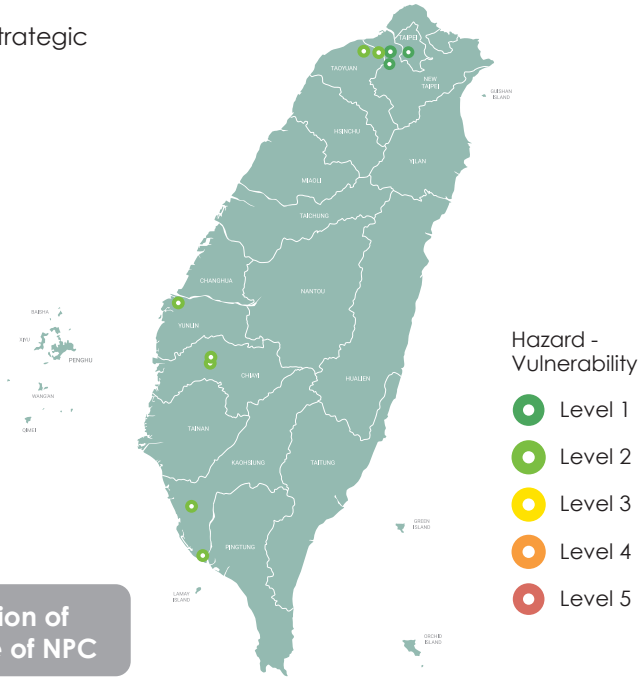
Risk Distribution of Production Site of NPC

RCP 8.5 Scenario Analysis of Future Drought Risk Estimation

Level of Flooding Risk Assessment

Drought risk assessment of production site for strategic planning of the organization:
Low to Medium: 9 sites (100%)

Low to Medium
100%



Risk Distribution of Production Site of NPC

4 Indicators and Targets

4.1 Carbon Reduction Absolute Targets and Emission Indicators

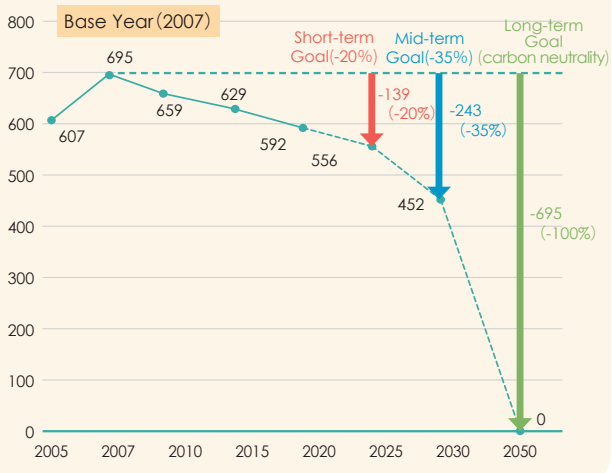
In order to ensure the accuracy of the greenhouse gas emission inventory values, the annual inventories of greenhouse gas emission of NPC are verified by SGS Taiwan, British Standards Institution (BSI), AFNOR and Bureau Veritas. Relevant data is disclosed in the "Environmental Protection" related chapters of the Sustainability Report to be used for the communication with stakeholders and internal performance review.

Carbon Reduction Target

Depending on different purposes, NPC has formulated three carbon reduction targets including "external commitment," "internal enhanced management," and "SBTi Targets." However, the most stringent reduction target will be adopted as the pursued one in order to ensure the carbon reduction path in each phase can achieve the aforementioned multiple targets and ultimately achieve the long-term goal of "carbon neutrality by 2050." The explanations for each indicator are as follows:

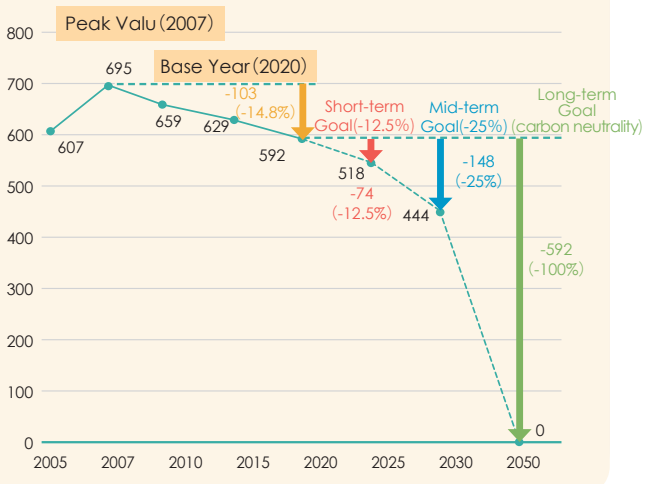
External commitment on carbon reduction targets:
"Scope 1 + Scope 2" is based on the year of 2007 (6.95 million tons CO_2e). The targets are to achieve a 20% reduction by 2025 (5.56 million tons CO_2e), a 35% reduction by 2030 (4.52 million tons CO_2e), and achieving carbon neutrality by 2050.

NPC Carbon Reduction Path - External Commitment on Carbon Reduction Targets



Internal enhanced management targets:
"Scope 1 + Scope 2" is based on the year of 2020 (5.92 million tons CO_2e). The targets are to achieve a 12.5% reduction by 2025 (5.18 million tons CO_2e), a 25% reduction by 2030 (4.44 million tons CO_2e), and achieving carbon neutrality by 2050.

NPC Carbon Reduction Path - Internal Enhanced Management Targets

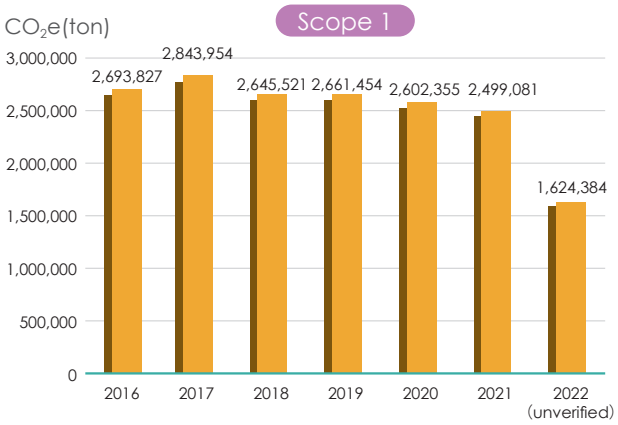


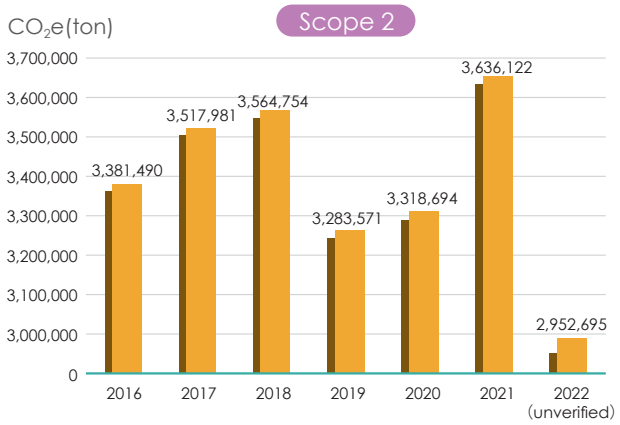
SBTi targets: formulated in accordance with SBTi's requirements for target applications:

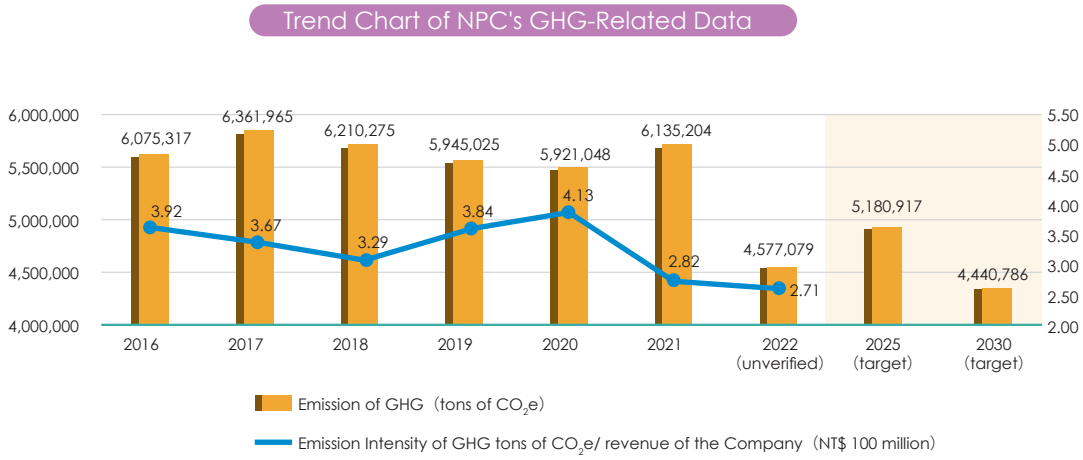
1. "Scope 1 + Scope 2" is based on the year of 2021 (6.14 million tons of CO_2e). Aims to achieve a 15% reduction by 2027 (5.22 million tons of CO_2e).
2. "Scope 3" is based on the year of 2021 targets a 7.4% reduction by 2027.

Historical Greenhouse Gas Emissions

Regarding NPC's 2022 greenhouse gas emission, since the power coefficient for Taiwan Power Company (Taipower) has not been disclosed yet as of June 2023 (before the publication of the TCFD report), the external verification operation cannot be completed. Therefore, we disclosed the result of internal inventory in advance. Based on our self-inventory, carbon emissions in 2022 decreased by 25.4% compared to 2021 and the emissions on a per-unit basis was a 3.9% reduction in 2022 compared to 2021.







Note1: Scope 1 refers to the direct emission of greenhouse gas.

Note2: Scope 2 refers to the indirect emission of greenhouse gas.

Note3: The data from 2016-2021 is verified by SGS, BSI AFNOR and Bureau Veritas. For 2022, the emission data is still under verification; therefore, the internal audit data (computer database) is used.

Note4: The GWP in the IPCC's Fourth Assessment Report (2007) is used to calculate the emission according to the EPA's regulations after 2016.

Besides continuing to promote the four major carbon reduction strategies and implementing various carbon reduction projects, it is crucial to integrate a carbon reduction culture, including energy conservation, emission reduction and circular economy, into each plant and department. NPC will fully exert our efforts to strengthen our capabilities and resilience in the transition to climate change.

4.2 Scope 3 Emission Indicators

NPC conducts an annual inventory on the relevance and emission data of Scope 3, and such data is verified by a third-party authentication unit. The total emission of 2021 was 14,868,344.95 tons CO_2e and the emission indicators are as follows:

Scope 3 Emission Source	Relevance	Emission (ton CO_2e)	Calculation Scope
Products and services purchased	Relevant and counted	11,614,602.4670	80% of raw material purchase amount
Capital goods	Relevant and counted	183,098.2255	Land, house and building, machine and equipment, transportation equipment, electrical (electronic) and computer equipment, boilers, utility equipment, general office equipment and miscellaneous equipment are included in the calculation.
Fuel and energy-related activities (not included in Scope 1 or 2)	Relevant and counted	841,288.6020	Include all fuel and energy activities, such as coal, pyrolysis low sulfur fuel oil, and natural gas
Upstream transportation and distribution	Relevant and counted	49,368.7872	80% of raw material purchase amount
Business waste disposal	Relevant and counted	2,306.7009	100% of the emissions generated by dealing with the business wastes
Business travel	Relevant and counted	91.5163	Emissions from air travel
Employee commuting	Relevant and counted	339.4610	Emissions from the transportation of employees between their homes and worksites
Upstream asset leasing	Irrelevant	-	Relevance of upstream asset leasing business is relatively lower
Downstream transportation and distribution	Relevant and counted	265,899.5616	All products (80%) are transported and sold to the gates of key customers
Processing of sold products	Relevant and counted	1,911,033.0005	The calculated processing methods refer to distillation and purification, polymerization; copper foil and glass filament processing, PCB processing, esterification products. The rests of products will be processed multiple times which cannot be analyzed in present.
Use of sold products	Irrelevant	-	Most of NPC's products are plastic products, and no greenhouse gas emission is generated from the use of the sold products
Ultimate disposition of the products sold	Relevant and counted	316.6329	Calculate the carbon emissions from the ultimate disposal of cartons and plastic packaging materials used in sold products
Downstream asset leasing	Irrelevant	-	Relevance of downstream asset leasing business is relatively lower
Franchising	Irrelevant	-	No franchising right
Investment	Irrelevant	-	The relevance for investment in business capable of generating additional greenhouse gas emission is relatively low

4.3 Other Indicators and Project Targets

Besides the statistical analysis of the greenhouse gas emission, NPC also disclose the energy saving execution status of steam, electricity and fuel related to the greenhouse gas emission. Please refer to NPC's 2022 Sustainability Report "3.2 Climate Action and Strategies" for details. In addition, the other energy saving and carbon reduction targets of NPC are as follows:

- **Construction of renewable energy facility:** To comply with the government's "Terms of Energy-Heavy Industries", NPC plans to install solar power generation facilities at the building roof of each plant site. The total capacity is around 58,365KW and is expected to account for 18.2% of Taipower's contracted capacity which is significantly higher than the 10% threshold stipulated by the government's terms of Energy-Heavy Industries.

By the End of 2023

- Installation plant site: Hsingkang Plant Site (Plant I of Rigid Film, Plant of Switchgear), Chiayi Plant Site, Mailiao Composting Plant
- Estimated Capacity: 15,536 KW
- Completed Project: Plant I of Rigid Film (195 KW) obtained the equipment registration approval in July, 2022 and renewable energy certificates in December, 2022. Plant of Switchgear (1,500 KW) with an investment of NT$70 million obtained the equipment registration approval in December, 2022 and the application for registration of renewable energy certificates is currently in progress.

Follow-up projects

- Installation plant site: Hsingkang Plant Site (Plant of Copper and other plant area), Mailiao and plant area in north and south
- Estimated Capacity: 42,829 KW

- **Transformation of coal-fired to gas-fired in utility plant:** NPC is now heading on the road to carbon neutrality and plans to cooperate with the requirements of local governments, promotes the transformation of coal-fired to gas-fired of utility plant in advance. NPC has invested NT$360 million in 2022 and completed improvement projects of Utility Plant in Shulin and Chiayi and transform the 40 tons coal-fired boiler to gas-fired in Kung Sang Site which is estimated to reduce 422,000 tons CO_2-e emission. The transformation schedule is as follows:

2021

- Plant Site: Transformation of coal-fired to gas-fired of utility plant in Linkou
- Actual Investment Amount: Around NT$258 million.
- Estimated Annual Carbon Reduction Benefits: Around 148,000 tons CO_2e/year

2022

- Plant Site: Transformation of coal-fired to gas-fired of utility plant in Shulin and Chiayi and transform the 40 tons coal-fired boiler to gas-fired in Kung Sang Site.
- Actual Investment Amount: Around NT$360 million.
- Estimated Annual Carbon Reduction Benefits: Around 422,000 tons CO_2e/year

In addition, NPC will continue to grasp the development trends in the domestic and international renewable energy markets and strategies for the transition to emerging energy sources, adopting the applications of zero-carbon timely to achieve the long-term goal of 2050 carbon neutrality.

Appendix

TCFD Disclosure Comparison Table

Aspect	Recommendations of TCFD	Correspond Chapter	Page
Governance	Describe the Board of Directors' oversight of climate-related risks and opportunities.	1.2 Organization and Responsibilities	P.5~9
	Describe management's role in assessing and managing climate-related risks and opportunities	1.2 Organization and Responsibilities	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.26
	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 Impact of Risks and Opportunities on the Company	P.11~23 P.27~31
	Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	3.4 Climate Risk Scenario Analysis	P.32~34
Risk Management	Describe the organization's processes for identifying and assessing climate-related risks.	3.1 Risk and Opportunity Management Process	P.24~25
	Describe the organization's processes for managing climate-related risks.	3.1 Risk and Opportunity Management Process	P.24~25
	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.24
Indicators and Targets	Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	4.1 Carbon Reduction Absolute Targets and Emission Indicators	P.35
	Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	4.1 Carbon Reduction Absolute Targets and Emission Indicators 4.2 Scope 3 Emission Indicators	P.35~37
	Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	4.3 Other Indicators and Project Targets	P.37~38

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