

2022

Task Force on Climate-Related Financial Disclosures Report



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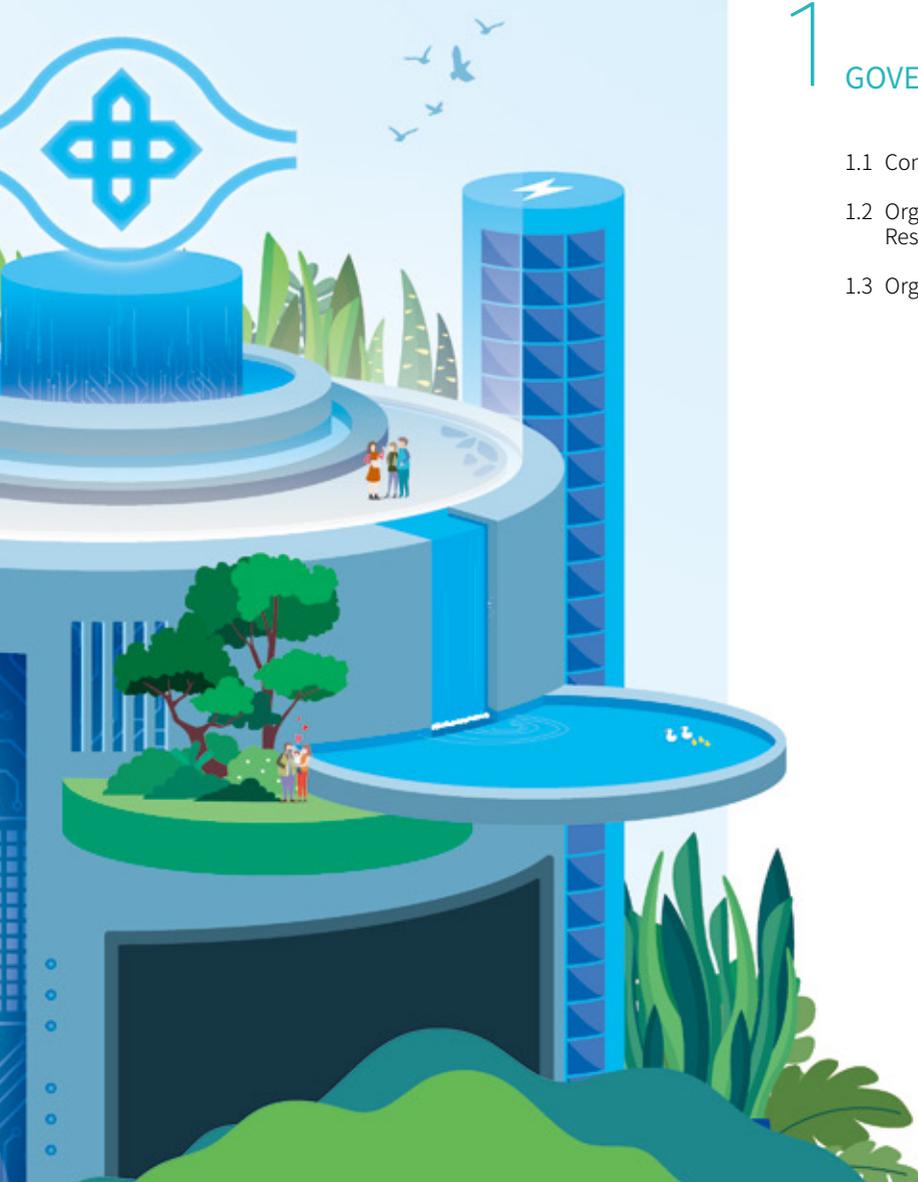
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Preamble

Global warming caused by the emission of greenhouse gases has brought significant risks to the growth of the global economy in recent years and will affect a greater number of businesses in the future. However, it may be difficult for investors to learn which companies are susceptible to risks of climate change, which companies are adequately prepared, and which ones are taking response actions. According to it is the reason why the Financial Stability Board (FSB) has assembled a special task force called the Task Force on Climate-related Financial Disclosures (TCFD), which has published its "TCFD Recommendations Report" in June 2017 after spending 18 months gathering opinions from business and financial leaders. The Recommendations Report provides businesses and investors with a complete and well-defined assessment framework for disclosing risks and opportunities associated with climate change and for reflecting risks in financial reports.

As a response to global trends, NAN YA PRINTED CIRCUIT BOARD CORPORATION (hereinafter referred to as "the Company") has disclosed risks and opportunities associated with climate change in accordance with the TCFD Recommendations Report and made a more reasonable and efficient allocation of capital in line with the Company's responsibilities and strategies to realize our vision toward low-carbon transition.



01

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Governance



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1.1 Company introduction

The Company started its operation in 1985. It was initially under the PCB Division of NAN YA PLASTICS and then became NAN YA PCB Co. Ltd. in 1997. The Company is engaged in the R&D, manufacturing and sales of printed circuit boards and IC substrates.

We are committed to meeting our customers' requirements on product quality through continuous process improvement and R&D, and to reducing production costs and improving efficiency through vertical integration within the Company. On the other hand, the Company has always believed that the only way to have a meaningful existence is to generate reasonable profits while making good contributions to society; therefore, we are committed to fulfilling our corporate citizenship by improving our performance in environmental protection, social responsibility and corporate governance.

1.2 Organization and Responsibilities

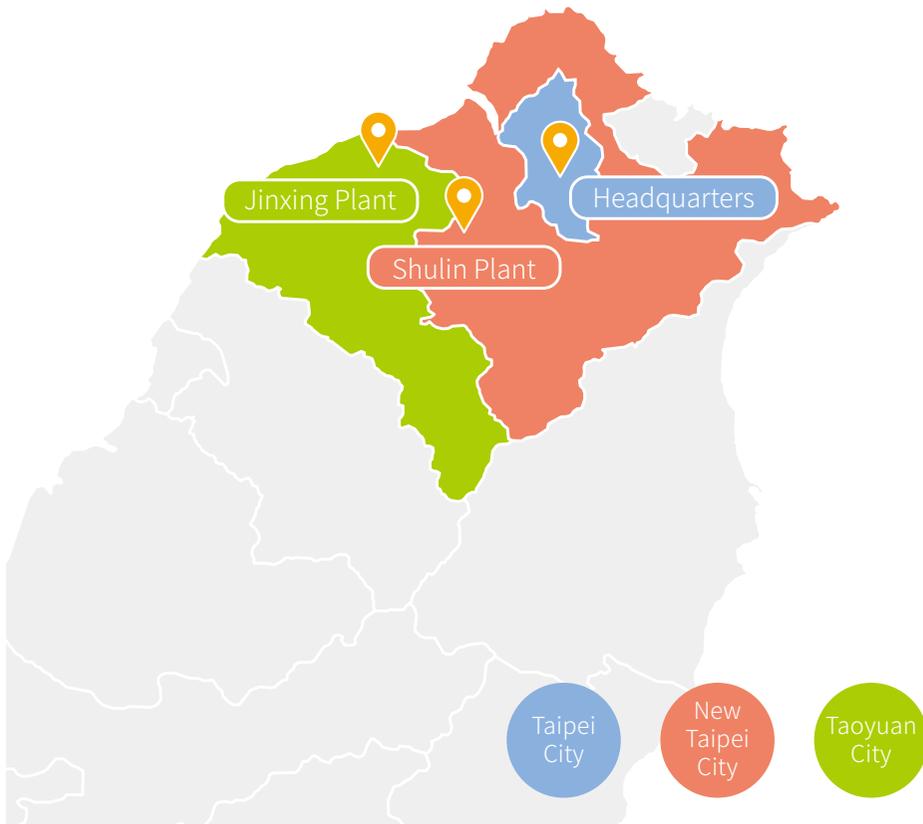
The Board of Directors is the highest governing body to make decisions and supervises the Company in response to climate changes. The Chairman of the Board is the leader and responsible for overseeing issues and matters related to climate change. In addition, to strengthen the Board's responsibility for supervising the ESG issues related to climate changes, the Company has established a Sustainable Development Committee under the Board of Directors in 2022 to be responsible for reviewing sustainable development policies, strategies, and management approaches and supervising the implementation of sustainable development initiatives.

The Company has set up an "ESG Promotion Team", chaired by the Chairman of the Board and the President of the Company is the Deputy Convener, under which supervisors are appointed to coordinate and promote the Company's sustainability programs and report to the Board of Directors on ESG related issues, in order to provide important guidance for the Company to formulate its sustainability policy.

The Company has set up separate task forces for promoting environmental protection, social responsibility, and corporate governance. The environmental protection task force is responsible for collecting and evaluating information related to climate change, formulating plans to respond to climate change, and implementing climate-related initiatives such as energy conservation and emission reduction, and reviewing and improving them on a regular basis.

1.3 Organizational Boundary

Name	Location
Headquarters	3F., No. 201-36, Dunhua N. Rd., Songshan Dist., Taipei City
Jinxing Plant	No. 338, Sec. 1, Nankan Rd., Luzhu Dist., Taoyuan City
Shulin Plant	No. 57, Weiwang St., Shulin Dist., New Taipei City



02

chapter

Strategy



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The Company is aware of its responsibility in environmental and climate protection challenges, and is actively promoting pollution prevention, energy saving, emission reduction and other environmental protection initiatives in response to climate change, and ensuring its sustainability and social responsibility by investigating the underlying causes and making continuous improvements.

Climate change is considered an important issue in the Company's business strategy and is one of the challenges we must address or the opportunities we must strive for. In response to the global trend of climate change and the Sustainable Development Goals (SDGs) 13 of the United Nations, the Company adopted the global temperature target of 2° C as the assumption and Taiwan's INDC as the scenario to analyze the impact on the Company's operations and to formulate short-, medium-, and long-term strategies to reduce the impact on the environment and to achieve sustainability in society.

2.1 Short-term strategies (0-3 years)

1. The Company improves energy efficiency, promotes energy saving and water conservation programs, introduces AI applications, and implements clean production processes to reduce the need for energy and water. The implementation status for 2022 is described below:
 - (1) In 2022, we completed 71 improvement projects related to save electricity by 24,951 kWh/day and reduce carbon emissions by 8,927 tons/year. For example, we have replaced air compressors, chiller, high efficiency public equipment, and upgraded the diesel forklift to an electric forklift.
 - (2) We completed 15 water-saving improvement projects in 2022 to save 271 tons of water per day by improving equipment, process operation, or water recycling to save water and improve water efficiency.
 - (3) The Company has implemented energy-saving improvements by simplifying and optimizing the manufacturing process to reduce electricity consumption, including eliminating the press-drying process for products with thickness over 600 um, reviewing the elimination of antioxidants in the roughing process to reduce the circulation line and stopping the pumping operation, and replacing the image transfer with internal secondary electroplating production; the process can be cut down by four stations.
 - (4) We replaced conventional lighting fixtures with LED lights or other energy-efficient fixtures to save electricity and reduce GHG emissions.

2. We have been actively purchasing products with the "Energy Saving, Water Saving, Environmental Protection, Carbon Reduction and Green Building Materials" labels in line with the government's green procurement policies. We have reported our procurement results to the government every year and have been receiving recognition from the environmental protection authorities. We participated in the voluntary GHG reduction project in the industry, and the results of our energy-saving measures have been reviewed by the Pure Green Foundation, a commissioning body of the Industrial Development Bureau, thus demonstrating the effective implementation of our sustainable development strategy. In addition, starting from 2022, the Company will compile quarterly statistics on green procurement products and the corresponding material numbers in the Company, and will indicate and control the requisition and procurement priorities in order to minimize the resources consumption, reduce the environmental pollution, and the impact on the earth.
3. In order to fulfill the corporate social responsibility and respond to government policies, the Company has reviewed the measures to directly subsidize employees to purchase new (replacement) electric motorcycles in 2022 at the amount equivalent to the amount subsidized by the government, and to cooperate with domestic electric motorcycle manufacturers to jointly implement carbon emission initiative. The amount of subsidy for the new purchase of electric motorcycles is \$10,000 and the amount of subsidy for the replacement of electric motorcycles is \$16,000.
4. To increase all employees' awareness of carbon reduction and include it in the business decision-making, the Company will implement an internal carbon pricing mechanism in 2022 with reference to the Climate Change Response Act in terms of carbon fees and charges for excessive carbon emissions. The related carbon cost is included in the internal income statement as the basis for the implementation of carbon risk management. In addition to continuing to formulate greenhouse gas emission reduction measures, the relevant information is a crucial indicator for performance evaluation, products and operations, and investment evaluation to maintain the Company's competitiveness.
5. Low-carbon energy transition: Plan and install renewable power generating equipment, and purchase or introduce wind power or solar energy and other green energy. The plan for 2022 is described below:
 - (1) The solar power system is scheduled to be installed on the roof of the second Shulin plant in Shulin District. The installation is expected to be completed in May 2023, with a total capacity of 340 KW for the plants in Taiwan. The investment cost is NT\$28,685 thousand. The estimated power generation is 330,000 kWh/year, with a carbon reduction of 164.19 tons of CO₂e.
 - (2) We expect to purchase green power in 2023 for 3 million kWh/year (carbon reduction for 2,966 tons of CO₂e), in 2024 for 13.41 million kWh/year (carbon reduction for 13,260 tons of CO₂e), green power expenses of NT\$97,160,000/year.

2.2 Medium and long-term strategies (within 3-10 years)

1. Green product applications:
In response to global warming and to reduce environmental impact, we have developed circuit boards/substrates that can meet the needs of the electric vehicle market, 5G, and the Internet of Things.
2. Create a green supply chain:
Include environmental system implementation in the supplier assessment, so that suppliers can understand the Company's commitment and goals to protect the environment. The supplier assessment also takes into account the GHG emission performance, which is one of the key factors. The Company conducts regular supplier assessments with senior executives from key suppliers. In addition to requiring new suppliers to be certified with ISO 9001 quality management system and ISO 14001 environmental management system, the Company evaluates whether a new supplier is suitable to join the supply chain through a comprehensive evaluation based on technical capability (T), quality (Q), service (R), delivery time (D), price (C), and environment (E). In addition, the Company has assessed its current suppliers on a semi-annual basis and requested them to pay attention to environmental and social governance (ESG, Environment, Social, and Governance indicators account for 10% of the overall rating); the Company has actively requested its suppliers to obtain RBA (Responsible Business Alliance) certification, ISO 45001 occupational safety and health system certification, and AEO (Authorized Economic Operator) certification. Each year, we evaluate about 20 suppliers and provide consultation to each supplier so that they can meet the requirements related to social and environmental responsibilities. The Company will choose the suppliers that are assessed having outstanding performance to be our long-term partners. The results of the assessment will be used as a reference when selecting the suppliers in the procurement department. Currently, all of the major suppliers we have assessed are meeting the requirements of the environmental governance.

03

chapter

Management of Climate Change Risks and Opportunities



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3.1 Risk and opportunity identification process

The EHS department is in charge of collecting risk and opportunity information every six months together with the relevant units (Operations Analysis Group/Management Group/Sales Division/Utility Division) to consider transition risks (policy and legal/market/technology/reputation) and physical risks (chronic and acute).

Furthermore, for events that may occur, we will describe the risks, including the financial impact level, the impact time (short, medium and long), the affected parties in the value chain, and the possibility of risk. When we create an opportunity scenario, we consider resource efficiency, energy, products and services, markets, and adaptability, and we make an opportunity description for events that may occur, including the degree of financial impact, impact duration (short, medium, long), parties in the value chain impacted, and risk likelihood.

After assessing the risks and opportunities associated with climate change, they are monitored in the ISO 14001 environmental management system along with other environmental issues. The Company also addresses potential events with significant risks and makes countermeasures in advance, such as risk shifting or risk avoidance and solutions to prevent the risks from occurring and to lower the financial impact to reduce the potential loss from the risk.





3.2 Risk and Opportunity Assessment

A matrix is used to determine significant risks and opportunities based on the financial impact level and the risk and opportunity possibilities, and the indicators are rated on a scale of 5 to 1 (as shown below).

Financial impact level	Amount	Risk and Opportunity Possibilities				
		Almost positive (Score 5)	Most likely (Score 4)	Possible (Score 3)	Unlikely (Score 2)	Almost impossible (Score 1)
		Must occurred	May occur several times in a given period of time (e.g., 10 years)	May occur more than one time in a given period (e.g., 10 years)	Never occurred in a given period of time (e.g., 10 years)	Never occurred
High (Score 5)	Over 20 million	1、2、8	3	7、11	—	6
Medium to high (Score 4)	Over 5 million ~ less than 20 million	9、10	12	—	—	—
Medium (Score 3)	Over 1 million ~ less than 5 million	—	—	—	—	—
Medium to low (Score 2)	Over 0.5 million ~ less than 1 million	—	—	—	—	4
Low (Score 1)	less than 0.5 million	—	—	—	—	—

The results of the above risk and opportunity matrix were classified as follows: (1) Score 15 to 25: High risk/Opportunity (Red) (2) Score 6 to 14: Moderate risk/opportunity (Blue) (3) Score 1 to 5: Low risk/opportunity (Green)

Note: Please refer to 3.3 on the risks or opportunities for items 1~12.

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

Serial Number	Current risk or opportunity analysis (Potential impact on Company)	Issue Category	Level of risks/ opportunities	Response Strategy
1. Carbon tax	The "National Climate Change Action Guideline" and the "Climate Change Response Act" specify Taiwan's long-term greenhouse gas reduction targets and establish a total greenhouse gas emission control and allocation method for manufacturing departments. After the control is imposed, we may have to purchase emission amounts, and energy bills will rise, causing our production costs to go up. In addition, the draft amendment to the "Climate Change Response Act" in 2022 and the EU from 2026 will impose a carbon tax and a carbon border tax respectively, which will result in an increase in expenditure and costs. Assuming that the carbon cost cannot be transferred, the product price will be less competitive, resulting in a significant financial impact.	Transition risk/ Policy and law	Major Risk	The Company is able to shorten the manufacturing process and improve the yield by using AI technology to reduce the amount of raw materials used, including reducing the baking process and improving the yield, improving the yield of the solder ball mounting process, and improving the yield of the solder paste process. In addition, the energy and water saving solutions in the plant are divided into three categories, including "energy reduction in process", "energy management", and "public equipment efficiency improvement". We monitor and manage the energy and water consumption in each plant on a monthly basis, and formulate climate change countermeasures to mitigate the risks arising from climate change.
2. Renewable Energy Development Act - Green Energy Setup	The amendment to the "Renewable Energy Development Act" in Taiwan was officially passed in April 2019. Since the contracted capacity of 47,117 KW of electricity consumed by the Company is larger than the 5,000 KW required by law, it is necessary to install 10% of the contracted capacity (or 8% within three years) of renewable energy power generation facilities, storage facilities, or purchase renewable energy certificates within five years; otherwise, monetary substitution must be paid.	Transformation risk/Policy and law	Major Risk	In order to comply with regulations, the Company plans to install renewable energy systems and conducts a preliminary assessment to determine the location and type of renewable energy facilities. 340KW solar power systems will be installed in the Shulin plant after the assessment. The Company has started to assess the various renewable energy providers to purchase the electricity, and will make adjustments to the green power market accordingly. It is expected that 16.74 million kWh will be used by 2024.
3. Energy/ Technology	The price of coal is on the rise as a result of the reduction in coal producing countries and the end of coal mining in some places. All of these happened in response to climate change. The public power station of NYPCB is likely to face an increase in energy cost expenditure.	Risk Transformation/ Energy Technology	Major Risk	1. The Company plans to install renewable energy systems and conducts a preliminary assessment to determine the location and type of renewable energy facilities. 340KW solar power systems will be installed in the Shulin plant after the assessment. 2. There are regular monitoring and management on the energy consumption and water usage for each of the factory area under the various projects, namely, "Reduction of Manufacturing Energy," "Energy Management" and "Public Facilities Efficiency Enhancement." This can mitigate the risks arising from energy cost expenditure.

Serial Number	Current risk or opportunity analysis (Potential impact on Company)	Issue Category	Level of risks/ opportunities	Response Strategy
4. Negative feedback of the Company's reputation due to climate change	In recent years, due to the increasing trend of ESG, 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. Thus, it will affect the borrowing interests of the financial institutions leading to the increase in cost of loan.	Transformation risk/Reputation	Low Risk	The Company actively participates in the ESG ratings in Taiwan and overseas and in the energy saving and carbon reduction initiatives. The highlight projects are as follows: 1. Taking part in the International Carbon Disclosure Project (CDP) rating, TCFD Initiative, and Science Based Target initiative (SBTi), fully demonstrating our determination in promoting ESG and carbon reduction outcomes. 2. Active promotion in energy saving and carbon reduction, such as installing solar power, green power procurement, promoting circular economy and so on carbon reduction plans. We will continue to move towards low carbon energy transformation in reducing the use of fuel.
5. Green Energy Demanded by Customer	One of the top ten customers in consumer electronics demanded for a full introduction of green energy by 2025. If this demand is not met, it is possible to lose relevant revenue.	Transformation risk/Market	Major Risk	In order to meet the requirements of customers, the Company plans to install renewable energy systems and conducts a preliminary assessment to determine the location and type of renewable energy facilities. 340KW solar power systems will be installed in the Shulin plant after the assessment. The Company has started to assess the various renewable energy providers to purchase the electricity, and will make adjustments to the green power market accordingly. It is expected that 16.74 million kWh will be used by 2024.
6. Change in precipitation pattern - Floods	With the base period of 1986~2005, the climate condition at the plant site in recent period (2016~2035) is predicted. Under the scenarios of RCP4.5 and RCP8.5, the maximum consecutive days of precipitation are 9.5-9.7 and 1,807mm. 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%. The Company considers the impact of strong winds or typhoons caused by abnormal climate. Strong winds or typhoons can cause the plant to require safe parking to prevent process hazards; the impact caused by heavy rainfall/flooding, the part of the plant where it is flooded due to heavy rainfall/flooding, and the shutdown will result in a loss of turnover.	Physical risk/ Acute	Low Risk	1. The Company periodically monitors and manages the energy consumption and water consumption of each plant site on a monthly basis and establishes climate change countermeasures to mitigate the risk arising from the climate change. 2. The Plant is installed with the flood control pumps, and inspection, repair and maintenance are performed regularly, in order to reduce the occurrence of flooding in the plant site due to heavy rainfall.
7. Change in precipitation pattern - Drought	The period of 1986~2005 is used as the base period to predict the climate condition of the plant site in recent period (2016~2035). It is predicted that there will be two months of water shortage or drought every year. The Company considers responses to deal with water shortage or drought caused by abnormal climate which will cause revenue loss.	Physical risk/ Chronic	Major Risk	The Company has planned to purchase recycled water from the Taoyuan North District Water Resources Recycling Center. By 2024, it is estimated that 2.86 tons of water will be reduced each year through the Company's water purification and recycling system, which can effectively supply water to the manufacturing process.

Serial Number	Current risk or opportunity analysis (Potential impact on Company)	Issue Category	Level of risks/ opportunities	Response Strategy
8. Electric Vehicle Market	The 27th United Nations Climate Change Conference (COP27) has set the target of achieving net zero carbon emission by 2050. Many countries around the world have set a timetable to implement fuel bans from 2020 to 2040 in response to net zero carbon emissions. In the next 20 years, consumers in these countries will have no choice but to buy electric vehicles or hydrogen fuel cell vehicles, which will drive the rapid development in the EV market. The Company is actively involved in the R&D of EV-related products, such as circuit boards/substrates for EV peripheral products. It is expected that the circuit board/substrate board will increase the revenue from the demand in the electric vehicle market.	Opportunity/ product and service	Major opportunity	The Company has focused on the development of high-density and large-size substrates to meet the needs of the electric vehicle market for wireless transmission and vehicle networking applications. We are also developing high end precision alignment technology for high end communication substrates, as well as high speed I/O count and 90μm solder ball pitch technology. As for the future product technology challenges, in addition to developing short, medium and long term R&D projects for key processes to ensure our technology will continue to lead in the future, new material development such as high reliability substrates and inks, low surface roughness and high dimensional stability substrates, low-loss transmission build-up films and others will be introduced to meet the future demand for high-speed communication products.
9. Improve the efficiency of resource utilization	In pursuit of sustainable development, the Company carries out risk management, corporate social responsibility, and climate change adaptation initiatives through the ESG Promotion Team. In response to climate change, we make every effort to recycle and reuse water resources, energy, and waste to strive toward the goals of energy conservation, emission reduction, resource integration, and zero waste. In recent years, we have continued to enhance resource efficiency and reduce our operating costs, while reducing greenhouse gas emissions due to the possibility of reusing process waste or water in the plants, to achieve the Company's sustainable development goals.	Opportunity/ Resource efficiency	Major opportunity	The wastewater treatment facility design of the Company is based on the characteristics of each type of wastewater, the stability and convenience of treatment and maintenance. We plan perfect wastewater treatment process and facilities, and take careful planning for wastewater plumbing at the source of the process, in order to effectively treat wastewater and make it available for recycling and purification at the back end. We have introduced 8 copper sulfate recovery machines since 2021, which can recover the tank stripping solvent and reduce the waste liquid discharged by 187 tons/month through repeated use. We will introduce 4 more production lines in 2022, which will increase the effectiveness of waste liquid reduction by about 94 tons/month, with a total reduction of 281 tons/month.
10. Establishment of renewable energy facilities	The company inspects and evaluates opportunities to install solar energy system for the existing sites of the Company. If it is possible to setup, it can reduce the Company's external purchase of electricity and it will reduce our carbon emissions. This will meet the sustainable development goals of the Company.	Opportunities/ Source of Energy	Major opportunity	The Company plans to install renewable energy systems and conducts a preliminary assessment to determine the location and type of renewable energy facilities. 340KW solar power systems will be installed in the Shulin plant after the assessment. The Company has started to assess the various renewable energy providers to purchase the electricity, and will make adjustments to the green power market accordingly. It is expected that 16.74 million kWh will be used by 2024.
11. Circuit boards for EV peripheral products	If the development of the circuit boards for EV peripheral products with the customer turns out to be successful, it can increase the company's revenue following the increase in demand of the electric vehicle market.	Opportunity/ product and service	Major opportunity	Development of related products is made following the customer demands for automotive electronics applications, such as self-driving car and In-Vehicle Infotainment system, required for the new generation low polluting eco-friendly emission and energy (electric vehicle) market.
12. Resilient supplier sourcing	The company increases climate resilience by engaging raw material suppliers who are at multiple locations and use local production in Taiwan and backup inventory replacing materials from Japan as a strategy.	Opportunity/ resilience	Major opportunity	There would be constant search for diverse suppliers for the procurement of important raw materials in order to stabilize the market procurement prices.

3.4 Climate Risk Scenario Analysis

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

The transition risk 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, the greenhouse gas emissions are set to be reduced by 50% by 2030 based on the business-as-usual (BAU) scenario. In this 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 NYPC is analyzed in terms of market, technology, reputation, finance, and operations in the future.

As for the physical risk, we refer to the Taiwan Climate Change Projection Information and Adaptation Knowledge Platform (TCCIP) and the National Science and Technology Center for Disaster Reduction to estimate sea level rise of 2020~2040, below-tidal-line area, flood levels below the 2050 level, temperature rise, maximum continuous rainfall days and total rainfall for the scenarios of RCP2.6, RCP4.5 and RCP8.5.

Plant Site	Taoyuan Plant
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)	No impact
Below-tidal-line area (risk of flooding) (RCP 8.5)	No impact
Area below the 2050 flood line (RCP 8.5)	No impact
Rise in temperature (RCP 8.5)	1.63
Average drought length (RCP2.6)	2 months
Precipitation change rate (RCP 8.5)	5%-10%
Maximum number of consecutive days of precipitation (RCP 4.5-8.5)	9.5 days - 9.7 days
Total precipitation (RCP 4.5-8.5)	1,807mm

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chapter

Indicators and targets



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4.1 Absolute targets and emission indicators for carbon reduction

The Company conducts GHG emissions inventory and completes the GHG emissions verification through the British Standards Institute every year to ensure the accuracy of GHG emissions.

The Company has passed the Science Based Target (SBT) with the target ambition of WB2 °C , scope 1 and 2, base year set at 2020, the starting year at 2021 and the target year at 2030. As a result, it is estimated to reduce carbon emissions by 25% in 10 years.

Table 4.1 Description of emissions and annual target emissions

Year	2020 (Base year)	2022 (Not yet verified)	2030 (Target year)
Carbon emission volume (Ton-CO ₂ e)	419,319	439,342	-
Compared to the base year (%)	-	-	-25%



The Company's GHG inventory volume in 2022 proposes to disclose the internal inventory data prior to the publication of the TCFD report in May 2023. Since the external verification of the power plant coefficients has not yet been verified and cannot be completed.

Table 4.2 Information on Scope 1 and 2 Emissions



Note 1: Scope 1 is the direct GHG emissions.

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

Note 3: The SGS and BSI inspection verification data are used for 2018-2020. In addition, for 2022, the emission data are still under verification; therefore, the internal audit data (from the computer database of Formosa Plastic Corporation) are used. The data for 2022 will be verified and disclosed in 2023 Quarter 3.

Note 4: The GWP in the IPCC's Fourth Assessment Report (2007) will be used to calculate the emission according to the EPA's regulations after 2016.

4.2 Scope 3 Emission Indicator

The Company conducts an annual inventory of the relevance and emission data of Scope 3 and such data have been verified by a third party. The base year for Scope 3 is 2020, its start year is 2021 and the target year is 2030. A reduction of 12.3% is expected over the 10-year period.

Table 4.3 Information on Scope 3 emission indicator

Scope 3 emission sources	Relevance	2021 emissions (ton of CO ₂ e)	Scope
Products and services purchased	Relevant and counted	137,756	60% of raw material purchase amount, back-calculation to 100%
Capital goods	Relevant and counted	87,131	Land, house and building, machine and equipment, transportation equipment, electrical (electronic) and computer equipment, boilers, public equipment, general office equipment and miscellaneous are included in the calculation (100%).
Fuel and energy-related activities (not included in Scope 1 or 2)	Relevant and counted	58,921	Include all fuel and energy activities, such as coal, pyrolysis low sulfur fuel oil, and natural gas (100%).
Upstream transportation and distribution	Relevant and counted	3,272	60% of raw material purchase amount, back-calculation to 100%
Business waste output	Relevant and counted	1,218	The scope of this inventory covers 100% of the emissions from the disposal of business waste.
Business trips	Relevant and counted	52	Emissions from air travel (Most of the physical conferences were changed to online method due to the COVID-19 policy. Hence, the emissions from the few required overseas travel)

Scope 3 emission sources	Relevance	2021 emissions (ton of CO ₂ e)	Scope
Employee commuting	Relevant and counted	12,750	100%
Upstream asset leasing	Irrelevant	-	None of such activities.
Downstream transportation and distribution	Relevant and counted	1,131	All products (95%) sold and delivered to the doors of key customers, back-calculation to 100%.
Processing of sold products	Relevant and counted	220,202	The calculation of product processing procedures is mainly based on assembly testing.
Use of products sold	Irrelevant	-	Our products are intermediate products, which our customers sell their products to more diversified end users. Since such information is confidential and unavailable, it is not possible to calculate.
Ultimate disposition of the products sold	Relevant and counted	1,789	Calculate the carbon emissions from the ultimate disposal of carton materials used in products sold
Downstream asset leasing	Irrelevant	-	None of such activities.
Franchising	Irrelevant	-	None of such activities.
Investment	Irrelevant	-	Investment will generate additional GHG emissions with low business relevance

- As the emissions for 2022 are still under calculation and to be verified, it is impossible to access the relevant information by the deadline of the Report, the information will be disclosed via through other public channels subsequently.
- As the Company has passed the SBT review just now, it is impossible to access the overall data by the deadline of the Report. Therefore, the Company plans to disclose the complete information about emissions and the inventory progress next year.

4.3 Other metrics

The implementation status of energy-saving for steam, electricity, and fuel-related to greenhouse gas emissions in 2022 is summarized as follows:

Targets and Achievement for 2022

CATEGORY	Item	2022 Target Values	2022 Actual Values	Status of achievement	Description
Energy saving	Greenhouse gas emissions per output unit (tons/million NTD)	8.1	6.8	Goal achieved	2% reduction per year based on the previous year's actual emissions

Note 1: The coefficient of Scope 2 GHG emissions is based on the 2022 emissions coefficient from the internal inventory of Nan Ya Plastics Plant (verification has not been completed). The data for 2022 will be verified and disclosed in 2023 Quarter 3.

Note 2: The output value is calculated based on the consolidated revenues.



05

chapter

Report management



- This report covers the period from January 1, 2020 to December 31, 2022.
- Frequency of preparation: whenever there is a material change
- This report has been prepared primarily based on the Recommendations of the Task Force on Climate-related Financial Disclosures (June 2017).
- Report Contact Information



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chapter

TCFD Index



Core Elements	Recommended Disclosures	Corresponding pages
Governance	Describe the board’s oversight of climate-related risks and opportunities.	P. 2-3
	Describe management’s role in assessing and managing climate-related risks and opportunities.	P. 2-3
Strategy	Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	P. 4-5
	Describe the impact of climate-related risks and opportunities on the organization’s businesses, strategy, and financial planning.	P. 4-5
	Describe the resilience of the organization’s strategy, taking into consideration different climate-related scenarios, including a 2° C or lower scenario.	P. 4-5
Strategy	Describe the organization’s processes for identifying and assessing climate-related risks.	P. 6-7
	Describe the organization’s processes for managing climate-related risks.	P. 7
	Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization’s overall risk management.	P. 8-11
Metrics and Targets	Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	P. 12-14
	Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	P. 12-14
	Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	P. 12-14