

Chapter 3 ENVIRONMENTAL PROTECTION

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3.1.1. Climate-Related Governance Framework

Given the intensifying impact of climate change, the international community is paying increasing attention to climate-related risks. While facing negative climate impacts, enterprises may also identify climate-related opportunities. The promotion of climate-related disclosure and adaptation strategies has gradually become a consensus among stock exchanges worldwide.

TPEX officially signed up to the Task Force on Climate-related Financial Disclosures (TCFD) in October 2020. At the second Sustainable Development Committee meeting in 2023, it passed a resolution that it will identify climate-related risks and opportunities, establish a climate-related risk management system, and strengthen climate-related risk governance in four major aspects, i.e. governance, strategy, risk management, indicators, and targets, in compliance with the TCFD and IFRS S2 frameworks.

3.1.2. Management of Climate-Related Risks and Opportunities

1. Process of Identifying Climate Scenarios and Climate-Related Risks and Opportunities

In response to the final draft of WGI AR6 released by the Intergovernmental Panel on Climate Change (IPCC) on August 9, 2021, the Ministry of Science and Technology, the Research Center for Environmental Changes of Academia Sinica, the Central Weather Bureau of the Ministry of Transportation and Communications, the Department of Earth Sciences of National Taiwan Normal University, and the National Science and Technology Center for Disaster Reduction jointly published the Scientific Highlights of IPCC AR6 (Sixth Assessment Report) and Updated Analysis of Climate Change in Taiwan. The report indicates that temperatures across Taiwan are projected to continue rising in the future. Under the worst-case scenario of global warming (SSP5-8.5), the average temperature in the middle and late 21st century may increase by more than 1.8°C and 3.4°C, respectively.

Given the inevitable challenges posed by climate change, TPEX organized a TCFD Workshop on Climate-Related Risks and Opportunities, inviting various departments to collectively study, discuss, and compile relevant information for crisis and opportunity analysis. Through this workshop, significant risks and opportunities faced by TPEX in the context of climate change were identified, followed by comprehensive risk and opportunity assessments to formulate appropriate risk management and opportunity utilization strategies, thereby reducing risks and seizing opportunities. The specific process for identifying significant climate-related risks and opportunities and formulating strategies is as follows:

A

Evaluating the impacts on the operating environment

Evaluating the impacts of climate change on the operating environment and stakeholders

B

Identifying significant climate-related risks and opportunities

Establishing a risk and opportunity matrix to identify major climate change risks and opportunities based on the likelihood of occurrence and the degree of impacts/effects.

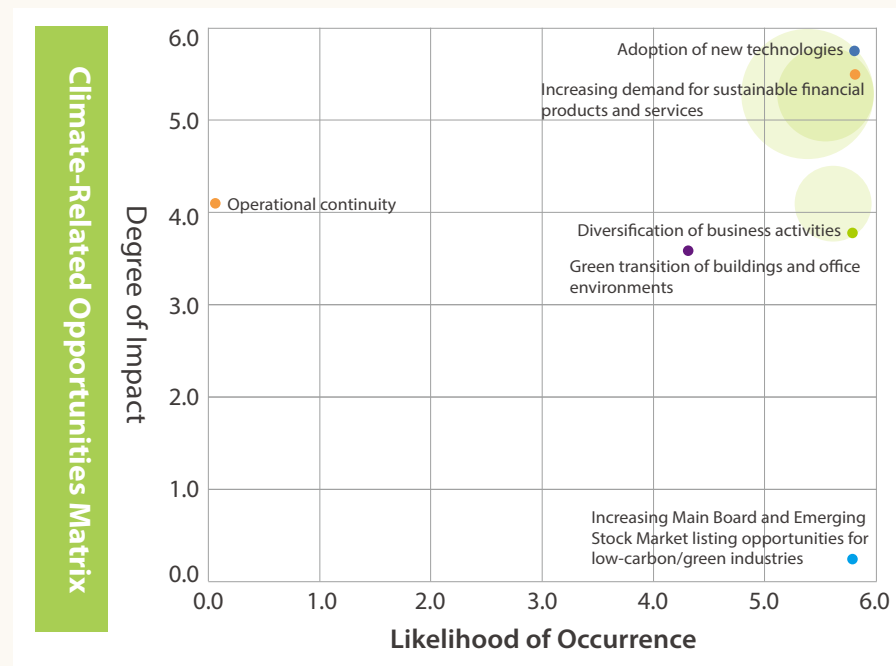
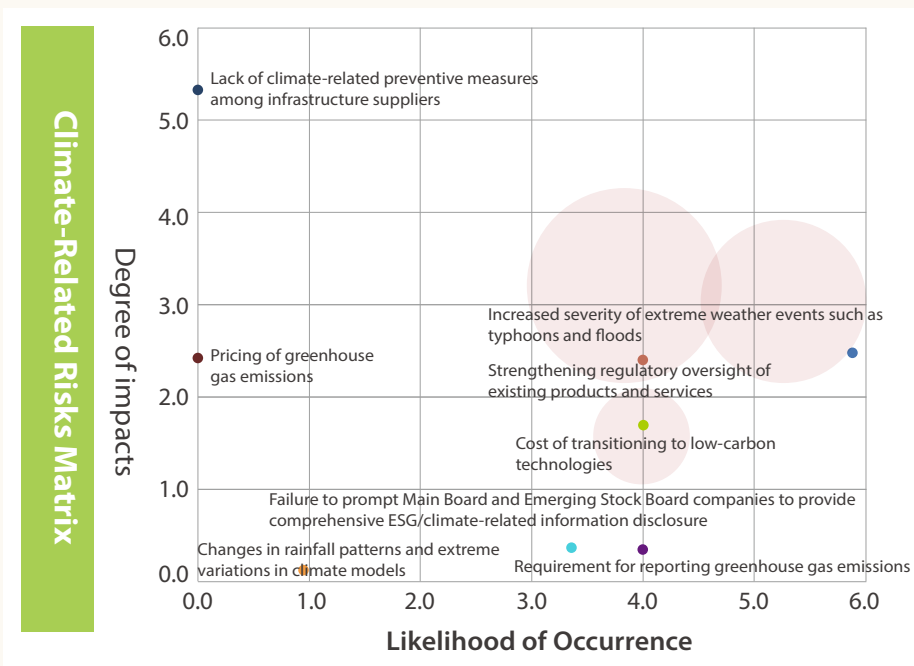
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Formulating response strategies, analyzing financial impacts/effects and response costs

Developing strategies in response to significant risks and opportunities, analyzing potential financial impacts/effects, and response costs.

2. Identification Results of Major Climate-Related Risks and Opportunities

TPEX has constructed a risk and opportunity matrix based on the “likelihood of occurrence” and “degree of impacts/effects”, and identified the top three climate risks and opportunities. Response strategies have been developed for these risks and opportunities, and response costs and financial impacts/effects have been estimated as well. The climate-related risks matrix and opportunities matrix for TPEX in 2023 are presented below:



According to the aforementioned matrix, the types and estimated time of occurrence, etc. of the top three identified risks and opportunities for TPEX are summarized in the table below:

Table of Identified Climate-Related Risks

Risk No.	Risk Type	Risk Factor	Estimated Time of Occurrence	Likelihood of Occurrence	Degree of Impacts
1	Acute Physical Risk	Increased severity of extreme weather events such as typhoons and floods	Short-term	Very high	Moderate
2	Transition Risk - Policy and Regulation	Strengthening regulatory oversight of existing products and services	Short-term	High	Moderate
3	Transition Risk-Technology	Cost of transitioning to low-carbon technologies	Short-term	High	Low

Table of Identified Climate-Related Opportunities

Opportunity No.	Opportunity Type	Opportunity Factor	Estimated Time of Occurrence	Likelihood of Occurrence	Degree of Effects
1	Opportunity-Energy source	Adoption of new technologies	Short-term	Very high	Very high
2	Opportunity-Products and services	Increasing demand for sustainable financial products and services	Short-term	Very high	Very high
3	Opportunity-Products and services	Diversification of business activities	Short-term	Very high	Moderate

Note: Definition of time frames: Short-term: 2024, mid-term: 2025-2030, long-term: 2031-2050

3.1.3. Management Strategies for Significant Climate-Related Risks and Opportunities

1. Strategies in Response to Significant Climate-Related Risks and Evaluation of Financial Impacts

Risk 1: Increased Severity of Extreme Weather Events such as Typhoons and Floods

With the intensification of extreme weather patterns, the frequency and severity of adverse weather events, including severe typhoons and floods, are on the rise. These events pose significant risks to TPEX's operations, potentially causing power outages, equipment malfunctions, and disruptions in employee commutes. Such interruptions can impede our ability to maintain normal business operations and conduct external audits, leading to decreased trading volumes, reduced revenue, and higher operational costs.

Impacts of Risk

Impacts on Business Operations or Facilities Location:

- The increasing frequency and intensity of extreme weather events present significant risks, including potential equipment failures, extended business closures, and challenges in employee commutes due to flooding and other issues. These factors raise the likelihood of disruptions across various business operations, impacting overall resilience and continuity.

Financial Impacts

Revenue Decrease:

- Extreme weather events may lead to stock market closures, system anomalies, or interruptions, preventing investors from trading. These disruptions can result in decreased trading volumes and subsequently reduced revenue.

The estimated financial impacts amount to approximately 0.46% of revenue.

(Note: The percentages of financial impacts and response costs to revenue are calculated based on the total accounting income of TPEX for the fiscal year 2023.)

Response Strategies

Plans to Address Impact on Business Operations or Facilities Location:

- **Enhance Business Continuity Management:** Ensure the robust operation of the business continuity management system. Regularly review and update disaster response and recovery mechanisms, and conduct comprehensive drills and tests to guarantee system stability and continuous functionality in case of disasters.
- **Promote Remote Working:** Facilitate remote working capabilities to mitigate the impact of extreme weather events on employee commutes. This approach helps maintain normal business operations and minimize disruptions.
- **Empower Employees:** Strengthen disaster awareness and preparedness among employees through targeted education and training programs. Equip them with the knowledge to reduce risks and ensure safety in various scenarios.
- **Insurance for Risk Transfer:** Secure insurance for equipment vulnerable to damage from typhoons or floods (e.g., company vehicles) to transfer and mitigate financial risks associated with extreme weather events.

Response Costs

Increased Operational Costs:

- Maintaining the effectiveness of the business continuity management system and ensuring the proper functioning of remote working infrastructure will incur additional costs for establishing and maintaining related information systems (e.g., mobile device management system licensing fees, remote working information system maintenance and personnel costs, business continuity management system maintenance costs, etc.).
- Additionally, disaster preparedness training and insurance premiums will contribute to increased expenses.

The estimated response costs are approximately 0.06% of revenue.

Risk 2. Strengthening Regulatory Oversight of Existing Products and Services

Due to heightened government requirements on ESG and climate-related disclosures by Main Board /Emerging Stock Board companies, as well as the increasing market demand for sustainable funding, TPEX must strengthen its regulation of greenhouse gas emissions disclosure and management. This will result in increased regulatory costs. Failure to effectively encourage Main Board / Emerging Stock Board companies to improve the disclosure of relevant information or to accredit issuers of sustainable bonds may lead to inaccurate risk evaluation by investors or market scrutiny, potentially affecting the reputation of TPEX.

Impacts of Risk

Impacts on Products or Services:

- The increasing demand in the market for sustainable funding highlights the importance of effective accreditation of issuers of sustainable bonds by TPEX and the supervision over their subsequent information disclosure. Failure in these areas, as well as lagging development of sustainable financial products compared to international standards, may influence investor decisions. This could result in market scrutiny, potentially impacting the reputation of TPEX and reducing market participants' willingness to raise funds and invest through TPEX.
- Additionally, in response to the heightened government requirements for ESG disclosures by Main Board companies, TPEX must effectively encourage these companies to improve the disclosure of relevant sustainability information. Failure to do so may reduce international visibility, impact investor risk evaluation, and further affect the stability of the trading market and the reputation of TPEX.

Financial Impacts

Revenue Decrease:

- Failure to effectively regulate sustainable bonds may lead to market scrutiny, affecting the reputation of TPEX. This could result in reduced issuance, trading volume, and related business volume, leading to decreased revenue.
- Additionally, failure to launch sustainable financial products aligned with trends may impact issuers and investors' willingness to participate in TPEX. This could result in decreased issuance, trading volume, and related business volume, leading to reduced revenue.

The estimated impacts amount to approximately 0.35% of revenue.

Response Strategies

Plans to Address Impacts on Products or Services:

- Enhance promotion of the application process, procedures, and precautions for sustainable bonds annually based on new products and mechanisms. Establish a dedicated section on the official website to provide regulatory information, enabling enterprises and investors to access relevant information. Hold promotional seminars to educate issuers and securities firms on relevant regulations.
- Continuously monitor international trends and respond to domestic market demands. Explore expanding the scale of sustainable bonds and promote their internationalization. This is expected to align Taiwan's sustainable bond market with international standards, providing issuers and investors with more diversified options.
- Align with the Financial Supervisory Commission's schedule for sustainable disclosure policies. Establish a section dedicated to aligning with IFRS sustainability disclosure standards. Develop an ESG digital platform to assist Main Board companies in preparing sustainability reports. Increase promotion and education for Main Board companies to understand the regulations and reduce the burden of disclosing sustainability information. Also, in line with the corporate governance evaluation system, gradually guide companies to voluntarily adopt best practices.
- Enhance the quality of corporate sustainability information disclosure by regularly reviewing Main Board companies' annual reports and sustainability reports.
- Promote the knowledge required for Emerging Stock Board companies to prepare ESG reports. Provide irregular updates on ESG-related regulatory information to encourage Emerging Stock Board companies to plan ahead for compliance with ESG laws and participate in ESG-related education and training programs, ensuring Emerging Stock Board companies possess the necessary ESG regulatory knowledge to comply with government regulations and international trends.

Response Costs

Increased Operational Costs:

- Establish a section on the official website to provide explanations of regulatory information for sustainable bonds, allowing enterprises and investors to access information. Hold promotional seminars to educate issuers and securities firms on relevant regulations. Increased costs are also expected for new product R&D and international exchanges.
- Apart from investing in manpower to monitor Main Board companies' compliance with sustainability disclosure, additional operational costs will also be incurred for establishing a section dedicated to aligning with IFRS sustainability disclosure standards, developing an ESG digital platform, organizing education and training sessions on sustainability for Main Board companies, producing short videos and launching other diverse promotional activities.

The estimated response costs are approximately 0.41% of revenue.

(Note: The percentages of financial impacts and response costs to revenue are calculated based on the total accounting income of TPEX for the fiscal year 2023.)

Risk 3. Cost of transitioning to low-carbon technologies

To address climate change, promoting low-carbon transition and digitization is imperative. Continuing paper-based operations may lead to increased consumption of paper and printing materials. This could not only increase the carbon footprints of products and services, but also raise market concerns and undermine the reputation of TPEX.

Impacts of Risk

Impacts on Products or Services:

- Failing to promote low-carbon transition and continuing paper-based operations may result in time-consuming processes, the need for keeping massive paper documents, and increased consumption of paper and printing materials. This will not only lead to continuously rising costs for purchasing paper and toner cartridges, but also increase the carbon footprints of products and services and raise market concerns, thereby undermining the reputation of TPEX.

Financial Impacts

Increased Operational Costs:

- Higher paper consumption leads to increased costs for purchasing paper and toner cartridges, resulting in a continuous increase in operational costs for TPEX.

The estimated impacts amount to approximately 0.04% of revenue.

(Note) Financial impacts and response costs are calculated as a percentage of TPEX's total accounting income for the fiscal year 2023.

Response Strategies

Strategies to Address Impact on Products or Services:

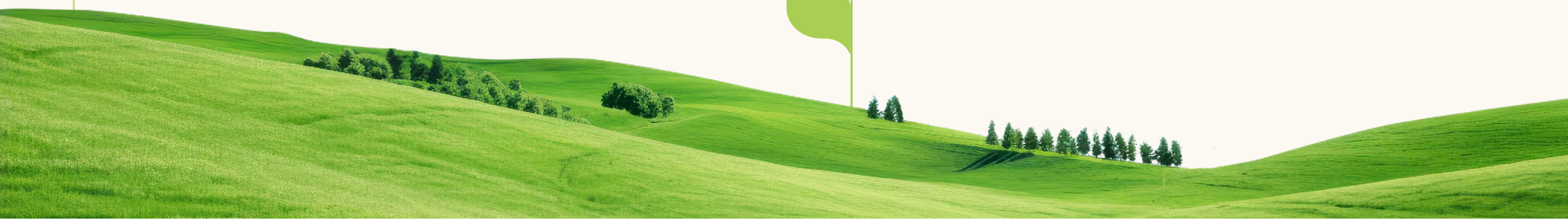
- Plan to establish an "Electronic Window Management System," with the first phase scheduled for completion in 2024. This system will not only reduce paper consumption and waste disposal, but also accelerate internal operational processes, improve efficiency, enhance accuracy, and lay the groundwork for digital transformation.

Response Costs

Increased Capital Expenditure and Operational Costs:

- Establishing the "Electronic Window Management System" will increase related expenditure and operational costs, including investment in information system development, software deployment costs, and labor costs. Long-term maintenance costs and personnel costs will also be incurred to ensure the stability and security of the system.

The estimated response costs amount to approximately 0.15% of revenue.



2. Strategies in Response to Significant Climate-Related Opportunities and Evaluation of Financial Effects

Opportunity 1: Adoption of New Technologies

TPEX can improve market services and management efficiency, reduce carbon emissions, and enhance its reputation by embracing digital technologies like process automation and paperless operations.

Effects of Opportunity

Opportunity for Products or Services:

•The adoption of new technologies, such as process automation and paperless operations, can streamline internal processes, improve service efficiency, reduce carbon emissions, and enhance TPEX's reputation.

Financial Effects

Reduced Operating Costs:

• Implementing process automation tools can decrease labor costs for routine operations. The electronic window management system can reduce paper consumption and printing operation, resulting in lower expenses for paper and toner cartridges, and ultimately reducing operating costs.

The estimated effects are approximately 0.04% of revenue.

(Note: The percentages of financial effects and response costs to revenue are calculated based on the total accounting income of TPEX for the fiscal year 2023.)

Response Strategies

Strategies for Addressing Opportunity for Products or Services:

- Introduce process automation tools to automate highly repetitive, labor-consuming and time-demanding supervisory operations, thus improving efficiency.
- Establish an electronic window management system to reduce carbon footprints and enhance internal operation efficiency.

Response Costs

Increased Capital Expenditure and Operating Costs:

• Implementing process automation tools and establishing an electronic window management system will increase capital expenditure and operating costs. This includes investing in information system development, software deployment, and labor. Additionally, there will be long-term costs for system maintenance and personnel to ensure system stability and security.

The estimated response costs are approximately 0.22% of revenue.

Opportunity 2: Increasing Demand for Sustainable Financial Products and Services

To meet the growing demand for sustainable financial products and services, TPEX can concentrate on introducing ESG-related financial products such as sustainable bonds and indices. This can fulfill the financing and investment needs of market participants, expand the market, and boost revenue.

Effects of Opportunity

Opportunity for Products or Services:

- As the demand for sustainable investments rises, addressing this trend by developing sustainable indices and launching ETFs, ETNs, bonds, and other sustainable financial products can encourage more investors and issuers to focus on sustainability. This can provide issuers and investors with more options while expanding TPEX's presence and increasing operating revenue.

Response Strategies

Strategies for Addressing Opportunity for Products or Services:

- Based on international sustainable development trends and market demands, expand the scope of the sustainable bond market from 2023 to 2024. This includes promoting sustainable convertible (exchangeable) corporate bonds and examining the feasibility of transition bonds. The aim is to deepen the development of domestic sustainable finance and encourage both enterprises and investors to pursue sustainability.
- Continuously develop index products that align with market demands from 2023 to 2024, enabling TPEX investors to participate in responsible investment through sustainable index products. This will encourage more investors and issuers to focus on sustainable development.

Financial Effects

Increased Revenue:

The development of sustainable indices and the promotion of sustainable development bonds, ETFs, ETNs, and other sustainable financial products will diversify products in the TPEX market. This will contribute to the development of TPEX's business and an increase in service fee income.

The estimated effects are approximately 0.25% of revenue.

Response Costs

Increased Operating Costs:

Developing sustainable indices and launching ETFs, ETNs, sustainable bonds, and other sustainable financial products will raise costs related to product research and development, system development and adjustments, marketing and labor.

The estimated response costs are approximately 0.08% of revenue.

(Note: The percentages of financial effects and response costs to revenue are calculated based on the total accounting income of TPEX for the fiscal year 2023.)

Opportunity 3: Diversification of Business Activities

To meet the new business activities emerging due to climate change, TPEX continues to maintain the sustainable information section on its website and launches education and training on climate change and carbon reduction. This includes recording short videos and hosting online educational seminars to increase market participants' awareness of sustainability and enhance TPEX's reputation.

Effects of Opportunity

Opportunity for Products or Services:

• With the growing focus on climate change-related issues across the society, various business activities related to climate change are emerging. This not only helps improve the quality of sustainability information disclosure by Main Board companies, but also diversifies the TPEX's services, increases investors' willingness to engage in sustainable investment, boosts trading volume, and consequently increases revenue.

Financial Effects

Increased Revenue:

• Through diverse ways of publicity, the penetration of sustainability information disclosures will grow, accelerating the strengthening of Main Board companies' sustainability awareness and the improvement of sustainability information disclosure quality. This will help enhance TPEX's reputation, increase investors' willingness to invest in sustainable financial products, and boost trading volume, thereby increasing income.

The estimated effects are approximately 1.69% of revenue.

(Note: The proportion of revenue from financial impacts and response costs is calculated based on the total income of the TPEX's in 2023.)

Response Strategies

Strategies for Addressing Opportunity for Products or Services:

- Establish and maintain the sustainable information section on the website to provide easy access to sustainability information.
- Launch education and training on climate change and carbon reduction, such as establishing a section for aligning with IFRS sustainability disclosure standards, setting up a digital platform for sustainability reports, recording short videos, and organizing online educational seminars on carbon reduction. These diverse carbon reduction publicity activities can increase Main Board companies' awareness of sustainability and enhance TPEX's reputation. Additionally, align with FSC's Main Board Company Sustainable Development Action Plan and Taiwan's Blueprint for Aligning with IFRS Sustainability Disclosure Standards, and continuously invest in and evaluate diverse ways to publicize carbon reduction. Collect feedback from Main Board companies on diverse ways and contents of publicity through post-event questionnaires or website sections for effects evaluation.

Response Costs

Increased Operating Costs:

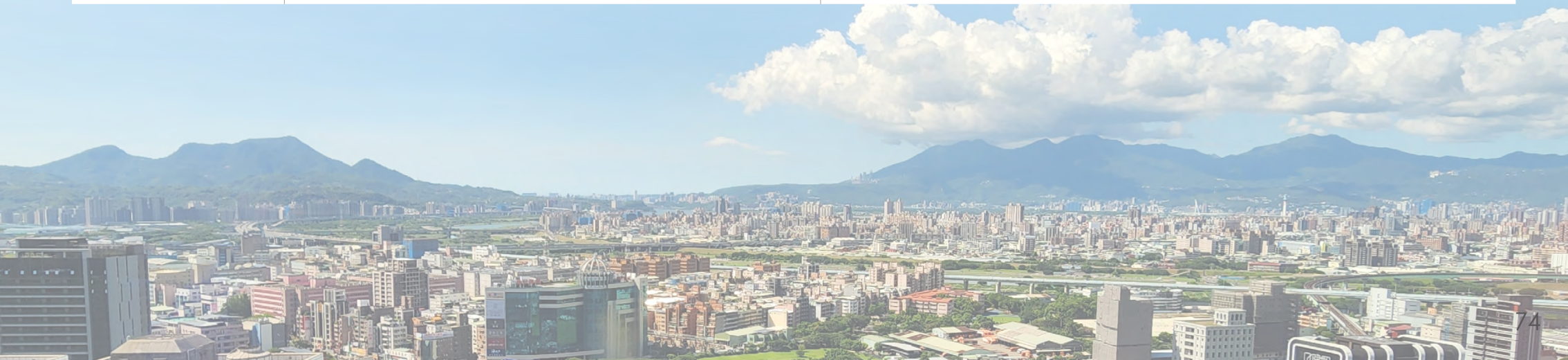
- TPEX needs to allocate manpower and budget for website section maintenance and diverse and sustainable carbon reduction publicity activities, leading to increased operating costs.

The estimated response costs are approximately 0.05% of revenue.

3.1.4. Climate -Related Indicators and Targets

Items	Indicators	Targets
Risk 001 - Increased Severity of Extreme Weather Events		
Resilience to Extreme Weather Events	<ul style="list-style-type: none"> Maintain system stability to ensure continuous operation after disasters. 	Ensure critical business interruptions do not exceed the Maximum Tolerable Period of Disruption (MTPD).
Risk 002 - Strengthening Regulatory Oversight of Existing Products and Services		
Encouraging Sustainable Information Disclosure	<ul style="list-style-type: none"> Align with policies including FSC's Main Board Company Sustainable Development Action Plan and Taiwan's Blueprint for Aligning with IFRS Sustainability Disclosure Standards, continually promote and supervise sustainable information disclosure by Main Board companies, and enhance compliance progress and quality. 	<ul style="list-style-type: none"> Encourage Main Board companies to prepare and release sustainability reports in stages as required, disclosing sustainability information such as greenhouse gas emissions and climate governance. Encourage Main Board companies to comply with IFRS sustainability disclosure standards in three stages (Main Board companies with a capital of over NT\$10 billion in 2026, companies with a capital of over NT\$5 billion in 2027, and all other Main Board companies in 2028).
Promoting Sustainable Financial Products	<ul style="list-style-type: none"> Issue press releases to support new products and mechanisms, update website sections, and launch promotional seminars. 	<ul style="list-style-type: none"> Establish timelines for sustainable product development and promotion. Evaluate the fulfillment of the schedule for product development and promotion on a quarterly basis.
Sustainable Trends and Product Offerings	<ul style="list-style-type: none"> Promote the sustainable bond market by hosting promotional seminars, conferences, or forums. Hold ESG-related regulatory information promotion activities and encourage Main Board and Emerging Stock Board companies to participate. 	<ul style="list-style-type: none"> Promote the sustainable bond market by hosting promotional seminars, conferences, or forums annually according to the work plan. Organize ESG-related regulatory information promotion activities, requiring eligible Main Board companies to participate and encouraging non-compliant Main Board and Emerging Stock Board companies to participate as well.
Risk 003 - Costs of Transitioning to Low-Carbon Technologies		
Advancing digitalization	<ul style="list-style-type: none"> Reduce paper and toner cartridge purchases. 	<ul style="list-style-type: none"> Reduce paper and toner cartridge purchases compared to the time before the launch of the electronic window management system.

Items	Indicators	Targets
Opportunity 001 - Adoption of New Technologies		
Implementation of digital technologies such as process automation and paperless operations	<ul style="list-style-type: none"> • Develop automated processes according to the business needs of each department and the schedule of the Information Department. • Reduce the purchase of paper and toner cartridges. 	<ul style="list-style-type: none"> • Reduce manpower for routine operations. • Reduce paper and toner cartridge purchases compared to the time before the launch of the electronic window management system.
Opportunity 002 - Increasing Demand for Sustainable Financial Products and Services		
Expansion of Sustainable Product Scale	<ul style="list-style-type: none"> • Based on international sustainable development trends and market demands, expand the scope of the sustainable bond market, and expand sustainable bond issuance. • Compile sustainability-related indices and promote ETFs and ETNs, and evaluate the achievement of the goals. 	<ul style="list-style-type: none"> • Promote the listing of convertible corporate bonds for sustainable development, complete the study on transition bond systems, promote sustainable bond issuance, and compile sustainability-related indices and introduce sustainable index products with reference to international sustainability trends to meet the financing and investment needs of market participants.
Opportunity 003 - Diversification of Business Activities		
Provision of Education and Training on Sustainable Information and Climate Change	<ul style="list-style-type: none"> • Continuously maintain the dedicated web section for sustainability information and launch education and training on climate change and carbon reduction issues. 	<ul style="list-style-type: none"> • Provide easy access to sustainable information and offer education and training courses on climate change and carbon reduction to assist Main Board companies in smoothly aligning.



3.2.1. Energy/Greenhouse Gas Emissions Management

TPEX focuses on securities trading and information services and does not conduct physical development or production activities. Having no violations of environmental regulations or received complaints, the TPEX is dedicated to sustainable operations. This commitment is demonstrated through the integration of environmental protection into its management policies, such as promoting electronic administrative processes, selecting eco-friendly materials for equipment and supplies, promoting energy conservation, and reducing paper consumption. These initiatives embody the principle of environmental sustainability. Additionally, TPEX has reached contracts on the procurement of PV power, and obtained 365 renewable energy certificates issued by the Ministry of Economic Affairs. In 2023, it utilized 365,185 kWh of green electricity, accounting for approximately 27.49% of its total electricity consumption.

Energy/Greenhouse Gas Emissions Management

In the context of global climate change, environmental issues have become a shared concern for all citizens of the world. ESG (Environmental, Social, and Governance) has emerged as a crucial indicator of corporate competitiveness. To advance towards net-zero transformation, TPEX conducted its first greenhouse gas inventory and registry in 2023 for the year 2022 in accordance with ISO 14064-1:2018. The inventory scope included: Category 1: Direct GHG emissions and removals, Category 2: Indirect GHG emissions from imported energy, Category 3: Indirect GHG emissions from transportation, specifically "business travel", Category 4: Indirect GHG emissions from products used by the organization, specifically "emissions from fuel and energy-related activities (electricity)". To enhance the credibility of the inventory information and reports, a third-party assurance institution was engaged to perform assurance work on Category 1 and Category 2 emissions. This adherence to international standards allows TPEX to comprehensively understand its greenhouse gas emissions, facilitating subsequent carbon reduction planning, with 2022 set as the baseline year.

In 2024, TPEX will continue conducting the greenhouse gas inventory and registry for 2023 in accordance with ISO 14064-1:2018, while actively expanding the scope of inventory and assurance. Regarding organizational boundaries, the Xindian warehouse and the Taipower Building office have been added. Regarding inventory items, in addition to continuously inventorying emission sources such as Category 1, Category 2, Category 3 "business travel," and Category 4 "emissions related to fuel and energy activities," "capital goods" under Category 4 (indirect greenhouse gas emissions from products used by the organization) were also added as an inventory item. Regarding assurance items, in addition to continuously entrusting the third-party assurance institution to perform assurance work for Category 1 and Category 2, "business travel" under Category 3 (indirect greenhouse gas emissions from transportation) and "emissions related to fuel and energy activities" under Category 4 (indirect greenhouse gas emissions from products used by the organization) were also included into the scope of assurance.

In 2023, TPEX sets the organizational boundary according to the operational control approach. The identified organizational boundary includes Guting Office in Taipei City, Teclast Backup Office in Taipei City, Banqiao Office in New Taipei City, Banqiao server room in New Taipei City, Xindian Warehouse in New Taipei City and the remote backup server room in Taichung City. The source of energy consumption is mainly purchased electricity (including 72.51% of general energy and 27.49% of renewable energy), followed by gasoline for official vehicles.



Energy consumption

Category	Type	2023	2022
Category 1	Vehicle Gasoline (Liters)	6,309.68	5,397.01
	Vehicle Gasoline (GJ)	206.06	176.25
Category 2	Purchased electricity	Non-Renewable (kWh)	1,049,427.53
		Non-Renewable (GJ)	3,777.94
		Renewable (kWh)	303,031.00
		Renewable (GJ)	1,090.91
Total Energy Consumption (GJ)		4,988.66	5,045.10
Energy Consumption per Capita (GJ/person)		16.46	17.58

Note 1: All data of this report for 2023 cover Guting Office in Taipei City, Teclast Backup Office in Taipei City, Banqiao Office in New Taipei City, Banqiao server room in New Taipei City, Xindian Warehouse in New Taipei City and the remote backup server room in Taichung City. All data from 2022 only cover Guting Office in Taipei City, Banqiao Office in New Taipei City and the remote backup server room in Taichung City, excluding Teclast Backup Office in Taipei City and Xindian Warehouse in New Taipei City. The total energy consumption in 2021 was 3,449.09 GJ, covering Guting Office in Taipei City, Banqiao Office in New Taipei City and the remote backup server room in Taichung City, excluding Teclast Backup Office in Taipei City, Xindian Warehouse in New Taipei City and Banqiao Office in New Taipei City.

Note 2: Vehicle gasoline, purchased electricity, total energy consumption, and energy intensity calculations are all rounded to two decimal places.

Note 3: Purchased electricity includes the use of renewable energy. The electricity purchased by Guting Office in Taipei City is based on the metered number specified on Taiwan Power Company's utility bills; those of other locations are based on the metered numbers stated on respective property management service providers' statements.

Note 4: The heating value coefficient is based on the GHG Emission Factor Management Table Version 6.0.4 issued by the Environmental Protection Administration, according to which vehicle gasoline is 7,800 kcal/liter.

Note 5: 1 gigajoule (GJ) = 10⁹ joules (J); 1 kilocalorie (kcal) = 4,186.8 joules (J); 1 kilowatt-hour (kWh) = 3.6 megajoules (MJ).

Note 6: Energy intensity was calculated based on the number of employees on December 31 of the year, namely 303 employees in 2023 and 287 employees in 2022.



Greenhouse Gas Emissions

Greenhouse Gas Emissions	Location based		Market based	
	2023年	2022 (Baseline Year)	2023	2022 (Baseline Year)
Category 1 - Direct GHG Emissions and Removals (tCO2e)	17.39	13.95	17.39	13.95
Category 2 - Indirect GHG Emissions from Imported Energy (tCO2e)	657.61	688.40	476.84	534.16
Subtotal of Category 1 and Category 2 Emissions	675.00	702.35	494.23	548.11
Category 1 and Category 2 Emissions Intensity (tCO2e/person)	2.23	2.45	1.63	1.91
Category 3 - Indirect GHG Emissions from Transportation (Business Travel) (tCO2e)	47.97	N/A	47.97	N/A
Category 4 - Indirect GHG Emissions from Products Used by the Organization (Procurement of Goods/Services) (tCO2e)	97.54	N/A	97.54	N/A
Total Emissions (tCO2e)	820.51	702.35	639.74	548.11
Emissions Intensity (tCO2e/person)	2.71	2.45	2.11	1.91

Note 1: All data of this report for 2023 cover Guting Office in Taipei City, Teclast Backup Office in Taipei City, Banqiao Office in New Taipei City, Banqiao server room in New Taipei City, Xindian Warehouse in New Taipei City and the remote backup server room in Taichung City. All data from 2022 only cover Guting Office in Taipei City, Banqiao Office in New Taipei City and the remote backup server room in Taichung City, excluding Teclast Backup Office in Taipei City and Xindian Warehouse in New Taipei City. The emissions of Category 1 in 2021 were 13.29 tCO₂e; the emissions of Category 2 were 456.30 tCO₂e (with the same results calculated on a regional basis and market basis); the data only cover Guting Office in Taipei City, Banqiao Office in New Taipei City, and the remote backup server room in Taichung City, excluding Teclast Backup Office in Taipei City, Xindian Warehouse in New Taipei City and Banqiao server room in New Taipei City; the calculations are all rounded to two decimal places.

Note 2: According to ISO 14064-1:2018, the use of electricity should be quantified by region, and the market segment should be increased to present the benefits of carbon reduction in the use of green electricity (decrease of 180.77 tCO₂e in 2023).

Note 3: This report adopted the operational control approach for greenhouse gas emissions inventory check. The calculation goes: activity data * emission factor* GWP (the emission factor based on the GHG Emission Factor Management Table Version 6.0.4 issued by the Environmental Protection Administration and the GWP is quoted from the IPCC Sixth Assessment Report in 2021. If the fifth assessment report is not updated, the calculation is based on the IPCC Fifth Assessment Report in 2013.)

Note 4: The calculation of greenhouse gas emission intensity includes Category 1 and Category 2 greenhouse gas emissions; Category 2 GHG emissions are mainly purchased electricity. 2023 electricity emission factor adopted 2022 carbon emission factor of electricity from the Bureau of Energy of the Economic Ministry, 0.495 kg CO₂e/kWh; 2022 electricity emission factor adopted 2021 carbon emission factor of electricity of the Bureau of Energy, Ministry of Economic Affairs, R.O.C., 0.509 kg CO₂e/kWh; 2021 electricity emission factor adopted 2020 carbon emission factor of electricity from the Bureau of Energy, Ministry of Economic Affairs, R.O.C., 0.502 kg CO₂e/kWh.

Note 5: Energy intensity was calculated based on the number of employees on December 31 this year, namely 303 in 2023 and 287 in 2022.







Note 6: Greenhouse gasses include Carbon Dioxide (CO₂), Methane (CH₄), Nitrous Oxide (N₂O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulfur Hexafluoride (SF₆), Nitrogen Trifluoride (NF₃).

In terms of electricity management, TPEX practices division of responsibility and regular tracking, using energy-saving lamps, and maintaining air-conditioning facilities regularly to improve efficiency. In addition, colleagues are reminded to practice energy conservation from time to time, including turning off air-conditioning in unused spaces, using only necessary lighting in office areas and turning off light when leaving. Before holidays, colleagues are asked to turn off and unplug all unused electric appliances.. In addition, TPEX has actively purchased green electricity. In 2023, the utilization rate of green electricity in Guting office is about 27.49%, and TPEX is also planning and negotiating for the use of green electricity in the rest offices.

In terms of fuel management, all TPEX departments provide employees with official-use EasyCards to encourage taking public transportation. Private use of official vehicles is strictly forbidden, and rides are shared in principle. Maintenance and inspection are also carried out regularly to maintain fuel efficiency.

Carbon Reduction Activities or Incentives

To enhance employee awareness of sustainability, TPEX resolved at its second Sustainable Development Committee meeting in 2023 to plan and execute carbon reduction initiatives and incentives covering various aspects of daily life such as food, clothing, housing, transportation, education, and leisure activities.

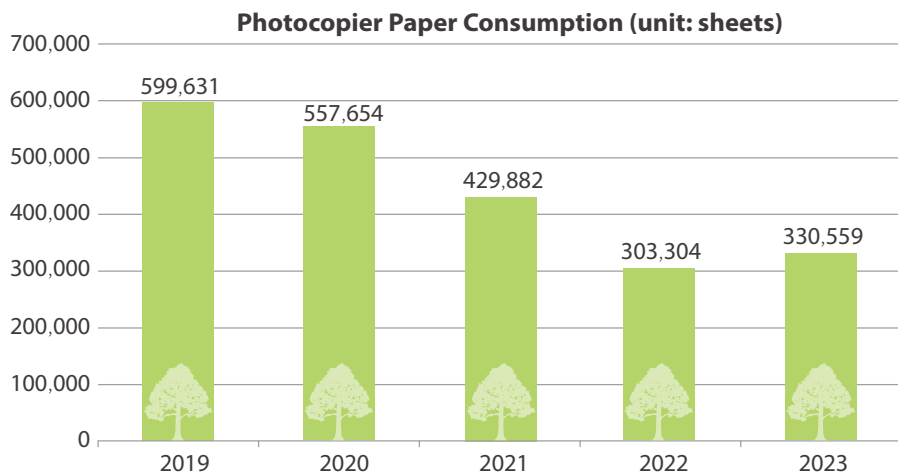
Aspect	Carbon Reduction Activities or Incentives
 <div>Food</div>	<ul style="list-style-type: none"> • Monthly Vegetarian Day: Regular provision of vegetarian and low-carbon lunches to voluntary colleagues. • Planning employee education and training courses on healthy cooking and sustainable diets in 2024. • Promoting the procurement of snacks with ESG concepts as needed for regular meetings or events to increase the proportion of local ingredients and vegetarian dishes in catering.
 <div>Clothing</div>	<ul style="list-style-type: none"> • Planning second-hand clothing donation activities in 2024.
 <div>Housing</div>	<ul style="list-style-type: none"> • Planning power-saving reward activities in 2024. • Encouraging colleagues to turn off lights for half an hour during lunch break (13:00-13:30) and in unoccupied areas during overtime. • Installing timer sockets for office equipment to automatically power off during off-peak hours.
 <div>Transportation</div>	<ul style="list-style-type: none"> • Encouraging colleagues to use stairs instead of elevators during office hours.
 <div>Education</div>	<ul style="list-style-type: none"> • Planning second-hand book donation activities in 2024. • Planning environmental education activities in 2024.
 <div>Leisure</div>	<ul style="list-style-type: none"> • Planning to call on colleagues to participate in charity activities with sustainable concepts in 2024. • Planning tree planting activities in 2024.

3.2.2.Resource Management

Paper resources management

TPEX's main consumables are photocopy papers. Over the past few years, we have been actively promoting digitalized and paperless processes. In addition to improving productivity, these efforts have also enabled us to achieve resource efficiency.

Internally, TPEX requires colleagues to process official documents electronically. In 2023, the usage rate of electronic official documents increased to 79.89% from 74.14% in 2022, with an increase of 4,148 pieces from a year earlier. The usage rate of electronic official documents rose from 74.14% to in 2022. In addition, meeting materials shall be transmitted electronically as much as possible; necessary photocopying or printing should also be double-sided. Since 2022, 100% of the paper purchased by TPEX is recycled paper. According to statistics, the number of papers used by photocopiers increased slightly by 0.89% in 2023 compared to 2022.



Externally, TPEX has been continuing to promote various electronic reporting services since 2015. To this end, it has successively digitalized declaration operations in place of the paper-based procedure for Main Board and Emerging Stock Market companies. Issuers or intermediary agencies can now download the necessary information from the TPEX website, and complete relevant online declarations in the electronic certification and declaration system of the Market Observation Post System (MOPS).

The Main Board and Emerging Stock Market companies download and online declarations type

Document download section for listed and registered companies	The list of the matters to be handled by the Main Board and Emerging Stock Market companies, registration form for press conferences regarding material information of companies, registration statements for listing of new shares for capital increase, registration statements for capital reduction, various Checklists, and Q & A, etc., are available online
The electronic certification and declaration system of MOPS	Main Board and Emerging Stock Market companies' stock listings, such as new shares from capital increase, cancellation of treasury shares, restricted stock awards, private placement of common shares, and over-the-counter trading of renamed new shares, etc. Securities firms joining midway and resigning from recommending Emerging Stock Market stocks Bond online listing

TPEX advocates Main Board and Emerging Stock Market companies to join the electronic document exchange system and reduce the transmission of paper documents. As of December 31, 2023, the proportion of Main Board and Emerging Stock Market companies can use the electronic document exchange system reached 92.40%.

Waste Management

TPEX mainly engages in securities trading and information services, therefore, is not associated with concerns over pollution or waste. At present, resource recycling bins are set up on each floor to enable the sorting of recyclables, and employees are required to practice resource recycling. Moreover, environmentally friendly toner is used throughout our offices, and 100% of the used toner cartridges are handed over to the original manufacturer for recycling to avoid causing pollution and resource wastage.

Water Management

TPEX's water supply is 100% sourced from the Taiwan Water Corporation, with no use of groundwater or other water sources. Its operational activities have no impact on the water supply. Wastewater is discharged into the sewer system. In terms of water management, in addition to promoting water-saving measures to its colleagues, TPEX also installs water-saving devices, regularly cleans the building's water tanks, conducts water quality tests, and inspects water facilities from time to time.



Afforestation

In response to environmental issues, Philip Chen, Chairman of TPEX, led colleagues and their families in a tree-planting activity at the Shimen Reservoir on April 7, 2022. This event aimed to instill the culture of sustainability and spread the seeds of sustainability to the next generation through parent-child interactions. TPEX has been nurturing afforestation in coastal and mountainous areas in Keelung, Taoyuan, Taichung, Kaohsiung, Yilan, and Hualien. As of now, it has adopted over 26,000 tree saplings. Apart from conserving water resources, preventing wind and sand erosion, and beautifying the landscape, TPEX has also sponsored the Forestry Bureau in rehabilitating protective forests. A healthy forest structure not only strengthens national security but maintains and creates biodiversity values.

County/City	Number of plants	Type of plants	Main functions
Keelung City	1,000	Pittosporum tobira, Ligustrum japonicum, Rhapsiolepis umbellata, Pongamia pinnata, Cerbera manghas	Wind-proof, sand-setting, greening, and beautification
Taoyuan City	1,000	Acer morrisonense, Picea asperata, Platycladus orientalis	Reservoir watersheds protection and enhancing climate resilience.
Taichung City	1,700	Acer morrisonense, Picea asperata, Platycladus orientalis	Protection of reservoir catchment areas and increasing climate resilience
Kaohsiung City	150	Scaevola taccada, Hibiscus tiliaceus, Vitex negundo	Ecological Construction and Preserving the Qie ding Wetland
Yilan County	2,000	Calophyllum inophyllum, Palaquium formosanum Hayata, Hibiscus tiliaceus, Bischofia polycarpa, Cerbera manghas, Melia azedarach, Ficus microcarpa	Maintaining the biodiversity of the native coastal forests and preventing sand from flying of shelter forest
Hualien County	20,660	Taiwan juniper, Taiwan cedar, Taiwan alder, Fagaceae	Sustainable production of forestry

Guandu Nature Park Adoption Plan



Guandu Nature Park, situated at the confluence of the Tamsui River and the Keelung River, serves as an important habitat for migratory birds, with roles in conservation, education, and research. However, in recent years, the park's wetlands have experienced increasing sedimentation and vegetation changes. To aid in the improvement of the wetland ecosystem, TPEX sponsored the "Guandu Nature Park Wetland Restoration Program," aiming to enhance the natural environment and biodiversity, thus contributing to the long-term sustainability of the Earth.

Adoption of the Organic Field of Xingjian Village and donation to social welfare organizations



Since 2016, TPEX has supported organic rice farming in Xingjian Village. The rice produced is donated through 19 social welfare organizations to disadvantaged groups. By adopting organic farmland, TPEX promotes environmentally friendly, non-toxic, and organic farming practices to boost rural development and transformation, achieve ecological conservation, and provide care for vulnerable families.

Supportive Environmental Education for Raising Environmental Awareness



To expand the influence of environmental protection, TPEX funded "Beyond Beauty - TAIWAN FROM ABOVE III", an environmental documentary produced by the Chi Po-lin Foundation. This documentary shows Taiwan's environmental pollution and degradation with real videos, aiming to raise the public awareness of environmental issues and call attention to environmental conservation, bringing hope and power for environmental change.

Continued Benefits from the Green Energy Charity Program



TPEX collaborates with the Taiwan Green Energy Charity Development Association, Sunnyfounder, and the Clown Doctors in the "Green Energy Charity Program," which creates four-win value through an innovative green energy charity model. This program, funded by TPEX, assists in the construction of solar power facilities to boost the development of the green energy sector. Meanwhile, the proceeds from selling green electricity are donated to social welfare organizations, providing them with stable funds for 20 years. In 2023, TPEX donated funds for the installation of 37 solar panels, generating a total of approximately 14.2 megawatt-hours.

GW¹⁰⁰⁺ 綠能公益

Certificate of
綠能公益減碳行動證書
Carbon Reduction

感謝您參與綠能公益計劃，以積極行動為環境創造更多乾淨能源，更成為能源轉型不遺落任何人之永續助力，您的行動將持續為減少碳排放貢獻，僅以 2023 參與至今成果致敬。

櫃買中心

贊助太陽能板	累計發電量	累計減碳量	受贈單位
37 片	14.2 千度	6.51 噸	紅鼻子醫生

以上統計資料為2023年度發電表現

台灣綠能公益發展協會
Taiwan Green Energy for Charity Association