5. Environmentally Friendly

ISO 14001 ISO 50001 ISO 14064-1 UL 2799 IECQ QC 080000 Zero Violations
Solar Energy Installation GRS- Global Recycled Standard AI and Green Product

Environmental Management and Sustainability Commitment

The world is facing severe environmental challenges such as climate change, resource depletion, biodiversity loss, and pollution. Pan-International recognizes that these changes have significant impacts on the economy and human well-being. As a corporate citizen, we actively take on sustainability responsibilities and are committed to reducing our operational environmental impact, doing our part for the future.

Although most of our Group's facilities are small to medium-sized production lines performing simple assembly with relatively simple processes and limited optimization opportunities, Pan-International always adheres to the concept of "Corporate Growth and Environmental Prosperity" in promoting sustainable operations. We consider environmental issues as one of our core corporate priorities and are dedicated to developing management systems and innovative strategies that align with sustainability principles.

To strengthen environmental management and ensure the implementation of related measures, our Group actively implements various environmental management systems and encourages subsidiaries with production facilities to obtain international certifications:

- In terms of environmental management, our Group promotes the ISO 14001 Environmental Management System and establishes management policies and systems in accordance with relevant regulations. Dongguan Pan-International, New Ocean Precision Component (Jiangxi), and Honghuasheng (Yantai) have obtained ISO 14001 certification in recent years and continue to maintain their qualifications; CJ Electric Systems (Wuhu) also obtained certification on February 2, 2024, valid until February 1, 2027. Currently, all facilities in China have obtained certification.
- In terms of hazardous substance management, our Group also promotes the implementation of hazardous substance management and reduction plans among subsidiaries, and obtains IECQ QC 080000 Hazardous Substance Process Management System certification. Among them, Dongguan Pan-International has obtained certification since 2021 and continues to maintain it, with the certificate valid until August 18, 2027.
- In terms of energy management, Honghuasheng (Yantai) has obtained ISO 50001 Energy Management System certification (valid until October 12, 2026), and New Ocean Precision Component (Jiangxi) is also actively implementing it. Through this system, enterprises can systematically identify energy-saving opportunities and continuously optimize energy use efficiency. Taking Honghuasheng (Yantai) as an example, in 2024, the total energy consumption decreased by approximately 7.54% compared to the base year (2022), and the total non-renewable energy consumption decreased by approximately 10.69%.
- In terms of waste management, Honghuasheng (Yantai) has obtained UL 2799 Platinum "Zero Waste to Landfill" certification, while New Ocean Precision Component (Jiangxi) has obtained GRS (Global Recycled Standard) certification. In 2024, Honghuasheng (Yantai) achieved a high waste reuse rate of 84.68%, meeting the goal of "maximizing resources and minimizing waste" in the production process; meanwhile, New Ocean Precision Component (Jiangxi) increased its annual recycled material utilization rate to 84.61% through the implementation of recycled material management system, demonstrating achievements in resource recycling.

Please refer to Section 1.2.2 and Appendix 5 of this report for certificates, and Sections 5.1-5.4 for details on various environmental policies.

We actively engage in energy conservation, carbon reduction, and green transformation through measures such as process optimization, equipment efficiency improvement, implementation of solar facilities, and purchase of renewable energy certificates (green certificates) to increase the proportion of green electricity usage and renewable energy efficiency. Among these efforts, the Dongguan Plant also sells excess solar power back to the grid, demonstrating a concrete commitment to green energy development. The Group also focuses on green product research and development and material selection, implementing environmental responsibility throughout the product lifecycle, continuously advancing towards environmental protection, energy conservation, and low-carbon directions.

This chapter summarizes the Group's achievements in environmental practices, current challenges, and future plans. We have developed specific environmental strategies and action plans covering greenhouse gas reduction, energy efficiency improvement, circular economy promotion, and ecological resource protection. Through the implementation of best practices, research and innovation, and collaboration with stakeholders, we are accelerating the realization of sustainability goals. The parent company will also relocate to a new factory office that complies with green initiatives in 2024, and has implemented the Task Force on Climate-Related Financial Disclosures (TCFD) framework to strengthen its climate risk management mechanism.

Looking ahead, Pan-International will continue to deepen its environmental sustainability planning, actively expand its electric vehicle industry supply chain and artificial intelligence industry applications, moving towards the dual goals of environmental sustainability and stable corporate operations.

▼ Zero environmental non-compliance in 2024

（GRI 307-1）

In 2024, the Group continued to strictly comply with various regulations and internal management systems in environmental management (covering water resources, waste, energy, and air emissions), and strengthened monitoring and improvement measures. Throughout the year, there were no incidents of violation of environmental regulations, achieving the "zero non-compliance" target, demonstrating our firm commitment to environmental protection and sustainable operations.

Environmental Policy SDGs Contributions

Contribution of Pan-International Group's Environmental Strategies to the United Nations Sustainable Development Goals (SDGs)

Enhance Environment Sustainability Plan	Environment Sustainability Financial Management Mutual Benefit
13 CLIMATE ACTION	SDG 13 Climate Action： Improve mitigation and adaption actions to address climate change and its impacts.
	Substitutability of Green Energy / Promote Greenhouse Gas Inventory
	Implement "Task Force on Climate-Related Financial Disclosures" / Green Transformation
7 AFFORDABLE AND CLEAN ENERGY	SDG 7 Affordable and Clean Energy: Ensure that everyone has access to affordable, reliable, sustainable, and modern energy.
	Enter the Electric Vehicle Sector
	Energy Saving Equipment / Substitutability of Green Energy
6 CLEAN WATER AND SANITATION	SDG 6 Clean Water and Sanitation: Ensure that everyone has access to water and sanitation and its sustainable management.
	Water Conservation Management Goal / Water Conservation Policy
	Water Conservation Equipment / Increase water utilization efficiency
12 RESPONSIBLE CONSUMPTION AND PRODUCTION	SDG 12 Responsible Consumption and Production: Promote green economy to ensure sustainable consumption and production patterns.
	Waste Reduction Policy / Increase Waste Recovery and Reuse Rate / Green Raw materials and Products
	Plan to Relocate to Plants With Green Initiatives / Responsible Mineral Purchase / Green Supply Chain

5.1 Energy Conservation and Carbon Reduction

Material Topic Management Approach: Energy, Greenhouse Gases

(The management actions for these two issues are highly related, so the management measures for both are explained together)

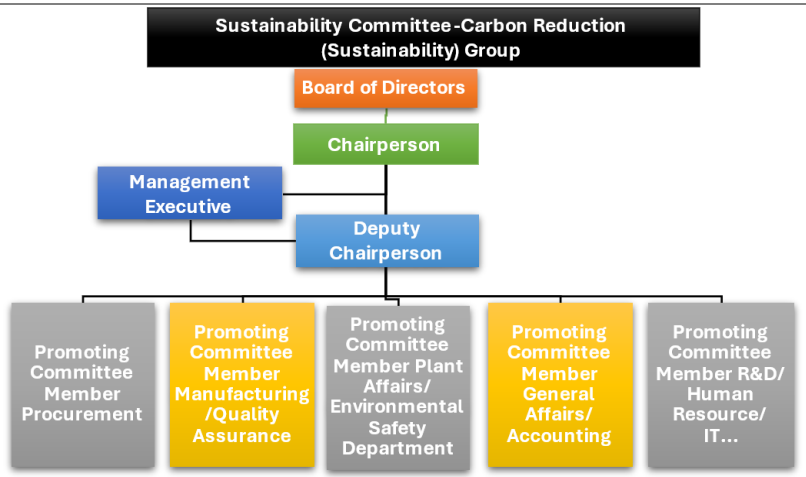
Corresponding GRI Indicators:

Energy - GRI 3-3, GRI 302-1, GRI 302-3, GRI 302-4

Greenhouse Gas－GRI 3-3, GRI 305-1, GRI 305-2, GRI 305-4, GRI 305-5

		Energy	Greenhouse Gas			
Impact Description		1. Energy consumption leads to rising costs, which increases operating expenses 2. Failure to fulfill corporate social responsibility 3. Deduction on company evaluation score	1. The gradual increase in greenhouse gas emission pricing 2. Extreme climate events 3. Negative stakeholder feedback 4. Violation of local and international regulations 5. Damage to corporate image			
Location		Pan-International, Taipei (Parent Company)	Dongguan Pan-International	New Ocean, Jiangxi	Honghuasheng, Yantai	CJ Electric Systems, Wuhu
Policies or Commitments Established or Followed	**Internal Regulations**	V	V	V	V	V
	Government Regulations	V	V	V	V	V
Responsible Units		Sustainability Committee/ Chairman / Management Committee	Sustainability Committee / Deputy Chairperson	Sustainability Committee / Deputy Chairperson	Sustainability Committee / Deputy Chairperson	Sustainability Committee / Deputy Chairperson

Management Actions



- Establish Sustainability Committee: Regularly discuss the implementation and planning of work related to climate change, energy issues, and greenhouse gas emission disclosure and reduction, then report the results to the Board of Directors annually/quarterly.
- Inventory and monitor greenhouse gas emissions
- Set carbon reduction goals and regularly review and improve

Organization	Plant	Department
Chairperson	Pan-International, Taipei	Stock Affairs Office
Management Executive		Sustainability Development Department
Deputy Chairperson	Dongguan Pan-International	HR Department-1
Deputy Chairperson		HR Department-2
Deputy Chairperson	CJ Electric Systems, Wuhu	Management Department
Deputy Chairperson		General Affairs Department
Deputy Chairperson	New Ocean, Jiangxi	Management Department
Deputy Chairperson		Plant Affairs Section - Fengcheng
Deputy Chairperson	Honghuasheng, Yantai	Maintenance Section 2

Process for Monitoring the Effectiveness of Actions

- Sustainability Committee: For key subsidiaries (with production plants), the Group established a management organization chaired by the Chairman, who acts as the Chairperson. The Committee meets regularly (quarterly) to discuss the implementation and planning of work related to climate change, energy issues, and greenhouse gas emission disclosure and reduction, then report the results to and review with the Board of Directors annually/quarterly.
- The Board of Directors supervises.
- The Sustainability Committee formulates and establishes energy conservation and carbon reduction policies and targets, as well as coordinating and integrating related promotion strategies and plans of each subsidiary. Regular meetings are held to continuously introduce various energy-saving plans suitable for different plants, confirm and review goal achievement rates, and challenge new energy-saving milestones.

Management Performance Indicators (Under the same conditions as the base year* - Note 1)				
Indicators	**2024 Achievement**	**Short-term Goal (Annual) (2022 base year)**	**Mid-term Goal (2022-2027)**	**Long-term Goal (2022-2050)**
(Non-renewable) Energy Intensity	Not achieved: ↑ 12.48% compared to previous year Due to significant decrease in revenue, resulting in increased intensity Under review, continuing efforts	Decrease by 1% annually	Decrease by 5% in 5 years	Net zero emissions
Increase in plant green energy proportion	Short-term goal 100% achieved: From 0.68% (2023) to 3.92% (2024)	Increase by 0.5% annually	Increase by 2.5% in five years	Increase by 10% for key plants
GHG Emission Intensity	Partially achieved by some sites ● Short-term goal 100% achieved: Dongguan Pan-International, New Ocean, Jiangxi, CJ Electric Systems, Wuhu ● Short-term target not achieved: Honghuasheng, Yantai Reason for not achieving: Due to global economic conditions in 2024, revenue decreased significantly, resulting in increased intensity	Decrease by 1.5% annually	Decrease by 7.5% in 5 years	Net zero emissions
GHG Emissions	Short-term goal 100% achieved: ↓ 8.43% compared to previous year, ↓ 17.17% compared to base year	Decrease by 1.5% annually	Decrease by 7.5% in 5 years	Net zero emissions
Zero violations	Short-term goal 100% achieved: 100% achieved	Comply with international and local environmental regulations to achieve zero violations.		

*Note [1]: (1) The 2022 base year boundary includes locations: Pan-International, Taipei, and subsidiaries in mainland China: Dongguan Pan-International, New Ocean, Jiangxi, Honghuasheng, Yantai, CJ Electric Systems, Wuhu; *This year's organizational boundary includes locations: Pan-International, Taipei, US subsidiary PIU (USA), and subsidiaries in mainland China: Dongguan Pan-International, New Ocean, Jiangxi, Honghuasheng, Yantai, CJ Electric Systems, Wuhu; (3) Same conditions as base year: Since the US subsidiary PIU (USA) was not included in 2022, it must be excluded from calculations.
*Note 2 Although the construction of Honghuasheng Yantai's solar power was postponed due to the pandemic, Dongguan Pan-International increased its green energy output, enabling the goal to be achieved.

Pan-International Group's global plants are not major carbon emitters, and are currently outside the scope of carbon tax or mandatory carbon trading regulations. Therefore, there have been no mandatory requirements in the past, only compliance with local regulations. Given the limited opportunities for carbon reduction in the industry, along with the current global climate issues and corporate responsibility, the Group remains committed to taking carbon reduction actions.

5.1.1 Energy and Greenhouse Gas Management

Due to energy shortages, global warming, and increasingly severe climate change, energy management and transition have become crucial components of international energy policies. The selection and consumption of energy are closely linked to issues such as company costs, environment, and safety. Improving energy utilization efficiency and reducing energy consumption will help save costs and mitigate the impacts of climate change.

Energy Structure: Due to the nature of the industry, the energy structure used by the Group's subsidiaries in mainland China primarily consists of purchased electricity, which accounts for over 80-90% of total energy consumption.

▼ Energy and Greenhouse Gas Governance

- 〔Sustainability Committee〕: The Chairman serves as the Chairperson, regularly discussing climate change, energy issues, and greenhouse gas emissions disclosure and reduction-related work implementation and planning, followed by annual reports to the Board of Directors.
- Focus on reducing non-renewable purchased electricity consumption by building additional solar (photovoltaic) power stations or using other renewable energy sources to increase green energy. Meanwhile, achieve energy savings through process and equipment improvements.
- Energy Conservation and Carbon Reduction Implementation: Through the Sustainability Committee, we establish guidelines and goals for energy conservation and carbon reduction. We also coordinate and integrate promotion strategies and plans for energy conservation and carbon reduction across each subsidiary. Regular meetings are held to continuously introduce various energy-saving plans, challenging new energy-saving milestones.

▼ Short-term Strategies (For key subsidiaries (with production facilities + 100% operational control))

- Green Equipment: Select energy-efficient equipment. Production facilities: Newly purchased production equipment or chiller units must be energy-efficient models.
- Energy-saving Process: Enhance energy recovery
- Green Facilities: Pan-International, Taipei (parent company) plans to relocate to a building with green architecture concepts.
- Energy Conservation in Non-production Areas: The Group's subsidiaries actively promote various energy-saving initiatives in offices and public areas, such as document digitalization and office areas.
- Use Energy-efficient Lighting Equipment: All replacement light tubes use more energy-efficient LED tubes.
- Comply with international and local environmental regulations to achieve zero violations.

▼ Mid to Long-term Strategies and Achievement Status

Items	Expected Timeline	Progress Status	Progress/Completion Level
Strengthen Energy Disclosure	2023	Completed (2023) and conducted annually	Starting from 2023, comprehensive energy structure inventory for 2022 (including thermal energy, natural gas, and gasoline/diesel) is required from key subsidiaries in mainland China (with production facilities)

Items		Expected Timeline	Progress Status	Progress/Completion Level
Implemented Task Force on Climate-Related Financial Disclosures		2022	Completed (2022) and regularly reviewed	Starting from 2022, TCFD has been implemented
Greenhouse Gas Inventory	Parent Company: Annual GHG (Scope 1, 2) Inventory	Complete previous year by 2025	Completed ahead of schedule (2023) and conducted annually	Starting from 2023, the parent company (Pan-International, Taipei) completed the 2022 greenhouse gas inventory and conducts it annually
	Consolidated subsidiaries: Annual GHG (Scope 1, 2) Inventory	Complete previous year by 2026	In progress, China (2022) and USA (2023) completed	Starting from 2023, Chinese subsidiaries (Dongguan Plant, Jiangxi Plant, Yantai Plant, Wuhu Plant) completed the 2022 greenhouse gas inventory (Scope 1, 2) and conduct it annually
				Starting from 2024, U.S. location PIU (USA) completed the 2023 greenhouse gas inventory (Scope 1, 2) and conducts it annually
	Parent company: Annual GHG (Scope 1, 2, 3) Inventory	Complete previous year by 2027	Completed (2025) and conducted annually	Starting from 2025, parent company has added: 2024 (Scope 3) - materiality analysis and inventory, and conducts it annually
	Consolidated subsidiaries: Annual GHG (Scope 1, 2, 3) Inventory	Complete previous year by 2027	In progress, some sites completed	Starting from 2023, Yantai plant has added: 2022 (Scope 3) - materiality analysis and inventory, and conducts it annually
				Starting from 2025, Dongguan Plant, Wuhu Plant, and Jiangxi Plant have added: 2024 (Scope 3) - materiality analysis and inventory, and conduct it annually
	Parent company: Annual GHG Assurance	Complete previous year by 2027	Completed (2025) and conducted annually	2025 has completed the 2024 parent company third-party verification/assurance, and conducts it annually
	Consolidated subsidiaries: GHG Assurance	Complete previous year by 2027	In progress, some sites completed	In 2024, Yantai Plant retrospectively obtained ISO 14064-1:2018 certification for 2020 and 2021 (Scope 1, 2)
				Starting from 2023, Yantai Plant obtained ISO 14064-1:2018 certification for 2022 (Scope 1, 2, 3), and conducts it annually
				Starting from 2024, Jiangxi Plant obtained ISO 14064-1:2018 certification for 2023 (Scope 1, 2), and conducts it annually
				Starting from 2025, Dongguan Plant and Wuhu Plant obtained third-party verification/assurance for 2024 (Scope 1, 2, 3), and conduct it annually
Use of green energy ≧10%		All (production) plants by 2050	In progress, some sites completed	Dongguan Plant completed and started using the solar power station in December 2022. Yantai Plant completed Phase I of the solar power station and started using it in March 2024. Jiangxi Plant started using solar and wind power in April 2024. Group renewable energy usage rate (2022) 0.06% > (2023) 0.68% > (2024)
Promote low-carbon manufacturing to reduce greenhouse gas emissions		Ongoing every year		Annual review and sharing
Promote ISO 50001 Energy Management System certification		In progress, some sites completed		Honghuasheng, Yantai has obtained ISO 50001 Energy Management System certification (valid until October 12, 2026), and New Ocean, Jiangxi is also actively implementing it

▼ 2024 Energy Conservation and Carbon Reduction Management Policies for Each Plant

Plant	Energy conservation and carbon reduction management measures implemented by each plant
Pan-International, Taipei（ Office）	1. Use electric forklifts; 2. Promote turning off unused electrical appliances; 3. Replace with energy-saving light tubes; 4. Move into new plant offices that comply with green initiatives in 2024
Dongguan Pan-International	1. Promote turning off unused electrical appliances; 2. Solar power generation; 3. Sell excess solar power; 3. Employee dormitory uses air compressor waste heat recovery system and air source heat pump water heater for water heating
New Ocean, Jiangxi	1. WH laser marking machine energy-saving improvement project; 2. Workshop lighting circuit modification for energy-saving improvement project; 3. Workshop installation of large exhaust fans for energy-saving improvement project; 4. Promote turning off unused electrical appliances; 5. Replace with energy-saving light tubes
Honghuasheng, Yantai	1. Energy-saving project for reducing air conditioning usage in the park's film room 2. Introduction of new energy-saving dust collection fan in Manufacturing Division 1 3. Replace compressed air drying with exhaust air from electroplating line 4. Combine fans for tin plating line/packaging machines 5. Energy-saving project for improving efficiency in drilling and adhesive application machine 6. Efficiency improvement project for drilling coating drill bits 7. Introduction of Grade 1 energy-efficient water pumps in the park 8. Introduction of VCP pre-roughening micro-etching line 9. Introduction of semi-automatic packaging machines 10. Introduction of solder mask AVI machines 11. Motor replacement project for waste gas scrubber fans in the park 12. Introduction of Kemet 12x density test machines 13. Punching machine automation 14. Integration of lamination fans in A1 plant
CJ Electric Systems, Wuhu	1. Promote turning off power for unused electrical appliances 2. Replace with energy-saving light tubes 3. Replace fuel-powered work vehicles with new energy vehicles
Mainland China subsidiaries	In addition to self-building solar power stations, China is actively promoting energy structure adjustments in response to global energy-saving and carbon reduction trends; large-scale applications of new energy sources such as wind power and solar power generation are being widely increased. The Group's plants utilize local electricity, contributing to carbon reduction through the use of green energy.
All units	Promote implementation of ISO 50001

*PIU (USA) is an office with 7 people, where energy management items are not materially significant.

To effectively improve the Group's energy use efficiency, we have introduced the ISO 50001 Energy Management System standard for the higher energy-consuming plant - Honghuasheng, Yantai, and plan to encourage other plants to follow.In accordance with ISO 14064-1:2018 Greenhouse Gas Inventory Standards, we conduct an energy resource inventory by directly measuring various energy uses through on-site meters. We also estimate plant energy consumption using mass balance method and procurement quantity method. The Sustainability Committee - Energy Management Groupis responsible for integrating the energy use status from each operating location, identifying the main energy types of each site, and formulating energy-saving improvement plans and short, medium, and long-term goals. The Sustainability Committee supervises the implementation of energy policies annually and adjusts energy plans in a timely manner to ensure the achievement of energy-saving goals.

As of the end of 2023, Honghuasheng, Yantai passed ISO 50001 external verification. The Group also strengthens the promotion of company energy-saving policies, holds relevant promotion activities and education and training courses to enhance employees' energy-saving and carbon reduction concepts.

Location	Whether ISO 50001 has been implemented	Energy supervision unit and its responsibilities	Energy data collection method
Pan-International, Taipei (Office)	None	Environmental Engineering Department	Direct measurement, financial data, evidence-based estimation
Dongguan Pan-International	Planning	Management Department	Meter monitoring, financial data, evidence-based estimation
New Ocean, Jiangxi	Ongoing	Engineering Department	Model analysis, meter monitoring, financial data, evidence-based estimation
Honghuasheng, Yantai	October 12, 2026	Plant Affairs Department	Direct measurement, meter monitoring, financial data, evidence-based estimation
CJ Electric Systems, Wuhu	None	Management Department	Meter monitoring, financial data, evidence-based estimation
PIU (USA) (Office)	None	Pan-International, Taipei assists in management (office with less than 10 people)	Direct measurement, financial data

Note: Dates listed in the table represent the expiration dates of the certificates

5.1.2 Energy Consumption

Total non-renewable energy consumption ↓ 10.49% (compared base year)

The renewable energy usage rate increased to 3.92%.

(GRI 302-1, 302-3)

Energy Management and Renewable Energy Promotion (Corresponding to SDG 7: Affordable and Clean Energy, SDG 12: Responsible Consumption and Production, SDG 13: Climate Action)

In 2024, the total energy consumption within Pan-International Group's organizational boundary was 496,256.325 GJ, with an energy intensity of 26.063 GJ per million NTD in revenue.

The energy use structure is mainly based on purchased non-renewable electricity, accounting for approximately 90% of total energy consumption; the remainder consists of purchased thermal energy at 4-5% and fossil fuels at 2-4%. Therefore, in terms of energy-saving strategies, the Group will focus on reducing electricity usage intensity and increasing the proportion of renewable energy use in the future.

In 2024, the Group's renewable energy usage ratio increased to 3.92%, showing a significant increase of 3.86 percentage points compared to the base year 2022, demonstrating Pan-International's proactive approach in energy transition.

Non-Renewable Energy Usage Trend Analysis (Corresponding to SDG 13: Climate Action)

In 2024, total non-renewable energy consumption was 476,803.651 GJ, decreasing by 12,556.514 GJ (-2.57%) compared to 2023, and decreasing by 55,771.144 GJ (-10.49%) compared to 2022 (base year), demonstrating significant energy-saving results.

However, the non-renewable energy intensity increased by 7.63% compared to the base year 2022, and also increased by 12.48% compared to 2023. This was mainly due to the global economic slowdown in 2024, which resulted in a decrease in the Group's revenue by 4,425.544 million NTD compared to the same period in 2023, leading to increased energy consumption per unit of revenue, falling short of this year's short-term target for non-renewable energy intensity.

Nevertheless, the overall total energy consumption continues to decrease, indicating that the Group's energy-saving measures maintain steady progress. We will continue to implement diverse energy-saving initiatives, including:

- Implementation of energy-saving equipment suitable for each location
- Continuous promotion of process improvements
- Regular review of energy-saving effectiveness and target achievement progress

Through these efforts, we steadily advance toward the next milestone in energy conservation and carbon reduction.

Solar Power Collaboration and Renewable Energy Application Achievements in Plant Areas (SDG 7, SDG 12, SDG 13)

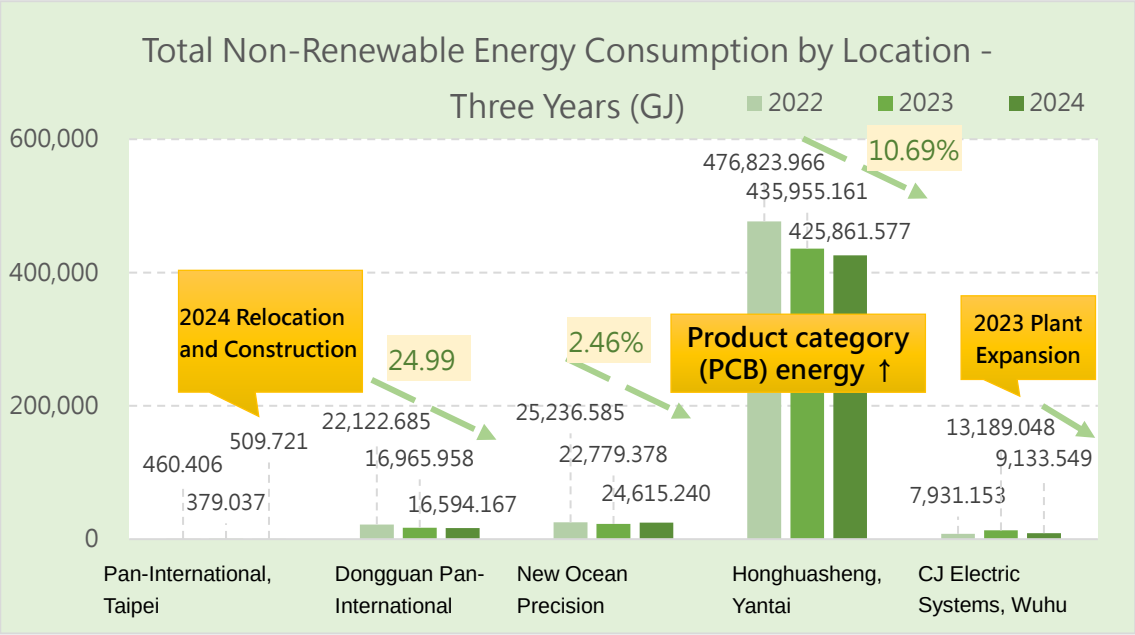
To further enhance the benefits of renewable energy usage, the Group's mainland China plants adopt a cooperative model by providing rooftop space free of charge to solar power companies for installing solar systems, and repurchasing renewable electricity at preferential rates. This initiative not only helps reduce electricity costs and carbon emissions but also promotes the development of green supply chains and circular economy.

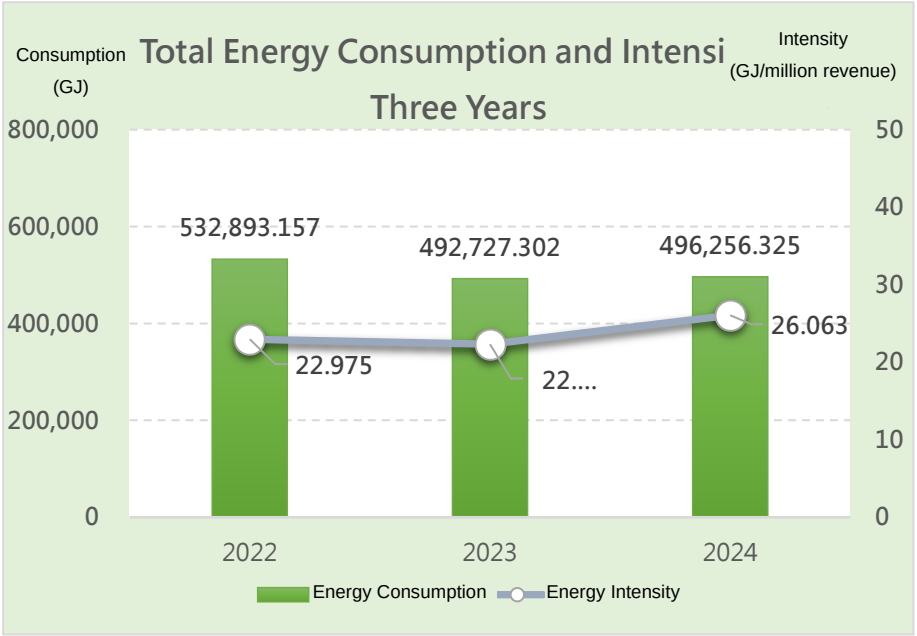
Among these initiatives, the Dongguan Plant has further adopted a "surplus power grid-connection model," feeding excess solar power that is not immediately used into the public power grid. This not only generates additional revenue but also improves the overall efficiency of renewable energy usage, demonstrating the Group's active commitment to green energy applications and energy resilience.

▼ Pan-International Group's Energy Consumption Analysis Table (Unit: Gigajoules, GJ)

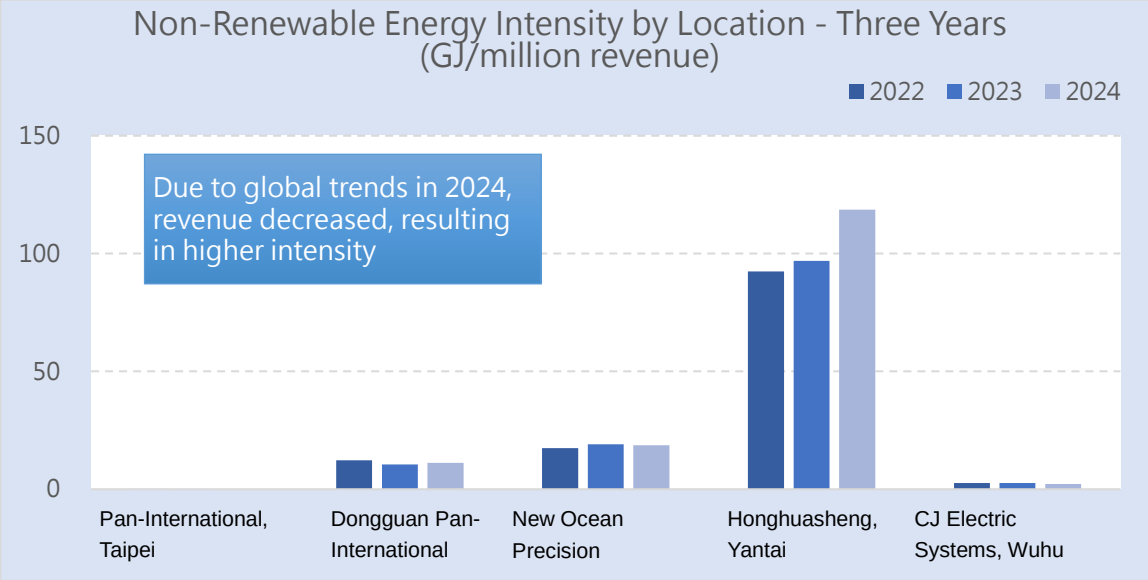
Location	Year	Purchased Renewable Energy Source(GJ)		Purchased Non-renewable Energy Source(GJ)			Total Renewable Energy Consumption(GJ)	Total Non-renewable Energy Consumption(GJ)	Energy Consumption(GJ)	Energy intensity (GJ/million revenue)	Non-renewable energy intensity (GJ/million revenue)	Percentage of renewable energy use	Solar Power Surplus Sales (GJ)
		Purchased (Solar)	Purchased Electricity (Wind)	Purchased Electricity	Fossil fuels	Purchased Thermal Energy							
Pan-International, Taipei	2022	0.000	0.000	459.774	0.632	0.000	0.000	460.406	460.406	0.039	0.039	0.00%	-
	2023	0.000	0.000	379.037	0.000	0.000	0.000	379.037	379.037	0.041	0.041	0.00%	-
	2024	0.000	0.000	509.721	0.000	0.000	0.000	509.721	509.721	0.063	0.063	0.00%	-
Dongguan Pan-International	2022	318.362	0.000	21,780.50	342.188	0.000	318.362	22,122.685	22,441.047	12.395	12.219	1.42%	-
	2023	3,367.137	0.000	16,688.35	277.613	0.000	3,367.137	16,965.958	20,333.095	12.656	10.560	16.56%	-
	2024	3,170.717	0.000	16,487.96	106.206	0.000	3,170.717	16,594.167	19,764.884	13.287	11.156	16.04%	136.831
New Ocean, Jiangxi	2022	0.000	0.000	24,681.89	554.697	0.000	0.000	25,236.585	25,236.585	17.468	17.468	0.00%	-
	2023	0.000	0.000	21,851.85	927.526	0.000	0.000	22,779.378	22,779.378	19.056	19.056	0.00%	-
	2024	1,188.271	72.016	24,098.87	516.370	0.000	1,260.287	24,615.240	25,875.527	19.606	18.651	4.87%	-
Honghuasheng, Yantai	2022	0.000	0.000	435,796.06	24,659.910	16,368.000	0.000	476,823.966	476,823.966	92.425	92.425	0.00%	-
	2023	0.000	0.000	400,535.89	16,546.178	18,873.090	0.000	435,955.161	435,955.161	96.930	96.930	0.00%	-
	2024	15,021.670	0.000	393,804.77	19,160.305	12,896.507	15,021.670	425,861.577	440,883.247	122.777	118.594	3.41%	-
CJ Electric Systems, Wuhu	2022	0.000	0.000	7,766.63	164.524	0.000	0.000	7,931.153	7,931.153	2.623	2.623	0.00%	-
	2023	0.000	0.000	13,024.52	164.524	0.000	0.000	13,189.048	13,189.048	2.604	2.604	0.00%	-
	2024	0.000	0.000	8,712.60	420.951	0.000	0.000	9,133.549	9,133.549	2.165	2.165	0.00%	-
PIU (USA)	2022	-	0.000	-	-	-	0.000	-	-	-	0.000	-	-
	2023	0.000	0.000	91.583	0.000	0.000	0.000	91.583	91.583	0.209	0.209	0.00%	-
	2024	0.000	0.000	89.397	0.000	0.000	0.000	89.397	89.397	0.329	0.329	0.00%	-
Total	2022	318.362	0.000	490,484.84	25,721.951	16,368.000	318.362	532,574.795	532,893.157	22.975	22.961	0.06%	-
	2023	3,367.137	0.000	452,571.23	17,915.841	18,873.090	3,367.137	489,360.165	492,727.302	22.333	22.180	0.68%	-
	2024	**19,380.658**	**72.016**	**443,703.31**	**20,203.832**	**12,896.507**	**19,452.674**	**476,803.651**	**496,256.325**	**26.063**	**25.041**	**3.92%**	**136.831**

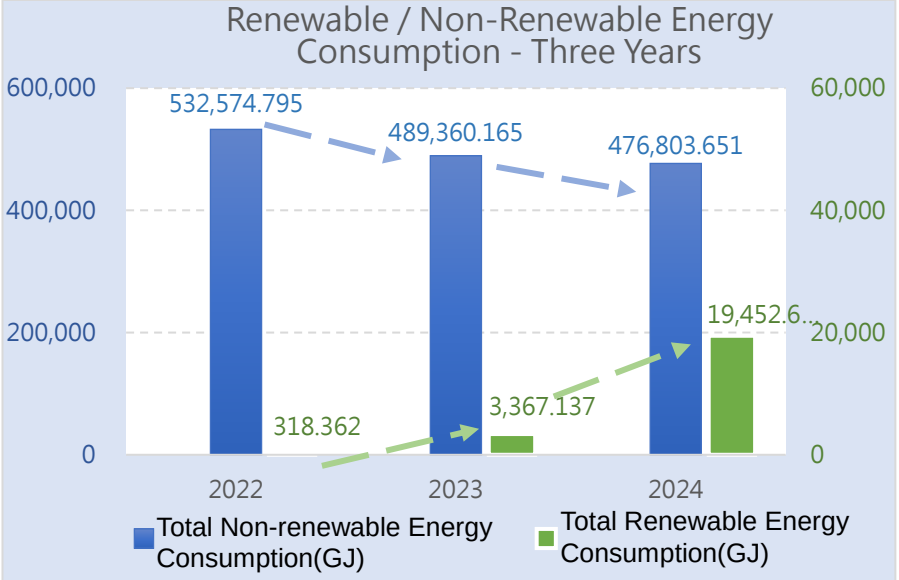
Note 1: The calorific values are sourced from the Bureau of Energy, MOEA, multiplying energy usage by unit calorific value and converting to gigajoules (GJ) to calculate energy consumption.
Note 2: Calorific value conversion: China Gasoline has a calorific value of 10,300kcacl/kg; China natural gas has a calorific value of 8,505kcal/m³, based on <GB／T 2589-2020 General Principles for Calculation of Energy Consumption>
Note 3: Conversion: China gasoline 1 L = 1 L x 0.7475 L/kg density x gasoline calorific value 10300 kcal/kg = 7699.2500 kcal/L x 4.187 KJ/kcal = 0.0322 GJ (2024 updated data)
Note 4: Conversion: China diesel 1 L = 1 L x 0.8275 L/kg density x diesel calorific value 10200 kcal/kg = 8440.5000 kcal/L x 4.187 KJ/kcal = 0.0353 GJ (2024 updated data)
Note 5: As most subsidiaries of the Group are manufacturing-based industries, revenue in millions of TWD is chosen as the denominator for intensity calculations.
Note 6: The total statistics for Pan-International, Taipei cover the period from 2024/1/1-2024/11/24 at Xindian Headquarters, and from 2024/11/24-2024/12/31 at the new Zhonghe Headquarters. Statistical data is primarily based on annual consolidated figures.
Note 7: The energy statistics for CJ Electric Systems, Wuhu include Ruichang (factory area) and Dechang (warehouse).





Note: For trend analysis, only manufacturing plants and parent company are listed / Honghuasheng, Yantai is a PCB plant with different industry type from other plants / CJ Electric Systems, Wuhu expanded in 2023 (Dechan Plant added 35,000 square meters)

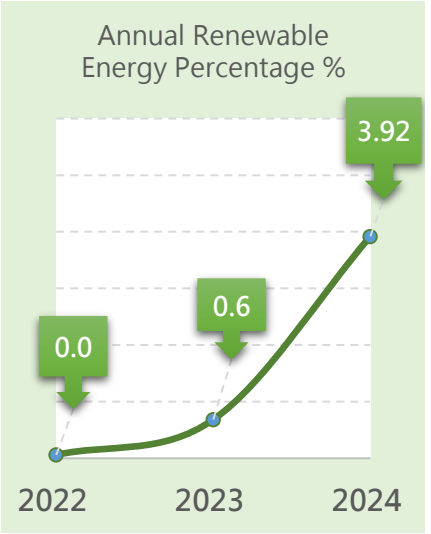




Note: The total values in the above charts are within the scope of this disclosure

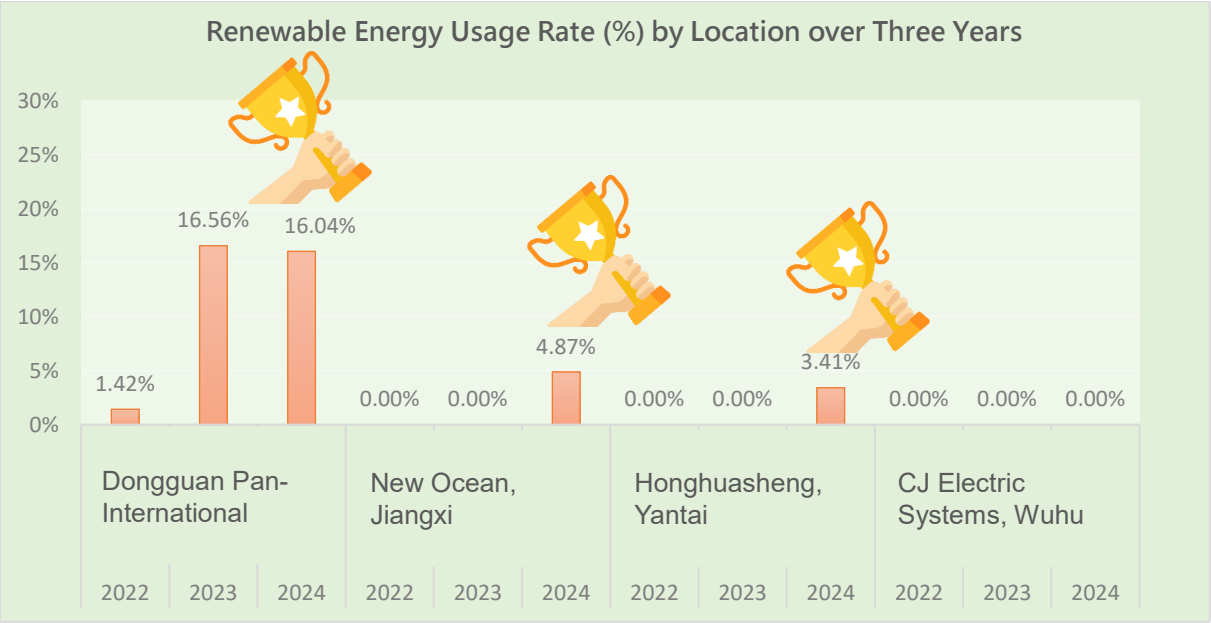
▼ Pan-International Group's Energy Consumption Proportion (Unit: %)

Energy consumption items		Energy Consumption Percentage		
		2022	2023	2024
Purchased - Renewable Energy Source	Purchased Electricity （Solar+Wind）	0.06%	0.68%	3.92%
Purchased - Non-renewable Energy Source	Purchased Electricity	92.04%	91.85%	89.41%
	Purchased Thermal Energy	3.07%	3.83%	4.07%
	Fossil fuels	4.83%	3.64%	2.60%
Self-produced Energy	Solar, Wind, Hydro	0.00%	0.00%	0.00%
Total Renewable Energy Consumption		0.06%	0.68%	3.92%
Total Non-renewable Energy Consumption		99.94%	99.32%	96.08%



Note: In mainland China, purchased - renewable energy source is leasing sites (rooftops) to solar energy operators, who then provide the produced solar energy at preferential prices.

▼ 2024 Renewable Energy Usage Rate (and Future Plans) by Location (Plant):



Description & Future Plans

Dongguan Pan-International

2022/12 Rooftop Solar Station began operation,

Increased to 16.04% in 2024.

Honghuasheng, Yantai

First phase of rooftop solar station completed in 2024.

Increased to 3.41% in 2024.

New Ocean Precision Component, Jiangxi

Unable to install solar station due to plant structure limitations.

Through purchasing renewable energy. Increased to **4.87% in 2024.**

CJ Electric Systems, Wuhu

Planning the solar station construction

5.1.3 GHG Emissions

ISO verification： Taiwan and Mainland China

Total GHG emissions ↓ 17.17% (compared base year)

Emission intensity ↓ 4.15%(compared base year)

Greenhouse Gas Inventory and Management Performance (SDG 13: Climate Action)

Pan-International Group follows the ISO 14064-1:18 Greenhouse Gas Inventory Standard, adopting the operational control approach to define organizational boundaries. The disclosure scope for 2024 includes Category 1 Direct Emissions, Category 2 Purchased Energy, and Categories 3 to 6 (according to the disclosure requirements of the Climate Change Response Act which replaced the Greenhouse Gas Reduction and Management Act). Categories 2-6 are calculated based on significant materiality assessment results. According to the ISO 14064-1: 2018 standard, significance assessment criteria for indirect greenhouse gas emissions are established (frequency, impact level, quantification method, and risk level). After weighted scoring based on significance identification factors for each emission type, those identified as significant emission types will be prioritized for inventory and emission calculation. The significance assessment of indirect greenhouse gas emissions comes from greenhouse gases generated by each company's operational activities, but these emission sources are not owned or controlled by the respective companies. And verification is conducted by an external third party.

This year's organizational boundary includes all locations within the scope of this sustainability report: parent company, subsidiaries in mainland China, and U.S. subsidiaries. The reporting boundary includes Category 1 direct greenhouse gas emissions: stationary sources, mobile sources, fugitive sources, process sources, etc.; Category 2 purchased energy emissions: electricity and thermal energy; Category 3: upstream transportation, business travel, etc.; Category 4: product purchases, waste disposal, etc.

Within the reporting boundary, major potential greenhouse gas emission sources are identified. The types of greenhouse gases include seven gases: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF6), and nitrogen trifluoride (NF3).

Since 2022, the Group's Taipei parent company and subsidiaries in mainland China (Dongguan Pan-International, New Ocean Precision Component Jiangxi, Honghuasheng Yantai, CJ Electric Systems Wuhu) have conducted annual greenhouse gas inventories, with 2022 serving as the base year (covering Scope 1 and Scope 2). The base year for Scope 3 is set as 2024. The U.S. subsidiary PIU (USA) began conducting inventories in 2023; however, as it is an office location with fewer than 10 people and extremely low carbon emissions, it is not included in the base year calculation scope.

Calculation Methods and Emission Factor References

The Group uses the emission factor method for inventory, converting to carbon dioxide equivalent (CO_2 e) using the formula "activity data × emission factor × Global Warming Potential (GWP)", with the unit being metric tons (tCO_2 e). Data sources are as follows: Emission factors are from the latest Greenhouse Gas Emission Factor Management Table (Version 6.0.4) published by the Environmental Protection Administration of the Executive Yuan; GWP values are from the IPCC Sixth Assessment Report; and for China's diesel, gasoline, and thermal energy calculations, values are based on China's Ministry of Ecology and Environment standards, GB/T 2589-2020 General Principles for Calculation of Comprehensive Energy Consumption, and the Guidelines for Accounting Methods and Reporting of Greenhouse Gas Emissions for Electronic Equipment Manufacturing Enterprises (Trial) issued by the National Development and Reform Commission.

The greenhouse gas emissions inventory for 2024 from Pan-International parent company, mainland China subsidiaries, and U.S. subsidiary (unit: tCO2e) shows Scope 1: 2,232.1190; Scope 2: 69,949.1040 (location-based)/67,502.3500 (market-based) tCO2e; Scope 3: 60,780.3280 tCO2e. The total greenhouse gas emissions are 130,514.797 tCO2e (market-based), with emission intensity (market-based) calculated at 6.855 per million TWD revenue, using total revenue (million TWD) as the intensity conversion unit. The total emissions for Scope 1 and 2 are 69,734.469 tCO2e (market-based), with emission intensity (market-based) at 3.662 per million TWD revenue.

2024 Greenhouse Gas Inventory Results (Unit: tCO_2 e): Full Organizational Boundary

Scope	Emissions	Notes
Scope 1 (Category 1)	2,232.1190	Direct Emissions
Scope 2 (Category 2)	69,949.1040 (Location-based) / 67,502.3500 (Market-based)	Purchased Electricity and Heat
Scope 3 (Category 3-6)	60,780.3280	Other Indirect Emissions (Upstream Transportation, Business Travel, etc.)
Total Emissions (Market-based)	130,514.797	Including Scope 1-3
Emission Intensity (Market-based)	6.855 tCO_2 e/Million NTD Revenue	All Scopes
Scope 1+2 Total Emissions (Market-based)	69,734.469	Including Scope 1-2
Scope 1+2 Emission Intensity (Market-based)	3.662 tCO_2 e/Million NTD Revenue	Including Scope 1-2

Note: The greenhouse gas (GHG) values listed in this table are calculated according to the Group's unified standards. However, due to joint verification with industrial parks in Mainland China, the actual verification values for Yantai and Jiangxi plants may slightly differ due to regional joint inventory mechanisms.

Comparison with Base Year and Previous Year (Scope 1+2 Market-based)

To maintain consistent comparison, the analysis between the base year and current year, excluding U.S. subsidiary data, is as follows:

Since the U.S. subsidiary was not included in the base year (2022), we compare this year's Scope 1,2 emissions and Scope 1,2 emission intensity with the base year (2022) on the same basis (excluding U.S. subsidiary data): Current year emissions decreased by 14,451.189 tCO2e/declined by 17.17%, and greenhouse gas emission intensity decreased by 4.15% compared to the base year. Compared to the previous year (2023): Current year emissions decreased by -5,878.953 tCO2e/declined by 8.43%, and greenhouse gas emission intensity increased by 7.44% compared to the previous year, failing to meet the short-term intensity target. This was mainly due to a decrease in revenue of 4,425.544 million NTD compared to the same period last year due to global trends in 2024, resulting in increased energy consumption per unit of revenue. However, when comparing emissions with the base year, we have achieved our reduction target.

Year	Scope 1+2 Market-based - Emissions (tCO_2 e)	Emission Intensity (tCO_2 e/Million NTD)
2022 (Base Year)	84,180.732	2.431
2023 (Previous Year)	75,608.496	2.169
2024 (Current Year)	69,729.543	2.330

Emission Reduction Drivers

The main reasons for the decrease in emissions are the active replacement of energy-efficient equipment, optimization of energy consumption for maximum contribution, and aggressive planning and installation of solar power stations across various plant sites. Additionally, local power plants in each region are increasing new green energy sources in stages, such as wind power and solar power generation, to continuously optimize the electricity consumption structure, thereby lowering electricity emission factors.

▼ Each (Manufacturing) Plant - Current Year Greenhouse Gas Reduction Performance (Excluding Office Analysis: Pan-International, Taipei, PIU (USA))

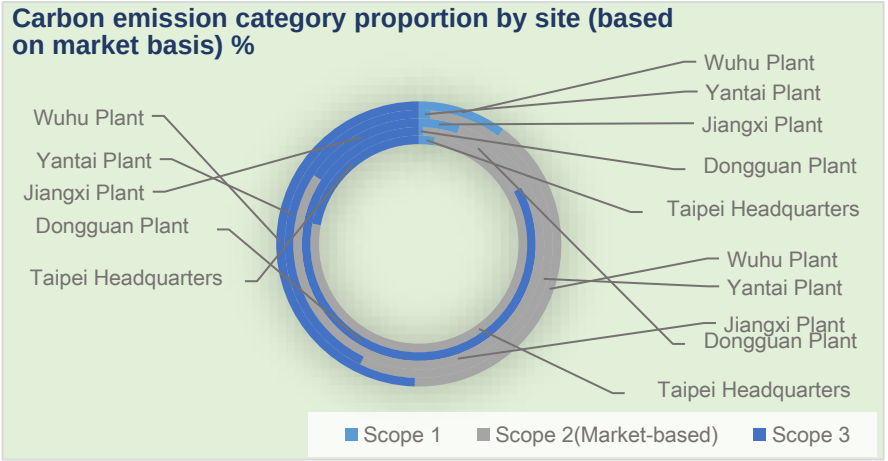
*Due to global economic conditions in 2024, Honghuasheng, Yantai experienced a significant revenue decrease, resulting in increased emission intensity.

Location	Scope 1+2 - Market-based			Intensity - Scope 1,2 - Market-based		
	2024 Emissions (tCO2e)	Rate of Change		2024 Intensity (tCO2e/Million Revenue)	Rate of Change	
		Previous Year (2023)	Base Year (2022)		Previous Year (2023)	Base Year (2022)
Dongguan Pan-International	2,526.207	**Decreased by 9.67%**	**Decreased by 30.68%**	1.698	**Decreased by 1.51%**	**Decreased by 15.62%**
New Ocean, Jiangxi	3,832.807	**Decreased by 0.07%**	**Decreased by 19.78%**	2.904	**Decreased by 9.49%**	**Decreased by 12.18%**
Honghuasheng, Yantai*	61,678.267	**Decreased by 8.34%**	**Decreased by 16.99%**	17.176	***Increased by 15.61%**	***Increased by 19.26%**
CJ Electric Systems, Wuhu	1,623.049	**Decreased by 30.81%**	**NA (Plant expansion in 2023)**	0.385	**Decreased by 8.20%**	**Decreased by 16.12%**

The greenhouse gas (GHG) values listed in this table are calculated according to the Group's unified standards; however, due to joint verification with industrial parks in mainland China, the actual verification values for Yantai and Jiangxi plants may slightly differ due to regional joint inventory mechanisms.

▼ Greenhouse Gas Emissions Proportion (Unit: %)

Carbon emissions - Scope 1 & 2 & 3 proportion (Scope Proportion) (%)			
Location	Scope 1 (Direct)	Scope 2 (Indirect Energy)/ Market-based	Scope 3 (Other Indirect/Material)
Pan-International, Taipei	2.38%	75.62%	22.00%
Dongguan Pan-International	0.60%	16.40%	82.99%
New Ocean, Jiangxi	1.46%	55.76%	42.78%
Honghuasheng, Yantai	5.31%	78.92%	15.77%
CJ Electric Systems, Wuhu	10.09%	40.37%	49.54%
PIU (USA)	0.00%	59.78%	40.22%



▼ Group's 2024 Greenhouse Gas Inventory Assurance Status

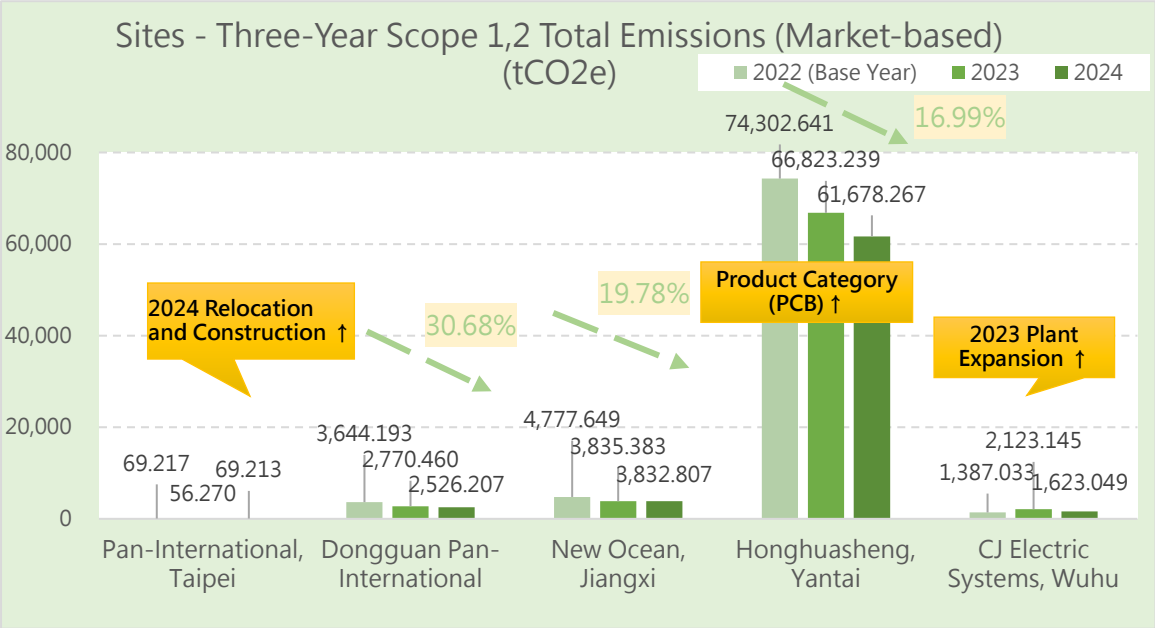
Location	Third-party Assurance	Assurance Organization	Assurance Standard	Category 1	Category 2	Category 3	Category 4	Category 5	Category 6
Pan-International, Taipei	Yes	AFNOR	ISO 14064-3	Reasonable	Reasonable	No Assurance	Limited	No Assurance	No Assurance
Dongguan Pan-International	Yes	AFNOR	ISO 14064-3	Limited	Limited	Limited	Limited	No Assurance	No Assurance
New Ocean, Jiangxi	Yes	CEPREI	ISO 14064-3	Reasonable	Reasonable	No Assurance	No Assurance	No Assurance	No Assurance
Honghuasheng, Yantai	Yes	CEPREI	ISO 14064-3	Reasonable	Reasonable	Reasonable	Reasonable	No Assurance	No Assurance
CJ Electric Systems, Wuhu	Yes	AFNOR	ISO 14064-3	Limited	Limited	Limited	Limited	No Assurance	No Assurance
PIU (USA)*	None	-	-	-	-	-	-	-	-

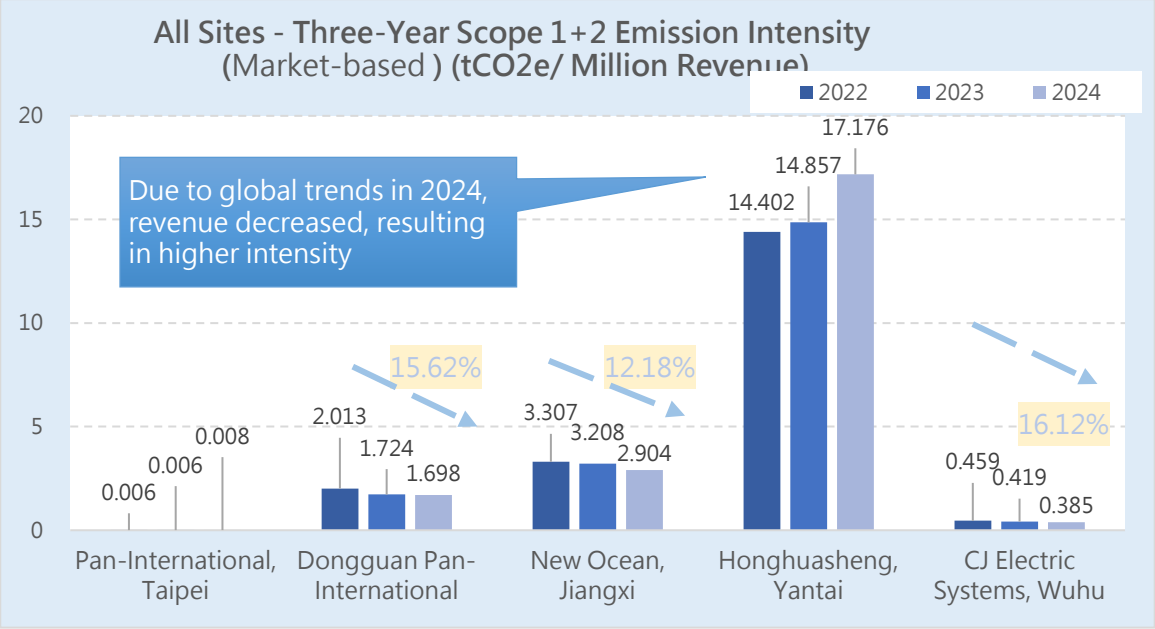
* PIU (USA) is an office-type location with 7 people, with extremely low carbon emissions, making assurance less meaningful.

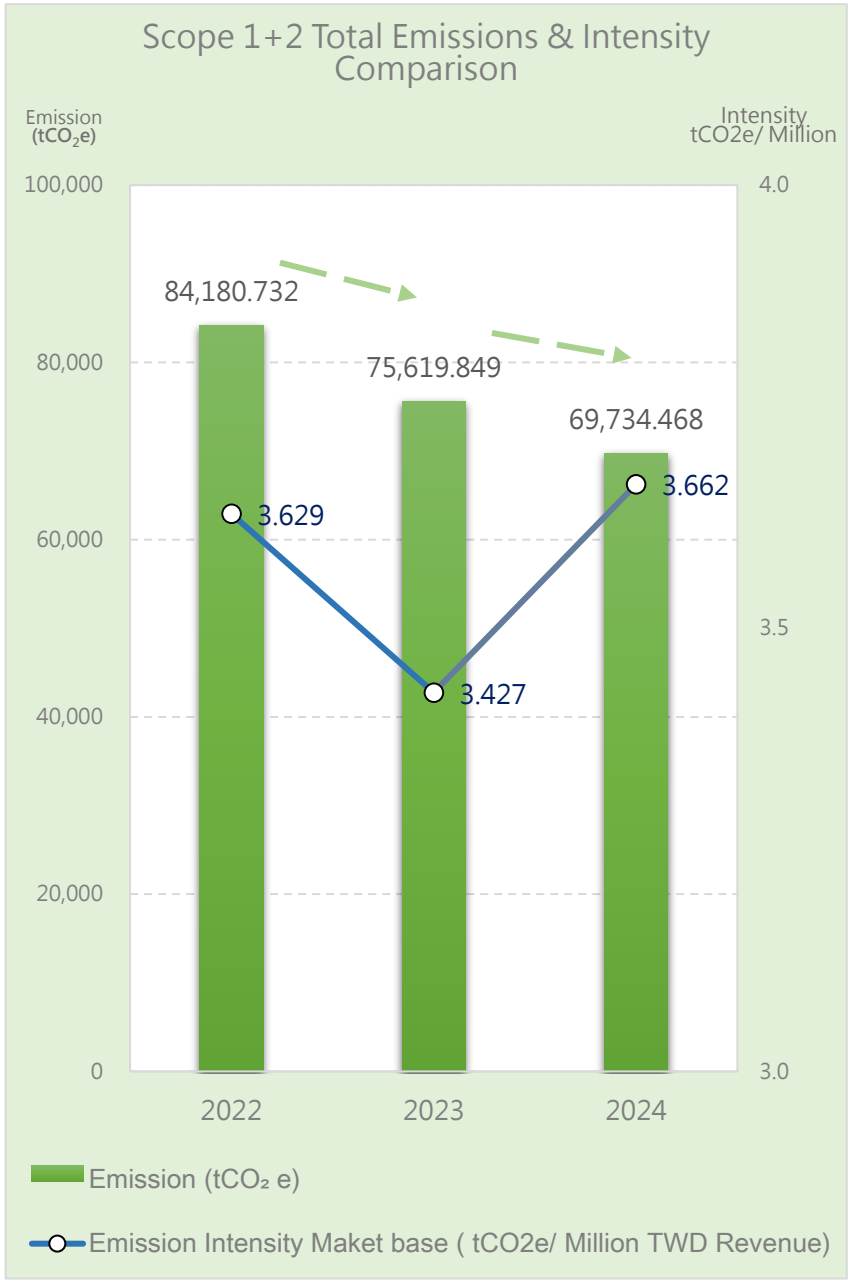
▼ Greenhouse Gas Emissions Analysis Table (Unit: tCO2e; Emission Intensity: tCO2e/Million TWD Revenue)

Plant	Year	Scope 1	Scope 2		Scope 3	Scope 1 Percentage	Scope 2 Percentage Market-based	Scope 3 Percentage	Scope 1-3 Market-based	Scope 1+2 Market-based	Intensity Scope 1+2 Market-based	Intensity Scope 1,2,3 Market-based
			Location-based	Market-based								
Pan-International, Taipei	2022 (Base)	4.2096	65.0069	65.0069	-	6.08%	93.92%	-	69.217	69.217	0.006	-
	2023	4.2687	52.0010	52.0010	-	7.59%	92.41%	-	56.270	56.270	0.006	-
	2024	2.1150	67.0980	67.0980	19.5200	2.38%	75.62%	22.00%	88.733	69.213	0.008	0.011
Dongguan Pan-International	2022	129.0623	3515.1302	3515.1302	-	3.54%	96.46%	-	3,644.193	3,644.193	2.013	-
	2023	126.7471	2643.7130	2643.7130	-	4.57%	95.43%	-	2,770.460	2,770.460	1.724	-
	2024	89.5350	2457.0630	2436.6720	12328.6270	0.60%	16.40%	82.99%	14,854.834	2,526.207	1.698	9.987
New Ocean, Jiangxi	2022	794.2667	3983.3825	3983.3825	-	16.62%	83.38%	-	4,777.649	4,777.649	3.307	-
	2023	373.6847	3461.6980	3461.6980	-	9.74%	90.26%	-	3,835.383	3,835.383	3.208	-
	2024	241.5550	3779.0620	3591.2520	717.6720	5.31%	78.92%	15.77%	4,550.479	3,832.807	2.904	3.448
Honghuasheng, Yantai	2022	2,169.5195	72,133.1213	72,133.1213	-	2.92%	97.08%	-	74,302.641	74,302.641	14.402	-
	2023	1,295.6259	65,527.6130	65,527.6130	-	1.94%	98.06%	-	66,823.239	66,823.239	14.857	-
	2024	1,574.2300	62,342.5900	60,104.0370	46,117.8420	1.46%	55.76%	42.78%	107,796.109	61,678.267	17.176	30.019
CJ Electric Systems, Wuhu	2022	133.5848	1253.4477	1253.4477	-	9.63%	90.37%	-	1,387.033	1,387.033	0.459	-
	2023	59.8430	2063.3020	2063.3020	-	2.82%	97.18%	-	2,123.145	2,123.145	0.419	-
	2024	324.6840	1298.3650	1298.3650	1593.3530	10.09%	40.37%	49.54%	3,216.402	1,623.049	0.385	0.762
PIU (USA)	2022	-	-	-	-	-	-	-	-	-	-	-
	2023	0.7470	10.6060	10.6060	-	6.58%	93.42%	-	11.353	11.353	0.0259	-
	2024	0.0000	4.9260	4.9260	3.3140	0.00%	59.78%	40.22%	8.240	4.926	0.0182	0.030
Total	2022	3,230.6429	80,950.0886	80,950.0886	-	3.84%	96.16%	-	84,180.732	84,180.732	3.6293	-
	2023	1,860.9164	73,758.9330	73,758.9330	-	2.46%	97.54%	-	75,619.849	75,619.849	3.4275	-
	2024	2,232.1190	69,949.1040	67,502.3500	60,780.3280	1.71%	51.72%	46.57%	130,514.797	69,734.469	3.7055	6.855

Note 1: As most of the Group's subsidiaries are manufacturing-based operations, million NT dollars of revenue is used as the denominator for intensity calculation.
Note 2: The total statistics for Pan-International, Taipei cover the period from 2024/1/1-2024/11/24 at Xindian Headquarters, and from 2024/11/24-2024/12/31 at the new Zhonghe Headquarters. Statistical data is primarily based on annual consolidated figures.
Note 3: The energy statistics for CJ Electric Systems, Wuhu include Ruichang (factory area) and Dechang (warehouse).
Note 4: CJ Electric Systems, Wuhu expanded in 2023 (Dechan Plant area increased by 10,600 pings).
Note 5: In 2022, PIU (USA) did not calculate GHG emissions.
Note 6: The greenhouse gas (GHG) values listed in this table are calculated according to the Group's unified standards; however, due to joint verification with industrial parks in Mainland China, the actual verification values for Yantai and Jiangxi facilities may slightly differ due to regional joint inventory mechanisms.
Note 7: Greenhouse gas types include carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O) and hydrofluorocarbons (HFCs), totaling 4 greenhouse gases.







Note: For trend analysis, only manufacturing plants and parent company are listed / Honghuasheng, Yantai is a PCB plant with different industry type from other plants / CJ Electric Systems, Wuhu expanded in 2023 (Dechan Plant added 35,000 square meters)

5.1.4 Energy-saving and Carbon Reduction Measures

(GRI 302-4)

Pan-International Group sets 2022 as the base year, and implements energy-saving planning and design through internal energy guidelines or energy management standards. The performance standards of energy-consuming equipment are incorporated as priority choices for future equipment replacement. The company is committed to increasing renewable energy usage with the goal of achieving net-zero emissions by 2050. The company has set a target to reduce non-renewable energy intensity by 1% annually, and plans to reduce emission intensity by 7.5% by 2027 compared to the base year (2022) (equivalent to a 1.5% reduction per year).

We mainly adopt measures such as replacing old with new (energy-saving devices), setting up solar plants, process improvements, and equipment (unit) improvements, and regularly track performance results. In 2024, the company invested a total of NTD 38,953,657.94 in energy-saving and carbon reduction measures. Through these implementation results, 48,764.6248 GJ of energy was saved, reducing greenhouse gas emissions by 7,187.2184 tCO2e; including solar power surplus sales of 136.8312 GJ, equivalent to approximately 20.3908 tCO2e in carbon reduction, the total reduction reached 7,207.6092 tCO_2e of greenhouse gas emissions.

SDG Alignment:

- SDG 7: Affordable and Clean Energy - Promote energy efficiency improvement and renewable energy installation, such as solar power generation.
- SDG 9: Industry, Innovation and Infrastructure - Achieve green transformation and innovative applications through process and equipment optimization.
- SDG 12: Responsible Consumption and Production - Implement energy management systems and introduce energy-saving equipment to promote efficient resource utilization.
- SDG 13: Climate Action - Actively formulate and implement carbon reduction strategies, progressing toward the 2050 net-zero goal.

▼ **Pan-International Group Energy-saving and Carbon Reduction Measures Overview**

Location	Energy-saving Method	Method Description	Energy Name	Calculation Method	Investment amount in NTD	Energy saving consumption	Energy Saving Volume (GJ)	Carbon Reduction Volume (tCO2e)	Reduction Scope
Pan-International, Taipei	Replacement of Old with New	Replace diesel forklifts with electric forklifts	Diesel	Evidence-based Estimation	132,000	17.97L diesel	0.6320	0.0468	Scope 1
Dongguan Pan-International	Solar energy	Rooftop solar installation	Solar energy	Direct Measurement	Roof rental offset against electricity price	880554 kWh	3170.7165	472.5053	Scope 2, Scope 3
Dongguan Pan-International	Feed-in tariff for surplus green energy	Solar power surplus fed into grid for renewable energy certificates	Solar energy	Direct Measurement	0	38000 kWh	136.8312	20.3908	Scope 2, Scope 3
New Ocean, Jiangxi	Equipment (unit) improvement:	Improvement of lighting switch control nodes. Improved switch control method from horizontal to vertical control, allowing production line lighting to be turned off at any time to save electricity.	Electricity	Evidence-based Estimation	0	52,565.8 kWh	189.2800	28.2068	Scope 2, Scope 3

Location	Energy-saving Method	Method Description	Energy Name	Calculation Method	Investment amount in NTD	Energy saving consumption	Energy Saving Volume (GJ)	Carbon Reduction Volume (tCO2e)	Reduction Scope
New Ocean, Jiangxi	Equipment (unit) improvement:	Installed 6 large exhaust fans in north-south direction of workshop. Air conditioning is not used for approximately two months per year (April and October, about 52 days, excluding National Day holiday), using exhaust fans instead to save electricity. Outsourced installation of 6 exhaust fans.	Electricity	Evidence-based Estimation	0	298721.28 kWh	1075.6416	160.2938	Scope 2, Scope 3
New Ocean, Jiangxi	Equipment (unit) improvement:	Introduced new laser marking machines that can mark directly without rotation, improved fixture plates, reducing laser processing time. Laser machine power is 1.0 kWh.	Electricity	Evidence-based Estimation	0	5760 kWh	20.7407	3.0908	Scope 2, Scope 3
Honghuasheng, Yantai	Replacement of Old with New	Replaced old screw-type chiller with centrifugal chiller	Electricity	Direct Measurement	9,086,772	1598847 kWh	5757.1603	857.9413	Scope 2, Scope 3
Honghuasheng, Yantai	Replacement of Old with New	Replaced old dust collection fan with new energy-efficient dust collection fan	Electricity	Direct Measurement	10,690,320	3997365 kWh	14393.7918	2144.9861	Scope 2, Scope 3
Honghuasheng, Yantai	Replacement of Old with New	Replaced old screw-type chiller with magnetic levitation chiller	Electricity	Direct Measurement	10,601,234	1191243 kWh	4289.4516	564.6492	Scope 2, Scope 3
Honghuasheng, Yantai	Replacement of Old with New	Shut down one scrubber after combining two waste gas scrubbers	Electricity	Direct Measurement	232,078	326692 kWh	1176.3591	175.3029	Scope 2, Scope 3
Honghuasheng, Yantai	Replacement of Old with New	Replaced old screw-type chiller with magnetic levitation chiller	Electricity	Direct Measurement	7,928,654	1000721.5 kWh	3603.4180	536.9872	Scope 2, Scope 3
Honghuasheng, Yantai	Rooftop solar power	Rooftop solar installation	Solar energy	Direct Measurement	Roof rental offset against electricity price	4171735.95 kWh	15021.6702	2238.5535	Scope 2, Scope 3
CJ Electric Systems, Wuhu	Replacement of Old with New	Replace sample set logistics shuttle with electric trucks	Gasoline for vehicles	Evidence-based Estimation	52,600	120L gasoline	3.8684	0.2738	Scope 1
CJ Electric Systems, Wuhu	Replacement of Old with New	Replace work vehicle GL8 with electric vehicle AITO	Gasoline for vehicles	Model analysis	230,000	1,920L gasoline	61.8946	4.3809	Scope 1

The Group adopts an evidence-based, data-driven energy conservation and carbon reduction strategy. Combined with internal energy management systems and ESG governance framework, we gradually promote measures such as replacing high energy-consuming equipment, optimizing air conditioning and lighting systems, recovering process heat energy, and changing electricity usage behaviors. These efforts effectively improve energy efficiency and reduce carbon emission intensity.

In the future, we will continue to develop concrete and feasible carbon reduction action plans based on greenhouse gas inventory and risk assessment results. Combined with external partners' and stakeholders' expectations for net-zero goals, we will strengthen technology implementation and carbon reduction management mechanisms to advance toward the 2050 net-zero emission vision, demonstrating the Group's active commitment to environmental sustainability and climate resilience.

5.2 Water Resource Management

Water Withdrawal: ↓ Decreased by 260.099 km³ (compared base year)

Wuhu Plant Water saving rate: 24.85% vs. 2023 ↓

(GRI 303-3- 303-5)

The main water sources for all Group subsidiaries of the Group (with production facilities + 100% operational control) come from local water companies in China, with water sourced from reservoirs. Except for Honghuasheng Yantai which is in a water-stressed area, water withdrawal at other facilities comes from non-water-stressed areas or non-protected areas, having relatively little impact on water sources.

The Group's Dongguan Pan-International, New Ocean, Jiangxi, and CJ Electric Systems, Wuhu do not cause significant environmental impacts from water withdrawal and wastewater discharge. The production wastewater generated does not reach industrial wastewater treatment standards and is treated as domestic water, which is then directly discharged into the urban sewage network for collection and treatment at sewage treatment plants.

Honghuasheng Yantai is the Group's only facility located in a water-stressed area and the only PCB manufacturing facility. Due to different manufacturing processes compared to other facilities, its water withdrawal is relatively higher, accounting for approximately 88.00% of the Group's total water withdrawal. Its industrial wastewater output includes PCB process water, which meets domestic wastewater discharge standards after primary chemical treatment and is ultimately discharged into the municipal sewage network. Regarding water conservation management, the facility continues to optimize its processes to improve water use efficiency and increase the rate of water recycling and reuse. Currently, some of the wastewater produced by the pure water system has been incorporated into the reuse system as a reusable water source, demonstrating positive results in sustainable water resource management implementation, with recycling and reuse benefits exceeding 10%.

For wastewater discharge management, each plant obtains permits from the government in accordance with local regulations and performs basic on-site treatment. Once the wastewater meets discharge standards, it is released into the government's sewage network for further treatment by government-commissioned agencies.

▼ **Water Resource Management**

- [Sustainability Committee]: Chaired by the Chairman of the Board, the committee regularly discusses the implementation and planning of disclosure and reduction initiatives, and reports to the Board of Directors annually.
- Each facility has also developed plans for emergency response teams during water shortages to address the challenges of water scarcity. In 2024, no production disruptions occurred at any facility due to water outages or shortages.
- Regarding mutual impacts on shared water resources, neither the Group nor its subsidiaries obtain water from environmental conservation areas. Only the Yantai facility is located in a water-stressed area, and this facility is committed to using recycled water and water-saving equipment. Moreover, the Group's water discharge does not exceed local industrial wastewater regulations. Therefore, there is no significant impact.

▼ **Short-term strategies (targeting key subsidiaries (with production facilities + 100% operational control))**

Use water-efficient equipment: Replace with water-saving faucets and sensor faucets.

Drinking water equipment: Regular water quality testing

Comply with international and local environmental regulations to achieve zero violations.

Water conservation slogans: Enhance water conservation education and promotional slogans at water usage points

▼ Medium and long-term strategies

Comply with international and local environmental regulations to achieve zero violations.

Increase the recycling and reuse rate of wastewater in hotspot facilities

▼ 2024 Water Resource Management Policies for Each Facility

Plant	Implementation of Water Resource Management Measures at Each Facility
Pan-International, Taipei（Office）	1. Promote water conservation.
Dongguan Pan-International	1. Through ISO 14001 Environmental Management System certification, establish prevention and improvement mechanisms, conserve water usage, and reduce environmental impacts from business operations. 2. Replace with water-saving faucets.
New Ocean, Jiangxi	1. Through ISO 14001 Environmental Management System certification, establish prevention and improvement mechanisms, conserve water usage, and reduce environmental impacts from business operations. 2. Replace water-saving equipment: Replace faucets in front of the restaurant area with water-saving faucets, which is estimated to achieve approximately 75% water savings and effectively improve overall water usage efficiency.
Honghuasheng, Yantai	1. Daily water usage from each production line is consolidated and reviewed in the production management meetings, allowing for stricter control of water consumption. 2. Water-saving production equipment is continually introduced and replaced. 3. Recycled water is wastewater from pure water production. Multiple workstations in the factory require pure water. During the pure water production process, wastewater with high ion concentration needs to be discharged (similar to water purifiers). This portion of wastewater was originally mixed with other wastewater for disposal. After improvements, the recycled water is used in workstations with lower water quality requirements. 4. Through ISO 14001 Environmental Management System certification, establish prevention and improvement mechanisms, conserve water usage, and reduce environmental impacts from business operations.
CJ Electric Systems, Wuhu	1. Promote water conservation awareness. 2. Replace faucets with water-saving models whenever possible. 3. Compare water consumption monthly and promptly investigate and repair any abnormal situations.

*PIU (USA) is an office with seven employees, where water resource management items are not materially significant.

Pan-International Group's total water withdrawal in 2024 was 1,574.252 thousand cubic meters (million liters), of which 1,385.396 thousand cubic meters came from water-stressed areas. The total freshwater withdrawal was 1,574.252 thousand cubic meters, total water discharge was 1,259.402 thousand cubic meters, and total water consumption was 314.850 thousand cubic meters.

Compared to 2023 (1,574.252 and 1,543.391 thousand cubic meters respectively), water withdrawal in 2024 slightly increased by 30.861 thousand cubic meters. This was due to the higher proportion of high-end board production (process differences) at the Honghuasheng Yantai plant in 2024, which led to an increase in water withdrawal by 45.759 thousand cubic meters. Water withdrawal at other plants generally showed slight decreases. Moreover, looking at water withdrawal from 2022-2024, there was still a significant decrease of 260.099 thousand cubic meters in 2024 compared to 2022 (which was 1,834.352 thousand cubic meters).

Looking at the water withdrawal situation from 2022 to 2024, the summary for 2024 is as follows:

- **Although the Group (boundary scope) showed a slight increase of 2.00% compared to 2023 (due to increased production of water-intensive products at the Yantai plant), it still maintained a water conservation rate of approximately 14.18% compared to 2022**
- Compared to 2023, Pan-International, Taipei achieved a water conservation rate of approximately 12.99%. The main reasons were as follows: In 2023, cleaning water demand increased due to the impact of the pandemic, while in 2024, operations returned to normal mode, resulting in relatively reduced overall water demand, thus showing water conservation effects.
- **After CJ Electric Systems, Wuhu experienced a significant increase in water withdrawal due to plant expansion in 2023. It achieved a water conservation rate of approximately 24.85% in 2024 compared to 2023 under similar conditions, mainly due to:** In 2024, the plant strengthened monthly water consumption monitoring, promptly investigated and repaired abnormal situations, and improved water management efficiency. (In 2023, there was a water abnormality incident where the water inlet of the central air conditioning system at the Dechang plant broke and was not discovered immediately, leading to a significant increase in water consumption. The abnormality was only noticed when the bill was due, affecting the total water consumption for that year.)

The Group values water resource management and incorporates it into its sustainable development strategy, using ESG indicators as implementation guidelines, which corresponds to the United Nations Sustainable Development Goal SDG 6 Clean Water and Sanitation. Through supervision and management by the Sustainability Committee, installation of water-saving equipment at various plants, promotion of water resource recycling and reuse, and improvement of emergency response mechanisms, the Group implements effective use and protection of water resources. Additionally, all subsidiaries comply with regulatory standards, and there were no major water shortage or discharge abnormality incidents in 2024, demonstrating the Group's commitment to implementing sustainable water resource management.

Performance Indicator	**2024 Performance**	Achievement Rate	Corresponding SDG
Total loss (including compensation or penalties) due to water resource regulations	0	100%	SDG 6.3: Improve water quality and ensure compliance with legal requirements
Major wastewater leakage incidents	None occurred; all wastewater treatment processes complied with legal standards	100%	
Water withdrawal reduction target (base year 2022, -1% per year)	Increased by 2% compared to 2023, but still achieved a 14.18% reduction versus 2022	100%	SDG 6.4: Improve water-use efficiency and ensure sustainable withdrawal
Performance Indicator	2024 Performance	Achievement Rate	Corresponding SDG

▼ **Water Withdrawal (Unit: Thousand cubic meters (million liters))**

Plant Location	Water Stress Situation	Water Source Category Note2	Water Quality Indicator Note 3	2022	2023	2024
Pan-International, Taipei (Parent Company) Note 1	Low-Medium (Non–Water-Stressed)	Third-party water	Pure water	2.123	3.484	3.031
Dongguan Pan-International	Low (Non–Water-Stressed)	Third-party water	Pure water	75.938	69.948	71.219
New Ocean, Jiangxi	Low (Non–Water-Stressed)	Third-party water	Pure water	105.410	69.740	68.650
Honghuasheng, Yantai	**Extremely High (Water Stress)**	**Third-party water**	**Pure water**	**1,619.681**	**1,339.637**	**1,385.396**
CJ Electric Systems, Wuhu	Low-Medium (Non–Water-Stressed)	Third-party water	Pure water	31.200	60.583	45.527
PIU（USA）	Medium (Non–Water-Stressed)	Third-party water	Pure water	NA	NA	0.429
Total water withdrawal				1,834.352	1,543.391	1,574.252

Note 1: The total statistics for Pan-International, Taipei include data from Xindian from 2024/1/1-2024/11/24, and from the new Zhonghe Headquarters from 2024/11/25 (relocation date) to 2024/12/31. Statistical data is primarily presented as annual consolidated figures, with additional explanations provided for specific indicators when necessary.

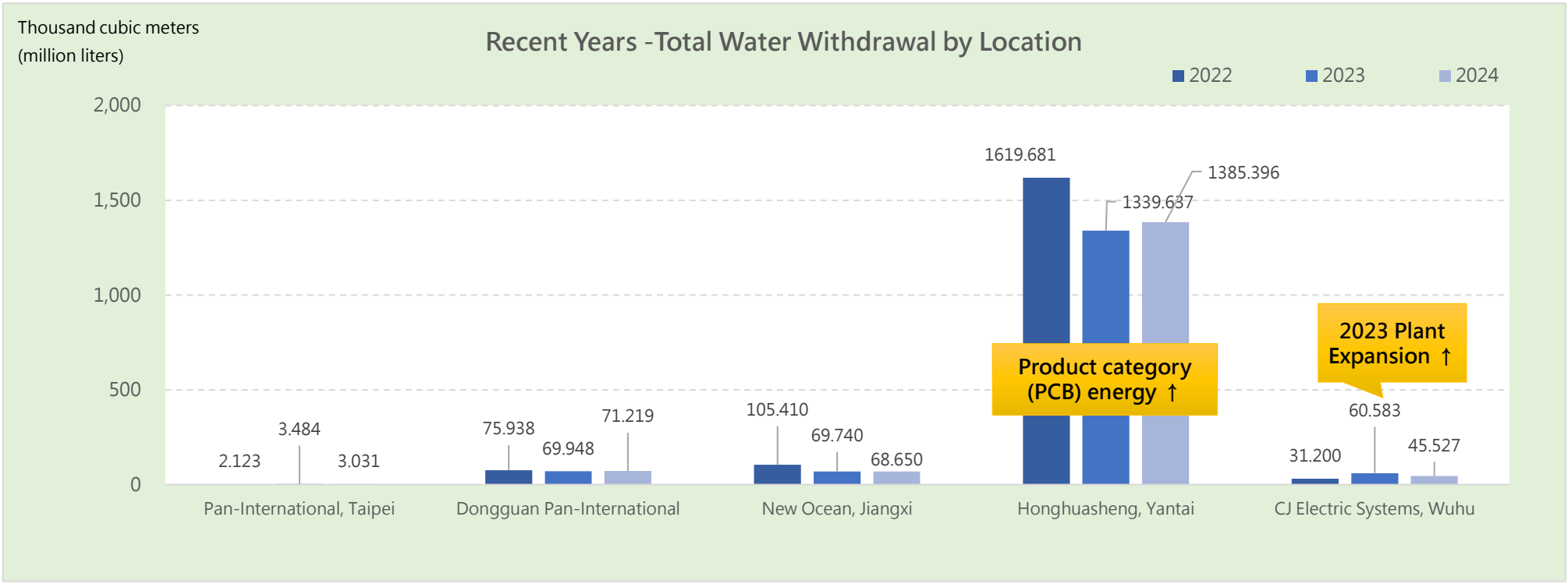
Note 2: The water source category for all plant locations is exclusively third-party water (tap water), and does not include other water sources such as surface water, groundwater, seawater, or produced water.

Note 3: The water quality indicator for all plant locations is pure water.

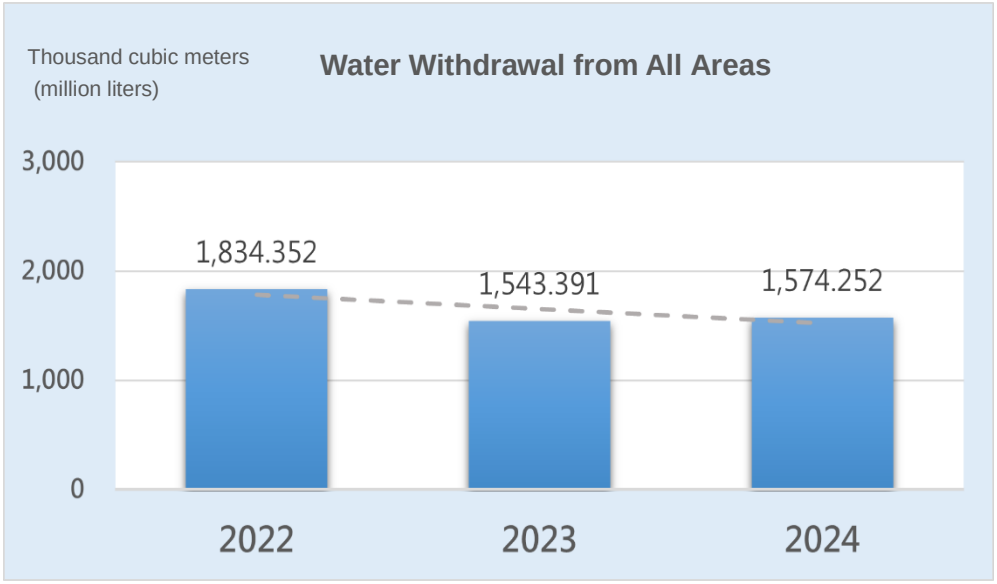
Note 4: The water withdrawal for CJ Electric Systems, CJ Electric Systems includes both CJ Electric Systems (plant area) and Dechang (warehouse).

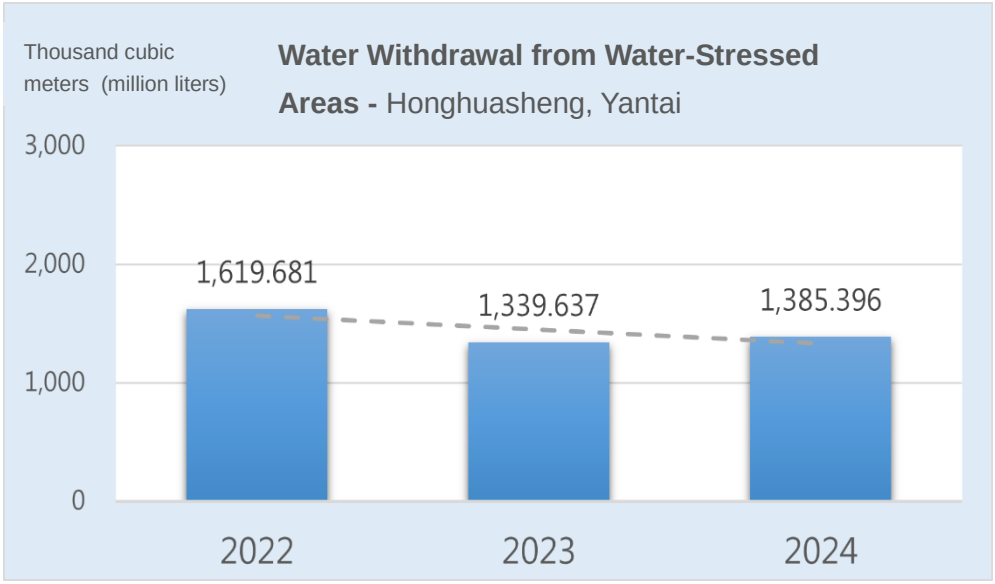
Note 5: Due to plant expansion at CJ Electric Systems, Wuhu in 2023, water withdrawal increased by 29,383 tons (94.18% increase) compared to 2022.

Note 6: As PIU (USA) is an office in a shared leased facility, the 2024 water usage is calculated based on California's per person daily water consumption rate. As only a small office space is leased within a large area, and there are few office staff (approximately 7 people), the landlord cannot provide specific water usage information and it is difficult to separate the data.



As the USA location is used solely for office purposes, the data is not comparable, therefore no chart analysis is provided and the information is only shown in the table.





▼ **Water Discharge (Unit: Thousand cubic meters (million liters)**

Plant Location	Water Discharge Category	Water Quality Indicator	2022	2023	2024
Pan-International, Taipei (Parent Company) Note 1	Third-party water	Freshwater	1.698	2.787	2.425
Dongguan Pan-International	Third-party water	Freshwater	60.750	55.958	56.975
New Ocean, Jiangxi	Third-party water	Freshwater	84.328	55.792	54.920
Honghuasheng, Yantai	Third-party water	Freshwater	1,295.745	1,071.710	1,108.317
CJ Electric Systems, Wuhu	Third-party water	Freshwater	24.960	48.466	36.421
PIU（USA）	Third-party water	Freshwater	NA	NA	0.343
Total Water Discharge			1,467.481	1,234.713	1,259.402

Note: Estimation method: As the Group is not a major water consumer and does not have flow meters installed to measure drainage, the estimated wastewater (discharge) volume is approximately 80% of water withdrawal.

Note: Pan-International, Taipei statistics cover from 2024/1/1-2024/11/24 at Xindian Headquarters, and relocated to the new Zhonghe Headquarters from 2024/11/25. Statistical data is primarily presented as annual consolidated figures, with additional explanations provided for specific indicators when necessary.

Note: Water withdrawal for CJ Electric Systems, Wuhu includes both CJ Electric Systems (plant area) and Dechang (warehouse).

Note: As PIU USA is an office in a shared leased facility, the 2024 water usage is calculated based on California's per person daily water consumption rate.

▼ **Water Consumption (Unit: Thousand cubic meters (million liters))**

Plant Location	Total water intake			Total water discharge			Total water consumption		
	2022	2023	2024	2022	2023	2024	2022	2023	2024
Pan-International, Taipei	2.123	3.484	3.031	1.698	2.787	2.425	0.425	0.697	0.606
Dongguan Pan-International	75.938	69.948	71.219	60.750	55.958	56.975	15.188	13.990	14.244
New Ocean, Jiangxi	105.410	69.740	68.650	84.328	55.792	54.920	21.082	13.948	13.730
Honghuasheng, Yantai	1,619.681	1,339.637	1,385.396	1,295.745	1,071.710	1,108.317	323.936	267.927	277.079
CJ Electric Systems, Wuhu	31.200	60.583	45.527	24.960	48.466	36.421	6.240	12.117	9.105
PIU（USA）	NA	NA	0.429	NA	NA	0.343	NA	NA	0.086
Total amount	1,834.352	1,543.391	1,574.252	1,467.481	1,234.713	1,259.402	366.870	308.678	314.850

Note: Pan-International, Taipei statistics cover from 2024/1/1-2024/11/24 at Xindian Headquarters, and relocated to the new Zhonghe Headquarters from 2024/11/25. Statistical data is primarily presented as annual consolidated figures, with additional explanations provided for specific indicators when necessary.

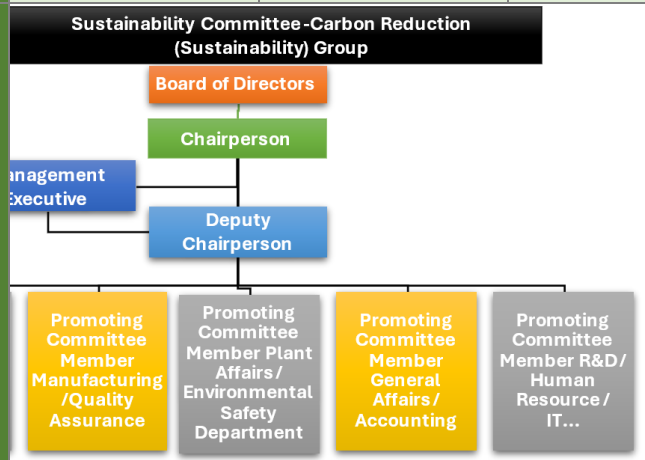
Note: Water withdrawal for CJ Electric Systems, Wuhu includes both CJ Electric Systems (plant area) and Dechang (warehouse).

Note: As PIU USA is an office in a shared leased facility, the 2024 water usage is calculated based on California's per person daily water consumption rate.

5.3 Waste Management

Material Topic Management Approach: Waste

Corresponding GRI indicators: GRI 3-3, GRI 306-3, GRI 306-4, GRI 306-5

Impact Description		1. Causes environmental pollution 2. Penalties from authorities due to violations of regulations				
Location		**Pan-International, Taipei (Parent Company)**	**Dongguan Pan-International**	**New Ocean, Jiangxi**	**Honghuasheng, Yantai**	**CJ Electric Systems, Wuhu**
Policies or Commitments Established or Followed	**Internal Regulations**	V	V	V	V	V
	Government Regulations	V	V	V	V	V
Responsible Units		Sustainability Committee / Chairman / Management Committee	Sustainability Committee / Deputy Chairperson	Sustainability Committee / Deputy Chairperson	Sustainability Committee / Deputy Chairperson	Sustainability Committee / Deputy Chairperson
Management Actions						

- Sustainability Committee: Regularly discusses the implementation and planning of waste and water resource-related work.
- Set targets for environmental issues and regularly review for improvements.

Process for Monitoring the Effectiveness of Actions	• Sustainability Committee: For key subsidiaries (with production plants), the Group established a management organization chaired by the Chairman, who serves as the Chairperson. The Committee meets regularly to discuss waste treatment issues and report the discussion results and review. • The Board of Directors supervises. • Through the Sustainability Committee, develop waste treatment guidelines and goals, and coordinate and integrate waste treatment strategies and plans of each subsidiary. Conduct regular meetings to continuously confirm and review goal achievement rates, challenging new energy-saving milestones.

Management Performance Indicators

Indicators	Short-term Goal (2024)	Short-term Goal (Annual) (2022 base year)	Mid-term Goal (2022-2027)	Long-term Goal (2022-2050)
Waste reduction	100% achieved **Waste reduction: 3,172.371t, down 28.24% ↓**	**1% annual reduction (base year 2022)**	**5 year reduction goal: –5%**	5 year reduction goal: –5%
Hazardous Waste Recycling Rate	100% achieved **From 13.45%(2023) → 86.71% (2024)**	**Increase by 1% annually**	**Increase by 5% in five years**	Key sites increased to 50%
Total recycling rate	100% achieved **From 36.5% (2023) → 81.04% (2024)**	**Increase by 1% annually**	**Increase by 5% in five years**	Key sites increased to 50%
Zero violations	100% achieved	Comply with international and local environmental regulations to achieve zero violations.		

*This year's organizational boundary includes the following locations: Pan-International, Taipei; PIU (USA), and subsidiaries in mainland China: Dongguan Pan-International, New Ocean, Jiangxi; Honghuasheng, Yantai; CJ Electric Systems, Wuhu

*Total recycling rate includes the recycling rates of both hazardous and non-hazardous waste, excluding incineration treatment (including energy recovery) items.

*Except for Honghuasheng, Yantai (due to its PCB industry being different from other assembly plants), the majority of waste from other mainland subsidiaries of the Group consists of employee household waste and general non-hazardous industrial solid waste, with only minimal amounts of hazardous waste. Therefore, no specific reduction plans have been established.

5.3.1 Waste Impact Assessment

(GRI 306-2)

The Group refers to domestic and international environmental impact reports, considering each stage of product life cycle (raw material extraction, production and manufacturing, sales and distribution, product use and waste disposal stages) to identify waste generated from organizational internal and value chain upstream and downstream operational activities. The potential impacts of waste on the environment and society are assessed, allowing the Group to create a value chain and waste impact context diagram.

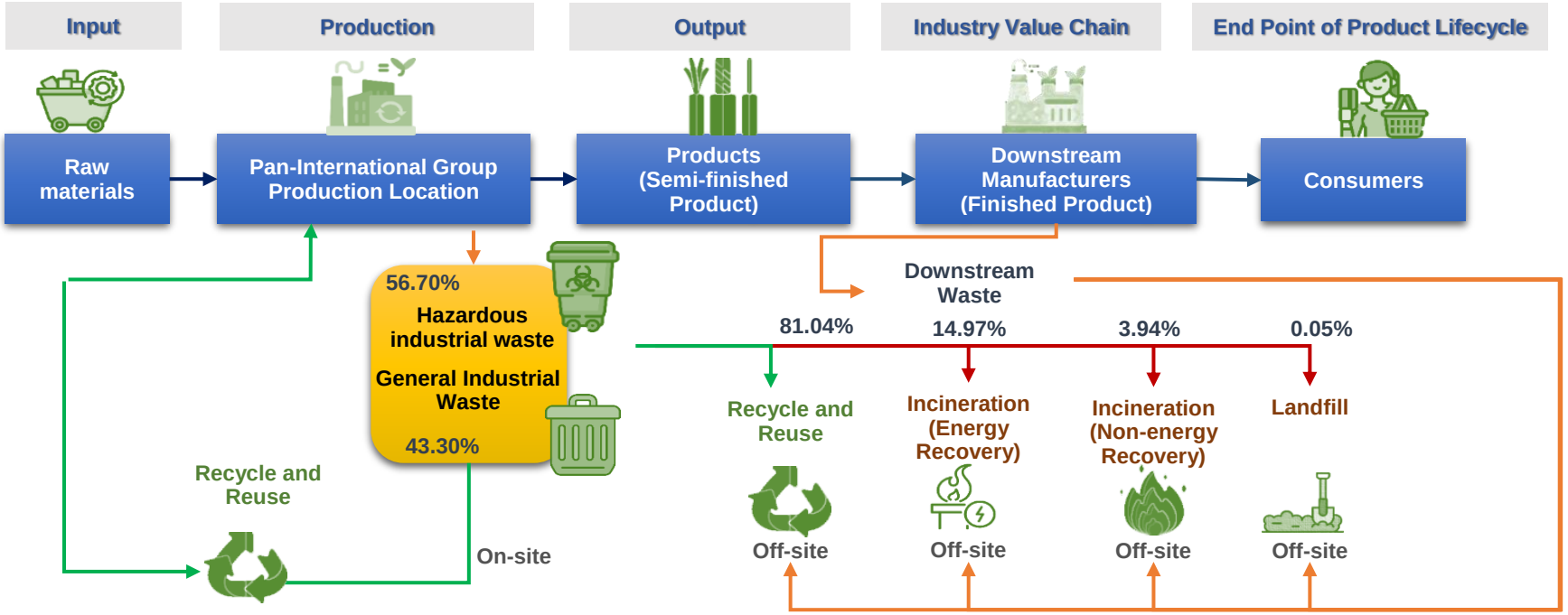
Except for the plant at Honghuasheng, Yantai, which has a different industry (PCB plant) from other plants, the waste generated by other plants in mainland China of the Group **includes hazardous and non-hazardous industrial waste**, mainly employee domestic waste, general industrial solid waste, and very small amounts of hazardous waste.Honghuasheng, Yantai plant generates more hazardous waste due to its industry (PCB plant). We develop corresponding management measures to address the potential impacts of various types of waste. Waste management units regularly supervise and assess the implementation effectiveness to mitigate or avoid negative impacts on both the internal organization or the external environment.

▼ Pan-International Value Chain and Potential Impact Context

Location	Value Chain Stage	Activities	Waste Types	Waste Categories	Disposal Methods	Disposal Units	Potential Impacts
Pan-International, Taipei	Own Operations	Daily office waste/others	Domestic waste generated by employees	Non-hazardous waste	Incineration (with energy recovery)	External third party	Improper treatment causes environmental pollution
Dongguan Pan-International	Own Operations	Daily office waste/Product scrapping or disposal	Domestic waste generated by employees	Non-hazardous waste	Incineration (with energy recovery)	External third party	Improper treatment causes environmental pollution
	Own Operations	Raw material supply/Product processing/Product packaging/Product scrapping or disposal/Others	Industrial solid waste	Non-hazardous waste	Recycling	External third party	Improper treatment causes environmental pollution
	Own Operations	Raw material supply/Product processing/Product packaging/Product scrapping or disposal/Others	Hazardous waste	Hazardous waste	Incineration (with energy recovery)	External third party	Improper treatment 1. causes environmental pollution 2. penalties from authorities due to violations of regulations
New Ocean, Jiangxi	Own Operations	Daily office waste/Product scrapping or disposal	Domestic waste generated by employees	Non-hazardous waste	Incineration (with energy recovery)	External third party	Improper treatment causes environmental pollution
	Own Operations	Raw material supply/Product processing/Product packaging/Product scrapping or disposal/Others	Industrial solid waste	Non-hazardous waste	Recycling	External third party	Improper treatment causes environmental pollution
	Own Operations	Raw material supply/Product processing/Product packaging/Product scrapping or disposal/Others	Hazardous waste	Hazardous waste	Incineration (without energy recovery)/ Recycling/ Preparation for reuse	External third party	Improper treatment 1. causes environmental pollution 2. penalties from authorities due to violations of regulations

Location	Value Chain Stage	Activities	Waste Types	Waste Categories	Disposal Methods	Disposal Units	Potential Impacts
Honghuasheng, Yantai	Own Operations	Daily office waste/Product scrapping or disposal	Domestic waste generated by employees	Non-hazardous waste	Incineration (with energy recovery)/	External third party	Improper treatment causes environmental pollution
	Own Operations	Raw material supply/Product processing/Product packaging/Product scrapping or disposal/Others	Industrial solid waste	Non-hazardous waste	Incineration (with energy recovery)/ Recycling	External third party	Improper treatment causes environmental pollution
	Own Operations	Raw material supply/Product processing/Product packaging/Product scrapping or disposal/Others	Hazardous waste	Hazardous waste	Incineration (with energy recovery)/ Recycling	External third party	Improper treatment 1. causes environmental pollution 2. penalties from authorities due to violations of regulations
CJ Electric Systems, Wuhu	Own Operations	Daily office waste/Product scrapping or disposal	Domestic waste generated by employees	Non-hazardous waste	Incineration (without energy recovery)	External third party	Improper treatment causes environmental pollution
	Own Operations	Raw material supply/Product processing/Product packaging/Product scrapping or disposal/Others	Industrial solid waste	Non-hazardous waste	Other recycling	External third party	Improper treatment causes environmental pollution
PIU（USA）	Own Operations	Daily office waste/others	Domestic waste generated by employees	Non-hazardous waste	Landfill	External third party	Improper treatment causes environmental pollution

▼ **Pan-International Group - Value Chain and Waste Impact Diagram**



5.3.2 Waste Management Policy

Waste Management Units

Each subsidiary of the Group has established responsible units for controlling, disposing of, and reporting industrial waste generated from company operations, and **reports industrial waste in accordance with local regulations**. Waste disposal methods are all implemented according to local regulations.

Pan-International Group's Waste Management Responsible Units:

[Sustainability Committee]: The Chairman serves as the Chairperson, regularly discusses the implementation and planning of work related to disclosure and reduction, then reports the results to and reviews with the Board of Directors annually. Each subsidiary has its own management responsible unit.

Waste Disposal Method: The Group's Waste Is all Outsourced for Treatment

The Group records waste types, quantities, and tracks waste flow through **online forms, management systems, evidence-based estimates, and other methods,** and compiles annual waste generation using **actual measurement and estimation methods.** All waste is entrusted to qualified external waste treatment operators for transportation and disposal. After receiving the three-part transport form issued by the external transport operator, the quantity (weight) measured in the plant must be verified with consistency. Regular audits are conducted to ensure that the transport and treatment operators dispose of industrial waste in accordance with the Group's and local regulatory requirements.

Due to the industry characteristics, most of the Group's subsidiaries are in the assembly industry, so waste classification is relatively simple, with almost all being non-hazardous waste. Except for Honghuasheng Yantai, which has a different industry (PCB plant) from other plants, other subsidiaries mainly have employee domestic waste as the largest category. Due to the technical or regulatory requirements, the plant cannot dispose of waste on-site. Therefore, all waste—whether hazardous or non-hazardous—is taken off-site and handled by qualified operators approved by the relevant authorities. Additionally, although Honghuasheng, Yantai generates a larger amount of hazardous waste, all waste from the entire plant (both hazardous and non-hazardous) is managed using full recycling and reuse methods.

To achieve sustainable resource utilization and ensure proper waste treatment, each plant selects legally qualified waste disposal contractors in accordance with internal waste management procedure regulations. Also, select contractors who can use "recycling and reuse" and "incineration (with energy recovery)" to replace "incineration (without energy recovery) and landfill" to ensure maximum resource utilization.

It is recommended to use recyclable and reusable materials in the plant to replace disposable materials. For example, using recyclable and reusable materials and packaging such as dry film cores, wood pulp boards, PE films, copper foils, aluminum sheets, film-coated aluminum sheets, aluminum alloys, and other recyclable and reusable packaging materials. This approach aims to improve the recycling and reuse rates of materials and packaging. Regarding hazardous waste treatment, the types and quantities of hazardous waste substances are first reported to the environmental protection platform in compliance with regulations. Qualified contractors then come to the plant regularly to handle the treatment.

Our goal is to achieve a circular economy, transforming waste into valuable resources while reducing negative impacts on the environment. We believe that through cross-industry cooperation and global collaboration, we can achieve true waste management and sustainable development.

▼ 2024 Waste Management Policies for Each Plant

Plant	Waste Management Measures Implemented at Each Plant
Pan-International, Taipei (Office)	▪Promote paperless office operations ▪Meals are provided without disposable utensils (employees must bring their own reusable utensils)
Dongguan Pan-International	▪Hazardous waste recycling and reuse: Report the quantity and types of hazardous waste on the environmental protection platform, where third-party contractors approved by the Environmental Protection Bureau uniformly transport the waste to recycling points approved by the Mainland China Environmental Protection Bureau for processing. ▪Promote paperless office operations
New Ocean, Jiangxi	▪Reduce packaging, recycle packaging, reuse pallets, and digitize documents ▪Hazardous waste recycling and reuse: Report the quantity and types of hazardous waste on the environmental protection platform, where third-party contractors approved by the Environmental Protection Bureau uniformly transport the waste to recycling points approved by the Mainland China Environmental Protection Bureau for processing.
Honghuasheng, Yantai	▪Coordinate the selection of qualified waste disposal vendors with legal credentials. Also, select contractors who can use "recycling and reuse" and "incineration (with energy recovery)" to replace "incineration (without energy recovery) and landfill" to ensure maximum resource utilization. ▪It is recommended to use recyclable and reusable materials in the plant to replace disposable materials. For example, using recyclable and reusable materials and packaging such as dry film cores, wood pulp boards, PE films, copper foils, aluminum sheets, film-coated aluminum sheets, aluminum alloys, and other recyclable and reusable packaging materials. This approach aims to improve the recycling and reuse rates of materials and packaging. ▪Regarding hazardous waste treatment, the types and quantities of hazardous waste substances are first reported to the environmental protection platform in compliance with regulations. Qualified contractors then come to the plant regularly to handle the treatment. Select vendors who can maximize "recycling and reuse" to ensure optimal resource utilization.
CJ Electric Systems, Wuhu	▪Hazardous waste recycling and reuse: Report the quantity and types of hazardous waste on the environmental protection platform, where third-party contractors approved by the Environmental Protection Bureau uniformly transport the waste to recycling points approved by the Mainland China Environmental Protection Bureau for processing. ▪ Use recyclable and reusable materials and packaging: dry film cores, wood pulp boards, PE films, copper foils, aluminum sheets, laminated aluminum sheets, aluminum alloys, and recyclable packaging materials▪ Promote paperless office operations
PIU (USA)	For an office with only 7 people, waste management initiatives have no substantial significance.

▼ Waste Management Responsible Units

Location	Waste Classification	Waste Storage	Waste Data Collection	Waste Reporting	Waste Treatment - Outsourced Treatment
Pan-International, Taipei (Office)	Administration Department / Materials Division	Administration Department / Materials Division	Administration Department / Materials Division	None	Administration Department / Materials Division
Dongguan Pan-International	Management Department	Management Department	Management Department	Management Department	Management Department
New Ocean, Jiangxi	Engineering Department	Engineering Department	Engineering Department	Engineering Department	Engineering Department
Honghuasheng, Yantai	Waste Treatment Unit / General Affairs / Environmental Engineering	Waste Treatment Unit / General Affairs / Environmental Engineering	Waste Treatment Unit / General Affairs / Environmental Engineering	Waste Treatment Unit / General Affairs / Environmental Engineering	Waste Treatment Unit / General Affairs / Environmental Engineering
CJ Electric Systems, Wuhu	Management Department	Management Department	Management Department	Management Department	Management Department
PIU (USA) (Office)	Finance	Finance	Finance	None	Finance

▼ Waste Disposal Method

Location	Waste Recording Method	Waste Generation Measurement Method
Pan-International, Taipei (Office)	Third-party issued receipts	Load count analysis method; Weight volume method
Dongguan Pan-International	Online forms; Management system; Handwritten weighing forms	Load count analysis method; Weight volume method; Material balance method; Evidence-based estimation
New Ocean, Jiangxi	Online forms; Management system; Domestic waste estimation	Load count analysis method; Weight volume method; Material balance method; Evidence-based estimation
Honghuasheng, Yantai	Online forms; Management system; Domestic waste estimation	Load count analysis method; Weight volume method; Material balance method; Evidence-based estimation
CJ Electric Systems, Wuhu	Domestic waste estimation	Evidence-based estimation
PIU (USA) (Office)	None	Evidence-based estimation

5.3.3 Waste Transportation, Disposal, and Reduction/ Recycling Performance

(GRI 306-3- 306-5)

Overview of Waste Generation and Disposal Methods

In 2024, Pan-International Group (including parent company, Mainland China subsidiaries, and U.S. subsidiaries) generated a total waste volume of 8,060.385 metric tons, of which:

Hazardous industrial waste was 4,570.146 metric tons, accounting for 56.70%; non-hazardous industrial waste was 3,490.239 metric tons, accounting for 43.30%

The above data was significantly influenced by the hotspot facility Honghuasheng, Yantai (PCB manufacturing plant), as its industrial nature differs from other facilities, generating a larger amount of hazardous waste. If excluded, then:

Hazardous industrial waste was 8.666 metric tons, accounting for only 1.07%; non-hazardous industrial waste was 799.461 metric tons, accounting for 98.93%

In terms of total hazardous industrial waste (over 90% from Honghuasheng, Yantai), there was a reduction of 1,484.392 metric tons compared to 2023, representing a decrease of 24.52%. The recycling rate also significantly increased from 13.42% in 2023 to 86.71%, demonstrating notable improvement results.

In terms of total non-hazardous industrial waste, there was a reduction of 1,687.979 metric tons compared to 2023 (a decrease of 32.60%), and the recycling rate increased from 63.45% in 2023 to 73.61%.

The improvement in reduction and recycling efficiency this year was mainly attributed to the facilities' continued promotion of hazardous waste resource utilization. For the main hazardous waste - copper-containing waste, the group switched to legal disposal vendors with high recycling efficiency for processing. This waste was primarily handled through incineration before, but starting from 2024, it was switched to comprehensive utilization treatment for hazardous waste. Through technical transformation, copper-containing sludge underwent resource recovery treatment, significantly increasing the recycling rate. This measure not only effectively reduced the final disposal volume but also significantly improved resource utilization efficiency, demonstrating Pan-International Group's technical orientation and sustainable commitment in hazardous waste management. This achievement is attributed to the group's active implementation of waste reduction and resource recovery strategies, including: replacing single-use materials with recyclable materials, promoting packaging reduction and recycling, reusing pallets, digitalizing document processes, and other source reduction measures.

Furthermore, to further enhance the resource value of waste, Pan-International Group also prioritizes circular processing methods such as recycling and reuse based on local regulations and technical feasibility, striving to improve resource recycling efficiency and environmental sustainability performance.

Overall, the total waste volume in 2024 decreased by 3,172.371 metric tons (a reduction of 28.24%) compared to the previous year, and the total recycling rate significantly increased from 36.50% in 2023 to 81.04%, also showing substantial growth compared to the base year (2022) recycling rate of 44.35%. This has greatly exceeded the group's short-term and medium-to-long-term goals set for this year, and will continue to be maintained and strengthened in the future.

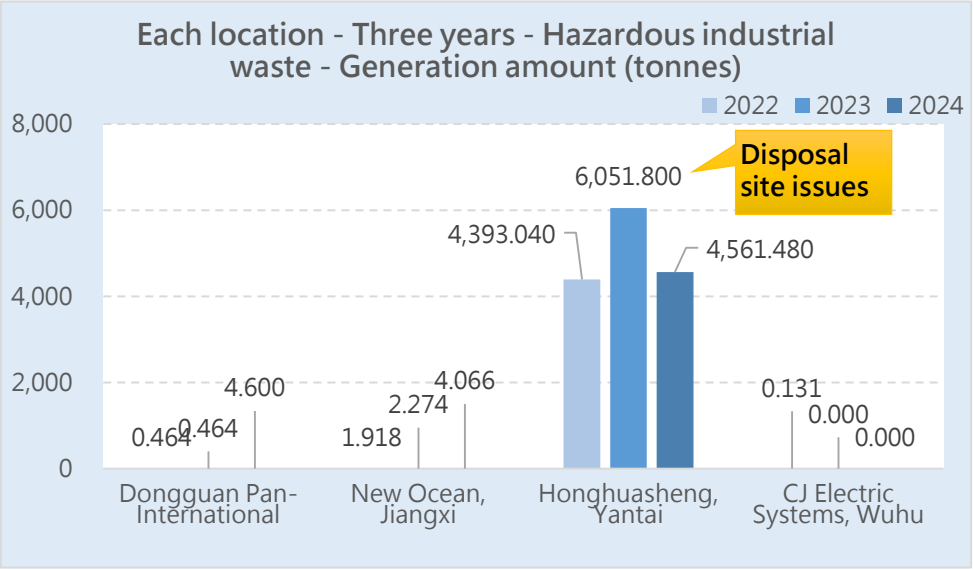
✶ **Highlights:**

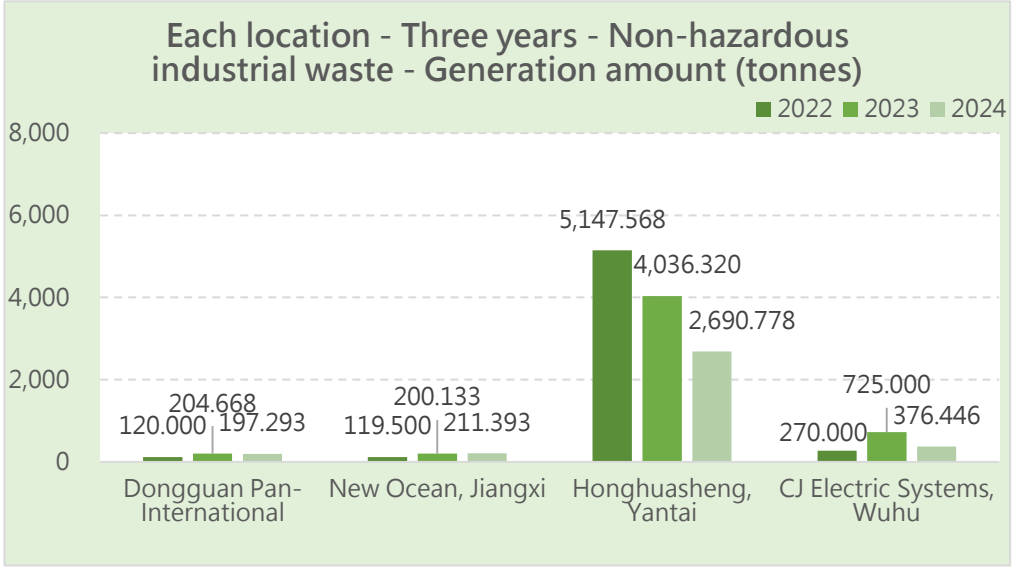
- Honghuasheng, Yantai achieved UL 2799 Zero Waste to Landfill Platinum certification (highest level) in 2024
- New Ocean, Jiangxi obtained Global Recycled Standard (GRS) certification in 2024
- The Group's total waste recycling rate reached 81.04%

▼ Industrial Waste Generation (Unit: Tonnes)

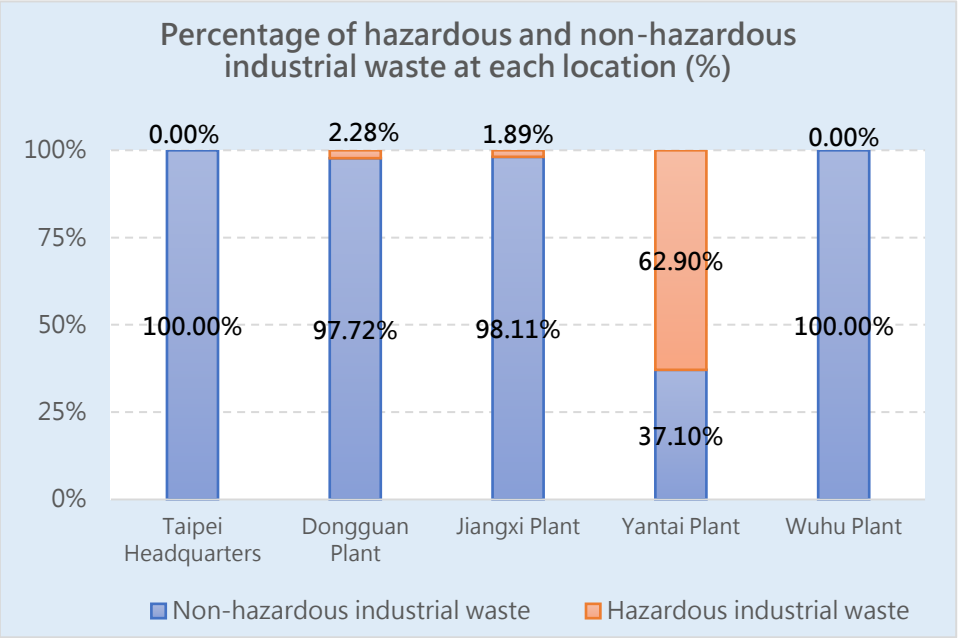
Location	Hazardous industrial waste			Non-hazardous industrial waste			Total		
	2022 (base year)	2023	2024	2022 (base year)	2023	2024	2022 (base year)	2023	2024
Pan-International, Taipei	0.000	0.000	0.000	8.587	7.627	10.379	8.587	7.627	10.379
Dongguan Pan-International	0.464	0.464	4.600	120.000	204.668	197.293	120.464	205.132	201.893
New Ocean, Jiangxi	1.918	2.274	4.066	119.500	200.133	211.392	121.418	202.407	215.458
Honghuasheng, Yantai	4,393.040	6,051.800	4,561.480	5,147.568	4,036.320	2,690.778	9,540.608	10,088.120	7,252.258
CJ Electric Systems, Wuhu	0.131	0.000	0.000	270.000	725.000	376.446	270.131	725.000	376.446
PIU (USA)	-	0.000	0.000	-	4.470	3.950	-	4.470	3.950
Total amount	4,395.553	6,054.538	4,570.146	5,665.655	5,178.218	3,490.239	10,061.207	11,232.756	8,060.385

Note: Due to calculation errors, waste data for New Ocean, Jiangxi and Honghuasheng, Yantai in 2022 has been partially corrected (2023 report has been updated)
Note: The classification of hazardous and non-hazardous waste is based on local regulations at each location.
Note: The total statistics for Pan-International, Taipei cover the period from 2024/1/1-2024/11/24 at Xindian Headquarters, and from 2024/11/25-2024/12/31 at the new Zhonghe Headquarters. Statistical data is primarily based on annual consolidated figures.
Note: In 2022, the amount of domestic waste generated by employees in Dongguan was not estimated, while in 2023, the amount of employee domestic waste was added.
Note: CJ Electric Systems, Wuhu expanded in 2023 (Dechan Plant area increased by 10,600 pings). Note: CJ Electric Systems, Wuhu energy statistics include CJ Electric Systems (factory area) and Dechang (warehouse). Note: For Honghuasheng Yantai in 2022, the hazardous waste copper-containing waste disposal contractor stopped operations, causing some hazardous waste (about 560 tons) generated in 2022 to be disposed of in 2023.
Note: PIU (USA) was not included in the 2022 calculations. For 2023 and 2024, calculations are based on daily garbage output per person.

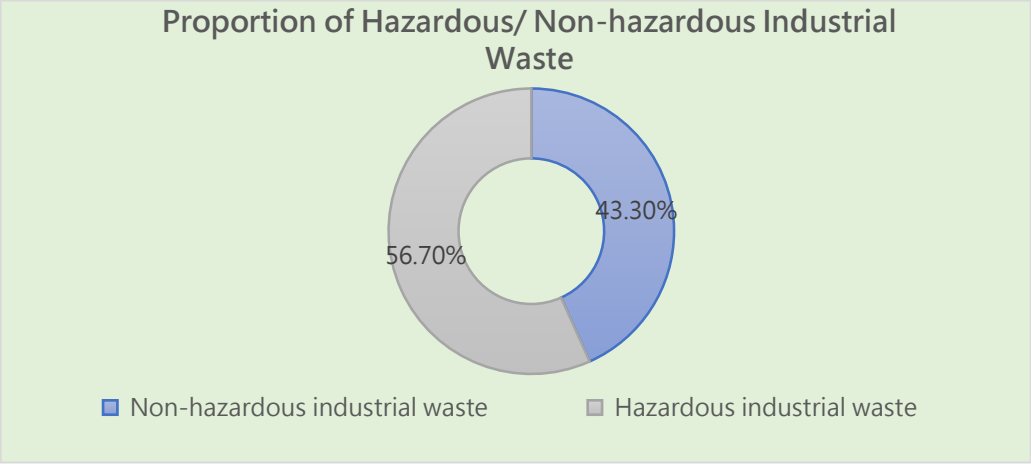




Percentage of hazardous/non-hazardous industrial waste at each location (%)		
Plant	**Non-hazardous industrial waste**	**Hazardous industrial waste**
Pan-International, Taipei	100.00%	0.00%
Dongguan Pan-International	97.72%	2.28%
New Ocean, Jiangxi	98.11%	1.89%
Honghuasheng, Yantai	37.10%	62.90%
CJ Electric Systems, Wuhu	100.00%	0.00%
PIU (USA)	100.00%	0.00%



Category	Proportion of Hazardous/ Non-hazardous Industrial Waste
Non-hazardous industrial waste	43.30%
Hazardous industrial waste	56.70%



Industrial Waste Disposal Transfer Explanation

The Group's waste treated by recycling methods mainly includes non-hazardous waste such as waste wood, waste metal, waste packaging materials, as well as hazardous waste like edge materials, waste metals. The recycling methods primarily involve preparation for reuse, recycling, and other recycling operations. In 2024, the amount of waste transferred for recycling operations included 3,962.675 tonnes of hazardous waste and 2,569.302 tonnes of non-hazardous waste, totaling 6,531.977 tonnes, all of which was handled by third-party contractors.

▼ Waste Transferred from Disposal by Recycling Operations (Unit: Tonnes)

Waste Types		Hazardous industrial waste				Non-hazardous industrial waste			
Disposal Transfer Method		Preparation for Reuse	Recycling	Other recycling operations	Total recycling amount	Preparation for Reuse	Recycling	Other recycling operations	Total recycling amount
Pan-International, Taipei	2022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2024	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Dongguan Pan-International	2022	0.000	0.464	0.000	0.464	0.000	0.000	0.000	0.000
	2023	0.127	0.000	0.000	0.127	0.000	0.000	152.828	152.828
	2024	0.000	0.000	0.000	0.000	0.000	148.093	0.000	148.093
New Ocean, Jiangxi	2022	0.000	0.000	1.833	1.833	0.000	0.000	5.000	5.000
	2023	1.691	0.566	0.000	2.257	0.000	190.240	0.000	190.240
	2024	0.086	2.009	0.000	2.095	0.000	180.201	0.000	180.201
Honghuasheng, Yantai	2022	0.000	666.180	0.000	666.180	0.000	0.000	3,788.418	3,788.418
	2023	0.000	812.080	0.000	812.080	0.000	2,315.180	602.400	2,917.580
	2024	0.000	3,960.580	0.000	3,960.580	0.000	2,180.628	0.000	2,180.628
CJ Electric Systems, Wuhu	2022	0.000	0.000	0.131	0.131	0.000	0.000	0.000	0.000
	2023	0.000	0.000	0.000	0.000	0.000	0.000	25.000	25.000
	2024	0.000	0.000	0.000	0.000	0.000	0.000	60.380	60.380
PIU (USA)	2022	-	-	-	-	-	-	-	-
	2023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	2024	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total	2022(base)	0.000	666.644	1.964	668.608	0.000	0.000	3,793.418	3,793.418
	2023	1.818	812.646	0.000	814.464	0.000	2,505.420	780.228	3,285.648
	2024	0.086	3,962.589	0.000	3,962.675	0.000	2,508.922	60.380	2,569.302

Note: Due to calculation errors, waste data for New Ocean, Jiangxi and Honghuasheng, Yantai in 2022 has been partially corrected (2023 report has been updated)
Note: The total statistics for Pan-International, Taipei cover the period from 2024/1/1-2024/11/24 at Xindian Headquarters, and from 2024/11/25-2024/12/31 at the new Zhonghe Headquarters. Statistical data is primarily based on annual consolidated figures.
Note: In 2022, the amount of domestic waste generated by employees in Dongguan was not estimated, while in 2023, the amount of employee domestic waste was added.
Note: CJ Electric Systems, Wuhu expanded in 2023 (Dechan Plant area increased by 10,600 pings). Note: CJ Electric Systems, Wuhu energy statistics include CJ Electric Systems (factory area) and Dechang (warehouse).
Note: The USA PIU (USA) office was not included in the 2022 calculation. For 2023 and 2024, the US plant's waste was calculated based on daily waste per person.

Industrial Waste Direct Disposal Explanation

▼ Waste Directly Disposed of by Disposal Operations (Unit: Tonnes)

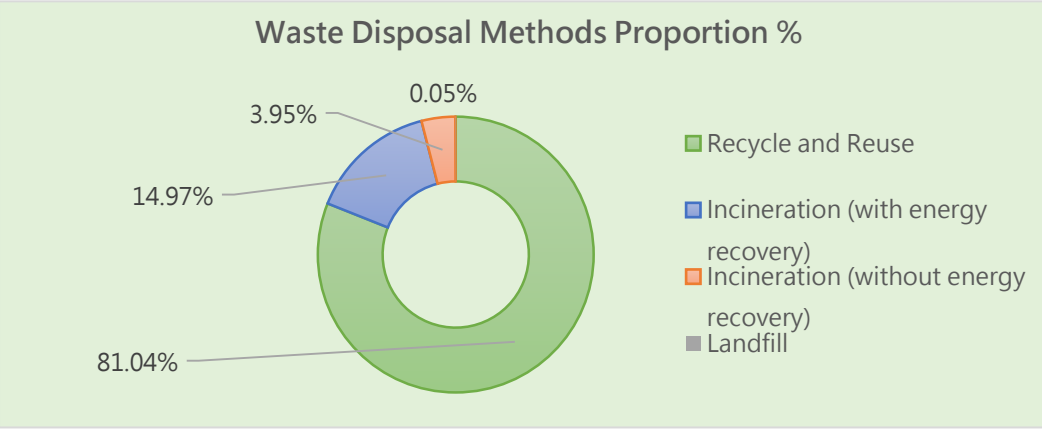
Waste Types		Hazardous industrial waste					Non-hazardous industrial waste				
Direct Disposal Method		Incineration (with energy recovery)	Incineration (without energy recovery)	Landfill	Other Direct Treatment	Total amount	Incineration (with energy recovery)	Incineration (without energy recovery)	Landfill	Other Direct Treatment	Total amount
Pan-International, Taipei	2022	0.000	0.000	0.000	0.000	0.000	0.000	8.587	0.000	0.000	8.587
	2023	0.000	0.000	0.000	0.000	0.000	0.000	7.627	0.000	0.000	7.627
	2024	0.000	0.000	0.000	0.000	0.000	10.379	0.000	0.000	0.000	10.379
Dongguan Pan-International	2022	0.000	0.000	0.000	0.000	0.000	0.000	120.000	0.000	0.000	120.000
	2023	0.000	0.337	0.000	0.000	0.337	0.000	51.840	0.000	0.000	51.840
	2024	4.600	0.000	0.000	0.000	4.600	49.200	0.000	0.000	0.000	49.200
New Ocean, Jiangxi	2022	0.000	0.084	0.000	0.000	0.084	8.000	0.000	10.000	96.500	114.500
	2023	0.017	0.000	0.000	0.000	0.017	9.893	0.000	0.000	0.000	9.893
	2024	0.000	1.971	0.000	0.000	1.971	31.192	0.000	0.000	0.000	31.192
Honghuasheng, Yantai	2022	3,726.860	0.000	0.000	0.000	3,726.860	0.000	1,359.150	0.000	0.000	1,359.150
	2023	5,239.720	0.000	0.000	0.000	5,239.720	1,118.740	0.000	0.000	0.000	1,118.740
	2024	600.900	0.000	0.000	0.000	600.900	510.150	0.000	0.000	0.000	510.150
CJ Electric Systems, Wuhu	2022	0.000	0.000	0.000	0.000	0.000	0.000	270.000	0.000	0.000	270.000
	2023	0.000	0.000	0.000	0.000	0.000	0.000	700.000	0.000	0.000	700.000
	2024	0.000	0.000	0.000	0.000	0.000	0.000	316.066	0.000	0.000	316.066
PIU (USA)	2022	-	-	-	-	-	-	-	-	-	-
	2023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.470	0.000	4.470
	2024	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.950	0.000	3.950
Total	2022(base)	3,726.860	0.084	0.000	0.000	3,726.944	8.000	1,757.737	10.000	96.500	1,872.237
	2023	5,239.737	0.337	0.000	0.000	5,240.074	1,128.633	759.467	4.470	0.000	1,892.570
	2024	605.500	1.971	0.000	0.000	607.471	600.921	316.066	3.950	0.000	920.937

Note: Due to calculation errors, waste data for New Ocean, Jiangxi and Honghuasheng, Yantai in 2022 has been partially corrected (2023 report has been updated)
Note: The total statistics for Pan-International, Taipei cover the period from 2024/1/1-2024/11/24 at Xindian Headquarters, and from 2024/11/25-2024/12/31 at the new Zhonghe Headquarters. Statistical data is primarily based on annual consolidated figures.
Note: In 2022, the amount of domestic waste generated by employees in Dongguan was not estimated, while in 2023, the amount of employee domestic waste was added.
Note: CJ Electric Systems, Wuhu expanded in 2023 (Dechan Plant area increased by 10,600 pings). Note: CJ Electric Systems, Wuhu energy statistics include CJ Electric Systems (factory area) and Dechang (warehouse).
Note: The USA PIU (USA) office was not included in the 2022 calculation. For 2023 and 2024, the US plant's waste was calculated based on daily waste per person.

In addition to waste disposed through resource recycling, the Group's other direct disposal methods include: incineration (with energy recovery), incineration (without energy recovery), and landfill. In 2024, the Group had a total of 1,528.408 tonnes of waste disposed through direct disposal methods, all of which was handled by qualified third-party professional organizations, including: incineration with energy recovery: 1,206.421 tonnes, incineration without energy recovery: 318.037 tonnes, and landfill disposal: 3.95 tonnes.
It is worth noting that the Group's various locations continue to improve their waste management mechanisms and actively increase their recycling utilization rates. In 2024, Dongguan Pan-International achieved a recycling rate of 73.35%, New Ocean, Jiangxi reached 84.61%, and Honghuasheng, Yantai achieved an even higher rate of 84.68%. All locations exceeded the 70% threshold, demonstrating the Group's excellent performance in resource circulation and pollution reduction. This also reflects our steady progress toward the sustainable goals of "zero waste landfill" and "maximum resource utilization".
This initiative corresponds to the United Nations Sustainable Development Goals (SDGs):
SDG 12: Responsible Consumption and Production — Promoting resource circulation and waste reduction at the production end through implementing waste sorting, improving recycling rates, and optimizing disposal processes.
SDG 13: Climate Action — Adopting methods such as incineration with energy recovery to effectively reduce the long-term environmental impact of waste and lower the potential risk of greenhouse gas emissions.

▼ Waste Disposal Methods Proportion

Action taken	Hazardous waste		Non-hazardous waste		Total	
	Generation Amount Tonnes	Disposal Methods Proportion %	Generation Amount Tonnes	Disposal Methods Proportion %	Generation Amount Tonnes	Disposal Methods Proportion %
Recycle and Reuse	3962.675	86.71%	2569.302	73.61%	6531.977	81.04%
Incineration (with energy recovery)	605.5	13.25%	600.921	17.22%	1206.421	14.97%
Incineration (without energy recovery)	1.971	0.04%	316.066	9.06%	318.037	3.95%
Landfill	0	0.00%	3.95	0.11%	3.95	0.05%
Other Direct Treatment	0	0.00%	0	0.00%	0	0.00%



Hazardous Waste Recycling ↑86.71%

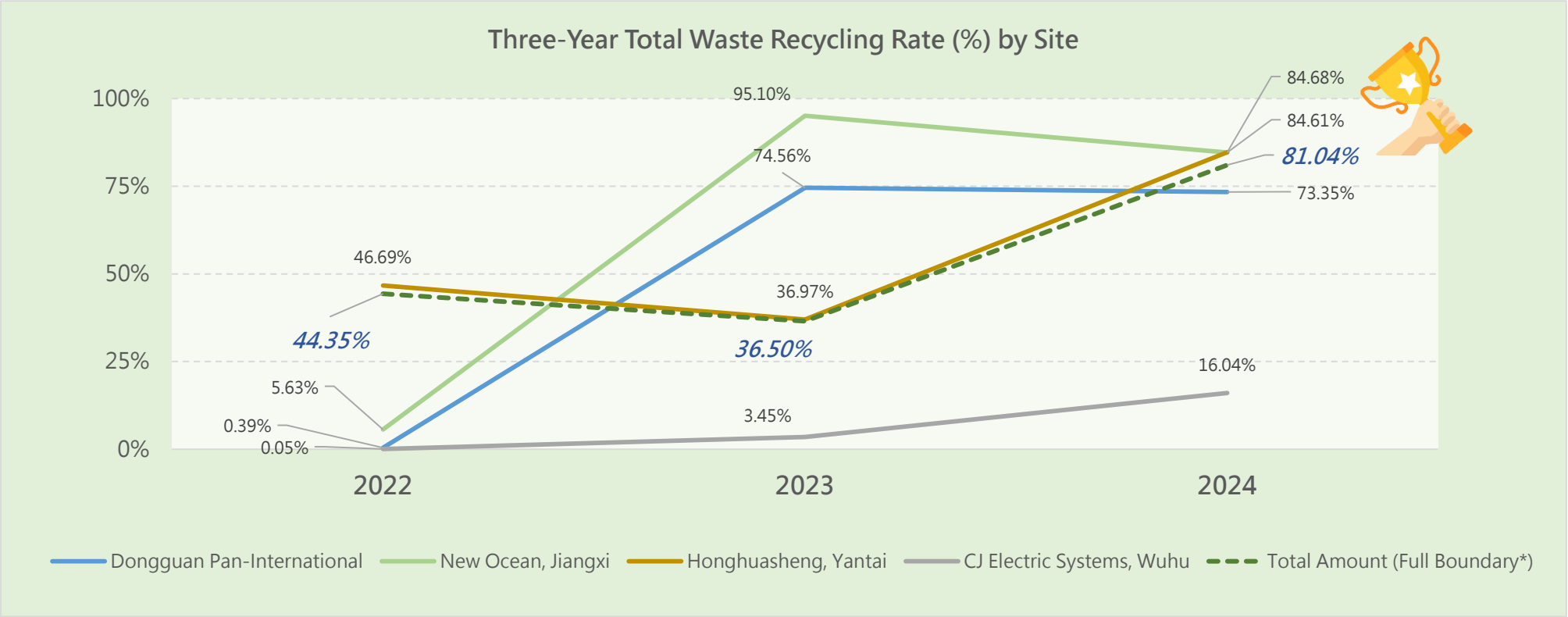
Non-Hazardous Waste Recycling ↑73.61%

Total Recycling ↑81.04% (from 44.35% based year)

▼ Three-Year Recycling Rate (%) for (Production) Facilities

Location	Hazardous Waste Recycling Rate			Non-hazardous Waste Recycling Rate			Total Recycling Rate		
	2022	2023	2024	2022	2023	2024	2022	2023	2024
Dongguan Pan-International	100.00%	27.37%	0.00%	0.00%	74.67%	75.06%	0.39%	74.56%	73.35%
New Ocean, Jiangxi	95.62%	99.25%	51.52%	4.18%	95.06%	85.24%	5.63%	95.10%	84.61%
Honghuasheng, Yantai	15.16%	13.42%	86.83%	73.60%	72.28%	81.04%	46.69%	36.97%	84.68%
CJ Electric Systems, Wuhu	100.00%	NA	NA	0.00%	3.45%	16.04%	0.05%	3.45%	16.04%
Total Amount (Full Boundary*)	15.21%	13.45%	86.71%	66.95%	63.45%	73.61%	44.35%	36.50%	81.04%

*Full boundary refers to the statistical data for the full boundary in the report



5.4 Air Quality

(GRI 305-7)

Air pollutant reduction plan：Maintaining existing control performance (due to minimal emissions)

The Group's Pan-International, Taipei headquarters and subsidiary PIU (USA) primarily operate in office environments; Dongguan Pan-International, New Ocean, Jiangxi, and CJ Electric Systems, Wuhu primarily focus on basic electronic assembly, and their operations do not generate air pollutants. Only two subsidiaries, Honghuasheng, Yantai and New Ocean, Jiangxi, may generate some air pollutants during their manufacturing processes due to differences in industrial nature and processes, which are explained as follows:

Honghuasheng, Yantai: As a Printed Circuit Board (PCB) manufacturing plant, it involves chemical processes such as etching, copper plating, drying, and cleaning, which generate:

- Nitrogen oxides and sulfur oxides: Generated by natural gas boilers, these emissions are untreated but comply with direct discharge standards.

- VOCs: Primarily discharged from waste gas scrubber used in processes involving inks (such as inner layer or solder resist ink printing and ink baking lines).

New Ocean, Jiangxi: Some wiring assembly and forming processes involve heating or bonding procedures that generate certain air pollutants, including:

-Particulate Matter (PM) generated from assembly processes -Volatile Organic Compounds (VOC) generated from assembly/forming/C&W processes

-Other significant gases - Non-methane Hydrocarbons generated from assembly/forming/C&W processes -Other significant gases - Tin and its compounds generated from assembly processes

For the above-mentioned potential sources of air pollutants, we track and control the emission of air pollutants in the facilities. In addition to installing relevant prevention equipment, Honghuasheng, Yantai conducts gas testing at emission points through third-party testing and partial automatic online monitoring at frequencies of semi-annual/annual/other intervals based on different items. New Ocean Precision Component (Jiangxi) Co., Ltd conducts third-party testing once per year based on different items, ensuring that all air pollutants generated meet or exceed government regulations/environmental impact assessment commitments.

As only the two aforementioned subsidiaries generate air pollutant emissions, and their emission levels are far below regulatory limits—with most parameters showing “not detected” results—the Group’s air pollutant reduction plan focuses on maintaining existing control performance and sustaining the results achieved through past efforts.

This management action corresponds to the United Nations Sustainable Development Goals (SDGs) as follows:

- SDG 3: Good Health and Well-being — Control air pollution sources to protect the respiratory health and quality of life of employees and community residents.
- SDG 11: Sustainable Cities and Communities — Implement pollution control to prevent harmful gases from impacting the surrounding environment.
- SDG 12: Responsible Consumption and Production — Promote green manufacturing, pollution reduction, and emission control.

▼ Air Pollution Control Equipment and Treatment Efficiency

Location	Air Pollutant Name	Prevention Equipment	Treatment Efficiency (%)
Honghuasheng, Yantai	Nitrogen oxides (NOx)	Direct discharge	Meets direct discharge standards
	Sulfur oxides (SOx)	Direct discharge	Meets direct discharge standards
	Volatile organic compounds (VOC)	Activated carbon adsorption treatment process & water spray scrubbing	Activated carbon treatment efficiency: 90%
	Persistent Organic Pollutants (POPs), Hazardous Air Pollutants (HAPs), Particulate Matter (PM)	Not contained	Not contained
New Ocean, Jiangxi	Particulate Matter (PM)	Activated Carbon Filtration	Treatment efficiency 95%
	Nitrogen oxides	Activated Carbon Filtration	Treatment efficiency 95%
	Sulfur Dioxide	Activated Carbon Filtration	Treatment efficiency 95%
	Volatile organic compounds (VOC)	Activated Carbon Filtration	Treatment efficiency 95%
	Total Non-methane Hydrocarbons	Activated Carbon Filtration	Treatment efficiency 95%
	Tin and its compounds	Activated Carbon Filtration	Treatment efficiency 95%

▼ Air Pollutant Emission Concentration Monitoring

Location	Major Gas	Process Emission Sources	Actual Tested Emission Concentration	Emission Standard **(Unit)**	Monitoring Frequency
Honghuasheng, Yantai	Nitrogen oxides (NOx)	Natural gas boiler	21	100 mg/m³	Once every six months
	Sulfur oxides (SOx)	Natural gas boiler	Not Detected	50 mg/m³	Once every six months
	Volatile organic compounds (VOC)	Waste gas scrubber used in the process	0.475	50 mg/m³	Once every six months
New Ocean, Jiangxi	Particulate Matter (PM)	Assembly	<20 mg/m³	120 mg/m³	Once per year
	Nitrogen oxides	Assembly	ND	240 mg/m³	Once per year
	Sulfur Dioxide	Assembly	ND	550 mg/m³	Once per year
	Total Non-methane Hydrocarbons	Assembly/molding/C&W	0.012083 kg/h	120 mg/m³	Once per year
	Volatile organic compounds (VOC)	Assembly/molding	0.000706 kg/h	-	Once per year
	Tin and its compounds	**Assembly**	0.000548 mg/m³	8.5 mg/m³	**Once per year**

Note 1: This table shows the average values of regular testing in 2024

Note 2: Emission standards comply with government regulations/environmental impact assessment commitments/air pollution operating permit

Note 3: All data sources are from third-party testing

In 2024, Honghuasheng Yantai's emissions were: nitrogen oxides (NOx) at 204.257 kg, sulfur oxides (SOx) at 0 kg, and volatile organic compounds (VOC) at 346.085 kg. No persistent organic pollutants (POP), hazardous air pollutants (HAP), particulate matter (PM), or other major gases currently regulated were produced.

- VOC emissions are fluctuating and difficult to measure precisely. VOC is mainly calculated by the concentration at the time of detection × total exhaust volume, so the concentration at the time of detection will affect the total amount. Honghuasheng continues to strive to treat and discharge VOCs in a manner that exceeds government regulations/environmental impact assessment commitments.

-The nitrogen oxide and sulfur oxide emissions in 2024 decreased compared to 2023 and 2022, mainly because (1) the pressure boiler in Plant A2 was replaced with a new boiler (reducing emissions) and (2) one steam humidification boiler was reduced in operation starting from 2023.

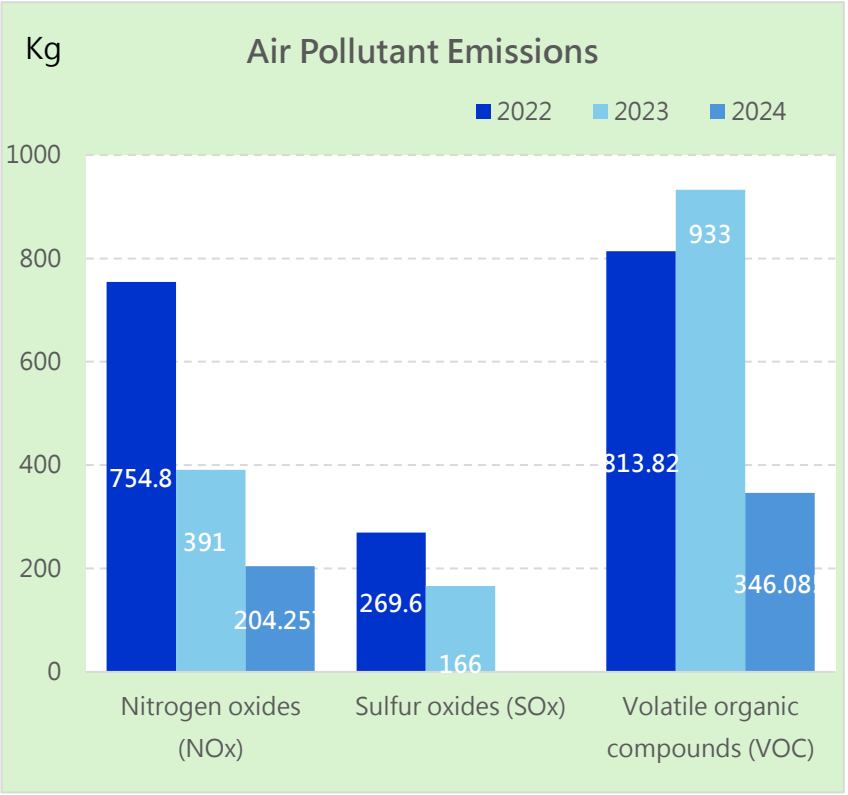
▼ **Honghuasheng, Yantai Air Pollutant Emissions Over the Years**(Unit: kg)

Location	Items	2022	2023	2024
Honghuasheng, Yantai	Nitrogen oxides (NOx)	754.8	391	204.257
	Sulfur oxides (SOx)	269.6	166	0
	Volatile organic compounds (VOC)	813.82	933	346.085

Note 1: Measurement method explanation: Emissions are monitored emission concentrations.

Note 2: Coefficient source: There is no coefficient for monitoring emission concentrations.

Note 3: VOC is calculated based on the concentration at the time of detection × total exhaust volume



In 2024, New Ocean, Jiangxi's emissions were: particulate matter (PM) at 459.089 kg, volatile organic compounds (VOC) at 4.097 kg, other major gases - non-methane hydrocarbons at 280.333 kg, and other major gases - tin and its compounds at 3.178 kg. The monitoring results for nitrogen oxides/sulfur dioxide were N.D. Besides the above, no other major gases currently under regulatory monitoring were generated.

- VOC emissions are fluctuating and difficult to measure precisely. VOC is mainly calculated by the concentration at the time of detection × total exhaust volume, so the concentration at the time of detection will affect the total amount. Newocean Precision Component (Jiangxi) Co., Ltd aims to treat and discharge VOCs in a manner that exceeds government regulations/environmental impact assessment commitments.

-The emissions of particulate matter (PM) and tin and its compounds in 2024 increased compared to 2023 and 2022, mainly due to measurement errors, but still remained within regulatory limits.

▼ **New Ocean, Jiangxi Air Pollutant Emissions Over the Years**(Unit: kg)

Location	Items	2022	2023	2024
New Ocean, Jiangxi	Particulate Matter (PM)	435.2	N.D	459.089
	Nitrogen oxides	55.42	N.D	ND
	Sulfur Dioxide	82.62	N.D	ND
	Volatile organic compounds (VOC)	/	5.2088	4.097
	Total Non-methane Hydrocarbons	493.102	408	280.333
	Tin and its compounds	0.05814	N.D	3.178

Note 1: Measurement method explanation: Emission amounts are based on monitored emission concentrations (average values).
Note 2: Coefficient source: There is no coefficient for monitoring emission concentrations.
Note 3: VOC is calculated based on the concentration at the time of detection × total exhaust volume