Coretronic

Coretronic Corporation

2022 TCFD Report

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Climate Change Overview

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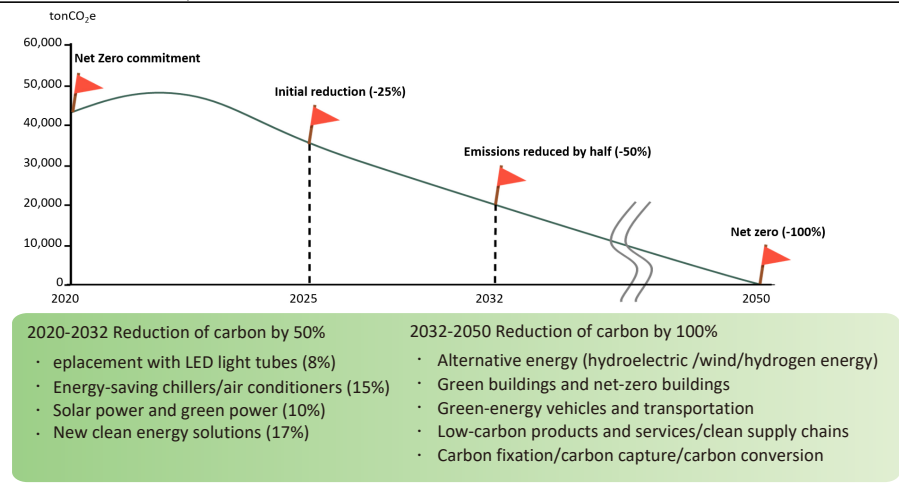| Core Elements	Strategy and Action	2022 Achievements
Governance	· The BOD regularly reviews the risks and opportunities associated with climate change. · The ESG Committee regularly reports TCFD strategies and results to the BOD. · The Environmental Protection Committee and Sustainable Energy Committee are responsible for setting goals and plans and implementing relevant strategies with the TCFD Team. · Participate in national and international initiatives.	· The ESG Committee is led by the chairman, and the executive representative–CFO, reports annually to the BOD at the board meeting on the implementation of sustainability projects, TCFD framework and strategies, various environmental indicators, net zero pathway, renewable energy strategies, and plans for sustainable development. · The chairman signed Coretronic's Net Zero Statement. · The Environmental Protection Committee and its Sustainable Energy Committee are responsible for setting short-, medium-, and long-term environmental goals and strengthening the implementation of strategies. · The TCFD Team, headed by the CFO, with members spanning safety and environmental, facility, accounting, finance, stock affairs, investor relations, public relations, procurement, manufacturing, production management, sales, product management, and R&D departments. · Signed up to support the TCFD and joined the Taiwan Climate Partnership and the Taiwan Alliance for Net Zero Emissions.
Strategy	· Identify risks and opportunities of climate change in the short, medium and long term through interdepartmental discussions. · Assess the potential operational and financial impacts of significant climate risks and opportunities on the Company. · Conduct situational analysis and SBT targets.	· The Environmental Protection Committee will call up various units to set short, medium and long-term environmental sustainability targets through cross-functional discussions, identify climate risks and opportunities in the short, medium and long term, and then present the potential operational and financial impacts caused by climate change based on the identification results. · Committed to developing low-carbon technologies and designing low-power, energy-efficient green products. · In response to the Paris Agreement, we set the carbon reduction target based on SBT 1.5°C scenario. · Planned strategies and set the goal for net zero emissions.
Risk Management	· Use the TCFD framework to identify the Company's risks related to climate change. · Based on the results of climate risk identification and ranking, plan corresponding solutions. · Integrate climate risk identification and evaluation into the enterprise risk management process.	· Assessed the types of potential operational and financial impacts caused by climate-related risks and opportunities. · "Climate Change" has been included in the risk management process and became one of the material topics in 2022.
Metrics and Targets	· Set management indicators related to climate change. · Regular inventory of greenhouse gas emissions in accordance with ISO 14064-1. · Review and manage energy performance regularly in accordance with ISO 50001. · Set climate change management targets and regularly review the progress and actual performance of achieving the targets.	· Set GHG emissions, electricity savings, water savings, renewable energy use, and waste reduction as climate change performance indicators. Review the target implementation results quarterly and annually to mitigate environmental impacts. · We have continued to obtain GHG inventory certificates since 2016 and expanded the scope of GHG inventory to Category 3~6 in 2020 in accordance with ISO 14064-1:2018, and will continue to implement carbon reduction measures based on the carbon inventory results. · The Taiwan plants have implemented the ISO 50001 Energy Management System. Through energy-saving equipment replacement projects and various energy-saving measures, we have effectively reduced GHG emissions intensity. · We have submitted a commitment letter to SBTi, pledging to set net-zero targets and decarbonization pathways based on the SBT 1.5°C scenario. We aim to reduce GHG emissions (Category 1 and 2) by 50% by 2023 and achieve net-zero emissions by 2050. By implementing measures such as installing solar plants, increasing the use of renewable energy, upgrading energy efficient equipment, and implementing energy-saving production management, we are gradually achieving the SBT reduction and net-zero target. · In 2022, we installed solar plants with a total capacity of 499.85 kWh in our Chunan Plant and Tainan Plant 2. These installations will start operation in 2023, and we expect our renewable energy use to reach 5%. Coupled with our green electricity wheeling and purchase of renewable energy certificates, we continue to make progress in renewable energy development. · The three EX1 laser projectors are Coretronic's first batch of projectors to pass the ISO 14067 verification. They will be a reference for the future development of sustainable products.

01 Net-Zero Actions

With the increasing severity of the impacts of extreme climate change on the environment and ecology, Coretronic firmly believes that addressing global warming is an urgent task. Therefore, in 2022, we announced our Net-Zero Statement, committing to reduce carbon emissions by 25% by 2025, 50% by 2032, and achieve net-zero emissions by 2050. We are dedicated to minimizing the impact of global warming on the environment, society, and economy and see it as our responsibility as a member of the global supply chain. Coretronic has long been committed to environmental sustainability, with the core principle of "Environmental Sustainability 4G Power." We have established four main themes: "Green Products," "Green Supply Chain," "Green Production," and "Green Lifestyle," to drive continuous environmental sustainability measures. We actively promote carbon reduction initiatives and increase the utilization of renewable energy. We have taken concrete actions to respond to climate initiatives both domestically and internationally. These actions include adopting TCFD (Task Force on Climate-related Financial Disclosures), joining the Taiwan Climate Partnership (TCP) and Taiwan Alliance for Net Zero Emissions (TANZE), responding to CDP (Carbon Disclosure Project) questionnaires on climate change and water security, and achieving management-level (B) ratings. Our Supplier Engagement Rating has also received a leadership-level (A-) rating. We have submitted a commitment letter to the Science Based Targets initiative (SBTi) and will set science-based reduction targets (SBT) based on a 1.5°C scenario, aiming to achieve net-zero emissions by 2050. We are committed to embarking on the path of net-zero sustainability.

CDP	TCFD	SCIENCE BASED TARGETS	TCP Taiwan Climate Partnership 台灣氣候聯盟	TANZE 台灣淨零行動聯盟 Taiwan Alliance for Net Zero Emissions
· Responding to CDP Climate Change questionnaires for 4 consecutive years. · Received Leadership level (A-) rating in Supplier Engagement Rating, which is higher than the average level in the industry, Asia, and the globe. · Received Management level (B) rating in Climate Change Evaluation, which is higher than the average level in the industry, Asia, and the globe. · Received Management level (B) rating in Water Security Evaluation, which is higher than the average level in the industry.	· Adopted and signed TCFD in 2020. · 2021~2022 Assessed climate change impacts on finance and generated a risk & opportunity matrix to further analyze the financial risks caused by climate change. · Continue to carry out risk analysis on energy, carbon emission, and extreme climate, as well as precaution measures.	· Submitted a commitment letter to the SBTi and set science-based reduction targets based on a 1.5C scenario, aiming to achieve 50% reduction in 2032, and net-Yero emissions by 2050 (base year 2020). · Submit SBT in 2024 and pass the review.	· Founded in 2021 by 8 corporates to promote net zero emission among Taiwan's supply chain. Connect with the world trend and actively collaborate with climate change initiatives with collective force. · Joined in 2022 and became the first batch of members.	· Encourage businesses to achieve the goal of "net-zero emissions for office locations by 2030 and production and service locations by 2050" through diverse energy-saving measures, process improvements, and energy substitution methods. · Awarded the Net-Zero Certificate in 2022, demonstrating our commitment and actions towards becoming a net-zero enterprise through commitment and action.

Coretronic is committed to developing a low-carbon product portfolio and implementing green operations as the cornerstone of our energy-saving and carbon reduction strategy. This includes the development of environmentally friendly technologies, source reduction initiatives, promoting circular economy principles, and pollution prevention measures. We also aim to reduce our reliance on fossil fuels and increase the use of renewable energy sources to mitigate the impact of climate change on the environment. In 2022, solar power generation facilities were installed in our Taiwan facilities, including the Chunan Plant, Tainan Plant 1, and Tainan Plant 2. These solar installations cover 75% of our Taiwan facilities and are still undergoing further expansion. Solar power generation facilities have also been established in our Kunshan and Wujiang plants in China [(Coretronic Optotech (Suzhou), Coretronic Display (Suzhou), Coretronic Optics(Suzhou)], with the aim of reducing carbon emissions through self-consumption. Furthermore, we actively engage in green electricity procurement and the purchase of renewable energy certificates to gradually increase our utilization of renewable energy sources, thereby supporting the use of green energy and achieving carbon reduction goals. Our factories also proactively respond to energy-saving policies by implementing various energy-saving measures, initiating equipment replacement programs to upgrade outdated cooling systems and energy-consuming equipment, thus strengthening our carbon reduction efforts. Through these energy-saving and carbon reduction initiatives, our Taiwan plants achieved a 22% reduction in greenhouse gas emissions (Category 1 and 2) intensity in 2022 compared to 2020, moving steadily towards our net-zero emissions target.

tonCO$_2$e

- Net Zero commitment
- Initial reduction (-25%)
- Emissions reduced by half (-50%)
- Net zero (-100%)

2020 — 2025 — 2032 — 2050

2020-2032 Reduction of carbon by 50%
- · eplacement with LED light tubes (8%)
- · Energy-saving chillers/air conditioners (15%)
- · Solar power and green power (10%)
- · New clean energy solutions (17%)

2032-2050 Reduction of carbon by 100%
- · Alternative energy (hydroelectric /wind/hydrogen energy)
- · Green buildings and net-zero buildings
- · Green-energy vehicles and transportation
- · Low-carbon products and services/clean supply chains
- · Carbon fixation/carbon capture/carbon conversion

02 Climate Governance

2.1 Boards of Directors

The Board of Directors is the highest governing unit of the company and serves as the center for significant business decisions. Its responsibilities include appointing and supervising the company's management team, overseeing operational performance, preventing conflicts of interest, and ensuring compliance with various laws, the company's bylaws, and shareholder resolutions in order to exercise its powers. The Board is committed to maximizing shareholder rights and interests.

The Board of Directors currently convenes at least once per quarter, during which the company's management team presents reports on operational performance. The Board then deliberates and decides on future business strategies and significant policies.

Under the purview of the Board of Directors, there are three functional committees: the Audit Committee, the Compensation Committee, and the Nomination Committee. These committees review and discuss matters before presenting them to the Board for decision-making. Through the scrutiny of these functional committees, the Board fulfills its responsibilities and enhances shareholder interests.
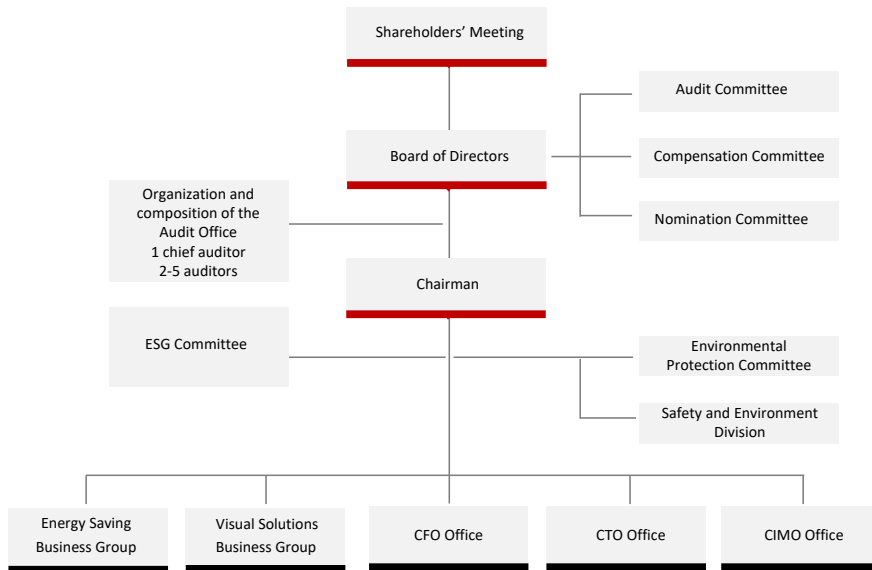
Periodic Review

· The BOD annually reviews the ESG Committee's representative - CFO's report on the results of sustainable project implementation, climate change risk management framework and coping strategies (TCFD), various environmental indicators, net-zero pathways, renewable energy strategies, and sustainable development directions in the future.
· The BOD biannually approves the "Material Topics of the ESG Report."
· The Chairman of the BOD quarterly reviews and monitors the ESG Committee's management representative's report on the annual progress of sustainable plan implementation, including environmental sustainability, climate change, net-zero, renewable energy, social engagement, labor, and human rights issues.
· The Annual ESG Report must be reviewed and approved by the chairman of the BOD before being published.

Approved Policies and Projects

· On October 31, 2022, the BOD approved the amendment to Coretronics "Sustainable Development Best Practice Principles," modifying regulations for significant aspects of ESG, including corporate governance, sustainable environment, social engagement, and human rights. And new policies related to climate-related financial disclosure (TCFD) and renewable energy usage were added to align with international sustainability trends and regulatory requirements.
· On March 13, 2023, the BOD approved the "Material Topics of the 2022 ESG Report."
· The Chairman of the BOD approved and signed the "Coretronic Net-Zero Statement," committing to "reduce carbon emissions by 25% by 2025, 50% by 2032, and achieve net-zero emissions by 2050." This commitment is publicly disclosed on the Company's ESG website for all stakeholders to access.
· The Chairman of the BOD approved the "Solar Power Plants Project" in each plant to increase the renewable energy usage and accelerate the achievement of carbon reduction and net-zero goals.

Education and Training

· To enhance the climate-related awareness of board members, annual climate change and sustainability-related courses are arranged, encouraging board members to participate in external climate-related courses.
· In 2022, five sustainability courses were arranged for board members, including "Climate Change Response, Building Sustainable Corporate Competitiveness," "Towards Net Zero Carbon Management Trend, and Counteractions," "Net Zero Emissions, Carbon Neutrality, and Corporate Legal Compliance," "ESG Tides and Impacts," and "ESG Industry Trends and Opportunities." The total number of participants was 18, with 54 person-hours in training.

02 Climate Governance

2.2 ESG Committee

To implement ESG, the CSR Committee was established in 2008, and was renamed to ESG Committee in 2020. According to "Sustainable Development Guidelines" approved by BOD, the committee is chaired by the Chairman of Coretronic, with presidents and the CFO as members and the spokesperson as the management representative. The ESG Committee also authorizes the executive representative of economic, social, and environmental departments to assist with ESG promotion. Currently, the ESG Committee is an independently operated unit and the management team regularly reports the implementation of ESG to the Board of Directors every year. The management team makes plans and sets goals for ESG, and regularly reviews the performance. The Board of Directors also regularly reviews and supervises the implementation of sustainable development, and urges the management team to improve when it is necessary.
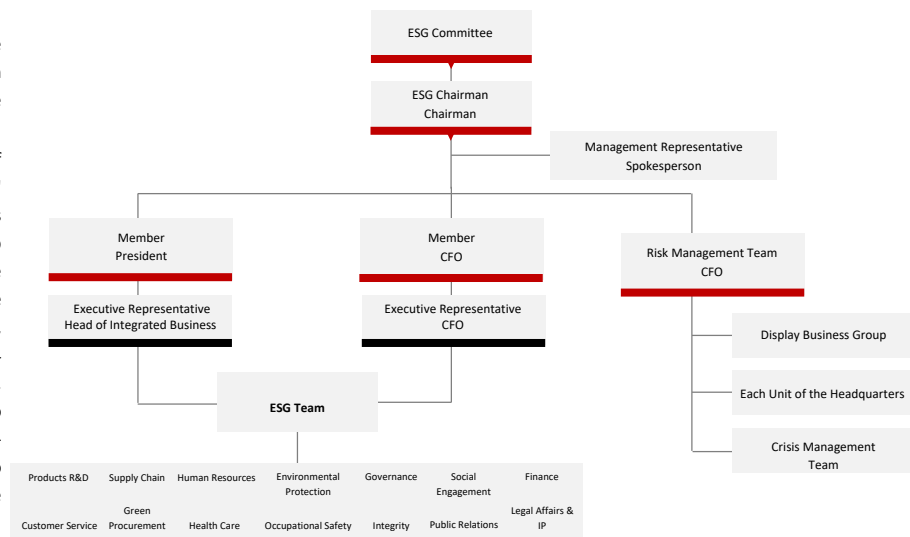
Implementation
· Committee members and executive representatives review the implementation and outcomes of sustainability on a quarterly basis through briefings. Quarterly meetings are held with the ESG team, where executive representatives and ESG team members attend. Discussions are held regarding the annual ESG report published that year and various sustainability awards to formulate the sustainability plans and goals for the following year.
· The management representative reports the progress of annual plan execution to the Chairman of the Committee, committee members, and executive representatives on a quarterly basis. They also present the annual sustainability achievements and the key sustainability focus areas and plans for the next year at the annual group meeting.
· Committee members and executive representatives- the CFO reports to the Board of Directors annually. The report includes the accomplishments of sustainability projects, the climate change risk management framework and response strategies (TCFD), various environmental indicators, net-zero pathways, renewable energy strategies, and future directions for sustainable development.
· We formulate sustainable policies in accordance with international and government regulations and provide training courses to the members of ESG Team to enhance their implementation of sustainability strategies.
· The annual ESG report is compiled by the ESG Team, then submitted to the management representatives, executive representatives, and committee members for revision in sequence, and then submitted to the Chairman for review and final issue.

Education and Training

Participate in internal/external training courses, issue quarterly ESG e-newsletters, and share ESG knowledge and activities on electronic/physical bulletin boards to improve employees' ESG awareness and concepts, and then internalize ESG core elements into the company's daily operations. At the same time, we make videos of sustainable activities and publish them through various channels, such as the official website, social media and Wikipedia.

· Internal Training Courses- Annual Mandatory Courses on Sustainability To enhance the sustainability awareness of all indirect employees, we planned two online mandatory sustainability courses in 2022 : "Decoding Sustainability" and "Interpreting ESG Reports." The first course focuses on gases, introducing important sustainability terms such as ESG, carbon neutrality, net-zero, greenhouse and provides relevant examples to help employees quickly understand their content and the latest trends. A total of 1,111 participants attended the course and passed the post-training assessment, resulting in a completion rate of 93%. The second course introduces the two major sustainability organizations within the company and their areas of responsibility, stakeholders, and material topics. It also teaches employees how to read the annual ESG report. A total of 1,084 participants attended the course and passed the post-training assessment, resulting in a completion rate of 91%.
· External Training Courses- CDP Climate Change Industry Questionnaire Analysis Training Courses In order to improve the CDP (Carbon Disclosure Project) questionnaire score and review the company's climate change-related strategies, goals, and performance through the answering process, representatives were sent to participate in an external training course. As a result, Coretronic successfully improved its CDP Climate Change questionnaire score from C grade to B grade.

02 Climate Governance

2.3 Environmental Protection Committee and TCFD Team

Environmental Protection Committee

Upholding the aim to implement energy conservation mechanisms, reduce greenhouse gas (GHG) emissions, fulfill corporate social responsibility, improve the overall corporate image, reduce operating cost, and assure sustainable business and development, Coretronic established the Environmental Protection Committee (EPC) in 2015. The head of the Integrated Business Source Center serves as the "Convener," the director of the Integrated Business Source Center serves as the "Chairman," the head of the Safety and Environment Division serves as the "Management Representative," and the supervisors of each unit or representative such as R&D, Manufacturing, Quality Assurance, Procurement, Facility Management, Safety and Environment, and General Affairs serve as "Committee Members." Additionally, the Company has set up the "Sustainable Energy Committee" and the "EPC Promotion Team" under its jurisdiction.

· Environmental Protection Committee and EPC Promotion Team
  ✓ Quarterly/Annually review short-, medium-, and long-term environmental goals and implementation of strategies.
  ✓ Establish, plan, and implement goals, strategies, and action plans for climate change, carbon peaking, carbon neutrality, and net-zero.
  ✓ Conduct climate risk assessments.
  ✓ Promote pollution prevention, disaster response, and preventive measures.
  ✓ Focus on and advocate key points of international initiatives.
  ✓ Integrate and implement measures related to green actions.

· Sustainable Energy Committee
  The director of the Integrated Business Source Center serves as the "Chairman", and supervisors of Facility Management Department from each factory serve as "Committee Members".
  ✓ Weekly/monthly/quarterly review on electricity, renewable energy, and water resource usage.
  ✓ Promote corporate energy conservation and carbon reduction projects and energy transition.
  ✓ Implement short-term, medium-term, and long-term net-zero strategies and targets.
  ✓ Quarterly report goal achievement status to the EPC.
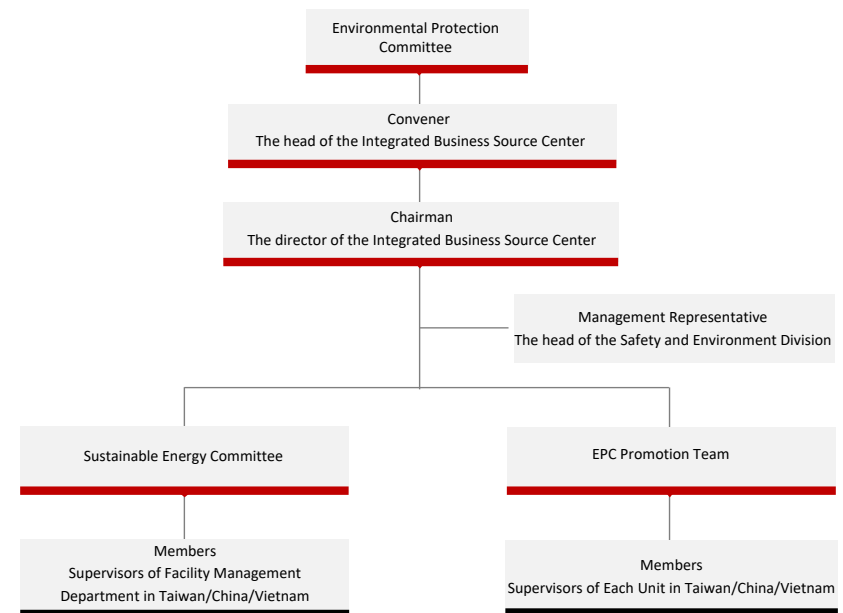
TCFD Team

Coretronic officially signed and supported TCFD in 2020, and established TCFD Team, headed by the CFO, with members spanning safety and environmental, facility management, accounting, finance, stock affairs, investor relations, public relations, procurement, manufacturing, production management, sales, product management, and R&D departments.

  ✓ Continually follow international initiatives, climate-related regulations changing and net-zero process.
  ✓ Biannually implement climate-related risks and opportunities identification, formulate coping strategies and solutions to reduce the negative impacts, and enhance the Company's climate resilience.

03 Climate Strategy

3.1 GHG and Energy Management

We have taken the SBT 1.5°C scenario as the reduction goal in setting a carbon reduction pathway to net zero. Using 2020 as the baseline, we aim to reduce GHG emissions (Category 1 and 2) by 50% by 2032 and achieve Net-Zero emissions by 2050. We plan to gradually achieve the SBT reduction and net-zero targets by installing solar equipment, increasing renewable energy use, upgrading energy-saving equipment, and implementing energy-saving production management. At Coretronic, purchased electricity is the main source of GHG emissions. Hence, we set the renewable energy consumption target at 1% in 2020 and began to purchase the renewable energy certificate (REC). As of 2022, the Taiwan plants have achieved this target for three consecutive years. In the future, we will continue to install solar equipment in our plants, purchase more renewable energy wheeling, and obtain renewable energy certificates to further increase the use of renewable energy. In addition, we actively participate in national and international initiatives, such as the Taiwan Climate Partnership, the Taiwan Alliance for Net Zero Emissions, submitting a commitment letter to SBT, implementing TCFD, and responding to CDP questionnaires. We also perform carbon offsets, develop green technologies, establish internal carbon pricing, strengthen green innovation practices and mitigation measures, improve the energy efficiency of HVAC systems, make factory equipment more energy-efficient, and install energy-saving lighting. We strive to be a leader in energy efficiency and carbon reduction in the industry and gradually achieve SBT reduction and net-zero targets.

Strategy	Performance in 2022
· The Environmental Protection Committee establishes environmental sustainability policies and regularly reviews carbon reduction performance to achieve GHG reduction targets. · Conducted a GHG inventory in accordance with ISO 14064-1 and passed the verification. · Set SBT carbon reduction targets. · Established the "Sustainable Energy Committee" under the Environmental Protection Committee to strengthen the net-zero trajectory and energy solutions. The committee will regularly review energy efficiency performance to achieve energy-saving targets. · Implement the ISO 50001 Energy Management System to identify opportunities for reducing energy consumption. · Improve energy-saving performance and energy efficiency through regular maintenance, improvement, and equipment replacement; optimization of processes; and system integration. · Review the energy consumption status of each plant and establish corresponding energy-saving measures. · Install solar systems to increase renewable energy use and achieve renewable energy targets.	· 2022: The Taiwan plants' GHG emissions (Category 1 and 2) intensity decreased by 22% from 2021 (a 49% reduction from 2019), achieving the short-term target. The China plants' GHG emissions (Category 1 and 2) intensity decreased by 49% from 2021. · 2016-2022: The Taiwan plants passed the ISO 14064-1 GHG verification for 7 consecutive years. The China plants passed the ISO 14064-1 GHG verification for the first time in 2022. · 2022: The Taiwan plants implemented the ISO 50001. (The Chunan Plant obtained the ISO 50001 certification for 7 consecutive years.) · 2015-2022: The Taiwan and China plants have implemented 311 energy-saving solutions, saving 28.15 GWh of electricity and reducing 16,450 tonCO$_2$e (equivalent to the annual carbon uptake of approximately 43 Daan Parks). · 2022: The Taiwan plants' electricity consumption intensity was 23% less than 2021 and 47% less than 2019, achieving the short-term target. The China plants' electricity consumption intensity was 22% less than 2021. · 2016-2022: The Taiwan plants have purchased renewable energy (green power, renewable energy certificates, and green electricity wheeling) for 7 consecutive years. This is equivalent to using 810,000 kWh of renewable energy, with a cumulative reduction of 419.6 tonCO$_2$e. · 2018-2022: The solar equipment of Tainan Plant 1 accumulated a total output of 1.38 GWh of solar energy, with an estimated cumulative reduction of 708 tonCO$_2$e. · 2022: The China plants' solar equipment output more than 5.17 GWh of solar energy, accounting for 14.5% of the China plants' electricity consumption of that year, with an estimated reduction of 2,949 tonCO$_2$e.

▶ GHG Inventory

We conduct annual GHG inventory in accordance with ISO 14064-1, covering seven types of gases: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3). The inventory allows us to monitor the current GHG use and verify the effectiveness of our reduction efforts. At this stage, although not subject to regulatory control to be required to carry out inventory and reduction, we have set greenhouse gas reduction targets in stages and review annually for continuous improvement. Also, we inventory the energy consumption, improve the efficiency of equipment, manage energy use status and install renewable energy equipment to maximize the use of energy, so as to achieve the goal of greenhouse gas reduction and the low-carbon goals with scientific management of data.

· Implementation of GHG Systematic Management

2009	2016 ~ 2018	2019	2020	2021	2022
We established an internal management mechanism to independently inventory the GHG emissions in Taiwan plants.	Plants in Taiwan entrusts a third-party to conduct ISO 14064-1 GHG verification.	· Added independent inventory of GHG Category 3~6 of plants in Taiwan and GHG Category 1~2 in Coretronic Display (Suzhou) and Coretronic Optotech (Suzhou).	Taiwan plants added Category 3 to 6 to the ISO 14064-1 GHG verification.	· Tainan Plant 2 began to accept ISO 14604-1 GHG verification. · Added independent inventory of GHG Category 1~2 in Coretronic Optics (Suzhou), Coretronic Projection (Kunshan), and Coretronic Optics (Kunshan).	· The Taiwan plants passed the ISO 14064-1 GHG verification for five consecutive years. · The China plants passed the ISO 14064-1 GHG verification for the first time.

. In 2022, the Taiwan plants' GHG emissions (Category 1 and 2) decreased by 235.5 tonCO2e from 2021 because the plants implemented energy-saving measures, such as installing solar systems, introducing magnetic levitation chillers, monitoring equipment electricity consumption, reducing energy consumption, managing nighttime energy use, and improving lighting efficiency. In addition, using renewable energy has reduced the use of purchased electricity, thereby reducing GHG emissions. The emissions intensity for Category 3 to 6 increased from 2021 because the scope of material inventory was expanded in 2022, now covering a more complete range of purchased raw materials. In the future, the GHG inventory will be conducted using the same standard.

. In 2022, the China plants' GHG emissions (Category 1 and 2) decreased by 17,498.6 tonCO2e from 2021 because of the plants' efforts to address climate change and achieve carbon peak by setting carbon reduction goals, developing renewable energy sources, implementing energy-saving measures, enhancing energy use management, and using renewable energy, thereby reducing the use of purchased electricity.

Area	Taiwan			China [1]		
Plant	Headquarters, Chunan Plant, Tainan Plant 1	Headquarters, Chunan Plant, Tainan Plant 1 and 2		Wujiang Plants	Wujiang and Kunshan Plants	
Indicator/Year	2020	2021	2022	2020	2021	2022
Direct Emissions—Category 1 (tCO_2e)	246.1	223.1	246.1	552.6	678.8	1,655.5
Indirect Emissions—Category 2 (tCO_2e)	7,465.8	7,985.1	7,726.6	16,377.7	38,858.2	20,382.9
Total GHG Emissions—Category 1+2 (tCO_2e)	7,711.9	8,208.2	7,972.7	16,930.3	39,537.0	22,038.4
GHG Emissions Intensity—Category 1+2 (tCO_2e/NTD 100m)[2]	43.6	30.5	23.9	167.6	99.1	50.5
Indirect Emissions—Category 3 (tCO_2e)[5]	1,647.1	1,493.1	1,307.7	–	–	59,964.2
Indirect Emissions—Category 4 (tCO_2e)[5]	7,699.7	6,158.6	41,511.1	–	–	563,858.6
Total GHG Emissions—Category 1-6 (tCO_2e)	17,058.7	15,859.8	50,791.5	–	–	645,861.1
GHG Emissions Intensity—Category 1-6 (tCO_2e/NTD 100m)[2]	96.4	59.0	152.5	–	–	1,481.3

1 : Includes electricity consumption from solar self-consumption and green electricity wheeling.

2 : The scope of revenue by year

  2020 : Taiwan plants—Coretronic, Young Green Energy, uCare Medical Electronics, Champ Vision Display, Coretronic Intelligent Cloud Service, Coretronic Intelligent Robotics, Innospectra, Coretronic MEMS, and Coretronic Reality; China plants—Coretronic Display (Suzhou) and Coretronic Optotech (Suzhou)

  2021-2022 : Taiwan plants—Coretronic, Young Green Energy, uCare Medical Electronics, Champ Vision Display, Coretronic Intelligent Cloud Service, Coretronic Intelligent Robotics, Innospectra, Coretronic MEMS, Coretronic Reality, and Coretronic Intelligent Logistic Solutions; China plants— Coretronic Display (Suzhou), Coretronic Optotech (Suzhou), Coretronic Optics (Suzhou), Coretronic Projection (Kunshan), and Coretronic Optics (Kunshan)

3 : Since 2020, the Taiwan plants have conducted GHG inventory and verification based on ISO 14064-1:2018. The China plants conducted a self-imposed GHG inventory based on ISO 14064-1:2006 for 2020-2021. Since 2022, the China plants have conducted GHG inventory and verification based on ISO 14064-1:2018, where Category 1 = Scope 1, Category 2 = Scope 2, and Categories 3-6 = Scope 3.

4 : The coefficient of Taiwan plants' carbon emissions in 2022 refers to the carbon emissions data of the Bureau of Energy in 2022, where 1 kWh = 0.509 kgCO2e. The coefficient of China plants' carbon emissions refers to the "Notice on Doing a Good Job in the Reporting and Management of Greenhouse Gas Emissions of Enterprises in the Power Generation Industry from 2023 to 2025," where 1 kWh = 0.5703 kgCO2e. The GWP values refers to the GWP of the IPCC 2021 Sixth Assessment Report, and the scope of the inventory is based on the Operational Control Law.

5 : Category 3 inventory items include upstream transportation and distribution, downstream transportation and distribution, employee commuting, and business travel. Category 4 inventory items include purchased goods, solid and liquid waste disposal, and asset use.

▶ Energy Management System

  In 2022, the chairman signed the Net Zero Statement and publicly committed to "reduce GHG emissions (Category 1 and 2) by 50% by 2032 and achieve net-zero emissions by 2050." As a result, we have established the "Sustainable Energy Committee" under the Environmental Protection Committee to strengthen the implementation of net-zero and energy solutions. Additionally, the Taiwan plants have implemented the ISO 50001 Energy Management System and obtained the certification, effectively saving electricity, reducing energy consumption, and lowering operating costs.

· 2016-2022: The Chunan Plant obtained the ISO 50001certification for 7 consecutive years.

· 2022: The Headquarters, Tainan Plant 1 and 2 obtained the ISO 50001 certification for the first time.

· 2022: The Taiwan plants' electricity consumption intensity was 23% less than 2021 and 47% less than 2019, achieving the short-term target.

▶ Status of Energy Consumption

  In 2022, the total energy consumption in Taiwan was 15,601 MWh, and 43,942 MWh in China. The energy consumption in both regions is mainly from electricity use. The Taiwan plants' total annual electricity consumption was 15,201 MWh (97% of energy consumption), and the China plants' was 40,912 MWh (93% of energy consumption). Natural gas, gasoline, and diesel consumption each accounted for less than 7%. Each plant proposes programs to improve the resource and energy efficiency and regularly reviews the implementation status of the goal regularly by the Environmental Protection Committee.

Area		Type	Taiwan			China		
Item /Year			2020	2021	2022	2020	2021	2022
Direct Energy	Renewable Energy[1] (MWh)[2]	Renewable	0	0	96	0	0	5,171
Direct Energy	Purchased Electricity (MWh)	Non-Renewable	14,413	15,907	15,105	31,113	49,016	35,741
Indirect Energy	Liquefied Petroleum Gas (MWh)	Non-Renewable	0	0	0	0	0	0
Indirect Energy	Natural Gas (MWh)	Non-Renewable	262	233	245	897	1,234	2,198
Indirect Energy	Diesel (MWh)	Non-Renewable	15	30	32	24	310	184
Indirect Energy	Gasoline (MWh)	Non-Renewable	130	104	123	87	1,057	648
Total Energy Consumption (MWh)			14,820	16,274	15,601	32,121	51,617	43,942
Total Intensity of Energy Consumption (1 MWh/NTD 100m)[3]			83.7	60.5	46.8	117.7	129.4	100.8
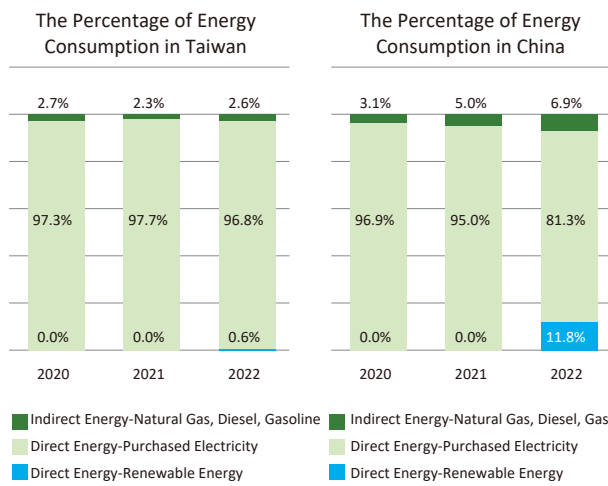
1：Includes electricity consumption from solar self-consumption and green electricity wheeling.

2：1 MWh = 0.0000036GJ

3：The scope of revenue by year

2020：Taiwan plants—Coretronic, Young Green Energy, uCare Medical Electronics, Champ Vision Display, Coretronic Intelligent Cloud Service, Coretronic Intelligent Robotics, Innospectra, Coretronic MEMS, and Coretronic Reality; China plants—Coretronic Display (Suzhou), Coretronic Optotech (Suzhou), Coretronic Projection (Kunshan), and Coretronic Optics (Kunshan)

2021-2022：Taiwan plants—Coretronic, Young Green Energy, uCare Medical Electronics, Champ Vision Display, Coretronic Intelligent Cloud Service, Coretronic Intelligent Robotics, Innospectra, Coretronic MEMS, Coretronic Reality, and Coretronic Intelligent Logistic Solutions; China plants—Coretronic Display (Suzhou), Coretronic Optotech (Suzhou), Coretronic Optics (Suzhou), Coretronic Projection (Kunshan), and Coretronic Optics (Kunshan)

The Percentage of Energy Consumption in Taiwan

The Percentage of Energy Consumption in China

- Indirect Energy-Natural Gas, Diesel, Gasoline
- Direct Energy-Purchased Electricity
- Direct Energy-Renewable Energy

▶ Energy-Saving Measures and Performance

· The Taiwan plants' electricity consumption intensity decreased by 23% from 2021 (47% from 2019) because of the implementation of 35 energy-saving measures, including upgrading the chillers, switching to LED bulbs in the entire plant, and monitoring electricity consumption. These measures have slowed down the electricity demand, leading to a decrease in overall energy consumption.

· The China plants have implemented energy-saving improvement solutions since 2018. For example, to respond to the extreme weather caused by global warming and climate change, the plants used the energy-saving lighting equipment, introduced the energy-saving measures to the air-conditioning system, and reviewed and shared the improvement actions with the Environmental Protection Committee on a quarterly basis. In 2021, the expansion of Wujian plants [established Coretronic Optics (Suzhou)] increased the electricity consumption intensity. To reduce energy consumption, we built solar plants at Wujiang plants to replace ordinary electricity consumption with clean energy in order to reduce the intensity of electricity consumption. As a result, the China plants' electricity consumption intensity in 2022 decreased by 24% from 2021.

· Since 2015, we have reduced electricity consumption by implementing energy-saving projects in three directions, including HAVC systems, electric lamps, and other electricity consumption. In 2019, Wujiang plants started to implement energy-saving measures, and in 2020, we acquired "levitation chillers and flow optimization control equipment" to replace energy-consuming HVAC equipment. In 2021, the Kunshan plants and Tainan Plant 2 started implementing energy-saving measures. From 2015 to 2022, the Taiwan and China plants implemented 311 energy-saving solutions, reducing 28.15 GWh of electricity and 16,000 tonCO2e, equivalent to the annual carbon uptake of 43 Daan Parks.

· In 2022, the Taiwan and China plants implemented 72 energy-saving measures, reducing 15.3 GWh of electricity and 8,614 tonCO2e.

Area/Year	Taiwan			China		
Item	2020	2021	2022	2020	2021	2022
Total Electricity Consumption（MWh）[1]	14,413	15,907	15,201	31,113	49,016	40,912
Total Electricity Conservation by Energy-Saving Projects (MWh)	1,922	2,346	1,827	446	2,111	13,473
Total Carbon Reduction of Energy- Saving Projects (tCO2e)	965	1,178	930	353	1,672	7,684
Electricity Consumption Intensity (1MWh/NTD 100m)[2]	81.4	59.1	45.6	114.0	122.8	93.8

1：The total electricity consumption of the plants includes purchased electricity and renewable energy (solar self-consumption and green electricity wheeling).

2：The scope of revenue by year

2020: Taiwan plants—Coretronic, Young Green Energy, uCare Medical Electronics, Champ Vision Display, Coretronic Intelligent Cloud Service, Coretronic Intelligent Robotics, Innospectra, Coretronic MEMS, and Coretronic Reality; China plants—Coretronic Display (Suzhou), Coretronic Optotech (Suzhou), Coretronic Projection (Kunshan), and Coretronic Optics (Kunshan)

2021-2022: Taiwan plants—Coretronic, Young Green Energy, uCare Medical Electronics, Champ Vision Display, Coretronic Intelligent Cloud Service, Coretronic Intelligent Robotics, Innospectra, Coretronic MEMS, Coretronic Reality, and Coretronic Intelligent Logistic Solutions; China plants—Coretronic Display (Suzhou), Coretronic

▶ Renewable Energy

Commitment and Target	Strategy
· 2020-2022：The annual renewable energy usage of the Taiwan plants for 1% of the annual electricity consumption of the entire plants. · 2023-2025：The annual renewable energy usage of the Taiwan plants will account for 5% of the annual electricity consumption of the entire plants. The annual renewable energy usage of the China plants will account for 13% of the annual electricity consumption of the entire plants. · 2026-2028：The annual renewable energy usage of the Taiwan plants will account for 6% of the annual electricity consumption of the entire plants. The annual renewable energy usage of the China plants will account for 15% of the annual electricity consumption of the entire plants.	· 2016-2017：Purchased green power · 2018：Tainan Plant 1 established a solar plant on the roof. · 2018-2022：Purchased renewable energy certificate(T-REC) for 5 consecutive years. · 2020：Set the target of the renewable energy usage. 2021：Solar plants were established on the roofs of Wujiang plants. · 2022： Coretronic Optics (Suzhou) installed a phase 2 solar system, and Coretronic Projection (Kunshan) installed a solar system. The Chunan Plant and Tainan Plant 1 use green power supply, and the Headquarters and Tainan Plant 2 purchased renewable energy certificates, achieving the goal of using renewable energy.

Performance in 2022
· 2021-2022 : The Wujiang plants [Coretronic Display (Suzhou), Coretronic Optotech (Suzhou), and Coretronic Optics (Suzhou)] installed solar systems with capacities of 1,207 kWh, 3,994 kWh, and 653.4 kWh, respectively. · 2022 : Three solar systems at Wujiang plants generated 4,711,087 kWh of electricity, reducing 2,687 $tonCO_2e$. · 2022 : The Kunshan plants [Coretronic Projection (Kunshan) and Coretronic Optics (Kunshan)] installed solar systems with a capacity of 618.9 kWh, generating a total of 459,805 kWh of electricity and reducing 262 $tonCO_2e$. · 2022 : The China plants' renewable energy consumption exceeded 5.17 GWh, accounting for 14.5% of the electricity consumption of the entire plants. · 2022 : The Chunan Plant and Tainan Plant 1 obtained 96,290 kWh of renewable energy through green electricity wheeling. The Headquarters and Tainan Plant 2 purchased 75,000 kWh of renewable energy certificates (75 T- RECs) The total reduction was 87.2 $tonCO_2e$. · 2022: The Taiwan plants used more than 170,000 kWh of renewable energy, accounting for 1% of the electricity consumption of the entire plants.

1：The electricity consumption shown in the table refers to purchased electricity.

2：The emission factor used for calculating the China plants' carbon emissions is 0.5703 $tonCO_2e$/MWh, which is the average emission factor of the national grid in 2022.

3.2 Waste Management

The waste produced by Coretronic's operational activities is mostly non-hazardous. However, hazardous industrial waste, such as flammable mixtures and electronic components, is produced during the R&D test process, which is incinerated and physically treated. We manage hazardous waste through output control and the categorization of scrap materials to reduce the amount of hazardous industrial waste. We also require suppliers to control waste disposal processes, fulfilling our commitment to environmentally friendly practices.

The Taiwan plants, Wujiang plants, and Coretronic Projection (Kunshan) ＊ have implemented and received the ISO 14001 certification. We examine waste output, removal, treatment, and recycling processes in different stages of the product life cycle. In addition, we reduce waste through systematic management and develop audit plans to avoid illegal practices or environmental risks from improper waste disposal. In 2022, the Taiwan plants continued to strengthen waste management, implementing classification controls and reusing packaging materials. As a result, the waste intensity decreased by 5.9% from 2021 and 66% from 2019, achieving the short-term target. The China plants' waste intensity in 2022 was 14.6. We aim to reduce environmental impacts by promoting domestic waste reduction, producing systematic statistics, and reviewing our achievements regularly.

＊ Coretronic Optics (Kunshan) is an upstream supplier of Coretronic Projection (Kunshan), and their environmental management systems are combined. In the future, they will undergo ISO 14001 certification upon customer request.

Strategy	Performance in 2022
· Enhance waste management and increase resource recycling percentage. · Design products with reduced size and materials to minimize waste output. · Use recycled materials to achieve waste reduction and recycling. · Commission qualified contractors for waste disposal.	· The Taiwan plants' waste intensity was 5.9% less than 2021 and 66% less than 2019, achieving the short-term target. · The China plants have collected data on all categories of waste since 2022. · Implemented 8 recycling and reusing measures for packaging materials, reducing 2,462 $tonCO_2e$ and saving NT$150,000 in the purchase of wooden pallets and waste disposal costs. · Tainan Plant 1 recycled and remanufactured trays, with 0.3 tons of trays recycled and 0.6 $tonCO_2e$ reduced in 2022. · The Kunshan plants have lightened chemical containers, reducing 2.6 tons of hazardous waste and 0.8 $tonCO_2e$ in 2022, as well as saving NT$40,000 in waste disposal costs. · The Taiwan and China plants audited 36 waste disposal contractors, with a 100% audit completion rate.

Waste Output

Coretronic is fully committed to waste reduction, reuse, and recycling. By incorporating circular economy practices into product manufacturing, strengthening waste reduction at the source, and pollution prevention, we continue to improve our waste management performance.

We classify waste into hazardous and non-hazardous waste based on their environmental impact. We further categorize non-hazardous waste into domestic waste, recyclables, reusable materials, and general industrial waste. We divide the waste into 5 categories based on their disposal status. In addition to domestic and recyclable waste, other waste is generated during manufacturing. In 2022, the Taiwan plants' waste output was 495.7 tons, increasing from 2021 because of capacity expansion. Among the waste, hazardous waste accounted for 0.8%, non-hazardous direct disposal waste accounted for 46.5%, and non-hazardous recyclable waste accounted for 52.7%. The China plants' waste output was 6,367.1 tons. Among the waste, hazardous waste accounted for 0.4%, non-hazardous direct disposal waste accounted for 11.7%, and non-hazardous recyclable waste accounted for 87.9%.

Category	Area	Taiwan			China
	Item / Year	2020	2021	2022	2022
Hazardous Waste [1]	Total	9.9	4.1	4.2	24.2
	Direct Disposal—Incineration	2.7	3.1	2.8	7.1
	Direct Disposal—Other disposal methods	7.2	1.0	1.4	0
	Recycle—Reuse for original purpose	0	0	0	6.0
	Recycle—Regeneration	0	0	0	11.1
Non-Hazardous Waste [2]	Total	549.0	432.4	491.5	6,342.9
	Direct Disposal—Incineration	189.8	200.8	228.4	743.9
	Direct Disposal—Landfill	0	0	0	0
	Direct Disposal—Other disposal methods	0	8.7	2.0	0
	Recycle—Reuse for original purpose	58.9	0.9	3.6	0
	Recycle—Regeneration	300.3	222.0	257.5	5,599.0
Total Waste Output (ton)		558.9	436.5	495.7	6,367.1
Waste Intensity (ton/NTD 100m) [3]		3.4	1.7	1.6	14.6

1：Mercury lamps, empty bottles, waste liquids, electronic waste, and other waste determined by local environmental protection authorities to be hazardous. Sorted and collected according to hazard characteristics and disposed of by qualified waste contractors.

2：Recyclable and reusable waste, including domestic waste, non-classifiable combustible general industrial waste, waste plastics, waste paper, scrap metal, and waste designated for reuse. Recyclable and reusable waste is collected and processed by qualified local recycling companies. Other waste is transported to processing facilities by qualified disposal companies according to the disposal methods of the waste.

3：The scope of revenue by year

2020: Coretronic, Young Green Energy, uCare Medical Electronics, Coretronic Intelligent Cloud Service, Coretronic Intelligent Robotics, Innospectra, Coretronic MEMS, and Coretronic Reality
2021-2022: Taiwan plants—Coretronic, Young Green Energy, uCare Medical Electronics, Coretronic Intelligent Cloud Service, Coretronic Intelligent Robotics, Innospectra, Coretronic MEMS, Coretronic Reality, and Coretronic Intelligent Logistic Solutions; China plants— Coretronic Display (Suzhou), Coretronic Optotech (Suzhou), Coretronic Optics (Suzhou), Coretronic Projection (Kunshan), and Coretronic Optics (Kunshan)

4：All generated waste is transported by qualified waste disposal to approved treatment facilities, with no disposal transfer involved.

5：The waste output, transfer, and disposal data are sourced from the EPA's Industrial Waste Report and Management System and the Jiangsu Province Pollution Source "One Enterprise, One File" Management System. The data on recycling and reuse are sourced from the plants' internal records and accounting statements.

Waste Output Status in Taiwan

- Total Waste Output (ton)
- Waste Intensity (ton/NTD 100m)
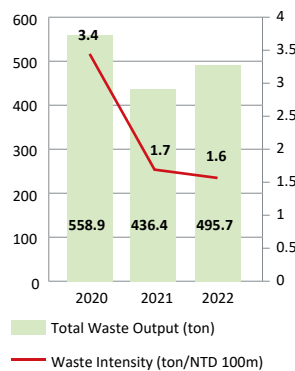
Waste Reduction Strategy

▶ Reusing Packaging Materials

In 2022, Coretronic implemented 8 recycling measures for packaging materials, achieving a recycling rate of 97%. Our recycling achievements, measured by the number of items, are as follows: 97% of trays, 90% of pallets, 74% of plastic pads, and 100% of cardboard boxes. A total of 1,195 tons of packaging materials were recycled and reused, reducing 2,462 $tonCO_2e$ and saving NT$150,000 in wooden pallet procurement costs (According to the Low Carbon Sustainable Information System website, each metric ton of waste produces 2.06 $tonCO_2e$).

▶ Circular Economy Alliance

· Reusing wooden pallet prototypes : Since 2017, we have collaborated with local transportation suppliers to recycle and reuse 490 tons of wooden pallet prototypes in logistics transportation, reducing 1,010 $tonCO_2e$ and saving NT$2.23 million in wooden pallet purchase and waste disposal costs.

· Remanufacturing trays : From 2021 to 2022, Taiwan Plant 1 recycled and remanufactured 1.4 tons of scrap trays, reducing 2.9 $tonCO_2e$.

▶ Lighten Chemical Containers

Kunshan plants replaced the 500 mL glass bottles with 2.5 L plastic buckets for ethanol storage, reducing 0.768 kilograms of hazardous industrial waste generated per liter of ethanol used. In 2022, we reduced 2.6 tons of waste and 0.8 $tonCO_2e$, saving RMB 9,153 (approximately NT$40,000) in waste disposal costs. According to the Carbon Footprint Information Platform website, each metric ton of hazardous industrial waste disposed of in landfills produces 0.3 $tonCO_2e$.

▶ Product End Processing Tracking

To ensure legal use of recycled products, Coretronic establishes explicit waste management regulations and performs on-site audit of the legal compliance and back-end disposition capability of the waste disposal service suppliers every year. If any nonconformities are identified, guidance is provided with an admonition received by the supplier concerned, and the nonconformities are subject to follow-up actions for improvement. If nonconformities are not removed, the waste disposal agreement will be terminated to ensure legal and appropriate disposal of waste. In 2022, audits of 36 suppliers rendering the services of wood pallet recycle and disposal of industrial and hazardous industrial waste and waste electronic components were scheduled and completed with a completion rate of 100%. The results of the audits did not show any nonconformities.

03 Climate Strategy

3.3 Water Resource Management

The water demand of plants in Taiwan and China is mainly for air conditioning, drinking water, cleaning, irrigation and group meals, and the users are employees, visitors and contractors. Since the manufacturing process does not require water, the impact on the environment is not significant. However, considering that water resource is the major international sustainability issue, we have adopted recycling and water conservation measures to reduce the impact, and at the same time, we have strengthened disseminating the messages on water conservation to prevent the crisis of water shortage in the dry season in advance.
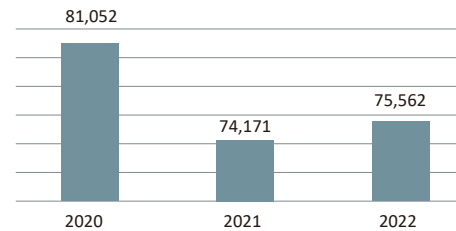
Water Management Strategy

- ▶ Maximize water usage efficiency.
- ▶ Enhance the importance of water conservation for the upstream and downstream value chains.
- ▶ Set water conservation goal and conduct regular review to achieve the target.
- ▶ Continue to promote various water conservation plans to reach the water conservation efficiency.
- ▶ Discover possible measures for water conservation through the daily management and inspections.
- ▶ Promote water resource education and enhance the water usage efficiency for stakeholders.
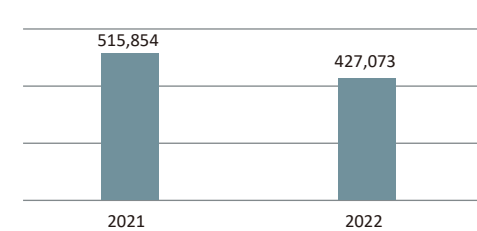
Water Use

- ▶ The issue of water resources is a common concern worldwide. Coretronic has set the water reduction target, even though water resource is not the major concern for its operation environments, by educational propaganda on water usage and promoting water conservation and recycling measures. In 2022, the Taiwan plants' water consumption was 2% more than 2021 but was 15% less than 2019, achieving the short-term target. In 2022, the Taiwan plants' water consumption increased because of the increase in the number of employees. However, we have formulated water conservation and recycling measures that are more proactive to achieve the water reduction target.

- ▶ Since 2021, the China plants have implemented have implemented water management by promoting water reduction programs for offices, operation areas, and plant systems. In 2022, the water consumption was 427,073 tons, 17% less than 2021. We have also set short-, medium-, and long-term water reduction targets. We aim to mitigate the impacts of climate change through more proactive water-saving measures.

Water Use in Taiwan (ton)

Year	Water Use
2020	81,052
2021	74,171
2022	75,562

Water Use in China (ton)

Year	Water Use
2021	515,854
2022	427,073

### Water Conservation Strategy–Recycling Systems and Water-Saving Devices

- ▶ The Taiwan and China plants are equipped with recycling systems, mainly collecting surface water, air conditioning condensate, and rainwater for landscape irrigation and secondary water supply for domestic use. Additionally, we implement measures such as adjusting the water change concentration of HVAC, installing tap water savers (flow controllers and sensors), monitoring water use in dining areas, and reducing water use for cleaning to achieve short-term water reduction targets.

- ▶ From 2018 to 2022, the Taiwan plants recycled and saved 100,907 tons of water. In 2022, the China plants also started implementing recycling and water-saving measures, recycling and saving 15,665 tons of water. The water-saving measures of all the plants reduced 208.7 $tonCO_2e$.

Water Conservation Performance

Area	Taiwan					China
Item/Year	2018	2019	2020	2021	2022	2022
Water Conserved (ton)	11,769	14,212	16,405	16,822	16,924	11,032
Water Recycled (ton)	1,996	2,845	3,066	7,254	9,614	4,633
Total Water Conserved and Recycled (ton)	13,765	17,057	19,471	24,076	26,538	15,665
Carbon Reduction (tCO2e)[1]	2.20	2.59	2.96	3.66	4.27	193.0

1：The carbon produced per unit of water in the Taiwan plants is calculated based on the values published by Taiwan Water Corporation. The carbon produced per unit of water in the China plants is calculated based on the coefficient in the GHG inventory of that year.
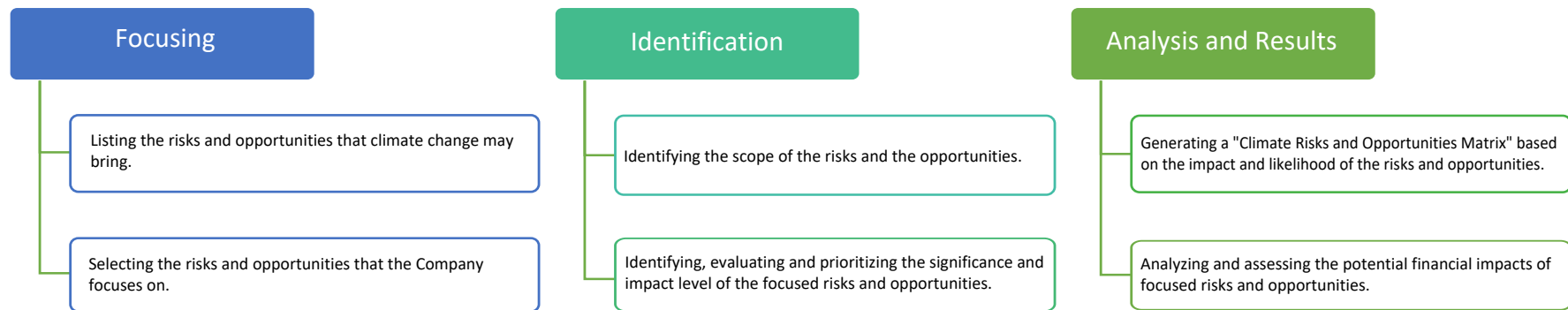
Water Conserved and Recycled in Taiwan (ton)

Year	Value
2018	13,765
2019	17,057
2020	19,471
2021	24,076
2022	26,538
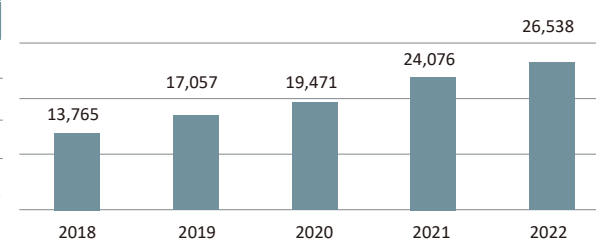
04 Climate Risk Management

4.1 Climate Risk Management

Coretronic actively joins and follows international initiatives and established the TCFD Team in 2020. Organizing and coordinating with relevant units and departments to identify and assesses climate cahge risks. Since 2021, we biennially identify the climate risks and opportunities and quantitatively assess the category, intensity, and likelihood of potential impacts for each risk and opportunity. We then grade and prioritize the risks and opportunities based on the assessment results. Additionally, we formulate improvement strategies and solutions for high-impact and short-term risks and opportunities to reduce negative impacts and enhance organizational climate resilience, creating more business opportunities.

Regarding the potential financial impacts caused by climate change, we have obtained relevant financial data. Once the calculation methodology is confirmed, we will be able to estimate the financial impacts, costs, or revenues.

Focusing	Identification	Analysis and Results
Listing the risks and opportunities that climate change may bring.	Identifying the scope of the risks and the opportunities.	Generating a "Climate Risks and Opportunities Matrix" based on the impact and likelihood of the risks and opportunities.
Selecting the risks and opportunities that the Company focuses on.	Identifying, evaluating and prioritizing the significance and impact level of the focused risks and opportunities.	Analyzing and assessing the potential financial impacts of focused risks and opportunities.

The First Stage – Focusing

The TCFD risk and opportunity identification questionnaire was distributed to 56 members of the TCFD Team to select the 20 risks and 10 opportunities related to climate change from among 38 climate-related risks and 22 opportunities based on the Company's operations and future status. A total of 56 responses were collected, with a 100% response rate. A total of 10 risks and 4 opportunities were successfully focused.

The Second Stage – Identification

The result of the first-stage questionnaire was distributed to 189 division and above leaders and members of TCFD Team to identify the significance and impact of risks and opportunities. A total of 181 responses were collected, with a 96% response rate.

The Third Stage – Analysis And Results

An analysis of the result from the second-stage questionnaire was conducted, and generated the Climate Risks and Opportunities Matrix. Further, the financial impacts of those 10 risks and 4 opportunities were assessed.

Climate Risks and Opportunities Matrix
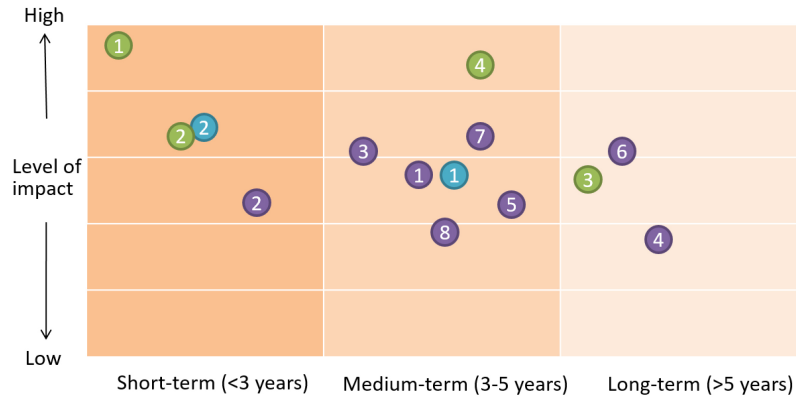
Transition Risks	
1	Total greenhouse gas amount control, carbon taxes, and carbon fees
2	Low-carbon product standards and labels
3	Regulatory requirements renewable energy
4	Uncertainty about climate change mitigation and adaptation regulations
5	Demand for low-carbon products and services
6	Investment in energy-saving and carbon reduction technology
7	Innovative low-carbon technology or service transformation
8	Clients' preference for more energy-efficient products and services with low environmental impact

Physical Risks	
1	Rising temperature
2	Flooding/drought

Opportunities	
1	Promotion of low-carbon green production
2	Use of recycled materials
3	Provision of products or services with low environmental impacts
4	Development of innovative low-carbon products and services

Climate-related Opportunities and Potential Financial Impacts

Type	Categories	Items	Potential Financial Impacts
Risks	Legal	Total greenhouse gas amount control, carbon tax, and carbon fee	Operating costs ↑
		Low-carbon product standards and labels (e.g., carbon labels)	Operating revenues ↓ 、Operating costs ↑
		Regulatory requirements renewable energy	Operating costs ↑ ; Capital expenditures ↑
		Uncertainty about climate change mitigation and adaptation regulations	Operating costs ↑
	Technology	Demand for low-carbon products	Operating revenues ↓
		Investment in energy-saving and carbon reduction technology	Operating costs ↑ ; Capital expenditures ↑
		Innovative low-carbon technology transformation	Operating costs ↑ ; Capital expenditures ↑
	Market	Clients' preference for more energy-efficient products with low environmental impact	Operating revenues ↓
	Extreme Weather	Rising temperature	Operating revenues ↓ 、Operating costs ↑ 、Capital expenditures ↑
		Flooding/drought	Operating revenues ↓ 、Operating costs ↑
Opportunities	Resource Efficiency	Promotion of low-carbon green production	Operating revenues ↑ 、Operating costs ↓ 、Capital expenditures ↑
		Use of recycled materials	Operating revenues ↑ 、Operating costs ↓
	Products/Services	Provision of products with low environmental impacts	Operating revenues ↑ 、Capital expenditures ↑
		Development of innovative low-carbon products	Operating revenues ↑ 、Operating costs ↓

04 Climate Risk Management

4.2 Risks Coping Strategies

In 2021, we conducted a climate change risks and opportunities assessment and impact analysis based on the TCFD framework. We identified 10 risks and 4 opportunities. For the high-impact and short-term transition risk, "Low-carbon product standards and labels," and the opportunities, "Promotion of low-carbon green production" and "Use of recycled materials," we have developed innovative solutions for low-carbon products. Additionally, for the physical risk of "Rising temperature," we have formulated energy-saving and carbon-reduction strategies.

Type	Selected Scenario	Risk and Opportunity Topic	Potential Finance Impact	Coping Strategy
Transition Risk	NZE	Low-carbon product standards and labels	Operating revenues↓ Operating costs↑	Together with our subsidiary, Optoma, we assessed the environmental impacts caused by our mainstream product, the EX1 laser projectors (EX1-1, EX1-2, and EX1-3), at each stage of their product life cycle. We also conducted a carbon footprint analysis of the product based on ISO 14067.
Physical Risk	RCP 3.4	Rising temperature	Operating revenues↓ Operating costs↑ Capital expenditures ↑	Devising strategies to improve energy efficiency, upgrade energy-saving equipment, develop renewable energy sources, and conserve energy and resources.
Opportunity	NZE	Promotion of low-carbon green production	Operating revenues↑ Operating costs↓ Capital expenditures ↑	· Establishing responsible team: Product Carbon Footprint Project Team and Green Product R&D Team · Establishing Product Carbon Inventory Platform, effectively managing product carbon emissions · Implementing independent and external Product Carbon Footprint Inventory · Improve manufacturing process
		Use of recycled materials	Operating revenues↑ Operating costs↓	· Raising the rate of green raw materials procurement · Using 50% PCR plastic as the product casing · Raising the rate of molded pulp packaging · Use cardboard boxes made from recycled pulp for shipping · Recycle and remanufacture scrap trays

Green Materials

▶ Strategy

- · Actively procure green raw materials to fully implement green supply chain management.
- · To reduce raw material consumption and implement a circular economy, the product casing of specific EX1 laser projector models uses 50% PCR plastic. In 2022, 512 kg of PCR plastic was used, and cardboard boxes with 85% recycled pulp were used for shipping.

▶ Performance

Year	2020	2021	2022
The amount of green material procurement (NTD 10,000)	1,536,714	2,309,956	2,135,307
The amount of material procurement (NTD 10,000)	1,597,902	2,381,341	2,448,863
The percentage of green material procurement	96%	97%	87%

Green Manufacturing

▶ Responsible Team

· Product Carbon Footprint Project Team: In response to the Product Carbon Footprint Project for the EX1 laser projectors, the Product Carbon Footprint Project Team is established. The head of the Technical Development Strategy Center serves as the convener, and 27 executives and employees from the R&D and Manufacturing Departments are assigned as team members who will receive training to facilitate the product carbon footprint assessment.

· Green Product R&D Team: Held meetings regularly and proposed 36 low-carbon product development projects. Among them, low-carbon technologies for LGP and lightweight designs have been implemented in mass production. In addition, automotive customers are encouraged to reuse packaging materials, creating sustainable business opportunities together.
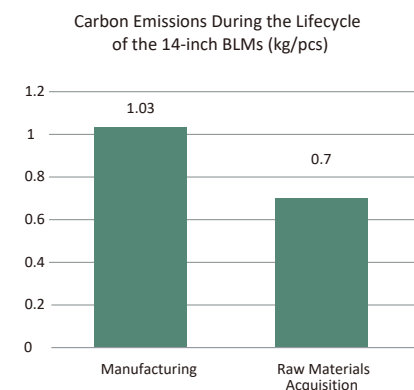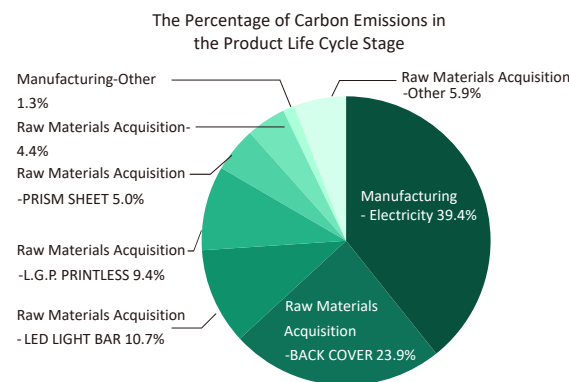
▶ Product Carbon Inventory Platform

· Based on the inventory results of the EX1 laser projectors, we will build a digital platform and database for product carbon inventory according to the BOM. This will be an important tool for promoting green products and carbon reduction in the future.

· We will collect the relevant coefficients of LCM and backlight module. In 2023, we plan to develop a carbon inventory platform to identify the carbon emission hot spots of the products and effectively manage product carbon emissions..

▶ Product Carbon Footprint Inventory

· ISO 14067: Select 3 mainstream models of the EX1 laser projectors to undergo the ISO 14067 Product Carbon Footprint B2B inventory and verification. Based on the inventory results, the stage with the highest carbon footprint is the B2B "Raw Material Acquisition." In the future, we will build a product carbon footprint database tool and address carbon emission hot spots by changing raw materials, selecting low-carbon materials, and incorporating recycled materials. We will improve our product designs and continue to develop sustainable products with green advantages for consumers.

· Independent Inventory: Since 2016, we have conducted independent carbon inventory of our backlight modules. We have always embraced green thinking and continue to promote lightweight designs, energy efficiency in production, and diverse energy-saving measures. In 2022, the carbon footprint of our 14-inch backlight modules was 1.73 $kgCO_2e$ per unit, a 30% reduction per unit from 2021. In the future, we will continue to promote energy-saving initiatives, increase the use of renewable energy, design green products, reduce carbon emissions from transportation, and develop low-carbon products.

Emissions Statistics During the Lifecycle of the 14-inch BLMs			
Life Cycle Stage	Category	Carbon Emissions (kg)	Percentage (%)
Manufacturing	Electricity	0.68	39.4%
	Other	0.02	1.3%
Raw Materials Acquisition	BACK COVER	0.41	23.9%
	LED LIGHT BAR	0.19	10.7%
	L.G.P. PRINTLESS	0.16	9.4%
	PRISM SHEET	0.09	5.0%
	Transportation	0.08	4.4%
	Other	0.10	5.9%

The Percentage of Carbon Emissions in the Product Life Cycle Stage

- Manufacturing-Other 1.3%
- Raw Materials Acquisition- 4.4%
- Raw Materials Acquisition -PRISM SHEET 5.0%
- Raw Materials Acquisition -L.G.P. PRINTLESS 9.4%
- Raw Materials Acquisition - LED LIGHT BAR 10.7%
- Raw Materials Acquisition -Other 5.9%
- Manufacturing - Electricity 39.4%
- Raw Materials Acquisition -BACK COVER 23.9%

Carbon Emissions During the Lifecycle of the 14-inch BLMs (kg/pcs)

Manufacturing: 1.03
Raw Materials Acquisition: 0.7

▶ Light Guide Plate Manufacturing Process Improvement: Regulate the production temperature and save 0.25 kWh of electricity per hour. In 2022, the total production time was 2,430.4 hours, with electricity saving of 607.6 kWh and carbon reduction of 0.3 $tonCO_2e$.

Green Packaging

▶ Molded pulp packaging: In 2022, for projector shipments, the molded pulp used in the packaging materials for fixed paper stands increased to 86%, a significant increase of 18% from 2021.

▶ Use cardboard boxes made from recycled pulp for shipping
Waste cartons and coated paper (photocopies, books, and newspapers) generated from manufacturing and the office are sent to paper mills for recycling by qualified environmentally friendly waste disposal companies. We also purchase paper products made from 80% to 100% recycled pulp with eco-labels from downstream paper product manufacturers. In 2022, we purchased and used 1,380,778 cardboard boxes made from recycled pulp for shipping.

▶ Recycle and remanufacture scrap trays
When the trays are recycled repeatedly and can no longer be used, we commission tray suppliers to remanufacture all the scrap trays, achieving the goal of "turning waste into resources, finding alternatives to natural resource exploitation, full recycling, and zero waste." In 2022, 5,957 scrap trays were recycled and remanufactured, reducing 0.3 tons of waste and 0.6 $tonCO_2e$.

Green Transportation

▶ By optimizing the volume design of the EX1 laser projector, the loading rate of sea transportation increased by 16.6%. Each projector can reduce approximately 3 $kgCO_2e$ and 5.3% of carbon emissions.

▶ Prioritize transportation with lower carbon emissions, such as sea transportation, which is expected to achieve an 11% carbon reduction. Combine shipments to reduce the demand for dedicated vehicles. Based on Kunshan plants' transportation route simulation, we estimate achieving a 17% carbon reduction.
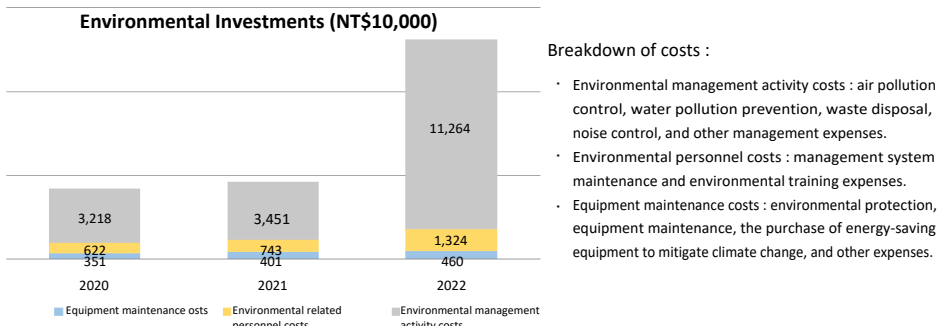

Green Design

▶ R&D Patent :
By integrating green thinking into technology development, we actively apply for R&D patents to design eco-friendly products to successfully help customers conserve energy and reduce carbon emissions. In 2022, 62% of the Taiwan plants' proposals were related to energy saving and carbon reduction, 11% more than 2021

▶ Projectors and Visual Solutions

· Constantly optimized the lighting design of projectors to save about 17.34 GWh of electricity and reduce 8,824 $tonCO_2e$ each year, 14.5% more efficient than 2021.

· Solid-state Illumination (SSI) projectors are more energy-efficient than lamp-based projectors. Among them, the EX1 laser projector, compared to other projectors with similar bulbs, can save 45% in energy use.

· The power consumption of the standard operating mode and standby mode complies with the energy efficiency standards of the European Union.

· The safe auto off function (including automatically shut off without input signals and sleep mode).

· Reducing the design of back-end process (electroplating, paint spraying, and printing) of products.

· Use of LED and laser eco-friendly solid-state illumination (SSI) and other mercury-free materials for a completely mercury-free projector.

· Compared to traditional short-throw projectors, projectors using LED and laser SSI have a five-time longer life without the need of bulb replacement to reduce environmental protection.

▶ Backlight Module (BLM)

· Lightweight design : Tainan Plant 1 reduced composite film thickness and redesigned the mechanism for the original model, reducing the use of optical composite film and backplane thickness, and the average weight was reduced by approximately 11%. In 2022, we produced approximately 3,739,693 units, reducing 2.5 $tonCO_2e$ and the weight by 1,222 kg.

· Low-carbon technology : Tainan Plant 1 enhanced the optical brightness technology, reducing the lighting power consumption by 37%. We produced 2,700 units in 2022. Based on daily use of 10 hours over 365 days, we estimate saving 8,278 kWh of electricity and 4.2 $tonCO_2e$ annually.

▶ Optical Film

In addition to enhancing the optical structure design, Wujian plants reduced the POP thickness from 0.45 mm to 0.32mm by introducing MOP. The optical performance remains unchanged. Additionally, Wujiang plants implemented lightweight designs for smaller products, reducing the average weight by approximately 29% for each product. In 2022, we manufactured 2,736,529 units of 14-inch, 43-inch, 50-inch, and 55-inch products. We reduced the product weight by 279,475 kg compared to the original design, reducing 575.7 $tonCO_2e$.

05 Metrics and Targets

5.1 Environmental Targets and Performance

★Taiwan baseline year 2019, China base year 2022

Year	Measure	Target			2022 Achievements in Taiwan
		Indicator	Taiwan	China	
Short-term 2020-2022	Implement Environmental Management System	Reduce GHG emissions intensity (Category 1 and 2)	6%	-	· ISO 14001, ISO 50001, and ISO 14064-1 certification, achieving the short-term target.
		Reduce electricity consumption intensity	13%	-	· GHG emissions intensity (Category 1 and 2) decreased by 22% from 2021 (decreased by 49% from 2019), achieving the short-term target.
		Reduce waste intensity	5%	-	· The electricity consumption intensity decreased by 23% from 2021 (decreased by 47% from 2019), achieving the short-term target.
		Reduce water consumption	8.4%	-	· The waste intensity decreased by 5.9% from 2021 (decreased by 66% from 2019), achieving the short-term target.
		Renewable energy use: % annual electricity consumption	1%	-	· The water consumption increased by 2% from 2021 (decreased by 15% from 2019), achieving the short-term target.
		Number of green activities	6	-	· Renewable energy: 1% of annual electricity consumption, achieving the short-term target.
Medium-term 2023-2025	The Taiwan plants, Wujiang plants, and Coretronic Projection (Kunshan) have implemented environmental management systems.	Reduce GHG emissions intensity (Category 1 and 2)	10%	4%	· 11 green activities, achieving the short-term target.
		Reduce electricity consumption intensity	17%	4%	1. 5,558 participations in World Earth Day activities.
		Reduce waste intensity	9%	4%	2. For six consecutive years, we adopted the Long Fong Fishing Port coastline and organized annual coastal cleanup, cleaning up 2 tons of marine debris.
		Reduce water consumption	12%	4%	3. Environmental education facilities tour (Hoyenshan Ecology Museum and Taijiang National Park).
		Renewable energy use: % annual electricity consumption	5%	13%	4. Ecological and environmental mutual benefit activities ("Finding Leopard Cats in Sanyi" and Taijiang National Park)
		Number of green activities	7	4	5. Collected 4,174 points for the "Green Point" initiative.
Long-term 2026-2028	The Taiwan plants, Wujiang plants, and Coretronic Projection (Kunshan) continue to implement environmental management systems.	Reduce GHG emissions intensity (Category 1 and 2)	14%	8%	· Annual environmental investments exceeded NT$130 million, nearly doubling the investments in 2021.
		Reduce electricity consumption intensity	20%	7%	
		Reduce waste intensity	12%	7%	
		Reduce water consumption	15%	7%	
		Renewable energy use : % annual electricity consumption	6%	15%	
		Number of green activities	8	5	

Environmental Investments (NT$10,000)

	2020	2021	2022
Environmental management activity costs	3,218	3,451	11,264
Environmental related personnel costs	622	743	1,324
Equipment maintenance osts	351	401	460

Breakdown of costs :

· Environmental management activity costs : air pollution control, water pollution prevention, waste disposal, noise control, and other management expenses.
· Environmental personnel costs : management system maintenance and environmental training expenses.
· Equipment maintenance costs : environmental protection, equipment maintenance, the purchase of energy-saving equipment to mitigate climate change, and other expenses.

5.2 Net-Zero Target and Performance

· We have declared our commitment to "25% reduction in GHG emissions (Category 1 and 2) by 2025, 50% reduction by 2032, and net-zero emissions by 2050." We have also joined national and international initiatives, such as the Taiwan Climate Partnership, Taiwan Alliance for Net Zero Emissions, TCFD, CDP, and SBTi.
· We have submitted a commitment letter to SBTi, pledging to set targets based on the "1.5°C scenario" absolute reduction approach. We have proposed reduction targets that align with SBT guidelines, which are expected to be approved within 2 years.
· In 2022, the Taiwan plants' GHG emissions (Category 1 and 2) were 7,972.7 tonCO$_2$e, which is lower than the expected net-zero pathway and in line with our expected net-zero progress.

06 Prospects

In response to the trend of net zero and the domestic Climate Change Response Act, Coretronic actively plans a comprehensive carbon management approach. In 2020, we signed and implemented the TCFD framework to identify and evaluate the potential financial impact on climate-related risks and opportunities. Simultaneously, strategies and solutions were developed and implemented for risks and opportunities with high impact and a high possibility of occurring in the short term, aiming to reduce negative impacts and enhance the Company's climate resilience, thereby creating business opportunities in the future. Furthermore, to align with the Paris Agreement and achieve a 50% reduction by 2032 and net-zero emissions by 2050, we officially submitted a commitment to SBTi in 2022, developed the target based on SBT 1.5°C scenario and submitted it for validation in 2023. Additionally, we actively participated in the Taiwan Climate Alliance (TCP) and Taiwan Net Zero Action Alliance (TANZE), responded to the CDP climate change and water security questionnaires (both receiving Management level (B) rating), got Leadership level (A-) rating on Supplier Engagement Rating, implemented a comprehensive energy management system, actively reduced fossil fuel usage, increased the utilization of renewable energy, introduced systematic management and innovative low-carbon technologies, and so on, following the Net-Zero Pathways to achieve net zero emissions .

To engage in the sustainable era with stakeholders, we require all suppliers to sign and adhere to the "Supplier and Contractor Sustainability Commitment Statement." Moreover, we share sustainability trending topics at the annual supplier conference, present the "Sustainability Award" to suppliers demonstrating practical carbon reduction benefits, and respond to "Recycling and Reusing Promotion Program" of the Ministry of Environment. In collaboration with 14 customers, suppliers, and local transportation companies, we achieved a 98% recycling rate for plastic frames, trays, and acrylic protective sheets. Additionally, we collaborated with our subsidiary and own brand, Optoma, for the first time, selecting three EX1 laser projectors and passing ISO 14067. We have conducted the independent product carbon footprint inventory for seven years. In 2022, the carbon footprint of each 14-inch backlight module decreased by 30% compared to 2021. We also advocate for green transportation, expecting an 11% and 17% reduction in carbon emissions through changes in sea and freight transportation modes, respectively.

In the future, Coretronic will continue dedicating itself to Net-Zero transformation, actively aligning with domestic and international environmental initiatives. Through various Net-Zero solutions, we aim to mitigate greenhouse gas emissions, expand our green impact, and implement carbon reduction strategies with stakeholders. Together, we seek to alleviate the significant effects of climate change, exert sustainable influence, and co-create a sustainable new world with stakeholders.

About the Report

With the trend of net-zero transformation and increasingly stringent international regulations, climate change and the issue of achieving net zero have become focal points in recent years for sustainability. To more precisely address stakeholders' concerns regarding the potential risks and opportunities associated with climate change, Coretrocnic published its first annual TCFD Report in 2023. This report observes the framework suggested by TCFD and discloses the Company's climate governance, strategies, risk management, indicators, and targets.

The scope of this report includes Coretronic Taiwan plants (Headquarters, Chunan Plant, Tainan Plant 1, Tainan Plant 2), Coretronic China plants (Kunshan plants: Coretronic Projection (Kunshan), Coretronic Optics (Kunshan); Wujiang plants: Coretronic Optotech (Suzhou), Coretronic Display (Suzhou), Coretronic Optics (Suzhou). The reporting period is from January 1, 2022 to December 31, 2022, and the Chinese and English version of this report will be published in December 2023 on Coretronic ESG website. For any questions or valuable suggestions about this report, please feel free to call +886-3-5772000 ext. 1500 or mail to CSR@coretronic.com.

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