2024

CTCI Climate & Nature-Related Financial Disclosures Report

CTCI

Discover Reliable

CONTENT

About This Report

This report is the second "Climate-Related Financial Disclosures Report" issued by CTCI Corporation (hereinafter referred to as "CTCI", the Company) in conjunction with nature-related financial disclosure after two consecutive years of issuance of the "Climate and Nature-Related Financial Disclosure Report" to fully disclose the Company's climate and nature governance structure and strategies, set climate and nature-related goals for risk management and action, hoping to enable the stakeholders better understand CTCI's climate and nature response, resilience, and external influence.

Reporting Scope

CTCI and its construction sites at home and abroad

Reporting Period

The information presented is for the period January 1 to December 31, 2024.
And disclose relevant sustainable actions until June 2025.

Guiding Principles for This Report

This report is prepared in accordance with the Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) published by TCFD and with reference to the Recommendations of Taskforce on Nature-related Financial Disclosures (TNFD).

The TCNFD report is one of CTCI's sustainability related reports. For more ESG-related information, please refer to other CTCI reports or websites:

- 2024 CTCI Annual report
- 2024 CTCI Sustainability Report
- 2024 CTCI Sustainable Impact Valuation Report
- ESG Policy Statement
- CTCI Website
- CTCI ESG Website

Net-Zero Commitment

CTCI prides itself on being a "Guardian of Sustainable Earth" and has implemented the TCFD practices since 2018. Faced with the possible impact of climate change on operations, it has improved its "mitigation" and "adaptation" capabilities and promoted "supplier carbon reduction" in phases, providing owners with "net-zero EPC value services." CTCI aims to deliver "Green Engineering" and focuses on three aspects, "green technology, green contracting, green investment." so that its projects can reduce carbon emissions throughout the entire lifecycle. From factory construction, operation to dismantling, each phase can reduce carbon emissions, further sharing the benefits of energy conservation, carbon reduction, and resource reuse with global owners. CTCI integrates its iEPC (intelligent engineering, procurement and construction) technology through the three core businesses, "green engineering, intelligent applications, and circular economy," to become a promoter of green life and fulfill the sustainability vision of "sustainable innovative green projects, Earth-friendly, and protecting the world."

Commitment to Biodiversity

CTCI prides itself on being a "Guardian of Sustainable Earth". With the increasing risk of biodiversity loss worldwide, CTCI, as a global citizen, is deeply aware that while we depend on the natural capital, we also have an impact on it. Therefore, we officially implemented the TNFD in 2023 to assess and disclose natural capital-related risks and opportunities, and make biodiversity commitments with the goal of positive nature growth. The Board of Directors has passed a resolution concerning "CTCI's Biodiversity and Zero Deforestation Policy Commitments," which include the following:

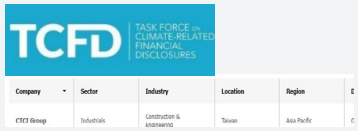
1. Provide products or services that comply with zero deforestation standards. Operating sites and value chain activities should avoid biodiversity hotspots regulated by national or international regulations.
2. For existing operational sites that encompass biodiversity hotspots, we commit to implementing strategies of avoidance, mitigation, restoration, and compensation to reduce the impact on those areas.
3. Regularly monitor the ecological environment surrounding the operational sites and assess their impact.
4. Implement biodiversity risk identification, including CTCI's own operations, adjacent areas to CTCI's own operations, upstream activities, and downstream activities.
5. Support biodiversity conservation activities or initiatives.
6. Engage with upstream and downstream value chains, as well as stakeholders and partners to achieve the aforementioned commitments.

Timeline of Climate and Nature Actions

2021 Oct.

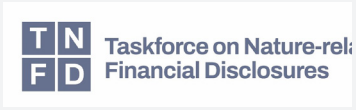
- CTCI joined the Taiwan Alliance for Net Zero Emission. John T. Yu, CTCI Group Chairman, was elected as the executive director and Michael Yang, CTCI Group Vice Chairman, was elected as the director.
- CTCI pledged to achieve 100% net zero emissions at the headquarters as well as offices worldwide by 2030, and achieve 100% net zero emissions at the headquarters, offices, as well as production sites worldwide by 2050.

2022 Oct.



- CTCI signed the Task Force on Climate Related Financial Disclosures (TCFD) to express our support by identifying potential climate risks and opportunities for management to mitigate risks and capitalize opportunities.

2023 Sep.

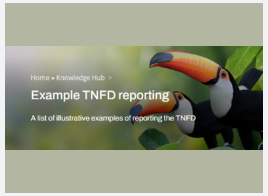


- Implemented the final recommendations for nature-related risk management and disclosure released by TNFD.

2024 Jan.

- CTCI's net zero target aligns with the 1.5°C scenario, and has been approved by the SBTi.

2025 Feb.



- The CTCI Climate and Nature-related Financial Disclosure Report has been selected as a report example for the TNFD and will be shared globally.

2022 Jun.

- CTCI held the "CTCI Group Net Zero Oath Ceremony" and "CTCI Leadership Forum on Net Zero and Sustainability," where senior executives of the group solemnly took the oath on behalf of all colleagues, demonstrating the collective determination to achieve their goals.

2023 May

- Participated in Business for Nature initiatives.

2023 Nov.

- CTCI joined as an Early Adopter of TNFD. The list of TNFD Early Adopters was announced at the World Economic Forum Annual Meeting in January 2024.

2024 Jul.

- Integrated TCFD and TNFD frameworks to publish the first Climate and Nature-Related Financial Disclosures Report. (the first TCFD report was published in 2022)

2022 "CTCI Group Net Zero Oath Ceremony" video

TCNFD Reports Section

Net-zero emissions pathway – Scope 1 and 2

CTCI has set its carbon emissions reduction targets based on SBTi's 1.5°C scenario, with 2022 as the baseline year. Our short-term goal is to achieve an absolute reduction of 45% in greenhouse gases (Scope 1 and Scope 2) by 2030. The long-term goal is to achieve net zero by 2050.

A.Short-Term Carbon Emissions Reduction Strategy (2024-2030)

Research and develop green technologies, digitalization, CCUS technologies, as well as increase the utilization of renewable energy. The three major strategies implemented in 2024 include:

Strengthening energy management

Adoption of ISO 50001 and establishment of a Sustainable Net Zero Task Force at construction sites.

Implementing emissions reduction measures

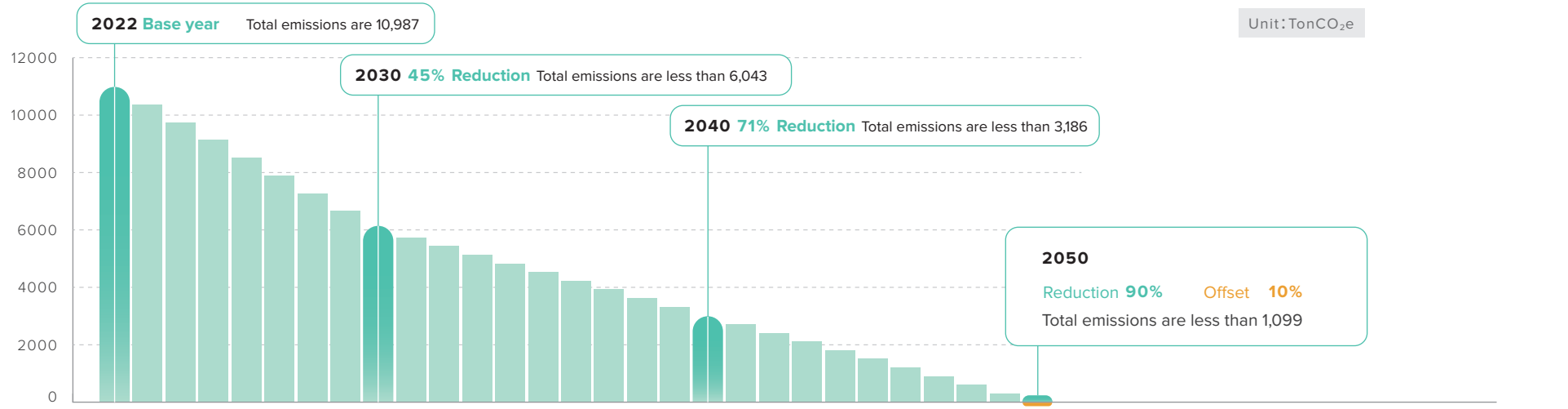
Internal carbon pricing and best project selection criteria.

Systematizing GHG inventory

iltegration of reimbursement system data for smart GHG tracking.

B.Long-Term Carbon Emissions Reduction Strategy (2030-2050)

Adopt energy storage technologies, utilize decarbonized energy sources, and apply CCUS technologies. Once various reduction efforts and carbon removal have been implemented, if there are still carbon emissions that cannot be reduced due to current technological limitations, moderate carbon offset (less than 10% of GHG emissions in the base year) purchases will be carried out to help us achieve the net-zero target.



Net-zero emissions pathway – Scope 3

CTCI's Scope 3 emissions mainly come from "Category 1: Purchased goods and services." In response, CTCI established the Supplier Alliance for Net Zero Emissions to enhance the greenhouse gas management capabilities of the vendors who participate in the alliance, encourage them to reduce greenhouse gas emissions in phases, and establish an incentive system to achieve the short-term goal of setting supply chain engagement targets within five years. It is expected that by 2030, every unit of CTCI's Scope 3 carbon emission intensity per million NT dollars in revenue will not exceed the level recorded in the baseline year of 2022. In the long run, CTCI will purchase low-carbon products, expand the influence of the Supplier Alliance for Net Zero Emissions, and encourage vendors to establish the carbon footprint of their products. The long-term goal is to lead suppliers toward net zero by 2050. For residual carbon emissions that cannot be eliminated by new technologies and new machines (the target is less than 10%), moderate purchases of carbon credit will be encouraged as offsets to achieve the net-zero goal.

Climate and Nature

Sustainability Governance

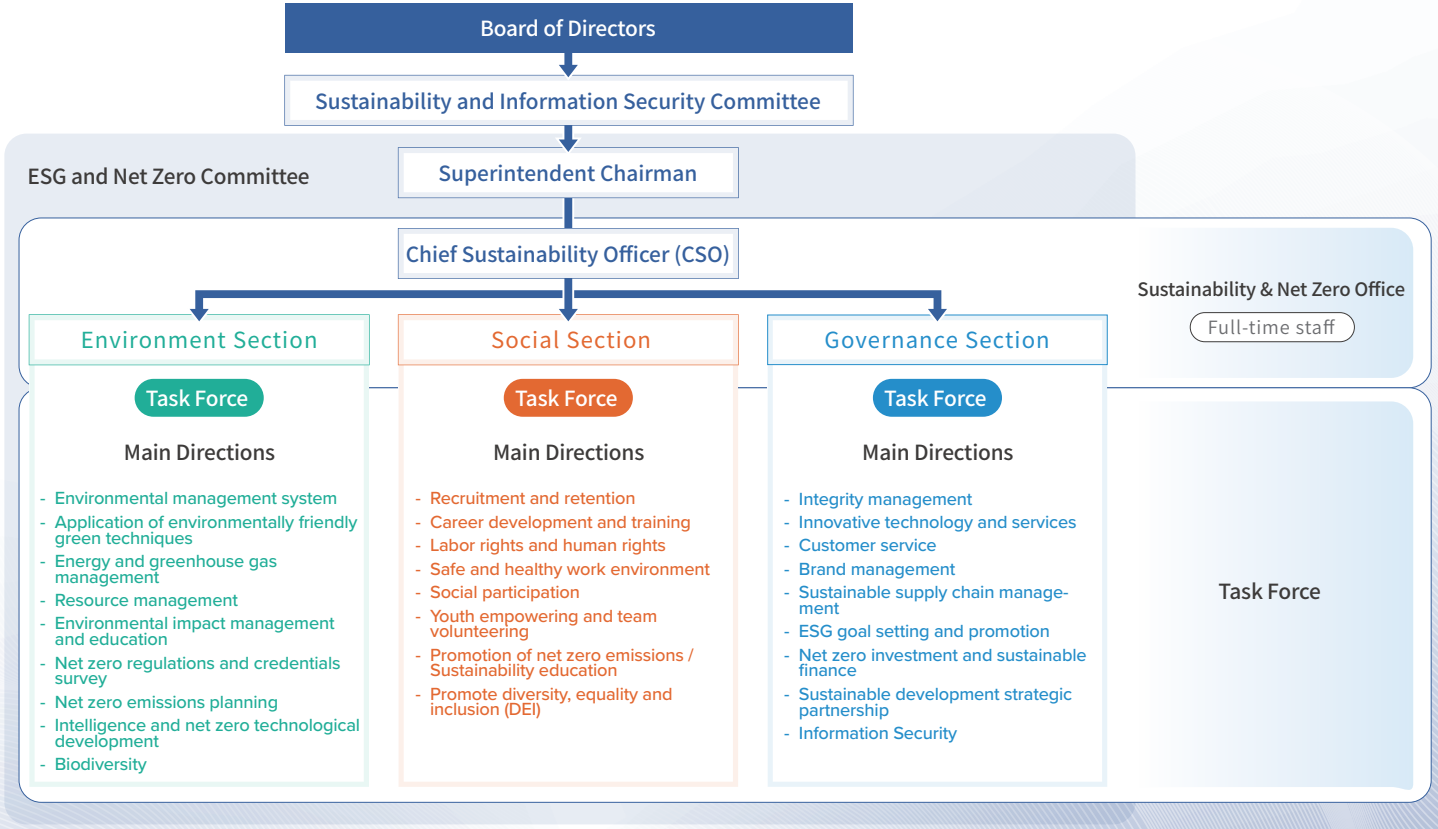
1

1.1 Governance Mechanism and Management Responsibilities

The board of directors is the top-level decision-making unit for CTCI's climate and natural sustainability governance, and supervises the management structure for climate change and natural sustainability governance. The board has established the Sustainability and Information Security Committee, whose committee members comprise of members of the Board of Directors, with Chien-Chung Li as the convener, and Directors Yancey Hai and Michael Yang as committee members. They are responsible for the formulation of sustainability, net-zero emissions, and information security policies, the establishment of goals, strategies, and implementation plans, as well as reviewing, tracking, and improving execution effectiveness. They are required to report regularly to the Board of Directors.

CTCI has established the "Sustainability and Net Zero committee" under the Sustainability and Information Security Committee. This team is jointly led by the Chief Sustainability Officer at the group level, along with the dedicated Sustainability & Net Zero Office, with the Chairman serving as the overall supervisor for sustainability initiatives. The Sustainability and Net Zero committee is responsible for promoting various sustainability matters, while the Sustainability & Net Zero Office is responsible for the formulation of the Group's sustainability and net zero strategies, action planning, and implementation of affairs. It collaborates with members of the Sustainability Task Force to jointly promote efforts in environmental protection, social engagement, and corporate governance. The Chief Sustainability Officer (CSO) is responsible for promoting CTCI's sustainability strategy, ensuring that environmental, social, and governance objectives are integrated with core business operations. This includes tracking emissions reduction performance, advancing the Company's green transformation, creating a happy workplace, and enhancing employees' sustainability literacy. Additionally, the CSO aims to strengthen communication with internal and external stakeholders, such as through monthly sustainability and net-zero meetings where results are reported to the Group President and Chairman, in order to facilitate continuous improvement.

Sustainability and Net Zero Organizational Structure



1.1.1 Role of the Board of Directors

The Chairman and the Chief Sustainability Officer shall report to the Board of Directors at least twice a year on the overall development strategy and the outcome of implementation related to sustainable development. In 2024, five Board meetings were held, three of which included climate and nature issues on the agenda. After hearing the reports, the Board reviewed the progress of execution, provided necessary guidance as needed, and urged adjustments to ensure alignment with the Company's sustainable development strategies.

Supervision on Key Sustainability Issues by the Board of Directors in 2024 and Promotion Outcomes

Climate and nature-related issues	Description	Date
Greenhouse gas inventory and emissions reduction outcome	Report the schedule, the results of the inventory of the Group, and obtain external verification.	5/3、12/13
Supply Chain Sustainability Management	Report on the Group's supply chain sustainability management KPIs and performance, progress in enhancing supply chain net-zero capabilities, and the expansion of supply chain sustainability efforts to subsidiaries for joint promotion.	11/5
Climate-related Financial Disclosures (TCFD) Implementation Report	Report on the impact assessment outcomes related to climate risks and opportunities, as well as management practices in the reporting year.	5/3
Nature-Related Financial Disclosures (TNFD) Implementation Report	Report on the impact assessment outcomes related to nature risks and opportunities, as well as management practices in the reporting year.	5/3
Risk management (including climate and nature-related risks)	Report on the status of risk management.	11/5
Sustainability (ESG) report	Report on the ESG execution progress and outcomes in the reporting year (including the effectiveness of stakeholder communication and identification of material issues)	5/3、12/13

1.1.2 Role of the Sustainability and Information Security Committee

The Sustainability and Information Security Committee serves as a vertical integration and horizontal cross-departmental communication platform, comprehensively integrating sustainability development strategies. In principle, the committee convenes twice a year. Additional meetings may be convened when necessary. Two meetings were held in 2024, one on May 13 and the other on December 13, where the Sustainability and Net Zero Office reported on work progress. Important agenda in 2024 included the following: (1) The completion of sustainability report, verified by SGS. (2) Identification of material issues and setting long-term sustainable goals for year 2030. (3) Formulation of goals and policies related to sustainability issues, for example, third-party verfied greenhouse gas emissions inventory, report on reduction path, as well as opportunity and risk assessments related to TCFD and TNFD. (4) Monitoring and assessing sustainable management practices, such as stakeholder communications, green engineering, and sustainable supply chain management.

Powers and functions of the "Sustainability and Information Security Committee"

- Formulation of the company's sustainability, net-zero emissions, and information security policies.
- Development of the company's sustainability strategy, including goals, strategies, and action plans in areas such as sustainability governance, ethical business conduct, information securities, environmental and social aspects.
- Review, monitoring, and revision of the implementation and effectiveness of the company's sustainability, net-zero emissions, and information security initiatives, with regular reporting to the Board of Directors.
- Addressing the concerns of various stakeholders—including shareholders/investors, customers, suppliers/contractors/partners, employees, media, communities/government/experts/academia and professional associations, and overseeing the implementation of communication plans.

1.2 Establish an Incentive Scheme for Good Performance on Climate and Nature

Sustainable goals linked to annual KPI:

CTCI connects the CEO's and other senior executives' performance indicators with sustainability targets to integrate the Company's operational goals with sustainability outcomes. Financial metrics include the Gross Profit Achievement Rate (which incorporates internal carbon pricing) and the Contract Amount Achievement Rate (which factors in green engineering projects). Non-financial metrics encompass Environmental Protection (including GHG management) and the Net Zero EPC Achievement Rate. Through communication between supervisors and employees, the aforementioned departmental KPI requirements are conveyed, enabling employees to adopt and set personal KPIs, thereby enhancing their efforts in promoting ESG performance.

	KPI Items	%
Financial Goal 50%	Gross Profit Achievement Rate (Incorporating Internal Carbon Pricing)	15%
	Contract Amount Achievement Rate (including green engineering)	15%
	Revenue Achievement Rate	10%
	Proposal Expense Saving	10%
Non-Financial Goal 50%	Occupational Safety KPI Achievement Rate	10%
	Environmental Protection (including net zero results)	10%
	Project Key Position Readiness	5%
	External Customer Satisfaction	5%
	Talent Turnover Rate	5%
	Net Zero EPC Achievement Rate	5%
	High "Risk Management Training Implementation Level"	5%
	High "Risk Management Control Implementation Level"	5%

The ESG behavior assessment for employees during the annual performance review includes:

1. Participation in the Group-wide ESG courses or competitions; 2. Consistent practice of sharing ESG Moments in meetings with five or more attendees. Encourage employees to place greater emphasis on sustainability and to practice it in both their work and daily lives.

Annual Best Project:

The evaluation criteria include energy management performance, with scoring based on the extent to which the project's emission intensity exceeds the annual target. Employees recognized for the best project will receive a project bonus as an incentive.

CTCI Group ESG Award for Sustainable Excellence and Impact:

Encouraging employees to propose innovative ideas related to "Climate Actions," including net-zero EPC, circular economy, and biodiversity aspects. Through the "Empowerment Workshop," various proposals will undergo creative thinking development, allowing selected colleagues to further enhance the proposal content and deeply explore the impact and diffusion benefits of their proposals. This initiative aims to connect with the Sustainable Development Goals (SDGs), guide co-creation, and value sustainability through actions. It is also rooted in the spirit of "people-centered, hands-on thinking, and embracing failure," which is internalized as a core principle. Outstanding individuals may be eligible for rewards of up to NT$20,000 for personal contributions and NT$30,000 for contributions made at the departmental or project level, with the possibility of being applied to real life.

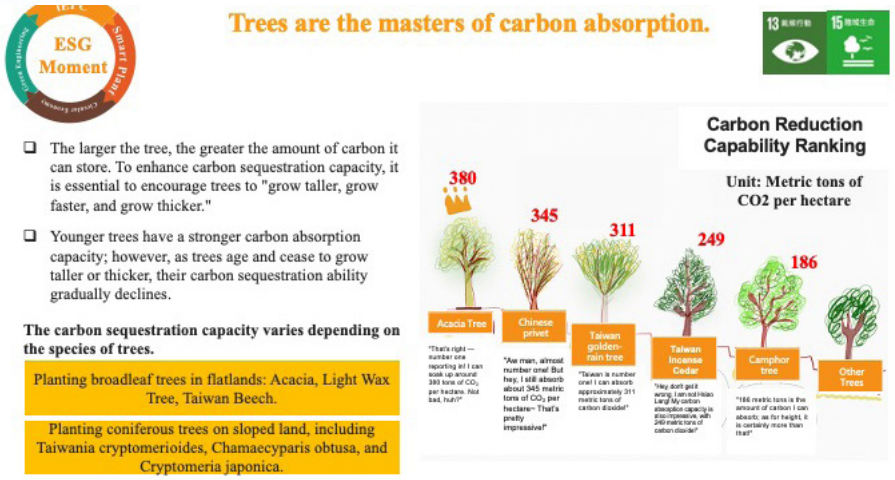
CTCI Group ESG Award for Sustainable Excellence and Impact

TWIN TOPICS		SUBTOPIC	TOTAL
CTCI GROUP CLIMATE	SELECTED TOPICS	Net zero epc, circular economy, biodiversity	SUBMISSIONS:70 42 LONGLISTED 12 AWARDED
	ACTION	■ Ctci green engineering's innovative solutions for enhancing biodiversity ■ Construction solutions that achieve carbon neutrality and ecological friendliness ■ Application of generative ai in turnkey projects for net zero emissions (turnkey projects include engineering, procurement, construction, and commissioning). ■ How to integrate systems and intelligent tools to accelerate carbon footprint calculation (tools include generative ai, qr codes, computer systems, fingerprint and facial recognition, etc.)	
CTCI GROUP SOCIAL	SELECTED TOPICS	Selected topics: charity care, diversity, equality, and inclusion (dei), talent development	
	INFLUENCE	■ How to leverage the operations of the 16 diverse clubs at ctci to integrate the core engineering business with the characteristics of external social enterprises or ngos, in order to jointly implement the united nations sustainable development goals. Please provide specific recommendations.	

1.3 Total Participation in ESG to Turn Net Zero EPC into Reality

In order to continue to incorporate sustainable development into the competitiveness and dna of the group, we initiated the “total participation in esg implementation” program in 2018. This program incorporates a practice called esg moment in even the smallest internal meetings and requires staff to share with meeting participants the latest knowledge on sustainability. Another part of the program includes various sustainability activities such as microfilm competitions, as well as the monthly sustainability and net-zero improvement meetings for each business group to monitor the progress of the sustainability initiatives. These efforts demonstrate ctci’s determination and action to cultivate a deep-rooted corporate sustainability culture.

ESG Moment



CTCI GROUP SUSTAINABLE MICROFILM EVENT

BEGINNER OF SUSTAINABLE EARTH

To encourage all colleagues to unleash their creativity and integrate sustainability into daily life, ctci group organized the inaugural “ctci group sustainable microfilm event.” Through film, the event gathers interesting and creative ideas to convey sustainability awareness and deepen sustainability goals.
Ctci took part in the 2024 8th taipei golden eagle micro movie festival through the award-winning entry.

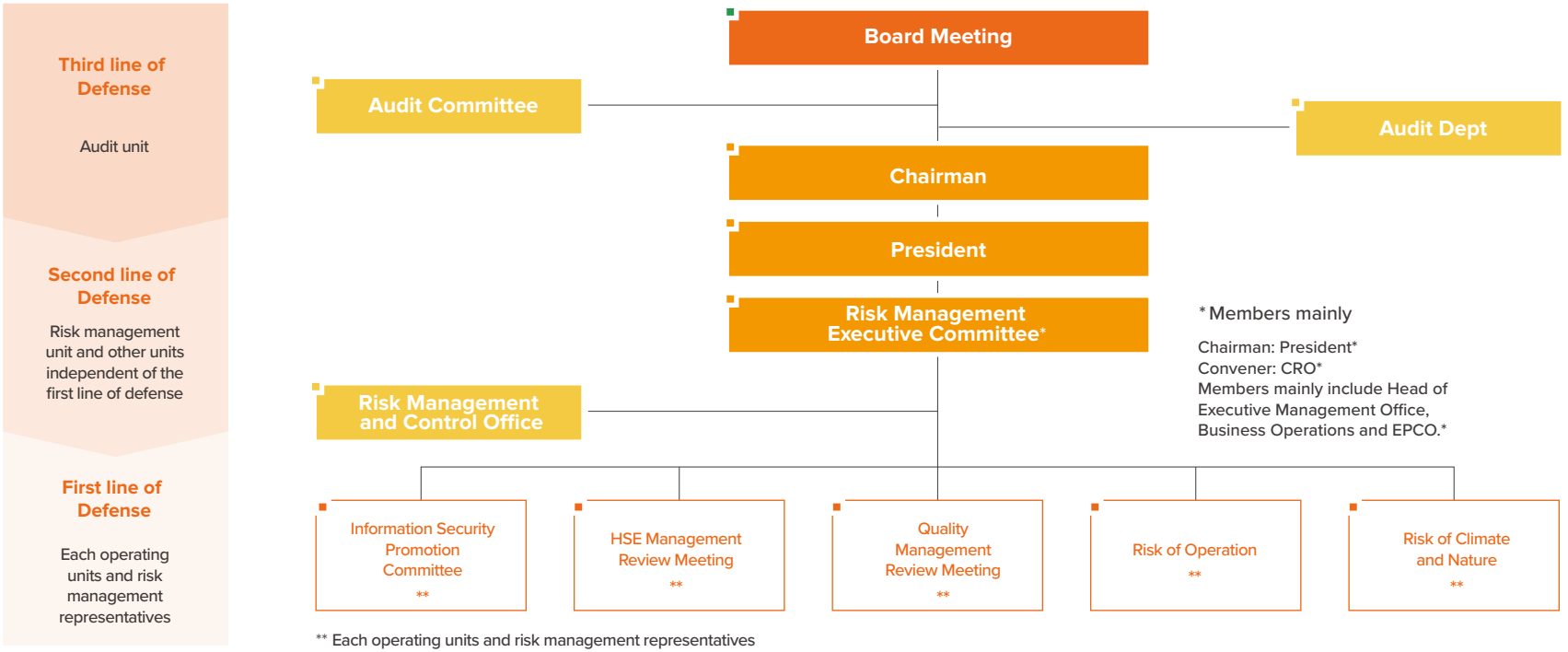
Management on Climate & Nature

Risks and Opportunities

2

2.1 Risk Management Structure

CTCI's risk management mechanism was established and is being handled in accordance with the ISO 31000 risk management system. Relevant management measures and implementation are based on risk-based thinking. CTCI combines climate and natural risk management mechanisms with the "Group Risk Management and Control Regulations" to standardize and the Risk Management Executive Committee is required to report on the implementation of risk management to the board and audit committee every year. The following figure describes CTCI's organizational structure in terms of risk management.



↗ Risk Management Regulations

↗ 2024 Risk Management Operations

↗ CTCI's risk management procedures can be found in the Accountable Governance of CTCI Sustainability Report

2.2 Climate Risk and Opportunity Management Process

To properly conduct climate risk assessment, CTCI has formulated the "Group Climate and Nature Risk Management Regulations" with reference to the TCFD framework and formulated implementation procedures, which are the main standards for managing issues related to climate risks and opportunities. By continuously identifying climate change issues, we are able to examine climate change factors to which the Company is exposed. Members of the Sustainability and Net-Zero Team would brainstorm to come up with measures to manage and mitigate such risks to improve internal identification of and response to related risks and opportunities.

Build TCFD awareness	Determine climate-related risk and opportunity issues	Identify major climate risks and opportunities	Evaluate climate-related risk and opportunity impact	Take management actions to address climate related risks and opportunities
Enhance employees' understanding of TCFD through training.	Collect 36 climate risk issues and 22 opportunity issues, examine the degree of correlation with CTCI, and categorize them into 15 risk issues and 13 opportunity issues.	Provide each unit with a questionnaire to identify 6 major climate risks and 6 major climate opportunities based on a matrix made up of probability of occurrence and the level of impact.	Develop different scenarios to evaluate and quantify the impact on all operational aspects from the perspective of the value chain (organization, suppliers, clients).	Further propose management actions and response plans for the identified major risks and opportunities.

2.2.1 Build TCFD Awareness

Through training courses with project, business, administrative, research and development units, employees can reflect on potential risks and development opportunities from their work, evaluate potential impacts, and propose necessary management actions.

2.2.2 Determine Climate-related Risk and Opportunity Issues

CTCI's Sustainability and Net-Zero Office has referred to scientific reports produced by the United Nations Intergovernmental Panel on Climate Change (IPCC) and the International Energy Agency (IEA), as well as the results of identification of climate risks and opportunities for domestic and foreign benchmark companies, to create a list of climate risks and opportunities issues covering physical risks, transition risks and opportunities that the Company may possibly face in response to the net-zero commitment schedule.

The Company then further examined the issue list based on the operational features of CTCI, engaging in discussions with various units including project, business, administration, and research and development teams. Items with lower relevance to CTCI's operations were excluded (for example, the "Renewable Energy Regulations" item, as CTCI's contract capacity does not reach 5,000 kW and is therefore not subject to the regulatory requirement to establish 10% green energy by 2025. Consequently, there is no violation of renewable energy regulations. However, CTCI has committed to achieving net zero by 2050, and in the future, it may not be able to procure sufficient renewable energy. Since this risk arises from its own commitment, it is included in the discussion of "Voluntary Agreements"). Similar issues were consolidated (for instance, the "Product Labeling Regulations" were merged into "Building Efficiency/Labeling Regulations and Standards"). Ultimately, the 36 identified risks were adjusted to 15, and the 22 opportunities were adjusted to 13. This constitutes the first phase of identification.

Risks		
Physical Risks	Acute	Changes in precipitation patterns and distribution
		Droughts
		Changes in extreme temperatures
	Chronic	Rise of sea level
Transitional Risks	Legal	Carbon tax/carbon fees
		Cap and trade schemes
		Regulatory requirements for building efficiency and standards
		General environmental regulations
		voluntary Agreements
	Technology	The original equipment and technology are eliminated
		The transformation of low-carbon technology is not as good as expected
	Markets	Changes in customer behavior
		Higher raw material price
	Reputation	Stigmatization of our reputation in the sector
	litigation	Exposure to litigation

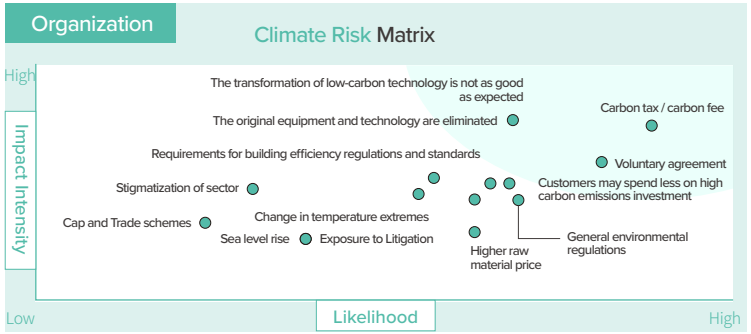
Opportunities	
Resource Efficiency	Improve transportation efficiency
	Optimize management process
	Recycling materials
	Energy-saving buildings
	Water resource
Energy Source	Renewable energy
Products and Services	Promote green engineering and diverse operations
	R&D and innovation
Markets	Changes in customer behavior
	The government's net zero plan can drive enterprise investment
	Green bond
Resilience	Higher energy efficiency
	Strengthen supply chain resilience

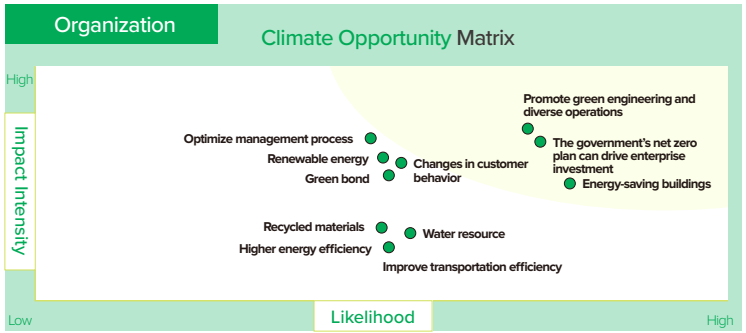
2.2.3 Identify Major Climate Risks and Opportunities

CTCI then conducted the second stage of identification for 15 risk items and 13 opportunity items. CTCI designed a survey based on the types of TCFD physical risks (short-term, long-term) and transitional risks (policy and legal, technology, market, and reputation), evaluated the business and operation impact from the perspective of the value chain (organization, suppliers, and clients), and established a climate risk opportunity matrix to identify major climate risks and opportunity projects in the near term (10 years), medium term (20 years), and long term (30 years).

Top 3 Risks

- Carbon tax/carbon fee
- The transformation of low-carbon technology is not as good as expected
- Voluntary agreement



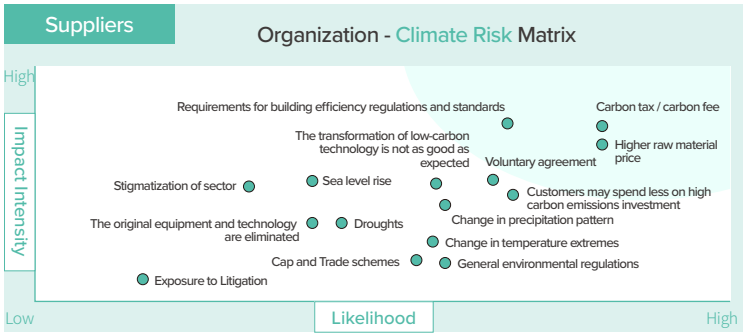


Top 3 Opportunities

- Promote green engineering and diverse operations
- The government's net zero plan can drives enterprise investment
- Energy saving buildings

Top 3 Risks

- Carbon tax/carbon fee
- Higher raw material price
- Requirements for building efficiency regulations and standards

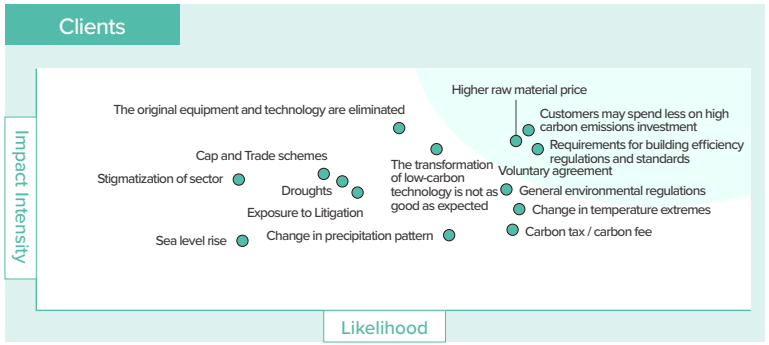


Top 3 Opportunities

- R&D Innovation
- Recycled materials
- Higher energy efficiency

Top 3 Risks

- Customers may spend less on reducing high carbon emissions.
- Higher raw material price
- Requirements for building efficiency regulations and standards



Top 3 Opportunities

- Promote green engineering and diverse operations
- The government's net zero plan can drives enterprise investment
- R&D Innovation

2.2.4 Climate Risk and Opportunity Impact Assessment and Management Response

Physical Risk Assessment

Physical Risk Assessment at CTCI Sites

According to CTCI's assessment, the Company's operation sites (including owned assets and construction sites) are not in areas prone to debris flow or sensitive areas for landslides, thus posing no risk of such events. For the four physical risks listed in the assessment, considering the operations of CTCI, "Change in Temperature Extremes" are assessed based on high temperatures, "Change in Precipitation Pattern" are assessed based on the flooding risks caused by extreme rainfall, and "Droughts" are assessed based on water stress. The assessment is described as follows:

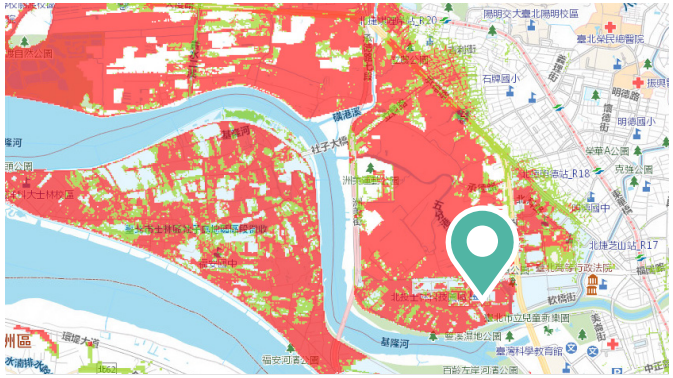
	Extreme Rainfall - Flooding Risk	Water stress	High temperature	Rising sea level
Climate scenario	RCP 4.5 RCP 8.5	RCP 4.5 RCP 8.5	RCP 2.6 RCP 4.5 RCP 6.0 RCP 8.5	Global: SSP5-8.5 with an average increase of 0.63~1.01 meters *1 Taiwan: SSP5-8.5 with an average increase of 1.2 meters*2
Evaluation results				
Headquarters Office Building	The second headquarters is at high risk. The risk was taken into consideration during the design phase, so the impact is not significant.	No impact	Higher air conditioning electricity expenses, which is a mild risk.	No impact
Construction sites	Three construction sites are at mild risk, and one site is at moderate risk. The construction plans of both the existing and newly established plant areas come with adaptation plans such as drainage and disaster prevention training to respond to flooding, so the impact is not significant.	CTCI is not located in areas of high water stress. Some construction sites are classified as mild and moderate risks. However, considering the industrial nature, secondary water can be used to clean vehicles or reduce dust emission, etc., and it can be reused. Therefore, the impact is not significant.	High temperatures can cause heat stroke, heat exhaustion, and pose a threat to labor health. Therefore, corresponding standards are in place at construction sites around the world, such as the "Overall Occupational Safety and Health Management Plan" to monitor external temperatures, arrange appropriate working hours, and provide ventilation facilities (such as electric fans), shade facilities (rest areas), drinking water, and appropriate amounts of salt (sour plums, etc.) for workers, so the impact is not significant.	No impact

Note 1. IPCC AR6 WG1- Physical Science Basis Report

Note 2. The National Science and Technology Center for Disaster Reduction (NCDR) further evaluates the situation in Taiwan using the IPCC AR6 WG1 Physical Science Basis Report.

Key Physical Risk Assessment and Adaptation1

Extreme rainfall and flood risk: The Second Headquarters is at high risk, and design phase considerations have been implemented to ensure an effective response.



The area where the second headquarters is located is adjacent to the Keelung River, with a relatively low terrain. Since the government established the Beitou Shilin Technology Park here, multiple flood control plans have been carried out.
The risk of flooding has been taken into consideration for the second headquarters during the construction phase and multiple adaptation plans have been carried out to address this risk. The assessment shows that the threat of flooding can be effectively mitigated.

1. Firstly, CTCI conducted a measurement on the current state of the land. The outcome report confirms the elevation of the three roads and adjacent land around the base, as well as the flow direction of the ditches around the base, and determines that the base is located at a relatively high point.
2. To respond to the expansion of the drainage system of the Zhoumei Pumping Station and Beitou Shilin Technology Park next to the base, and connect them to the nearby Wufengang Creek, large-scale flood control measures and designs have been carried out.
3. The height difference between the head and tail of the north-south road on the west side of the base is close to two meters, ensuring that the base is located at a relatively high point, so that flood water can flow downstream along the road surface without entering the building.
4. The building should be equipped with multiple layers of foundations and raised layer by layer, and must be higher than the road surface elevation layer by layer.
5. Giant waterproof gates and multiple intercepting ditches have been set up at the entrance of the vehicle/motorcycle parking lot below the base to ensure that there will be no water inflow during little or heavy rainfall.
6. The base is built with front and rear squares and buffered by the surrounding green spaces, so that the water can be drained into the surrounding ditches to prevent water accumulation.
7. There are emergency response sandbags around the building to meet emergency needs.

Key Physical Risk Assessment and Adaptation 2

Extreme rainfall: flooding risk. Three sites are at mild risk and one site is at moderate risk. The construction plans have taken these into consideration, with effective responses.

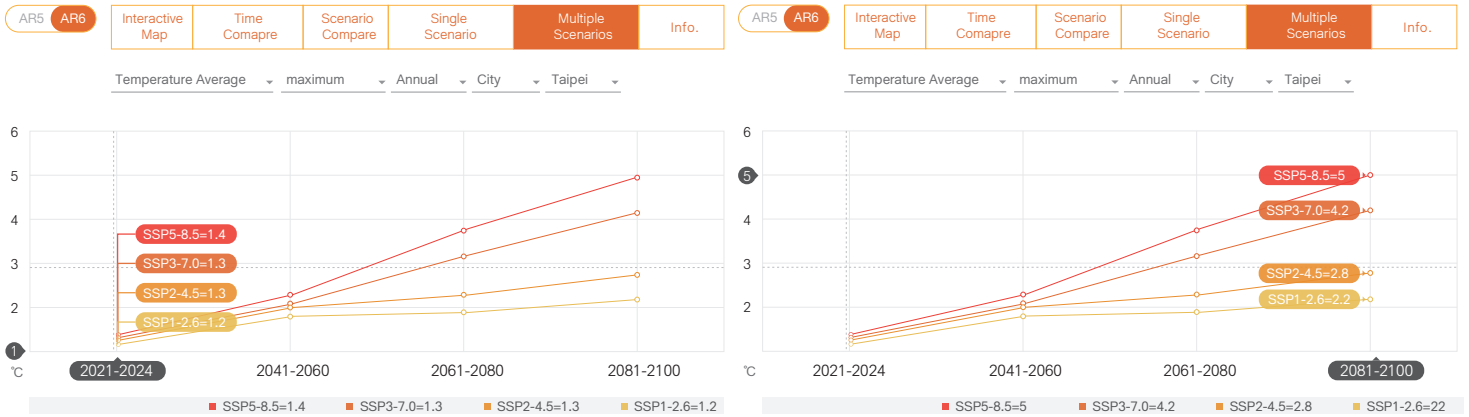
Through the Dr. A Climate Change Disaster Risk Adaptation Platform, an assessment of existing construction sites in 2024 under the RCP8.5 scenario indicates that there are three sites located in areas of low-risk potential and one site with moderate-risk potential. In terms of flooding risk management at the construction site, the responsibility for coordinating relevant protective measures lies with the client, while the role of contractors, including CTCI, is to cooperate. Under this allocation of responsibility, the following actions have been taken to ensure that flooding does not occur during the construction period:

- CTCI included detailed descriptions of the “drainage system in the construction area” in the method statements for both existing and newly planned construction sites, with regular removal of sediment and sludge.
- Adhering to the principle that “disaster prevention” is more important than “disaster relief,” during the flood season (from May to December each year), the “Self Inspection Form for Disaster Prevention and Reduction at the Construction Site During the Flood Season” shall be inspected at least once a month.
- When typhoon strikes, preparations should be carried out in accordance with the “Checklist for Typhoon Prevention Work.” This includes inspecting drainage systems and ditches to ensure they are clear, securing tower cranes with guy wires, and leveling the boom. Additionally, consideration must be given to the intensity of the typhoon; if it reaches the level of a strong typhoon (wind speed ≥ 51.0 m/s, equivalent to a wind force of 16 or higher), the fencing will be dismantled for safety. Through the aforementioned measures, combined with personnel training in disaster prevention to enhance employees’ ability to respond to future disasters, it is assessed that this can effectively mitigate the threat of flooding, thereby ensuring the safety of clients, as well as the personnel and property of CTCI.

Key Physical Risk Assessment and Adaptation 3

High temperature: Heat hazards require shutdown and increase air conditioning load. This is a mild risk and requires continuous management.

According to NCDR research, under the RCP8.5 scenario, Taiwan’s annual average temperature rise can reach 1.2~1.4 degrees between 2021 and 2040, and the annual average temperature rise can even reach 5.0 degrees by the end of the century (2081–2100). High temperatures may cause various heat hazards, including heat stroke, heat cramps, heat syncope, heat exhaustion, etc., which affect the health and work safety of construction site workers, and in serious cases, may even suspend the entire work.



CTCI has specified the following measures in the “Overall Occupational Safety and Health Plan” to ensure that workers can free themselves from the threat of heat hazards.

1. After monitoring the work environment conditions (Universal Thermal Climate Index) or the type of worker’s work (measuring work metabolic heat), the appropriate ratio of work and rest time is arranged according to the standard schedule of work and rest time for high-temperature operations to prevent workers from thermal hazards.
2. Set up ventilation facilities (such as electric fans) and shade facilities (resting areas); offer workers drinking water and appropriate amounts of salt (sour plums, etc.).
3. Arrange heat adaptation measures for new employees and returning employees, increasing the daily workload by 20%, 40%, 60%, 80% and 100% day by day to relieve employees from needing to withstand heat stress immediately. In principle, CTCI tries not to assign tasks that require a person to work alone.
4. Monitor meteorological data. If the forecast shows that there are extreme temperatures, CTCI would avoid operations that are exposed to direct sunlight outdoors or working in high-temperature spaces.
5. CTCI has hazard notifications in high-temperature seasons or in work areas with thermal hazards. The Company provides proper protective equipment, and promotes the need to maintain a normal daily routine, develop good eating habits, and get enough sleep.

High temperatures can also increase the burden of air-conditioning power consumption. Taking the Company’s headquarters as an example, air-conditioning power consumption will increase by approximately 250,000 kWh/year from 2021 to 2040 compared with 2024, and the electricity bill will increase by approximately NT$1.51 million a year.Toward the end of the century, the electricity consumption of air conditioners will increase by about 900,000 kWh per year, and the electricity bill will increase by about NT5 million.
We provide the best performing air conditioning at the headquarters and encourage our employees to use it wisely, such as by increasing the indoor air conditioning temperature, turning off the air conditioning system 1 hour in advance at 5 PM, and adjusting the time to close the electric roller blinds. The personnel managment cost is approximately NT$1.03 million.

Physical Risk Assessment of CTCI's Suppliers

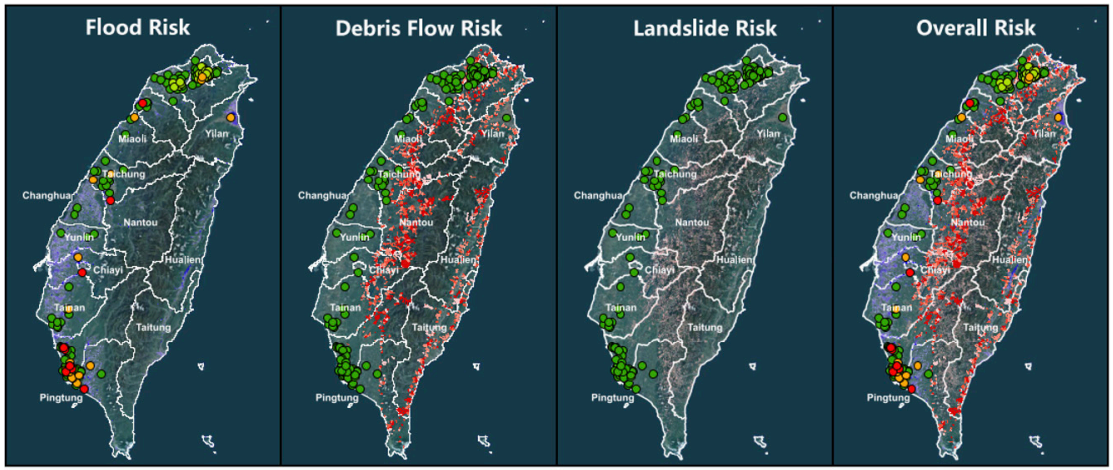
CTCI reviewed 189 suppliers with whom it had transactions in Taiwan in 2024 and explored the physical risks based on their locations. The assessment results showed that they were not located in areas prone to debris flow or sensitive areas for landslides, thus posing no risk for such events. Regarding the risk of flooding, 131 sites posed no threat and were therefore classified as risk-free. The remaining 58 places were assessed to have a risk of flooding. Among these sites, the number of low-risk sites ranges from 22 to 30 sites, and the number of medium-risk sites remains at 19 to 26. These numbers may vary under different climate change scenarios and periods. The number of high-risk sites ranges from eight to ten and is expected to gradually increase under the SSP5-RCP8.5 scenario.

In consideration of the significance of transactions, further confirmation will be conducted regarding suppliers categorized as medium and high risk. If a supplier is classified as a first-tier concern for CTCI, it will be prioritized for management. After analysis, it has been determined that there are ten first-tier concern suppliers, which include contractors and agents. The primary assessment locations are office environments. Given that economic activities predominantly occur at construction sites, which have already been evaluated and where method statements have taken flooding risks into account, the impact of flooding risks on CTCI's operations is minimal.

Note 1:Suppliers whose cumulative annual transaction amount ranks in the top 95% and whose annual transaction amount exceeds US$3 million or are classified as having high sustainability risks.

Risk Level	Suppliers at Risk of Flooding (SSP5-RCP8.5 scenario)			
	Short-term	Medium-term	Medium- to Long-term	Long-term
No Risk	131	131	131	131
Low Risk	30	30	29	23
Medium Risk	19	20	21	25
High Risk	9	8	8	10
Total	189			

CTCI 2024 Vendor Risk Level and Distribution (Long-term from SSP5 to RCP8.5)



Transitional Risks

From the risk assessment matrix, CTCI has identified the top three risks associated with its supply chain (CTCI, suppliers and subcontractors, clients). Their operational and financial impacts and response action plans are explained as follows:

Risk Types	Operational and Financial Impact			Response Action Plans
	Suppliers	Organization	Clients	
Carbon tax/carbon fee	Higher procurement costs	Higher operational costs	-	■ Search for low emission suppliers and local procurement. ■ Through the assistance of the CTCI Supplier Alliance for Net Zero Emissions, suppliers are being supported in establishing carbon management capabilities, such as greenhouse gas inventory. ■ Require suppliers to provide carbon emission data in orders and contracts, and establish a reward mechanism. ■ Passing on the increased costs to customers, where appropriate. ■ Implement multiple emissions reduction measures, such as adopting high-efficiency equipment, installing electric charging stations, and replacing gasoline vehicles with electric vehicles. ■ Consume green electricity.
Voluntary agreement	-	Lower amount in new contracts (lower competitiveness and more customer churn) Reputation impact	-	
The transformation of low-carbon technology is not as good as expected	-	Lower amount in new contracts (lower competitiveness and more customer churn)	-	■ Continuously develop green engineering technologies and provide net-zero EPC value services to enhance market competitiveness. ■ Continue to develop capabilities in intelligent technologies such as iEPC and Digital Twin. ■ Enhance client outreach by visiting clients with the sales team to explain the benefits of Digital Twin technology and promote its application in projects. ■ Open the Demo Site to allow customers to experience the system's functionalities, collect user feedback, and enhance the system based on their experiences.
Requirements for building efficiency regulations and standards	Higher procurement costs	-	Lower amount in new contracts (lower competitiveness and more customer churn because customer needs are not met)	■ Study regulations related to the assessment of energy efficiency in green buildings and focus on technological advancements. ■ Research, test, and use various types of recycled materials.
Higher raw material price	Higher procurement costs	-	Lower amount in new contracts (customers are not likely to invest)	■ Establish long-term partnerships with suppliers to leverage volume-based pricing. ■ Sign long-term supply contracts for bulk engineering raw materials. ■ Implement hedging measures for major metal procurement. ■ Establish inventory mechanism. ■ Shorten the design schedule and ensure more accurate procurement quantities.
Customers may cut back investment on projects with higher carbon emissions.	-	-	Lower amount in new contracts (enterprises with higher carbon emission may cut back investment, or CTCI may miss opportunities in low-carbon green energy industry)	■ Establish the Strategic Task Force for Energy Transition to explore transformation opportunities, such as the business prospects of green hydrogen/ammonia and carbon capture, utilization, and storage (CCUS). ■ Form strategic partnerships with world-leading technology providers and experienced firms to pursue domestic and international projects in carbon capture, storage, blue hydrogen/ammonia, and renewable fuels. ■ Continue to develop green engineering technologies and provide net-zero EPC value services to enhance market competitiveness. ■ Continue to develop capabilities in intelligent technologies such as iEPC and Digital Twin.

Description of the financial impact of key transition risks and response action plans:

Risk Cases	CTCI is levied carbon tax/carbon fee	Suppliers are levied carbon tax/carbon fee, which is passed on to CTCI	Customers may cut back investment on projects with higher carbon emissions
Risk description	■ CTCI is not classified by the Ministry of Environment as an "emission source required to register greenhouse gas emissions" and therefore is currently exempt from carbon fees. However, considering future net-zero trends, if the Ministry of Environment expands the levy scope of carbon fee and includes CTCI, the Company's operational costs will increase. Accordingly, CTCI has estimated the potential increase in expenses should carbon fees become applicable (from 2026 onwards), by taking its headquarters building as the scope for greenhouse gases emissions calculation. ■ CTCI has established a target for its headquarters to achieve net zero emissions by 2030. In this context, an estimation of carbon fees based on emissions has been conducted, with the rate set between NT$300 and NT$1,800 per ton.	■ The EU will begin requiring CBAM (Carbon Border Adjustment Mechanism) certificates starting in 2027. Other countries may follow suit. If suppliers are subject to CBAM and pass all associated costs on to CTCI, the Company's procurement costs will increase. ■ To understand the maximum potential risks faced by CTCI, several assumptions have been established for evaluation: 1. All countries will follow suit, regardless of the supplier sources; 2. Offsets are not considered in the assessment for simplification purposes; 3. All fees paid by suppliers will be fully passed on to CTCI.	■ Given the global trend in pursuing net-zero transition, consumption of fossil fuel will decline significantly, with investment shifting toward renewable energy. The International Energy Agency has indicated that due to current national net-zero commitments, global oil demand will decline after 2024. This poses a major impact on CTCI's traditional business operations in the refining and petrochemical sectors.
Climate scenarionote [note 1]	NDC, NZE	SSP1-1.9, SSP3-4.5	SSP1-1.9, SSP3-4.5
Financial impact	■ The carbon fee expenditure in 2026 is approximately NT$127,000~763,000. Given CTCI's mitigation pathway, the emissions would decrease every year. The carbon fee expenditure in 2030 is therefore approximately NT$69,000~413,000.	■ Year 2030 compared to year 2024 ■ Increase of domestic procurement costs by 0.08%~0.68% ■ Increase of foreign procurement costs by 0.26%~1.85%	■ The new contract value for refining and petrochemicals in 2030 is estimated to decrease by approximately 2.80%~24.44% compared to the average from 2021 to 2024.
Response action plan	■ Encourage multiple reduction measures, such as adopting high-efficiency equipment and replacing gasoline vehicles with electric vehicles. ■ Consume green power.	■ Search for low-carbon emission suppliers and source locally. ■ Assist suppliers to reduce carbon emissions through the CTCI Supplier Alliance for Net Zero Emissions. ■ Moderately pass on the increase in costs to customers.	■ Set up an energy transition strategy team to search for transition opportunities, such as green hydrogen/ammonia and carbon capture and reuse (CCUS) business opportunities. ■ Form strategic partnerships with world-leading technology providers and experienced firms to pursue domestic and international projects in carbon storage, blue hydrogen/ammonia, and renewable fuels. ■ Continue to develop green engineering technology and providing net zero EPC value services to enhance CTCI's market competitiveness. ■ Continue to develop intelligent technologies, such as iEPC and Digital Twin.
Cost of response plan	About NT$6.67 million /year	About NT$0.77 million/year	About NT$132 million/year

Climate Transition Opportunity

From the opportunity assessment matrix, CTCI has identified the top three opportunities associated with itsr supply chain (CTCI, suppliers and subcontractors, clients). Their operational and financial impacts and response action plans are explained as follows:

Opportunity Type	Financial impact			Response Action Plan
	Suppliers	Organization	Clients	
The government's net zero plan can drive enterprise investment	-	Higher amount in new contracts (in line with the government's development goals and the Company's strategic development)	Higher amount in new contracts (CTCI meets the ESG requirements for bids and improves its competitiveness in winning bids)	■ Established the Strategic Task Force for Energy Transition to explore transformation opportunities, such as the business prospects of green hydrogen/ammonia and carbon capture, utilization, and storage (CCUS). ■ Continuously develop green engineering technologies and provide net-zero EPC value services to enhance market competitiveness. ■ Continue to develop capabilities in intelligent technologies such as iEPC and Digital Twin. ■ Established partnerships with governmental engineering execution agencies and investment enterprises to strengthen cooperation. ■ Signed a collaboration agreement with the Industrial Technology Research Institute and served as the convener of the Carbon Capture Working Group within the Taiwan-U.S. CCUS Alliance. Additionally, CTCI established the New Business Development and Strategy Management Committee to seize business opportunities and technological leadership opportunities.
Promote green engineering and diverse operations	-	Higher amount in new contracts (in line with the global trend of net zero and the Company's strategic development)	-	
Energy-saving buildings	-	Lower operating costs Higher amount in new contracts	-	■ CTCI's First Headquarters buiding has obtained Green Building certification, while the Second Headquarters has obtained Smart Green Building certification. ■ Apply green engineering to clients' projects.
Higher energy efficiency	Lower operating costs	-	-	■ Replace equipment with ones that are more efficient and energy-saving. ■ Stronger management of people's energy consumption behavior.
R&D Innovation	Lower operating costs (introducing R&D during the engineering phase to secure win-win for CTCI and its suppliers)	-	Higher amount in new contracts (CTCI can become more competitive and win bids)	■ Continue to develop green engineering technologies and provide net-zero EPC value services to enhance the Company's market competitiveness. ■ Continue to develop capabilities in intelligent technologies such as iEPC and Digital Twin. ■ Enhance client outreach by visiting clients with the sales team to explain the benefits of Digital Twin technology and promote its application in projects. ■ Open the Demo Site to allow customers to experience the system's functionalities, collect user feedback, and enhance the system based on their experiences. ■ Establish partnerships with government engineering execution agencies and investment institutions to strengthen cooperation.
Recycled materials	Lower operating costs (become more competitive)	-	-	■ Research, test, and use various types of recycled materials. ■ Have a clearer picture of suppliers that can supply recycled materials.

Description of the financial impact of key opportunities and response action plans:

Opportunity Cases	The government's net zero plan can drive enterprise investment	Promote green engineering and diversify operations	R&D innovation
Opportunity description	■ The government is promoting the "12 Key Strategic Action Plans for Net Zero Transformation," which aims to drive corporate investment through demonstration projects, create market demand through policy initiatives, and support industry development through incentive and guidance measures. This presents potential development opportunities for CTCI in the following sectors: ■ Renewable energy and hydrogen: The government plans to achieve a cumulative installed capacity of 13.1 GW for offshore wind power, 31 GW for solar energy, and 0.89 GW for hydrogen power generation by 2030. ■ Low-carbon and negative-carbon technologies: The government is encouraging the development of geothermal energy, biomass energy, and marine energy, and has set a target for carbon capture, utilization, and storage of 1.76 to 4.6 million tons by 2030.	■ Circular economy (Energy Resource Center, Biomass Energy Center): The existing incineration units are outdated and insufficient in processing capacity; plans are underway for gradual construction, renovation, or expansion. ■ Water reclamation plants and seawater desalination plants: The government and high-tech parks have successively launched construction plans. CTCI has the capability to treat wastewater for reuse, even achieving electronic-grade standards. ■ Railway construction: Various metro and light rail projects are being launched across Taiwan. CTCI is experienced in electromechanical system integration and has the capability for independent power supply system engineering, both of which are competitive advantages. ■ Electric vehicle battery factory: Driving electric vehicles have become a major global trend, which is expected to continue to thrive. This is also a primary focus of CTCI's investment.	■ CTCI has invested in iEPC and Digital Twin technologies, emphasizing digitization, collaborative cooperation, automation, visualization, and intelligence. This investment aims to optimize the efficiency and quality of each stage of the EPC process, significantly enhancing safety and reducing costs. ■ Through the long-term promotion of green technologies, CTCI is committed to reducing energy and resource consumption, minimizing pollutant emissions and environmental impact, and lowering costs. These sustainability benefits throughout the building lifecycle have helped CTCI earn clients' trust and created opportunities for collaboration.
Climate scenario	NDC	NDC	-
Financial benefits	■ Renewable energy and hydrogen energy: The government expects to allocate a budget of approximately NT$210.7 billion by 2030. ■ Low carbon and negative carbon technologies: The government expects to allocate a budget of approximately NT$41.5 billion by 2030. ■ Potential infrastructure for liquid hydrogen, liquid ammonia, and liquefied CO_2 receiving terminals: NT$18.5 billion.	■ Circular economy (energy-from-waste plants, biomass energy centers): with potential business opportunities of approximately NT$140 billion. ■ Water reclamation plants and seawater desalination plants: with potential business opportunities of approximately NT$150 billion. ■ Railway transportation: The budget for the electromechanical system of 10 railway tracks is approximately NT$150 billion. ■ Electric vehicle battery plants: By 2030, newly signed contract values are projected to increase by approximately NT$4.9 billion compared to the 2021–2024 average.	■ IEPC, Digital Twin, and green technology may be applied to all kinds of projects. The benefits are the same as the ones in "the government's net zero plan" and "promote green engineering and diversify operations."
Response action plan	■ Set up an energy transition strategy team to study transition opportunities, such as green hydrogen/ammonia and carbon capture and reuse (CCUS) business. ■ Formed strategic partnerships with internationally leading technology providers and experienced firms to pursue domestic and international projects in carbon storage, blue hydrogen/ammonia, and renewable fuels. ■ Continue to develop green engineering technology and provide net zero EPC value services to enhance CTCI's market competitiveness. ■ Continue to develop intelligent technologies such as iEPC and Digital Twin. ■ Established partnerships and strengthen cooperation with government engineering execution units and investment institutions. ■ Signed a cooperation agreement with the Industrial Technology Research Institute; served as the convener of the carbon capture team in the Taiwan-US CCUS alliance; and established the New Business Development and Strategy Management Committee to seize business opportunities and gain technological competitiveness.	■ Continue to develop green engineering technology and provide net zero EPC value services to enhance CTCI's market competitiveness. ■ Continue to develop intelligent technologies such as iEPC and Digital Twin. ■ Participated in seminars and various trade exhibitions to explore business opportunities, and facilitate collaboration and exchange with other contractors who have relevant experience. ■ Established the New Business Development and Strategy Management Committee to seize business opportunities and gain technological competitiveness.	■ R&D and maintenance of technologies such as iEPC and Digital Twin. ■ Strongly promote technologies to customers, visit owners with sales representatives to explain the benefits of "Digital Twin", and apply iEPC, Digital Twin and other technologies to projects. ■ Collect user feedback and their experience to optimize the system.
Response plan costs	About NT$130 million/year	About NT$ 130 million/year	About NT$ 127 million/year

2.2.5 Description of Climate Scenario Selection

Based on the TCFD framework, CTCI has analyzed specific transition and physical risks in the future under different global greenhouse gas emission control scenarios, and evaluated the impact on company operations or value chains, further developing corresponding strategies.

In terms of physical risks, the Intergovernmental Panel on Climate Change (IPCC) released the Sixth Assessment Report (AR6) in 2021, using the Global Climate Model (GCM) to estimate future long-term climate change, and adopting the Shared Socioeconomic Pathway (SSP) to take into account greenhouse gas emissions under different social and economic scenarios which cover climate change assessments in various regions around the world.

In terms of transition risks, since net-zero in 2050 has become an international trend and is also Taiwan's climate policy guideline, Net-Zero Emissions by 2050 Scenario (NZE) set in the World Energy Outlook 2022 (WEO 2022) published by the International Energy Agency (IEA) in 2022 and the Nationally Determined Contribution (NDC) proposed by Taiwan have served as the basis for evaluation on CTCI's pathway to net-zero.

Risk Types	Scenarios	Scenario Description
Physical Risks	RCP 2.6 RCP 4.5 RCP 6.0 RCP 8.5	The Representative Concentration Pathways (RCP) were proposed in the sixth scientific assessment report of the United Nations Intergovernmental Panel on Climate Change in 2021. The RCP8.5 scenario stands for an impact pathway where radiation forcing has increased by 8.5 W/m^2 at the end of the century compared to 1750 and delivers global warming of approximately 4.4 temperature increase without reducing any carbon emission.
Transition Risks	NDC	Taiwan has proposed National Determined Contribution (NDC), a net zero target by 2050, a reduction of 24% by 2030, and 12 goals.
	NZE	"The Net Zero by 2050 A Roadmap" aims to maximize technological feasibility, cost-effectiveness, and social acceptance without relying heavily on negative emission technologies, while ensuring economic growth and stable energy supply.
	SSP1-1.9、SSP1-2.6 SSP3-4.5 SSP5-8.5	Shared Socioeconomic Pathway, SSP ■ SSP1: Best scenario: the world moves towards sustainable development, low energy consumption, and the popularization of renewable energy. ■ SSP3: Different countries are competing against each other without cooperation, so the technological development is slow and there are almost no reduction measures or adaptation plans. ■ SSP5: Heavy use of fossil fuels, low investment in alternative energy sources, but fair distribution of resources to adapt to climate impacts.

2.3 Nature Risk and Opportunity Management Process

In order to properly conduct natural risk assessment, CTCI has formulated the “Group Climate and Nature Risk Management Regulations” and revlevant responding procedures, which are the main standards for managing issues related to natural risks and opportunities. By continuously identifying climate change issues, we are able to examine natural factors to which the Company is exposed. Members of the Sustainability and Net Zero Committee brainstormed to come up with measures to manage and mitigate such risks to improve internal identification of and response to related risks and opportunities.

	L	E	A	P
	Raising awareness of TNFD	Identifying potential dependencies on and impacts to natural capital	Analyzing dependency and impact levels	Assessing significant risks and opportunities related to nature	Managing management actions in response to nature-related risks and opportunities
	Enhancing employees’ awareness of TNFD through education and training. Physical courses and workshops were held on 2024/2/2. An online course was offered to suppliers on 2025/4/22.	Screening for operation sites with ecological priority. Carry out dependency and impact significance analysis on natural and ecosystem services.	Providing questionnaire forms for each unit to fill out and identify significant natural risks through the dependency and impact matrix.	Integrating nature-related risks into existing risk management and continuously assessing business opportunities related to nature.	Further disclosing and proposing strategies for the significant risks and opportunities identified.

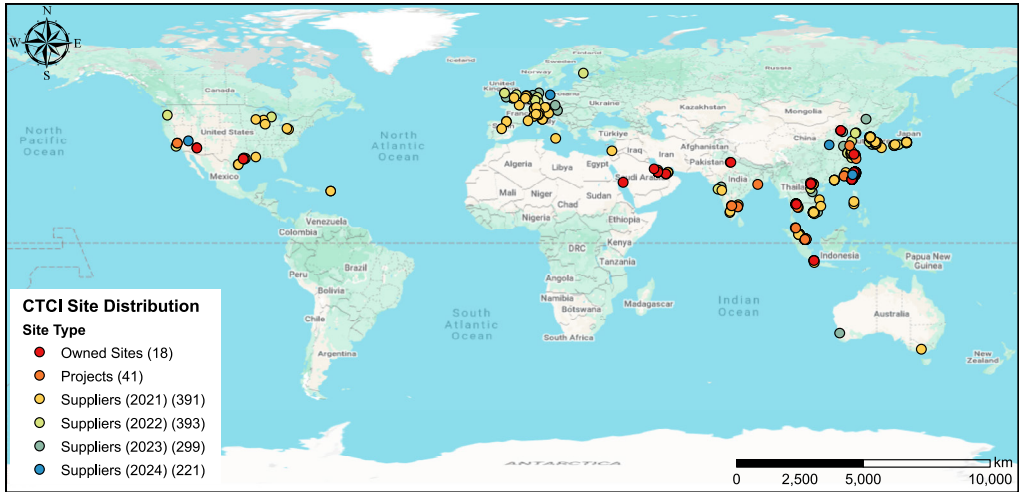
2.3.1 Build TNFD Awareness

To enhance employees’ understanding of the Taskforce on Nature-related Financial Disclosures (TNFD), we have invited representatives from various departments, including projects, marketing & sales, administration, and procurement, to participate in training courses. These sessions aim to educate employees about natural capital, emphasizing the company’s reliance on the resources and services provided by natural capital to support operations, as well as the potential impacts on natural capital that may lead to ecological degradation and resource depletion. The LEAP (Locate, Evaluate, Assess, and Prepare to report) approach is designed to assist in evaluating and revealing risks and opportunities related to natural capital, and to propose corresponding management actions. Furthermore, training courses have been provided to suppliers to enhance their understanding of biodiversity and the Taskforce on Nature-related Financial Disclosures (TNFD).

2.3.2 Identifying Operational Sites

Requirements for the first step of LEAP - Identifying operational sites (Locate): A total of 1,363 business locations (18 proprietary assets, 41 downstream businesses, and 1,304 upstream businesses with transactions between 2021 and 2024) worldwide were assessed for impacts on biodiversity, including the distribution of locations and the number of locations in each country.

We divided the subject of evaluation into Taiwan sites and global sites. The analysis method started from setting the operating site as the center, delineated a potential impact area within a radius of 2-km from the center, and conducted an overlaying analysis with the information drawings of the local protection area map to further summarize the overlapping area between business locations and the value chain.



Taiwan's unique geographical location has given rise to a high level of species and ecological diversity. The map resources of various protected areas and the related laws and regulations are also relatively complete. Therefore, for the sites in Taiwan, we analyze the coverage of protected areas between regulated and non-regulated areas to understand the protected areas affected by the business locations and also make further assessment of the relevant laws and regulations by which we may be affected.

We have reviewed the relevant ecological conservation laws and regulations in Taiwan and the coverage of protected areas designated by non-governmental organizations to compile a list of 9 types of protected areas. In order to connect with international analysis results, we conducted an analysis based on the reasons for the designation of each protected area and the objects of protection, which correspond to the classification of protected areas by the International Union for Conservation of Nature (IUCN).

Legal basis		Maps of protected areas	IUCN classification
Regulated areas	Coastal Zone Management Act	Coastal reserve	V
	Wetland Conservation Act	Important wetland	IV
	National Park Law	National Park	II
	Act on Wildlife Conservation	Wildlife reserves, important habitats for wild animals and plants	IV
	Cultural Heritage Preservation Act	Nature reserve	Ia
	The Forestry Act	Nature reserve	III
Non-regulated areas		Green belt, key biodiversity area (KBA)	-

The analysis results of the biodiversity impact at the CTCI Taiwan Value Chain sites indicate that, within a radius of 2 kilometers, there are a total of 254 sites in Taiwan that are subject to regulatory protection areas. Among these, there are 2 sites that are owned assets, which include coastal protection areas (the general coastal protection area of the Tamsui River estuary) and important wetlands (the Taoyuan Pizhun Wetland). 8 project sites intersect with legally designated protected areas, with a total of 244 companies being involved in areas subject to regulatory protection (Note 1). In addition, there are a total of 359 locations that fall within the scope of illegal regulatory conservation corridors or critical biodiversity areas.

Both our own sites and project sites are included in risk management. Please refer to the section on Nature-related Risks and Opportunities Impact Assessment and Management Response.

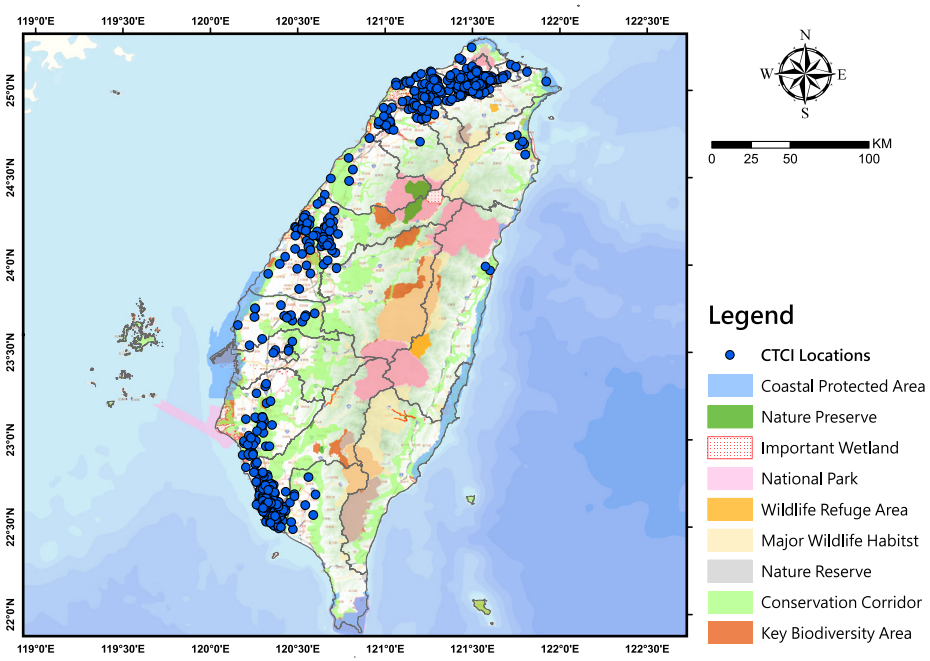
In the upstream segment of the value chain, due to the larger number of manufacturers, further analysis will be conducted. In 2024, if any Tier 1 suppliers (Note 2) were identified as being within the regulatory protected areas, they were prioritized for management. Impact assessment results will be communicated to assist suppliers in understanding their nature-related risks. The analysis revealed that there are no Tier 1 suppliers fall within such areas.

Type \ Reserve	Coastal reserve	National Park	Wildlife reserve	Important habitat for wildlife	Important wetland	Nature reserve	Nature reserve	Green belt	Key biodiversity area (KBA)
Owned	1	-	-	-	-	-	1	1	-
Vendor (upstream)	27	5	79	80	9	-	227	249	134
Project (downstream)	-	-	2	2	-	-	8	12	5

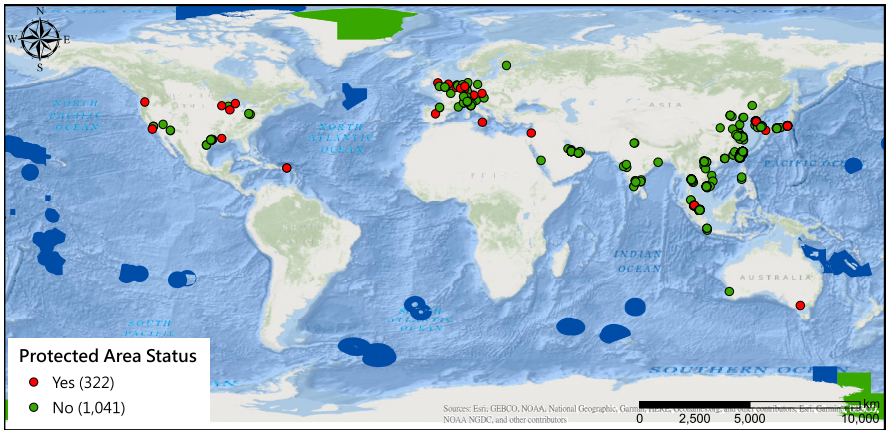
Note 1: The number of accesses varies from the total number of sites impacted, as a single site may be in contact with more than one regulated/non-regulated protected areas.

Note 2: Suppliers whose cumulative annual transaction amount ranks in the top 95% and whose annual transaction amount exceeds US$3 million or are classified as having high sustainability risks.

Distribution of CTCI's vendors and Taiwan's protected areas



Distribution of CTCI's global value chain sites and IUCN protected areas



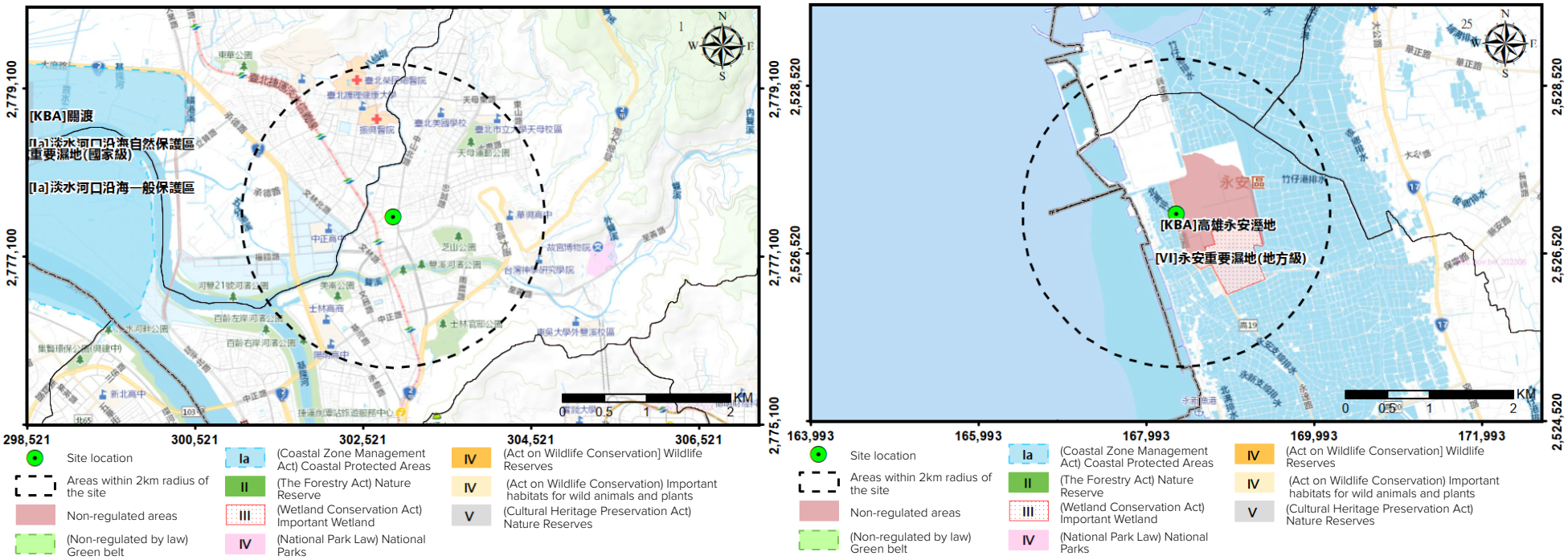
The global value chain locations of CTCI were analyzed with reference to the map of global protected areas by the International Union for Conservation of Nature (IUCN). Founded in 1948, IUCN is the world's largest environmental organization and conservation network. The IUCN protected area categories are the most widely used global categorization of protected areas. It includes maps of protected areas announced by countries around the world and categorizes them into eight categories. The data is also provided to the World Conservation Monitoring Centre (WCMC) under United Nations Environment Program (UNEP) to establish the World Database on Protected Areas (WDPA).

Category	Name in English
Ia	strict nature reserve
Ib	wilderness area
II	national park
III	natural monument or feature
IV	habitat or species management area
V	protected landscape or seascape
VI	protected area with sustainable use of natural resources
Not Reported / Not applicable / Not Assigned	(T.B.D)

Biodiversity impact analysis of CTCI's global value chain sites (within a 2-kilometer radius) shows a total of 144 sites in the IUCN protected areas. Of these sites, 111 are in Asia (accounting for 77.1%), followed by 25 in Europe. (17.4%), and a total of 7 locations in America and Australia (4.9%). Among the sites in Asia, Taiwan had the most with 77 sites, followed by South Korea with 16 sites and Japan with 10 sites.

Distribution of CTCI's global value chain sites and IUCN protected areas

The geospatial mapping indicates whether a site has biodiversity impacts, and if so, in what category. The figure below uses CTCI's first headquarters building and Hsinta power plant of the Taiwan Power Company project as examples. The results show that the first headquarters is not in touch with key protected areas, while the the Hsinta power plant comes into contact with important wetlands and KBA. The ecological protection measures will explain the impact mitigation and conservation measures during the construction stage.



2.3.3 Nature-related Risks and Opportunities Impact Assessment and Management Response

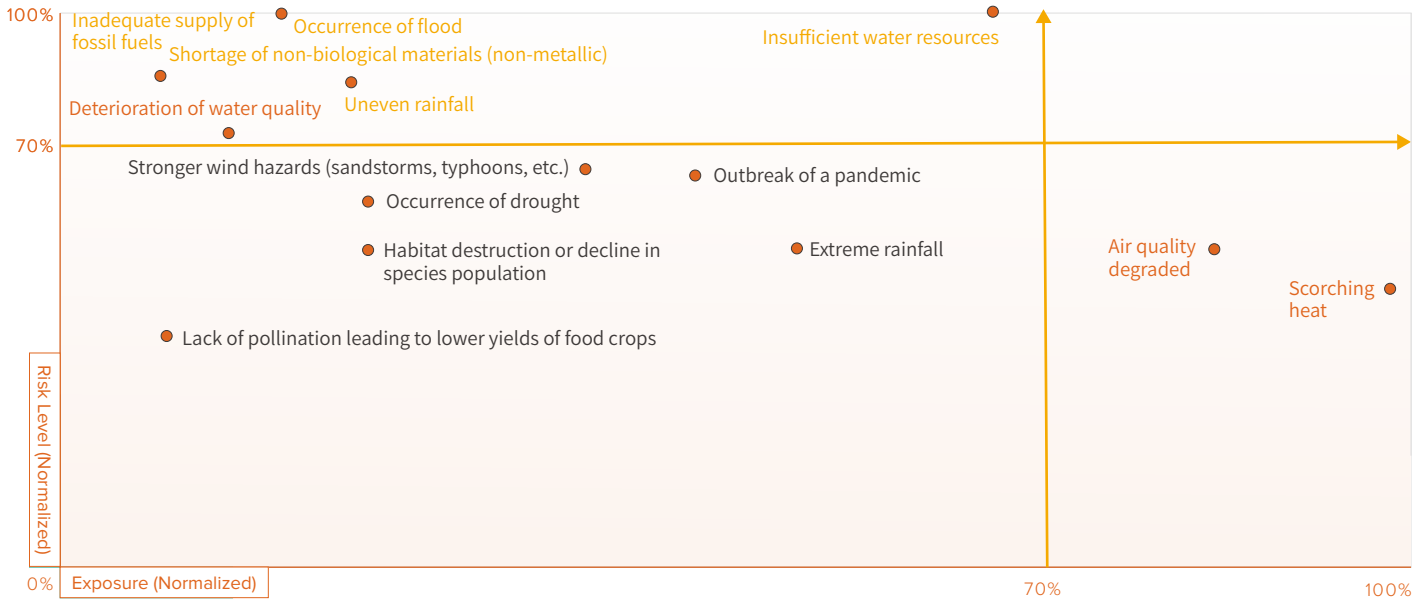
The dependence of enterprises on natural capital refers to the potential risks or opportunities that businesses may face due to changes in the state of the natural environment, which can be caused by external changes in ecosystems that affect the natural capital they rely on. The construction industry largely relies on nature and ecosystems, which is reflected in the following four aspects. As an engineering, procurement, and construction (EPC) contractor, CTCI is positioned in the midstream of the industry. After identifying nature-related dependencies and impacts, CTCI assesses associated risks and opportunities.

- Land Resource Utilization: Construction projects require a substantial amount of land resources for the development of buildings, infrastructure, and roads. Land is a part of natural capital, and its sustainable use and protection are crucial for the development of the construction industry.
- Water resources management: Construction projects require water for construction activities, such as concrete production and site cleaning. Therefore, the rational use and management of water resources is an important consideration for the sustainable development of the construction industry.
- Ecosystem protection: Construction projects often involve forests, wetlands, rivers and other ecosystems. Therefore, it is necessary to consider the protection of the ecosystem to prevent damage to the environment and ecological balance during project planning and implementation.
- Impact of climate change: The construction industry is affected by climate change. For example, extreme weather events may lead to building damage and increased risk of flooding. Therefore, the construction industry needs to consider the impact of climate change on building design, material selection and risk management to ensure the long-term stability of buildings.

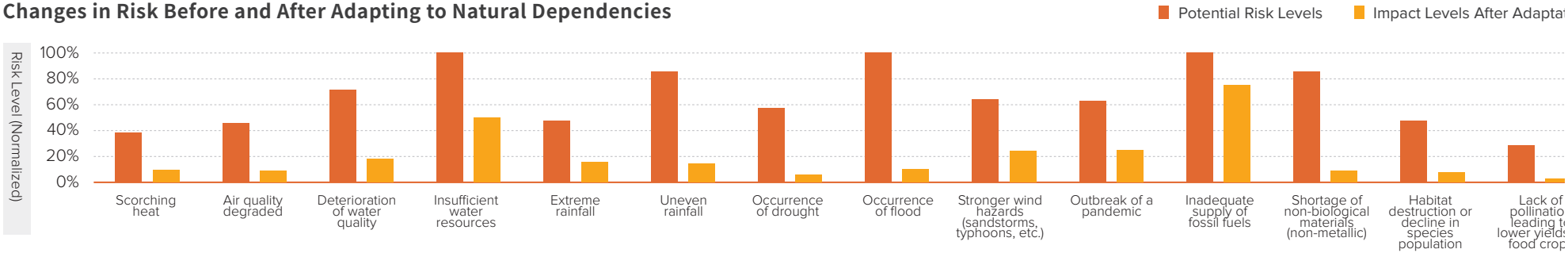
Identification of Nature-related Dependency in CTCI's Operations

In the process of analyzing our dependence on nature and ecosystem services, we conducted questionnaire surveys and held group discussions in workshops. The results of the questionnaire matrix analysis showed that there are two high-exposure issues in the Company's own operations: high temperature and degraded air quality; other six potential high-risk issues facing CTCI include shortage of fossil fuel supply, occurrence of floods, shortage of water resources, shortage of non-biological materials (non-metallic) supply, uneven rainfall, and deterioration of water quality. Among them, "water resources shortage" and "fossil fuel shortage" are two issues that are reckoned insufficient to address even with current adaptation measures. In response to these high-risk dependency issues, the Company has established dependency indicators and measuring units for risk management and tracking high-risk issues.

Operational dependency matrix analysis



Changes in Risk Before and After Adapting to Natural Dependencies



Management indicator of natural dependency

Dependency Items	Establish an early warning mechanism	Dependency (Indicator)	Metric
Scorching heat	Temperature Forecast (Central Weather Administration)	1.Increased power consumption due to high temperature 2.Change of construction progress due to high temperature	1. Relationship between power consumption and temperature change 2.Relationship between construction progress and temperature change
Degraded air quality	Air quality index (Central Weather Administration)	Degraded air quality affects operations	Impact of degraded air quality index on operation/construction progress
Inadequate supply of fossil fuels	None	Rising costs due to rising fossil fuel prices	1. Consumption of natural gas, coal and fuel 2.Proportion of fossil fuel cost of total expenditure 3.Achievement rate of low-carbon transition plan
Occurrence of flood	Meteorological forecast (Central Weather Administration)	Operations affected by flooding	Impact of flooding on operation/construction progress
Insufficient rainfall/insufficient water resources	Rainfall forecast (Central Weather Administration)	Operations affected by drought/water shortage/restrictions	1. Impact of past events on operation/construction progress and emergency response mechanism 2.Potential impacts of future droughts/water shortages/water restrictions
Shortage of non-biological materials (non-metallic)	None	Quantity of high-risk natural products from land/ocean/freshwater (e.g. water, wood, minerals, agricultural products)	The weight of high-risk natural products, including the ratio to the total amount of natural products, is divided into: 1. From land/sea/fresh water 2.From the Sustainability Management Plan or related certification schemes
Uneven rainfall	Rainfall forecast (Central Weather Administration)	Operations affected by flooding	Impact of flooding on operation/construction progress
Deterioration of water quality	Water quality index, pollution index (National Environmental Water Quality Information, Water Resources Agency, and Water Corporation)	Deterioration of water quality affects operations	Impact of deteriorated water quality on operation/construction progress

Risk management of nature-related dependency

Dependency items	Risk description	Risk category	Financial impact	Responding measures
Scorching heat	The direct impact of gradual increase in ambient temperature on business operations	It will affect the electricity consumption for essential use (air conditioning) of the headquarters building, and the increase of electricity bill will affect the Company's cost. If the location of construction is in a hot area, it will affect the progress of the construction.	Under the RCP 8.5 scenario, the headquarters' power consumption will increase by 250,000 kWh each year, and the electricity bill will increase by about NTD$1.51 million. If the worksite is suspended due to high temperature for one day, the operating cost (overtime pay) will be about NTD$4 million.	Establish environmental disaster prevention and contingency plans according to regional characteristics
Degraded air quality	The air quality around the site is getting worse and worse, which affects the site.	Employees' health is affected. The Company's operations will be affected and the operating costs will increase when employees fall ill. If the construction site is in an area with excessively poor air quality, it will affect the number of workers and the visibility of the site area, resulting in delay of the construction progress.	The average cost of sick leave per employee per day is about NTD$ 47,300. If a worksite is shut down for a day due to degraded air quality, the operating cost (overtime pay) will be about NTD$4 million. If the construction site experiences prolonged shutdown, it is equivalent to losing daily revenue of about NTD$0.8 million.	Air purifiers are installed within the Company, and environmental disaster prevention and response plans are established based on regional characteristics of the site.

Dependency items	Risk description	Risk category	Financial impact	Responding measures
Supply shortages of fossil fuel	The shortage of fossil fuels, such as coal, natural gas, gasoline and diesel, has an impact on the Company	1. Rising energy prices: Fossil fuels are now one of the world's main energy sources, particularly in the fields of transportation, industrial, and power generation. Supply shortages may lead to imbalances between supply and demand, which in turn push up energy prices. This may result in the pressure of rising costs for the Company. 2. Transportation and transportation difficulties: Energy shortages may affect transportation systems, causing supply chain disruptions and transportation difficulties. This may result in delays in the transportation of goods and increase in prices. 3. Technological Transition Risks: Supply shortages may promote the shift to cleaner and renewable energies. However, this transition may face challenges in terms of technology, capital and social acceptance. 4. As a result, chemical companies are less willing to invest, which in turn reduces revenues of the Company.	1. If the fossil fuel price increases by 1%, it will affect the cost (cost = contracting and procurement cost × percentage of equipment purchased × fossil fuel price increase rate) that stands at about NTD$0~300 million. 2. Roughly NTD$ 30 million of labor expenses 3. If the Company is unable to adapt to this transition, it will loss approximately NTD$120 - 490 million. (Total revenue × percentage of innovative business × loss rate) 4. The impact of revenue reduction is approximately 7.2%~28.8%	1. Energy efficiency improvement: Improve energy efficiency and reduce the demand for fossil fuels. 2. Shift to renewable energy: Adopt renewable energy, such as solar energy, wind energy and hydropower, to reduce the dependence on limited fossil fuels and reduce carbon footprint at the same time. 3. Diversified energy sources: Reduce dependence on a single source of energy and establish a diversified energy structure, including natural gas and biomass energy. 4. Government policy support: Actively participate in and support the government's energy policy, promote the development of renewable energy, and promote energy transition at the same time. 5. Energy management system: Establish a comprehensive energy management system to monitor and optimize energy use, reduce waste, and improve performance. 6. Invest in research and development: invest in new technologies and research to promote energy innovation and develop alternative energy and technology.
Occurrence of flood	Risk of river flooding in the vicinity of sites	If the construction site is in the flood-affected area, it will cause property damage and delay the construction progress.	If a site is shut down due to flooding for a day, the operating cost (overtime pay) will be about NTD$4 million. If the construction site experiences prolonged shutdown, this is equivalent to about NTD$135 million of daily revenue loss.	Flood prevention and contingency plans are established according to regional characteristics
Insufficient rainfall/insufficient water resources	The operation of the organization depends on water resources as an important material	Affect the water supply for daily living in the headquarters building. Company operations will be affected if employees run out of water; the progress of construction may be affected in times of water shortage.	The operating cost (overtime pay) of a one-day shutdown at the headquarters is about NTD$5 million. If a site is shut down due to water shortage for a day, the operating cost (overtime pay) will be about NTD$4 million. If a construction site experiences prolonged shutdown, it is equivalent to losing about NTD$ 30 million of daily revenue.	1. Regularly store water to avoid running out of water in case of water shortage. 2. Understand the composition of local water resources and establish access in emergency.
Uneven rainfall	The operations of the organization will be affected by changes in the drought or rainy seasons or wildfires	This will affect the building utility water use of the headquarters building, and the increase in water bills will affect the Company's cost expenditure. If the construction site is in the arid or rainy season, it will affect the progress of the project.	If the water bill increases by 1%, the annual cost of the headquarters building will increase by about NTD$6,000. If a site is shut down due to water shortage for a day, the operating cost (overtime pay) will be about NTD$4 million. If the construction site experiences prolonged shutdown, it is equivalent to losing about NTD$ 13.5 million of daily revenue.	1. Promote the concept of water conservation among employees 2. Establish environmental disaster prevention and contingency plans according to regional characteristics
Deterioration of water quality	Water quality affects the organization's operations	Affects the daily use of water in the headquarters building. Pollution of the water quality will affect the health of employees or personnel in the construction site area, and will increase the Company's operating costs.	The average cost of sick leave per employee per day is about NTD$ 47,300.	Understand the composition of local water resources and establish pipelines for access to water with proven quality in emergency.

Dependency items	Risk description	Risk category	Financial impact	Responding measures
Shortage of non-biological materials (non-metallic)	Influence of supply shortage of non-metallic materials, such as gases and chemicals	1. Price fluctuation: The shortage of materials may cause the price to rise, increasing the Company's costs and affecting the profit. 2. Risk of supply chain interruption: shortage of materials may interrupt supplier's production, delay the manufacture and delivery of products, and affect the overall construction period. 3. Regulatory compliance risks: Certain non-metallic materials may be subject to environmental protection regulations. If the supply of these materials is restricted, the Company may need to find alternative materials to comply with regulatory requirements, which may lead to increased costs and operational difficulties. 4. As a result, chemical companies are less willing to invest, which in turn reduces revenues of the Company 5. Environmental Resource Shortages: A lack of sufficient energy and water resources will increase company costs or necessitate the search for alternative energy and water resources, resulting in higher construction and operational costs.	1. If the price of non-metallic materials increases by 1%, it will affect the cost (Cost of NTD$ 0 - 300 million = contracting and procurement costs × percentage of equipment purchased × range of price increase of non-metallic materials) 2. NTD$ 30 million of labor expenses 3. The decrease in revenue is estimated to be 7.2% to 28.8%. 4. The shortage of environmental resources may impact costs by approximately NT$90 million.	1. Diversified supply chain: to ensure that key materials are obtained from multiple suppliers to reduce dependence on a single source of supply. In this way, even if one of the suppliers is facing a problem, the other suppliers can still provide support. 2. Regular risk assessment: Assess risks of the global supply chain on a regular basis, including regional political stability and natural disaster risks, in order to identify potential supply shortage risks as soon as possible. 3. Research on alternative materials: to find and research alternative non-metallic materials to deal with the supply shortage and mitigate the price fluctuation and supply uncertainty. 4. Partnerships: Establish stable and long-term partnerships. Through close cooperation, we can more flexibly respond to supply shortages and face challenges together. 5. Technological innovation: invest in technological innovation, find ways to improve production efficiency, reduce material use or develop new products, in order to reduce the demand for specific materials.

Opportunity management of nature-related dependency

Dependency items	Opportunity description	Opportunity category	Financial impact	Mastering strategies
Scorching heat	Optimized energy management Improve resilience against natural disasters	External value: ecological conservation, sustainable resource utilization	Reduce operating costs	Fans are used in conjunction with air conditioners to prevent the indoor temperature from rising and to reduce the frequency of air conditioner operations.
Degraded air quality	Increased opportunities for constructing carbon capture facilities	Corporate performance: products and services	Reduce operating costs, increase revenue, and launch additional businesses	Continue to pay attention to the demand for carbon capture- related plant construction

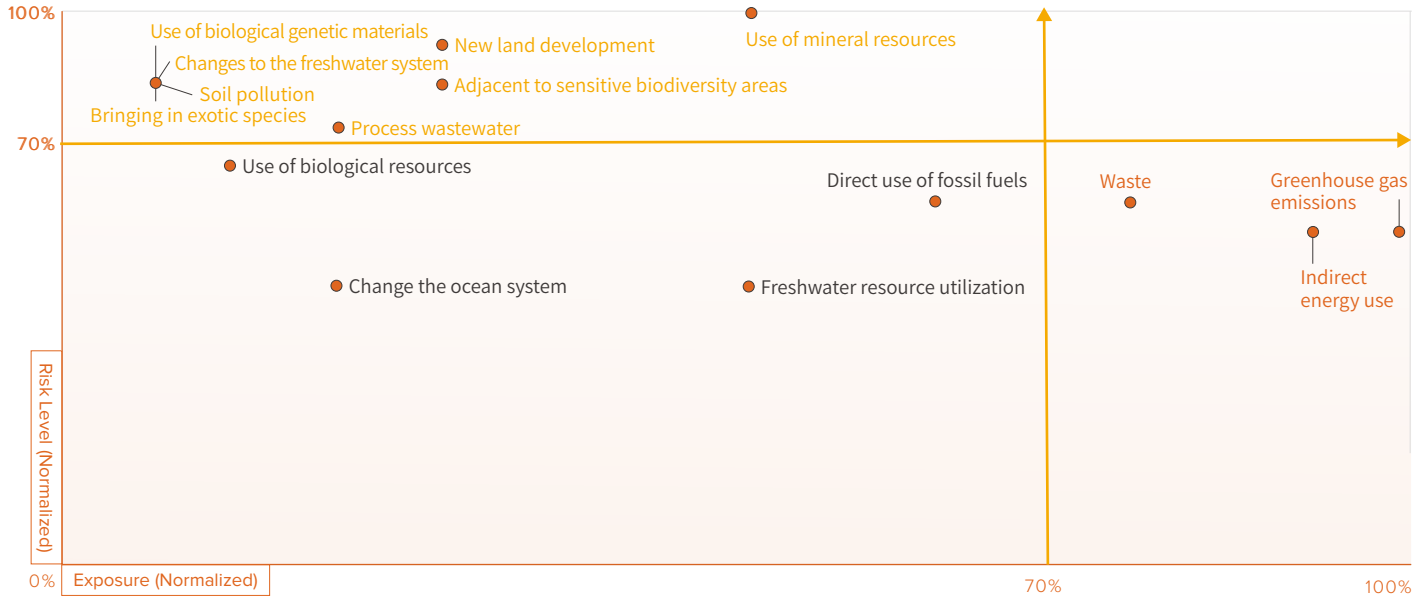
Dependency items	Opportunity description	Opportunity category	Financial impact	Mastering strategies
Supply shortages of fossil fuel	1. Opportunities in the renewable energy market: Turn to new market opportunities in renewable energy and clean technologies, such as green/blue hydrogen, blue ammonia, and energy storage technology. 2. Mastering high-performance products: It helps to reduce energy consumption and cost at the same time. 3. Participation in the carbon market: Participation in the carbon market and carbon trading system can reduce carbon emissions to the minimum level and bring economic benefits to the Company. 4. Energy management services: Plan energy management and optimization services to help the Company and property owners use energy more efficiently and reduce energy costs. 5. Technological innovation and R&D: Investment in emerging technologies and R&D may bring the Company a competitive advantage in the future and promote the development of the entire industry.	Corporate performance: resource efficiency, market, reinvestment External value: sustainable resource utilization	Reduceproperty losses, reduce operating costs, develop additional business opportunities, and increase revenue	1. Environmental analysis: Understand the changes in the external and internal environment, including market trends, competition, regulatory environment, technological innovation, etc. 2. Goal setting: clarify the company's long-term and short-term goals, and ensure that the formulation and implementation of strategies are in line with these goals. 3. Implementation of the action plan: Formulate the corresponding concrete action plan according to the target, including resource allocation, personnel training, technology investment, etc., and ensure the effective implementation. 4. Monitoring and evaluation: Regularly monitor the implementation effect, conduct evaluation, and adjust strategies in a timely manner to deal with new challenges and opportunities. 5. Learning and improvement: to learn from the experience of implementation, to reflect, to continuously improve and to adjust strategies, in order to maintain adaptability and flexibility. 6. Upgrading of renewable energy technologies 7. Market analysis: Understand the public/private sector's needs for the treatment and use of renewable environmental resources and increase the chances of winning green project bids.
Occurrence of flood	Improve resilience against natural disasters	External Value: Conservation	Reduction of property losses	Continue to improve the flood warning around the construction site to avoid the impact of disasters on the construction site.
Insufficient rainfall/ insufficient water resources	Increase job opportunities related to water resource infrastructure development	External Value: Conservation, sustainable resource utilization	Reduce property losses, increase revenue, and develop additional businesses	Each employee maintains the habit of storing and saving water to reduce man-made water shortage, and continues to pay attention to the demand for water-related infrastructure projects
Uneven rainfall	Develop good habits and improve resilience against natural disasters.	External value: sustainable resource utilization	Reduce operating costs	Each employee maintains the habit of storing and saving water to reduce man-made water shortage.
Deterioration of water quality	Increase job opportunities related to water resource infrastructure development	Corporate performance: products and services External value: Sustainable resource utilization	Reduce operating costs, and increase revenue	Encourage employees to use boiled water to reduce disease-causing pollutants, and continue to monitor the demand for water purification infrastructure projects.

Dependency items	Opportunity description	Opportunity category	Financial impact	Mastering strategies
Shortage of non-biological materials (non-metallic)	1. Material Innovation: Supply shortages can stimulate the research and development of new alternative materials or enhance the performance of existing materials, thereby promoting innovation in materials science and engineering. 2. Circular Economy: Apply the principles of circular economy to company operations, seeking more efficient resource utilization and recycling solutions to reduce the demand for finite materials. 3. Sustainable Design: Emphasizes the design for sustainability to reduce the impact of engineering on the environment while enhancing the lifecycle of use. 4. Supply Chain Optimization: Optimize the supply chain to enhance flexibility, thereby better responding to supply shortages and market changes. 5. Market Competitiveness: Achieving a competitive advantage in adapting to new materials and supply chain models to meet owners' demands for sustainable products and environmentally friendly industries. 6. Opportunities in the Recycling Environmental Resource Sector: Increasing market demand for renewable energy, waste resource utilization, and emerging water resource infrastructure.	Corporate performance: resource efficiency, products and services, market, cash flow, reinvestment External value: ecological conservation, sustainable resource utilization	Reduce property losses and increase revenue	1. Environmental Analysis: Understanding changes in both the external and internal environments, including market trends, competitive conditions, regulatory environment, and technological innovations. 2. Objective Setting: Clearly define the company's long-term and short-term goals to ensure that the formulation and implementation of strategies align with these objectives. 3. Implementation of Action Plan: Based on the objectives, establish corresponding specific action plans, including resource allocation, personnel training, and technological investment, while ensuring effective implementation. 4. Monitoring and Evaluation: Regularly monitor the implementation effectiveness, conduct evaluations, and timely adjust strategies to respond to new challenges and opportunities. 5. Learning and Improvement: Learning from implementation experiences, engaging in reflection, and continuously improving and adjusting strategies to maintain adaptability and flexibility. 6. Enhance green technology 7. Market Analysis: Understand the demands of the public and private sectors for the handling and utilization of renewable environmental resources to enhance opportunities for winning green engineering contracts.

Identification of Nature-related Impact to Business Operations

CTCI conducted a matrix analysis for the impact materiality that is similar to the dependency materiality assessment. The results showed that greenhouse gas emissions, indirect energy use, and waste are the top three high-exposure impact issues, while high-risk impact issues include the use of mineral resources, new land development, proximity to sensitive biodiversity areas, use of genetically related materials, changes in the freshwater system, and introduction of exotic species, soil pollution, and wastewater. After advanced discussion by the working group, it was concluded that since the use of mineral resources, new land development, proximity to sensitive biodiversity areas, use of genetically related materials, alteration of the freshwater system, and introduction of exotic species are all indirectly related to CTCI's operation, they are temporarily excluded from subsequent management actions. For high-risk impact issues, the Company establishes management indicators, management measures, as well as targets for risk management and tracking.

Operational impact matrix analysis



Management indicator of natural impact

Impact Items	Impact description	Resulting changes in the state of the natural environment	Management indicators	Management measures	Goal setting
Indirect energy use	Use of indirect energy (electricity, heat, steam, etc.) as an important input for production	Indirect impacts from energy production	1. Headquarters building sets annual EUI targets 2. Global construction sites set annual energy intensity targets 3. Increase the proportion of green electricity in headquarters buildings	1. The headquarters building is equipped with an energy management system that continuously monitors various electricity usage data and regularly reviews energy consumption. 2. Headquarters buildings instal solar panels. 3. Utilize green engineering technologies to reduce electricity consumption during construction. 4. Utilize recycled materials to reduce production energy consumption.	Mitigation targets have been established (see Energy Metrics and Targets).

Impact Items	Impact description	Resulting changes in the state of the natural environment	Management indicators	Management measures	Goal setting
Greenhouse gas emissions	Greenhouse gases are generated during the operation process (scope 1 and 2), and greenhouse gas has become an item of concern for customers.	Global greenhouse gas concentration is on the rise Stronger global warming potential Changes in global average temperature Rise of sea level Increased frequency of extreme weather events	1. In alignment with the SBTi 1.5°C scenario, establish reduction targets for Scope 1 and 2, with the objective of achieving a 4.2% annual decrease in carbon emissions. 2. Headquarters building sets annual EUI targets 3. Global construction sites set annual energy intensity targets	1. The headquarters building is equipped with an energy management system that continuously monitors various electricity usage data and regularly reviews energy consumption. 2. Headquarters buildings instal solar panels 3. Continuously monitor the consumption of gasoline and diesel at construction sites worldwide.	Mitigation targets that are scientifically based are in place (see Greenhouse Gas Emission Metrics and Targets).
Waste water	Waste water generated from the operation process (BOD, COD, etc.)	Degraded water quality	The hazardous operating environment testing process and organization are established in accordance with the safety, health and environmental procedures, including the organizational structure and responsibilities, and the hazardous operating environment testing process and description.	Follow the regulations on air, water, waste, and toxic by the Environmental Protection Administration according to the project needs.	Mitigation targets are in place (see Water and Waste Metrics and Targets).
Soil pollution	Land pollution caused by the emissions	Degraded soil quality			
Waste	Industrial waste is generated during the operation process and needs to be reported	Different treatment measures will result in different results, which are indirect impacts.			

Risk management of nature-related impact

Impact Items	Impact path	External pressure	Risk category	Financial impact	Responding measures
Indirect energy use	The use of traditional electric energy for construction on the project site increases carbon emissions. Any increase in energy costs will lead to an increase in the overall cost of the enterprise.	1. Increase the proportion of green power to reduce carbon emissions 2. Increase energy conservation 3. Increase green energy projects 4. Use recycled materials	Laws and regulations, market, technology	If the price of electricity increases by 1%, the cost will increase by about NTD$460,000 to NTD$590,000.	1. Use green power to meet the net zero goal as a ESG construction site 2. Proposal to introduce smart engineering 3. Construction modularization 4. Use recycled materials to reduce energy consumption in production.
Greenhouse gas emissions	As the world pays more and more attention to the greenhouse gas issue, international customers may include this as a scoring item when selecting a company, and the Financial Supervisory Commission in Taiwan has announced the disclosure requirements for TWSE/TPEX listed companies. If CTCI does not conduct inventory inspections and set reduction targets, it may affect customers' willingness to outsource and fail to meet domestic regulatory requirements.	1. Reduction of greenhouse gas emissions 2. Develop the Company's overall reduction plan	Regulations, markets	Under the climate scenarios of NDC and NZE, the annual carbon fee is about NTD$ 130,000 to NTD$ 760,000.	1. Development of greenhouse gas reduction strategies 2. Set carbon reduction targets and pass SBTi verification
Waste water	An environmental fine was issued for wastewater pollution at construction sites.	1. Construction stage: If the grit chambers are demolished due to the construction process but there is no space on-site for reinstallation, the cost of external leased land or other alternatives will be increased. 2. Commissioning stage: If the waste water treatment system of the process is abnormal, it will cause production loss due to shutdown; the cost will increase if it is carried by an external treatment unit.	Regulations, market, goodwill	CTCI has not been fined for pollution in the past 5 years. The application fee for construction site runoff permit is to be paid by the property owner.	1. During the planning and design stage, considerations are given to sewage discharge piping layout, increased daily maximum treatment capacity, and contingency measures for emergency situations. 2. In the early stage of pre-construction stage, a backup waste water collection pool shall be set up to avoid storage and disposal under emergency conditions.

Impact Items	Impact path	External pressure	Risk category	Financial impact	Responding measures
Soil pollution	1. If the proprietor fails to conduct soil sampling and analysis before handing over the construction, it is difficult to effectively clarify whether any contamination occurred prior to handoveror after the construction. 2. An environmental fine was issued for the soil pollution caused by the construction.	If the Environmental Protection Bureau determines that soil remediation is required due to soil pollution, huge costs or construction delays will be incurred. In addition, relevant equipment is installed in accordance with environmental protection regulations, and contractors are required to comply with environmental protection regulations.	Regulations, market, goodwill	In 2024, approximately NTD$2,600,000 was spent on site soil pollution assessment, survey and testing, and no pollution penalty was incurred.	1. If the land developed by the proprietor is identified as a potential soil contamination area, submission of a soil pollution sampling report is required. 2. Construction stage: The common soil pollution is the leakage of construction oil to the surface. It is required to install oil containment trays for oil drums and generators. 3. Commissioning and operation phase: The operation and control personnel in the commissioning phase shall not discharge non-sewage directly to the surface soil at will in case of emergency situation of the sewage treatment system.
Waste	1. An environmental penalty was issued for the construction site pollution. 2. A large number of licenses were revoked by government agencies for violation of regulations, which in turn affected the balance of supply and demand in the transportation market. 3. The generation of solid waste and the tightening of external regulations will cause enterprises to spend more costs on sorting and disposing industrial waste.	1. Relevant equipment is installed in accordance with environmental protection regulations, and contractors are required to comply with environmental protection regulations. 2. Due to the balance of supply and demand in the market, the cost of waste removal and transportation indirectly increased. 3. Enhance waste management and reinforce waste reduction measures	Regulations, market, goodwill	Approximately NTD$95 million (headquarters building and construction sites) was spent on removal and disposal of waste in 2024, without penalty for pollution.	1. Assign personnel to strengthen the cleaning, dismantling and sorting of garbage in the construction area. 2. Recycling reusable waste materials, or matching them to be used at other construction sites. 3. Estimate the type and quantity of construction scraps and the comparison with the design volume, which can be used as a reference for the planning of new projects in the future to avoid problems such as waste caused by excessive design.

Opportunity management of nature-related impact

Impact Items	Opportunity description	Opportunity category	Financial impact	Mastering strategies
Indirect energy use	1. Enhancing renewable energy technologies 2. Minimizing energy use 3. Promoting intelligent engineering 4. Development of applications for recycled materials	Enhancement of business reputation Corporate performance: resource efficiency, market External value: sustainable resource utilization	Reduce operating costs and expand additional business ventures.	1. Collaborate with external research institutions to develop new technologies. 2. Actively apply for patents to establish core technologies. 3. Enhance the proposal system by establishing proposal performance indicators. 4. Efforts to establish battery manufacturing and renewable energy operations.
GHG emissions	1. Applied energy management system 2. Research on CCUS technologies	Corporate performance: market External value: sustainable resource utilization	Increase market opportunities	1. Continuously promote the inventory and reduction of greenhouse gas emissions. 2. Technical collaboration with subsidiaries and external research institutions.
Waste water	1. The government has launched several new projects for water reclamation plants and desalination plants 2. Effective wastewater treatment to provide a good water environment and maintain the ecological balance of the water area	Enhancement of reputation External value: products and services, ecosystem protection	Increase revenue and reduce operating costs	1. Expand the business of water resources nt, with potential business opportunities exceeding NTD$100 billion 2. There must be a sewage drainage plan and a sand settling basin on the construction site, with the water not containing harmful ingredients or being polluted so as to be recycled and reused

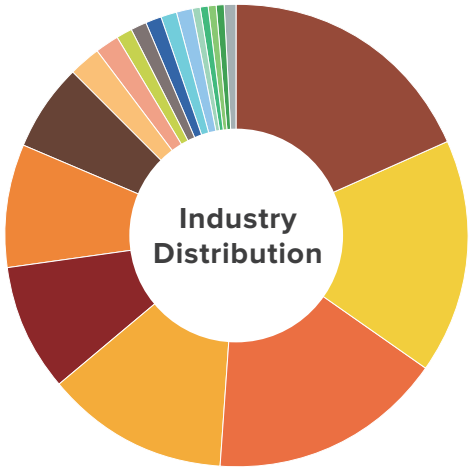
Impact Items	Opportunity description	Opportunity category	Financial impact	Mastering strategies
Soil pollution	Maintain the cleanliness of the site to avoid environmental contamination	Enhancement of reputation External value: ecosystem protection	Reduce operating costs	Review the environmental compliance of project construction sites to avoid being fined by the competent authorities
Waste	1. In the next three years, six waste incineration plants in Taiwan will be gradually replaced or expanded. There is a trend among various countries towards recycling, reuse, and the establishment of zero waste centers. 2. Reuse not only reduces waste generation but also decreases the Company's costs for procuring new materials.	Enhancement of business reputation External value: sustainable resource utilization, environmental conservation	Increase revenue and reduce operating costs.	1. Expanding the waste management business presents a potential market opportunity exceeding NTD$10 billion. 2. Continue to promote monitoring of waste-related issues and focus on innovative applications. 3. Encourage partner manufacturers to reduce waste and have established a reward mechanism. 4. Reduce waste from the early stages of design, use modular construction and recyclable materials. 5. Implement classification and recycling during the construction process, and adopt innovative technologies such as waste energy. At the same time, achieve goals through monitoring and collaboration, reduce environmental impact and improve corporate image.

Identifying the Nature-related Dependency of Supply Chain

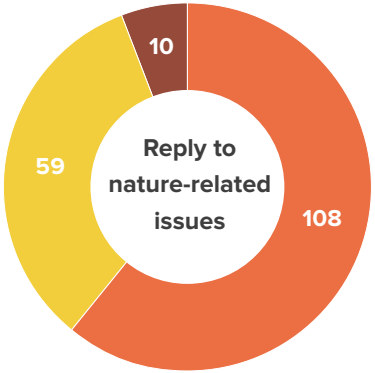
In order to gain a deeper understanding of the dependence of different industrial supply chains on biodiversity and ecology, and the impacts they face, we distributed survey questionnaires to suppliers with whom we had transacted during 2021 to 2023, covering 19 industry groups. This questionnaire included dependency analysis, impact evaluation, and risk management measures.

Through this survey, we gained valuable information about the degree of dependency of different industry supply chains on biodiversity, the impacts they face, and response measures. We had collected a total of 233 questionnaires in Chinese and 52 in English, and retained 177 valid questionnaires for analysis.

We selected the dependency issues with a degree of concern of more than 10% (16 companies) for matrix analysis. The results showed that the high exposure issues were scorching heat and degraded air quality; high-risk issues were the supply shortage of abiotic materials (metals). The comparison results of various nature-dependent issues before and after adjustment showed that "shortage of abiotic material (metal) supply" was a high-risk issue that was relatively difficult for suppliers to mitigate through adjustment. For high-dependency items, CTCI has formulated supplier's biological and ecological risk management indicators and measurement units for subsequent tracking of dependence levels.

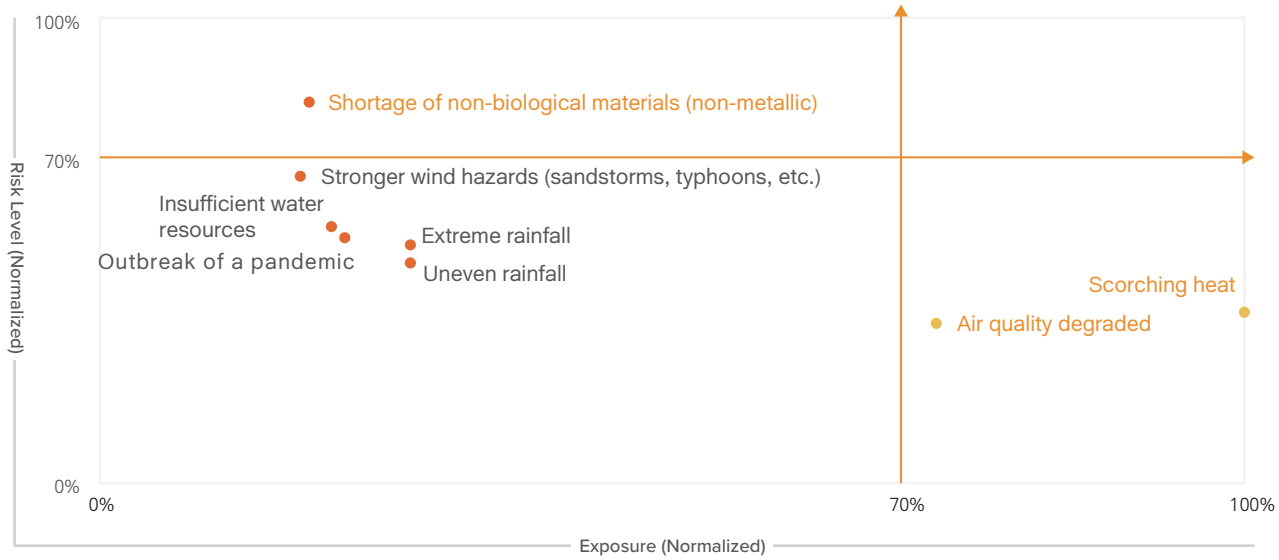


- 33 Service – other
- 29 Electric and machinery equipment manufacturing
- 29 Construction Engineering
- 23 Metal products manufacturing
- 16 Mechanical equipment repair and installation
- 15 Wholesale and retail
- 11 Professional scientific and technical services
- 4 Water supply and pollution control
- 3 Transportation and warehousing
- 2 Basic Metal Industry
- 2 Manufacturing of chemical fertilizers, chemicals, and pharmaceuticals
- 2 Furniture and other manufacturing
- 2 Construction engineering
- 2 Rubber, plastics, and non-metallic products manufacturing
- 1 Petroleum and coal products manufacturing
- 1 Automotive and transportation component manufacturing
- 1 Education
- 1 Electricity and gas supply
- 1 Electronic Components Industry

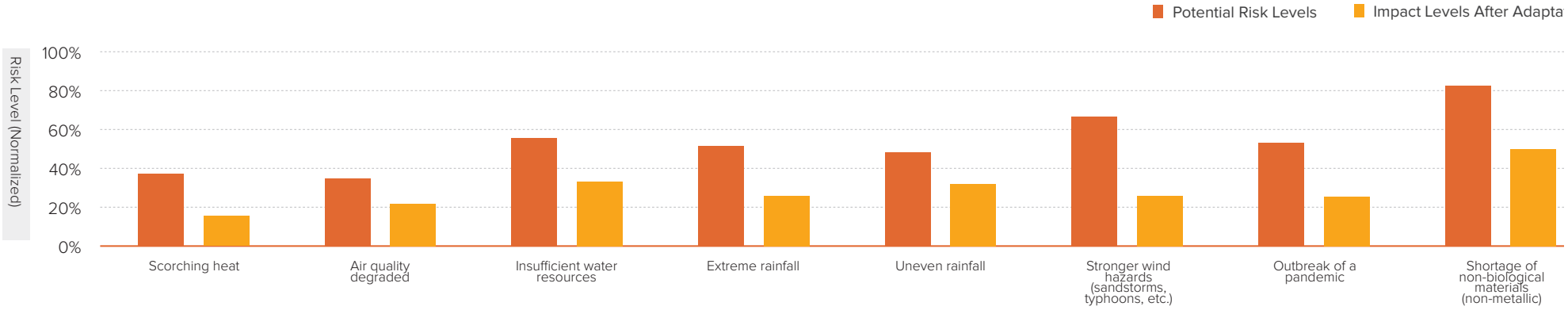


- We have fully understood the risks associated with changes in living organisms and the natural environment where it operates
- We have partially understood the risks associated with changes in living organisms and the natural environment where it operates
- We have not yet understood the risks of changes in the natural environment around where it operates

Supply chain dependency matrix analysis



Changes in Risk Before and After Adapting to Nature-Related Issues

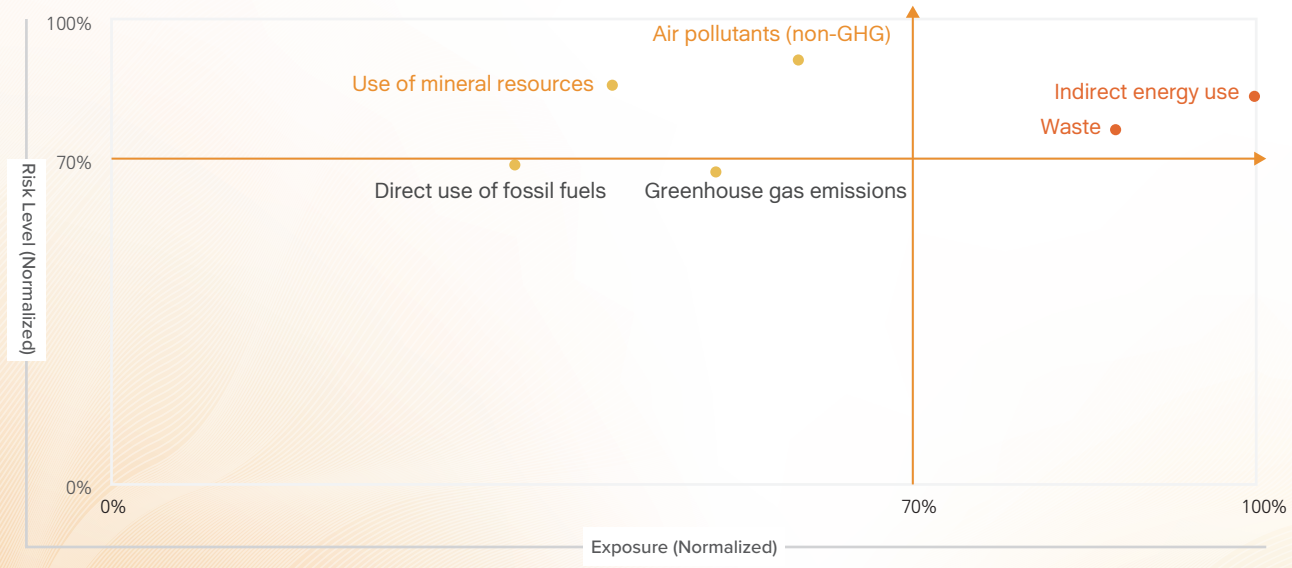


Dependency items	Establish early warning mechanism for suppliers	Risk management indicator (Indicator)	Metric
Scorching heat	Temperature Forecast (Central Weather Administration)	1. Increased power consumption due to high temperature 2. Changes in production capacity due to high temperatures	1. Relationship between power consumption and temperature change 2. Relationship between production capacity and temperature change
Degraded air quality	Air quality index (Central Weather Administration)	Degraded air quality affects operations	Impact of degrading air quality index on supplier operations
Shortage of supply of abiotic materials (metals)	Obtain information related to key materials, including geopolitical risks	Quantity of high-risk natural products derived from metallic minerals	The weight of high-risk natural products, including its ratio to the total amount of natural products, is divided into: 1. Origin 2. From the Sustainability Management Plan or related certification schemes

Identifying the Nature-related Impact of Supply Chain

Similar to the identification of dependence on nature, we selected the impact issues with a degree of exposure of more than 10% (17 companies) in the questionnaires returned by suppliers for matrix analysis. The results showed that the high risk and high exposure issues were indirect energy use, waste substances; high-risk issues were air pollutants and the use of mineral resources. For high-impact items, CTCI has formulated supplier's biological and ecological risk management indicators and measurement units for subsequent tracking of dependence levels.

Supply chain impact matrix analysis



Impact Items	Risk management indicator (Indicator)	Metric	Supplier Survey Items
Indirect energy use	Energy consumption Renewable energy consumption	Unit of energy consumption: 1. Total energy consumption 2. Energy intensity Renewable energy consumption: 1. Types of renewable energy 2. Market classification	1. Total energy consumption 2. Energy intensity 1. Usage or ratio of renewable energy 2. Level of compliance with regulatory requirements
Waste	Waste disposal volume	Classified according to different disposal methods: 1. Industrial waste output 2. Domestic waste output 3. Plastic waste output	1. Output from waste disposal 2. Waste disposal measures and related data
Air pollutants	Air Pollution Control Act-related regulations	Different industries have different statutory air pollutants (emissions)	1. Establish indicators which do not violate the Air Pollution Control Act 2. Establish air pollution indicators (in compliance with laws and regulations) for suppliers in specific industries
Use of mineral resources	Quantity of high-risk natural products derived from metallic minerals	The weight of high-risk natural products, including its ratio to the total amount of natural products, is divided into: 1. Origin 2. From the Sustainability Management Plan or related certification schemes	1. Production volume by region 2. Have the Sustainability Management Plan or related certification schemes beem formulated?

Climate and Nature

Response Strategy

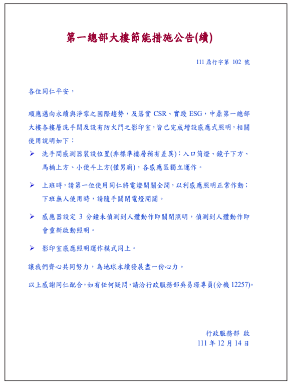
3

From a value chain perspective, CTCI not only reduces its own greenhouse gas emissions, but has also established the "CTCI Supplier Net Zero Alliance" to work with suppliers through capacity building to jointly reduce carbon emissions. This initiative aims to build a low-carbon supply chain and further promote green engineering, reducing emissions across the entire project life cycle. Through these efforts, CTCI hopes to exert its impact to make the environment better, joining efforts to move toward the 2050 net zero goals.

3.1 Organizational Emisssion Reduction

3.1.1 CTCI's Reduction Initiatives

Based on the greenhouse gas inventory results, CTCI inspected the reduction opportunitiesfor each emission source in the headquarters building and each construction site. In addition to regularly inspecting equipment such as air-conditioning, lighting, sockets and elevators, the company implements related energy-saving measures and periodically evaluates their effectiveness.. The Company issues announcements from time to time to remind the staff to develop energy-saving habits, establish an energy-saving corporate culture, and constantly prioritize energy conservation and carbon reduction in daily operations.



第一總部大樓節能措施公告(續)

111 鼎行字第 102 號

各位同仁平安，

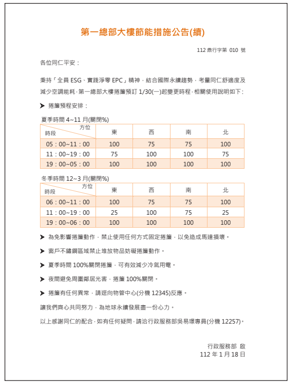
順應邁向永續與淨零之國際趨勢，及落實 CSR、實踐 ESG，中鼎第一總部大樓各樓層洗手間及設有防火門之影印室，皆已完成增設感應式照明，相關使用說明如下：

- 洗手間感測器裝設位置(非標準樓層稍有差異)：入口筒燈、鏡子下方、馬桶上方、小便斗上方(僅男廁)，各感應區獨立運作。
- 上班時，請第一位使用同仁將電燈開關全開，以利感應照明正常作動；下班無人使用時，請隨手關閉電燈開關。
- 感應器設定 3 分鐘未偵測到人體動作即關閉照明，偵測到人體動作即會重新啟動照明。
- 影印室感應照明運作模式同上。

讓我們齊心共同努力，為地球永續發展盡一份心力。

以上感謝同仁配合，如有任何疑問，請洽行政服務部吳易璟專員(分機 12257)。

行政服務部 啟
111 年 12 月 14 日



第一總部大樓節能措施公告(續)

112 鼎行字第 010 號

各位同仁平安：

秉持「全員 ESG、實踐淨零 EPC」精神，結合國際永續趨勢，考量同仁舒適度及減少空調能耗，第一總部大樓捲簾預訂 1/30(一)起變更時程，相關使用說明如下：

- 捲簾預程安排：

夏季時間 4~11 月(關閉%)

時段 \ 方位	東	西	南	北
05：00~11：00	100	75	75	100
11：00~19：00	75	100	100	75
19：00~05：00	100	100	100	100

冬季時間 12~3 月(關閉%)

時段 \ 方位	東	西	南	北
06：00~11：00	100	75	75	100
11：00~19：00	25	100	75	25
19：00~06：00	100	100	100	100

- 為免影響捲簾動作，禁止使用任何方式固定捲簾，以免造成馬達損壞。
- 窗戶不鏽鋼區域禁止堆放物品妨礙捲簾動作。
- 夏季時間 100%關閉捲簾，可有效減少冷氣用電。
- 夜間避免周圍鄰居光害，捲簾 100%關閉。
- 捲簾有任何異常，請逕向物管中心(分機 12345)反應。

讓我們齊心共同努力，為地球永續發展盡一份心力。

以上感謝同仁的配合，如有任何疑問，請洽行政服務部吳易璟專員(分機 12257)。

行政服務部 啟
112 年 1 月 18 日

Major Energy Saving Measure

Location	Item	Measures	Energy Saved (kWh)	CO_2e reduced (ton-CO_2e)
Headquarters building	Solar photovoltaic modules	1. Installation of a 55.08 kW solar photovoltaic system in the first headquarters building 2. The second headquarters building's 43.56 kW solar system has transitioned from a wholesale model to self- consumption	51,950	25.66
	Electric vehicles	1. Gradually replacing business vehicles with EVs based on their lifespan 2. Electric bollards installed in the headquarters building	71,155	18.50
Global construction sites	Energy-saving electrical appliances	Energy-saving electrical appliances are used in the construction offices.	709,533	350.51
	Electrification of construction equipment	Electric stackers are used in the warehouse at construction sites	43,491	8.13

Note 1 :The carbon emission coefficient for electricity is 0.494 tons CO_2e per 1,000 kWh.

Note 2:The electric vehicles were gradually phased out starting in 2022. The energy consumption prior to the improvements is based on the energy consumption of company vehicles in 2022, while the energy consumption after the improvements is based on the energy consumption of company vehicles in 2024. The remaining three energy-saving measures is based on the energy consumption for the year 2024.

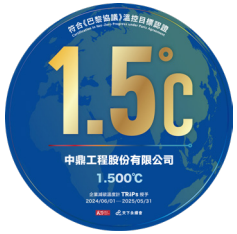
Usage of green energy and subsequent plans

Plan & Target		Actual (%)	Achieved or not
2022	The green electricity usage rate is 0.7%	100 MWh of green electricity (The green electricity usage rate is 0.9%)	✔
2024	The green electricity usage rate is 15%	3,051 MWh of green electricity (The green electricity usage rate is 22%)	✔
2030	The green electricity usage rate in headquarters building is 100% (45% use of green electricity across CTCI)	-	-
2050	The green electricity usage rate in the headquarters building, plus domestic and foreign construction sites is 100% (100% use of green electricity across CTCI)	-	-

3.1.2 Climate-related External Initiatives

Net Zero Emissions Initiatives	2030	Commitment to achieving 100% net zero emissions at the headquarters and offices
	2050	Commitment to achieving 100% net-zero emissions at the headquarters, offices, and production sites

In October 2021, CTCI joined the "Taiwan Net Zero Emissions Association," jointly established by the Taiwan Institute for Sustainable Energy and 26 leading domestic enterprises. John Yu, c Chairman of CTCI, was elected as an Executive Director, and Michael Yang, Chairman Vice Chairman , was elected as a Director. The purpose of the Association is to "advocate for enterprises and organizations to realize net-zero emissions and assist the government in achieving carbon neutrality in Taiwan." It aims to lead various sectors through action, enhance societal awareness of net-zero carbon issues in Taiwan, and serve as a communication bridge among the government, businesses, and the public, working together to create a triple-win situation and accelerate the realization of the vision of net-zero emissions across Taiwan. Accordingly, CTCI has committed to achieving 100% net zero for its headquarters and offices by 2030, and 100% net zero for its headquarters, offices, and production operations by 2050, contributing to global reduction efforts.



CTCI supports CommonWealth Magazine's "Corporate Carbon Reduction Thermometer," which adopts internationally recognized standards and methodologies to help companies easily assess whether their carbon reduction targets align with global goals. Based on this evaluation, CTCI's carbon reduction pathway and targets are aligned with the Paris Agreement goal of limiting global warming to within 1.5° C. CTCI was rated as "Outstanding Performance" (below 1.6° C), highlighting not only the effectiveness of its emission reduction efforts, but also its strong commitment to safeguarding the 1.5° C target.

3.2 Promote Reduction by Value Chain reduction to Expand Influence in Sustainability

Through these Green Engineering projects, CTCI has not only striven to achieve the net zero goal but has worked with proprietors and supply chain partners to build a "Green Supply Chain" to safeguard the sustainability of our planet Earth. In 2023, we form a "CTCI Supplier Net Zero Alliance" to support each other through the alliance. We will ask suppliers to conduct "greenhouse gases inventory" and report the amount of inventory to actively demonstrate the effectiveness of carbon emissions reduction, and provide our customers with "zero EPC value services" to move together towards the sustainable net zero goal, creating a triple win situation.

100%

signing rate of "Vendors' Commitments to Corporate Sustainable Management and Net Zero."

229

suppliers have completed a simplified carbon inventory (as of December 2024)

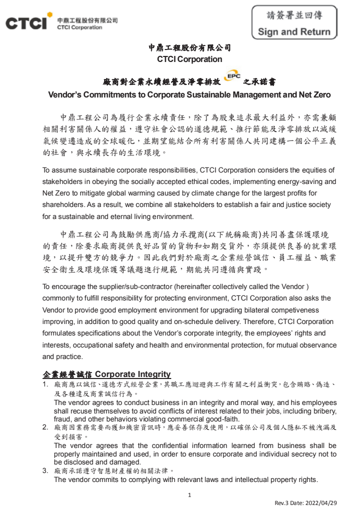
(as of December 2024)

To effectively and substantially enhance the sustainability and net zero capabilities of our suppliers, CTCI has developed a new supplier cooperation model that aims to improve the greenhouse gas (GHG) management capabilities of suppliers and maintain long-term and stable relationship with them. We also create and upload tutorial videos on the CTCI Education Website that teach suppliers how to take inventory on their GHG emissions. We also train some of our staff to conduct on-site audit and assist our suppliers to take inventory on their GHG emissions.

Name of programs	Project Content	Target suppliers	Number of suppliers	Qualitative benefits	Quantitative benefits
Supplier carbon management capacity-building	■ Manufacturer: Through the government counseling program, the Company works with external consultants to assist suppliers in greenhouse gas inspections and provide guidance on improving energy-saving and carbon-reduction performance. ■ Non-Manufacturer: CTCI assists suppliers in conducting greenhouse gas inventory and provides guidance on improving energy conservation and carbon reduction performance.	■ Tier 1 suppliers of year 2024 and members of the Supplier Alliance for Net Zero Emissions*	■ 229,including 88 anufaturers and 141 non-manufaturers	■ Suppliers become capable of conducting greenhouse gas inventories and improving their energy-saving, carbon-reduction performance.	■ Trained 229 suppliers to complete a simple carbon inventory and understand how much carbon emissions they emit.
Workshop	■ Established the Supplier Alliance for Net Zero Emissions to cultivate suppliers' sustainability awareness and facilitate carbon reduction knowledge sharing. In 2024, three workshops were held for alliance members, featuring external consultants to enhance sustainability understanding and expand the alliance's collective impact.	■ Members of the Supplier Alliance for Net Zero Emissions*	■ 83	■ Collaborated with suppliers to optimize processes, promote energy conservation and carbon reduction, while contributing to Taiwan' s economic development.	■ Three workshops were held on May 13, June 27, and November 28 in 2024, titled: "ESG Trends Analysis," "Next-Gen Energy Management and Carbon-Negative Technologies," and "Promoting Energy Efficiency and Case Sharing."
Sustainability Insights	■ By regularly sending out e-newsletters covering diverse topics, CTCI communicates global sustainable development trends to enhance suppliers' soft power. ■ Encourage suppliers to participate in sustainability-related events such as engineering forums and environmental education activities to strengthen supplier sustainability literacy.	■ Tier-1 suppliers and members of Supplier Alliance for Net Zero Emissions	■ 795	■ Raise suppliers' awareness of sustainability	■ Published 12 issues of ESG e-newsletters. ■ Held one Sustainable Engineering Forum, which saw 244 participants (including group suppliers). ■ Organized one environmental education event, partnering with two suppliers to take concrete environmental action and promote green living practices.

*: This includes suppliers whom CTCI regularly works with, suppliers who are willing to collaborate with CTCI on carbon emissions reduction, or CTCI's long-term contract suppliers

As a part of its environmental effort, CTCI's "Vendor's Commitments to Corporate Sustainable Management and Net Zero" requires suppliers to assess and disclose their dependence on, and impacts on, local and global biodiversity. Suppliers are expected to avoid deforestation, minimize negative environmetal impacts over time, and actively enhance positive contributions. In addressing biodiversity-related risks, they should fully align with sustainable development principles across all stages, including mining, production, procurement, supply chain operations, usage, and disposal. By working in partnership with CTCI, suppliers play a vital role in supportingnature conservation efforts.



CTCI 中鼎工程股份有限公司 CTCI Corporation

請簽署並回傳 Sign and Return

中鼎工程股份有限公司
CTCI Corporation

廠商對企業永續經營及淨零排放 EPC 之承諾書
Vendor's Commitments to Corporate Sustainable Management and Net Zero

中鼎工程公司為履行企業永續責任，除了為股東追求最大利益外，亦需兼顧相關利害關係人的權益，遵守社會公認的道德規範、推行節能及淨零排放以減緩氣候變遷造成的全球暖化，並期望能結合所有利害關係人共同建構一個公平正義的社會，與永續長存的生活環境。

To assume sustainable corporate responsibilities, CTCI Corporation considers the equities of stakeholders in obeying the socially accepted ethical codes, implementing energy-saving and Net Zero to mitigate global warming caused by climate change for the largest profits for shareholders. As a result, we combine all stakeholders to establish a fair and justice society for a sustainable and eternal living environment.

中鼎工程公司為鼓勵供應商/協力承攬商(以下統稱廠商)共同善盡保護環境的責任，除要求廠商提供良好品質的貨物和如期交貨外，亦須提供良善的就業環境，以提升雙方的競爭力。因此我們對於廠商之企業經營誠信、員工權益、職業安全衛生及環境保護等議題進行規範，期能共同遵循與實踐。

To encourage the supplier/sub-contractor (hereinafter collectively called the Vendor) commonly to fulfill responsibility for protecting environment, CTCI Corporation also asks the Vendor to provide good employment environment for upgrading bilateral competiveness improving, in addition to good quality and on-schedule delivery. Therefore, CTCI Corporation formulates specifications about the Vendor's corporate integrity, the employees' rights and interests, occupational safety and health and environmental protection, for mutual observance and practice.

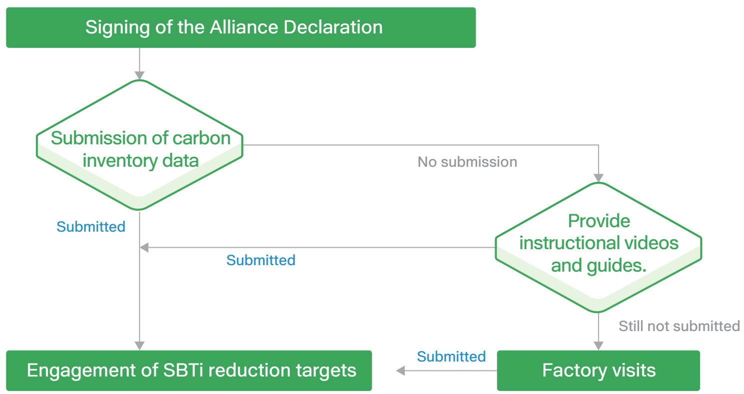
企業經營誠信 Corporate Integrity

1. 廠商應以誠信、道德方式經營企業，其職工應迴避與工作有關之利益衝突，包含賄賂、偽造、及各種違反商業誠信行為。
The vendor agrees to conduct business in an integrity and moral way, and his employees shall recuse themselves to avoid conflicts of interest related to their jobs, including bribery, fraud, and other behaviors violating commercial good-faith.
2. 廠商因業務需要而獲知機密資訊時，應妥善保存及使用，以確保公司及個人隱私不被洩漏及受到損害。
The vendor agrees that the confidential information learned from business shall be properly maintained and used, in order to ensure corporate and individual secrecy not to be disclosed and damaged.
3. 廠商承諾遵守智慧財產權的相關法律。
The vendor commits to complying with relevant laws and intellectual property rights.

1

Rev.3 Date: 2022/04/29

Building carbon management capabilities and execution procedures for suppliers



Supplier Meeting

CTCI's Supplier Meeting is held every two years, with the theme for 2025 being "Hand in Hand for Sustainable Prosperity." The focus will be on strengthening the resilience of the supply chain and promoting sustainable development. Additionally, the conference will introduce CTCI's plans and goals regarding sustainability and net-zero initiatives. A total of 333 participants from 105 suppliers across 11 countries will attend, both online and in-person.

This year's conference invites suppliers to share their experiences in promoting ESG, aiming to inspire and provide valuable insights for all participating vendors. To leverage group synergies, CTCI has invited its subsidiary, CTCI Advanced Systems Inc., to talk about its "Mr. Energy" system. This energy management and greenhouse gas inventory tool is designed to assist suppliers their carbon reduction goals.

The event also recognized 20 outstanding companies, ranked based on their evaluation scores across various sectors, including piping, equipment, electrical, instrumentation and control, contracting, and safety and environmental categories. Additionally, a special "Sustainability Award" was established to honor six CTCI partners for their outstanding achievements in sustainability, including innovative practices, environmental and social contributions, and long-term commitment to sustainable development.

Through the Supplier Meeting, CTCI aims to expand the benefits of ESG, and collaborate with suppliers toward a future of sustainable operations.

3.3 Driving Global Net-Zero through Green Engineerings across the Entire Life Cycle of Projects

CTCI promotes sustainability through the iEPC (Engineering, Procurement and Construction) technology, which is achieved in green engineering – "green technology, green contracting, green investment." and promotes the low-carbon supplier chain to help owners reduce carbon emissions during the factory construction, operation and demolishing phases.

EPC Projects

Client's Scope

E

- Implement energy-saving and carbon-reduction solutions

P

- Procure low-carbon products
- Maximize local procurement**
- Prioritize tenders for ESG high-performing suppliers

C

- Digitalization of engineering information
- Implement automation with smart robots
- Modular construction implementation

O&M

- Apply Digital Twin technology
- Utilize the intelligent energy management system (Mr. Energy)

Demolish

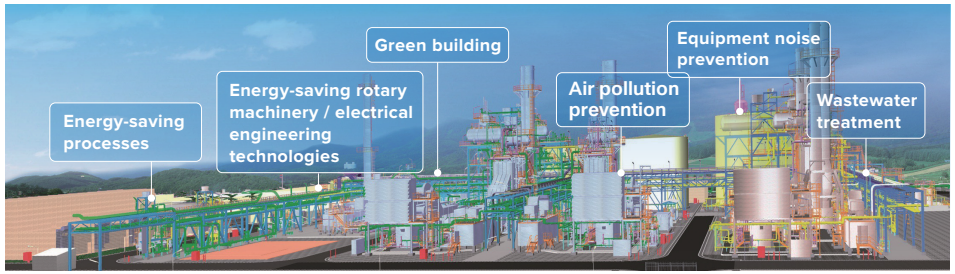
- Proper classification and recycling of construction waste

3.3.1 Green Technology

"Green technology" refers to the comprehensive lifecycle energy-saving and carbon reduction technical solutions proposed by CTCI during the EPC (Engineering, Procurement, and Construction) process of plant construction. The following outlines how net-zero EPC value services are delivered to clients:

a.Design and Engineering Phase	b.Material Procurement Phase:	c.Transportation Phase	d.Construction Phase	e.Operational Phase	f.Demolition Phase
Utilize the most feasible green technologies during the design stage, including energy and water conservation, , green building practices, air pollution control, and value engineering, to mitigate environmental risks.	Prioritize the use environmentally friendly, renewable, and recycled materials. Suppliers with a track record in sustainability and high performance should be prioritized during the bidding process.	Promote local procurement to reduce transportation costs and carbon emissions.	Adopt modular and automated technologies to reduce on-site workload. Implement energy-saving, water-saving, and waste-reduction measures to lower carbon emissions during construction.	Improve energy efficiency in green building systems such as air conditioning, and implement energy-saving technologieslike wind turbine arrays to reduce electricity usage and carbon emissions. The use of intelligent energy management systems, such as Mr. Energy, is also recommended.	Construction waste generated on-site is the primary source of waste. Efforts should be made to minimize waste within site boundaries, and with proper classification and recycling of construction debris.

Through the application of "Green Techniques," CTCI is estimated to have achieved the following benefits during the operational phase of the projects built for its clients between 2022 and 2024:



1,570 million kWh
In cumulative power savings, equivalent to power consumption of 417,288 households per year

16,298 TJ
In cumulative energy saving of green engineering

20.5 million tons
In co_2e reduction, equivalent to the annual carbon absorption of 52,577 daan forest parks

113.62 million tons
In water savings, equivalent to 137 days of taipei city's water use

* Calculation based on the plant life cycle**
* All data are verified by SGS**

3.3.2 Green Contracting

Green contracting refers to the execution of eco-friendly engineering projects by CTCI. Taking the backlog of contracts as an example, the value of CTCI's low-carbon and green engineering projects reached NT$217.4 billion in 2024. The proportion of these project increased from 23% in 2015 to 65% in 2024, representing a substantial growth of 396%.

The green engineering projects undertaken by the CTCI Group are a crucial component in effectively mitigating climate change and environmental impacts. Taking the petrochemical industry as an example, this high-energy-consuming sector must confront stricter environmental sustainability and net-zero requirements in response to the impacts of global warming and climate change. Enhancing energy efficiency and reducing consumption is critical, which involves phasing out outdated facilities and upgrading existing plants to improve operational efficiency. Priority is placed on incorporating low-energy design strategies to actively support clients in engineering design and construction. In addition, the scope of CTCI Group's contracted projects has expanded in response to current trends, now encompassing various environmental protection and green energy initiatives. These include projects related to wind energy, solar energy, renewable fuels (such as biodiesel), waste management (such as energy resource centers), water recycling plants, wastewater treatment, air pollution improvement, public transportation, green building, carbon capture, and carbon storage.

MRT construction project

North District Water Resources Recycling Center in Taoyuan

Green Contracting: Green, Low-Carbon & Eco-Friendly Projects Grow Each Year

Backlog: Grows by

369%

2015

Green, Low-Carbon & Eco-Friendly Projects: 23%

23%

2024

Green, Low-Carbon & Eco-Friendly Projects: 65%

65%

- Kwun Tong CPC third LNG terminal station gasification facility turnkey project
- Hsinta/Taichung/Sunba Power Phase II Gas Recycled Power Plant Turnkey Project
- Guanyin / Zhong Neng / CFXD Offshore Wind Farm Underwater Foundation Yunlin Offshore Wind Farm Transition Pieces Fabrication Work
- Multiple Solar Power Plants
- Molie Quantum Energy Hi-Tech Battery Plant Project
- Renewable Diesel Project in the U.S.
- EPC project for carbon storage of Tiehchenshan
- Design Project for Saudi Crude-to-Chemicals (CTC) Process

3.3.3 Green Investment

"Green investment" refers to CTCI's eco-friendly investment in the form of BOO or BOT, such as reclaimed water plants, biomass energy centers and solar power plants.The TSMC Southern Taiwan Science Park Water Reclamation Plant serves as aprime example. Commissioned by TSMC, CTCI was responsible for the design, construction, and 20-year operation of the plant. The project adopted innovative technology and advanced biological treatment procedures with a low pollution load to significantly reduce energy consumption and sludge generation, delivering multiple benefits including energy conservation , carbon reduction, minimized secondary pollution, and zero wastewater discharge. It is the world's first water reclamation plant that successfully recycles and reuses the industrial wastewater for the semiconductor processes, marking a major milestone in water resource recycling project construction.

CTCI's green investment benefits for 2024 are as follows:

EfW Centers

1.532 billion kWh

in cumulative power generation from EfW plants, able to meet annual power needs of 410,000 households in Taiwan

Solar Power Plants

121.6 million kWh

in cumulative power generation from solar power plants, able to meet annual power needs of 32,000 households in Taiwan

Waste treatment center

2.67 million tons

of waste treated

Sewage treatment and reclaimed water treatment plant

74.28 million tons

of sewage treated

Waste solvent recycling plant

14,913 tons

of waste solvent (IPA) treated

3.4 Ecological/Environmental Conservation Strategy and Planning

CTCI establishes a dedicated unit, the Sustainability and Net Zero Office, in collaboration with the Sustainability and Net Zero Committee, to jointly promote sustainability-related matters across departments. The unit operates under the supervision of the Sustainability Superintendent. The Sustainability Superintendent and the Chief Sustainability Officer regularly report not only the assessment and response of climate and nature-related risks and opportunities, but also the outcomes of nature conservation and biodiversity protection to the Sustainability and Information Security Committee established under the Board of Directors.

CTCI has set targets for biodiversity conservation. By 2030, our operational sites aim to achieve No Net Loss (NNL) and adhere to No Gross Deforestation standards. By 2050, our operational sites strive to achieve Net Positive Impact (NPI), while our value chain aims for No Net Loss and compliance with No Gross Deforestation standards.

Strategic Focus

2030

By 2030, biodiversity at operational sites will achieve No Net Loss (NNL) and comply with Zero Deforestation standards.

2050

By 2050, operational sites will achieve Net Positive Impact (NPI), while the value chain will achieve No Net Loss (NNL) and comply with Zero Deforestation standards.

Sustainable Engineering Leader: Establishing a natural environment value chain management mechanism + Regular monitoring and guidance.

Strategic Goals and Actions

- An impact analysis is conducted on the surrounding fauna, flora, habitats, and water sources when establishing a new construction site.
- Propose avoidance and mitigation measures.
- Implement recovery measures for unavoidable impacts to minimize the effects.
- Compensate for irreparable impacts (e.g., environmental restoration).
- Prioritize the procurement of products certified by internationally recognized organizations (e.g., FSC).
- Disclose nature-related risks and mitigation measures based on the TNFD framework.
- Incorporate biodiversity and zero-deforestation policies into the code of conduct.

- Achieving No Net Loss (NNL) of biodiversity at operational sites.
- Ensuring operational sites comply with Zero Deforestation standards.
- Establishing a global monitoring system for zero deforestation at operational sites and tracking compliance with national regulations.
- Requiring the value chain (including primary and non-primary suppliers) to comply with local regulations, fulfill commitments to protect biodiversity, and prevent deforestation.

- Continuously engaging in ecological conservation at operational sites, regularly monitoring species and environmental changes to gradually achieve the NPI goal by 2050.
- Sharing experiences of biodiversity conservation with the value chain.
- Providing incentive mechanisms to drive the value chain towards achieving No Net Loss (NNL).
- Regularly reviewing the compliance of the value chain with Zero Deforestation standards.

- Achieve Net Positive Impact (NPI) at operational sites.
- Attain No Net Loss (NNL) within the value chain.
- Ensure compliance with zero-deforestation standards throughout the value chain.

2023 — 2030 — 2040 — 2050

3.4.1 Nature conservation measures

Within a 2-km radius of the construction site, there are projects that impact on wildlife protection areas and wetlands, measures have been taken to address the terrestrial and marine ecological environments. Prior to project implementation, an Environmental Impact Assessment (EIA) report is obtained to develop a management plan. The following table illustrates the potential impacts during the construction and operation phases, as well as the corresponding mitigation strategies. In addition, all personnel are required to undergo environmental education training on air pollution prevention, water pollution control, waste sorting and treatment, and other relevant topics before entering the construction site. During gatherings or meetings, relevant provisions of ecological conservation laws and the necessary actions for ecological protection are explained to the participants. Furthermore, re-education measures are implemented for individuals or contractors found to be in violation of regulations.

Ecology	Impact	Strategies and Improvement Meatures
Terrestrial Ecology	**Construction Period** 1. The dust and noise generated by construction vehicles cause poor growth of terrestrial animals and plants. 2. The noise, vibration, and dust generated by construction machinery affect terrestrial organisms. 3. Trucks generate dust, noise, vibration, and exhaust emissions during equipment or material transportation. **During the operational phase** 1. The operation of factory facilities generates noise and vibrations that impact terrestrial organisms. 2. During the transportation of raw materials, trucks generate dust, noise, vibrations, and exhaust emissions. 3. The production process generates emissions that affect air quality and impact terrestrial organisms.	**Avoidance** 1. During road planning, efforts will be made to avoid freshwater ponds as much as possible. 2. Equipment prone to vibration shall be set in a place far away from prone areas. **Mitigation** 1. The width of the road passing through windbreak forests will be minimized to reduce the impact. 2. Set up containment facilities and sprinkle water regularly to reduce dust. 3. Vehicles transporting earth shall be covered and car washing stations shall be set at the entrances and exits to prevent soil and particles from polluting the environment around the road. 4. Select excellent transportation tools and construction machines and tools, and maintain them regularly to reduce the exhaust gas and meet the emission standards. 5. Use machines and tools with low noise or silencing equipment. 6. Use temporary noise insulation facilities for construction machines and tools with high noise to reduce the impact. 7. Improve road conditions and reduce noise caused by vehicle vibration. 8. Construction machines and tools with low vibration are adopted. 9. Avoid truck overload and strictly limit the weight. 10. Installation of exhaust gas recovery equipment to ensure compliance with standards before emissions into the atmosphere. 11. Avoid conducting construction activities during nighttime to reduce the disturbance to surrounding habitats caused by lighting and construction noise. **Restoration** 1. In the planning of green belts and landscaping, priority will be given to selecting native tree species that combine windbreak, soil and water conservation, and aesthetic enhancement. 2. Natural construction methods are adopted to create habitats. 3. Continuous monitoring of the ecology and environment serves as the foundational data for setting up and planning environmentally friendly measures in the surrounding area.

Ecology	Impact	Strategies and Improvement Meatures
Marine Ecology	**Construction Period** 1. During the construction period, dredging and earth filling can easily lead to water quality deterioration. 2. Improper disposal of construction waste leads to marine pollution and poses a qthreat to marine ecosystems. 3. The sediment generated during construction flows into water sources and affects marine organisms. **During the operational phase** 1. The discharge of cooling water results in increased seawater temperature, which will impact the survival of coral reefs, fish, and other marine organisms. 2. The indiscriminate discharge of wastewater poses a threat to marine organisms. 3. The improper discharge of operational waste into the ocean without proper treatment.	**Avoidance** 1. Set up an intercepting system and a silting basin to discharge the runoff water and general drainage sand after treatment, so as to avoid polluting the seawater quality. 2. General household waste and construction debris are entrusted to local sanitation authorities or government-approved professional waste management companies for collection and disposal, avoiding arbitrary dumping of waste that may pollute the ocean. **Mitigation** 1. Sand dredging and land reclamation works will be carried out using low-pollution operating methods to minimize potential construction pollution. 2. Strengthen the maintenance of construction machines and tools and transportation tools to avoid oil pollution in water quality. 3. Domestic wastewater will be treated in wastewater treatment facilities before being discharged, thereby reducing water pollution. 4. Construction activities that are prone to cause water quality deterioration will be scheduled to avoid the breeding and nursery seasons of marine organisms as much as possible. 5. After the cooling water is cooled to an appropriate temperature and the water quality is confirmed, it can be discharged into the sea to reduce the impact of temperature on marine organisms. 6. Conducting thorough environmental monitoring to track the impacts of construction activities and promptly notifying the construction units of the monitoring results, in order to take timely responsive measures. 7. Installing temporary sedimentation basin and implementing temporary covering and waterproofing measures at each excavation site to reduce sediment runoff and minimize water pollution in the adjacent marine areas. **Restoration** 1. Continuously monitor the ecology and environment to generate the foundational data for setting up and planning environmentally friendly measures in the surrounding area.

Client/Project	Sensitive zone	Species of concern	Impact minimization and conservation measures during the construction phase
Taipower/ Taichung Power Plant	→ Dadu River Mouth Major Wildlife Habitat (IUCN category IV) → Dadu Estuary Important Wetland (National level)	Black-winged kite, eurasian kestrel, and brown shrike	1. During construction phase, the construction area is fenced and low-noise construction machines are used to reduce noise disturbance and avoid falling dust and human interference to the surrounding environment. 2. Plan a fixed transportation route for construction vehicles to reduce theiraccess to reduce their access, minimizing interference from noise and vibration. 3. The exposed surface after construction is sprayed with grass seed to speed up the recovery of the vegetation and enhance soil and water conservation. 4. Harmful methods such as incineration or use herbicides usage to remove surface vegetation during the land preparation stage is prohibited
Taipower/ Hsinta Power Plant	→ Yongan Important Wetland (Regional level)	black-faced spoonbill, greater painted snipe, osprey, little tern, eurasian kestrel, brown shrike, and peregrine falcon	1. Implement ecological conservation education and training for construction personnel. Frightening and intentionally disturbing wildlife is prohibited. When encountering wildlife that appears to be injured, individuals should report it to a wildlife rehabilitation unit. 2. Temporary soundproof walls or construction fences featuring sound insulation properties, such as close-fitting construction fences, are erected along the base boundary. Appropriate soundproofing or anti-vibration measures are implemented throughout the project, including the use of low-noise and low-vibration equipment, and concurrent construction operations involving a great deal of machinery are avoided. 3. Except for the necessary continuity construction, construction at night will be avoided. Lights and construction noise will be reduced to minimize interference to the surrounding habitats. 4. Protective measures were taken to prevent construction sewage from entering Yong An Wetland and the surrounding water area, and sprinkle water regularly to reduce construction dust and water pollution, while maintain the quality of the water habitat environment. 5. 5. Set up grit chamber, closure ditch and other facilities to reduce the interference of construction sewage or sediment to the adjacent water body, and treat the discharged wastewater to meet the standards before discharge. 6. Prohibit arbitrary dumping of waste, include it in the self-inspection items of construction and acceptance inspection, and maintain the environmental quality of water habitats. 7. Domestic sewage from construction workers shall be properly collected and treated.

3.4.2 External initiatives and partners

To strengthen its influence on natural ecology and environmental protection, CTCI not only takes actions internally but also collaborates with external initiatives and partners, including various non-governmental organizations. Through these partnerships, CTCI actively invites its employees, their families, and value chain to participate in initiatives aimed at raising public awareness and understanding of the value and importance of biodiversity conservation, and promote the mainstreaming of biodiversity.

TNFD Early Adopter

After TNFD finalized the final version of the framework in September 2023, it became the standard for companies to disclose natural risks and related strategies. CTCI promised to disclose the nature-related risks and strategies of company operations and became the first batch of TNFD early adopter companies in the world. From 46 countries around the world, there are 320 commercial and financial institutions have joined, and 14 companies from Taiwan are listed. The 2023 Climate and Nature-related Financial Disclosure Report published by CTCI was selected as a list of illustrative examples of reporting the TNFD, and only five companies in Taiwan were included.

Business for Nature initiatives

The initiative of more than 1,500 business and financial institutions from 86 countries, including CTCI Group, is calling for ambitious and collective action for nature. Healthy societies, resilient economies and thriving businesses rely on nature. Governments must adopt policies now to reverse nature loss in this decade. Together let's protect, restore and sustainably use our natural resources. The hope is to reverse nature negtive by 2030.

Participate in the "Earth Hour" campaign

CTCI Group has been actively participating in the "Earth Hour" campaign initiated by the World Wide Fund (WWF). All our domestic and overseas companies have joined this global initiative by switching off nonessential electricity for one hour, demonstrating our commitment to sustainable development. To make colleagues feel more involved, we specially organize activities on the social media Facebook. If you respond together, you can participate in the lucky draw.

Responding to the "Take Action for Tamsui River" campaign launched by CommonWealth Magazine

CTCI participates in this initiative to restore clean water sources and preserve the biodiversity of the Tamsui River. We encourage our colleagues to support this initiative through concrete actions in their daily lifes. The following are ways to participate:

(1) Reduce the use of disposable packaging and avoid purchasing products that are excessively packaged.
(2) Encourage green procurement, such as choosing environmentally friendly labels and low-carbon products.
(3) Supervise waste disposal contractors to prevent indiscriminate dumping of waste.
(4) Drive the value chain by adopting high-standard wastewater treatment and reducing construction waste.

Guandu Nature Park: Tamsui River Wetland Protection

CTCI collaborates with Guandu Nature Park for third year. Guandu Wetland is an important natural asset in Taipei City and national level wetland. The program begins with an introduction to wetlands, followed by a professional guided tour of different wetland habitats. Through active participation, participants engage in wetland conservation efforts by eliminating invasive species like the bitter vine (Mikania micrantha), reducing their impact on native species, also performing pool maintenance and removing wetland silt. We contribute to the protection of biodiversity in the Guandu Wetland.

A total of 61 group colleagues, their families and external supplier partners participated in this event to implement environmental actions together, protect Tamsui River and wetlands, and strive to maximize sustainable influence from the perspective of the value chain and make concrete contributions to biodiversity.

Urban Explorers Biodiversity Collaboration Project

CTCI, together with Zhishan Cultural and Ecological Garden and nine cultural exhibition halls in Taipei City, jointly practice ecological conservation, and join hands with the public to become urban explorers. Together, they participate in surveys and implement conservation plans to protect Taipei City's biodiversity. Ecological surveys are carried out on average once a week. Through continuous data accumulation, we can roughly compare the differences in species richness in rural areas, waterfront areas, and urban core areas. The number, location, and photos of organisms are recorded in ecological database systems such as eBird, which regularly establishes records of Taipei City's biodiversity. In 2024, a total of 1,792 people participated in the survey, and nearly a thousand species of organisms were surveyed, with fruitful results.

Tree and creek protection actions in Wufengang Creek

Beside Fenfenggang River, it is an old river channel where Shuangxi flows into the Keelung River. It is the only natural river channel in Taipei that is not cemented, and the Linong Wetland where the basin is located is very ecologically rich. CTCI collobates The Beautiful Waterways Association, which is the adopter of Wufengang Creek, Volunteers removed the invasive alien species, and protected the precious plant Barringtonia racemosa. They also conducted water quality testing and creek cleaning by raft, and participated in the Wufengang Creek Land Art Festival to encourage colleagues to pay more attention to natural ecology and environmental protection.

Green New Life - Protecting Habitats in Taiwan

Collaborating with OKO Green continously, we combine fair trade products with habitat conservation, encouraging employees to increase their green consumption. We pledge to donate 10% of the purchase amount to the Taiwan Environmental Information Association, safeguarding 3% of Taiwan's habitats and making our contribution to ecological preservation in Taiwan.

New collaboration with Bluemagpie Tea Social Enterprise will integrate the same watershed area with "watershed recovery" as the core, and improve biological habitats through pesticide-free farming and consumer power.

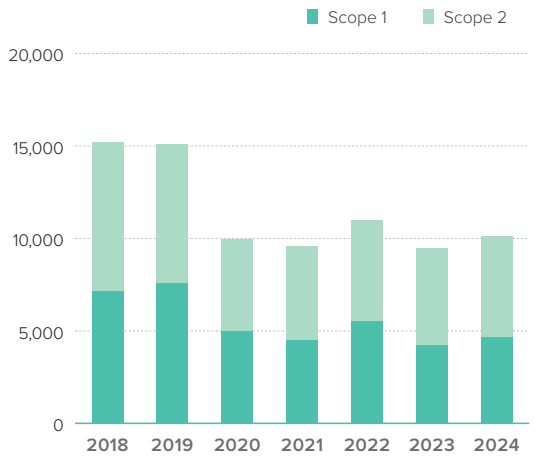
Climate and Nature

Management Indicators and Targets

4

In the 2023 Carbon Disclosure Project (CDP) questionnaire, CTCI received A- (leadership) score for carbon disclosure and A- (leadership) score for supply chain engagement. Each year, we continue to check if there are rooms for improvement in terms of climate change management by filling out such questionnaire, examining the change in questions, as well as benchmark learning. Moreover, our responses to climate change risks and opportunities extend beyond ourselves by working with our upartners upstream and downstream. We encourage them to work with us in terms of identification, analysis, calculation, and reduction of the greenhouse effect and emissions reduction, so we can disclose our indirect carbon emissions.

4.1 Greenhouse Gas Emission Indicators and Targets



Scope 1 & Scope 2 Greenhouse Gas Emissions

Location	Scope[Note 7]	Annual Performance[Note 8] (Ton CO_2e)				Goal
		2021	2022	2023	2024	
Headquarters Building	Scope 1	159	34	22	16	
	Scope 2 (Location Baseline)	2,445	2,509	2,555	2,449	
	Scope 2 (Market Baseline)	2,445	2,458	1,070	967	
Subtotal	Scope 1+2 (Location Baseline)	2,604	2,543	2,577	2,465	
	Scope 1+2 (Market Baseline)	2,604	2,492	1,092	983	
Global Construction Sites	Scope 1	4,318	5,467	4,226	4,667	
	Scope 2 (Location Baseline)	2,677	3,028	4,176	4,461	
	Scope 2 (Market Baseline)	2,677	3,028	4,176	4,461	
Subtotal	Scope 1+2 (Location Baseline)	6,995	8,495	8,402	9,128	
	Scope 1+2 (Market Baseline)	6,995	8,495	8,402	9,128	
Headquarters Building + Global Construction Sites Total	Scope 1	4,477	5,501	4,248	4,683	
	Scope 2 (Location Baseline)	5,122	5,537	6,731	6,910	
	Scope 2 (Market Baseline)	5,122	5,486	5,246	5,428	
	Scope 1+2 (Location Baseline)	9,599	11,038	10,979	11,593	
	Scope 1+2 (Market Baseline)	9,599	10,987	9,494	10,111	
Headquarters Building + Global Construction Sites Total	Sceop 1 Emission Intensity (Ton-CO_2e/ million NTD in revenue)	0.15	0.17	0.09	0.08	
	Sceop 2 Emission Intensity (Ton-CO_2e/ million NTD in revenue)	0.17	0.17	0.15	0.11	
	Sceop 2 Emission Intensity (Ton-CO_2e/ million NTD in revenue) (Market Baseline)	0.17	0.17	0.11	0.09	

2024 Goal: Greenhouse Gas Emissions (Ton-CO_2e) 10,162 (MBA)↓ 11,679 (LBA)↓

2024 Achievements: 10,111 (MBA)↓ 11,593 (LBA)↓ — Achieved 2024 Goals

2025 Goal: 9,257(MBA)↓ 11,134 (LBA)↓ GHG emissions (MBA) decreased by 15.8% compared to the base year.↓

Note 1. The scope of GHG inventory includes 100% revenue.

Note 2. Baseline year: 2022.

Note 3. Based on the SBTi 1.5° C scenario, our goal is carbon emmissions reduction of 15.75% in 2025.

Note 4. Inventory methods include ISO 14064-1:2018, the GHG Protocol - An Enterprise Accounting and Reporting Standard, GHG Inventory Registry Operation Guidelines. GWP values are based on 2021 IPCC AR6. Emissions factors are based on Environmental Protection Administration's GHG Emission Factor Management Table v. 6.0.4.

Note 5. Emissions from the second headquarters were included from 2022.

Note 6. The GHG emissions have been verified by an independent third party (SGS Taiwan Ltd.).

Note 7. Scope 1 & 2 are named Category 1 & 2 in ISO14064-1:2018.

Note 8. Greenhouse gas include CO_2、CH_4、N_2O、HFCs、PFCs、SF_6 and NF_3

Scope 3 Greenhouse Gas Emissions

Categoeies	Corresponding to ISO14064-1:2018	Emissions (Ton CO_2e)				Remark
		2021	2022	2023	2024	
Category 1. Purchased goods and services	Category 4	603,057	737,700	540,851	760,749	▪ EEIO method ▪ Industry-specific total amount x Industry-specific carbon emission coefficient
Category 2. Capital goods	Category 4	586	343	2,223	1,123	▪ EEIO method ▪ Industry-specific total amount x Industry-specific carbon emission coefficient
Category 3. Fuel- and energy-related	Category 4	2,182	2,430	2,078	2,201	▪ Emission factor method ▪ Oil consumption and electricity consumption x carbon emission
Category 4. Upstream transport	Category 3	-	25,624	37,012	27,327	▪ EEIO method ▪ Industry-specific total amount x Industry-specific carbon emission coefficient
Category 5. Waste	Category 4	35	965	1,394	1,594	▪ Emission factor method ▪ Weight of each waste x carbon emission coefficient
Category 6. Business travel	Category 3	17	230	547	1,029	▪ Emission factor method ▪ Total mileage x carbon emission coefficient
Category 7. Employee commuting	Category 3	825	1,112	1,102	1,124	▪ Emission factor method ▪ Total mileage x carbon emission coefficient
Category 8. Upstream leased assets	Category 4	180	622	1,885	2,965	▪ Emission factor method ▪ Total mileage of rental vehicles x carbon emission coefficient
Category 9. Downstream transport	Category 3	-	0	0	0	▪ CTCI has no downstream products that require transportation and distribution; thus, there are no associated emissions.
Category 10 Processing of sold products	Category 5	-	0	0	0	▪ CTCI has no downstream products that require further processing; thus, there are no associated emissions.
Category 11 Use of sold products	Category 5	-	0	0	0	▪ We basically follow the specifications in the ITB (Invitation to Bid) in our EPC (Engineering, Procurement, Construction) projects. We do not have decisive impact on the use of sold products.
Category 12 End-of-life treatment of sold products	Category 5	-	0	0	0	▪ We basically follow the specifications in the ITB (Invitation to Bid) in our EPC (Engineering, Procurement, Construction) projects. We do not have decisive impact on the end-of-life treatment of sold products.
Category 13 Downstream leased assets	Category 5	-	0	0	0	▪ CTCI does not engage in asset leasing; therefore, there are no related emissions.
Category 14 Franchises	Category 5	-	0	0	0	▪ CTCI does not operate under franchising arrangements; therefore, there are no related emissions.
Category 15 Investment	Category 5	-	4,922	5,107	3,628	▪ Includes our subsidiaries' Scope 1 & 2 emissions based on the inventory carried out in 2024. ▪ subsidiaries' Scope 1 & 2 emissions x CTCI's equity share
Total		606,882	773,948	592,199	801,741	
Emission intensity (ton CO_2e/million (NTD) in revenue)		20	24	13	13	

Note 1. Scope 3 emissions inventory is done based on the "Corporate Value Chain (Scope 3) Accounting and Reporting Standard," developed by WRI & WBCSD in 2011.

Note 2. Beginning from 2022, CTCI will carry out Scope 3 GHG inventory. The emissions data 2021 is based on Scope 3 screening results.

Note 3. The foreign carbon emission coefficients used in EEIO are sourced from international databases https://www.exiobase.eu/, https://websites.umich.edu/~mingxu/ceeio.html

Note 4. Partial data for the year 2022 has been updated according to SBTi review feedback.

Note 5. According to ISO 14064-1:2018, indirect greenhouse gas emissions require significant identification. Categories 1, 3, 5 (general waste), and 8 have been verified based on the identification results, and the data has been verified by the third party.

Since 2022, CTCI carried out an inventory on its Scope 3 greenhouse gas emissions. Scope 3 emissions reduction is done with 2022 as the baseline year. The near-term supply chain engagement target will be set based on the SBTi's "well below 2°C" scenario and achieved within five years from 2023. The participating suppliers will cut their carbon emissions at least by 2.5% per year. In the long-term, the goal is to lead our suppliers towards net zero. If there are residual carbon emissions that cannot be eliminated by new technologies and new machines (the goal is to be less than 10%), we will encourage the suppliers to purchase carbon credits as offset and reach the net zero goal by 2050. In 2024, Scope 3 emissions intensity decreased by approximately 46% compared to the base year. While revenue increased, emissions intensity remained consistent with the previous year. CTCI will continue progressing toward its net-zero target.

4.2 Energy Indicators and Targets

The largest amount of energy consumed at the headquarters building is purchased electricity, while gasoline and diesel are the primary sources of energy consumption during the construction processes. These comprise CTCI's main sources of greenhouse gas emissions. In 2024, the total electricity consumption of the headquarters building and the construction sites combined was 10.99 GWh, while total consumption of gasoline and diesel combined was 1.66 million liters. Moreover, we regularly compile the performance statistics each year and report them to the President. The aim is to analyze the energy efficiency of operations by observing the changes and trends over the years. We then use the results to formulate and implement relevant policies, and use them as reference when setting carbon emissions reduction and energy-saving targets in the future. That way, we can gradually fulfill the low-carbon vision.

Energy Consumption

Location	Energy Type	Unit	Annual Performance				Target Note 7		
			2021	2022	2023	2024	2024	Achieved or not	2025
1st ,2nd Headquarters buildings	Renewable electricity (self-consumption)	kWh	-	-	31,000	51,950	50,000	O	50,000
		MJ	-	-	1.12×10^5	1.87×10^5	1.80×10^5		1.80×10^5
1st ,2nd Headquarters buildings	Renewable electricity (wheeling)	kWh	-	100,000	2,999,018	3,000,000	2,064,493		2,479,251
		MJ	-	3.60×10^5	1.08×10^7	1.08×10^7	7.43×10^6		8.93×10^6
1st ,2nd Headquarters buildings	Non-renewable electricity	kWh	4,869,793	4,828,530	2,162,214	1,958,503	4,866,409		4,743,784
		MJ	1.75×10^7	1.74×10^7	7.78×10^6	7.05×10^6	1.75×10^7		1.71×10^7
Company cars	Gasoline	Liter	14,803	14,580	9,270	6,731	20,672		20,672
		kWh	1.34×10^5	1.32×10^5	8.40×10^4	6.10×10^4	1.87×10^5		187,401
		MJ	4.83×10^5	4.76x105	3.03×10^5	2.20×10^5	6.75×10^5		6.75×10^5
Global construction sites	Electricity	kWh	5,134,454	5,913,183	8,436,030	9,029,819	6,743,443		8,197,082
		MJ	1.85×10^7	2.13x107	3.04×10^7	3.25×10^7	2.43×10^7	O	2.95×10^7
Global construction sites	Gasoline	Liter	175,221	207,979	266,857	263,553	150,745		183,240
		kWh	1.59×10^6	1.89×10^6	2.42×10^6	2.39×10^6	1.37×10^6		1.66×10^6
		MJ	5.72×10^6	6.79×10^6	8.71×10^6	8.60×10^6	4.92×10^6		5.98×10^6
Global construction sites	Diesel	Liter	1,004,079	1,829,948	1,263,408	1,394,390	1,628,675		1,979,757
		kWh	9.81×10^6	1.79×10^7	1.23×10^7	1.36×10^7	1.59×10^7		1.93×10^7
		MJ	3.53×10^7	6.43×10^7	4.44×10^7	4.90×10^7	5.72×10^7		6.96×10^7
1st ,2nd Headquarters buildings + global construction sites	Non-renewable electricity + fuels	kWh	2.15×10^7	3.06×10^7	2.54×10^7	2.71×10^7	2.91×10^7	O	3.41×10^7
		MJ	7.75×10^7	1.10×10^8	9.46×10^7	9.74×10^7	1.05×10^8	O	1.23×10^8
1st ,2nd Headquarters buildings + global construction sites	Renewable and non-renewable electricity + fuels	kWh	1.93×10^7	2.15×10^7	3.07×10^7	3.01×10^7	3.11×10^7	O	3.66×10^7
		MJ	6.94×10^7	7.75×10^7	1.11×10^8	1.08×10^8	1.12×10^8	O	1.32×10^8

Note 1. 1 kWh=3.6 MJ

Note 2. 1 kcal=4,184 J

Note 3. Vehicle heating value=7,800 kcal/liter. Sources: website of the Bureau of Energy, MOEA： "Energy Product Unit Heating Value Table " ≒ 32.6352 megajoules/liter ○ 44.Diesel heating value = 8,400 kcal/liter. Sources：website of the Bureau of Energy, MOEA:"Energy Product Unit Heathing Value Table" ≒ 35.1456 megajoules/liter

Note 5. Since our 2022 target for the energy usage per person at the first headquarters building and the energy usage per million working hours at construction sites is part of our materiality management, the energy usage needs to be reduced by 13.2% between 2018 and 2024 (2.2% reduction per year). As the second headquarters building was completed in 2022, the energy usage needs to be reduced by 4.4% between 2022 and 2024.

Note 6. The energy utilization rate of the first and second headquarters buildings is 61%.7.Both renewable and non-renewable electricity are included in our electricity target.

Energy Management Performance Indicators

Location	Indicator	Unit	Annual Performance				Target		
			2021	2022	2023	2024	2024	Achieved or not	2025
1st, Headquarters building Note1	EUI	kWh/ square meters	116.4	111.1	113.1	111.1	111.1	O	115.6
Global construction sites	Energy Intensity	kWh/ million working hours	781,831	1,058,736	1,179,944	1,157,603	1,110,351	X Note2	1,038,000

Location	Indicator	Unit	Annual Performance				Target		
			2021	2022	2023	2024	2024	Achieved or not	2025
Headquarters buildings + global construction sites	Energy Intensity	kWh /million NTD in revenue[Note3]	699.41	968.78	619.34	488.57	-	-	840.90

Note 1: As the second headquarters is not in routine use, the annual EUI cannot be calculated and is thus excluded.
Note 2: Our target is based on 2025 energy management performance indicators and estimated working hours. A Sustainable Net-Zero Task Force mechanism has been established at each construction site, responsible for initiating and reviewing energy-saving measures and their implementation. ESG training sessions are also held regularly at the sites to enable autonomous management of sustainability-related issues, while remaining under the supervision of the corporate headquarters.
Note 3: Million turnover refers to the individual turnover for each year.

4.3 Water Indicators and Targets

In terms of the use of water resources, the water for the headquarters building is directly supplied by public tap water, and no additional water is taken from other water bodies. All wastewater is discharged to the sewerage. The water consumption of the headquarters building is lower than the target in 2023. Many automatic sensor faucets will be in place to reduce the consumption of water resources, and water will be saved by controlling the water output and water output time. Many water-saving signs are also in place to remind colleagues to save water. Both the top floor of the building and the work sites are equipped with rainwater recycling systems, which can be used for irrigation of open space vegetation or for construction.

Starting in 2024, the headquarters building implemented environmentally friendly foaming hand soap throughout the facility, effectively reducing water consumption and contributing to green procurement efforts.

In addition to setting daily water use at the headquarters building as a target for efficiency improvement, CTCI has also established measures to reduce water consumption and promote greywater reuse during construction. Water recycling and savings are quantitatively tracked, including the reuse of rainwater and surface runoff collected in sedimentation basins, reclaimed water from barrel leak tests, and recycled water from pressure testing. In 2024, the water intensity of the headquarters building is 11.1 cubic meters per person, while the global construction site water intensity is 3,986 cubic meters per million work hours. The total water consumption has decreased by 77.6% compared to the base year (2018).

Water Consumption (m^3)

Location (water source)	Annual Performance				Goal		
	2021	2022	2023	2024	2024	Achieved or not	2025
Headquarters building (tap water)	16,439	19,788	23,489	22,612	-	-	-
Global construction sites (tap water)	176,103	163,910	409,223	86,183	-	-	-
Headquarters building + global construction sites (Total)	192,542	183,698	432,712	108,795	469,207	O	554,350
Recycled water (rainwater)	Note 1	Note 1	Note 1	Note 1	-	-	-
Recycled water percentage	Note 1	Note 1	Note 1	Note 1	-	-	-
Drain water	192,542	183,698	432,712	108,795	469,207	O	554,350
Water consumption	0	0	0	0	-	-	-

Note 1. Rainwater is collected at the headquarters building and construction sites. However, since no quantitative data is available, we only disclose tap water.
Note 2. The targets are set based on the estimated number of staff in the headquarters and the estimated working hours at the sites.
Note 3. Water intake = water consumption + discharge. We do not use water excessively at the headquarters, so our water discharge is equal to water intake. If water is carried away or used in the construction sites without returning to the natural environment, that amount is water consumption, otherwise it is water discharge.
Note 4. Starting from 2022, the water consumption in the headquarters building includes the water consumption from the first and second headquarters buildings.

4.4 Waste Indicators and Targets

The general waste disposal method for the headquarters building is incineration, with a generation volume of 65.47 metric tons in 2024. The general waste disposal methods for global construction sites include incineration and landfill, with an incineration volume of 4,032.19 metric tons and a landfill volume of 0 metric tons in 2024. The waste disposal volume for CTCI in 2024 is below the established target value, achieving zero landfill waste in 2024.

To continuously and effectively reduce waste, the headquarters building is implementing waste volume control on each floor. Paper, paper containers, metal, plastic, and food waste are all recycled. In response to the increased use of paper containers and cups, in addition to the headquarters building implementing paper container recycling starting in 2024, the coffee bar on the second floor promotes the use of reusable cups to reduce the waste generated from coffee purchases by employees. Additionally, umbrella drying stands and shared umbrellas have been purchased and installed to reduce the use of umbrella covers.

CTCI's design and construction principles aim to minimize waste generation within the project site as much as possible. Additionally, comprehensive reduction, reuse, and recycling goals are set for all projects to strengthen management and prevent waste. At all operational sites and project construction sites, general household waste, as well as waste that can be mixed with regular waste for disposal or treatment, are first sorted for collection and stored in appropriate containers before being entrusted to local cleaning units for processing. The waste intensity at the headquarters building is 32.0 kg per person, and 65.4 kg per million in revenue at the global construction sites. In 2024, the construction site waste recycling rate increased to 35.5%.

Amount of Waste Produced

Location	Type	Unit	Annual Performance				Goal		
			2021	2022	2023	2024	2024	Achieved or not	2025
Headquarters building	General waste	Tons	56.31	55.04	61.07	65.47	-	-	-
	Hazardous construction waste		0	0	0	0	-	-	-
Global construction sites	General construction waste	Tons	1,720.18	1,843.49	3,417.41	4,032.19	-	-	-
	Hazardous construction waste		0	0	0	0	-	-	-
Headquarters building + global construction sites (total)	General construction waste	Tons	1,776.49	1,898.53	3,478.47	4,097.66	5,164.93	O	5,782.39
	Hazardous construction waste		0	0	0	0	-	--	-

Note 1. The general waste at the construction sites is entrusted to the local cleaning business for treatment. Waste is weighed and calculated since 2018.
Note 2. No chemical reaction happened during construction that would have produced intermediates, so no hazardous waste was generated.
Note 3. The targets are set based on the estimated number of staff at the headquarters and the expected working hours of the sites. Waste is managed according to management procedures. Its carbon emissions are classified as Scope 3 for auditing.
Note 4. Since 2022, general waste data for the headquarters has included both the first and second headquarters buildings.

Appendix

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Appendix 1: TCFD Index

Elements	Recommended Disclosures	Chapter	Page
Governance	Describe the board's oversight of climate-related risks and opportunities	1.1.1 Board of Directors' Supervision 3.4 Ecological/Environmental Conservation Strategy and Planning	6 47
	Describe management's role in assessing and managing climate-related risks and opportunities.	1.1.2 Commitment of the Sustainability & Net Zero Committee	6
Strategy	"Describe the climate-related risks and opportunities the organization has identified over	2.2.3 Determine Climate Related Risk and Opportunity Issues	13
	the short, medium, and long term."	2.2.4 Climate Risk and Opportunity Impact Assessment and Management Response	14
	"Describe the impact of climate-related risks and opportunities on the organization's	2.2.5 Description of Climate Scenario Selection	21
Risk Management	businesses, strategy, and financial planning. "	2.2 Climate Risk and Opportunity Management Process	11
	Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	2.2 Climate Risk and Opportunity Management Process	11
	Describe the organization's processes for identifying and assessing climate-related risks.	2.1 Risk Management Structure	10
Metrics and Targets	Describe the organization's processes for managing climate-related risks.	1.2 Establish an Incentive Scheme for Good Performance on Climate and Nature 4. Climate and Nature Management Indicators and Targets	7 54~58
	Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	2.2.4 Climate Risk and Opportunity Impact Assessment and Management Response 4.1 Greenhouse Gas Emission Indicators and Targets	14 54
	"Disclose the metrics used by the organization to assess climate-related risks and opportunities	4. Climate and Nature Management Indicators and Targets	54~58

Appendix 2: TNFD Index

Elements	Recommended Disclosures	Chapter	Page
Governance	Describe the board's oversight of nature-related dependencies, impacts, risks and opportunities.	1.1.1 Role of the Board of Directors 3.4 Ecological/Environmental Conservation Strategy and Planning	6 47
	Describe management's role in assessing and managing nature-related dependencies, impacts, risks and opportunities.	1.1.2 Role of the Sustainability and Information Security Committee	6
	Describe the organisation's human rights policies and engagement activities, and oversight by the board and management, with respect to Indigenous Peoples, Local Communities, affected and other stakeholders, in the organisation's assessment of, and response to, nature-related dependencies, impacts, risks and opportunities.	Commitment to Biodiversity 1.1.1 Role of the Board of Directors	2 6
Strategy	Describe the nature-related dependencies, impacts, risks and opportunities the organisation has identified over the short, medium and long term.	2.3.3 Nature -related Risks and Opportunities Impact Assessment and Management Response	25
	Describe the effect nature-related dependencies, impacts, risks and opportunities have had on the organisation's business model, value chain, strategy and financial planning, as well as any transition plans or analysis in place.	2.3.3 Nature -related Risks and Opportunities Impact Assessment and Management Response	25
	Describe the resilience of the organisation's strategy to nature-related risks and opportunities, taking into consideration different scenarios.	2.3.3 Nature -related Risks and Opportunities Impact Assessment and Management Response	25
	Disclose the locations of assets and/or activities in the organisation's direct operations and, where possible, upstream and downstream value chain(s) that meet the criteria for priority locations.	2.3.2 Identifying Operational Sites	22
Risk & impact management	(i) Describe the organisation's processes for identifying, assessing and prioritising nature-related dependencies, impacts, risks and opportunities in its direct operations. (ii) Describe the organisation's processes for identifying, assessing and prioritising nature-related dependencies, impacts, risks and opportunities in its upstream and downstream value chain(s).	2.3.3 Nature -related Risks and Opportunities Impact Assessment and Management Response	25
	Describe the organisation's processes for managing nature-related dependencies, impacts, risks and opportunities.	2.3.3 Nature -related Risks and Opportunities Impact Assessment and Management Response	25
	Describe how processes for identifying, assessing, prioritising and monitoring nature-related risks are integrated into and inform the organisation's overall risk management processes.	2.1 Risk Management Structure	10
Metrics & Targets	Disclose the metrics used by the organisation to assess and manage material nature-related risks and opportunities in line with its strategy and risk management process.	4. Climate and Nature Management Indicators and Targets	54~58
	Disclose the metrics used by the organisation to assess and manage dependencies and impacts on nature.	4. Climate and Nature Management Indicators and Targets	54~58
	Describe the targets and goals used by the organisation to manage nature-related dependencies, impacts, risks and opportunities and its performance against these.	4. Climate and Nature Management Indicators and Targets	54~58

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