

chapter 1

# Governance

1.1 Governance Structure	40
1.2 Sustainability Management Framework	43
1.3 Risk Management Framework	46
1.4 TCFD	51
1.5 Ethical Management	61
1.6 Information Security	67
1.7 Supply Chain Management	71
1.8 Customer Communication	77
1.9 Intellectual Property Management	80

8
DECENT WORK AND ECONOMIC GROWTH

9
INDUSTRY, INNOVATION AND INFRASTRUCTURE

Corresponding SDGs



Inspired by Florence’s “Il Porcellino,” a symbol of good fortune. |  
TCC DAKA Renewable Resource Recycling Center (RRRC)

1.1

# Governance Structure

GRI 2-9 / 2-10 / 2-11 / 2-12 / 2-13 / 2-15 / 2-16

2-17 / 2-18 / 2-19 / 2-20 / 405-1

TCC is committed to building an innovative, diverse, and equitable governance system to strengthen the Company's resilience, drive operational growth, and ensure transparency.

 **TCC KEY FACTS**

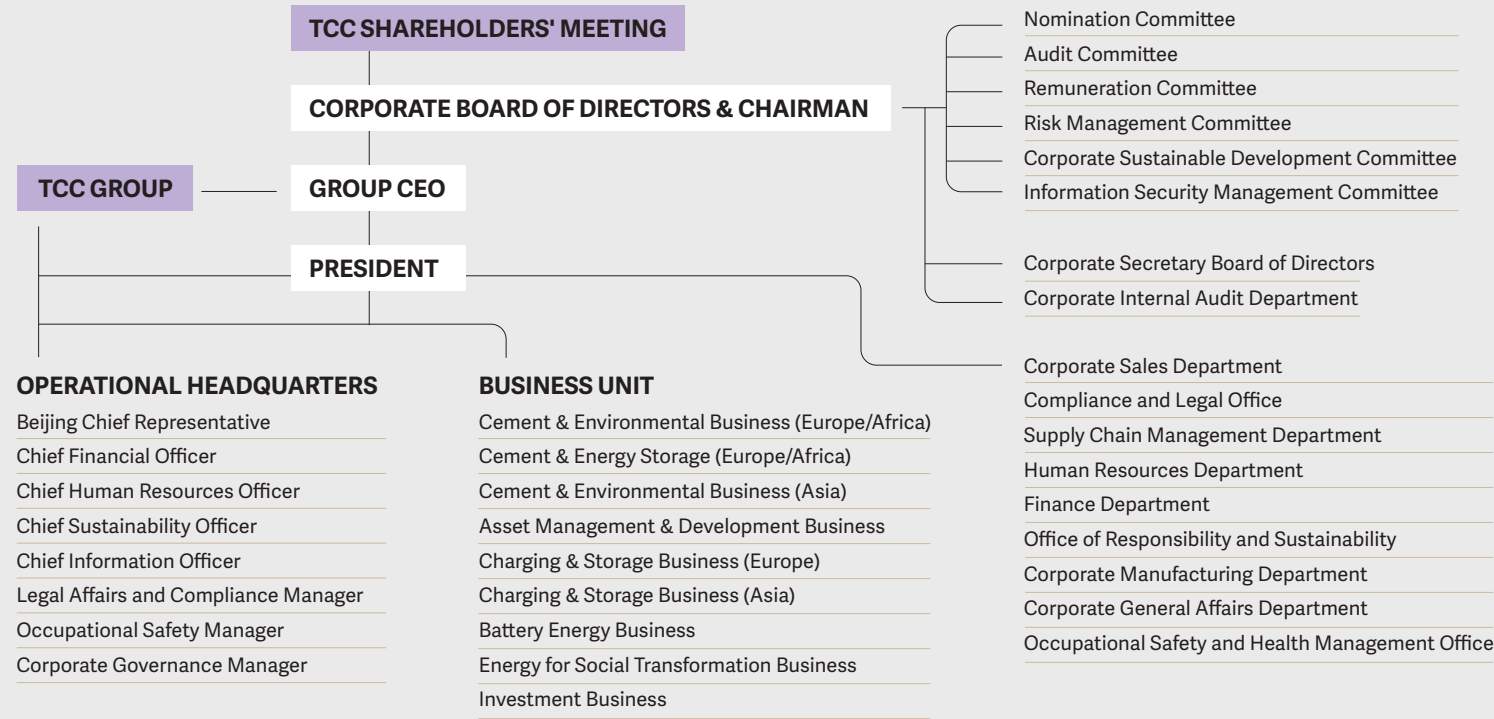
Retained for three consecutive years

# Top 5%

in Taiwan Stock Exchange (TWSE) Corporate Governance Evaluation

The only construction materials company on the list

## TCC Group Holdings Organization Structure



Note 1: The various business units of the TCC Group Holdings set up different operational entities according to their respective scopes of business, including but not limited to subsidiaries, research and development centers, manufacturing plants, sales offices, and distribution hubs.

## The 25<sup>th</sup> Board of Directors 15 Directors | 33% Independent Directors | 33% Female Directors

TCC elects all directors via a candidate nomination system. The Nomination Committee rigorously vets candidates based on Board composition, diversity, company industry characteristics, and future strategies. Selection criteria include professional knowledge, skills, experience, gender, independence, and strategic alignment, with priority for female candidates. Independent director candidates must comply with the Securities and Exchange Act, relevant regulations, and TWSE independence criteria. The Board must approve all candidates before the election.

TCC Board members serve re-electable three-year terms. The current Board's average tenure is 9.8 years. Re-elected on May 21, 2024, the 25th Board includes five directors with construction materials experience. The independent director proportion exceeds the FSC's "Listed Companies Sustainable Development

Action Plan" requirements. Director experience spans energy, environmental protection, cement, M&A/investment, and IT, covering operations, international markets, risk management, accounting/financial analysis, legal, and ESG. TCC and its subsidiaries ensure director and supervisor compen-

sation liability complies with Taiwanese law. TCC maintains Directors and Officers Liability Insurance, reviewed annually to mitigate risks for directors, supervisors, key officers, and the Company, establishing sound corporate governance. Mainland China and overseas subsidiary directors are mainly individuals.

Table of the 25<sup>th</sup> Board of Directors

Name	Gender	Age <sup>2</sup>			Average Term of Corporate Directors	External Independence <sup>3</sup>	Industry Experience <sup>4</sup>	Professional Expertise
		31-50	51-70	>71				
Nelson An-ping Chang	■	♂		✓	6.92	Executive Director	Raw Materials Industry	<div></div>
Kenneth C.M. Lo	■	♂		✓	22.92	Director with Independence	Financial Industry	<div></div>
Yu-Cheng Chiao	■	♂	✓		1	Director with Independence	Information Technology Industry	<div></div>
Eric Chen Sun Te	■	♂	✓		8.92	Director with Independence	Financial Industry	<div></div>
Kang-Lung (Jason) Chang	■	♂	✓		12.92	Director with Independence	Raw Materials Industry	<div></div>
Liz Wang	■	♀	✓		12.92	Director with Independence	Raw Materials Industry	<div></div>
Roman Cheng	■	♂	✓		6.92	Executive Director	Financial Industry	<div></div>
Kung-Yi Koo	■	♂	✓		6.92	Executive Director	Raw Materials Industry	<div></div>
Por-Yuan Wang	■	♂		✓	21.92	Director with Independence	Information Technology Industry	<div></div>
Chien Wen	■	♂		✓	21.92	Director with Independence	Raw Materials Industry	<div></div>
Victor Wang	□	♂		✓	11.92	Director with Independence	Industrial - Professional Services	<div></div>
Lynette Ling-Tai Chou	□	♀	✓		6.92	Director with Independence	Public Utilities - Educational Services	<div></div>
Sherry S. L. Lin	□	♀		✓	3.83	Director with Independence	Industrial - Professional Services	<div></div>
Ruu-Tian Chang	□	♀		✓	1	Director with Independence	Information Technology Industry	<div></div>
Man-Jung Chan <sup>5</sup>	□	♀	✓		0	Director with Independence	Public Services – Education	<div></div>

■ Representative of Corporate Director □ Independent Director

● Business Management ● International Market ● Risk Management ● Accounting Services ● Law ● Sustainable Development ● Information Security

Note 2: The age distribution of directors: over 71 years old accounts for 47%; 51 to 70 years old accounts for 47%; 31 to 50 years old accounts for 6%. Note 3: The external independence of directors is assessed based on the following criteria. Non-executive directors must meet at least four of the following indicators, including at least two from the first three items: i. In the past year, the director has not served as a senior executive of the Company; ii. For the current year, neither the director nor their family members have received more than US\$60,000 from the Company or any of its subsidiaries, except for the amount permitted under US SEC Rule 4200; iii. For the current year, no family members of the director have served as senior executives of the Company or any of its subsidiaries; iv. The director is not a consultant to the Company or its management team and has no conflict of interest with the Company's consultants; v. The director has no conflicts of interest with the Company's major customers or suppliers; vi. The director has no service contract or employment relationship with other enterprises or their management; vii. The director has no conflicts of interest with any non-profit organization that receives significant donations from the company. viii. In the past year, the director has not served as a partner or been employed by the Company's external audit firm; ix. The director has no conflicts of interest that would affect the independent operation of the Board of Directors. Note 4: The director's industry experience is classified according to the first-level categories of the Global Industry Classification Standard (GICS). Note 5: Elected at the 2025 Annual Shareholders' Meeting (replacing an independent director who resigned for personal reasons on October 9, 2024). Note6: All Board members (representatives of corporate directors and independent directors) are citizens of the Republic of China. Note 7: Board Information as of May 31, 2025.

### Board Operations

TCC's Board of Directors meets at least once per quarter, during which each department reports on the management team's work progress and improvement status. As of the end of 2024, a total of 12 Board meetings were held, with an average director attendance rate (including attendance by proxy) of 99.44%. Important resolutions of TCC's Board of Directors are promptly and accurately disclosed on the Market Observation Post System (MOPS). Directors disclose their interests and abstain from voting at Board meetings on any matters involving themselves or the legal entities they represent.

TCC's Remuneration Committee Charter mandates the regular evaluation of director performance to determine remuneration based on results. For information on individual director remuneration, please refer to [2024 Annual Report](#).

### Director ESG Training Program

TCC actively enhances directors' sustainability knowledge to support their supervisory roles and regulatory compliance. Training courses focus on

emerging sustainability risks. In 2024, ESG training averaged 8.6 hours per director, totaling 120.5 training hours. Topics covered included sustainable financial disclosure, just transition to net-zero, corporate governance, and sustainable development. For details on directors' training, please refer to [2024 Annual Report](#).

### Outstanding External Evaluation of Board Performance

TCC has established the Rules for Performance Evaluation of Board of Directors to regularly evaluate the Board and its functional committees. The process incorporates an annual internal performance evaluation and a triennial external assessment conducted by independent experts and scholars. The evaluation covers five key aspects: engagement in company operations, improvement of Board decision-making quality, Board composition and structure, director selection and continuing training, and internal control. The most recent external assessment for 2024 concluded in January 2025. The [resulting report](#), which earned an "Outstanding" rating, was submitted to the Board on February 12, 2025, and presented at the Board meeting on March 12, 2025.

## Functional Committees

To strengthen the Board of Directors' functions, functional committees are established under the Board based on their authority and responsibilities to assist in reviewing various proposals and ensuring the quality of the Board's decision-making. In 2024, the Information Security Management Committee was reorganized into a functional committee.

### Audit Committee 94.74% 100%

Establishing and amending internal control systems, procedures for handling significant financial and business activities, reviewing securities, financial reports, and matters involving directors' own interests.



### Remuneration Committee 100% 100%

Establishing and reviewing performance assessment and remuneration policies for Directors and Managers and regularly evaluating their performance to determine remuneration.



### Risk Management Committee 100% 100%

Executing risk management decisions approved by the Board of Directors, supervising the establishment of TCC's risk management mechanisms, and overseeing the implementation and coordination of overall risk management operations.



### Corporate Sustainable Development Committee 100% 100%

The decision-making and supervisory units for the Company's sustainable development work covers three key areas including corporate governance (G), environment (E), and social (S). This is to strengthen the Company's management system, promote environmental conservation, and fulfill social responsibilities, enabling the Board of Directors to effectively safeguard the rights and interests of the Company, its employees, shareholders, and stakeholders.



### Nomination Committee 88% 100%

Formulating the selection criteria for directors (including independent directors) and senior managers, establishing and regularly reviewing directors' development plans, operational performance, Board member evaluations, and succession plans for senior managers.



### Information Security Management Committee 100% 100%

Establishing and reviewing the information security management framework and policies, regularly examining the development, implementation, and execution of the Company's relevant mechanisms.



## 1.2

# Sustainability Management Framework



*Rather than approaching carbon reduction and sustainability as passive duties or obligations, we should embed them into TCC's core values, making them the very foundation of our organization, nurturing a seamless integration of living, production, ecology, and daily life. These positive actions may ultimately lead to new business opportunities, fresh perspectives, and innovative ideas, enabling us to clearly stand out from the competition.*

--Chairman Nelson An-ping Chang



### TCC KEY FACTS

Selected by TIME Magazine  
The World's

# Top 500

Sustainable Companies in 2024



[Sustainable Development Best Practice Principles](#)

## Sustainable Development Decision-making and Supervision Process

TCC's sustainable development is governed at the highest level by the Board of Directors. The Board annually reviews sustainability projects, discusses management approaches, and oversees implementation through regular reports from the Corporate Sustainable Development (CSD) Committee. The CSD Committee, a dedicated functional committee, is chaired by the Chairman and comprises two directors (one of whom also serves as President), and three independent directors, all possessing ESG-related expertise. With independent directors constituting 50% of its members, the committee ensures robust and objective governance. All discussion items are presented to the Board for resolution by the Chief Sustainability Officer (CSO). The Committee's work is executed through seven specialized functional groups composed of senior executives and experienced personnel from relevant departments and subsidiaries: Corporate Governance, Comprehensive Care (including Social Welfare), Sustainable Products and Manufacturing, Sustainable Environment, Green Energy, Biodiversity, and Sustainable Information Disclosure. This structure ensures that ESG tasks are integrated into core departmental functions and implemented company-wide, including at TCC's subsidiaries. For details on committee composition, resolutions, and Board meeting minutes, please visit the Investor Relations section of [TCC's official website](#). During operational meetings presided over by the Chairman, clear responsibilities are assigned to each subcommittee based on the nature of the issue. The CSO is then responsible for coordinating implementation, monitoring progress, and regularly reporting outcomes to the CSD Committee for review.

### BOARD OF DIRECTORS

The highest decision-making body in TCC's sustainable development

### CORPORATE SUSTAINABLE DEVELOPMENT COMMITTEE

Responsible for the approval and supervision of sustainable development promotion

### SUBCOMMITTEES

Responsible for sustainable projects and proposing key indicators and goals

OFFICE OF  
RESPONSIBILITY  
AND SUSTAINABILITY  
CSO

### FUNCTIONAL GROUPS

Corporate Governance

Comprehensive Care (including Social Welfare)

Sustainable Products and Manufacturing

Sustainable Environment

Green Energy

Biodiversity

Sustainable Information Disclosure



## 2024 Board Supervision of Sustainability Project Implementation Results



### Sustainability Disclosure Standards S1 and S2

Pilot Alignment of the 2023 Annual Report with IFRS Sustainability Disclosure Standards S1 and S2.



### Net Zero Emissions

- Completed 1.5°C Science-Based Targets (SBT) for cement plants in Taiwan and Mainland China, as well as Scope 3 inventory and reduction target setting.
- Supervised the inventory progress of subsidiaries in consolidated statements according to the FSC's Sustainable Development Roadmap.
- Planned for methane emissions inventory of cement business entities in Taiwan and Mainland China, along with a quantitative assessment of the methane reduction benefits from co-processing municipal waste by cement plants and environmental business units.



### Value Chain Influence

- Established the Green Supply Chain Alliance with 19 significant transportation and raw material partners, aiming to complete product carbon footprint assessment by 2025 and achieve a self-imposed carbon reduction target of 10% by 2030.
- Calculated external carbon reduction impact based on methodologies such as the WBCSD's Avoided Emissions.
- Initiated TCC's just transition, engaging with stakeholders to build consensus.
- Implemented human rights and environmental due diligence in response to the EU Corporate Sustainability Due Diligence Directive (CSDDD).



### Biodiversity

- Set a target to achieve a net positive impact starting in 2040 by assessing the timeline for No Net Loss in quarries, based on cement industry methodology.
- Established the No Deforestation Commitment.
- Promoted the Little Tern Protection Plan with the aim of increasing breeding success rate by 10% within three years.

## Management Succession Plan

TCC conducts annual training courses for key personnel, including the Chairman, President, Managers, and middle-level executives, to strengthen their competencies and leadership skills. Through project assignments, mid-to-senior management evaluations across group subsidiaries, cross-business unit rotations, and overseas postings, TCC effectively develops a robust

talent pipeline. These initiatives, combined with annual performance assessments, form the basis for management succession and establish a solid succession mechanism for key management positions. TCC has also established a CEO succession plan to ensure continuity in company strategy and operations.

**Step 1** Assess key positions and management talent to identify the required professional expertise and leadership qualities.

**Step 2** Establish a talent pool of potential successors through management discussions and selection processes.

**Step 3** Through annual meetings, managers and high-potential talent clarify their understanding of TCC's sustainability vision and global industry trends. They engage in discussions on strategic planning and apply these insights to upstream, midstream, and downstream industry operations.

**Step 4** Regular management programs for middle and senior executives offer a structured curriculum for identifying optimal solutions. The courses emphasize practical exercises to enhance cross-domain collaboration, strategic thinking, agility, situational leadership, and talent development skills, thereby establishing a shared management language.

**Step 5** Periodically review individual performance and assign talent to target positions following successful management-level evaluations.

## Management Team Remuneration Policy

Remuneration for TCC’s President, Vice Presidents, and managers is determined by business strategy, corporate profitability, individual performance, and market benchmarks. The policy is reviewed by the Remuneration Committee and formally approved by the Board of Directors. TCC’s variable remuneration includes both short-term and long-term incentives. Short-term incentives consist of quarterly and annual performance-based bonuses, while treasury stock plans serve as a key long-term measure to drive sustained operational development. To reinforce its sustainability commitments, TCC directly links 40% of senior management’s remuneration to ESG performance targets, motivating management to continuously improve in environmental protection, social responsibility, and corporate governance. Furthermore, specific remuneration for the CFO, Chief Procurement Officer, and the Procurement Department is tied to key sustainability indicators. The CEO’s entire variable compensation is paid in stock, deferred over a three-year period to a personal stock account. This aligns remuneration with the company’s long-term performance to achieve sustainability objectives.

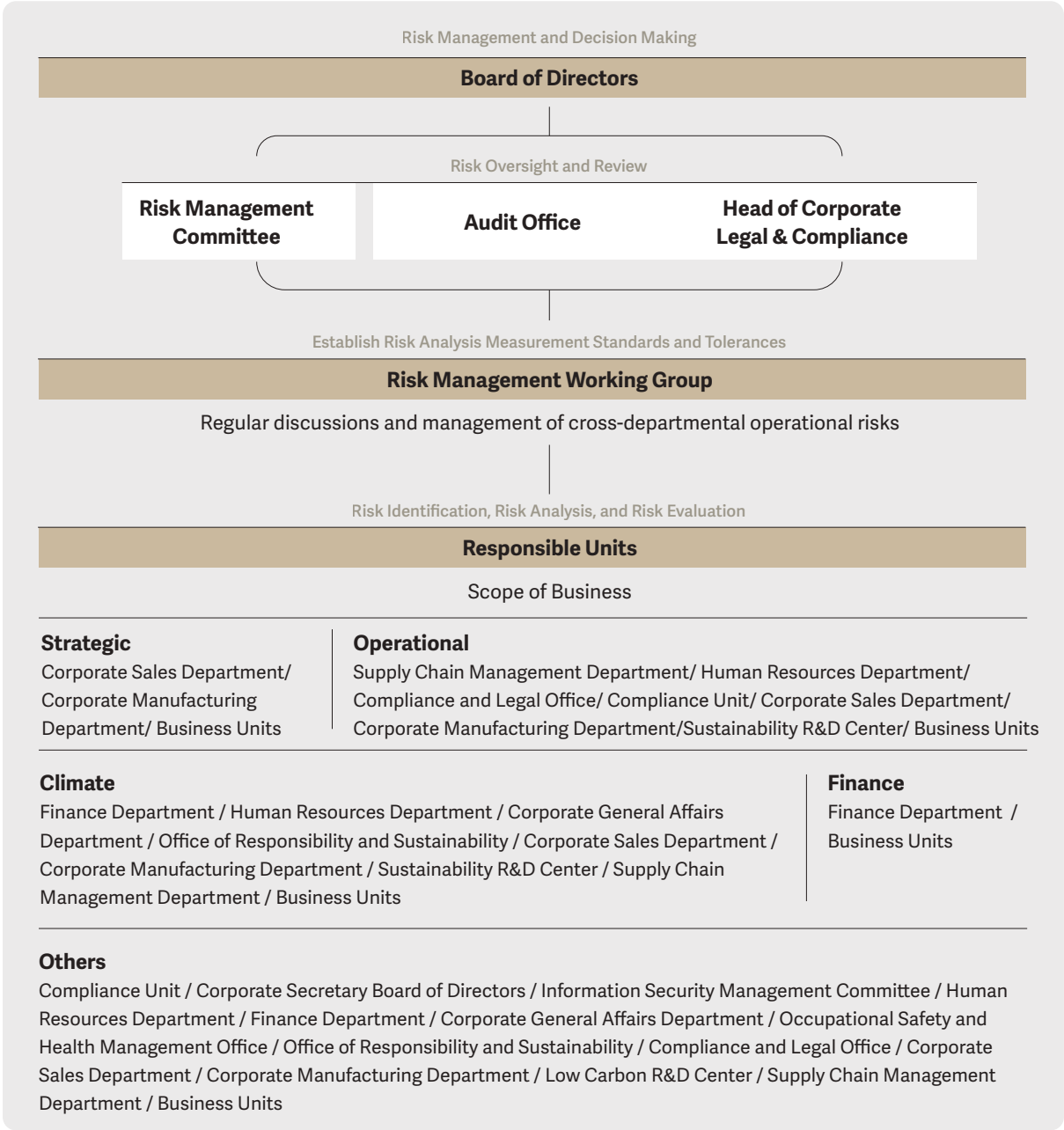
Indicator Dimensions	Indicator Content	Proportion	Corresponding Material Topics
Personal Performance Indicators (30%)	Task Performance and Goal Attainment	30%	-
	AI Innovation and Application Effectiveness		R&D Innovation
	Legal Compliance and Risk Prevention Assessment of Long-term Risks		Legal Compliance
	Talent Cultivation Enhancing Employee Capabilities and Qualities Fostering a Global Mindset		Talent Cultivation and Development
Financial Performance Indicators (30%)	Return on Assets (ROA)	7.5%	-
	Return on Equity (ROE)	7.5%	
	Net Profit After Tax	7.5%	
	Growth Rate	7.5%	
Sustainability and Climate Indicators (40%)	SBT Carbon Reduction Target Progress	10%	Climate Action and Net-zero Emissions
	Alternative Fuel Usage	10%	Co-processing of Renewable Resources
	Green Electricity Usage	5%	Green Energy and Energy Storage
	Sustainable Supply Chain Management Practices	5%	-
	Percentage of Sales from Low-carbon Products	5%	Sustainable Products and Services
	Zero Penalties for Water Resources	5%	Pollution Prevention Management Water Resource Management
	Zero Penalties for Occupational Safety		Occupational Health and Safety
	Female Employee Ratio		-

1.3

# Risk Management Framework

GRI 2-16

TCC's Board oversees risk management for the Group's various business entities, using a three-lines-of-defense model. Operational units manage risks as the first line. The cross-departmental Risk Management Working Group sets control standards and manages risks as the second. The third line, comprising the Risk Management Committee, Audit Office, and Head of Corporate Legal & Compliance, provides regular management supervision. Additionally, the 2025 Risk Management Policy amendment mandates all departments integrate risk management into operating procedures for new products, services, or investment plans.



TCC KEY FACTS

Employee risk education training hours

710.7 hours

Number of participants 8,901



Risk Management Policy



The Risk Management Committee is responsible for reviewing the execution of risk management, periodically identifying and managing operational risks, and leading the planning of response measures. This includes approving risk appetite and risk levels, and reviewing risk identification and analysis reports, which cover physical and transition risks from climate change. The Committee meets at least annually (averaging twice yearly for 2023-2024). All departments must report on their response strategy plans, which the Committee then reports to the Board. It also supervises and tracks the management team's risk management performance to strengthen the company's resilience. To ensure the effectiveness of this mechanism, the risk management process is included in the annual audit plan for internal audits. The Audit Office also participates in the Risk Management Committee to confirm practical conditions.

### Risk Assessment Method

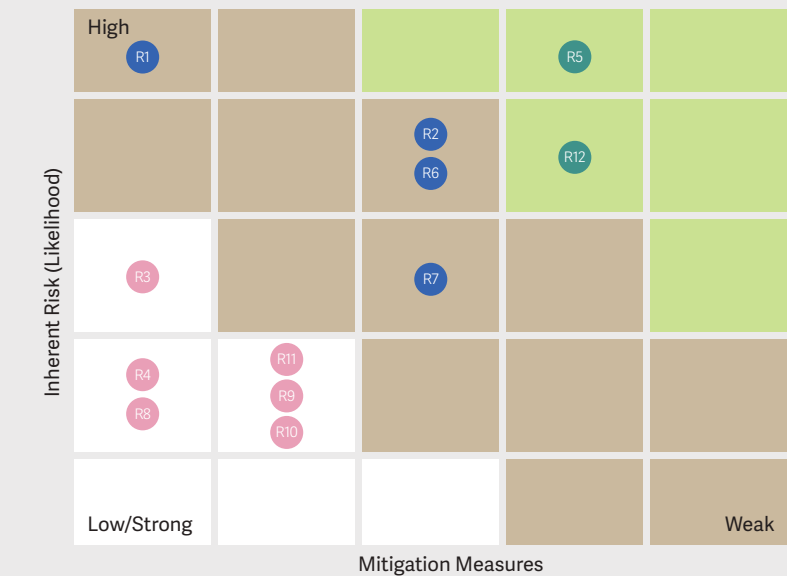
TCC benchmarks its risk identification against sources like the WEF Global Risks Report 2025, peer analyses, SASB standards, and internal policy. The process covers four major risk dimensions: strategy, operations, finance, and climate. It also considers factors such as the geographical location of operating sites and the value chain, while assessing potential risks that could lead to significant company losses, such

as biodiversity risk, geopolitical risk, and information security risk Using a hybrid top-down/bottom-up approach, TCC integrates internal/external factors and stakeholder concerns via scenario analysis and questionnaires. Each risk's value, based on likelihood and impact, is evaluated against company risk appetite to set a level and formulate a response, underpinning the management cycle.

In 2025, TCC will launch a scientific risk database to enhance data-driven risk management. It will assess significant risks at its European, Asian, and African sites by analyzing historical loss data and existing mitigation to calculate residual risk. This risk is then prioritized by impact and likelihood, with response strategies developed and aligned with operational decisions in senior executive reviews. Additionally, management assesses the business impact and risk of each sustainability issue during material topic identification (details in '[Stakeholder & Material Topic Analysis](#)').

To mitigate risks, TCC installed backup energy at its eastern Taiwan plants against power grid instability, providing two hours of emergency power for a kiln's adjustments. Geopolitical risks are mitigated via its international deployment strategy.

### 2024 TCC Risk Matrix



- R5 Natural Disaster (Earthquake)
  - R12 Geopolitical Risk
  - R2 Poor Occupational Health and Safety Management
  - R6 Fluctuation in Product and Raw Material (Energy) Prices
  - R7 Inflation - Tariffs
  - R1 Industry Development and Competition - Mainland China Cement Market
  - R11 Interest Rate/Exchange Rate Fluctuations
  - R9 Improper Use of Alternative Raw Materials/Fuels/Waste Resource Recycling
  - R10 Support Intensity from Insurance and Financial Institutions for Investment and Financing
  - R3 Insufficient Information Security Management
  - R4 Losses Due to Ineffective Strategic Management
  - R8 Carbon Trading/Carbon Fees/Carbon Tax for Total Carbon Emissions Control
- Related to material topics

### Emerging Risk

#### Mitigation Measures

TCC also identifies emerging risks that could have an impact within the next 3 to 5 years. It pays particular attention to two with a greater potential impact: "Generative AI" and "Goeconomic Confrontation."

These risks could significantly affect the company's long-term development and stability, and identifying them early helps TCC to monitor and plan mitigation measures to reduce their impact.

Emerging Risks	
Category	Technology
Risk Factor Description	Generative AI relies on user-provided data, making it vulnerable to hacking if data isn't protected or models have flaws. Inconsistent input data can also lead to unreliable content. Furthermore, employee resistance due to job displacement fears or work process changes may hinder AI adoption.
Impact	<ul style="list-style-type: none"><li>Integrate external AI systems risks leaking customer data and trade secrets, potentially leading to litigation, fines, reputational damage, and loss of customer trust.</li><li>Content generated from biased or inconsistent data can cause flawed decision-making, reduce operational efficiency, and incur correction costs, thereby eroding employee trust and decreasing AI adoption.</li><li>Low employee engagement, sluggish AI implementation, failure to fully leverage AI advantages to improve efficiency, and setbacks in digital transformation process.</li></ul>
Mitigation Measures	<ul style="list-style-type: none"><li>Establish AI policies to guide TCC's information security team.</li><li>Develop a proprietary, closed AI system on ChatGPT's foundational model, ensuring data privacy while training TCC-specific models to minimize content bias.</li><li>In collaboration with MIT, TCC Lyceum offers ten on-demand AI courses to ease employee anxiety regarding the AI transformation.</li></ul>

### Goeconomic Confrontation

#### Economic

The US government is promoting the reshoring of manufacturing and implementing protective trade measures, including equivalent tariffs to encourage overseas manufacturers to set up factories in the US. The US has imposed a tariff on Taiwan, and has announced plans to expedite related negotiations. As of April 2025, the Taiwanese government has stated that it will not implement retaliatory tariff measures.

- A new wave of international trade barriers may lead to the restructuring of regional trade organizations. Failure to join these organizations could further slow domestic economic growth, indirectly impacting demand for cement and energy products in domestic and foreign markets.

- Mitigate import tariffs and trade barriers by establishing production bases or joint ventures in major markets.
- Mitigate coal price volatility from trade barriers by establishing a flexible, diversified supply chain through expanded procurement sources and long-term agreements.

## Business Continuity Plan (BCP)

To ensure the timely recovery of critical operations in the face of disruption risks, TCC has established business continuity management policies and objectives. This framework was advanced in 2024 with the Business Continuity Management Guidelines for TCC's cement manufacturing and sales operations. Based on ISO 22301 principles, these guidelines define response mechanisms, organizational responsibilities, and mandate regular drills. In the future, we will evaluate the formal implementation of ISO 22301 certification. In a disaster, TCC establishes a Command Team—led by the Chairman as

Chief Commander and senior executives as Deputies—to activate the response plan and confirm the Maximum Tolerable Period of Disruption (MTPD), Recovery Point Objective (RPO), and Recovery Time Objective (RTO) based on operational impact. A supporting Operations Team of plant and corporate managers handles loss assessment, disaster prevention, equipment recovery, and external coordination. In line with TCC's guidelines, each plant and unit must develop its own business continuity plans, assessing equipment risks and proposing countermeasures. TCC also maintains BCPs for

critical IT systems and services. For details, please refer to [CH1.6 Information Security](#).  
On April 3, 2024, following a magnitude 7.1 earthquake in Hualien, TCC promptly activated its BCP to sustain essential operations and expedite the return of normal operations, minimizing the disaster impact. TCC continues to strengthen its operational resilience and response to natural disasters according to the four stages of disaster management (mitigation, preparedness, response, and recovery).

	Mitigation	Preparedness	Response	Recovery
Objective	Minimize disaster likelihood and impact, safeguard personnel and assets, and maintain operational continuity.	Enhance response readiness to ensure timely action and minimize losses during an incident.	Rapidly control incidents to safeguard employee safety, minimize property damage, and sustain critical operations.	Restore normal operations, strengthen long-term resilience, and incorporate lessons learned for future events.
Measures	<ul style="list-style-type: none"><li>Strengthen the seismic design of facilities and equipment, and performing regular inspections and maintenance.</li><li>Develop and implementing strict safety standards and operational protocols, and conducting ongoing risk assessment and management.</li></ul>	<ul style="list-style-type: none"><li>Develop detailed contingency plans, including emergency evacuation routes and shelters.</li><li>Conduct regular emergency drills to build employee response capabilities for various disaster scenarios.</li><li>Stock necessary emergency supplies and equipment.</li></ul>	<ul style="list-style-type: none"><li>Establish real-time communication networks to gather post-disaster information.</li><li>Activate business continuity plans to maintain critical business operations.</li><li>Establish emergency rescue teams to perform immediate rescue and repair work.</li><li>Promptly evacuate affected employees and provide temporary accommodation and supplies.</li></ul>	<ul style="list-style-type: none"><li>Repair damaged facilities to restore operational capabilities.</li><li>Assess disaster impacts, activate recovery plans, and strengthen the disaster resilience of facilities and systems.</li><li>Provide counseling and support to assist employees in returning to normal work and life.</li></ul>

## Promoting Risk Awareness Among All Employees and Integrating Risk Management into Daily Work

The Risk Management Committee annually trains all directors in risk management. The 2024 session, "Enterprise Risk Management Trends and Organizational Resilience," analyzed international risk case studies and key insights from the Fortune/Deloitte 2024 CEO Summer Survey Report. Future plans will mandate annual training for 100% of non-executive directors. TCC also annually trains all employees, followed by tests to ensure comprehension. Additionally, the "Sustainable Action by All" metric is 10% of each employee's performance evaluation, focusing on "controlling or reducing corporate risks" to strengthen risk management.

## Action Spotlight

# From Compliance to Innovation: How CIMPOR Transforms Compliance into Advantage



**Özge AŞÇIOĞLU**

Group Director of Internal Audit, Risk and Compliance,  
Cimpor & OYAK CEMENT, TCC Group Holdings

Experienced compliance, risk and audit leader with 20+ years of experience of international experience across the EMEA region. Holds a unique blend of financial and business leadership education, having managed growing teams in various industries, including Energy, Telecoms, Banking and Manufacturing.

TCC's European subsidiary, CIMPOR, drives its robust compliance system through an independent department that integrates the COSO framework and the three lines of defense to oversee all compliance operations and ensure adherence to applicable laws and policies. CIMPOR's Compliance Policy Management Plan covers 21 core policies and is published multilingually in Turkish, Portuguese, English, and French. To embed a culture of integrity, CIMPOR also provides regular online and in-person training for all employees, from senior management to frontline employees, strengthening company-wide compliance awareness. CIMPOR's "Compliance 4.0" program leverages technology to transform compliance from a manual operation into an efficient, value-generating mechanism. This initiative demonstrates that compliance is not merely a risk mitigation tool, but a core strategy for building a competitive, ethical, and sustainable enterprise.

- **Process Automation (RPA) for Policy Adherence:** Using RPA to monitor employee review of the code of ethical conduct and anti-competitive guidelines, ensuring their commitment to compliance.
- **Third-party Due Diligence (Refinitiv Platform):** Leveraging the Refinitiv information service to conduct due diligence on potential partners (suppliers, customers, applicants) to screen for sanctions or compliance risks.
- **Systematic Gift & Hospitality Reporting (eBA):** The eBA system enables employees to systematically report gifts, hospitality, and conflicts of interest in accordance with regulations.

1.4

TCFD —

Climate-related Risks & Opportunities

GRI 201-2

2024 TCFD Report

Governance

The Board of Directors serves as the highest governance body overseeing climate-related issues, with responsibility for reviewing the company's sustainability strategy, supervising the overall direction of climate risk and opportunity management, and ensuring alignment with TCC's broader sustainability development policies. TCC has established both a Corporate Sustainability Development (CSD) Committee and a Risk Management Committee, tasked respectively with advancing climate-related strategic initiatives and overseeing the management of material risks.





The CSD Committee convenes at least twice annually to oversee the formulation and execution of climate targets and action plans and reports regularly to the Board to reinforce governance oversight. Concurrently, the Risk Management Committee, led by the President, holds primary accountability for climate risk governance. This committee assesses physical and transition risks and reports its management execution annually to the Board; it convened twice in 2024. Since 2023, Board-approved annual climate performance metrics have been embedded in the company's reporting cycle, strengthening strategic execution and enhancing responsiveness to stakeholders.

Risk Management

**Climate-related Risk and Opportunity Management Process**

TCC has established the [Risk Management Policy](#) and [Risk Management Committee Charter](#), holding regular meet-

ings to monitor climate action progress. This approach helps to keep potential risks from various operations within acceptable limits and establishes sound risk management operating principles.

Step 1 / Risk and Opportunity Identification	Step 2 / Risk and Opportunity Analysis	Step 3 / Response and Adaptation	Step 4 / Management and Supervision
<div></div> <div>Building on previous climate risk and opportunity identification results, international scientific and technical reports, and industry trends in local operational regulations, TCC updates climate-related risk and opportunity issues.</div> <div>Based on the SASB standards applicable to individual industries involved in key operations and their disclosure topics, the Company is gradually identifying and incorporating climate-related risks and opportunities across various industries.</div> <div><b>RESULTS</b> 10 key climate risks and 5 climate opportunities identified</div>	<div></div> <div>Hold cross-departmental workshops to understand the substantial impacts, timing, sources, and expected financial impacts of various risks and opportunities on TCC.</div> <div>Analyze and evaluate questionnaire results, and incorporate perspectives from external experts and senior executives to identify key risks and opportunities.</div> <div><b>RESULTS</b> Distribute 32 internal assessment questionnaires, ultimately identifying three major key risks and three opportunities</div>	<div></div> <div>Link climate policies, operational production, products and services, and external communication to current climate mitigation and adaptation strategies to develop and implement six major climate action plans.</div> <div><b>RESULTS</b> Six Major Climate Actions</div>	<div></div> <div>Regularly hold meetings to track the progress of the six major climate actions in response to risks and opportunities, monitor cement plant carbon reduction effectiveness through the carbon reduction management platform, and finally have the Risk Management Committee submit climate risk-related indicators and target tracking reports to the Board of Directors.</div> <div><b>RESULTS</b> Management Indicators and Non-financial Performance Indicators for the Six Major Climate Actions</div>



### Climate Risk, Opportunity Identification, and Assessment Methods

TCC's Board of Directors functions as the highest decision-making authority on risk management, overseeing a comprehensive identification and assessment framework spanning four dimensions: strategic, operational, climate-related, and financial risks. Climate-related risks have been fully integrated into the company's enterprise risk management (ERM) system. Aligned with the TCFD framework, TCC categorizes climate risks into acute and chronic physical risks and transition risks over short- and long-term horizons. Evaluated risk types include current and emerging regulations, technolog-

ical disruption, legal exposures, market volatility, and reputational impacts. In practice, TCC supplements internal analysis with international climate policy and regulatory trend monitoring to assess the potential implications of climate-related events across its subsidiaries and affiliated entities. To enhance analytical robustness and forward-looking capability, TCC applies scenario-based risk assessment tailored to risk typology. It employs the IPCC's high-emissions scenario (SSP5-8.5) to simulate the potential impact of worsening climate extremes on operations and physical assets. Concur-

rently, the IEA's Net Zero Emissions by 2050 (NZE) scenario is used to capture risks and opportunities arising from accelerated policy tightening, rapid market shifts, and technological transformation. Climate risk assessments are conducted across short-, medium-, and long-term horizons with financial quantification, enabling the company to evaluate how various climate pathways may affect its strategic positioning, operating model, and financial performance. These assessments inform TCC's climate resilience planning and strategic decision-making.

Scope of Business Identification and Assessment		Construction Materials, Energy for Social Transformation, Green Energy and Storage, Batteries and Asset Management
Scenario Settings	Physical Climate Risks	SSP5-8.5
	Climate Transition Risks	NZE 2050
	Climate-related Opportunities	NZE 2050

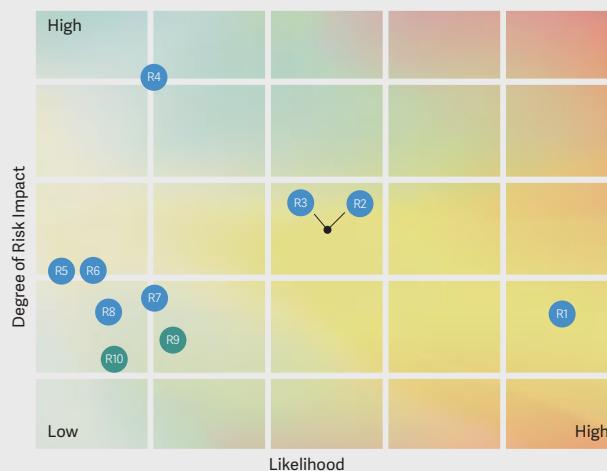
Time Horizon	Definition	Link to Strategic Decision-making
Short Term	Within 2 years (2025–2026)	Annual review and rolling adjustment of strategic initiatives planned for the upcoming 1–2 years.
Medium Term	2 to 4 years (2027–2029)	Aligned with the typical 4-year cycle for major strategic decisions; periodic reassessment and recalibration.
Long Term	Beyond 4 to 6 years (post-2030)	Strategies expected to deliver material impact after 2030, aligned with Taiwan's national 2050 net-zero roadmap and related sectoral policies for cement and concrete transition.

## Climate Risk Matrix, Climate Opportunity Matrix

### Short, Medium, and Long-term Climate-related Risks and Opportunities

In response to potential operational impacts from extreme weather events caused by climate change and net-zero transition, TCC has integrated climate risks into its overall Risk Management Policy. Following the climate-related risk and opportunity identification process, TCC has identified three significant key climate-related risks: carbon trading/carbon fees/carbon tax for total carbon emissions control (R1), support intensity from insurance and financial institutions' investment and financing (R2), and one physical risk, frequency and intensity of extreme precipitation events (R9). Three major key climate-related opportunities have been identified: new energy project development (O1), smart low-carbon production and collaborative waste treatment (O2), and market expansion of low-carbon products and services (O3). In addition to inventorying existing concrete response strategies and adaptation measures, TCC has planned six major climate actions based on the scope and duration of risks and opportunities: low-carbon circular production, industry-leading low-carbon construction materials, low-carbon and negative carbon technology innovation, smart new energy business, low-carbon supply chain, and climate disaster adaptation. These initiatives enhance corporate resilience and adaptive capacity in the net-zero transition, enabling effective transformation deployment and strengthening operational resilience.

#### Climate Risk Matrix



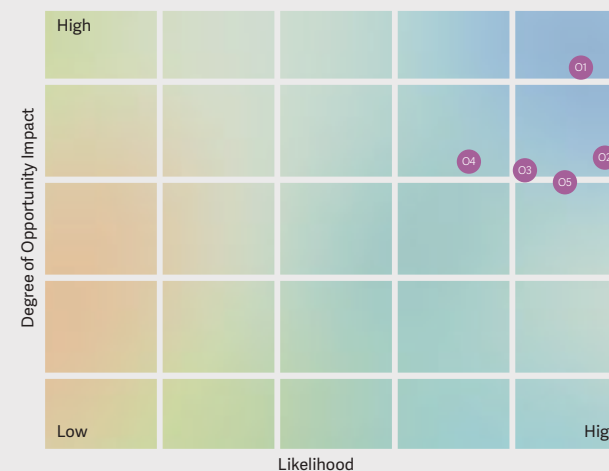
#### Transition Risks

- R1 Carbon Trading/Carbon Fees/Carbon Tax for Total Carbon Emissions Control
- R2 Support Intensity from Insurance and Financial Institutions' for Investment and Financing
- R3 Improper Use of Alternative Raw Materials/Fuels/Waste
- R4 Reputational Damage Due to Insufficient Low-carbon Transition
- R5 Difficulty in Obtaining Renewable Energy
- R6 Poor Energy Efficiency Management
- R7 Poor Performance in Low-carbon Technology, Equipment and Management
- R8 Failure in Research and Development Investment for Low-carbon and Negative Carbon Technologies

#### Physical Risks

- R9 Frequency and Intensity of Extreme Precipitation Events
- R10 Lack of Water Resources

#### Climate Opportunity Matrix



- O1 New Energy Project Development
- O2 Smart Low-carbon Production and Co-processing of Waste
- O3 Market Expansion of Low-carbon Products and Services
- O4 Attracting Long-term Investment Interest from Investors
- O5 Participate in Power Trading Market

# Strategy

TCC identifies climate-related risks and opportunities with high impact levels and likelihood, further evaluates whether current measures and strategies are sufficient to address

them and examines TCC's resilience under different climate risks and opportunities. Through this process, TCC simultaneously analyzes the impact of the aforementioned risks and

opportunities on current financial conditions, using it as a decision-making basis for strengthening risk management and resource allocation.

	Climate-related Risks	Risk Type		Risk Description
R1	Carbon Trading Carbon Fees Carbon Tax for Total Carbon Emissions Control	Transition Risk   Policies and Regulations	Construction Material	Traditional cement manufacturing processes emit large amounts of greenhouse gases. Without reducing greenhouse gas emissions, the Company will be impacted by increasingly stringent carbon regulation laws (such as carbon trading, carbon tax, or carbon fees). Furthermore, if countries do not implement carbon border taxes, imported goods will not be subject to carbon costs, resulting in unfair competition.
			Energy for Social Transformation	Without strategic planning for greenhouse gas reduction, the Company may face regulatory pressure from carbon control measures such as carbon fees, leading to increased operating costs. If these costs cannot be fully passed on, there is a risk of declining profits.
R2	Support Intensity from Insurance and Financial Institutions for Investment and Financing	Transition Risk   Market Risks	Construction Material	As a high-carbon emission industry, the cement sector will face significantly reduced willingness from financial institutions to engage in business if low-carbon transition plans are not developed. This includes decreased investment interest from potential investors, difficulties in financing and insurance coverage. Additionally, since TCC issues green financial products linked to carbon reduction performance, failure to meet carbon reduction targets will lead to increased financing costs.
			Energy for Social Transformation	Amid the global coal phase-out trend, financial institutions have ceased financing for coal-fired power plants, insurance companies refuse to provide insurance services for coal-fired projects, and potential investors show reduced interest, which will significantly impact organizational operations.
R9	Frequency and Intensity of Extreme Precipitation Events	Physical Risk   Immediacy	Construction Material	Cement and concrete operation sites may experience revenue loss or increased operational costs due to business interruptions or damage to owned equipment. Heavy rainfall and typhoons may lead to fluctuations in raw material quality and supply disruptions, which could also affect product transportation, resulting in delivery delays or failure to ship, thereby impacting overall operations.

	Expected Reasonable Time Period	Impact on Business Model and Value Chain	Strategy and Decision-making	Correspond to Six Major Climate Action Plans	Estimated Response Cost <sup>8</sup>
R1	Short-term to medium and long-term	<b>Business Model</b> — Cement Production — Energy Generation <b>Value Chain</b> Downstream: Customers in the Construction Industry, Ready-mixed Concrete Producers, and other Electricity Customers	<ul style="list-style-type: none"> <li>Implementation strategies include clinker substitution, alternative raw materials, alternative fuels, process improvements, waste heat power generation, renewable energy, carbon capture, and carbon sinks.</li> <li>Promote internal carbon pricing in cement business.</li> </ul>	Low-carbon Circular Production Low-carbon Supply Chain Low-carbon and Negative Carbon Technology Innovation	Approximately NT\$7.99 billion
R2	Short-term to medium and long-term	<b>Business Model</b> Financing Activities & Insurance	<ul style="list-style-type: none"> <li>Continue to engage with financial institutions and respond to international sustainability ratings.</li> <li>Align with IFRS Sustainability Disclosure Standards.</li> <li>Issue green financial instruments to attract investors.</li> <li>Plan for decommissioning Ho-Ping Power Plant by 2040.</li> </ul>	Low-carbon Circular Production Leading the Industry in Low-carbon Construction Materials Low-carbon and Negative Carbon Technology Innovation Smart New Energy Business	Approximately NT\$510 million
R9	Short-term to medium and long-term	<b>Business Model</b> — Cement Production — Energy Generation <b>Value Chain</b> — Upstream: Raw Material Supplies — Downstream: Product Transportation	<ul style="list-style-type: none"> <li>Construct detention and sedimentation ponds and build 2-meter-high earth embankments on the quarry slopes to mitigate the impact of flooding.</li> <li>All RMC Plants have established emergency response procedures; cement plants have formulated typhoon and flood response plans.</li> <li>Flood control teams are set up at the plants to conduct regular drills and enhance inspections.</li> <li>All high-risk critical equipment is insured against natural disaster-related damages.</li> </ul>	Climate Adaptation	Approximately NT\$500 million

	Climate-related Opportunities	Opportunity Type	Risk Description		Expected Reasonable Time Period
O1	New Energy Project Development	Products and Services	Green Energy and Energy Storage	Amid the accelerating push toward net-zero transition, the demand for green energy continues to rise. Installing solar panels for self-consumption at operating sites; independently developing diverse renewable energy sources and establishing energy storage systems to meet Taiwan enterprises' green electricity and energy storage needs. TCC Group's subsidiary Atlante joins European Spark Alliance to expand product market and business territory.	Short-term to medium and long-term
			Battery	By optimizing battery energy efficiency and charging/discharging efficiency, combining self-developed energy management systems for battery health monitoring, and integrating renewable energy with charging equipment applications, the Company improves power generation efficiency, extends battery life, strengthens product competitiveness, and enhances customer loyalty.	
O2	Smart Low-carbon Production and Co-processing of Waste	Resilience	Construction Material	The government promotes climate-related regulations and offers carbon fee incentives, encouraging businesses to plan early for low-carbon transformation. This enables companies with low-carbon production to gain competitive advantages. TCC Group takes the lead in adopting alternative raw materials and fuels along with AI-smart manufacturing processes, improving energy efficiency and lowering costs. Meanwhile, through co-processing waste, the Group reduces coal usage, creating carbon reduction benefits and revenue streams, strengthening its overall carbon reduction competitiveness.	Short-term to medium and long-term
O3	Expand the Market in Low-carbon Products and Services	Products and Services	Construction Material	Global demand for low-carbon Construction materials is increasing. TCC develops low-carbon products by utilizing alternative raw materials and fuels, improving process, and adopting energy-saving technologies, strengthening its competitiveness and driving profit growth. The launch of new domestic and international products, including UHPC, along with the implementation of regulations and carbon pricing, helps raise customers' carbon reduction awareness and drives market demand.	Short-term to medium and long-term



	Impact on Business Model and Value Chain	Correspond to Six Major Climate Action Plans	Strategy and Decision-making	Estimated Response Cost <sup>a</sup>
O1	<b>Business Model</b> Low-carbon New Energy Products and Services Sales <b>Value Chain</b> Downstream: Customers with New Energy Demands	Smart New Energy Business	<ul style="list-style-type: none"> <li>TCC Green Energy Corporation focuses on the development and management of renewable energy projects including solar power, wind power, and geothermal energy, as well as research, evaluation and cooperation in renewable energy</li> <li>NHOA.TCC is dedicated to building city-level microgrids. In addition to establishing large-scale EnergyArk energy storage facilities, it also develops and designs energy storage cabinets that are more suitable for indoor use, with plug-and-play integration of batteries and equipment for urban power grids</li> <li>Invest in Taiwan's first super battery factory, focusing on mass production of large power batteries</li> <li>Establish integrated green charging and energy storage charging services, as well as providing green energy matching services and aggregated power trading</li> <li>Expand into Taiwan, European and American electric vehicle and charging station markets</li> </ul>	Approximately NT\$8.33 billion
O2	<b>Business Model</b> Cement Production	Low-carbon Circular Production	<ul style="list-style-type: none"> <li>Implementation of artificial intelligence for production efficiency</li> <li>Co-processing of household waste and hazardous waste in cement kilns</li> </ul>	Approximately NT\$30 million
O3	<b>Business Model</b> Low-carbon Products and Services Sales <b>Value Chain</b> Downstream: Construction Industry, Ready-mixed Concrete Manufacturers, and Charging Service Customers	Low-carbon Circular Production Leading the Industry in Low-carbon Construction Materials Low-carbon Supply Chain	<ul style="list-style-type: none"> <li>Actively develop low-carbon cement and concrete and low-carbon products such as UHPC</li> <li>100% sales of Portland Limestone (IL) low-carbon cement in Taiwan</li> </ul>	Approximately NT\$40 million

Note 8: For detailed information about financial impact, please refer to the TCC 2024 TCFD report.

## Scenario Analysis

TCC has identified its top three climate-related risks, with all classified as transition risks, reflecting the sector’s exposure to evolving regulatory and market dynamics. To quantify the timing and financial magnitude of these risks, the company prioritized two risk dimensions for scenario analysis:

R1: Carbon pricing mechanisms, including emissions trading schemes, carbon fees, and carbon taxes—recognized as the most material transition risk; and

R9: The increasing frequency and severity of extreme precipitation events—TCC’s most significant physical climate risk.

These focal risks form the basis of TCC’s forward-looking climate scenario analysis, which evaluates potential financial impacts across multiple global warming pathways and regulatory environments. The outputs inform the company’s climate resilience strategy and are integrated into its roadmap toward long-term net-zero targets.

In alignment with global disclosure best practices, TCC applies a multi-scenario analytical framework to assess transition risk exposure under varied climate policy trajectories. Specifically, the company references the International Energy Agency (IEA)’s Stated Policies Scenario (STEPS), Announced Pledges Scenario (APS), and Net Zero Emissions by 2050 (NZE) to model the financial implications of carbon pricing volatility on its global operations. This approach supports the company’s ability to formulate dynamic mitigation strategies and capital allocation decisions under increasing policy, investor, and market scrutiny.

Risk Type	Scenario Description	Key Parameters	Impact Content	Estimated Temperature Rise	Scenario Source
TRANSITION RISKS	<b>STEPS</b> Existing climate change response measures and established concrete policies from governments worldwide.	Price changes in different regions <sup>9</sup>	Additional expenses over five to ten years due to carbon fees or carbon trading	<b>2.4 °C</b>	IEA <sup>10</sup>
	<b>APS</b> Incorporating the latest climate commitments from all countries, including Nationally Determined Contributions (NDCs) and long-term net-zero targets.			<b>1.7 °C</b>	
	<b>NZE 2050</b> Global energy sector achieves net-zero greenhouse gas emissions by 2050.			<b>1.5 °C</b>	
PHYSICAL RISKS	<b>SSP1-2.6</b> A low-emission scenario refers to a global effort to achieve sustainability goals, though progress remains slow	Changes in precipitation patterns caused by climate extremes	Operational disruptions and asset impairments due to flooding	<b>1.8 °C</b>	IPCC
	<b>SSP5-8.5</b> A very high-emission scenario refers to extremely high levels of emissions resulting from heavy reliance on fossil fuels in the absence of global climate policies.			<b>4.4 °C</b>	

Note 9: Referenced from IEA WEO 2024, the Regulations Governing the Collection of Carbon Fees (2024), and Carbon pricing options for Taiwan (2020).

Note 10: Referenced the IEA 2024 World Energy Outlook.

## Transition Risks —

### Analyze carbon price impacts brought by domestic and international carbon regulations

As a high-emission industry, cement faces growing regulatory pressure. In 2023, Taiwan passed the Climate Change Response Act, followed by the Regulations Governing the Collection of Carbon Fees in August 2024. TCC is expected to begin paying carbon fees in 2026 based on 2025 emissions. Approval of a voluntary reduction plan would allow use of a carbon leakage risk factor to ease financial impact. In Mainland China, the national ETS launched in 2021 for the power sector will include cement by 2025, directly affecting TCC’s mainland operations and requiring proactive risk management.

To strengthen operational resilience and manage decarbonization risks, TCC expanded its global presence in 2024, raising its stake in Türkiye’s OYAK CEMENT to 60% and acquiring full control of Portugal’s CIMPOR. These moves enhance access to advanced low-carbon technologies. CIMPOR’s African sites have achieved 90% biomass fuel substitution rate, and it operates the world’s first large-scale calcined clay cement plant, reducing CO<sub>2</sub> emissions by at least 40%. These advantages help TCC respond to global carbon pricing and the EU’s CBAM, while improving long-term carbon cost competitiveness.

To assess carbon pricing impacts, TCC models emissions under Business-as-Usual (BAU) and internal target scenarios. Using the IEA’s STEPS, APS, and NZE2050 pathways, it analyzes global carbon price trends and estimates site-level exposure to carbon fees and ETS costs. This supports integration of climate risks into capital planning and strategy.

Analysis of Sites	Key Parameters Considered	Scenarios	Response Strategies	Results
Cement Production Sites of Taiwan, Mainland China, and CIMPOR Ho-Ping Power Plant	Cementitious Material Production Volume	IEA STEPS Carbon Prices Under Current Policies Scenario	Alternative Clinker	Carbon Price Carbon Trading Financial Impact Results <sup>11</sup>
	Clinker Production Volume		Alternative Raw Materials	
	Taiwan's Energy Transition Plan	IEA APS Carbon Prices Under Target Scenario	Alternative Fuel	
	Energy Consumption		Process Improvement	
	Taiwan's Carbon Leakage Risk Coefficient		Waste Heat Power Generation Renewable Energy	
	Carbon Prices in Taiwan and Mainland China	IEA NZE 2050 Carbon Prices Under Net Zero Emissions	Carbon Capture Carbon Sink	
	Preferential Rates			

Analysis shows that without proactive emissions reduction, TCC sites would face carbon costs exceeding internal abatement thresholds under all climate scenarios—especially under NZE 2050, where projected costs surpass those under STEPS and APS. In contrast, achieving internal targets across all sites would significantly reduce carbon fees and reliance on external credits. Estimated savings will be

disclosed in TCC’s 2024 TCFD Report. Without strong emissions control, all TCC sites risk major financial impact from carbon pricing. In response, TCC has accelerated facility- and group-level decarbonization targets as the foundation of its net-zero strategy, aiming to reduce transition risks from stricter climate policies and rising carbon costs.

Note 11: Financial impact refers to the difference compared to not taking carbon reduction measures.

## Physical Risks —

### Frequency and Intensity of Extreme Precipitation Events

TCC assessed physical climate risks at its sites in Taiwan and Mainland China using national meteorological data, IPCC scenarios (SSP1-2.6 and SSP5-8.5), and disaster risk databases, classifying risks as high, medium, or low. For OYAK CEMENT and CIMPOR, flood risks in 2030 and 2050 were evaluated using WRI's Aqueduct Floods tool under extreme precipitation scenarios. Findings will be disclosed in the 2024 TCFD Report. To reduce potential impacts, TCC will conduct regular flood simulations and enhance adaptation measures at key sites.

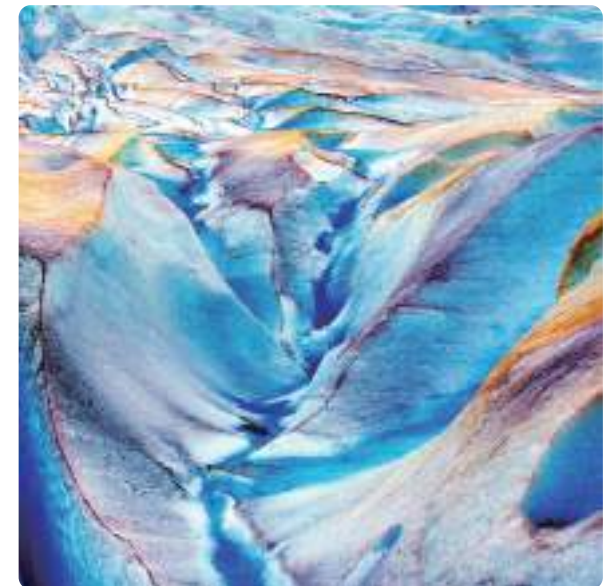
## Metrics and Targets

### Climate-related Management Metrics

TCC has committed to climate goals based on the most rigorous scientific standards, including net-zero by 2050, carbon-neutral concrete, and Science Based Targets (SBT) for 2025. To drive the energy transition, TCC offers green energy solutions for national grids, cities, businesses, and EV users. The company holds regular reviews to track progress on six major climate actions, linking carbon targets to performance evaluations and incentive systems. For detailed information, please refer to [Sustainability Goals and Tracking](#).

### Internal Carbon Pricing System

To promote low-carbon investment, improve energy efficiency, and incentivize internal carbon reduction efforts, TCC has established an internal carbon pricing system. For detailed information, please refer to [CH2.2 Low-carbon Production Management](#).



# 1.5 Ethical Management

GRI : 2-25 / 2-26 / 2-27 / 205-1 / 205-3 / 206-1

SASB : EM-CM-520a.1

TCC emphasizes professional ethics, regulatory compliance, and integrity. TCC Taiwan, CIMPOR and OYAK CEMENT have both achieved ISO 37001 Anti-bribery Management System certification, with CIMPOR and OYAK CEMENT further obtaining ISO 37301 Compliance Management System certification.

## Zero Tolerance for Bribery and Corruption

TCC has established an "Anti-corruption and Anti-bribery Promotion Team" led by the President, with the Compliance and Legal Office overseeing. Department supervisors monitor daily corruption and bribery risks, reporting to the Audit Committee and Board of Directors at least annually. Employee performance appraisals incorporate ethical management indicators, including anti-corruption, anti-bribery, and legal compliance.

### Corruption and Bribery Risk Assessment and Due Diligence

The Compliance and Legal Office updates regulatory compliance trends annually through the "Internal/External Issues Registry". It oversees legal updates and authority requirements, reviewing last year's risk control measures. Departments and subsidiaries must monthly update and promptly report controversies to the Compliance and Legal Office for quick legal or compliance issue resolution. TCC conducts ISO 37001-aligned annual corruption-risk assessments, across all departments and global production sites, while progressively digitizing the process. Under its "Business Partner Corruption Risk Assessment and Due Diligence Procedures.", TCC conducts due diligence on suppliers, contractors, and customers, and stipulates countermeasures for partners that decline to cooperate.

#### TCC KEY FACTS

**ZERO** corruption incidents occurred.

**100%** of medium and high-risk personnel at operational headquarters have signed the Integrity Code

- Ethical Corporate Management Best Practice Principles
- Anti-corruption and Anti-bribery Policy
- Reporting Mechanism for Violation of Code of Conduct
- Code of Ethical Conduct

#### TCC KEY FACTS

**99.9%** of employee signature rate for the Statement of Integrity and Ethical Conduct

| Planning underway for Fuzhou grinding station, Liaoning and Longshan Cement Plant



	Business Partners <sup>12</sup>	Employees	Operating Procedures										
Execution Frequency	<ul style="list-style-type: none"><li>Irregular execution before initial cooperation</li><li>Once a year after cooperation</li></ul>	At least once a year	At least once a year										
Risk Assessment Process	<ul style="list-style-type: none"><li>Conduct a corruption and bribery risk assessment based on six major aspects<sup>13</sup><table><tr><td>High-risk areas</td><td>High-risk significant value activities</td></tr><tr><td>High-risk business arrangements</td><td>High-risk partners</td></tr><tr><td>Reputational incidents</td><td>Policies and procedures</td></tr></table></li><li>Conducting corruption and bribery risk due diligence based on assessment results<table><tr><td>Low-risk entities</td><td>High-risk entities</td></tr><tr><td>Basic due diligence procedures</td><td>Enhanced due diligence procedures</td></tr></table></li></ul>	High-risk areas	High-risk significant value activities	High-risk business arrangements	High-risk partners	Reputational incidents	Policies and procedures	Low-risk entities	High-risk entities	Basic due diligence procedures	Enhanced due diligence procedures	<ul style="list-style-type: none"><li>Corruption and bribery risks are assessed separately by department and by employee level within each department.</li><li>Aggregating departmental risks and position-level risks to calculate overall risk levels.</li></ul>	<ul style="list-style-type: none"><li>Identifying stakeholder needs and expectations to ensure the management system can effectively respond to them.</li><li>Identifying corruption and bribery risk scenarios within operational activities.</li><li>Assessing the level of impact based on the likelihood of risk occurrence and its potential consequences.</li><li>Evaluating the effectiveness of relevant control measures.</li><li>Determining residual risk based on the assessed impact and control levels.</li></ul>
High-risk areas	High-risk significant value activities												
High-risk business arrangements	High-risk partners												
Reputational incidents	Policies and procedures												
Low-risk entities	High-risk entities												
Basic due diligence procedures	Enhanced due diligence procedures												
Risk Response and Treatment	<ul style="list-style-type: none"><li>Parties that fail the assessment will be blacklisted, eliminating the possibility of future cooperation.</li><li>Anti-corruption and anti-bribery clauses are included in standard contract terms with business partners, who are also required to sign relevant codes of conduct.</li></ul>	<ul style="list-style-type: none"><li>All employees must complete due diligence procedures before being hired or assuming their roles and sign the Statement of Integrity and Ethical Conduct.</li><li>Employees of departments assessed as medium-high risk sign the Statement of Integrity and Ethical Conduct and Integrity Code at least once a year.</li><li>Linking compliance with anti-corruption and anti-bribery systems to employee performance incorporating it into annual performance evaluations.</li></ul>	<div><div>High-risk</div><div>Medium-risk</div><div>Low-risk</div></div> <ul style="list-style-type: none"><li>Requires immediate development of improvement plans or enhanced control measures.</li><li>Responsible unit must re-examine control mechanism completeness and appropriateness, providing a review plan.</li><li>Managed through standards procedures.</li></ul> <ul style="list-style-type: none"><li>After the risk assessment results and response plans are reviewed by the promotion groups of each unit, they are compiled by the Compliance and Legal Office and submitted to the President for approval before being forwarded to the Audit Committee for final approval.</li></ul>										

Note 12: Assessment frequency is tailored to each site's size and business profile. For example, CIMPOR and OYAK CEMENT conduct assessments every three years and review high-risk partners more often. All new partners must also complete a Compliance Investigation Questionnaire.

Note 13: Business-partner evaluations cover: initial onboarding targets—(i) production suppliers whose first contract exceeds NT\$5 million; (ii) non-production suppliers above NT\$1 million; and (iii) all first-time domestic or overseas customers and construction-project suppliers. Annual review targets include tier-1 key production suppliers, non-production suppliers with yearly spend over NT\$5 million, domestic cement customers whose prior-year purchases exceed NT\$20 million, all overseas cement customers, and all suppliers engaged in construction projects during the year.

### Integrity and Ethics Education Training

In 2024, integrity management training was provided to directors, business partners, employees, new recruits, and interns, extending to global operational sites (except CIMPOR Cameroon plant, where implementation is expected in 2025).

The number of trainees reached 9,729, with a total of 11,937 hours. Education and training have been gradually extended to suppliers and contractors, with a total of 305 suppliers trained across sites in Taiwan and Mainland China in 2024, totaling 1,220 hours. Headquarters staff prioritize participation in ISO 37001 anti-corruption management system online policy promotion and training, covering corruption detection, public sector interaction management, and hospitality and gift guidelines. Subsidiaries CIMPOR and OYAK CEMENT implement integrity and ethics education aligned with ESRS indicators adopted by CSRD, covering 100% of employees in high-risk functions, including sales and marketing, procurement, human resources, finance, and audit compliance-related units.


Target
<b>New Recruits</b> (Including Part-time and Student Workers)
<b>Current Employees</b> (Including Senior Managers, Part-time and Student Workers)
<b>Directors</b>
<b>Business Partners</b>

### Education and Training Content

- New recruits are required to sign the Statement of Integrity and Ethical Conduct on their first day and receive one-on-one training on anti-corruption and anti-bribery policies within ninety days of employment, with training records duly maintained.
- All employees participate in anti-corruption and anti-bribery education and training at least once a year, with records maintained to ensure they understand the relevant operational regulations and the potential consequences and risks of non-compliance. For employees involved in customer and supplier interaction or departmental operational process corruption assessments, additional specialized training on related themes is provided.
- At least once a year, communicate anti-corruption and anti-bribery education and training materials are sending to directors via email or print, with a requirement for them to sign the Commitment to Compliance with Integrity Management, Anti-Corruption, and Anti-Bribery.
- Suppliers** | Communicate the spirit of integrity management to suppliers through emails, supplier conventions, and other channels, and require all suppliers to sign the Supplier Code of Conduct, which includes provisions related to integrity management.
- Contractors** | Integrity management awareness is promoted to all contractors, including outsourced personnel such as security guards.
- Customers** | Conduct credit evaluations for cement customers that include integrity management clauses.

## Whistleblowing Mechanism and Whistleblower Protection

TCC promotes reporting of misconduct by anyone connected to the Company through its "Reporting Mechanism for Violation of Code of Conduct, accepting reports via email, written submissions, or in person. TCC also promotes the whistleblowing mechanism through integrity management education and training courses to ensure that employees and external personnel are familiar with the system and procedures. Reports can be anonymous but must include complete information and evidence to deter malicious claims. Whistleblower identities and report details are kept confidential, and retaliation is strictly prohibited. If it involves senior managers, reports can be made to the Audit Committee. The Audit Office registers received cases within five days and verifies their acceptance based on relevant information. Upon acceptance, an investigation team is formed with relevant personnel to ascertain facts, and findings and recommendations are submitted to the President and Chairman. If the case involves the President, the report will be submitted directly to the Chairman. If a whistleblowing case is verified as true, the Audit Office will collaborate with relevant departments to review internal controls and operational procedures, propose corrective measures, and regularly report to the Audit Committee to prevent recurrence.



CIMPOR has established a third-party whistleblowing mechanism, managed by an independent external unit through the online whistleblowing platform Ethico. The platform operates year-round, regardless of time, location, or time zone, supports multiple languages, and allows anonymous reporting. Employees and suppliers can submit reports via telephone, email, or the online platform ([cimporglobal.speakup.report](https://cimporglobal.speakup.report)), and the audit department regularly monitors these channels and reports to the management level.

✉ Whistleblowing mailbox: [mp.buster@taiwancement.com](mailto:mp.buster@taiwancement.com)  
Whistleblowing mailbox for high-level integrity management related issues: [tccwhistle@taiwancement.com](mailto:tccwhistle@taiwancement.com)

### 2024 Summary Table of Whistleblowing and Grievance Cases

Whistleblowing and Grievance Channels	Whistleblowing Mailbox	Audit Committee Mailbox	Employee Grievance Mailbox	Online Peace of Mind Platform
Number of Cases Received	241	7	0	0
Number of Cases Related to Violations of Integrity Management				176
Number of Cases Related to Harassment (Including Sexual Harassment)				68
Number of Cases Related to Bullying (Including Discrimination)				4

### Violation of Internal Guidelines

Penalty Type	Number of Cases
Corruption or Bribery	0
Discrimination or Harassment Incidents	3
Customer Data Privacy	0
Conflict of Interest	0
Money Laundering or Insider Trading Incidents	0

Note 14: No corruption or bribery cases for TCC in 2024, resulting in zero fines.

## Audit and Internal Control Management System



### TCC Audit Personnel

22%  
hold CPA  
certification



44%

of personnel have obtained audit certification, including ISO Lead Auditor and International Computer Audit Software Professional (ICCP)

### CIMPOR & OYAK CEMENT Audit Personnel

25% hold  
CPA  
certification



38%

of personnel have obtained audit certification, including Certified Internal Auditor (CIA), Certified Fraud Examiner (CFE), Certified Financial Services Auditor (CFSA), Certified Information Systems Auditor (CISA), and Certification in Risk Management Assurance (CRMA)

TCC's Audit Office reports to the Board of Directors (BOD) and is staffed by one Chief Auditor and eight auditors. It audits TCC's operations in Taiwan, Mainland China, and subsidiaries, and consolidates audit progress from CIMPOR. Key audit findings are reported to the Audit Committee each quarter. CIMPOR has an audit unit at its headquarters that covers all sites in Europe and Türkiye.

To strengthen audit personnel's professional understanding of ESG regulations and internal control mechanisms, TCC continually provides relevant education and training. In 2024, 28 auditors from TCC and CIMPOR logged 730 training hours. Courses covered IFRS S1/S2, practical implementation of sustainability internal controls in annual reports under new regulations, and legal risks of green-washing. Future sessions will explore AI-enabled auditing and assurance of sustainability data to sharpen auditors' ability to detect internal deficiencies and anomalies.

The Audit Office develops its annual plan based on risk assessments, entity business models, and data analytics. Audit priorities are also guided by key regulations, including public company internal control rules, assessment items, and the IFRS Sustainability Standards implementation progress. When deficiencies are found, the audited unit must implement corrections by a deadline, with all remedies tracked and reported to the Audit Committee. For example, in 2024, water-footprint imbalances found at several plants in Taiwan and Mainland China were corrected on time, and water controls will be reinforced. The 2025 plan will add internal control audits for sustainability data and deploy AI to enhance anomaly detection.

#### Step 1 Formulation of Audit Plan

The annual audit plan is developed based on the results of risk assessments and is formally approved by the BOD.

#### Step 2 Issuance of Audit Report

Audit items are executed in accordance with the approved annual audit plan. Upon completion, comprehensive audit reports are prepared and submitted to the Audit Committee for review.

#### Step 3 Follow-up on Audit Findings

- All identified deficiencies and irregularities are accurately disclosed in the audit reports.
- Follow-up actions are conducted after the reports are reviewed and approved, with follow-up reports subsequently submitted to the Audit Committee for further examination.

### Incorporating Sustainability Information into Internal Control Cycles

TCC established an internal control system in accordance with the Guidelines for the Establishment of Internal Control Systems by Public Companies issued by the Financial Supervisory Commission. In December 2024, the Internal Control Policy was submitted to and approved by the Board of Directors. Risks are reviewed regularly and matched with controls to ensure compliance and transparent disclosures; the system spans nine operating cycles (including sales and collections, purchase and payment, production, payroll, financing, fixed assets, investments, R&D, and information systems) and 19 control activities. In 2025, Sustainability Information Management has been added and codified the Cycle Control Operating Guidelines, embedding sustainability data into cycle controls and requiring IFRS-aligned treatment. The Audit Office must submit an annual sustainability-information audit plan for BOD approval. TCC ensures transparency and

credibility through clear governance, defined disclosure boundaries, and accredited third-party preparation & assurance, ensuring compliance and providing stakeholders with reliable information. From Q1 2025, an e-platform will support unit-level self-assessments at headquarters, gradually adding sustainability and fair-trade regulations to reinforce the three lines of defense—self-check, compliance & risk management, and internal audit.



### External Sanctions Violations

In 2024, TCC had a total of six Significant penalty incidents<sup>15</sup>, including two environmental incidents in Taiwan and four environmental incidents in Mainland China, with a total penalty amount of NT\$20,609,808. TCC has implemented necessary corrective measures for the violations and enhanced training efforts. For more details, visit the Material Information and [ESG – Ethical Management sections](#) on ESG section on the TCC website.

Penalty Type	Environmental Regulation Violation Incidents
Number of Cases	6
Case Summary	Violation of water pollution regulations: <b>2 incidents</b> Violation of waste management regulations: <b>1 incident</b> Violation of forestry regulations: <b>3 incidents</b>
Response Measures	Including upgrading wastewater treatment systems, enhancing equipment maintenance, regularly cleaning up waste, and strengthening internal environmental education to reduce environmental pollution and ensure compliance with regulatory requirements.

Note 15: Significant penalty incidents refer to incidents where a single penalty amount exceeds USD 10,000.  
Note 16: Explanation Of The Aquavoltaics Arbitration Case - Land use permit case of Area F at the Chiayi Aquavoltaics Phase I site. For more information, please refer to TCC's 2024 Annual Report.



1.6

# Information Security

To ensure the security of data, systems, and trade secrets, TCC has adopted a Group-wide Information Security Policy. The policy covers all domestic and overseas subsidiaries and other entities under TCC's effective control, applying to every site employee and any outsourced, contracted, or dispatched vendor with access to internal information.

## Information Security Committee Execution Structure Supervised by an Independent Director with Expertise in Information Security

TCC has established an Information Security Management Committee in accordance with ISO 27001 and Article 27 of the Corporate Governance Best Practice Principles for TWSE/TPEX Listed Companies. In 2024, it was elevated to a functional committee. Led by the Chief Information Security Officer (CISO) and a dedicated security team, the committee designs the Group's security architecture, operations, and monitoring, handles incident response and investigations, tracks annual security priorities, and manages incident-reporting channels. The CISO submits regular status and outlook reports to the BOD. The committee comprises three independent directors, including Ruu-Tian Chang, who brings expertise in cybersecurity and AI. In response to AI advances, TCC is shaping its AI policy with reference to the Bletchley Declaration, the Frontier AI Safety Commitments, and insights from the AI Action Summit.



TCC KEY FACTS

ZERO

critical information security incidents<sup>17</sup> occurred.  
incidents of customer or employee information leakage occurred.

100%

new recruits signing the Information Security Statement  
| Taiwan and Mainland China cement operations, subsidiaries CIMPOR's European plants, and OYAK CEMENT  
| Planning underway for CIMPOR's African plants



Information Security Policy  
Incident Reporting and Response Process  
Personal Data Protection and Management Policy

Note 17: TCC's defines critical information security incidents as cases involving leakage of sensitive data or trade secrets, tampering with information in core business systems or critical infrastructure, or operational disruption causing business interruptions that cannot be restored within a predetermined timeframe.



TCC KEY FACTS

Employee information security  
education and training  
**3,259 hours / 3,555 participants**

**Obtained ISO 27001**  
Information Security Management System certification  
| Taiwan and Mainland China cement operations, subsidiaries OYAK CEMENT, and Molice | Planning underway for CIMPOR

## Information Security Specialized Team



TCC headquarters has a dedicated information security team of five members, 100% of whom hold four internationally recognized information security certifications. Additionally, there is a support team of 30 personnel assisting with information security. In 2024, a total of 44 weekly, eight monthly, and four quarterly information security meetings were held. TCC also encourages its information security personnel to obtain international certifications such as ISO 27001 and EC-Council Certified Incident Handler (ECIH). In 2025, the Company plans to have staff complete external training for ISO 27001 Lead Auditor certification.

# Information Security Incident Reporting and Handling Mechanism

To manage information security risk, TCC has clear incident-reporting and response procedures. When malicious connection detection system (MxDR) or device status monitoring software (PRTG) identifies a potential threat or anomaly, the system instantly alerts security and management staff to act. Employees must also report suspected incidents to the security team. Incidents are ranked on a four-level scale; major cases are escalated to the CISO and Information Security Committee, with emergency protocols triggered when required. During the information security incident handling process, the system owner and vendors will collaborate to perform repairs and documentation and conduct in-depth digital forensics depending on the situation. To prevent recurrence, TCC holds review meetings to strengthen existing security measures, enhancing its information security protection capabilities.

# Information Security Management Programs

## Information Business Continuity Plan

TCC has established Information Business Continuity Plans at all sites to keep critical systems running and restore operations quickly after a disaster or unexpected event. To validate each plan, sites in Taiwan and Mainland China test it at least every six months, while OYAK CEMENT and CIMPOR test at least once a year, continually sharpening response capabilities and execution. When TCC's data center fails, an emergency response team is activated immediately and relevant personnel are alerted. If the outage is expected to last more than a week, the team decides within 24 hours to switch to the backup data center and directs the switchover. Annual live drills, core-system disaster-recovery tests, and operational technology (OT) prevent threats and keep response capabilities sharp. TCC will also assess overseas backup options for core systems to reduce geopolitical risk.

## Cybersecurity Education and Training to Enhance Employee Awareness

TCC requires 100% of new recruits worldwide to sign an information-security declaration and will extend this practice to its African plants in 2025. Company-wide cybersecurity training is delivered annually, while emails and the security platform promote system protection, password hygiene, and anti-phishing practices. It also occasionally holds expert courses and distributes security policies and protective measures to enhance cybersecurity awareness among all employees. CIMPOR augments these efforts with CyberReady automated training and six SOC-led sessions each year for high-risk staff.

## Regularly Conduct Third-party Vulnerability Analysis and Internal Audits

TCC's operations in Taiwan and Mainland China, as well as subsidiaries Molice, Ho-Ping Power Plant, and OYAK CEMENT have all obtained ISO 27001 certification. For details on the validity period, please refer to the [ESG section on the TCC website](#). CIMPOR has begun the certification process to raise its security management. Information-security reviews are mandatory in the annual audit plan; in 2024, sites in Taiwan and Mainland China, as well as OYAK CEMENT and CIMPOR, completed independent vulnerability assessments. Each year TCC conducts vulnerability scans, penetration tests, red-/blue-team drills, honeypot monitoring, and simulated attacks, while OYAK CEMENT and CIMPOR also commission yearly third-party scans, penetration tests, and full security-system evaluations to ensure robust protection.

## Action Spotlight

In 2024, a total of 11 information security health checks and 16 social engineering drills were completed, recording an overall violation rate of 2 percent. Employees who breached rules during drills were promptly assigned to awareness enhancement courses, and TCC maintains a management target of keeping violations below 3 percent. Going forward, drill results will be more widely communicated and tied to individual performance to boost anti-fraud awareness and strengthen corporate cyber-resilience.

## Comprehensive Information Security Management

### Information Security Strategy

### Specific Management Procedures and Measures



#### PREVENTION

Information Security Risk Assessment Mechanism

TCC regularly conducts annual assessments of all IT-related departments and information systems. Following its security-risk assessment mechanism, TCC analyzes risks across three dimensions: asset value x vulnerability x threat, and implements mitigation actions to fulfill the spirit of information security management.

Network-related Security Procedures

Establish firewall access rules, intrusion detection and prevention mechanisms (IDS/IPS), web application firewalls (WAF), web traffic filtering and analysis (Akamai), internet behavior monitoring systems (L7), enhanced remote connection mechanisms (VPN with two-factor authentication), to ensure internal network security and reduce the risk of hacker intrusion.

Ransomware Protection

Deploy enterprise-wide endpoint protection measures (EDR) and malicious connection detection mechanisms (DDI). Engage external professional security teams for 24/7 monitoring and analysis of abnormal events (MxDR), with 48 security threats detected and immediately blocked in 2024.

Regularly Review Audit Trails

Regularly review audit trails of core systems and equipment, using correlation analysis to identify potential threat events, ensuring there are no abnormal access behaviors from internal or external sources.

Join Security Threat Intelligence Center

Join TW-CERT, Trend Micro, and other security threat intelligence centers to receive real-time security risk information. In 2024, a total of 223 pieces of security intelligence were received, all of which were immediately processed and risks blocked.

Face Recognition Mechanism for Copiers

The headquarters, along with E One Moli Corporation and Molie Quantum Energy Corporation, have implemented a print management system that incorporates OCR image recognition to detect sensitive content. The system utilizes facial recognition and monitoring mechanisms to track abnormal printing activities, preventing employees from printing sensitive information.

Lens-free Smartphone Project

- Colleagues in the information department at the headquarters are prohibited from bringing camera-equipped 3C devices into sensitive areas and office areas to prevent sensitive data leakage.
- E One Moli Corporation and Molie Quantum Energy Corporation have designated sensitive data areas, redesigned personnel movement routes, prohibited carrying personal smartphones, and provided lens-free smartphones for communication, while also installing metal detection gates and security posts to ensure safe entry and exit of equipment.



#### DETECTION

Vulnerability Scanning and Penetration Testing

- Vulnerability scanning is conducted quarterly, covering core critical systems and all information systems within the Group, with requirements to remediate high-risk vulnerabilities within two months and complete retesting to confirm the effectiveness of the patches.
- In 2024, a total of two penetration tests were conducted, identifying 23 risks, of which three were high-risk and all were remediated within two months.

## Information Security Strategy

## Specific Management Procedures and Measures



### DETECTION

Red Team vs. Blue Team  
Cybersecurity Exercises

- Through simulated internal network attacks, lateral movement, and lurking, we identify potential system risks and continuously strengthen security mechanisms.
- The 2024 exercise results recommended enhancing detection and response mechanisms, conducting regular reviews of AD system settings, addressing weak password issues, and upgrading outdated operating system versions.

Honeypot System and  
Simulated Hacker Attacks

In 2024, 526 attacks were effectively blocked, suspicious connections were interrupted and incidents were investigated, ensuring no security incidents occurred.

Expanded Endpoint  
Security Review

Security audit operations have been expanded to factories in Mainland China, requiring factory sites to assign personnel as security seed members, with headquarters security team providing training and security compliance items, ensuring that factory sites have adequate security protection measures.

Third-party  
Security Risk Scoring

Utilizing Trend Micro products to analyze the security risks of endpoint devices and conducting security maturity assessments based on the NIST CSF framework to continuously improve security protection levels and management efficiency.



### OPERATIONS PROTECTION

Privileged Access Management  
(PAM)

- All high-privilege accounts are documented in sealed paper records kept by the Chief Information Security Officer. When access is needed, users must submit an application; after use, the security team will reset the password before resealing the record.
- Core business systems are regularly inventoried annually and appropriate permissions are granted based on the Need-to-use principle, with security controlled through the Privileged Access Management (PAM) system.

Sensitive File Encryption System  
| External File Transfer Control

- Implementing a sensitive file encryption system to prevent hackers from stealing trade secrets from core business data, which could impact operations.
- Strictly control external file transfer channels, including portable devices (such as USB), cloud drives, instant messaging software (IM), file transfer protocol (FTP), and email sending mechanisms.

Two-factor Authentication  
Mechanism (MOTP)

- Highest-privilege account logins and enterprise group remote connections use the Mobile One-Time Password system (MOTP) as two-factor authentication.
- Core areas use dual-factor authentication with facial recognition and employee ID card scanning.

Real-time Monitoring and Warning  
Mechanism (PRTG)

Core business systems and equipment all have real-time monitoring and warning mechanisms (PRTG) established, which can immediately notify system administrators for emergency response if abnormal conditions occur.

Dedicated ChatGPT Project

- Establish a dedicated TCC ChatGPT system and train TCC's proprietary AI model.
- ChatGPT uses two-factor (2FA) authentication and simultaneously records user login trails.

1.7

# Supply Chain Management

GRI 2-6 / 204-1

Compliance with the Supplier Code of Conduct is a necessary condition for cooperation with TCC

To safeguard operational safety, working environment, and to ensure that all employees (including contractors) in the supply chain are treated with respected while upholding environmentally responsible manufacturing, TCC has established the Supplier Management Policy Statement. In addition, suppliers must adhere to relevant occupational safety and health regulations and sign the Safety and Health Responsibility Commitment.



TCC KEY FACTS

Obtained

ISO 20400

Sustainable Procurement Certification



Supplier Management Policy Statement  
Supplier Code of Conduct  
TCC Procurement Portal

## Sustainable Supply Chain Management Framework

TCC implements two core strategies — **Sustainable Supplier Management & Localized and Green Procurement** — under the Board of Directors oversight. The Supply Chain Management Department integrates initiatives across TCC and subsidiaries, with regular progress regularly reported and discussed by the CSO at Chairman-led operational meetings. The department head also provides periodic updates to the Board. The sustainable supply chain mechanism prioritizes cement business in Taiwan and Mainland China, distribution stations in Hong Kong, and key mining subsidiaries, with projects periodically reviewed by the Sustainable Development Committee to ensure that procurement policies comply with the Company's sustainability requirements. By 2025, this approach will extend to subsidiaries Feng Sheng, E.G.C., and Ho-Ping Power Plant, and gradually including suppliers from other subsidiaries and CIMPOR and OYAK CEMENT.

Labor and Human Rights	Suppliers should strictly prohibit all forms of discrimination, forced labor, child labor, and workplace harassment, while ensuring a fair, safe, and healthy workplace.
Health and Safety	Suppliers should regularly carry out safety and health management and improvements in accordance with international standards, reporting on incident handling, preventive measures, management reviews, and improvement actions.
Environment and Climate Action	Suppliers are encouraged to set SBT targets and address carbon-related issues. Those failing to align with TCC's sustainability goals or provide carbon footprint data will be disqualified from TCC's supply chain. Suppliers unable to reduce emissions will be removed.
Business Ethics	Suppliers should follow TCC's ISO 37001 system, adhere to integrity management and anti-corruption regulations, and establish whistleblower protection mechanisms.
Management System	Suppliers should establish management systems and procurement policies, ensuring compliance with the code, responsible sourcing, and sustainable supply chains.



## Sustainable Supply Chain Management Goals Setting 7 Targets

95% locally-procured non-raw materials	Achievement Rate in 2024	96.71%
100% new suppliers & existing Significant Tier-1 Suppliers signed the Supplier Code of Conduct (excluding state-owned enterprises)	Achievement Rate in 2024	100%
100% contractors signed the Safety and Health Responsibility Commitment	Achievement Rate in 2024	100%
100% High-risk Significant Suppliers supported by improvement plans	Achievement Rate in 2024	100%
100% reviewed conducted to Significant Tier-1 Suppliers (desk/ on-site assessment) (excluding state-owned enterprises)	Achievement Rate in 2024	93.63% <sup>18</sup>
80% by 2030 Sustainability Questionnaire Collection Ratio of Significant Tier-1 Suppliers (by procurement amount) Taiwan and Mainland China	Achievement Rate in 2024	78.65%
Supplier Carbon Footprint Inventory   Taiwan		
• Accumulated total of 35 suppliers by 2025		
• Accumulated total of 40 suppliers by 2030	In Progress	

Note 18: Subjects of the 2024 inspection are 2023 Significant Tier-1 Suppliers. The achievement rate didn't reach 100% because transactions between some suppliers has been completely canceled in 2024 or they have been removed from the Significant Tier-1 Suppliers List, hence the abortion on inspecting these suppliers.

TCO Definition

- Significant suppliers: Refers to those that have a significant impact on the quality and delivery of TCC's products, account for amounts reaching a certain level or proportion, or that present high ESG-related risks.
- Tier-1 suppliers: Suppliers that engage in direct transactions with TCC.

### Action Spotlight

## Establish the Green Value Chain Alliance Commits to 10% Carbon Emission Reduction by 2030



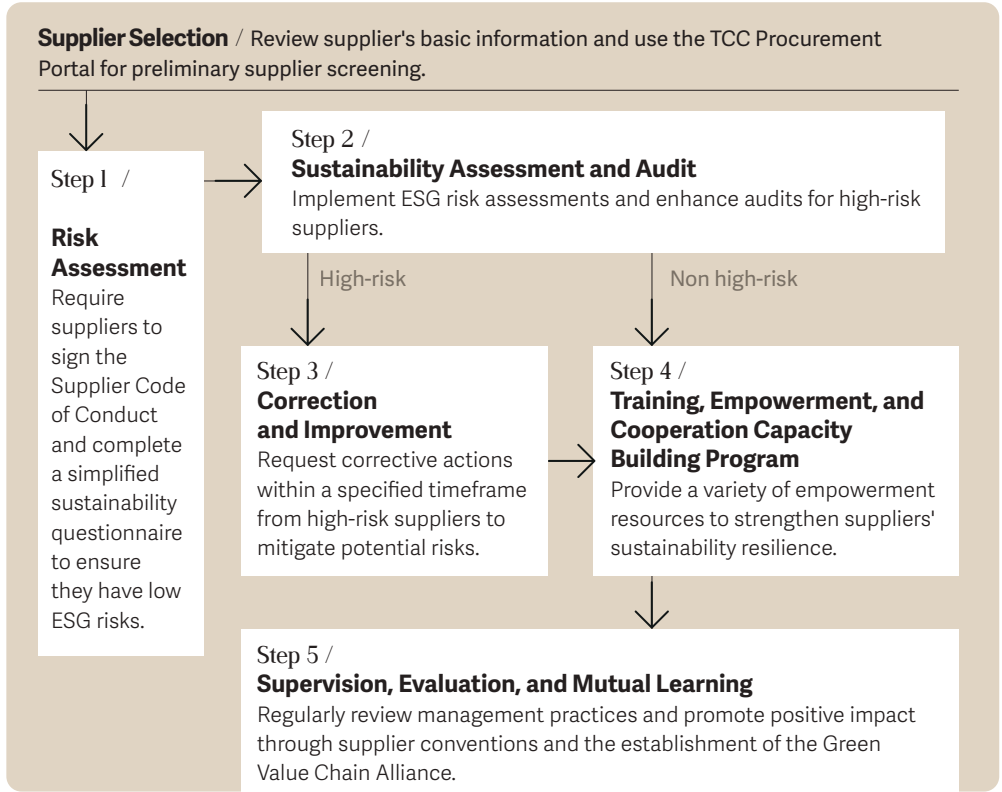
At the 2024 Supplier Convention, TCC officially established the Green Value Chain Alliance, bringing together 19 key transportation and raw material partners from Taiwan and Mainland China. The alliance is committed to completing product carbon footprint by 2025 and achieving 10% autonomous carbon reduction by 2030. In

response to the United Nations' Kunming-Montreal Global Biodiversity Framework, TCC has mobilized ten major supplier partners of the Hoping EcoPort and Power Plant to jointly participate in the "Little Tern Conservation Project-Hoping Welcomes You". For details, please refer to [CH4.7](#).

## Sustainable Supplier Management Process and Performance

TCC refers to the United Nations Global Compact (UNGC) Sustainable Supply Chain Guide and ISO 20400 Sustainable Procurement Guide to assess supply chain sustainability and human rights risks. Meanwhile, TCC has prioritized the implementation of EU Corporate Sustainability Due Diligence Directive (CSDDD) document review for suppliers of its Taiwan cement and RMC plants. Through five key steps, TCC strengthens supplier sustainability reviews and aims to build long-term, mutually beneficial partnerships<sup>19</sup>.

Note 19: OYAK CEMENT and CIMPOR review suppliers' product quality, production and delivery capabilities, and compliance. In the future, they plan to incorporate ESG factors into sustainable supply chain management and introduce third-party supplier audits.



### Local Procurement and Green Procurement

TCC is committed to strengthening supply chain resilience and building a green, safe, and human rights-respecting value chain in close collaboration with suppliers. TCC prioritizes energy-efficient, low-emission, and renewable or recyclable products and services, and promotes supplier localization to enhance service efficiency, reduce transport emissions, and support local employment.

#### Procurement Percentage in 2024

	Taiwan	Mainland China	Taiwan & Mainland China	OYAK CEMENT	CIMPOR
Local Procurement	86.31%	99.99%	93.74%	94.77%	78.38%
Raw Material Green Procurement <sup>20</sup>			4.6%	5.09%	10.54%
Non-raw Material Green Procurement			1.2%	0.13%	4.88%

Note 20: Raw materials include both raw materials and fuels. Due to the absence of green material certification in Mainland China, only the green procurement amount of non-raw materials is considered.

### Education and Training for Company's Buyer

To continuously enhance the sustainability capabilities of procurement staff, TCC conducts at least one educational training session annually for procurement personnel in both Taiwan and Mainland China. In 2024, TCC commissioned an external consulting team to deliver training that includes human rights education, ensuring that the importance of human rights is thoroughly conveyed throughout the supplier management process. Future plans include introducing practical training courses on ISO 20400 sustainable procurement. In 2024, the training totaled 162 participants and 472 hours.

Course   Including Internal and External Training	Number of Participants	Person-hours (Hours)
Supplier Human Rights Due Diligence	89	178
Supply Chain Human Rights and Environmental Due Diligence Seminar	16	8
Sustainability Governance Workshop	36	216
Sustainable Supply Chain Internal Training	15	45
Corporate and Supply Chain Respect for Human Rights	2	13
AI x Sustainability Summit	2	5
Climate Change and Corporate Sustainability Trend Analysis Post-COP29	2	7
Total	162	472

Step I

Risk Assessment

Approaches at TCC

- New suppliers are required to sign the “Supplier Code of Conduct”, “Supplier Management Policy Statement”, and “Integrity Statement”, and complete the Simplified Supplier Sustainability Self-evaluation Questionnaire. Suppliers who fail to comply will not be included in the approved supplier list.
- Conduct annual risk assessments of existing suppliers, including the following:

Assessment Dimensions
<b>Country-specific Risk</b>
Review key national legislation and international political and economic developments to identify potential risks, e.g., logistics disruption, human rights laws, carbon pricing.
<b>Sector-specific Risk</b>
Analyze major ESG issues faced by the cement industry, such as compliance with environmental regulations, water resource scarcity, and risks related to community relations.
<b>Commodity-specific Risk</b>
Assess value chain risks related to TCC’s products, including the use of non-compliant raw materials, waste management, and compliance with labor rights regulations.
<b>Environmental Aspects</b>
Include greenhouse gas emissions, energy consumption, water usage, resource efficiency, pollution, waste, and biodiversity impacts.
<b>Social Aspects</b>
Cover human and labor rights, including child labor, forced labor, discrimination, freedom of association, collective bargaining rights, working hours, compensation, health and safety, and the rights of local communities.
<b>Governance Aspects</b>
Include corruption, bribery, conflicts of interest, and anti-competitive behavior.
<b>Business Relevance</b>
Consider factors such as pricing, purchase volume, and substitutability.

- Identify and categorize ESG risks of existing suppliers to ensure that all Significant Tier-1 Suppliers are of low sustainability risk.

2024 Performance and Future Plans

TCC Procurement Portal enhances supply chain AI screening mechanism

TCC developed the Procurement Portal to digitize vendor selection and enable real-time two-way communication. In 2025, TCC will further expand its application by evaluating an AI scoring system for supplier sustainability questionnaires, aiming to reduce manual effort and boost the efficiency and accuracy of ESG assessments. Simultaneously, it will strengthen its AI-driven supply chain decision system to enhance procurement efficiency through analysis of past purchase prices and market trends. An AI-driven risk management system will also integrate financial, credit, and compliance data to ensure supplier stability.

TCC KEY FACTS

100%

blocking of blacklisted suppliers and their associated suppliers after comprehensive screening in 2024

<div>Step 2</div> <div>Sustainability Assessment and Audit</div>	<div>Approaches at TCC</div> <div><div></div><div>Develop a sustainability self-assessment questionnaire based on OECD, requiring suppliers to complete it. Based on results and ESG risk categories, suppliers with potential high risks are identified.</div><div></div><div>Conduct desk and on-site assessments (field audit), including second- or third-party assessments for high-risk suppliers.</div><div></div><div>For certain high-risk suppliers, additional third-party on-site audits are arranged, with TCC procurement staff or consultants joining third-party teams for interviews and sample checks on-site.</div></div>	<div>2024 Performance and Future Plans</div> <div><div></div><div>The sustainability questionnaires response rate reached 94.55%, identifying 14 high-risk suppliers.</div><div></div><div>In 2024, TCC conducted desk assessments for 275 suppliers, on-site audits for 116 suppliers, and 3 second-party on-site audits conducted by consultants.</div><div></div><div>In 2025, TCC plans to adopt differentiated questionnaires based on supplier size and industry.</div></div>
	<div>Step 3</div> <div>Correction and Improvement</div> <div>Regarding the assessment results</div> <div>High-risk suppliers</div> <div><div></div><div>Guide suppliers to submit improvement plans and implement improvements within three months.</div><div></div><div>Given priority for capacity building projects such as sustainability governance workshops and subsequent reviews in the following year.</div><div></div><div>If no improvement is made within three months of guidance, it is reported internally for transaction termination and replacement.</div></div> <div>Suppliers failing to meet the desk assessment score standard</div> <div><div></div><div>Cooperation was maintained but listed as key targets for close monitoring and guidance.</div><div></div><div>Required to attend training and strengthen supervision.</div><div></div><div>If scores remain below 60 within 12 months, reported for being terminated and replaced.</div></div>	<div><div></div><div>12 suppliers implemented improvement plans, achieving 86% coverage.</div><div></div><div>In 2024, 12 suppliers were terminated and replaced due to failure to comply with TCC's sustainability practices, such as refusing sustainability engagement, failing audits, or not improving after 6 months of guidance.</div></div>

Step 4

Training, Empowerment, and Cooperation Capacity Building Program

Approaches at TCC

GHG Inventory Practical Camp & GHG Reduction Workshop

Supported suppliers in calculating carbon emissions and partnered with independent third-party to verify carbon inventory results.

Sustainability Governance Workshop

Held twice annually to help SMEs and medium- to high-risk Significant Tier-1 suppliers establish sustainability systems and define policies and targets.

Annual Supplier Convention

Announced Scope 3 targets and emphasized supplier responsibilities related to human rights due diligence and biodiversity, with training by external experts.

Step 5

Supervision, Evaluation, and Mutual Learning

- The Supply Management Department's senior management, along with external consultants, assess sustainable procurement's key issues across 7 major areas, including corporate governance, human rights, fair operating practices, the environment, labor standards, community involvement and development, and consumer issues.
- Purchasing practices towards suppliers are continuously reviewed to ensure alignment with the Supplier Code of Conduct and to avoid potential conflicts with ESG requirements.

Suppliers with excellent performance

- Priority negotiation rights.
- Public recognition and invitation to present practices at the Supplier Convention.

Green Supply Chain Alliance

Collaborating with 19 raw material and transportation partners, the Green Value Chain Alliance aims to complete product carbon footprints by 2025 and achieve a 10% self-imposed carbon reduction by 2030.

2024 Performance and Future Plans

- 262 companies participated in the capacity building programs, including 248 significant suppliers.
- 41 suppliers participated in the Carbon Inventory Practical Camp, with 40 passing third-party verification (97.56%).
- 18 suppliers attended the GHG Reduction Workshop and set carbon reduction targets.
- 77 suppliers participated in the Sustainability Governance Workshop.

- Over 243 local and overseas suppliers joined the supplier convention, where experiences on adopting eco-friendly vehicles were shared. A new contract clause now requires suppliers to gradually adopt green vehicles. TCC plans to expand the Green Value Chain Alliance to include all raw material and transport suppliers.

Guigang Plant suppliers cooperate to promote electric vehicles

Suppliers of the Guigang Plant (Guangxi) cooperate with TCC's supplier convention to promote transportation electrification. For transportation from the plant to the dock, suppliers supported transport electrification by adding 60 electric tractors for plant-to-dock transport, reducing both costs and GHG emissions.

1.8

# Customer Communication

Committed to protecting enterprise client rights, TCC adheres to The OECD Guidelines for Multinational Enterprises, ensuring product and service health and safety, marketing, and labeling standards.

## Product Health and Safety Management

TCC's global plants are all ISO 9001 certified, ensuring the health and safety of cement and concrete products. TCC employ rigorous three-tier quality control and independent inspection systems, delivering six quality assurances and certifications, including six raw material and six third-party certifications. TCC actively adopts regularly tests products for no adverse health or safety impact during use, with information labeled locally. TCC provides customers with safety information through product labels, packaging bags, and delivery notes at all global sites, along with detailed Safety Data Sheets (SDS) to ensure safe usage. Concrete products in Taiwan meet Green Building Material Label standards, all products certified as non-radioactive, asbestos-free, and pass heavy metal leaching tests (Cd, Cr, Cu, Pb, Se, Cr(VI), Hg, As), with no chloride ions detected. Cement products in Taiwan and Mainland China are tested by laboratories before delivery to ensure stability and non-toxicity. Annual customer satisfaction surveys are conducted to proactively communicate and confirm that TCC products pose no health risks. CIMPOR strictly monitors Cr<sup>6+</sup> content, ensuring compliance through production tests and reducing agents, with regular sampling of exports to maintain safety standards. TCC offers on-site product application instructions to ease customer concerns. For packaging, CIMPOR bagged cement uses recycled paper bags from its factory, with FSC™ certified bags coming in 2025. Taiwan plans to prioritize recycled packaging for low-carbon products by 2025. All Taiwan office paper is eco-labeled recycled, with 80% recycled pulp. TCC's cement and concrete products consistently offer stable quality and engineering reliability across diverse uses and over time. Concrete made with TCC cement shows superior compressive strength at 3, 7, and 28 days versus traditional concrete. Using TCC construction materials ensures overall structural safety and durability, effectively extending service life.

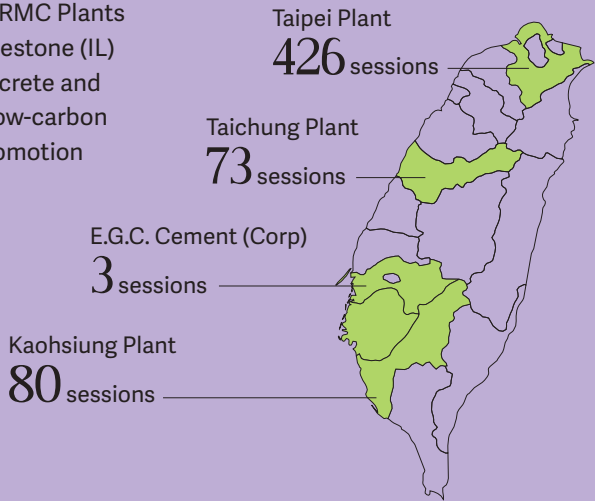
Concrete Compressive Strengths (MPa) of TCC Cement

Type	3 days	7 days	28 days
Portland Type I Cement Concrete	191.4	297.5	484.8
Portland Limestone (IL) Cement Concrete	206.3	363.1	498.8
The strength of TCC concrete products at 3, 7, or 28 days consistently exceeds CNS standard values.			



TCC KEY FACTS

2024 Taiwan RMC Plants  
Portland Limestone (IL)  
Cement Concrete and  
Optimized Low-carbon  
Mix Ratio Promotion  
Sessions



Clients' Rights and Interests Protection Policy






Management Mechanism
Three-tier Quality Control System
Six Raw Material Inspections
TCC Portland Series
Third-party Product Certifications
Product Resume

### Inspection Systems

- Tier 1: Branch plants conduct material inspections according to SOP
- Tier 2: The parent plant goes to the branch plant for regular random inspections
- Tier 3: The independent third-party research laboratory performs irregular visits to the plant for random inspections

Cement, sand and gravel, slag, fly ash, chemicals, and mixing water, passed the tests by TAF laboratories like those of TCC, SGS, etc.

Cement	<ul style="list-style-type: none"><li>Carbon Footprint Label, MOE Taiwan</li><li>Carbon Footprint Reduction Label, MOE Taiwan</li><li>Gold-rated Green Mark, MOE Taiwan</li><li>Low-carbon Product Certification, Mainland China</li></ul> <div></div>
Concrete	<ul style="list-style-type: none"><li>Carbon Footprint Label, MOE Taiwan</li><li>Carbon Footprint Reduction Label, MOE Taiwan</li><li>Green Building Material Label, MOI Taiwan</li><li>Low-carbon Circular Building Material Certification, MOI Taiwan</li></ul> <div></div>

- Concrete Specimen Compressive Strength Report
- Good Ready-mixed Concrete Label
- TCRI product traceability certification
- EPD Type III Environmental Product Declaration (For more information, please refer to [Carbon Competitiveness](#))

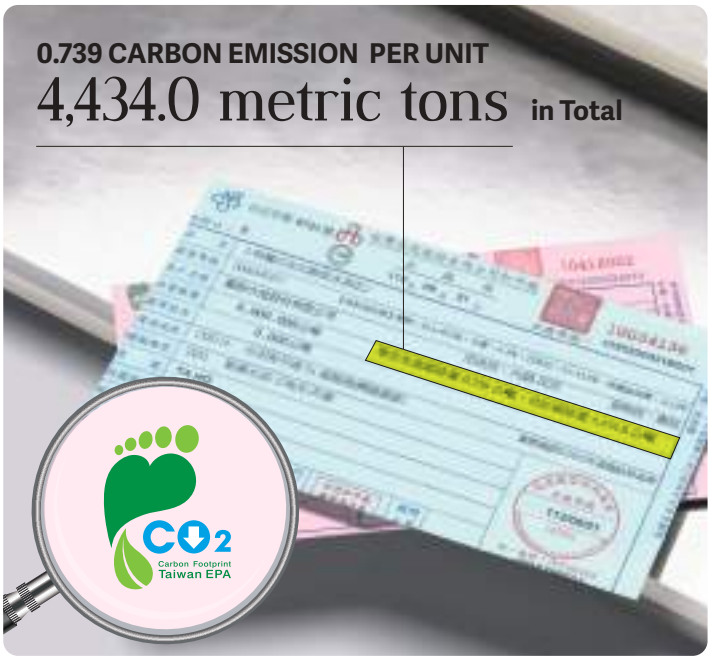
Strength specifications, cement source, slag source, chemical admixtures, quality assurance certificate, sand and gravel source, fly ash source, aggregate source, carbon emission information, chloride ion report, 28-day compressive strength report, external certification, and TCRI product traceability certification.

## Engage with Clients on Climate and Water to Broaden Environmental Impact

TCC partnered with over a hundred construction leaders to form the Low-carbon Construction Pioneer Alliance in 2024, spearheading the adoption of TCC's low-carbon limestone cement and concrete. Beyond promoting materials, TCC aid the construction industry's transformation. TCC champions product transparency, disclosing raw material ratios and carbon footprints since 2023. Carbon footprint labels, indicating 50% cement mix, are printed on every shipment (e.g., 280, 350, 420 specifications), with third-party verified data coming in 2025. In 2024, Taiwan's RMC Plants continue promoting Limestone (IL) Cement Concrete and low-carbon mix concrete. During client trial mixes, TCC provides on-site presentations explaining the carbon reduction, water saving, and the sustainability verification and management effectiveness of its products, helping them navigate the sustainability trend. Learn more about the Alliance under [Carbon Competitiveness](#).

To enhance customer service quality, TCC has established a Product Safety Traceability System that incorporates AI assistance and user-oriented design. Customers can access information on raw material mixing ratios, sources, carbon emission intensity, and

inspection reports via QR Codes, disclosing product details in line with food resume specifications. At the same time, TCC integrates e-commerce APP, launching the "TCC News" function, facilitating order placement and real-time delivery of its sustainability information. To ensure customers receive high-quality, reliable products and professional support, TCC regularly trains its employees on product safety, cement application guidance, and formula recommendations. In 2024, a total of 71 participants, accumulating 497 hours.



### Client Satisfaction Survey


TCC conducts annual customer satisfaction surveys. The latest survey included cement, concrete, and mineral powder product customers across Taiwan, Mainland China, and Hong Kong , plus CIMPOR cement, concrete, aggregate, and dry mortar clients, and OYAK CEMENT cement clients. New survey dimensions included "Sustainable Products" and "Quality and Safety," with added questions on "Carbon Reduction," "Process Water Saving," "Product Traceability," and "Human Health and Safety." This engages clients on climate and water issues, encouraging shared focus and gathering feedback. For survey details, refer to [ESG section on the TCC website](#).

	2021	2022	2023	2024
Client Satisfaction Rate (%)	96.67	96.86	98.64	93.50 <sup>21</sup>
Coverage (%)	100	100	100	100

Note 21: 2024 client satisfaction survey scope broadened after acquiring European cement operations CIMPOR and OYAK CEMENT.

### Complaint Mechanism to Protect Client Rights

To safeguard client rights, TCC has a robust complaint procedure. All complaints are internally reviewed, resolved, and clients are informed of final outcomes. Furthermore, TCC employees, guided by the Statement of Integrity and Ethical Conduct, are bound by strict confidentiality. This includes protecting all non-public information that could harm company or client interests, ensuring personal data security.

 **Complaint Channels**  
Corporate Sales Department Client Service:  
[tccsales@taiwancement.com](mailto:tccsales@taiwancement.com)

## 1.9 Intellectual Property Management

TCC is implementing a comprehensive technology strategy. This involves integrating low-carbon construction materials and new energy businesses. This strengthens patents related to cement materials, energy storage cabinet structures, and battery design. Concurrently, the Company is conducting a full inventory of trade secrets and patented technologies within TCC's internal confidential document domains.

 **TCC KEY FACTS**

Obtained

# TIPS

 Certification

(Taiwan Intellectual Property Management System)

# 100%

 Employee Confidentiality and IP Ownership Agreement signed rate

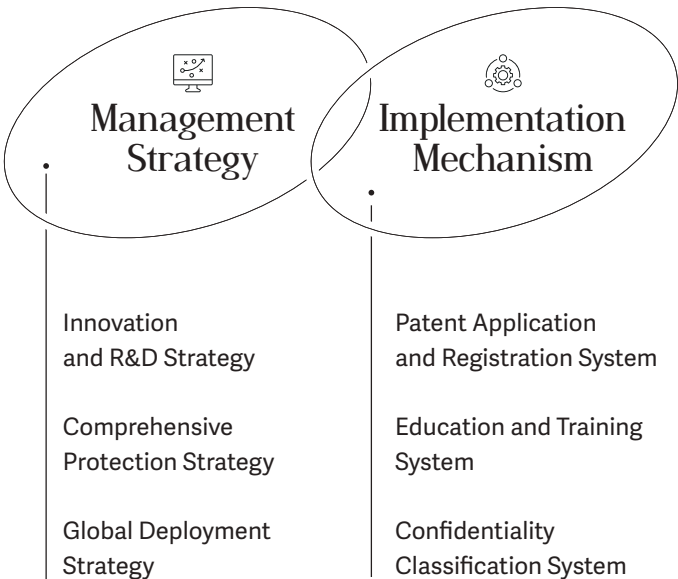
### Taiwan Intellectual Property Management System (TIPS) Certification with Level A Protection

To safeguard R&D outcomes and boost operational sustainability, TCC first adopted the **Taiwan Intellectual Property Management System (TIPS)** in 2024, covering patents and trademarks. Following TIPS guidelines, TCC established standardized R&D and design processes, alongside other IP management aspects like document control and confidentiality classification.

TCC encourages and reviews employee patent and trademark

applications, boosting technological capabilities and brand recognition to strengthen competitiveness and protect internal R&D. IP and confidentiality training also fosters company-wide awareness. In 2025, TCC will pursue TIPS Level A re-verification for patents/trademarks and simultaneously inventory copyright/trade secret assets, further expanding its IP governance scope.

#### Intellectual Property Management Policy



#### TCC KEY FACTS

##### Trademarks

With 816 approved trademarks and 48 applications pending, TCC's trademark portfolio covers more than 25 global markets, including Taiwan, Mainland China, the United States, European Union, Switzerland, and Japan.

##### Trade Secrets

- Commercial partners are required to sign non-disclosure agreements (NDAs) or agree to confidentiality clauses
- All employees must sign an Employee Confidentiality and IP Ownership Agreement upon onboarding
- Key IP employees must also sign a separate Employee Covenant Agreement (including non-compete and non-solicitation clauses) upon resignation

## TCC KEY FACTS

### Patents<sup>22</sup>

Energy Storage Business	Focus areas for patent applications include four technical aspects: Ultra-High Performance Concrete (UHPC) energy storage cabinet design, safety, Energy Management Systems (EMS), and battery module design.
Cement Business	Patent applications have been filed for technologies such as UHPC KT slabs and waste glass powder.
Battery Business	Patent applications for cylindrical lithium battery electrode body and cell winding technologies have been filed across multiple countries.

TCC holds 128 approved invention patents and has 88 pending applications across 9 global markets, including Taiwan, Mainland China, the United States, European Union, Japan, and Korea.

### Copyrights

All R&D and creative outcomes funded by TCC and completed by business partners include stipulated clauses on rights ownership and non-infringement guarantees in standard contracts and procurement orders.

Data scope (as of November 26, 2024): TCC's Taiwan & Mainland China Cement businesses, OYAK CEMENT, CIMPOR, and NHOA Energy.

Note 22: Patent information is sourced from the GPSS Global Patent Search System. The statistical count of patents does not include 176 expired approved patents and 62 patents not continued for review.

## Action Spotlight

### EnergyArk Energy Storage Cabinet Multi-national Patent Family

TCC integrates resources from its low-carbon construction materials and green energy businesses to innovatively develop the patented EnergyArk energy storage cabinet. The patent portfolio focuses on four key areas: cabinet design, safety, energy management, and battery modules. This development delivers a safe, stable, heat-resistant, and efficient energy storage system. Patents for various technical aspects have been applied for in Taiwan, Mainland China, Japan, Hong Kong, Korea, the United States, the European Union, and other countries to protect green product research and development assets.

- ✓

**Cabinet Design and Safety**  
UHPC combined with fire-resistant layer, heat-insulating layer, gas pressure relief, and liquid immersion designs to instantly suppress battery thermal runaway.
- ✓

**Energy Management**  
AI combined with battery energy control and inter-system energy transfer methods, effectively monitors thermal critical points.
- ✓

**Battery Module**  
Battery modules feature structural designs incorporating cooling plates, fire barriers, and battery enclosures.

