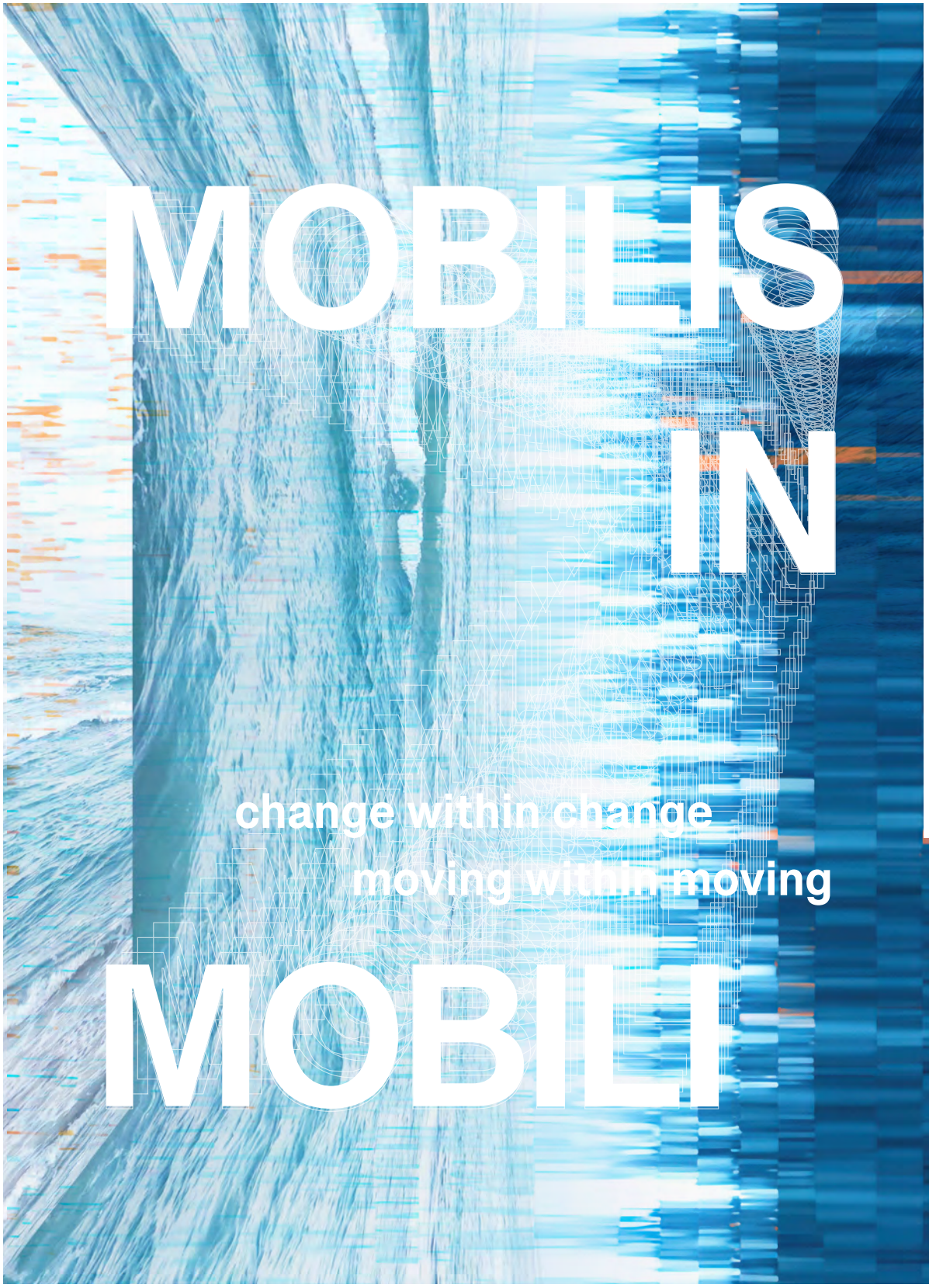

2024

THE TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

THE TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

TCC

GROUP HOLDINGS

TCC GROUP HOLDINGS

2024
THE TASK FORCE ON
CLIMATE-RELATED
FINANCIAL
DISCLOSURES

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About the Report

This report follows the recommended framework of the Task Force on Climate-related Financial Disclosures (TCFD), disclosing information based on the four core elements of Governance, Strategy, Risk Management, and Metrics and Targets. The report also incorporates analyses and explanations tailored to TCC Group's business characteristics and the specific climate risks of the cement industry. Adhering to the principles of transparency, comparability, and verifiability, this report aims to help investors, stakeholders, and the public gain a clear understanding of TCC Group's risk resilience, transition progress, and sustainability commitments under climate change scenarios. Through continuous disclosure and improvement, the Company proactively responds to the global vision of net-zero emissions and sustainable development.

Boundaries and Scope of Disclosure：The operations of cement &concrete business include low-carbon construction materials and Social Aspect of Energy Transition business
Reporting Period：January 1 to December 31, 2024
Report Publication Frequency：Annual

TCC Climate Action Highlights

● International Rankings ▲ Initiatives & Recognition ★ Low-carbon Products/Energy Services

2025

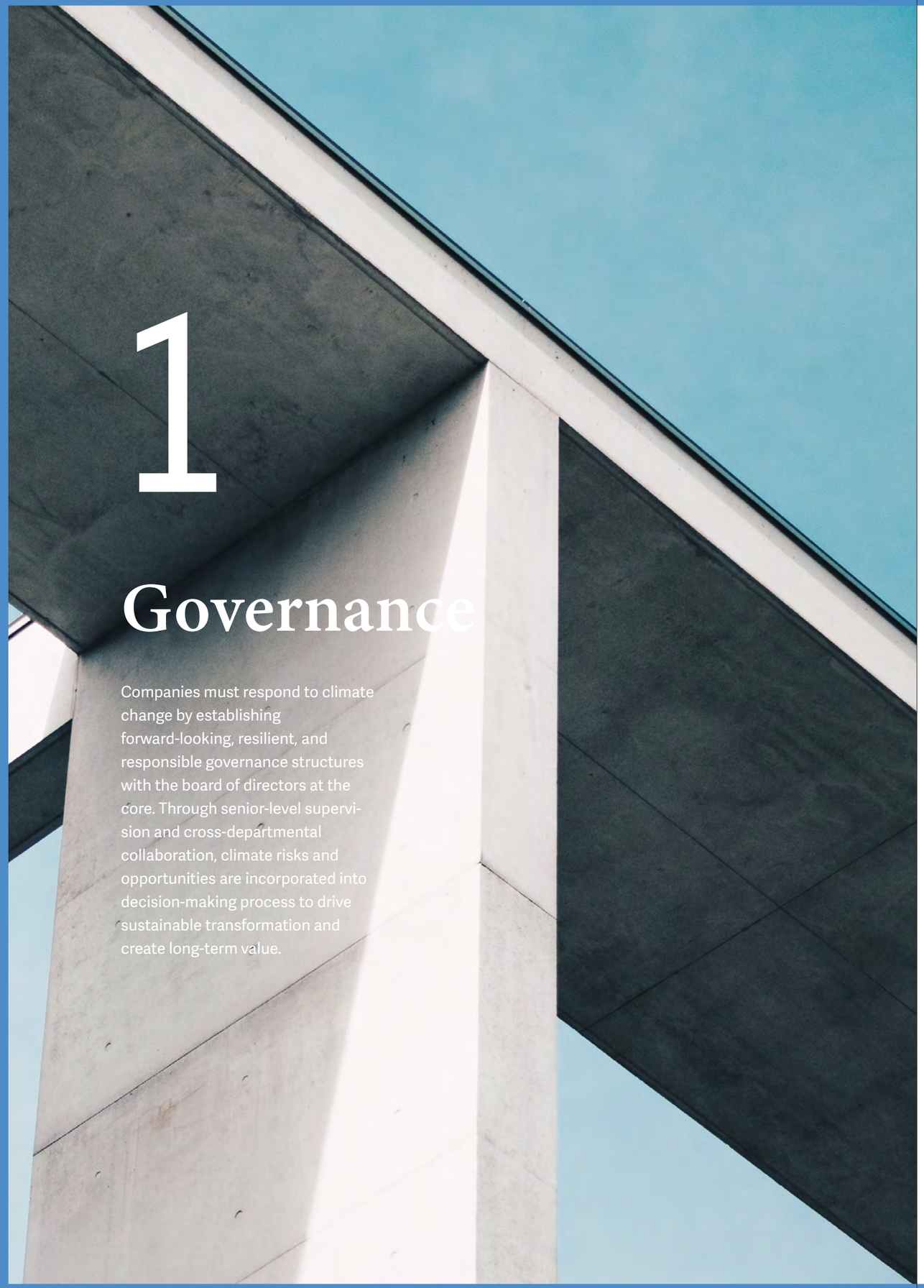
- ▲ The Ministry of Environment has established the Green Growth Alliance, inviting businesses and relevant ministries to participate in voluntary greenhouse gas reduction programs. TCC was the only representative cement company to be invited in the first wave of the alliance and will work together with the government to achieve the nation's new carbon reduction goals.
- ★ TCC Guigang Plant encourages suppliers to participate in electrification through offering priority delivery rights, achieving 87% annual carbon reduction per vehicle compared to fuel-powered vehicles
- ★ TCC's Dutch subsidiary completed the signing of a five-year, 500-million-euro Green Loan with a syndicate of banks, with all funds to be invested in projects that meet international green finance standards
- ▲ The cement produced by CIMPOR Alhandra Plant has received hydraulic binder certification from AFNOR

2024

- ★ TCC Group's Energy Storage Business Unit manages 35 energy storage sites globally with a total installed capacity of 1,030.63MWh
- ★ According to UNEP statistics, TCC contributed to a reduction of 1.16 million tons of carbon emissions in the global construction industry in 2024
- ★ TCC's renewable energy, energy storage, and high-power battery products have helped reduce global carbon emissions by 217,000 tons
- ▲ TCC's Hoping Industrial Port in Hualien received the Excellence Award at the 9th National Environmental Education Awards
- ▲ TCC's Suao Plant received the Excellence in Corporate Air Pollution Response Action Award from the Ministry of Environment
- ★ TCC's subsidiary signed an €800 million unsecured sustainability-linked syndicated loan, which was oversubscribed by 1.5 times, demonstrating TCC's determination in carbon reduction and low-carbon transformation
- ▲ Molicel's Kaohsiung Molie Quantum Energy factory received dual Gold certifications for green building standards from U.S. LEED and Taiwan's EEWH.
- ▲ TCC received the Low-carbon Recycled Materials Certification from the Ministry of the Interior.
- ▲ Joined the Science Based Targets initiative (SBTi) as a member, committing to collective efforts toward carbon reduction
- ★ Completed the closing procedures for expanded investment in European low-carbon cement, officially establishing the Company as one of the major suppliers of low-carbon cement in the European market
- ★ Attracting climate action talents, deploying AI virtual spokespersons, expanding generative AI teams to support technology integration across 11 industries in 13 countries
- ★ Partnering with German tkPOL to develop next-generation pure oxygen carbon capture technology, targeting annual CO2 capture of 100,000 tons by 2030
- ★ TCC's fire-resistant EnergyArk energy storage cabinet passed the most stringent international UL 9540 safety test and was showcased at CES in the United States
- ▲ Became one of the first companies to adopt the TNFD (Taskforce on Nature-related Financial Disclosures) in the world, and the only large construction materials supplier invited to participate from Taiwan

2023

- ★ TCC announced its partnership with the Turkish OYAK Group to expand investment in the low-carbon cement markets in Europe, Asia, and Africa, with a plan to increase its stake in OYAK CEMENT from 40% to 60% and that in Portuguese Cimpor from 40% to 100%
- ★ TCC launched Taiwan's largest 100-MW E-dReg energy storage system in Hualien, as the No.1 by the market share in the energy trading platform, generating an estimated revenue of NT$1 billion per year, with a total trading capacity across ETP of Taipower, project sites, and aggregated energy trading management services of 169.2 MW
- ★ TCC launched the Total Climate series of low-carbon building materials
- ★ TCC showcased the patented fire-proof and fire-extinguishing EnergyArk UHPC Energy Storage Cabinet at Energy Taiwan and Net-Zero Taiwan
- ★ Published the "Green Financing Framework", with the Second-party Opinion (SPO) from Sustainalytics, an international ESG ratings agency, verifying the alignment with green standards; completed a US$420 million international fundraising for green ECB on October 18th
- ★ The European ATLANTE S.R.L (ATLANTE), under TCC subsidiary NHOA, qualified for the EU's transport infrastructure funding program and received the grant of an estimated amount of €49.9 million from the EU's CEF Fund in 2023
- ★ Energy Helper TCC Corporation, a subsidiary of TCC, assisted Decathlon's five suppliers in the APPA, helping the SMEs on their way to RE100
- ★ The Yingde Plant of TCC inaugurated the largest 43.2-MW/107.3MWh energy storage system in the cement industry of Mainland China, realizing energy transition through solar energy and energy storage
- ★ Taiwan Transport & Storage Corp. introduced the first electric heavy-duty truck into Taiwan to support IKEA to kick off its zero-carbon green logistics and establish support services of charging station
- ▲ Golden Award, Profit-seeking Enterprise Category, Taiwan Biodiversity Awards, 2023TCSA
- ● Top 10% in the 2023 S&P Sustainability Yearbook



1

Governance

Companies must respond to climate change by establishing forward-looking, resilient, and responsible governance structures with the board of directors at the core. Through senior-level supervision and cross-departmental collaboration, climate risks and opportunities are incorporated into decision-making process to drive sustainable transformation and create long-term value.

1.1_ Board oversight of climate-related risks and opportunities

The Board of Directors at TCC serves as the highest governing body for the Company's climate-related matters, responsible for guiding and supervising the management of significant risks related to economic, environmental, and social aspects. Climate change risks and opportunities are also included within its scope of the Board's responsibilities. To strengthen the governance structure, TCC has established a Risk Management Committee and a Corporate Sustainable Development Committee to assist in formulating and implementing climate-related strategies. Implementation results are regularly reported to the Board of Directors for supervision and review, ensuring that the Company's climate strategy direction aligns with its overall sustainable development guidelines. Furthermore, TCC established the Office of Responsibility and Sustainability in 2022, responsible for cross-departmental communication and integration of group resources to enhance the implementation efficiency of climate actions and sustainability projects, while providing strategic optimization recommendations to advance the realization of sustainability goals.

Unit	**Climate Responsibility and Scope**	**Members**	**Attendance**
Number of Shareholders' Meetings: 12	The highest decision-making body for approving and supervising the Company's climate change strategy	Convener: Chairman Nelson An-ping Chang 14 Directors: 9 Corporate Director Representatives, 5 Independent Directors	99.44% attendance rate in 2024 ***Including attendance by proxy**

2024 Key Achievements

FSC Sustainable Development Roadmap Planning

Following internationally recognized methodologies such as SBT (Science Based Targets), MIT EN-ROADS, IEA (International Energy Agency), and WBCSD (World Business Council for Sustainable Development), TCC has newly released its 2050 Net Zero Roadmap for its cement business unit.

Sustainability Disclosure Standards S1 and S2

TCC aligns with IFRS Sustainability Disclosure Standards S1 'General Requirements for Disclosure of Sustainability-related Financial Information' and IFRS S2 'Climate-related Disclosures' by publishing the '2023 TCC Sustainability and Climate-related Financial Report IFRS S1 & S2 Special Chapter

Human Rights Due Diligence

TCC aligns with the EU Corporate Sustainability Due Diligence Directive (CSDDD) regulations by publishing its first CSDDD report in 2024, incorporating systemic climate change risks and proposing preventive measures to address negative impacts such as extreme weather events.

1.2_ Responsibilities and Oversight of Functional Committees

TCC's Board of Directors has established the Risk Management Committee and Corporate Sustainable Development Committee, which are respectively responsible for the Company's overall risk control and sustainability strategy implementation. The Risk Management Committee is dedicated to strengthening the Company's risk governance mechanisms. The President serves as the highest authority for climate risk, coordinating the identification and management of operational risks (including physical and transition risks associated with climate change), and leading the planning and implementation of response measures. The management team reports to the Board of Directors at least once a year on the implementation status and control effectiveness of risk management, ensuring the continued effectiveness and improvement of the governance process. Additionally, a Risk Management Working Group has been established under the Risk Management Committee, consisting of senior executives from various departments and business groups. The group develops strategies based on four risk aspects: strategic, operational, climate, and financial. This ensures that relevant practices are implemented in business operations and regularly consolidates execution results and response measures to report back to the Risk Management Committee.

The Corporate Sustainable Development Committee is responsible for reviewing and supervising the Company's sustainable development strategies and performance, with the Chairman serving as the convener. Discussion topics cover climate governance and low-carbon transition planning, and meetings are held at least twice a year. A Corporate Sustainable Development Working Group has been established under the Corporate Sustainable Development Committee and divided into functional groups covering seven key sustainability areas. The Working Group is composed of senior executives and experienced colleagues from various departments, responsible for promoting sustainability actions within their respective areas of responsibility. Through annual meetings and written reports, the Working Group evaluates the implementation results and future planning of climate change and other sustainability issues, thereby continuously optimizing strategy and implementation effectiveness. The Chief Sustainability Officer regularly reports overall progress to the Sustainable Development Committee.

Risk Management Executive Committee

Risk Management and Decision Making

Board of Directors

Risk Oversight and Review

Risk Management Committee — Audit Office — The Legal Compliance Manager of President's Office

Establish Risk Analysis Measurement Standards and Tolerances

Risk Management Working Group

Regular discussions and management of cross-departmental operational risks

Risk Identification, Risk Analysis, and Risk Evaluation

Responsible Units

Scope of Business

Strategic
Corporate Sales Department/ Corporate Manufacturing Department/ Business Units

Operational
Supply Chain Management Department/ Human Resources Department/ Compliance and Legal Office/ Compliance Unit/ Corporate Sales Department/ Corporate Manufacturing Department/ Sustainability R&D Center/ Business Units

Climate
Finance Department / Human Resources Department / Corporate General Affairs Department / Office of Responsibility and Sustainability / Corporate Sales Department / Corporate Manufacturing Department / Sustainability R&D Center / Supply Chain Management Department / Business Units

Finance
Finance Department
Business Units

Others
Compliance Unit / Corporate Secretary Board of Directors / Information Security Management Committee / Human Resources Department / Finance Department / Corporate General Affairs Department / Occupational Safety and Health Management Office / Office of Responsibility and Sustainability / Compliance and Legal Office / Corporate Sales Department / Corporate Manufacturing Department / Sustainability R&D Center / Supply Chain Management Department / Business Units

Unit	Climate Responsibility and Scope	Members	Attendance
Risk Management Committee Number of meetings: 2	Review and evaluate risk controls and provide improvement suggestions, including climate risks, to ensure the risk management framework remains aligned with company strategy	Convener: Independent Director Sherry S. L. LIN 3 members: Independent Director Victor WANG, Independent Director Lynette Ling-Tai CHOU	100% attendance rate in 2024 *Including attendance by proxy

2024 Key Achievements

- Reporting on the damage and recovery progress of the Company's production and business locations in Taiwan due to the Hualien earthquake on April 3, 2024.
- TCC's updated main risk identification matrix in seven major aspects: operations, finance, national, legal compliance, ESG, personnel, and information security.
- TCC's 2023 Climate-Related Performance Indicator Achievements and 2024 Climate-Related Target Setting

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

Unit
Corporate Sustainable Development Committee
Number of meetings: 3

Climate Responsibility and Scope
Supervising TCC's climate strategy implementation and project performance, and approving relevant indicators and targets recommended by the Corporate Sustainability Working Group

Members
Convener: Chairman Nelson An-ping Chang
5 committee members: President Roman CHENG, Director Liz WANG, Independent Director Victor WANG, Independent Director Sherry S. L. LIN, Independent Director Lynette Ling-Tai CHOU

Attendance
100% attendance rate in 2024
*Including attendance by proxy

2024 Key Achievements

- Based on the UN Integrity Matters report, ISO IWA 42 Net Zero Guidelines, and the open-source calculation methodology of the En-ROADS Net Zero Simulator developed by MIT team, TCC presents separate net-zero pathways for its global cement and concrete business units, as well as the external carbon reduction impact, in its sustainability report and on its official website.
- In response to the Paris Agreement's goal of limiting global warming to an increase of 1.5°C, TCC completed the 1.5°C Science Based Targets (SBT) for cement plants in Taiwan and Mainland China, including short-term targets and net-zero commitments. The Company also completed Scope 3 inventory and reduction target setting for cement plants in Taiwan and Mainland China by the end of the year.
- Responded to FSC's requirements to complete greenhouse gas inventory for subsidiaries included in consolidated financial statements by 2025 and verification by 2027.
- Gradually rebuilt TCC and its subsidiaries' websites in an internationalized and standardized format, with comprehensive presentation of sustainability-related information across all websites.
- Readjusted internal information systems and accounting system classifications to meet TCC's sustainability management needs and fulfill sustainability financial disclosure purposes.

Executive Unit Meeting

TCC adopts a cross-departmental collaboration mechanism for climate-related issues, conducting regular communication and coordination. Participating departments include Engineering, Finance, Business, Materials, Low-carbon R&D, Human Resources, and various production units. Meetings are held monthly based on issue importance to continuously track the progress of carbon reduction projects and climate strategy implementation. To stay informed of implementation progress in real-time, the Chairman also periodically convenes project meetings with the President and Vice Presidents of various functional units to strengthen supervision and guidance on climate-related actions.

Meeting Name / Cross-departmental Monthly Report

Participating Departments or Personnel Titles
Engineering Affairs Department, Finance Department, Sales Department, Supply Chain Management Department, Audit Office, President's Office

Main Discussion Items
Market Operations, Monthly Profit and Loss, Material Procurement, Alternative Raw Material Usage, Carbon Emissions Status, Project Progress

Key Discussion Topics in 2024
- ⊙Progress of Hualien Construction Waste Treatment Plant
- ⊙Carbon Fee Increase - Setting of Voluntary Reduction Targets
- ⊙Current Status of UHPC On-site Casting
- ⊙Natural Disaster Damage Status and Improvement Measures
- ⊙Permeable Concrete Construction Progress
- ⊙Energy Conservation and Carbon Reduction Progress and Performance

Meeting Name / Environmental Protection Monthly Meeting

Participating Departments or Personnel Titles
Engineering Affairs Department, Low-carbon R&D Center, President's

Main Discussion Items
Conduct technical development of low-carbon cement and low-carbon concrete, as well as low-carbon product development.

Key Discussion Topics in 2024
- ⊙Future Development Direction for Low-carbon Product Operations

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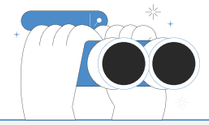


From Türkiye to Portugal - How OYAK CEMENT and CIMPOR Are Shaping TCC's Global Climate Governance Network

In the face of climate change, the cement industry, as one of the most carbon-intensive industries, stands at a critical juncture in its journey toward green transformation. As important global strategic locations, OYAK CEMENT in Türkiye and CIMPOR in Portugal are not only pillars of TCC's international operations but also play key roles in implementing TCC's global climate governance strategy.

OYAK CEMENT —

Climate Governance Practices of Türkiye's Leading Cement Company

OYAK CEMENT is one of Türkiye's largest and most influential cement manufacturers, officially becoming part of the TCC Group in 2024. It owns seven integrated cement plants and multiple concrete and port facilities, with comprehensive vertical integration capacity and logistics capabilities, serving multiple regions across Europe and Asia. In terms of climate governance, OYAK CEMENT has established a multi-level sustainability management structure. The Sustainability Committee, led by the Board of Directors, is responsible for reviewing ESG policies and climate risks, and regularly examining and adjusting strategies. At the operational level, dedicated sustainability and climate teams have been established to support the achievement of policy goals in production and investment activities.

OYAK CEMENT's climate commitments:

- ⊙ Actively promote the application of alternative fuels, such as Solid Recovered Fuel (SRF) and biofuels
- ⊙ Promote energy efficiency improvements and carbon capture research, becoming one of the first companies in Türkiye's cement industry to commit to a net-zero pathway

CIMPOR —

A Low-Carbon Model Deeply Rooted in Portuguese-Speaking Countries

CIMPOR, founded in 1976, is Portugal's oldest and largest cement company, currently operated as a joint venture between TCC and OYAK CEMENT. Its production bases are located in mainland Portugal, Cape Verde in West Africa, and other locations, with multiple international shipping routes, serving as a key hub connecting the European and African markets. In terms of climate governance, CIMPOR actively aligns with EU climate policies and has committed to investing 130 million euros by 2030 to advance its decarbonization transition. Key measures include:

⊙Increase the usage of alternative materials such as slag, fly ash, and natural pozzolan
⊙Implement alternative fuel strategies to increase the proportion of non-fossil fuels
⊙Strengthen environmental management systems and carbon footprint tracking systems

Meanwhile, CIMPOR also participates in European policy platforms and technical alliances, dedicated to accelerating the research, development, and commercialization of net-zero technologies for building materials. It has become a representative sample of low-carbon transformation among Portuguese-speaking countries.

Integrating Governance with a Global Vision: TCC's Transnational Climate Resilience Strategy

By integrating the sustainability experiences of OYAK CEMENT and CIMPOR, TCC has established a climate governance model that spans Asia and Europe, tailored to local conditions and covering end-to-end management from the board level to factory operations. Looking ahead, TCC Group will continue to build on the climate governance efforts of OYAK CEMENT and CIMPOR, accelerating the green transformation of its global operations and enhancing overall climate resilience. to meet the 2050 net-zero challenge Through knowledge sharing, coordination of carbon management systems, and integration of data platforms, TCC Group aims to meet the 2050 net-zero goals.

1.3_ TCC Climate Connection

Climate-related education and training
In 2024, the Board of Directors completed 75 hours of climate and sustainability-related development courses

To enhance employees' understanding and responsiveness to climate change issues, TCC actively promotes comprehensive climate education and capacity-building programs, strengthening awareness and practical application capabilities in climate risk and carbon management across all levels of the organization. Through a variety of training courses and internal communication mechanisms, all personnel, from board members and senior executives to ground-level staff, can participate in role-specific courses tailored to their responsibilities. The course covers key areas such as climate change trends and risks, greenhouse gas inventory methods, carbon rights and carbon pricing concepts, low-carbon transformation strategies, and international policy developments. This not only enhances the organization's overall awareness and responsiveness to climate issues but also supports the effective internal implementation of climate strategies. Through continuous talent development and knowledge enhancement, TCC demonstrates its commitment to advancing low-carbon transformation. These efforts further strengthen the internal governance foundation for sustainable development and ensure that climate actions are closely integrated with overall corporate strategies for long-term implementation.

Courses	Participants and Related Information
Category Director Training Courses	
Sustainable Finance Disclosure	Total Training Hours for Directors and Independent Directors: 75 Hours
Taiwan's Path to Net-Zero Just Transition in Hard-to-Abate Sectors	
Corporate Governance and Sustainable Development	
Circular Economy Benefits and Sustainable Finance Opportunities	
Opportunities and Challenges of Generative AI; Leveraging Climate Regulatory Economic	
Tools to Address Scope 3 Carbon Reduction Challenges	
Exploring Business Operation Challenges and Responses through the Growth of Well-known	
Multinational Companies/Climate Change and Corporate Sustainability Trends and	
Challenges	
Carbon Credit Trading Mechanism and Carbon Management Applications	
Green Energy, Certificates, and Sustainable Development - Pathway to Net Zero for	
Corporates	
How the Board Links the Executive Remuneration to ESG Performance	
Latest ESG Sustainability Regulations and Practices	
Category 2024 TCC Carbon Academy	
Greenhouse Gas Inventory Workshop	Number of Participants: 633 Employee Percentage: 8.2%
Product Carbon Footprint Workshop	
Scope 3 Inventory Trends and Practical Training	
Engineering Carbon Footprint Training Course	
Supplier Carbon Footprint Course	

Climate Remuneration Performance Link

To strengthen climate governance and implement sustainability strategies, TCC has incorporated medium and long-term climate goals and various non-financial performance indicators into its remuneration evaluation system for senior executives and all employees. TCC links 40% of senior management remuneration to ESG performance targets, incentivizing management to continuously improve performance in environmental protection, social responsibility, and corporate governance. Similarly, special targets based on key sustainability indicators are set for the CFO, Chief Procurement Officer, and the Procurement Department, linking their sustainability performance to remuneration. The President's personal performance evaluation also includes the aforementioned sustainability aspects, reflecting top management's commitment to climate and sustainability responsibilities. Upholding the principle of accountability for all employees, TCC has established a performance-based incentive mechanism. Since 2018, a quarterly bonus system has been in place, with all employees eligible to participate. In addition to considering quarterly EPS and operational performance, the achievement of SBT carbon intensity targets at each plant is included as a key indicator, encouraging collective participation in the low-carbon transformation. The performance bonus system is centered on profit sharing and is based on evaluations of individual employee performance and the achievement of unit targets. Environmental indicators, such as risk control, sustainability promotion, environmental emissions, and SBT carbon reduction targets, are incorporated into the assessment to ensure alignment between business operations and sustainable development goals.

Since 2019, TCC has continuously set annual carbon reduction targets for its cement plants both in Taiwan and Mainland China. Plants in Mainland China have incorporated KPI indicators into the budget planning phase. Using an AI-powered carbon reduction management platform, TCC tracks daily emission intensity, carbon reduction project progress, as well as alternative raw material and fuel usage in real-time, ensuring effective and transparent implementation. Performance data is also reviewed, with strategies adjusted during bi-weekly SBT meetings to evaluate plant performance. Since 2023, TCC has been enhancing its internal carbon trading mechanism. Through inter-plant carbon quota trading and related assessment systems, performance is linked to remuneration incentives for all employees. Annual performance indicators for all TCC employees (including President, Vice Presidents, and Managers) incorporate participation in the "Sustainable Action by All" initiative and progress in the "Sustainable Learning Action Program," which together account for 10% of the evaluation. This approach directly aligns employee performance with the Company's sustainable development goals. The indicators include environmental protection, emission and carbon reduction, water resource reuse, waste management, strengthening supply chain and business partnerships, reducing corporate risks, providing comprehensive talent training, and anti-corruption and anti-bribery measures. These efforts further strengthen organizational consensus and momentum for carbon reduction, accelerating the Group's progress toward net-zero transformation.

2 Risk Management

To strengthen our responsiveness to climate risks, we have established a climate risk management mechanism and integrated it into our existing risk management framework. Through clear identification processes, assessment methods, and management strategies, we systematically monitor transition and physical risks to ensure operational stability and organizational resilience.

2.1_ Climate Risk, Opportunity Identification, and Assessment Methods

The Board of Directors, as TCC's highest risk governance and decision-making body, is responsible for overseeing overall risk management policies and strategic directions, ensuring that risk control mechanisms are effectively incorporated into core operational processes. Based on each department's business scope, the Company systematically conducts risk identification and analysis across four major dimensions: strategic, operational, climate, and financial risks. Climate-related risks have been formally integrated into the Enterprise Risk Management (ERM) framework to ensure consistency and forward-looking capabilities in related response measures and decision-making mechanisms. TCC assesses climate risks across eight aspects based on the TCFD framework and practical principles, including policy and regulations, technology, market, reputation, acute and long-term physical risks. The assessment considers the impact and intensity of risks over different time horizons—short-term, medium-term, and long-term—to enhance the layered and adaptive nature of risk management.

Risk Type	Description of TCC's Risk Exposure
Current Regulatory Risks	Subject to existing environmental regulations at various operational sites, such as carbon fees, emissions reporting, and energy efficiency requirements, non-compliance may result in penalties or additional compliance costs.
Emerging Regulatory Risks	Potential future regulations, such as Carbon Border Adjustment Mechanism (CBAM), clinker blending ratio restrictions, and low-carbon product procurement obligations, may raise compliance thresholds, increase pressure to substitute raw materials and modify process, and impact production costs and international competitiveness.
Legal Risks	Inadequate disclosure or management of environmental risks may expose the company to litigation from shareholders or stakeholders, such as civil or administrative liabilities arising from inaccurate climate information disclosure, pollution, or illegal emission incidents.
Technology Risks	The introduction of immature technologies (such as carbon capture, alternative fuels, low-carbon building materials) or delays in implementation may hinder progress toward carbon reduction goals and market transformation. These efforts may also face challenges such as high R&D costs and uncertain returns.
Market Risks	Increasing market demand for low-carbon products and shifting consumer preferences are reducing the competitiveness of traditional high-carbon products. Failure to launch compliant products or obtain low-carbon certifications in a timely manner may result in loss of tender qualifications or market share.
Reputational Risks	Failure to actively address net-zero and sustainability demands may lead to doubts among investors, customers, and the public about the company's corporate responsibility and reputation, ultimately impacting shareholder trust, tender participation, and partnership decisions.

Risk Type	Description of TCC's Risk Exposure
Acute Physical Risks	Extreme weather events (such as heavy rainfall, typhoons, and floods) may disrupt the operations of cement and power plants, causing supply chain interruptions or logistics obstacles. Facilities located in low-lying and coastal areas are particularly vulnerable to these risks.
Long-term Physical Risks	Long-term climate change (such as sea level rise and water resource depletion) may pose threats to factory safety, water resource usage, and raw material source stability. In response, early risk response and site adaptation assessments are necessary.

To enhance the scientific basis and scenario foresight in risk identification and decision-making, TCC adopts various scenario models based on risk characteristics and probabilities when assessing climate risks and opportunities:

The International Energy Agency (IEA)'s Net Zero Emissions by 2050 (NZE) roadmap serves as the primary reference to assess transition risks and climate opportunities. This framework captures the institutional challenges and growth opportunities businesses may encounter under scenarios such as rapidly tightening global policies, accelerating industrial transformation, swift advancement of low-carbon technologies, and shifting market preferences.

IEA International Energy Agency

The high-emission scenario SSP5-8.5, developed by the United Nations Intergovernmental Panel on Climate Change (IPCC), is used to assess physical risks. This scenario simulates potential extreme events, such as rainfall, drought, heatwaves, or sea level rise amid ongoing climate change, evaluating their impacts on operational sites, infrastructure, and supply chains.

IPCC Intergovernmental Panel on Climate Change

Scope of Business Identification and Assessment	Building Materials, Social Energy Transition, 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

By setting the above two representative extreme climate scenarios, TCC conducts comprehensive qualitative and quantitative analysis of risks and opportunities, evaluating potential impacts on corporate strategy, capital allocation, operational models and financial performance under different climate development pathways. This serves as a core basis for enhancing climate resilience, formulating medium- and long-term transition strategies, and prioritizing resource allocation.

2.2_ Climate Risk and Opportunity Management Process

TCC has approved the Risk Management Policy and Risk Management Committee Charter. By regularly holding meetings to monitor climate action results, TCC aims to keep potential risks across its operations within acceptable limits and to establish robust risk management procedures. In identifying and assessing climate-related risks and opportunities, TCC has established a systematic identification and analysis process based on TCFD recommendations to ensure that climate risk and opportunity management is fully integrated into corporate decision-making.

STEP 1

Risk and Opportunity Identification

⊙ Building Update climate risk and opportunity issues in accordance with the results of the previous climate risk and opportunity identification, international scientific and technological reports, industry trends in local laws and regulations where TCC operates, etc.

⊙Based on the Sustainability Accounting Standards Board (SASB) standards applicable to industries involved in key operations and their disclosure topics, the Company is gradually identifying and incorporating climate-related risks and opportunities across different sectors.

Results |

Based on TCFD classification to identify 10 key climate risks and 5 climate opportunities

STEP 2

Risk and Opportunity Analysis

⊙ Conduct cross-departmental workshops to probe into the actual impacts, timing, sources, and expected financial impact of various risks/opportunities on TCC

⊙ Analyze and assess questionnaire results, incorporating the perspectives of external experts and executives, to identify key risks/opportunities.

Results |

Distributed 32 internal assessment questionnaires, ultimately identifying 3 major climate risks and 3 major climate opportunities

STEP 3

Response and Adaptation

Link the climate policies, operation and production, products and services, and external communication to the existing climate mitigation and adaptation strategies to formulate and execute six climate action plans.

Results |

Six Climate Actions

STEP 4

Management and Supervision

Call meetings on a regular basis to track the progresses of the Six Climate Actions in response to risks and opportunities, track the carbon reduced by each plant via the Carbon Reduction Management Platform, and present the risk control report to the Board of Directors by the Risk Management Committee.

Results |

Performances against the management indicators and non-financial performance indicators of the Six Climate Actions

First, in the risk and opportunity identification phase (Step 1), TCC considers previously identified results, the latest international scientific research, local regulations at its operational sites, and industry trends to continuously update climate-related issues. Guided by the Sustainability Accounting Standards Board (SASB) framework for industry-specific disclosure topics, TCC gradually reviews potential climate risks and opportunities in key operational activities. In this phase, TCC identified a total of 10 key climate risks and 5 climate opportunities as the foundation for subsequent analysis. In the risk and opportunity analysis phase (Step 2), TCC conducted cross-departmental workshops to gain an in-depth understanding of how various risks and opportunities could potentially impact company operations and finances, including their timeframes and sources. After distributing 32 internal assessment questionnaires and consolidating input from external experts and senior executives, TCC conducted cross-validation from multiple perspectives, ultimately identifying 3 major climate risks and 3 major climate opportunities. These findings serve as a key basis for subsequent strategic planning, resource allocation, and prioritization of climate actions.

When identifying and assessing climate-related risks and opportunities, TCC adopts a matrix method for systematic analysis, comprehensively considering the timeframe of risk occurrence (short-term, medium-term, long-term), likelihood (from low to high), and degree of financial impact (effects on revenue, operating costs, capital expenditure, or asset value) to evaluate their overall significance. Through this method, TCC effectively identifies the most critical risks and opportunities for business operations and transformation and prioritize them accordingly as a key basis for subsequent resource allocation, risk response strategy formulation, and operational planning. Furthermore, this risk matrix also corresponds to the Group's overall risk management system, ensuring that climate issues are incorporated into daily risk monitoring and management decision-making processes, enhancing corporate resilience and responsiveness under climate change.

Definition of Timeframes

Connection to Strategic Decisions

Short term 2025-2026

TCC regularly reviews and adjusts its key strategic initiatives for the next two years through a rolling mechanism to ensure its operations and sustainability transformation remains responsive to rapidly changing external environments. In response to increasingly severe environmental risks and policy challenges, TCC integrates external expert advice, domestic and international research reports, and market observations to systematically assess potential risks and opportunities brought by environmental changes, using them as key references for adjusting corporate strategies.

Medium Term 2027-2029

The average planning cycle for TCC's major decision-making items spans two to four years, accompanied by regular reviews and rolling adjustments to ensure long-term strategies remain aligned with changing external conditions. In response to potential risks and transformation opportunities arising from climate change, the Company draws on external expert opinions, internal and external research data, and international market trends to integrate climate-related risks and opportunities, continuously evaluating the potential impacts of environmental changes on its operations and the industry.

Long Term After 2030

TCC aims to achieve net-zero emissions for its cement and concrete business units by 2050 as a long-term goal and formulates specific action guidelines in accordance with Taiwan's net-zero emission pathway and China's overall policy planning. The related strategies are expected to gradually demonstrate synergies after 2030 and lay the foundation for long-term corporate transformation.

Definition of Probability of Occurrence

Description of Probability of Occurrence	Probability (P)	Frequency
Almost Certain to Occur	P ≧ 90%	Occurs once per year on average
Very Likely to Occur	65% ≤ P< 90%	Occurs once every 1-3 years (inclusive) on average
Likely to Occur	35% ≤ P< 65%	Occurs once every 3-5 years (inclusive) on average
Very Unlikely to Occur	10% ≤ P< 35%	Occurs once every 5-10 years (inclusive) on average
Almost Impossible to Occur	P < 10%	Occurs once every 10-30 years (inclusive) on average

Financial Impact Level Definition

Inherent Risk Impact Level Description	Financial Impact
Extreme	$>$1.5 billion
High	1 billion<$≤1.5 billion
Moderate	500 million<$≤1 billion
Low	10 million<$≤500 million
Very Low	$≦10 million

TCC has formally integrated climate change risks and opportunities into its Enterprise Risk Management (ERM) framework, with implementation coordinated through the board-authorized risk management mechanism. This approach ensures that climate issues are managed and governed alongside other key risks, such as operational, financial, and regulatory risks, instead of being addressed independently. Specifically, TCC has incorporated transition risks (such as carbon pricing, regulations, and green finance pressure) and physical risks (such as extreme weather events and sea level rise) into its existing risk identification and assessment processes. Through cross-departmental collaboration, the Company jointly inventories risk sources and potential impacts, incorporating them into regular risk assessment operations. By integrating the aforementioned systems and frameworks, TCC has enhanced the governance and management of climate issues, embedding them within the overall corporate decision-making process and achieving a risk management-oriented sustainable transformation.

3 Strategy

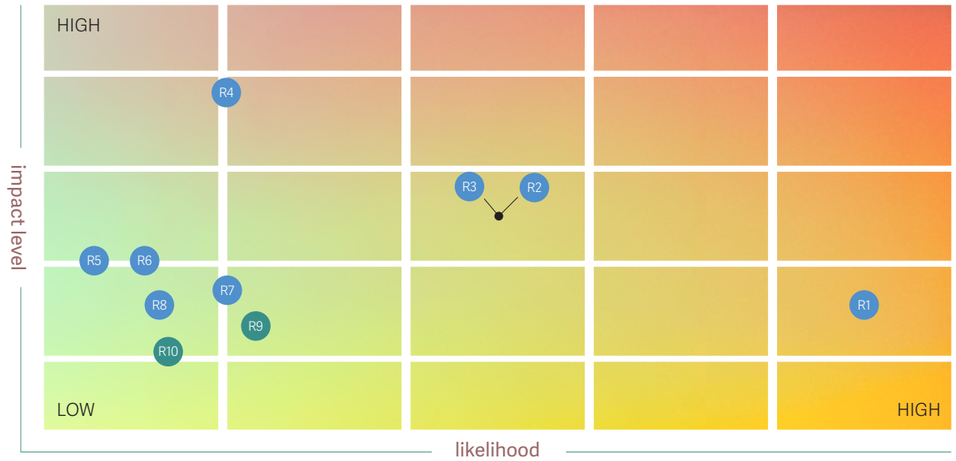
Climate change profoundly affects global economic and industrial development. To enhance corporate resilience and sustainable value, we incorporate climate risks and opportunities into our strategic planning. Through scenario analysis and transition planning, we adjust operations, innovate products and services, and actively develop roadmaps for green growth to meet the challenges of low-carbon transition.

3.1_ Climate Risks and Opportunities

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

TCC has established a systematic identification and evaluation process to strengthen corporate resilience under the impact of extreme climate events, and the pressures of the net-zero transition. During the assessment, TCC adopts risk matrix tools to comprehensively assess the time scale of risk occurrence (short-term, medium-term, long-term), likelihood (low to high), and degree of financial impact (covering revenue, operating costs, capital expenditure, and asset value) to evaluate the overall impact of climate issues on operations and transition. Material risks are determined based on the post-assessment risk value (likelihood x impact level). The two highest-ranking transition risks and the physical risk with the highest risk value are identified as priority concerns, serving as the core basis for incorporation into strategic adjustments, operational deployment, and capital expenditure planning. By closely linking assessment results with decision-making processes, TCC transforms risk identification into action, effectively enhance responsiveness and resource allocation efficiency while capturing green growth opportunities arising from the climate transition.

Climate Risk Matrix



Transformation Risks

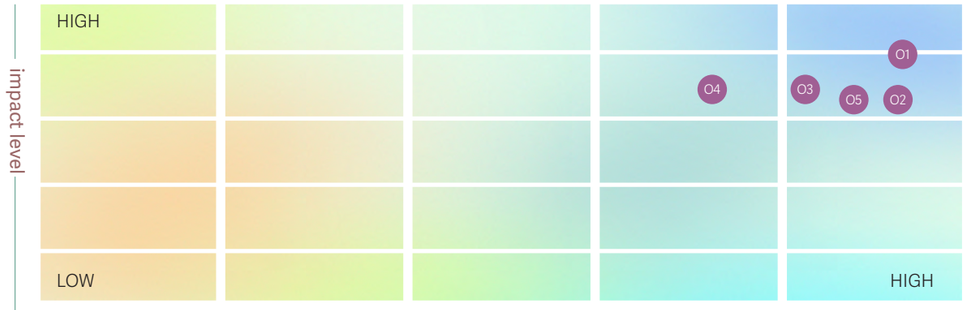
- R1 Carbon trading/carbon fee/carbon tax for Cap and Trade
- R2 Strength of Support from Insurance and Financial Institutions for Investment and Financing
- R3 Improper Use of Alternative Raw Materials/Fuels/Waste Resource Recycling
- R4 Reputational Damage Due to Insufficient Low-carbon Transition
- 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

When assessing climate-related opportunities, TCC adopts practice-oriented evaluation criteria, identifying opportunities with the three highest-ranked opportunities (likelihood x impact level) as key items to recognize the Company's potential transition value. These key climate opportunities have been incorporated into the Company's strategic planning and resource allocation processes, serving as action guidelines for promoting green innovation and strengthening market deployment. This approach strengthens the Company's competitive advantage in the global net-zero transition while generating new momentum and market opportunities for sustainable growth.

Climate Opportunities Risk Matrix



- O1 Installation of New Energy Project
- O2 Smart Low-carbon Production and waste co-processing
- O3 Market Expansion of Low-carbon Products and Services
- O4 Securing investors' willingness for long-term investment
- O5 Involvement in the electricitytrading market

Material Risks and Opportunities

In response to the operational impacts that may arise from extreme weather events caused by climate change and the net-zero transition process

TCC follows its internal climate risk and opportunity identification process to identify three material risks, including:

- R1 Carbon trading/carbon fee/carbon tax for Cap and Trade
- R2 Strength of Support from Insurance and Financial Institutions for Investment and Financing
- R9 Frequency and Intensity of Extreme Precipitation Events

Meanwhile, three key climate opportunities have also been identified, including:

- O1 Installation of New Energy Project
- O2 Smart Low-carbon Production and waste co-processing
- O3 Market Expansion of Low-carbonProducts and Services

By reviewing current response strategies and adaptation practices, TCC has developed six major climate actions that are aligned with the scope and timeline of various risks and opportunities. These actions include low-carbon circular production, industry-leading low-carbon construction materials, low- carbon and carbon negative technical innovations, smart new energy business, low carbon supply chain, and climate &nature disaster adaptation. TCC strengthened its resilience by formulating a systematic action roadmap, laying a solid foundation for the transition towards net-zero.

Material Risk Analysis Table

Climate-related Risks	
R1 **Carbon trading/carbon fee/carbon tax for Cap and Trade**	R2 **Strength of Support from Insurance and Financial Institutions for Investment and Financing**
Risk Type	
Transformation Risks | Policies and Regulations	Transition Risks | Market Risks
Risk Description	
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. **Social Aspect of Energy Transition** | 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.	**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. **Social Aspect of Energy Transition** | 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.
Expected Time Period	
Short-term to medium and long-term	Short-term to medium and long-term
Impact on Business Model and Value Chain	
Business model | cement production and energy generation **Value chain** | Downstream construction industry, ready-mixed concrete customers, and downstream power customers	**Business model** | financing activities and insurance
Expected Financial Impact	
⊙Short-term: NT$ 2.067 billion ⊙Medium-term: NT$ 7.349 billion ⊙Long-term: NT$ 11.608 billion	⊙Short-term: NT$ 4.074 billion ⊙Medium-term: NT$ 3.134 billion ⊙Long-term: NT$ 3.179 billion
Strategy and Decision-Making	
⊙Implementation strategies include alternative clinker, alternative raw materials, alternative fuels, Equipment and process enhancements, power generation by waste heat recovery, renewable energy, carbon capture, and carbon sinks ⊙Promote internal carbon pricing in cement business	⊙Continue to engage with financial institutions and respond to international sustainability ratings ⊙Align with IFRS Sustainability Disclosure Standards ⊙Issue green financial instruments to attract investors ⊙Plan for decommissioning Hoping Power Plant by 2040
Correspond to six major climate action plans	
Low-carbon Circular Production Low-Carbon and Carbon Negative Technical Innovation Low-carbon Supply Chain	Low-carbon Circular Production Leading the Industry in Low-carbon Construction Materials Low-Carbon and Carbon Negative Technical Innovation Smart New Energy Business
Response to cost estimation (including capital expenditure and expenses)	
Approximately NT$ 7.99 billion	Approximately NT$ 0.51 billion

Material Risk Analysis Table

Climate-related Risks
R9 Frequency and Intensity of Extreme Precipitation Events
Risk Type
Physical Risks | Acute
Risk Description
Construction Material | Cement and concrete operational sites may experience revenue loss or increased operational costs due to business interruptions caused by extreme precipitation events 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 Time Period
Short-term to medium and long-term
Impact on Business Model and Value Chain
Business model | cement production and energy generation
Value chain | Upstream raw material supplies and downstream product transportation
Expected Financial Impact
⊙Long-term: NT$ 3.414 billion
Strategy and Decision-Making
⊙Construct detention and sedimentation ponds and build 2-meter-high earth embankments on the mining area slopes to mitigate the impact of flooding.
⊙All RMC Plants have established emergency response procedures; cement plants have formulated typhoon and flood response plans.
⊙Flood control teams are set up at the plants to conduct regular drills and enhance inspections.
⊙All high-risk critical equipment is insured against natural disaster-related damages.
Correspond to six major climate action plans
Climate and Natural Disaster Adaptation
Response to cost estimation (including capital expenditure and expenses)
Approximately NT$ 0.50 billion

Major Opportunity Analysis Table

Climate-related Opportunities
O1 Installation of New Energy Project
Opportunity Type
Products and Services
Opportunity Description
Green Energy and Energy Storage | 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 NHOA ATLANTE joins European SPARK ALLIANCE to expand product market and business territory
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.
Expected Time Period
Short-term to medium and long-term
Impact on Business Model and Value Chain
Business model | low-carbon new energy products and services sales
Value chain | Downstream customers with new energy demands.
Strategy and Decision-Making
⊙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
⊙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
⊙Invest in Taiwan's first super battery factory, focusing on mass production of large power batteries
⊙Establish integrated green charging and energy storage charging services, as well as providing green energy matching services and aggregated power trading
⊙Expand into Taiwan, European and American energy storage and charging station markets
Correspond to six major climate action plans
Smart New Energy Business
Response to cost estimation (including capital expenditure and expenses)
Approximately NT$ 8.33 billion

Major Opportunity Analysis Table

Climate-related Opportunities	
O2 Smart Low-Carbon Production and Waste Co-Processing	O3 Market Expansion of Low-carbon Products and Services
Opportunity Type	
Resilience	Products and Services
Opportunity Description	
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.	**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.
Expected Time Period	
Short-term to medium and long-term	Short-term to medium and long-term
Impact on Business Model and Value Chain	
Business model | cement production	**Business model** | low-carbon products and services sales **Value chain** | downstream construction industry and ready-mixed concrete manufacturers
Strategy and Decision-Making	
⊙Implementation of artificial intelligence for production efficiency ⊙Co-processing of household waste and hazardous waste in cement kilns	⊙Actively develop low-carbon cement and concrete and low-carbon products such as UHPC
Correspond to six major climate action plans	
Low-carbon Circular Production Low-Carbon and Carbon Negative Technical Innovation	Low-carbon Circular Production Industry-leading Low-carbon construction Materials Low-carbon Supply Chain
Response to cost estimation (including capital expenditure and expenses)	
Approximately NT$ 0.03 billion	Approximately NT$ 0.04 billion

3.2_ Using scenario analysis for resilience assessment

To thoroughly assess the potential impacts of climate risks on corporate finances and operations, we focus on conducting scenario analysis for three climate risks highly relevant to TCC. The first two risks belong to the transition risk category: " Carbon Trading/Carbon Fees/Carbon Tax for Cap and Trade (R1)" and " Strength of Support from Insurance and Financial Institutions for Investment and Financing (R2)", which rank first and second among transition risks respectively. The other is the highest-ranked physical risk "Frequency and intensity of extreme precipitation events (R9)", to comprehensively understand the challenges to company operational resilience and financial stability under different climate scenarios.

For transition risk assessment, TCC adopts three representative policy scenarios proposed by the International Energy Agency (IEA): Stated Policies Scenario (STEPS), Announced Pledges Scenario (APS), and Net Zero Emissions by 2050 Scenario (NZE2050), to evaluate the impact of carbon price fluctuations on operating costs and investment decisions under different levels of climate policy tightening, serving as an important basis for formulating climate response strategies and financial planning. In addition to carbon pricing impacts, TCC also incorporates "Insurance and financial institutions' financing support intensity" as one of the key transition risks, evaluating changes in insurance coverage for the Hoping Power Plant under net-zero transition trends to understand the scale of financial exposure. On the other hand, failure to meet carbon reduction requirements may lead to financial risks such as increased financing costs and difficulties in obtaining funding. Through scenario analysis, TCC is able to grasp the degree of financial exposure early on and strengthen the efficiency of fund allocation and transition investment deployment.

For the climate physical risk of "extreme precipitation events", TCC adopts the SSP1-2.6 and SSP5-8.5 emission pathway scenarios proposed by the United Nations Intergovernmental Panel on Climate Change (IPCC) for simulation, evaluating the potential impacts of extreme weather events (such as heavy rainfall) on production bases, logistics transportation, and infrastructure resilience under continuing climate change deterioration. This high-risk scenario helps TCC quantify potential direct operational disruptions and financial losses caused by physical risks, serving as a basis for strengthening facility resilience and disaster response planning. Through a dual climate scenario analysis framework encompassing both transition risks and physical risks, TCC can systematically grasp potential financial risks and response opportunities under net-zero transition and climate impacts, further strengthening corporate strategic flexibility and enhancing overall transition resilience and sustainable competitiveness.

Risk Scenario Description

Risk Type	Scenario Description	Key Parameters	Impact Content	Estimated Temperature Rise	Scenario Source
Transformation Risks	**STEPS** | The climate change response measures in force and concrete policies enacted by governments around the world	Trading Price Changes in Different Regions1 Changes in Insurance Coverage Range	Additional Expenses Due to Carbon Fees or Carbon Trading Impact on Risk Exposure Due to Changes in Insurance Coverage	2.4°C	IEA[2]
	APS | The latest climate commitments of countries, including the NDCs and long-term net-zero goals.			1.7°C	
	NZE 2050 | Realization of net-zero CO_2 emissions of the global energy sector by 2050			1.5°C	
Physical Risks	**SSP1-2.6** | The low emissions scenario with a global effort to achieve sustainability goals, but in a slow progress	Changes in Precipitation Due to Extreme Weather	Business Interruption and Asset Impairment Due to Flooding	1.8°C	IPCC[4]
	SSP5-8.5 | The extremely high emissions scenario with ultra-high emissions brought by the extensive use of fossil fuels in the absence of climate policies globally			4.4°C	

Note1: Reference from the IEA WEO (2024) ; The 5th Carbon Fee Rate Review Committee of Ministry of Environment
Note2: Reference from the IEA World Energy Outlook 2024(WEO)

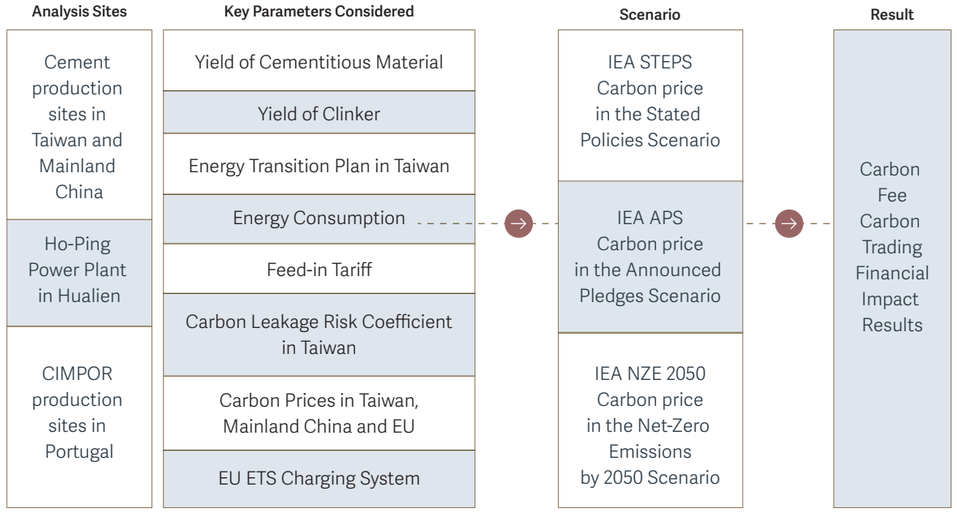
Transition Risks | Analyzing the impact of carbon prices resulting from domestic and international carbon-related regulations

As a high-carbon emission industry, TCC needs to pay close attention to greenhouse gas emission regulations at its operational locations during the operational process. Taiwan passed the Climate Change Response Act in 2023 and released the Regulations Governing the Collection of Carbon Fees in August 2024. TCC will pay carbon fees in 2026 based on its 2025 carbon emissions. However, if TCC's voluntary reduction plan is approved, it can apply the carbon leakage risk coefficient, which will help to reduce the financial impact of carbon fees. Furthermore, Mainland China established its national carbon trading market in 2021, which currently only mandates participation from the power sector. However, China's Ministry of Ecology and Environment plans to include the cement industry in the national carbon emissions trading market by 2025.

With the official implementation of the EU Carbon Border Adjustment Mechanism (CBAM) and increasingly stringent global carbon pricing systems, TCC expanded its overseas operational presence in 2024 by increasing its shareholding in Türkiye's OYAK CEMENT to 60% and Portugal's CIMPOR to 100%. This move not only strengthens the Group's operational foundation in European and African markets but also facilitates the introduction of advanced local low-carbon manufacturing processes and technologies in these regions. Considering that the European market has fully implemented the European Union Emissions Trading System (EU ETS), we will likewise use this mechanism as a core method to assess the potential carbon cost risks faced by CIMPOR's production sites during their transition process. The assessment content covers carbon allowance requirements and carbon price fluctuation trends. On the other hand, since there is no formal policy direction regarding carbon cost-related issues in Türkiye yet, OYAK CEMENT is temporarily excluded from the scope of this assessment.

To understand the impact of carbon pricing on TCC's operations, TCC estimates future carbon emissions by considering different Business as Usual (BAU) scenarios and company target scenarios. Through the IEA's Stated Policies Scenario (STEPS), Announced Pledges Scenario (APS), and Net Zero Emissions by 2050 Scenario (NZE 2050), TCC analyzes domestic and international carbon price scenarios to calculate the financial impact of carbon fees and carbon trading on each operational site.

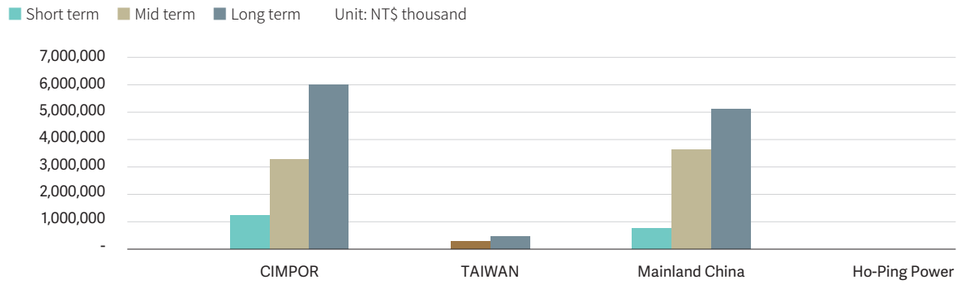
Key Analysis Points



Note[3]: Türkiye's current carbon fee policy is unclear. After evaluation, OYAK CEMENT has been temporarily excluded from this year's analysis

The analysis results indicate that, regardless of the climate scenario, the absence of transition measures would subject TCC sites to carbon costs exceeding the Company's set emission reduction targets. Based on a comprehensive assessment of TCC's operating model and decarbonization pathway, under the BAU scenario, the estimated short-term carbon price impact for domestic and overseas facilities could reach NT$2.067 billion, medium-term impact could reach NT$7.349 billion, and long-term impact NT$11.608 billion. Whether domestic or overseas, any facility will face significant financial impact in the future without implementing carbon reduction management measures.

Carbon Impact Analysis Table



	CIMPOR	TAIWAN	Mainland China	Ho-Ping Power
Short term	1,213,060	34,919	815,243	3,926
Mid term	3,363,010	278,044	3,692,610	15,703
Long term	6,060,324	416,577	5,115,186	15,703

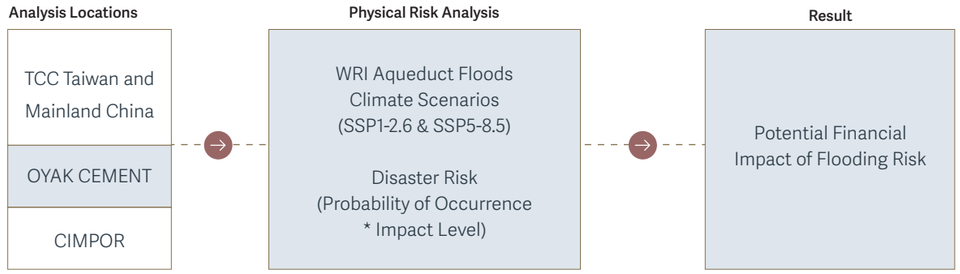
Transition Risks | Strength of Support from Insurance and Financial Institutions for Investment and Financing

Under increasingly stringent climate change policies and decarbonization trends across financial markets, "Insurance and financial institutions' financing support intensity" has become a key factor in assessing corporate transition risks. For cement industry and coal-fired power generation with highly concentrated carbon emissions, they may face future challenges such as reduced insurance coverage, increased capital costs, and decreased financing availability. Based on the above analysis, the "Strength of Support from Insurance and Financial Institutions for Investment and Financing" may have significant impacts on thermal coal power plants and cement industry under different climate policy and market scenarios. If carbon-intensive industries fail to effectively disclose their greenhouse gas emissions status, or lack concrete feasible decarbonization pathways and implementation progress, insurance companies may adjust their risk pricing models and underwriting standards and consider such companies as high-risk targets. Under this scenario, not only could insurance premiums increase significantly, but there could also be reduced coverage scope and difficulties in reinsurance arrangements. Taking Hoping Power Plant as an example, based on the projected trend of declining insurance coverage, the estimated short-term exposed asset value is NT$4.074 billion, the medium-term value is NT$3.134 billion , and the long-term value is NT$3.179 billion.

Physical Risks | Frequency and Intensity of Extreme Precipitation Events

To enhance climate resilience and operational stability, TCC Group systematically conducts physical risk assessments. For its major global operational sites, it uses the Aqueduct Floods tool and related databases developed by the World Resources Institute (WRI), supplemented by historical disaster records and geographical characteristics, to simulate extreme weather risks under different climate scenarios (such as IPCC's SSP1-2.6 and SSP5-8.5). For operational sites in Taiwan and Mainland China, the potential impacts of extreme precipitation on production facilities, logistics transportation, and operational interruptions are quantitatively assessed by simulating flood risks in 2030. Based on water depth indicators, risks are categorized into different levels, serving as important references for risk adaptation and resource allocation. Internationally, Türkiye's OYAK CEMENT and Portugal's CIMPOR plants are also included in the same analytical framework, assessing potential flood disasters under different emission scenarios to understand the exposure level of key facilities under climate change.

Analysis Process



Under the high-emission scenario (SSP5-8.5), TCC conducted extreme climate risk assessments for its operational locations in Taiwan and Mainland China, focusing on the impact of heavy rainfall during the plum rain and typhoon seasons from April to September each year. The results show that there are 10 locations at risk of flooding in Taiwan, located in Yilan County, Taichung City, Tainan City, and Kaohsiung City. In Mainland China, there are 5 locations at risk, distributed across Guangdong, Liaoning, and Hunan provinces. Additionally, for international operations, TCC also simulated the 2030 flood risk for OYAK CEMENT in Türkiye and CIMPOR plants in Portugal. Preliminary analysis shows that 15 locations are in flood-risk zones. Based on the comprehensive assessment analysis above, without effective adaptation measures, long-term climate impacts could lead to production equipment damage, operational interruption, and asset impairment for TCC, with estimated long-term potential financial impacts reaching NT$3.414 billion. To reduce the aforementioned risks, TCC will continue to conduct regular flood simulations and disaster adaptation assessments for high-risk locations across its global sites, optimize flood prevention facilities, and enhance backup mechanisms and response capabilities.

Mainland China Flood Risk Map

Taiwan Flood Risk Map

OYAK CEMENT Flood Risk Map

CIMPOR Flood Risk Map

3.3_ TCC Climate Commitments and Goals

With carbon reduction and green enhancement as its core focus, TCC promotes three key business transformations, adopting strategies such as carbon reduction in basic construction materials and optimization of new energy storage. These efforts advance sustainable products and services, strengthen the Company's resilience and drive operational growth, increase its green content, and seize green business opportunities arising from climate change. The Low-Carbon Construction Materials Business expands its markets presence through innovative low-carbon products. The Resource Recycling Business utilizes co-processing of cement kilns to treat industrial and domestic waste while increasing the construction waste reutilization. The Green Energy Business advances energy transition by developing new energy projects and participating in the electricity trading market.

According to the World Business Council for Sustainable Development (WBCSD), while corporate responsibility for reducing Scope 1, 2, and 3 emissions is now considered a basic obligation ("Do Less Harm"), companies can drive deep transformation by proposing concrete climate solutions and exerting greater decarbonization influence ("Do More Good"). In addition to continuously strengthening carbon reduction in its core business, TCC is committed to developing new products and services that can help customers and society reduce emissions, expanding the external positive impact of Avoided Emissions. According to United Nations Environment Programme (UNEP) statistics, basic construction materials such as steel and cement account for approximately 18% of global construction-related carbon emissions. The United Nations' Emissions Gap Report 2024 highlights that low-carbon cement technologies using alternative clinkers, such as limestone, could reduce global carbon emissions by approximately 400 million tonnes by 2035, making it a cost-effective solution with significant carbon reduction potential.

In response, TCC launched Portland Limestone (IL) cement and concrete products, enabling customers to reduce carbon emissions by 146,000 tonnes within one year of market introduction, demonstrating the substantial emission reduction benefits of low-carbon products. Additionally, TCC is actively promoting the adoption of global low-carbon construction materials, helping the construction industry reduce carbon emissions by approximately 1.16 million tonnes in 2024. Reduction is expected to reach 1.69 million tonnes by 2030. This initiative reflects the Company's significant influence in driving carbon reduction innovation and market promotion.

Overall Carbon Reduction Key Performance

2024 Carbon Reduction Performance	Carbon Reduction Amount (Base Year 2016)	Carbon Reduction Contribution
Alternative Raw Materials/Alternative Clinker	9.51 million	56%
Alternative Fuels/Equipment& Process Enhancements	6.73 million	39%
Renewable Energy/Power Generation by Waste Heat Recovery	0.86 million	5%
Total	**17.10 million**	**100%**

TCC Carbon Reduction Roadmap

TCC's Carbon Reduction Roadmap is focused on the overall goal of achieving net-zero emissions in cement and concrete operations by 2050. Guided by the International Energy Agency (IEA) Net Zero Emissions by 2050 (NZE) scenario, World Cement Association (WCA) and Global Cement and Concrete Association (GCCA) carbon reduction blueprints and considering the current status of TCC's operational sites and policy restrictions, the Company has developed a three-stage reduction strategy covering short-term, medium-term, and long-term phases.

Short-term until 2030

Strengthening Low-carbon Foundation

Reduce clinker-to-cement ratio: Promote high-proportion blended cement (using materials such as limestone, volcanic ash, kaolin, and slag powder) to replace traditional clinker, aiming to achieve a clinker ratio below international recommended standards by 2030.

Increase Thermal Substitution Rate (TSR) of alternative fuels: Accelerate the use of alternative fuels (such as SRF, waste tires, biomass fuels) to reduce fossil fuel dependency.

Increase the use of alternative raw materials: Reduce natural raw material extraction and decrease carbon emissions from raw materials during the manufacturing process.

Advance renewable energy self-generation and green electricity procurement: Install solar power and energy storage systems throughout plant areas and participate in green electricity market.

Introduce low-carbon product standards and ratings: Continuously research, develop and promote cement and concrete products that have obtained low-carbon certification.

Medium-term 2031–2040

Initiating Innovative Carbon Reduction Technology Transformation

Develop Carbon Capture, Utilization and Storage (CCUS) technology: Implement and verify preliminary CCUS demonstration systems in compliance with domestic and international regulations and carbon pricing trends.

Enhance smart manufacturing and energy efficiency: Reduce carbon emission intensity through AI-based equipment health prediction, anomaly detection, and real-time process optimization systems.

Increase the adoption of Ultra-High Performance Concrete (UHPC) and new construction materials: Drive the use of high-durability, low-carbon footprint advanced construction materials to enhance product value and expand market share by replacing traditional concrete.

Long-term 2041–2050

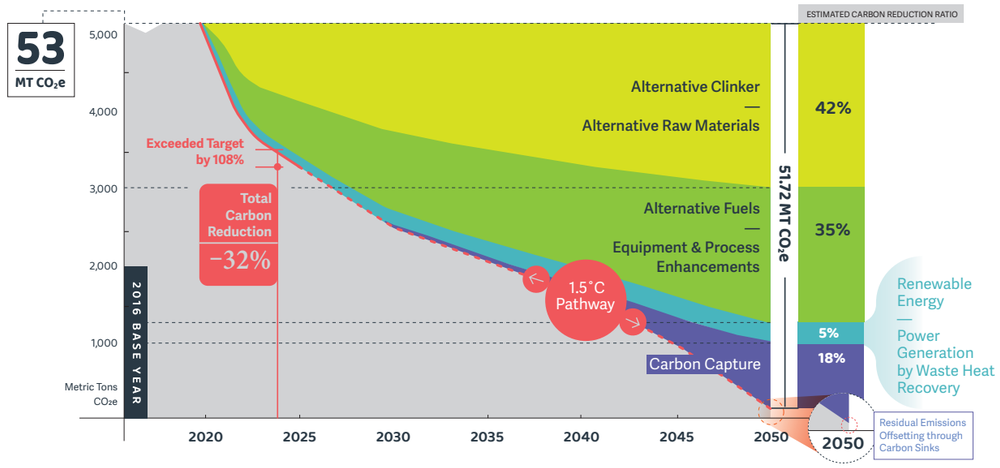
Advancing Net-Zero Transformation

Full deployment of commercial CCUS systems: Implement mature CCUS facilities at major cement plants to process unavoidable residual carbon emissions.

Adopt innovative alternative raw materials and processes (such as clinker-free cement technology and plasma calcination): Significantly reduce carbon emissions at the source.

Carbon removal and natural carbon sink investment: Remove residual carbon emissions and achieve ultimate net-zero through carbon capture alongside natural solutions.

The overall Carbon Reduction Roadmap is centered around three key axes: technological innovation, policy alignment, and business feasibility, ensuring that each phase is feasible and aligned with international goals. TCC reviews annual carbon reduction performance and technological progress, continuously adjusts pathway milestones, and strengthens its resilience and carbon competitiveness.



Note: The net-zero pathway scope covers all operational sites in Taiwan, Mainland China, CIMPOR, and OYAK CEMENT

Furthermore, to support the corporate-wide net-zero transformation goals, TCC also highly values carbon emission management throughout the supply chain, actively promoting Scope 3 greenhouse gas inventory and reduction initiatives. For Scope 3 greenhouse gas emissions, after identifying industry characteristics, emission hotspots, and reduction potentials, the Company focuses on four major categories: upstream transportation and distribution, downstream transportation and distribution, purchased goods and services, and fuel and energy-related activities, setting short-term carbon reduction targets for 2030. At the same time, following the SBTi 1.5°C methodology, TCC has developed a long-term carbon reduction pathway and targets for Scope 3 emissions throughout 2050. Through collaboration with suppliers and logistics partners, the Company is strengthening low-carbon transportation solutions and raw material procurement mechanisms, gradually increasing carbon reduction benefits to achieve coordinated climate action across the upstream and downstream value chain.

3.4_ TCC Climate Actions

In the face of increasingly severe physical and transition risks from climate change, TCC upholds its commitment to sustainable transformation from within and at the foundational level, viewing net-zero transformation as a core driver of long-term corporate competitiveness. In addition to regulatory compliance, the Group proactively engages in diverse climate actions, such as forward-looking technology research and development, process optimization, energy structure transformation, and supply chain carbon reduction. In combination, these efforts contribute to the global target of limiting temperature rise to 1.5°C through concrete actions. The Group implements localized, versatile carbon reduction solutions at its major operational sites in Taiwan, Mainland China, Türkiye, and Portugal based on local climate risks and policies. By tailoring approaches to local conditions and integrating efforts across regions, the Company demonstrates resilient climate governance.

3.4.1_ Low-carbon Circular Production

Climate Risks Addressed

- R1 Carbon Trading/Carbon Fees/Carbon Tax for Cap and Trade
- R2 Strength of Support from Insurance and Financial Institutions for Investment and Financing
- R4 Reputational Damage Due to Insufficient Low-carbon Transition

Climate Opportunities Addressed

- O2 Smart Low-Carbon Production and Waste Co-Processing
- O3 Market Expansion of Low-carbon Products and Services

TCC Circular Economy Model

In response to the dual challenges of resource depletion and climate change, TCC actively embraces circular economy principles by transforming the traditional linear production model of extraction-manufacturing-disposal into a circular framework of reduction-reuse-resourceization. By implementing cement production processes categorized by high temperature, high turbulence, and long retention time, TCC has developed a system for the co-processing of cement kilns to achieve the dual objectives of maximizing resource utilization while minimizing pollution emissions.

TCC's circular economy strategy focuses on the following three core aspects:

Alternative Raw Materials

TCC utilizes industrial waste (such as calcium fluoride sludge, reduced slag, fly ash, etc.) to replace natural limestone and clay as cement raw materials, balancing resource reuse and reduction in natural raw material extraction.

Alternative Fuel

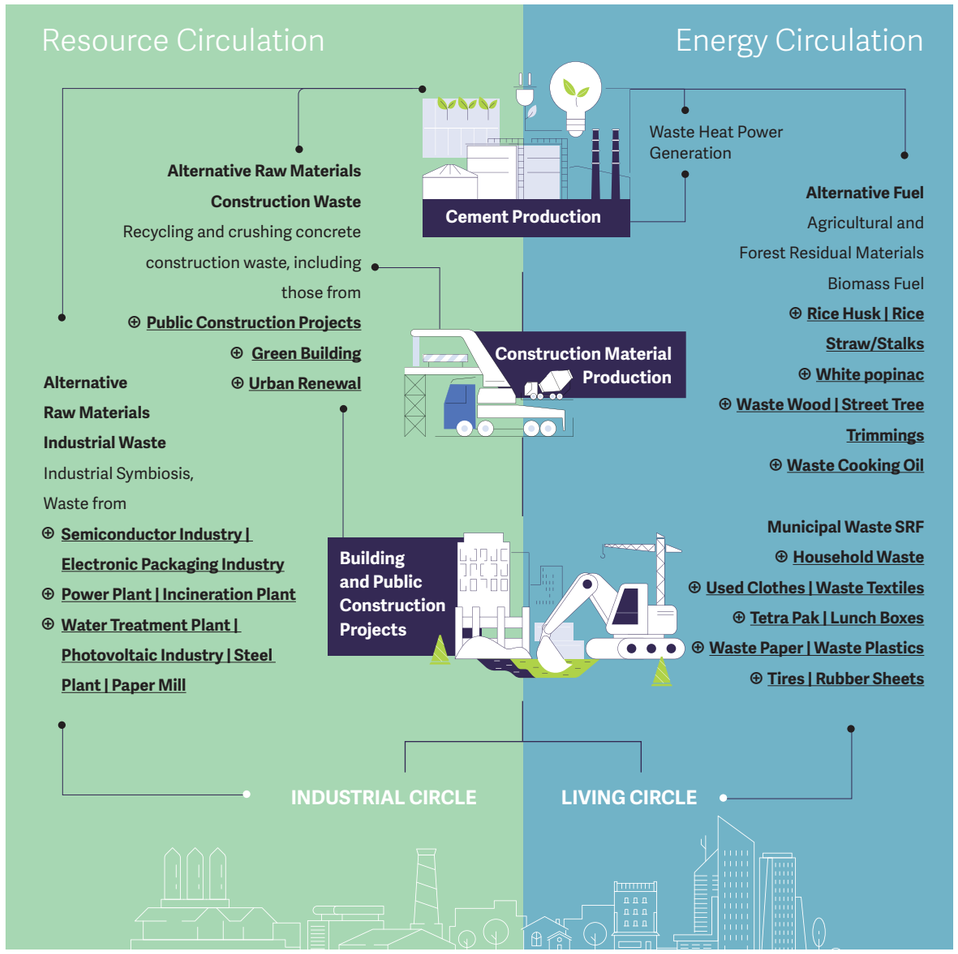
Promoting the use of Alternative Fuels (AF) is one of the most crucial carbon reduction measures in the cement manufacturing process. TCC actively introduces high-calorific alternatives such as Solid Recovered Fuel (SRF), waste wood, waste plastics, and waste rubber to gradually replace traditional fossil fuels like coal. This initiative reduces greenhouse gas emissions and decreases waste incineration and landfill volumes, producing advantageous results.

Alternative Clinker

Following the carbon reduction recommendations from the International Energy Agency (IEA) and World Business Council for Sustainable Development (WBCSD) on reducing the Clinker-to-Cement Ratio, TCC incorporates more limestone, volcanic ash, and kaolinite as clinker alternatives within regulatory limits and market acceptance. These production for these blended cements produce less carbon dioxide due to their reduced clinker content. For example, in Ivory Coast and Cameroon, TCC uses calcined clay as a clinker substitute, which, when blended, reduces clinker usage and produces low-carbon cement products.

By leveraging its R&D capabilities and process advantages to collaborate with local industries, TCC has developed a flexible and expandable co-processing platform capable of handling various waste types, including waste solvents, waste liquids, household waste, sludge, and old clothing. This approach simultaneously addresses waste reduction, carbon reduction, and pollution control, while improving overall resource circulation efficiency.

Process Flow Diagram



3.4.2_Leading the Industry in Low-carbon Construction Materials

Climate Risks Addressed

- R2 Strength of Support from Insurance and Financial Institutions for Investment and Financing
- R4 Reputational Damage Due to Insufficient Low-carbon Transition

Climate Opportunities Addressed

- O3 Market Expansion of Low-carbon Products and Services

Low-Carbon Products

In April 2025, the Global Cement and Concrete Association (GCCA) released the world's first Low Carbon Rating (LCR) standard for cement and concrete, providing a consistent carbon intensity benchmark for the global construction materials industry. TCC's Portland Limestone Type IL Cement and concrete products launched in Taiwan make it the only company in Taiwan's construction materials industry to meet both GCCA's cement and concrete low carbon rating standards. Beyond Taiwan, TCC's low-carbon products manufactured in Mainland China, Türkiye, Portugal, and West Africa have also undergone the Company's carbon footprint assessment and fully comply with GCCA's newly issued rating standards. However, compared to the EU's progressive regulations, where the clinker ratio can be reduced to 20% and alternative materials can reach up to 80%, Taiwan's current cement regulations, which have remained unchanged for nearly fifty years, still impose higher limits on clinker content. In view of this, TCC continues to engage with government departments, recommending that domestic regulations align more closely with the EU framework by relaxing regulations that hinder cement decarbonization, while encouraging and supporting the development and application of alternative raw materials, fuels, and carbon reduction technologies domestically. By prioritizing the use of low-carbon construction materials in public works and other large procurement projects, the substantial procurement volume can drive market demand and promote carbon reduction within the construction industry, ultimately accelerating the green transformation of the domestic cement industry.

Low-carbon Product Sales, Management Indicators, and Targets

TCC

Enhance decarbonization efforts and increase the production and sales of low-carbon cement and concrete

CIMPOR

Sales proportion in the Portuguese market will increase to +90% with export share reaching 30%

TCC will reduce the clinker ratio in cement production to below 65% by 2030

OYAK ÇİMENTO

The proportion of high-carbon CEM-I in gray cement sales decreased from 23.4% to 12.2%

The clinker ratio in cement production will decrease to 73%

According to the 2050 Global Building Net Zero Pathway published by the United Nations, embodied carbon in construction materials used in new construction must be reduced by more than 40% by 2030 compared to the 2020 baseline, as a crucial step in achieving net-zero emissions in the building sector. The United Nations' Emissions Gap Report 2024 also indicates that the global adoption of limestone and other materials as clinker alternatives to produce low-carbon cement could reduce global carbon emissions by 400 million tonnes CO_2e by 2035. The report underscores that these technologies are feasible and highly effective key decarbonization solutions.

TCC Branded Cement Performance

		carbon reduction
Portland Type I	Can be used for general construction and engineering	**10.3%**
Portland Limestone Type IL Cement	Higher early strength, can be used for general construction and engineering The carbon footprint is 754.82 $kgCO_2e$ per metric ton of cement	**23.8%**
Portland Type II (MH)	Low heat of hydration Resistant to sulfates, suitable for bridge piers and large dams	**6.2%**

Key Performance for Cement Plants in Mainland China

Most PII, PO, and PC type cement produced in Mainland China plants have obtained **low-carbon product certification**

Sales revenue in 2024 was NT$15,289,834 thousand, **accounting for** 84% **of total sales revenue in the Chinese market**

Shipment volume in 2024 was 15,742,205 tonnes, **accounting for** 83% **of total shipment volume in the Chinese market**

TCC Low-Carbon Concrete Features

- Consistent slump and excellent workability
- Higher early strength
- Strong workability and better carbon reduction
- Excellent durability
- Used for general construction and engineering

Ultra-High Performance Concrete

Ultra-High Performance Concrete (UHPC) is an advanced new construction material developed over recent decades. It features a discontinuous pore structure that effectively blocks the penetration of harmful substances such as chlorides, exhibiting superior mechanical strength and durability that comprehensively surpass that of traditional concrete. UHPC has a lifecycle of over 100 years. Compared to traditional concrete, it can significantly reduce material consumption, decrease component thickness, and reduce the quantity and weight of construction materials, further reducing overall carbon emissions. For example, UHPC can reduce the thickness of exterior walls by 75% and lower carbon emissions by 60% compared to traditional concrete. TCC's UHPC R&D team has overcome the limitations of traditional precast methods, successfully developing formulations for cast-in-place construction. 3D printing technology has been further integrated to broaden applications in architecture and infrastructure, delivering an innovative and sustainable material transformation solution.

- TCC DAKA RRRC Curtain Wall
- UHPC EnergyArk
- Waterproofing Improvement Project for Radio Room Roof at Zhongli Maintenance Section of the Freeway Bureau, MOTC

Internal Carbon Pricing

In response to the implementation of the EU's Carbon Border Adjustment Mechanism (CBAM) and Taiwan's upcoming carbon fee system, TCC has proactively established an internal carbon pricing system, incorporating carbon costs into operational and investment evaluations as a key economic incentive tool for driving low-carbon transformation. Through this system, TCC can systematically analyze the potential impacts of carbon emissions on operating costs, capital expenditure, and financial risks, while strengthening climate risk awareness when making investment decisions and planning operations across facilities. In 2024, TCC further launched an internal carbon trading simulation platform to calculate emission allowances and reduction results for each operational unit. Through this trading simulation mechanism, the Company reinforces carbon reduction accountability and promote resource collaboration across departments, encourages technological innovation and low-carbon investments, and gradually establishes an internal carbon governance mechanism.

Starting from 2025, TCC's cement business will set its internal carbon pricing to NT$500 per ton, with plans for annual increases to reach NT$1,800 per ton by 2030. For Mainland China operations, the price will be adjusted to RMB 105 per ton, with plans for annual increases to reach RMB 302 per ton. For international operational sites, Portugal and Türkiye have set a benchmark of 150 euros per ton of carbon dioxide by 2030, based on carbon price forecasts from the European Cement Association (CEMBUREAU), International Energy Agency (IEA), and Bloomberg New Energy Finance (BNEF). This benchmark serves as a basis for internal investment sensitivity analysis, enabling early assessment of long-term impact of global carbon costs on capital expenditures and operational strategies. TCC utilizes comprehensive carbon pricing and trading system simulations, aiming to build an economically driven low-carbon transformation framework, enhance carbon risk management effectiveness, and capture transition opportunities while strengthening operational resilience amid climate change.

3.4.3_ Low-Carbon and Negative Carbon Technology Innovation

High-Calorific Solid Recovered Fuel (SRF) Co-firing and Clean Integration System for Cement Kilns

Regarding fuel substitution, significant differences in calorific value, moisture content, and composition among different alternative fuels require extensive testing to verify their stability and suitability. In 2023, TCC collaborated with the Industrial Technology Research Institute to establish a High-Calorific Solid Recovered Fuel (SRF) Co-firing and Clean Integration System for Cement Kilns to improve the efficiency of alternative fuels. System performance verification is ongoing. SRF and wood chip co-firing tests completed in March 2025, yielding an optimal mixing ratio to further increase the usable volume and stability of alternative fuels in cement kilns.

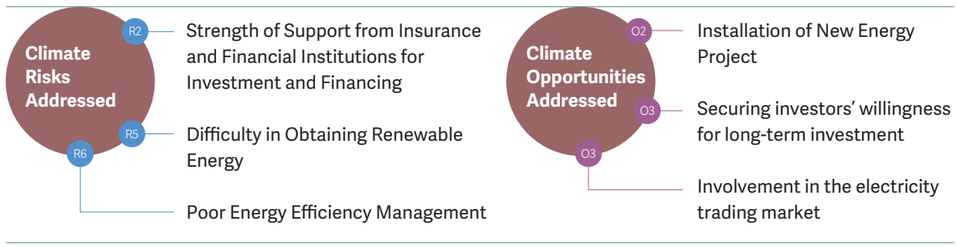
Negative Carbon Technology - Carbon Capture, Utilization and Storage (CCUS)

CIMPOR subsidiary collaborates with the European Cement Research Academy (ECRA) and the German Cement Industry Association (VDZ) to continuously promote CCUS technology development at its Alhandra and Souselas plants in Portugal. From 2019 to 2022, it also participated in the EU-funded Strategy CCUS project, actively promoting CCUS development plans and business models for operational sites in Southern and Eastern Europe. Due to shifts in the international landscape, uncertainty surrounding storage locations, and unclear supporting measures, implementation in Taiwan has been temporarily suspended. Priority is now given to oxygen-enriched combustion technology, which can reduce carbon emissions in the short term, while we continue to monitor the latest advances in storage technology.

Oxygen-Enriched Combustion

To enhance carbon reduction in the cement manufacturing process, TCC actively promotes the application and optimization of Oxygen-enriched Combustion technology. Oxygen-enriched combustion involves increasing the oxygen content in combustion air (usually above the natural level of 21%) to raise flame temperature and thermal efficiency while reducing fuel consumption and carbon emission intensity. This technology reduces unburned carbon content in the kiln, improves combustion stability, and shortens reaction time, enhancing overall process efficiency. Since 2023, TCC has introduced oxygen-enriched combustion trials at the Suao Plant to verify the optimal oxygen concentration, energy-saving, and carbon reduction effectiveness under different fuel combination conditions. Preliminary results indicate that oxygen-enriched combustion can effectively increase clinker production capacity and reduce energy consumption and carbon emissions per unit of clinker.

3.4.4_ Smart New Energy Business



TCC does not rely on purchasing renewable energy certificates as its main carbon reduction strategy but instead adopts a parallel approach of "self-generation and consumption" and "external green power procurement." TCC's global operational sites, including headquarters, cement plants, RMC plants, and subsidiaries, are actively installing solar power generation systems on plant rooftops and idle spaces. This initiative promotes self-built, self-generated, and self-consumed renewable energy, advancing energy independence and the use of green electricity. Meanwhile, TCC actively participates in the green electricity market, strategically increasing its annual proportion of green electricity usage through green power procurement. In 2024, Taiwan's cement business locations self-generated and self-consumed a total of 5,741,522 kWh renewable energy. The Hoping Plant and Suao Plant, as mandatory renewable energy users, achieved their large electricity user obligation targets ahead of schedule in 2023.

Operational sites in Mainland China have generated and consumed 20,520,259 kWh electricity through their self-built solar power systems. Additionally, TCC promotes the installation of energy storage systems to regulate peak and off-peak power loads, participate in Taiwan Power Company's electricity trading market, and enhance energy dispatch flexibility. During natural disasters or sudden power outages, energy storage equipment can discharge immediately to ensure stable, uninterrupted production. Cement plants in Mainland China and CIMPOR sites in Portugal have taken the lead in implementing the integrated "solar power + energy storage" strategy to reduce electricity costs and enhance operational resilience. Among them, Yingde Plant and Guigang Plant have installed a combined energy storage capacity of 140.8MWh, achieving annual electricity savings of 100 million dollars, demonstrating the effectiveness of energy transition.

Green Power Procurement Targets Starting from 2025

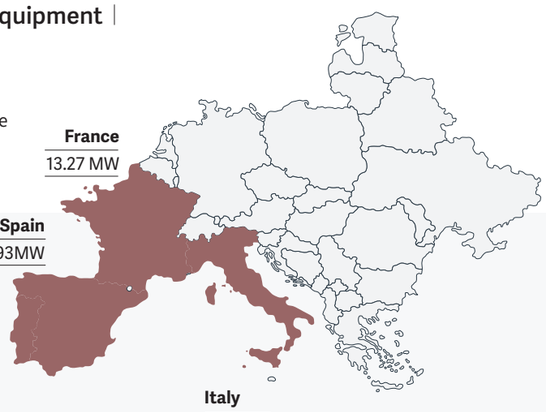
Taiwan: Additional
100,000kWh
annually

Mainland China: Additional
10millionkWh
annually

Establishment of Energy Storage Equipment

Global Sites Energy Storage Capacity

Collaboration with European subsidiary Atlante
Expected to go online between 2025 and 2026
Enter the European power trading market

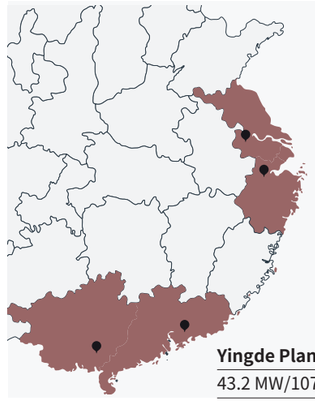


France
13.27 MW

Spain
4.93MW

Cimpor Alhandra and Souselas Cement Plants
2MWh
expected to be online in 2025

Italy
6.44 MW



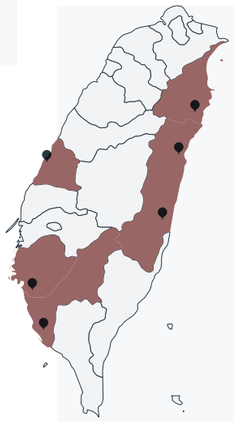
Jurong Plant, Jiangsu
8.3MW/16.6MWh
to launch in 2025

NHOA.TCC Jurong UHPC Plant 836kW/1672kW
to launch in 2025

Hangzhou Operational Headquarters
3.6MW/7MWh to launch in 2025
The first case in Mainland China
to install EnergyArk energy storage system
to supply power for
charging piles and buildings

Yingde Plant, Guangdong
43.2 MW/107.3MWh

Guigang Plant, Guangxi
5.6 MW/33.546MWh



Suao Plant (Yilan)
35 MW/123.6MWh
11MW/13MWh
to launch in 2025
serves as backup power
with black start capability

Hoping Plant (Hualien)
2.2 MW/2.3MWh
10 MW/32.8MWh
13MW/28MWh
launch in 2025
serves as backup power
with black start capability
100 MW/311.4MWh
The largest E-dReg site
in Taiwan

Changbin AFC Phase
5 MW/5.2MWh
Changbin AFC Phase II
4.9 MW/6.8MWh

MOLICEL
Xiaogang Plant Phase I 5 MW/6.2MWh
Xiaogang Plant Phase II 4 MW/5.3MWh
STSP Plant 1.2 1.2 MW/1.7MWh

Hualien Plant 50
50 MW/160.042MWh

Note: MW refers to power, MWh refers to electrical energy

Cumulative Installed Capacity of Large Energy Storage Projects:
Taiwan & Mainland China covered

2021	2022	2023	2024	2025
Operational	Operational	Operational	Operational	Installed (operational included)
5.2MWh	8.8MWh	507.2MWh	796.6MWh	955.3MWh

Energy storage technology is one of the key pillars in the advancement of energy transition. According to the International Energy Agency (IEA), at least 1,500 GW of energy storage capacity must be added globally by 2030 to effectively manage green power fluctuations and ensure a stable power supply. Recent major power outages in Spain and Portugal have further highlighted the critical importance of energy storage systems in modern power infrastructure. TCC proactively established NHOA.TCC in 2020 and acquired Engie EPS, an European energy storage leader, in 2021. Following the merger, the company was renamed to NHΩA and has been actively integrating global energy storage technologies. NHΩA positions itself as a Virtual Power Plant (VPP) operator at its core, focusing on city-level small-scale energy storage applications, promoting distributed power system construction, supporting energy infrastructure modernization across multiple countries, and significantly accelerating the global energy transition.

Key Performance

As of May 2025
Global energy storage site installation capacity
(including under construction)
3,463.63MWh

NHOA.TCC
energy storage capacity reaches
1,030.63MWh

NHOA Energy
installation capacity reaches
2,433MWh

Objective | Global energy storage installation capacity of 2.5GWh in 2025

Energy Helper TCC Corporation

Energy Helper TCC Corporation focuses on delivering one-stop integrated energy services to major electricity consumers. Its offerings include green power supply and energy storage dispatch, providing a convenient energy trading experience akin to that of convenience stores. The platform enables power generators to easily list green energy resources and uses AI algorithms to optimize green energy matching, planning low-surplus, low-cost green energy arrangements for corporate users. It also activates idle power resources and acts as an agent in Taiwan Power Company's electricity trading market, helping stabilize electricity costs and generate additional revenue. To enhance green energy procurement efficiency, Energy Helper TCC Corporation has developed the Online Green Energy Consultant platform to match diverse green energy sources with the aim to introduce integrated Green Energy + Carbon Management services. Through medium and long-term PPAs (Power Purchase Agreements), it helps enterprises lock in green electricity prices and effectively control energy expenditure and future carbon cost risks.

The platform integrates green energy and energy storage resources from TCC's subsidiaries and clients, building an aggregated energy trading platform that encompasses all current power trading programs of Taiwan Power Company. Leveraging AI algorithms and a cloud-based Energy Management System (EMS), we analyze market price trends through big data to optimize bidding strategies. In addition, we dynamically adjust power allocation of energy storage systems to ensure stable power supply and economic benefits. As of December 2024, Energy Helper TCC Corporation's registered resource capacity has reached 226.1 MW, with E-dReg participation capacity reaching 170 MW, capturing a 39.4% market share and firmly maintaining its position as the market leader. The Company will continue aligning with policy directions, assisting enterprises in integrating diverse energy resources, such as demand response, power generation units, and energy storage systems, jointly promoting smart power and low-carbon transformation.

Super Battery Installation

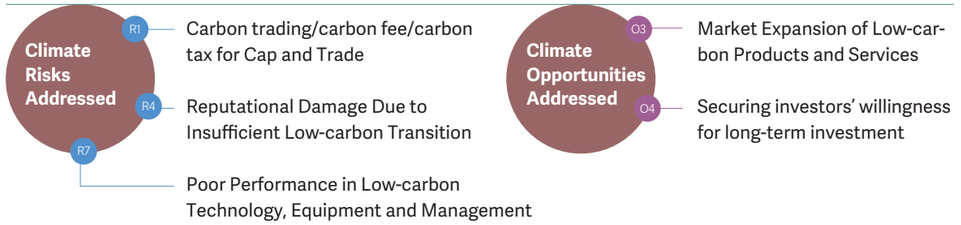
Molicel is continuously expanding its high-performance lithium battery application, successfully supporting multiple innovative projects characterized by high power output, lightweight design, and automotive safety certifications. The Spéirling PURE high-performance electric vehicle, developed in collaboration with McMurtry Automotive, has repeatedly set international track speed records, fully demonstrating Molicel's leading advantages in battery energy density and instantaneous output. Meanwhile, the VARG electric off-road motorcycle, developed with Molicel's assistance by Stark Future, defeated traditional gasoline motorcycles in the British Indoor Championship, garnering significant market attention. With pre-orders exceeding 18,500 units, this achievement demonstrates that electric off-road vehicles have reached breakthrough milestones in both performance and consumer acceptance. Molicel also offers specialized battery solutions for European drone manufacturer FlyingBasket, helping their heavy-duty cargo drones achieve a 9% increase in flight range and an effective payload of 100 kilograms, thereby expanding practical applications in offshore operations and last-mile logistics.

In the electric aviation sector, Molicel's specialized lithium battery products are currently the only commercialized solution simultaneously offering high-rate charging and discharging capabilities that meet aviation regulatory safety certifications. Their long cycle life effectively improves operational efficiency and boosts aviation electronics revenue. Molicel collaborates with multiple international electric aviation startups, among which Archer Aviation obtained FAA airworthiness certification in 2024 and become the exclusive air taxi supplier for the 2028 Los Angeles Olympics. Vertical Aerospace received the Shaping the Future Award by the British Aviation Technology Institute, reflecting rapid international market validation and adoption of their technical market solutions.

Ocean Thermal Energy Conversion

Marine energy is stable resource that is capable of operating year-round, around the clock, offering a more reliable power source compared to intermittent renewable energies. It holds the potential to become a key technological breakthrough in energy transition. TCC has designated the three-in-one production park at Hoping Industrial Port Power Plant in Hualien as its marine energy development base. Located just 1.8 kilometers offshore, the area reaches a depth of 600 meters and is therefore geographically suited to deep seawater power generation. TCC is actively investing in Ocean Thermal Energy Conversion (OTEC) technology, aiming to generate power by utilizing temperature differences between the existing cooling water from the power plant and deep seawater through turbine-driven heat exchange. The first phase plans to establish demonstration units with an installed capacity of 1 to 2MW, estimated to provide a stable daily power supply of approximately 24,000 kWh, sufficient to meet the daily electricity needs of about 2,000 households. The project completed its underwater cultural heritage review in 2024, and the Environmental Impact Assessment (EIA) for terrestrial and marine ecosystems has been submitted to the Ministry of Environment for review. Phase 1 aims to achieve grid-connected operation of the first megawatt-class Ocean Thermal Energy Conversion (OTEC) facility by 2029, with Phase 2 targeting full commercial operation by the end of 2034. This project is poised to become a milestone as Taiwan's first commercial application of marine energy, opening new prospects for developing a diverse and stable green energy portfolio.

3.4.5_ Low-carbon Supply Chain



Green Transportation

According to the latest statistics from the Ministry of Environment, the transportation sector is Taiwan's second-largest source of carbon emissions, with road transportation accounting for the highest proportion. To reduce greenhouse gas emissions and air pollution from transportation, TCC is actively promoting green transportation and enhancing the environmental performance of its own logistics system. Utilizing its subsidiary Taiwan Transport & Storage's operational resources, TCC officially introduced electric tractor units for cement product transportation in April 2024, which is estimated to reduce per-trip transportation carbon emissions by approximately 32%. The RMC plants operated by TCC and Feng Sheng Industrial are simultaneously upgrading their fleets, gradually replacing diesel mixer trucks with more fuel-efficient and lower-emission Euro V and Euro VI environmental protection vehicles.

As of 2024, the proportion of environmentally friendly vehicles has reached 92% for TCC and 57% for Feng Sheng Industrial, respectively. Additionally, TCC continues to expand its green logistics fleet, which currently includes 2 electric tractor units, 2 electric heavy-duty trucks, and 1 self-developed, patented electric compressor truck. In 2025, TCC plans to add 10 more electric tractor units and 4 electric heavy-duty trucks to its fleet, further strengthening its low-carbon transportation capabilities and moving towards a comprehensive green supply chain deployment.

Guigang Terminal to Fully Adopt Electric Tractor Units by 2025

TCC's Guigang Terminal has introduced a Priority Dispatch Rights mechanism, encouraging suppliers to invest in fleet electrification transformation and actively building a low-carbon logistics ecosystem. Along the main transportation route spanning 38 kilometers from the plant to the terminal, 60 electric tractor units have been deployed for cement and product transportation, reducing overall transportation costs by 15% and achieving an 87% annual carbon reduction per vehicle. This initiative not only strengthens the resilience of green transportation in the plant area but also serves as a concrete example for regional supply chains advancing towards net-zero transformation.

Key Performance Achievements

Over >2,300 **tonnes of carbon reduction for cement vessels** compared to traditional vessel types

Installation of Propeller Boss Cap Fins (PBCF) and optimized hull design, combined with optimized route planning achieve fuel savings of over +2%

2 bulk carriers retrofitted with high-power LED lighting facilities, **saving over** >208,000 kilowatt-hours of electricity

Regular dry-dock maintenance for 6 vessels, with hulls fully coated using 11,304 liters of the latest energy-saving and environmentally friendly paint that complies with the International Convention on the Control of Harmful Anti-fouling Systems on Ships (AFS). This paint contains no harmful substances like organic tin, effectively prevents marine organism adhesion, reduces navigation resistance and achieves 3% fuel savings

Supplier Carbon Management

TCC follows two core strategies for supply chain management: Sustainable Supplier Management and Localization and Greening of Procurement, with the Board of Directors serving as the highest decision-making body. The Supply Chain Management Department is responsible for integrating the execution results of the parent company and its subsidiaries, while the Chief Sustainability Officer regularly reports and discusses these outcomes in operational meetings chaired by the Chairman. The highest-ranking officer of the Supply Chain Management Department regularly reports to the Board of Directors on overall management progress and results, ensuring sustained high-level attention and engagement in sustainable supply chain issues within corporate governance. Currently, the sustainable supply chain management mechanism primarily covers self-owned factories in the cement business in Taiwan and Mainland China, Hong Kong shipping terminals, and major mining subsidiaries. It adopts a project manag＝ement approach, with the Supply Chain Management Department periodically submitting relevant plans to the Sustainability Development Committee for review. This process ensures that all procurement operations and management mechanisms align with the Company's sustainability goals and risk control principles. Starting in 2025, TCC plans to gradually expand its sustainable supply chain management mechanism to key subsidiaries, including Universal Cement, E.G.C. Cement Corp., Ho-Ping Power Company. The Company will also evaluate extending this framework to European operations, including joint venture partner OYAK CEMENT Group and Portuguese subsidiary CIMPOR's supply chains. Through this expansion, the Group aims to comprehensively strengthen sustainable governance and risk identification capabilities across its global suppliers.

Environmental and Climate Action Commitment

TCC encourages suppliers to actively support sustainable transformation, particularly in carbon management, and aims for them to adopt Science Based Targets (SBT) to collaboratively advance toward a low-carbon economy. At the same time, we also expect our partners to proactively provide carbon footprint-related data, enhancing transparency and management efficiency across the overall supply chain. Partner vendors who do not align with TCC's sustainability principles or fail to provide necessary carbon information and reduction measures may jeopardize their partnership opportunities within the supply chain. In response to global carbon reduction trends, TCC will continue to optimize its supply chain structure and collaborate with partners who share the same vision to promote sustainable development.

3.4.6_Climate Adaptation

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

TCC's cement and concrete operations are increasingly exposed to extreme weather driven by climate change, posing unprecedented challenges to operational continuity and cost control. Extreme rainfall and typhoons may cause damage to production equipment, road disruptions, and logistics system paralysis, leading to delays in raw material deliveries and finished product shipments. This subsequently affects customer delivery schedules and revenue performance. Additionally, heavy rainfall may affect raw material quality stability, adversely impacting process proportions and product strength.

In addition to flood risks, operational sites must also address challenges brought by drought. Cement and concrete production heavily relies on industrial and cooling water resources. Prolonged periods of below-average rainfall and tight water resource allocation can lead to restricted water access, increased water costs, or production interruptions. These risks are particularly significant in regions facing intense competition for water, such as areas with high agricultural irrigation and domestic water pressure. Drought also limits the stability of recycled water and wastewater reuse systems, increasing corporate dependence on external water resources and further amplifying operational uncertainties. To mitigate the aforementioned physical climate risks, TCC has initiated multiple adaptation actions, including strengthening raw material supply chain resilience, establishing emergency shipment dispatch routes, implementing smart water monitoring systems, and increasing water storage and recycling rates in plant areas. These measures help enhance factory operational flexibility and business continuity under extreme weather conditions, ensuring stable delivery and corporate sustainable competitiveness.

Business Continuity Plan (BCP)

To strengthen emergency response and enable quick recovery, TCC has set up a Business Continuity Management Plan with clear goals and procedures for risk prevention and response. This protects staff, maintains customer service, and reduces disruption impacts. In 2024, For its core business of cement manufacturing and sales, TCC established the Business Operations Continuity Management Guidelines in 2024, adopted the ISO 22301 framework for cement operations, establishing clear responsibilities, objectives, and regular drills to improve resilience. TCC also plans to obtain ISO 22301 certification in the future.

In the event of a disaster, TCC's Chairman serves as the Chief Commander and appoints senior executives as Deputy Commanders to swiftly form a Command Team composed of first-level managers to activate the response plan. Based on the degree of operational impact, the team determines the Maximum Tolerable Period of Disruption (MTPD), Recovery Point Objective (RPO), and Recovery Time Objective (RTO). Meanwhile, an Operations Team composed of managers from various plants and business units is responsible for executing tasks such as damage assessment, on-site response, activation of disaster prevention measures, equipment recovery, and coordination with external service units. Each plant and enterprise must establish their own business continuity plans in line with the guidelines, assess their equipment risks and post-disaster recovery capabilities, propose enhancement measures and specific disaster response solutions to ensure production and operational stability during unexpected events.

Mitigation and Adaption Measures

Physical Risks **Flood**	**Risk Description**
	Equipment damage leading to production process delays and interruptions
	Response Measures
	⊙ **RMC Plants establish climate disaster emergency response guidelines:** For extreme weather events such as typhoons and heavy rains, the RMC Plants should clearly define pre-disaster prevention, during-disaster response, and post-disaster recovery mechanisms to ensure personnel safety and uninterrupted operations. ⊙ **Cement plants establish typhoon and flood prevention contingency plans:** Drawing on historical disaster experiences and regional climate risks, they develop tiered response operation procedures to enhance real-time response capabilities during emergencies. ⊙ **Comprehensively strengthen flood prevention system facilities in plant areas:** Including raising drainage ditches, installing flood gates and temporary water containment facilities to reduce the risk of plant flooding and equipment damage. ⊙ **Complete safety inventory checking and dispatch arrangement of raw materials and finished products before flood season:** Ensure minimum operational requirements and stable customer delivery are maintained during disasters. ⊙ **Arrange natural disaster insurance coverage for high-risk and critical equipment:** Incorporate natural disasters into the risk transfer mechanism to reduce the financial impact of potential asset losses on operations.
Physical Risks **Drought**	**Risk Description**
	Production delay and disruption due to water shortage in production
	Response Measures
	⊙ **Continuously optimize process water efficiency:** Through technical upgrades and process adjustments, gradually reduce the water withdrawal intensity required per unit of cement product to decrease dependence on natural water resources. ⊙ **For plants located in medium- to high-water-risk areas, establish water storage and regulation facilities:** Enhance operational resilience and water supply stability during drought or water restriction periods. ⊙ **Fully implement ISO 14046 Water Footprint standard and ISO 46001 Water Efficiency Management System:** Strengthen water resource use performance evaluation, target setting and continuous improvement mechanisms to align with international best practices in water resource management. ⊙ **Install rainwater harvesting and process water recycling/purification equipment at each RMC plant:** Increase recycled water usage, reduce freshwater withdrawal, and minimize the environmental impact of wastewater discharge. ⊙ **Develop a digital water footprint management platform:** Collect and monitor water usage at each operational site in real-time, improve water use transparency and decision-making efficiency to support resource allocation and water risk management.

4 Green Sustainable Finance

4.1_ Green Investment and Financing

Since launching its transformation roadmap in 2018, TCC has steadily built a robust operational foundation and achieved resilient growth. TCC's consolidated revenue in 2024 grew by 41% compared to 2023, demonstrating the strong growth momentum and operational resilience brought by its transformation strategy. International credit rating agencies, S&P Global Ratings and Fitch Ratings, have both highly recognized TCC's transformation performance and financial stability, awarding the Company an Investment Grade BBB– credit rating with a Stable outlook. This rating reflects TCC's leadership position in major cement markets including Taiwan, Portugal, and Türkiye. The Company's stable profitability and cash flow performance, as well as the competitive advantages and sustainable development potential gradually established during its green transformation process, laying a solid foundation for its continued future growth.

In response to global push for the 2050 net-zero emissions goal, industrial competition has fully entered a new era defined by green transformation and scaling collaboration. With a long-term strategic perspective, TCC continues to invest in low-carbon building materials, resource circulation, and green energy deployment. These efforts not only deliver significant carbon reduction results. but also open new market opportunities, enhance future innovation capabilities and carbon competitiveness, and solidify the Company's sustainable leadership position in the net-zero transformation era.

Green/Sustainable Financial Instruments	Raised Fund Amount	Fundraising Description
Sustainable and Green Credits	Sustainable and green financing lines of approximately NT$129.4 billion	⊙ By the end of 2024, the obtained green or sustainable financing loan facility amount reached NT$129.4 billion. ⊙ Fund usage includes but is not limited to: – Carbon reduction and emission control: Reduce greenhouse gas emissions and air pollution – Resource recycling and waste reduction – Renewable energy development – Installation and operation of energy storage equipment and charging stations – Clean transportation: Procurement of electric vehicles, use of low-sulfur fuel for ships, implementation of shore power systems, and production of new energy lithium batteries for vehicles. – Green building construction – Protection of terrestrial and aquatic biodiversity

Green/Sustainable Financial Instruments	Raised Fund Amount	Fundraising Description
Sustainability-linked convertible bonds	NT$8 billion	⊙ In December 2024, TCC issued NT$8 billion in Sustainability-Linked Convertible Bonds (SLCB), a type of sustainable development bond that attracted both domestic and international investors. This was Taiwan's first SLCB issuance and the largest of its kind in the market, with the total issuance amount resulting in an increased cash inflow of NT$8 billion from financing activities. Based on the Sustainability Performance Target (SPT), greenhouse gas reduction goals were established using 2016 as the base year, with targets set for 2027. The combined Scope 1 and Scope 2 emission intensity from cement plants in Taiwan and Mainland China will be reduced by 14.9%.
Green Euro Convertible Bonds (Green ECB)	US$350 million	⊙ In March 2025, TCC issued US$350 million in Green Euro Convertible Bonds (Green ECB). The raised funds will primarily be used to increase capital investment in TCC Dutch Holdings B.V., strengthening the capital reserves for low-carbon cement and green energy projects in Türkiye and Europe. ⊙ According to TCC's latest published Green Financing Framework, which received a Second Party Opinion from the third-party institution ISS Corporate. The funds are allocated to promoting carbon emission reduction, increasing the proportion of renewable energy, and improving resource recycling efficiency, all aimed at solidifying TCC's long-term strategy to achieve net-zero emissions by 2050.
Green Bank Loans	€500 million	⊙ TCC's Dutch subsidiary signed a five-year, €500 million Green Loan with the underwriting banking syndicate in June 2025, and the loan has been successfully disbursed. The funds support key initiatives such as carbon emission reduction, development of new green energy, increasing the proportion of renewable energy, and enhancing resource recycling efficiency, aligning with TCC's long-term strategy of steadily progressing towards net-zero emissions by 2050. All funds will be invested in projects that meet international green finance standards, covering TCC's low-carbon cement production line upgrades and new energy project development in Türkiye, Portugal, and Africa, as well as the construction of "integrated charging and storage" smart energy stations in France, Italy, Portugal, and Spain. ⊙ This green loan was planned in alignment with TCC's latest Green Financing Framework and received a Second Party Opinion from the third-party institution ISS Corporate, ensuring full compliance with the Green Bond Principles established by the International Capital Market Association (ICMA) and the Green Loan Principles jointly promoted by the Loan Market Association (LMA) and other organizations.

As of the end of June 2025, sustainable and green credit facilities and corporate bond financing totaled NT$155.6 billion, accounting for over 35% of the Group's total facilities. These funds were primarily used to support the Group's sustainability-related and low-carbon transition economic activities.

4.2_ Financial Impacts arising from the climate risks and opportunities

Risk R1 Carbon Trading/Carbon Fees/Carbon Tax for Cap and Trade

Traditional cement manufacturing processes and coal-fired power generation emit large amounts of greenhouse gases. Without effective emission reductions, the Company may face increasing pressure from stringent carbon regulations, such as carbon trading, carbon tax, or carbon fees. TCC's cement plants and RMC plants actively promote process equipment upgrades and energy-saving modifications, systematically optimizing energy efficiency and carbon reduction through the adoption of high-efficiency motors, smart control systems, and low-carbon fuel adaptation equipment. These upgrades and modifications improve overall production efficiency and enhance resilience to future climate risks. However, they involve high upfront capital expenditures and increased procurement demands for high-efficiency equipment and low-carbon technologies. Furthermore, the global cement industry gradually moves toward the 2050 net-zero goal by implementing carbon reduction policies such as the EU's CBAM. International industry peers have actively invested in R&D and capital expenditure for low-carbon technologies, including alternative raw materials and fuels, clinker substitutes, and smart manufacturing processes. Market tenders are also requiring supply chain carbon footprint information and adherence to low-carbon standards for building materials. In addition to optimizing its production systems, TCC is expanding its carbon reduction actions to transportation, including launching eco-friendly cement carriers with energy-saving and emission-reduction benefits, implementing Phase 6 ready-mix concrete truck replacement plans, and introducing shore power facilities in port areas to reduce carbon emissions during berthing operations. By thoroughly planning its carbon reduction initiatives, TCC strengthens its competitive advantage and sustainable value in future low-carbon markets.

CURRENT IMPACT

Continuous equipment and technology upgrades, including improving the efficiency of gasifiers, preheaters, and cement mills; updating waste heat power generation systems; expanding alternative raw material and fuel storage areas; installing infrared scanning equipment, alternative fuel conveyor belts; adding smoke detectors to silos; increasing automatic sprinkler facilities to enhance fire control for alternative fuel storage; and investing in the DAKA Resource Recovery Center for treating municipal waste in cement kilns, resulted in capital expenditures of NT$8,136,756 thousand and NT$5,115,954 thousand in 2024 and 2023. These upgrades led to cash outflows and generated depreciation expenses of NT$1,619,572 thousand and NT$617,695 thousand, respectively.

Promoting transportation vehicle electrification by continuously converting official vehicles at various operational sites to electric vehicles and purchasing electric trucks and electric tractor units. The purchase of related electric vehicles resulted in capital expenditures of NT$18,693 thousand in 2024 and NT$44,088 thousand in 2023. The purchase led to cash outflows and generated depreciation expenses of NT$50,266 thousand in 2024 and NT$24,062 thousand in 2023, respectively.

EXPECTED IMPACT

Operational equipment upgrades or technology-related equipment investments will lead to increased capital expenditures and depreciation expenses, resulting in cash outflows.

To expand storage capacity for alternative raw material and fuel and comply with industrial zone building coverage requirements, the Board of Directors approved a capital expenditure project in August 2024 for the construction of storage facilities at the Company's Hoping Plant, with a total investment amount of approximately NT$1,636,000 thousand. The project will increase capital expenditure, resulting in cash outflows and depreciation expenses.

Moving forward, TCC plans to adopt electric vehicles as its official company vehicles, including additional purchases of electric trucks, tractor units, and mining trucks. This transition is expected to increase capital expenditures, resulting in corresponding cash outflows and depreciation expenses.

Unit: NT$ Thousand

Capital Expenditure and Related Cost Investment	2023	2024	Planned Investment for 2025
Equipment related to alternative raw materials and fuels usage	2,349,129	1,588,773	9,001,424
Energy saving and carbon reduction equipment	113,117	403,322	454,984
Equipment and process enhancements	2,191,219	5,156,060	6,120,049
Self-generated renewable energy equipment for self-use	506,502	82,070	3,308,400
Oxygen-enriched and oxey-fuel combustion technologies	3,878	19,722	170
Procurement of Phase 6 eco-friendly RMC trucks for RMC plants in Taiwan	5,100	21,560	-
Procurement of electric RMC trucks for RMC plants in Taiwan	-	-	17,700
Electrification of large transportation vehicles	-	46,900	233,320
Docking overhaul of cement carriers	26,098	153,512	96,125
Dock overhaul of bulk carrier fleet	-	39,688	25,309
Transformation of existing cement carriers (Installation of Alternative Maritime Power system)	4,885	5,868	47,789
Procurement of new eco-friendly cement carriers	-	471,687	728,548
Construction of Alternative Maritime Power systems	37,999	1,657	-
Subtotal	**5,237,927**	**7,990,819**	**20,123,818**

Risk R2 Strength of Support from Insurance and Financial Institutions for Investment and Financing

As global attention to climate change and net-zero emissions continues to grow, major international financial institutions are integrating corporate carbon emissions performance and climate risk responsiveness into their evaluation criteria for credit decisions and capital allocation. If high-carbon-emitting industries fail to demonstrate concrete low-carbon transition strategies, greenhouse gas management effectiveness, and comprehensive climate disclosure, they may risk losing support from financial markets. In the future, financial institutions may become less willing to extend credit to high-carbon-emitting industries or may raise financing costs due to factors such as risk management, alignment with internal ESG policies, or regulatory requirements, making it more challenging for companies to secure funding.

Cement and coal-fired power generation are both high-carbon-emitting industries. A lack of planning relevant low-carbon transition initiatives may seriously affect financial institutions' willingness to engage, leading to reduced investor interest and difficulties in financing and obtaining insurance coverage.
In response, TCC has incorporated Financial Institution Investment and Financing Support Intensity as a key element of climate transition risk, including it in climate scenario simulations to evaluate potential changes in financing conditions under evolving policies and climate pathways. TCC will continue to monitor changes in regional financial policies, climate disclosure regulations, and investor preferences. These efforts aim to strengthen the Group's awareness of climate risks in capital markets and incorporate relevant scenario analyses and assessment results into financial and operational decisions, enhancing resilience and competitive advantages during the net-zero transition.

CURRENT IMPACT

Insurance premiums for property and business interruption insurance increased by 34% and 11% for TCC operations and Ho-Ping Power Company, respectively, compared to the previous period, while coverage ratios maintained at 85% and 62%. For cement operations in Mainland China, premiums remained unchanged, with coverage ratio maintained at 100%;

EXPECTED IMPACT

Failure to achieve low-carbon transition goals may increase financial institutions' insurance exposure risk, potentially resulting in higher premiums and lower coverage ratios. This, in turn, would raise operating costs and lead to additional cash outflows.

Stricter climate policies in the future may lead to downgrading risk ratings for high-carbon industries by financial institutions, resulting in higher financing rates. This will not only raise capital costs but may also reduce cash inflows and decrease capital flexibility.

Expected Impact

As the financial industry accelerates its decarbonization efforts, investment and financing support for high-carbon industries is gradually tightening, resulting in reduced cash inflows for TCC.

Unit: NT$ Thousand

Capital Expenditure and Related Cost Investment	2023	2024	Planned Investment for 2025
TCC Taiwan Property and Business Interruption Insurance	57,514	86,329	115,328
Ho-Ping Power Company Property and Business Interruption Insurance	215,418	320,408	356,403
TCC Mainland China Property and Business Interruption Insurance	38,402	41,953	40,857
CIMPOR & OYAK CEMENT Property and Business Interruption Insurance	-	204,619	250,000
Subtotal	**311,334**	**653,309**	**717,588**

Risk R9 Frequency and Intensity of Extreme Precipitation Events

TCC's operating locations in Taiwan and South China are in subtropical and monsoon climate zones, where extreme weather events are becoming more frequent due to climate change. The local flood season occurs between April and September each year, with high-intensity rainfall events occurring frequently, and typhoons are more common during the summer. The extreme weather may cause multiple impacts on production and operations, including:

Infrastructure damage
Sudden heavy rainfall and typhoons may cause damage to plant equipment, such as power facilities, storage tanks, and conveyor systems, and could even force production line shutdowns

Operational interruption
Extreme weather may cause road closures, port shutdowns, and logistics delays, disrupting raw material deliveries and product shipments, which could result in order delays or contract breaches

Cost increase
Damages from extreme weather result in additional costs for repairs, alternative transportation, and inventory adjustments, increasing short-term financial pressure on the company

Risk transfer difficulty
With the rising frequency of extreme weather events, insurance companies are tightening their assessments of related disaster risks, which may lead to higher insurance premiums or more stringent claim restrictions

In response to these acute physical risks, TCC has not only established a Business Continuity Plan (BCP) but also regularly inventories climate-sensitive assets and regional risk hotspots, gradually strengthening the weather-resistant design of its production lines and infrastructure. At the same time, we actively coordinate contingency procedures with local governments and logistics partners to enhance overall supply chain resilience during climate-related disasters, ensuring stable operations and timely deliveries.

CURRENT IMPACT

TCC mitigates flood damage by installing water storage pools and implementing enlarged drainage outlet projects. Equipment additions totaled NT$23,709 thousand in 2024 and NT$50,162 thousand in 2023, leading to cash outflows from investment activities and generating depreciation expenses of NT$27,639 thousand and NT$16,928 thousand, respectively.

EXPECTED IMPACT

Extreme flooding events may disrupt product or raw material shipments and dispatching, requiring adjustments to transportation methods and resulting in higher transportation costs. Floods can also cause water damage to equipment and create a need for strengthened slope protection, leading to increased operating costs and cash outflows from operating activities.

Unit: NT$ Thousand

Capital Expenditure and Related Cost Investment	2023	2024	Planned Investment for 2025
Water recycling-related facilities	50,162	23,709	10,433
Climate resilience enhancing facilities	1,369	10,504	577,722
Typhoon additional insured	25,711	491,693	546,138
Subtotal	**77,242**	**525,906**	**1,134,293**

Opportunity 01 Installation of New Energy Project

TCC Group continues to deepen its energy transition by actively installing photovoltaic systems at major operational sites, following the principles of self-generation and self-consumption to reduce dependence on traditional energy sources and decrease carbon emissions. Additionally, TCC is not limited to passively procuring renewable energy, but also actively engages in the independent development of diverse renewable energy sources, including solar and wind power, further integrated with energy storage system construction to create a stable and reliable green energy supply model. This initiative not only helps meet the Group's own operational electricity needs but also provides local businesses with diverse green power and energy storage services, strengthening TCC's influence and role in the renewable energy market value chain.

In terms of international expansion, ATLANTE, the electric vehicle charging brand of the Group's subsidiary NHOA, is actively expanding into the European market and has successfully joined the EU-led SPARK ALLIANCE for electric vehicle infrastructure, further expanding its product market share and business territory. ATLANTE integrates renewable energy applications into EV fast-charging stations, combining independently developed Energy Management System (EMS) and battery health monitoring technology to continuously optimize battery performance and charging-discharging efficiency, extend energy storage system lifespan, and enhance overall energy dispatch effectiveness. Through developing smart charging and storage integration solutions, TCC not only helps users achieve higher energy self-sufficiency rates and grid stability but also further strengthens customer loyalty and brand competitiveness. In the future, TCC will continue to promote the widespread adoption of renewable energy and energy storage applications through innovative technology, advancing the objectives of green power localization and intelligentization while accelerating TCC's transformation into a resilient, low-carbon enterprise model.

CURRENT IMPACT

Energy storage and charging station products and services, renewable energy trading, and battery-related product services generated operating revenues of NT$15,453,386 thousand and NT$10,639,209 thousand in 2024 and 2023 respectively, resulting in increased cash inflow from operating activities and significant growth in diversified revenue.

EXPECTED IMPACT

The International Energy Agency (IEA) and international consulting research reports expect renewable energy to show rapid growth over the next five years, with the global battery energy storage system's market size expected to double in size . Renewable energy and energy storage power trading will become drivers for TCC's revenue increase and affect the increase in cash inflow from operating activities.

Unit: NT$ Thousand

Capital Expenditure and Related Cost Investment	2023	2024	Planned Investment 2025
Solar Power Projects sites	-	40,919	6,135
Fishery and electricity symbiosis project sites	777,515	106,645	390,961
Wind farms	285,322	123,224	-
Geothermal energy Development	251,624	242,065	71,508
Ocean Energy Development	23,755	8,085	9,373
Energy Storage Projects	8,242,171	810,748	1,009,111
Super battery factory construction project	2,186,616	3,229,583	223,977
Super Battery machinery and equipment	4,069,665	2,949,672	461,341
Battery R&D Investment	560,719	610,168	610,000
Energy Storage R&D Investment	205,491	209,052	209,000
Subtotal	**16,602,878**	**8,330,161**	**2,991,406**

Opportunity 02 Smart Low-Carbon Production and Waste Co-Processing

TCC Group has long been focused on climate policy trends, leading the industry in deploying carbon reduction technologies. We pioneered the use of alternative raw materials and fuels, accelerating coal reduction and decarbonization processes. Through AI-powered smart process control systems, we continuously enhance energy efficiency, lower carbon emissions and energy costs per unit of product, as well as strengthen operational resilience and overall efficiency. Furthermore, TCC actively promotes circular economy applications by utilizing the high-temperature cement kilns to co-process industrial and municipal waste. This not only effectively reduces dependence on fossil fuels and environmental impact but also creates economically valuable alternative fuel sources, balancing carbon reduction benefits with revenue contribution.

CURRENT IMPACT

The use of alternative fuels reduces coal consumption, decreasing operating costs by NT$2,600,780 thousand in 2024 and NT$1,190,466 thousand in 2023, respectively (the acquisition of OYAK CEMENT and Cimpor cement operations in 2024 contributed additional alternative fuel benefits of NT$1,346,472 thousand).

Engagement in industrial waste and municipal waste treatment services generated operating revenues of NT$466,509 thousand in 2024 and NT$748,807 thousand in 2023, respectively, resulting in increased cash inflow from operating activities.

EXPECTED IMPACT

The thermal substitution rate targets are set at 25% for 2025 and 35% for 2030. The expected increase in alternative fuel usage will further reduce the demand for purchased coal, lowering operating costs and contributing to positive cash flow.

Improvements in waste heat power generation efficiency will reduce reliance on purchased electricity. Additionally, TCC has joined EP100, setting a target to increase energy productivity by 50% by 2040 compared to 2016. These efforts are expected to lower future operating costs and contribute to positive cash flow generation.

The development project for high-calorific SRF co-firing and clean integration systems in cement kilns is set to receive government subsidies in 2025, which will boost government subsidy income and increase cash inflows from operating activities.

With the expansion of municipal waste treatment services, TCC DAKA Renewable Resource Recycling Center has a daily processing capacity of over 200 tons, while cement plants in Mainland China collectively process over 600 tons per day. This is expected to boost future operating revenue and enhance cash inflows from operating activities.

Unit: NT$ Thousand

Capital Expenditure and Related Cost Investment	2023	2024	Planned Investment for 2025
Efficient combustion project for alternative fuels	31,094	30,710	12,086

Opportunity O3 Market Expansion of Low-carbon Products and Services

With the accelerating global trend towards net-zero transition, the demand for low-carbon building materials in the construction and infrastructure industries is rising, becoming a key driver for industrial innovation. In response, TCC actively invests in low-carbon product R&D and process optimization. By introducing alternative raw materials and fuels, improving process energy efficiency, and implementing AI-powered control technology, TCC continues to reduce product carbon footprints and develops high-performance, environmentally friendly building materials, enhancing its market competitiveness and building momentum for sustainable profitability. Among these initiatives, the newly launched Ultra-High Performance Concrete (UHPC) is being promoted in both domestic and international markets. With its high strength, long lifespan, and exceptional durability, UHPC is especially suited for infrastructure and specialized structural engineering projects. This concrete effectively reduces material consumption and maintenance frequency, supporting TCC's carbon reduction goals throughout the product lifecycle. The implementation of carbon pricing mechanisms and stricter building regulations on environmental impact have heightened customer awareness of the carbon emissions of building materials, thereby driving demands for low-carbon construction materials.

TCC will continue to leverage its technological strengths and production flexibility to position itself in the future building materials market. In line with government policies and global carbon reduction trends, TCC aims to drive low-carbon transformation across its entire product line, delivering greater value to customers and promoting more sustainable construction solutions.

CURRENT IMPACT

Operational sites in Taiwan and Mainland China generated low-carbon product revenues of NT$32,672,421 thousand in 2024 and NT$39,279,069 thousand in 2023, respectively, according to the Company's definition. Following TCC's consolidation with OYAK CEMENT and Cimpor in March 2024 and based on their respective definitions of low-carbon cement and concrete, the consolidated revenue from low-carbon products between March and December 2024 totaled NT$39,599,537 thousand, generating cash inflow from operating activities.

EXPECTED IMPACT

Sales of Taiwan's low-carbon Portland Limestone Cement and Africa's ultra-low carbon cement, produced using low-carbon calcined clay as a substitute for traditional clinker, are expected to grow annually. This is projected to drive revenue growth and increase cash inflow from operating activities.

Unit: NT$ Thousand

Capital Expenditure and Related Cost Investment	2023	2024	Planned Investment for 2025
Construction of Ultra-High Performance Concrete (UHPC) Plants and Equipment	117,523	26,682	385,764
Research and Development Investment in Ultra-High Performance Concrete (UHPC)	187,587	15,714	15,361
Subtotal	**305,110**	**42,396**	**401,125**

5 Metrics and Targets

By setting clear climate indicators and short-, medium-, and long-term goals, TCC quantifies the results of its sustainable transformation and incorporates them into daily operations and strategic management. These serve as key references for decision-making, resource allocation, and performance review, ensuring a robust and forward-looking transformation process.

5.1_ Greenhouse Gas Emissions Metrics and Targets

Climate Related Metrics and Targets

Items	Scopes	Performance		Target	
		2024	2025	2030	2050
Greenhouse Gas Management Base Year 2016 Units: ton of CO_2e/ton of cementitious material	Taiwan and Mainland China (Weighted Average)	0.655	0.645	0.552	Setting in Progress
	CIMPOR	0.664	-	0.538	0.033
	OYAK CEMENT	0.690	-	0.610	0.033
Water Resource Management - Fresh Water Withdrawal Intensity (OYAK CEMENT currently has no targets for this item)	Taiwan and Mainland China (Weighted Average) Base Year 2023 Units: Million liters/ton of cementitious material	0.000377	-	0.000248	-
	CIMPOR Units: Million liters/ton of cementitious material	0.00020	0.00020	0.00020	-
Thermal Substitution Rate of Alternative Fuel	Taiwan and Mainland China (Weighted Average)	15.4%	25%	35%	50%
	CIMPOR	33.8%	60%	70%	-
	OYAK CEMENT	24.5%	30.5%	58%	-
	Only for gray cement; if including white cement, the target is to reach 52% by 2030				
Alternative Raw Material Ratio	Taiwan and Mainland China (Weighted Average)	17.4%	21%	22%	25%
	CIMPOR	3.6%	4%	5%	-
	OYAK CEMENT	1.86%	2.09%	5%	-
Clinker-to-Cement Ratio	Taiwan and Mainland China (Weighted Average)	0.789	0.796	0.780	0.570
	CIMPOR	0.80	0.67	0.625	-
	OYAK CEMENT	0.80	0.79	0.73	-
Renewable Energy Unit: MW	TCC Group	203MW	235MW	400MW	750MW
Carbon Capture Unit: ton	Taiwan and Mainland China	Prioritize the adoption of oxy-fuel combustion technology that can achieve short-term carbon emission reductions.		100,000 Tonnes/Year	1.6 Million Tonnes/Year
Valid Data of Carbon Emission Collection from Critical Tier 1 Suppliers	Taiwan	91%	90%	90%	-
		Implementation of the third-party carbon review program for raw material suppliers in Taiwan in 2024			

Note 1: Items that have not achieved their targets will continue to be monitored for improvement. For details on climate actions, please refer to Chapter 3.
Note 2: After the acquisition of CIMPOR & OYAK CEMENT in 2024, in order to standardize the water management indicators within the Group, the water management metric has been changed from water intensity reduction to fresh water withdrawal intensity.
Note 3: The thermal substitution rate of alternative Fuel is subject to regional regulations: in Taiwan, it must comply with CNS 61 standards; in Mainland China, it must comply with the chloride ion limits specified in GB 175 standards.
Note 4: BACT stands for Best Available Control Technology.

Greenhouse Gas Emissions

Absolute GHG emissions Over the Past Four Years | unit:tCO_2e

Construction Materials

		2021	2022	2023	2024
Scope 1	**Taiwan**	4,798,945	4,314,312	3,463,663	3,311,817
	Mainland China	25,867,678	20,715,305	17,418,591	20,300,454
	Subtotal	30,666,623	25,029,617	20,882,254	23,612,271
	CIMPOR & OYAK CEMENT	-	-	-	9,183,229
	Total	30,666,623	25,029,617	20,882,254	32,795,500
Scope 2 (Market-based)	**Taiwan**	220,392	218,480	195,702	208,671
	Mainland China	1,094,397	846,574	656,627	682,879
	Subtotal	1,314,789	1,065,054	852,329	891,550
	CIMPOR & OYAK CEMENT	-	-	-	537,745
	Total	1,314,789	1,065,054	852,329	1,429,295
Scope 1 and Scope 2 Combined	**Taiwan**	5,019,337	4,532,792	3,659,365	3,520,448
	Mainland China	26,962,075	21,561,879	18,075,218	20,983,333
	Subtotal	31,981,412	26,094,671	21,734,583	24,503,781
	CIMPOR & OYAK CEMENT	-	-	-	9,720,974
	Total	31,981,412	26,094,671	21,734,583	34,224,755
Scope 3	**Taiwan**	28,761	17,428	6,277,977	6,473,285
	Mainland China	-	-	-	963,241
	Subtotal	28,761	17,428	6,277,977	7,436,526
	CIMPOR & OYAK CEMENT	-	-	-	1,867,000
	Total	28,761	17,428	6,277,977	9,303,526

Absolute GHG emissions for the past four years

Cement Plant

Items		2021	2022	2023	2024
Total Scope 1 and Scope 2 Emissions Unit：tCO_2e ton of cementitious material	**Taiwan**	0.806	0.803	0.769	0.761
	Mainland China	0.709	0.690	0.671	0.661
	Subtotal	-	-	-	0.656
	CIMPOR & OYAK CEMENT	0.724	0.709	0.686	0.668
	Total	0.806	0.803	0.769	0.761

Note 1: Greenhouse gas emissions are calculated using the operational control approach for inventory. The calculation method is: Activity Data x Emission Factor x GWP Value. For Taiwan, emission factors are cited from the Ministry of Environment's GHG Emission Factor Table.. This table uses the greenhouse gas GWP values from IPCC AR6 for calculation.
Note 2: Scope 3 greenhouse gas emissions encompass all 15 categories as defined by the GHG Protocol Scope 3, and obtained third-party verification. The calculation follows the GHG Protocol - Corporate Value Chain (Scope 3) Accounting and Reporting Standard (WRI & WBCSD).
Note 3: Based on the 2024 cementitious material production of 4,598,399 tons in Taiwan, the 2024 carbon emission intensity (cement plant Scope 1 and Scope 2) is 0.761 (tons CO_2e/ton of cementitious material). In Mainland China, with a 2024 cementitious material production of 25,613,238 tons, the 2024 carbon emission intensity (cement plant Scope 1 and Scope 2) is 0.661 (tons CO_2e/ton of cementitious material).
Note 4: Based on the 2024 clinker production of 4,224,284 tons in Taiwan, the 2024 carbon emission intensity (cement plant Scope 1 and Scope 2) is 0.828 (tons CO_2e/ton of clinker). In Mainland China, with a 2024 clinker production of 25,613,238 tons, the 2024 carbon emission intensity (cement plant Scope 1 and Scope 2) is 0.819 (tons CO_2e/ton of clinker).
Note 5: The newly disclosed scope in 2024 includes Longshan, Huaihua, and Liaoning cement plants; Fuzhou and Liuzhou grinding plants; Feng Sheng Enterprise Company, 123 Environmental Protection Technology Co., Ltd., Beijing TCC Environmental Technology Co., Ltd., TCC (Guangdong) Renewable Resources Technology Company Limited. CIMPOR, OYAK CEMENT, and the European Operations Headquarters.
Note 6: CIMPOR & OYAK CEMENT were formally incorporated into the Company's consolidated financial statements starting from March 2024; therefore, the table only includes their greenhouse gas emissions from March to December 2024..

Absolute GHG emissions for the past four years | unit:tCO2e

Social Aspect of Energy Transition business

Items	2021	2022	2023	2024
Scope 1	7,530,599	7,380,815	7,995,242	6,936,330
Scope 2	333	750	1	2,787
Total Scope 1 and Scope 2	7,530,932	7,381,565	7,995,243	6,939,117

5.2_ Other Climate-related Key Indicators

Energy Usage

Energy Usage for the Past Four Years | Construction Materials

Energy Usage (Unit: GJ)		2021	2022	2023	2024
Direct Energy Usage	**Taiwan**	17,688,678	17,093,101	12,958,316	12,722,861
coals, diesel fuel,	**Mainland China**	104,106,338	83,708,071	73,953,649	67,104,919
gasoline,	**Subtotal**	121,795,016	100,801,172	86,911,965	79,836,780
natural gas	**CIMPOR & OYAK CEMENT**	-	-	-	11,416,087
and alternative fuel	**Total**	121,795,016	100,801,172	86,911,965	91,252,867
Indirect Energy Usage	**Taiwan**	1,641,978	1,603,108	1,500,701	1,549,637
renewable energy	**Mainland China**	8,179,002	5,766,802	4,949,919	7,327,388
and purchased electricity	**Subtotal**	9,820,980	7,369,910	6,450,620	8,877,025
	CIMPOR & OYAK CEMENT	-	-	-	7,512,445
	Total	9,820,980	7,369,710	6,450,620	16,389,470
Energy Recovery	**Taiwan**	497,725	388,800	228,780	286,155
and Utilization	**Mainland China**	3,723,552	2,919,600	2,565,800	3,088,559
waste heat to power	**Subtotal**	4,221,277	3,308,400	2,794,580	3,374,714
	CIMPOR & OYAK CEMENT	-	-	-	301,356
	Total	4,221,277	3,308,400	2,794,580	3,636,070
Total	**Taiwan**	19,828,381	19,085,009	14,687,797	14,567,873
	Mainland China	116,008,892	92,394,473	81,469,368	77,529,866
	Subtotal	135,837,273	111,479,482	96,157,165	92,097,739
	CIMPOR & OYAK CEMENT	-	-	-	19,229,888
	Total	135,837,273	111,479,482	96,157,165	111,327,627

Note 1: The newly disclosed scope in 2024 includes Longshan, Huaihua, and Liaoning cement plants; Fuzhou and Liuzhou grinding plants; Feng Sheng Enterprise Company, 123 Environmental Protection Technology Co., Ltd., Beijing TCC Environmental Technology Co., Ltd., TCC (Guangdong) Renewable Resources Technology Company Limited., CIMPOR(not including cement plant in Cameroon, OYAK CEMENT.
Note 2: For cement plants in Taiwan, coal calorific values are converted according to each plant's settings: Suao Plant coal calorific value conversion factor: 5,532.69 kcal/kg, Hoping Plant coal calorific value conversion factor: 5,570.14 kcal/kg. Other items are converted based on the calorific values provided in the emission factor table announced on the Bureau of Energy website: coal at 5,512.66 kcal/kg, diesel at 8,400 (kcal/l), gasoline at 7,800 (kcal/l), electricity at 3,600 (GJ/million kWh), and natural gas at 8,000 (kcal/m3). The calorific value calculations for Mainland China, CIMPOR, and OYAK CEMENT are conducted in accordance with relevant local practices and regulations.
Note 3: Energy consumption is based on data reported to the Bureau of Energy.
Note 4: Due to scheduling arrangements, the coal and natural gas consumption data for CIMPOR and OYAK Cement will be disclosed in the ESG section of the TCC corporate website.

Energy Usage for the latest Year | Social Aspect of Energy Transition business

Energy Usage (Unit: GJ)	2024
Coals	69,716,746
Diesel fuel	303,557
Gasoline	224
Purchased electricity	20,312
Renewable energy	2,909
Total	70,043,748

Water Resources Usage

Water Resources Usage for the Past Four Years | Construction Materials

Water Resource Usage (Unit: million liters)		2021	2022	2023	2024
Freshwater	**Taiwan**	2,463	2,301	2,828	2,878
	Mainland China	14,109	9,645	10,062	13,511
	Subtotal	16,572	11,946	12,890	16,389
	CIMPOR & OYAK CEMENT	-	-	-	8,702
	Total	16,572	11,946	12,890	25,091
Seawater	**Taiwan**	-	-	-	-
	Mainland China	-	-	-	-
	Subtotal	-	-	-	-
	CIMPOR & OYAK CEMENT	-	-	-	19,929
	Total	-	-	-	19,929
Recycled water from manufacturing process	**Taiwan**	102	113	73	89
	Mainland China	-	-	-	-
	Subtotal	102	113	73	89
	CIMPOR & OYAK CEMENT	-	-	-	9
	Total	102	113	73	98
Total	**Taiwan**	2,566	2,414	2,900	2,968
	Mainland China	14,109	9,645	10,062	13,511
	Subtotal	16,675	12,059	12,962	16,479
	CIMPOR & OYAK CEMENT	-	-	-	28,641
	Total	16,675	12,059	12,962	45,120
Process Recycled water	**Taiwan**	91,218	88,394	62,485	5,864
	Mainland China	11,773	9,610	9,779	758
	Subtotal	102,991	98,004	72,264	6,622
	CIMPOR & OYAK CEMENT	-	-	-	1,921
	Total	102,991	98,004	72,264	8,543
Other Recycled Water	**Taiwan**	-	-	54	175
	Mainland China	-	-	-	292
	Subtotal	-	-	54	467
	CIMPOR & OYAK CEMENT	-	-	-	-
	Total	-	-	54	467

Note 1: TCC assessed future water supply using the WRI Aqueduct Water Risk Atlas. The results indicate that only Guangan Plant and Huaying Plant in Sichuan and the Anshun Plant in Guizhou are located in high water stress areas in Mainland China. All other locations in Taiwan and Mainland China are not situated in water-stressed regions.
Note 2: In 2024, wastewater discharge volume from cement plants in Taiwan was 494 million liters, while the wastewater discharge volume from cement plants in Mainland China was 118 million liters, the wastewater discharge volume from cement plants in CIMPOR & OYAK CEMENT was 25,410 million liters. Total wastewater discharge from cement plants was 26,022 million liters. Water consumption at cement plants in Taiwan and Mainland China was 2,474 million liters and 13,391 million liters, respectively. Water consumption at cement plants in CIMPOR & OYAK CEMENT was 3,231 million liters. Total water consumption at cement plants was 19,096 million liters.

Water Resources Usage for the Past Four Years | Social Aspect of Energy Transition business

Water Resource Usage (Unit: million liters)	2021	2022	2023	2024
Freshwater	1,543	1,558	1,697	1,564
Seawater	1,209,710	1,231,339	1,274,384	1,219,195
Recycled water from manufacturing process	247	230	194	139
Total	1,211,500	1,233,127	1,276,275	1,220,898
Process Recycled water	147,510	167,255	141,238	77,465
Other Recycled Water	99,507	62,921	52,557	61,197

5.3_ Seven Cross-Industry Indicators

Metrics and Targets	Description	Corresponding Sections
Greenhouse Gas Emissions	Organizations should disclose their total absolute greenhouse gas emissions for Scope 1, Scope 2, and Scope 3 during the reporting period, expressed in metric tons of carbon dioxide equivalent, and disclose their methodology for measuring greenhouse gas emissions	CH5 Metrics and Targets
Transformation Risks	Amount and Percentage of Assets or Business Activities Vulnerable to Climate-Related Transition Risks	CH3 Strategy CH5 Metrics and Targets
Physical Risks	Amount and Percentage of Assets or Business Activities Vulnerable to Climate-Related Physical Risks	CH3 Strategy
Climate-related Opportunities	Amount and Percentage of Assets or Business Activities Aligned with Climate-Related Opportunities	CH3 Strategy
Capital Deployment	Amount of Capital Expenditure, Financing, or Investment Deployed toward Climate-Related Risks and Opportunities	CH3 Strategy CH4 Green Sustainable Finance
Internal Carbon Pricing	Organizations should disclose: whether and how they apply carbon pricing in decision-making (e.g., investment decisions, transfer pricing, and scenario analysis), as well as the price per metric ton of greenhouse gas emissions used to assess the cost of their emissions	CH3 Strategy
Remuneration	Organizations should disclose: whether and how climate-related considerations are factored into executive remuneration, as well as the percentage of executive management remuneration recognized in the current period that is linked to such considerations	CH1 Governance

APPENDIX

Reference Sources

Global Risks Report 2024 (WEF, 2024)

World Energy Outlook 2024 (WEO, 2024)

Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC, 2021)

TCC Sustainability and Climate Related Policies, Reports and Publications

TCC Sustainability Report 2023

TCC Corporate Sustainable Development Committee Organizational Procedures

TCC Risk Management Executive Committee - Organizational Procedures

TCC Risk Management Policy and Principles

TCC Annual Report 2023

TCFD Disclosure Comparison Table

Aspects	TCFD disclosure items	Corresponding section of this report	Page Number
Governance	a) Describes the risks and opportunities associated with the Board's oversight of climate-related matters	CH 1 Governance	04
	b) Describes the role of management in assessing and managing climate-related risks and opportunities	CH 1 Governance	04
Strategies	a) Describes the short-, mid-, and long-term climate related risks and opportunities identified by the organization	CH 3 Strategy	22
	b) Describes the climate related risks and opportunities that have a significant or material impact on the organization's business, strategy and financial planning, and clearly discloses the actual financial impact on the organization and information on the organization's low carbon economic transformation plan	CH 3 Strategy	22
	c) Describes the organization's strategic resilience, taking into account different scenarios of climate change, including scenarios of 2°C or lower	CH 3 Strategy	22
Risk Management	a) Describes the organization's process for identifying and assessing climate-related risks	CH 2 Risk Management	14
	b) Describes the organization's process for managing climate-related risks	CH 2 Risk Management	14
	c) Describes how the organization's processes for identifying, assessing, and managing climate related risks are integrated into overall risk management program	CH 2 Risk Management	14
Indicators and Objective	a) Discloses the metrics used by the organization to assess climate related risks and opportunities in accordance with the strategy and risk management process	CH 5 Metrics and Targets	66
	b) Discloses Scope I, II, III emissions quantities and related risks (if applicable)	CH 5 Metrics and Targets	66
	c) Describes the organization's goal for managing climate-related risks and opportunities and the performance of that goal, adding disclosure of milestones (if the organization has a mid- to long-term goal)	CH 5 Metrics and Targets	66

Additional Disclosures for the Construction Materials Industry

Aspects	TCFD disclosure items	Corresponding section of this report	Page Number
Strategies	d) Incorporates climate risks and opportunities into existing strategic decision-making considerations, including planning for climate change mitigation and adaptation targets	CH 3 Strategy	22
	e) Organizations with more than US$1 billion in annual revenue need to implement more complete climate related scenarios	CH 3 Strategy	22
Indicators and Objectives	d) Disclosure of relevant key indicators, including energy, water and land use, etc.	CH 5 Metrics and Targets	66

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CONFORMITY STATEMENT

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Conformity Statement

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This is to conform that: TCC Group Holdings CO., LTD.
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As a result of carrying out conformity check process based on TCFD requirement, BSI declares that:

TCC Group Holdings CO., LTD. follows the Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) with Supplemental Guidance for the Non-Financial Groups to disclose climate-related financial information which is clear, comparable and consistent against its organizational risks and opportunities as well as its financial impacts. The disclosure covers the four core elements of the TCFD and is prepared based on the seven guiding principles for effective disclosures.

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For and on behalf of BSI

Joe Hsieh, Managing Director Northeast Asia, APAC Assurance

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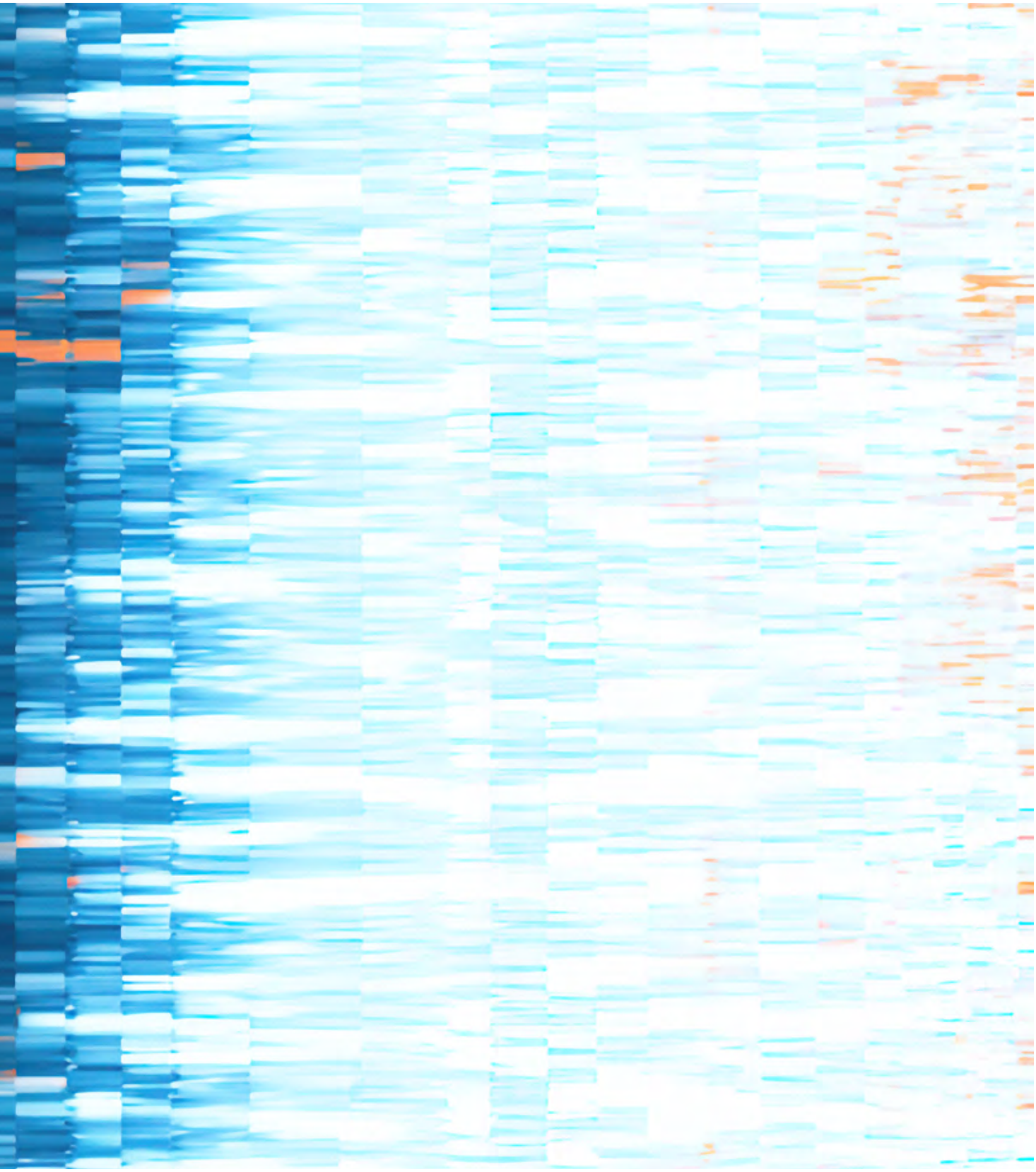

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