TCC

GROUP HOLDINGS

MOBILIS IN MOBILI

change within change

moving within moving

2024 TCC GROUP HOLDINGS

SUSTAINABILITY REPORT

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Report Cover Theme
Mobilis in Mobili

—

Moving within motion and changing within change. With the resilience of water's ripples, we navigate shifting currents; channeling streams of intelligence, we weave the tapestry of sustainability.

Our 2024

TCC Group Holdings set a revenue record in its first year of internationalization and continues to advance sustainability.

Operating Net Income

NT$ 17.13 BILLION

EBITDA Margin

28.82%

Cash Inflow from Operating Activities

NT$ 31.79 BILLION

Carbon Reduction and Green Investment as % of Total CAPEX

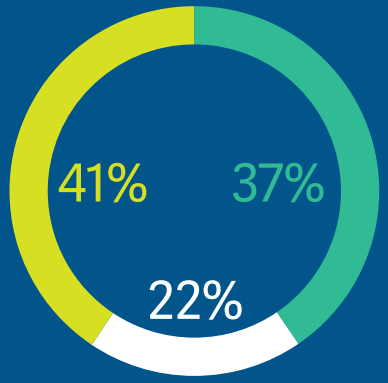
70%

Revenue Growth

+41%

Regional Revenue Information

Taiwan	37%
Asia	22%
Europe	41%



2,884.63MWh

Energy Storage Global Deployment

As of May 2025, includes capacity under construction

Employee Nationalities 46

SBT 1.5 ˚C Pathway

Scope 1

619 kg CO_2e/ metric ton of cementitious material (net)

-4% in total carbon emissions in 2024 compared to 2023

*Cement and Concrete Business Units Worldwide

Sustainable Product Revenue Ratio 57%



Global Employee Count (Including Subsidiaries)

13,772+

Letter to Our Stakeholders



Looking back on 2024, it was an extremely challenging year, marked by major natural disasters—including a powerful earthquake and typhoons. A magnitude 7.2 earthquake struck Xiulin Township near our Hoping Plant, followed closely by a typhoon that triggered the highest level of alert. These events caused significant damage to the Hoping Cement Plant, Hoping Power Plant, and Hoping Port.

The major repairs took approximately ten months and were mostly completed by January of this year. Although I personally visited the plant eight or nine times, ongoing maintenance issues and hidden internal damages continue to emerge. While this may not be solely attributed to inadequate management, it could be one of the contributing factors. As a result, the plant's operations over the past 12 months have been extremely disrupted, even though we have been consistently working on restoration efforts.

However, 2024 was also a pivotal year for TCC as we took significant steps toward internationalization. Amidst turbulent global affairs and a rapidly shifting world economy, we have always believed: **In times of chaos, true leadership emerges; in moments of upheaval, vision is needed more than ever.**

Gazing at the stars, we remain humble; looking down at the earth, we are grateful. This era has given us not only the opportunity for business, but also the mission to create value and contribute to the future of humanity. We firmly believe that, in our limited lifetimes, leaving a mark on the world is the most important work.

This year, we will continue to uphold the spirit of "looking up at the stars, while keeping our feet on the ground." We will strengthen our core advantages, maintain our reputation for quality, and drive innovation to unlock limitless possibilities for our products and markets. Because we believe: the best way to predict the future is to create it ourselves.

In the face of the energy transition, TCC is not just a participant but a driving force. We are actively investing in renewable energy and emerging technologies, expanding our new energy footprint, and transforming the challenges of green transition into opportunities for corporate growth.

Amid the wave of technological revolution, AI is our powerful engine for transformation and upgrading. We have already integrated artificial intelligence into various aspects of production, operations, and customer service to enhance efficiency, reduce costs, and optimize decision-making. We will continue to focus on cutting-edge technologies and stand at the forefront of change.

As the global political and economic landscape grows increasingly complex, TCC's strategy of "deep local roots, global presence" demonstrates our resilience against risks. We do not chase short-term gains, but instead lay out a solid plan for long-term value. In the face of geopolitical tensions and economic slowdowns, we will continue to optimize our strategies, build diverse supply chains, strengthen financial management, and adhere to our "East-West advancement, North-South balance" international layout—turning uncertainty into momentum for growth.

Dear shareholders, over the past decade, we have weathered market fluctuations and industry transformation, yet our original intention has never wavered; our resolve has only grown stronger. We are well aware: This is not just about cement, nor is it only about climate; it is about the kind of future world we choose to build for our children.

We pursue a balance between development and sustainability, a respect for life and the environment—not just the accumulation of cold numbers.

Therefore, this year, TCC's theme is:

Mobilis in Mobili — Change within Change.

In 2025, a year of uncertainty and challenge, we are guided by sustainability and powered by technology, moving toward smart manufacturing and a low-carbon future. We are especially launching the DIN (Digital Intelligence Navigator) program, to attract new-generation talent with digital thinking, green vision, and interdisciplinary abilities.

We are not just looking for colleagues—we are seeking pioneers to co-create the future. In a time of constant change, we strive to transform with precision and advance steadily through the waves of transformation.

Looking ahead, we are fully aware of the uncertainties surrounding the global economic environment and market outlook. Both the capital and foreign exchange markets may experience significant fluctuations. This year's business performance may not necessarily surpass that of last year. In the face of these challenges, our team will redouble their efforts to drive transformation and innovation.

Encouragingly, as our strategic plans continue to take shape, we maintain a cautious outlook for the coming year, with a strong commitment to achieving improved results. We sincerely thank our shareholders for their continued trust and support. Together, we strive forward with resilience and determination, building a stronger and more sustainable future.

Finally, allow us to share a short poem as encouragement:

Let us lift our eyes to the stars,
with dreams in our hearts.

Let us walk with purpose,
grounded in faith and resolve.

Let us hold reverence for nature,
and guard the home we all share.

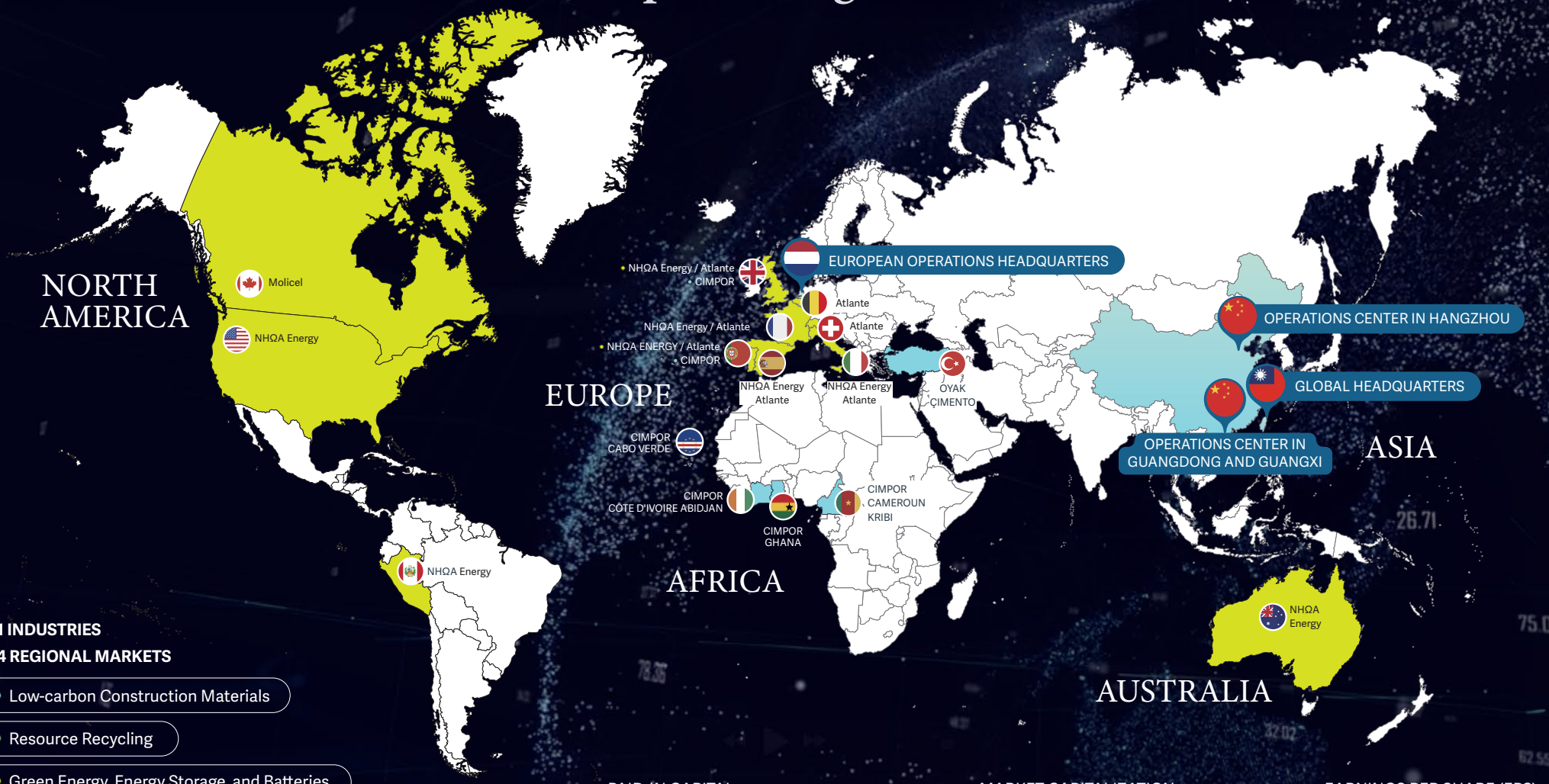
Let us welcome change with courage,
and move forward with grace and strength.

Let us join hands and hearts,
to create a glorious future together.

Group CEO, TCC Group Holdings



TCC Group Holdings at A Glance



11 INDUSTRIES
14 REGIONAL MARKETS

- Low-carbon Construction Materials
- Resource Recycling
- Green Energy, Energy Storage, and Batteries
- Energy for Social Transformation and Others

PAID-IN CAPITAL	MARKET CAPITALIZATION	EARNINGS PER SHARE (EPS)
NT$77.51billion	NT$239.37 billion	NT$1.45

Core Market Resilience

CIMPOR OYAK CIMENTO

Dominant Brand in Local Market

SBT — Net-Zero

atlante

Spark Alliance Member

Highway & High Street Domination

NHOA ENERGY

Tier 1 Energy Storage SUPPLIER



EU Funding Support

CIMPOR Maia warehouse's self-built solar power project received funding support from EU's Next Generation EU program and Portugal/EU Recovery and Resilience Facility (RRF).

NHOA Energy and Atlante received Connecting Europe Facility (CEF) Fund.



TCC

Top 1 in Taiwan

Ranked 7th in Mainland China
(ccement.com)

SBT 1.5°C

CLIMATE GROUP EP100

Green Growth Alliance of Ministry of Environment Member

ESG Model Enterprise of China Building Materials Federation Core Member

1946
Officially established

1962
Became the first publicly listed company in Taiwan

2000
Entered the Mainland China market

2018
Marked a landmark expansion beyond Asia by establishing a Dutch subsidiary and partnering with Türkiye's OYAK CEMENT to develop Asia-Europe markets

2019
Acquired Portuguese cement company CIMPOR via a joint venture with OYAK CEMENT, securing EU approval for Portuguese market entry

2021
Acquired European energy company ENGIE EPS (renamed NHOA - New Horizons Ahead) to strengthen the Group's green energy business

2024
Completed expanded investment in European low-carbon cement. Restructured as a holding company under the new English name TCC Group Holdings

TCC Vision & Drivers

"The Future is Worth It!
In everything you do, always put people first.
Life is the only answer."
--Chairman Nelson An-ping Chang

Fulfilling its Total Climate and Total Care commitments, TCC propels three core businesses: low-carbon construction materials, green energy, and resource recycling, creating solutions for the complex relationship between human civilization, climate, and nature.
TCC pursues a two-way deployment of carbon reduction and green growth, from reducing carbon emissions in its core business to helping others reduce carbon. Grounded in a human-centered philosophy, the company promotes diverse cross-domain and cross-age integration, driving low-carbon transition and building global competitiveness through four major drivers.

CORPORATE VISION

THE FUTURE IS WORTH IT

SUSTAINABILITY COMMITMENT

- Total Climate Commitment
- Total Care Commitment

CORE BUSINESS

- Resource Recycling
- Low-Carbon Construction Materials
- Green Energy

SUSTAINABILITY DRIVERS

- Robust Capital
- Carbon Competitiveness
- AI Innovation & Electrification
- Diversity and Inclusion

"In today's globalized world, market positioning must adapt to changing circumstances, diversify risks, seize business opportunities, and ensure steady growth."
~
Chairman
Nelson
An-ping Chang

Driver Robust Capital

TCC is transforming from a traditional industry role centered on cement to a diversified enterprise focused on innovation and energy. The cement markets in Taiwan and Mainland China, solidly establishing its growth foundation and forming two major pillars. In response to market changes, TCC proactively pursued internationalization. In March 2024, OYAK CEMENT and CIMPOR were incorporated into the Group, contributing over 30% of operating revenue for that year and becoming the third strong operational pillar.

Meanwhile, TCC is actively developing green energy, energy storage, smart grids, and high-power NCM lithium batteries. Through these efforts, TCC is gradually building a comprehensive new energy industry chain while accumulating key technologies and patent advantages. This has become the fourth pillar supporting TCC's transformation, establishing a stable and robust four-pillar operational structure.

S&P Global
- Long-term Credit Rating: **BBB-**
- Long-term Rating Outlook: **Stable**

FitchRatings
- Long-term Credit Rating: **BBB-**
- Long-term Rating Outlook: **Stable**

中華信用評等 Taiwan Ratings
An S&P Global Company
- Long-term Credit Rating: **twA+**
- Long-term Rating Outlook: **Stable**
- Short-term Credit Rating: **twA-1**

SELECTED COMPONENT STOCKS

As of 2025/05/31

- Dow Jones Sustainability World Index
- Dow Jones Sustainability Emerging Markets Index
- Yuanta MSCI Taiwan ETF
- Fubon TWSE Corporate Governance 100 ETF
- Yuanta FTSE4Good TIP Taiwan ESG ETF
- FTSE Emerging ESG Index
- Yuanta/P-shares Taiwan Top 50 ETF
- Cathay Global Autonomous and Electric Vehicles ETF

SUSTAINABILITY RATING

S&P Global
Dow Jones Sustainability Indices
World Index and Emerging Market Index

CDP
DISCLOSURE INSIGHT ACTION
Climate Questionnaire A
Water Questionnaire A-

23.4 SUSTAINALYTICS
a Morningstar company

MSCI ESG RATINGS
A
CCC B BB BBB A AA AAA
RATING ACTION DATE: December 04,2024

Marsh
CIMPOR | 2024 Risk Rating: 6.9
OYAK CEMENT | 2024 Risk Rating: 7.3

ISS ESG
C+PRIME Selected Enterprise

3.9 FTSE Russell
FTSE4Good
TIP Taiwan ESG Index

Global Green Finance Backs Low-Carbon Transition

TCC Secures a

€500M Green Loan

First published in 2023 and updated in 2025, TCC's Green Financing Framework received a Second Party Opinion (SPO) from ISS-Corporate, enhancing its sustainable finance credibility. The framework partially aligns with the EU Taxonomy and fully complies with the Green Bond and Green Loan Principles from the International Capital Market Association (ICMA) and the Loan Market Association (LMA). In June 2025, TCC secured a five-year, €500 million green loan, saving at least €5 million in annual interest. This facility optimizes TCC's financial structure and underscores international confidence in its credit and clear decarbonization roadmap.



TCC has deployed EnergyArk energy storage cabinets in Caen, Normandy, France.

Leading Sustainable Transformation Investment

Launched Taiwan's First SLCB, Linking Financial Instruments to Climate Commitments

In December 2024, TCC pioneered Taiwan's first Sustainability-Linked Convertible Bond (SLCB) with an issuance of NT$8 billion, setting a domestic market record for the largest issuance of its kind. The bond's maturity yield is linked to TCC's greenhouse gas reduction targets, embodying its 'Total Climate Commitment.'

Global Financial Support for Energy Transition

NHOA Energy Secures Major European Financing for Strategic Growth

NHOA Energy secured €87.7M in performance bonds and £4M in guarantees from BNP Paribas and Italy's SACE for its large-scale storage projects in the UK and Australia. This financing, demonstrating strong international trust in NHOA Energy's technology and stability, will boost development of high-capacity battery storage and Southern Europe's largest EV charging network.

International Financial Reporting Standards S1 and S2

As sustainability and climate-related financial information significantly influence investor decisions, in 2024, TCC piloted the inclusion of sustainable financial information in its annual report, referencing the International Financial Reporting Standards (IFRS) Sustainability Disclosure Standards to lead industry sustainability. In 2025, TCC continues this disclosure with two-year comparative data and expand the scope to include subsidiaries OYAK CEMENT and CIMPOR.

Foresight

In 2024, strategic deployment across 14 key global markets generated NT154.6 billion in consolidated revenue. Net profit after tax reached NT15.6 billion, with NT$11.259 billion attributable to the parent company, marking a 41% year-on-year growth. Sales of European cement and energy products to the US market constitute less than 1% of consolidated revenue. TCC's "local-to-local" supply chain resilience model reduces vulnerability to global tariff and trade fluctuations.

Steadiness

In 2024, 70% of TCC's capital expenditure was allocated to carbon reduction and green initiatives. This investment focuses on deploying low-carbon construction materials and new energy across industrial chains in Europe, Asia, and Africa, aiming to create diverse revenue sources and sustainable growth. These expenditures are fully funded by TCC's own capital.

Diversified Growth

Demonstrating that sustainable development drives profit growth, TCC's sustainability-related businesses generated NT$88.2 billion in revenue in 2024, accounting for 57% of the total. These businesses—including low-carbon cement and concrete, waste treatment, energy storage and charging, renewable energy trading, and batteries—are central to TCC's growth strategy. The 2024 EBITDA margin of 28.82% further reflects high operational efficiency and profitability.

For more information, please refer to 2024 Annual Report

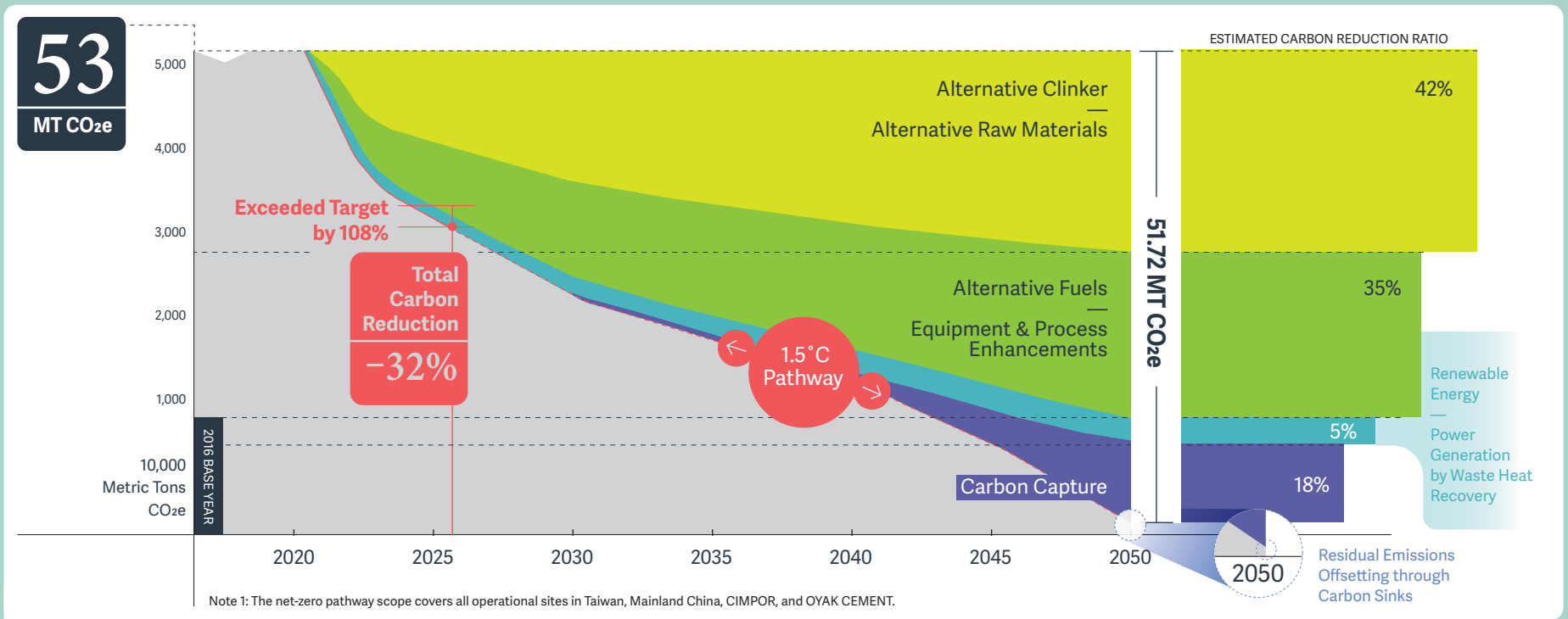


The path we must succeed for the 30 years to come, the path of the carbon revolution!
~
Chairman Nelson An-ping Chang

Driver Carbon Competitiveness

Cement and Concrete Business Units Worldwide Net Zero Pathway

The 2050 net-zero pathway is based on the SBT 1.5°C methodology, ISO IWA 42 net-zero guidelines, and the IEA's Net Zero Pathway and 2024 Energy Outlook reports. Key carbon reduction solutions include Alternative Clinker, Alternative Raw Materials, Alternative Fuels, Power Generation by Waste Heat Recovery, Equipment & Process Enhancements, Renewable Energy, and Carbon Capture. To develop carbon sinks, forest and soil surveys began in 2023 to identify feasible net-zero carbon removal solutions.



Note 1: The net-zero pathway scope covers all operational sites in Taiwan, Mainland China, CIMPOR, and OYAK CEMENT.

2024 Carbon Reduction Performance		Carbon Reduction Amount(tCO_2e)		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/ Power-saving Measures		0.86 million		5%
	Total		**17.10 million**		**100%**

After identifying industry characteristics, emission scale, and reduction opportunities, Scope 3 carbon reduction targets focus on four categories to establish short-term reduction targets for 2030. The overall long-term Scope 3 reduction target for 2050 is set based on the SBT 1.5°C methodology.

Scope 3 Categories — Base Year: 2023	**2024 Emissions (tCO_2e)**	**2030 Targets**	**2050 Targets**
C4 Upstream Transportation and Distribution	**664,210**	**-3.0%**	**All Scope 3 Categories** **-90%**
C9 Downstream Transportation and Distribution	**480,331**	**-3.0%**	
C1 Purchased Goods and Services	**1,220,508**	**-0.5%**	
C3 Fuel-and-energy-related-activities	**1,149,386**		

Note 2: The target covers 73% of the Scope 3 emissions generated by the cement plants in Taiwan and Mainland China.

Carbon Capture, Utilization, and Storage (CCUS) Projects

CIMPOR is advancing CCUS technology at its Alhandra and Souselas plants in Portugal in collaboration with the European Cement Research Academy and the German Cement Industry Association, and through its participation in the EU's 'Strategy CCUS' project (2019-2022). While direct CCUS implementation in Taiwan is paused due to uncertainties in storage and policy, TCC now prioritizes oxygen-enriched combustion for immediate emission reductions while monitoring storage tech progress. In parallel, TCC Sustainability R&D Center has developed advanced, low-carbon Ultra-High Performance Concrete (UHPC) materials for on-site casting and 3D printing.



CIMPOR's Souselas Plant, Portugal

SCIENCE BASED TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

SBT Carbon Reduction Target

In January 2025, TCC's Taiwan and Mainland China sites, along with its European subsidiaries CIMPOR and OYAK CEMENT, all achieved the SBT 1.5°C validation and committed to setting 2050 net-zero plans. According to the SBT methodology, the gross GHG emissions per ton of cementitious products is used as the basis for calculating the target carbon emission intensity.

		Target Base Year /	2016	2024	2030	2050
TCC	SCOPE 1		724	642	-23.9%	COMMITTED
	kg CO_2e/t Cementitious Materials					
	SCOPE 2		30	25	-64.4%	Net Zero
	kg CO_2e/t Cementitious Materials					
		Target Base Year /	2021	2024	2030	2050
OYAK	SCOPE 1		740	705	-20.59%	-95.8%
	kg CO_2e/t Cementitious Materials					
	SCOPE 2		49	42	-56.3%	Net Zero
	kg CO_2e/t Cementitious Materials					
		Target Base Year /	2022	2024	2030	2050
CIMPOR	SCOPE 1		659	659	-19.5%	-95.2%
	kg CO_2e/t Cementitious Materials					
	SCOPE 2		28	3	-55.7%	Net Zero
	kg CO_2e/t Cementitious Materials					

Note 3: The net-zero targets for Taiwan and Mainland China will have their net-zero target setting completed through the SBT expert meeting by the end of 2025, after completing the calculation of Scope 3 emissions proportion.
Note 4: The targets cover 100% of total emissions from the designated base year.

Sustainable Products and Services

The World Business Council for Sustainable Development (WBCSD) states that while reducing Scope 1, 2, and 3 emissions (Do Less Harm) is essential, businesses must also offer climate solutions to maximize positive impact (Do More Good). TCC reduces operational emissions and develops sustainable products and services to generate external carbon reduction impact (Avoid Emissions) for customers and society.

2023-2024 Carbon Reduction Impact / 2030 targets

Low-carbon Construction Materials

2023 **-1.09 Million**
2024
-962,000
2030 TARGETS
-1.69 Million



Resource Recycling

2023 **-38,000**
2024
-92,000
2030 TARGETS
NA



GREEN ENERGY
Renewable Energy

2023 **-60,000**
2024
-65,000
2030 TARGETS
-530,000



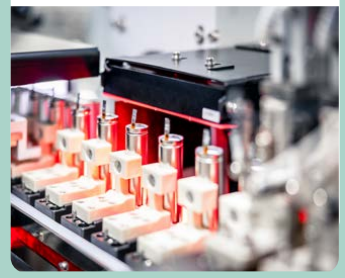
GREEN ENERGY
Energy Storage

2023 **-75,000**
2024
-149,000
2030 TARGETS
-160,000



GREEN ENERGY
Battery

2023 **-2,300**
2024
-3,399
2030 TARGETS
-320,000



Unit: metric ton CO_2e Note 5: In 2024, low-carbon construction materials from TCC's operations in Taiwan, Mainland China, and Europe are calculated in accordance with the latest LCR standard.

Low-carbon Construction Materials

GCCA released the first global Low Carbon Rating (LCR) standard in April 2025. TCC's cement products across Taiwan, Mainland China, Türkiye, Portugal, and West Africa all meet LCR criteria. TCC is also Taiwan's sole company certified for both low-carbon cement and concrete. The company targets 100% low-carbon production and sales at Taiwan sites, and is forming a Low-Carbon Construction Pioneer Alliance to promote early adoption of Portland Limestone (IL) products and support sustainable construction. For more details, please refer to CH2.1.

TCC's Concrete -
The Lowest Carbon Footprint in Taiwan

Launched in 2024, TCC's low-carbon Portland Limestone (IL) cement and concrete series has concrete emissions 53% lower than government standards, making it Taiwan's lowest. By May 2025, over 2,566 projects had adopted it, totaling over 2.04 million cubic meters in deliveries. TCC also exclusively supplies ASML's Linkou plant.



Resource Recycling

The Renewable Resource Recycling Center (RRRC) converts up to 200 metric tons of daily household waste into energy to partially replace fuel. In Mainland China, TCC's plants process over 600 metric tons of waste daily, serving as an alternative fuel while mitigating methane emissions from accumulation. Furthermore, TCC is developing services to treat and recycle concrete from demolished buildings.

Green Energy

TCC actively supports global energy transition. TCC Green Energy develops and manages solar, wind, and geothermal projects, and engages in renewable energy research and partnerships. NHOA.TCC provides integrated energy solutions, including Green Charge & Storage Integrated Charging Station, EnergyArk Energy Storage Cabinet, Green Electricity Matching, and Aggregated Electricity Trading. Molicel's ultra-high-power batteries will play a key role in future urban transport, powering eVTOL such as Archer Aviation's air taxi service in Abu Dhabi.



NHOA Energy Storage Project in Blyth, South Australia

Environmental Product Declaration (EPD) Certification

EPD certification measures environmental impact across a product's life cycle, offering consumers clear comparison data.

- **Portland Limestone (IL) Cement & Concrete:** Expected to obtain EPD certification by the end of 2025.
- **EnergyArk Energy Storage Cabinet:** Expected to initiate EPD certification in the first half of 2026.

Jurong Plant UHPC Production Base

- **CIMPOR's grey cement products, including** CEM I 52,5 R, CEM I 42,5 R, CEM II/A-L 42,5 R, CEM II/B-L 32,5 N, CEM IV/B (V) 32,5 N – SR, and CEMIV/A(V)42,5R-SR: All obtained EPD certification in 2023 in accordance with ISO14025, EN15804:2012+A2:2019, and EN15942.
- **OYAK CEMENT's cement products, including** CEM I 52.5R, CEM II/A - LL 52.5 R, CEM II/B-LL 42.5 R, CEM I 52.5R, and CEM III/A (S) 42.5 N: All obtained EPD certification in 2025 in accordance with ISO14025, EN 15804:2012+A2:2019/AC:2021, EN 16908, and PCR 2019:14.
- **Molicel batteries:** STSP Plant's P22S is expected to obtain certification by the end of 2025. Xiaogang Plant plans to simultaneously pursue EPD certification for two main battery products, P45B and P50B, in 2025.
- **NHOA Energy Standard System Design:** Integrates proprietary power electronics technology with LFP battery cabinets. Certified under EN ISO 14025 EPD in 2024, the system's modular design enables a replicable evaluation method for other products.

For more information, please refer to the **EPD Certification**.

R^3

TCC DAKA RENEWABLE RESOURCE RECYCLING CENTER

Low Carbon — Circular — New Energy Sustainable Transformation Practice Site

"TCC has always believed that knowledge can resonate with life, and industry can coexist with all things." Since 2020, TCC has opened its factory doors to the public through the TCC DAKA Open Ecological Circular Factory (TCC DAKA). In 2023, the TCC DAKA RRRC, resembling a nautilus shell in appearance, was completed. It serves as a significant milestone in TCC's expansion from low-carbon construction materials to resource recycling and further deepens the complex relationships between industry and society.

LEARN MORE ABOUT RRRC

Circular Economy Injects Sustainable Vitality into Industry

Designed by KPF, one of the world's top ten architectural firms, Renewable Resource Recycling Center (RRRC) won the 2021 A&D Award. Its exterior resembles overlapping planets, following the mountain contours of Hoping Village, and is designed to look like an ecological valley.

The basic construction materials extensively use TCC's self-produced low-carbon construction materials. The perforated exterior walls are made with UHPC, with each wall panel having different curvatures and individually molded, demonstrating UHPC's plasticity and customization possibilities. The surrounding roads are paved with permeable concrete, featuring sublayer materials made from construction waste reutilization. This structure is designed to withstand heavy pressure and manage extreme rainfall caused by the heat island effect. Combining TCC's energy business capabilities, the parking lot is equipped with NHOA.TCC charging stations and TCC's patented EnergyArk energy storage cabinets, providing stable integrated charging and storage services.

a&d AWARDS 2021

During the operational phase, with environmental protection design as its core, RRRC incorporates rainwater recycling and reuse with automatic irrigation systems, rooftop solar panels, and small wind turbines for self-generation and consumption, optimized air conditioning systems, and high-efficiency lighting. Compared to projects of similar scale, RRRC can reduce its carbon footprint by 23.5% over its approximately 60-year lifecycle, achieving overall carbon reduction of over 12,000 metric tons. In 2024, it received Diamond-level certification from both the Ministry of the Interior's Green Building program and the Low Carbon Building Alliance.



TCC Hoping Eco-friendly Low-carbon Energy Park

In 2002, 3-in-1 Park of Port, Power, Cement plant was launched, becoming the first in Asia to integrate a cement plant, industrial port, and power plant. From raw materials to manufacturing and transportation, it practices zero waste cross-industry circular production. In 2018, TCC started to roll out new energy facilities, including solar power, wind energy, ocean thermal energy conversion, energy storage, and EV charging stations. In 2023, the RRRC gasification furnace was put into operation to help process municipal waste, building a fully integrated low-carbon, green energy, and environmentally friendly production and service chain.



The Co-processing Technology of Cement Kilns

The concept of using cement kilns as urban purifiers is made possible by their core operating temperature of 1,300°C, which allows for the harmless treatment of waste without producing any secondary waste requiring further processing. Since the 1970s, countries in Europe, the U.S., and Japan have utilized cement kilns to address waste management challenges.

In 2019, TCC launched a project to add a gasification furnace to its cement kiln system to co-process domestic waste, aiming to tackle the issue of waste overflow in Hualien County. By applying cement kiln co-processing technology, the project helped reduce pressure and waste in Hualien, while also contributing to global carbon reduction. Compared to traditional landfill methods, the high-temperature co-processing technology can reduce methane emissions by 59 kg per metric ton of waste. Additionally, since the waste no longer needs to be transported north to Yilan, the project cuts 500,000 kilometers of land transport each year, equivalent to an annual carbon reduction of 390 metric tons. As of 2024, the RRRC has processed a cumulative total of 41,421 metric tons of domestic waste and stockpiled waste, equivalent to 65% of Hualien County's waste generation during the same year, effectively avoiding 2,441 metric tons of methane emissions that would have resulted from landfilling.

RRRC further processes waste to be completely odorless. First, exhaust fans draw odorous gases into the gasifier and rotary kiln for combustion, where high temperatures break down harmful gases. Meanwhile, toxins in the exhaust gas, such as sulfur, chlorine, and heavy metals, are absorbed and mixed with cement raw materials, and finally sealed in the cement kiln, becoming part of the cement clinker. This process significantly reduces odors, acidic gases, dioxins, and heavy metals, making it both clean and safe. In the future, the public will be able to visit with peace of mind, enjoy a coffee inside, and take in the stunning views of the Pacific Ocean.



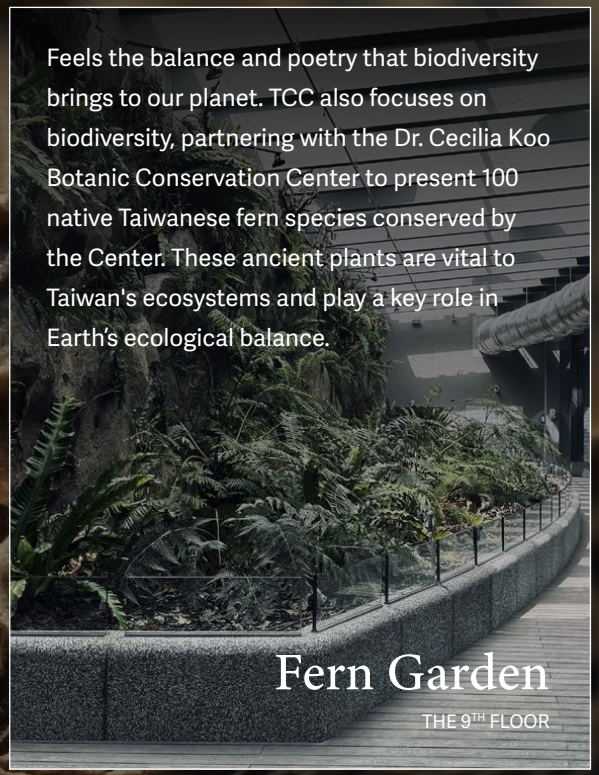
DAKA NEXT!

Nautilus Bibliotheca Grand Opening

Born from a dream, guided by light

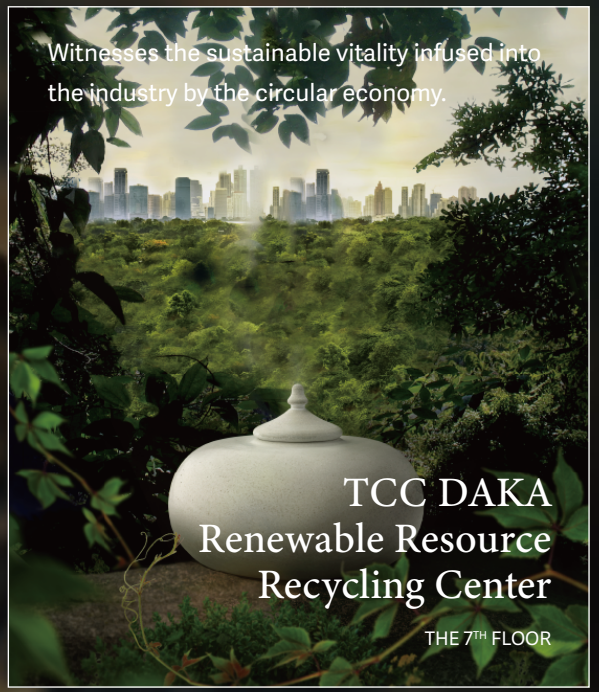
Every great story begins with an inquiry into the future and the inspiration of a dream. For TCC, RRRC is not just a factory that produces goods, but also a leisure park, a classroom for knowledge exchange, and a museum of art. Like the structure of a nautilus shell, it holds the mysteries of science, mathematics, literature, aesthetics, and biology. The "Nautilus Bibliotheca", shaped like a nautilus shell, will serve as a key to unlock the future chapters between human civilization and nature with its deep knowledge and endless reflections. It is not only a tranquil sanctuary of knowledge but also a source of inspiration that breathes new life into thoughts.

By opening its gates, TCC not only supports industrial growth but also envisions the future of Heping. The story unfolds across floors, linking Heping's past and future like the golden spiral of the nautilus winding through time. TCC hopes RRRC will become a key to unlocking future chapters in the relationship between civilization and nature—fostering endless exploration and reflection on industrial ethics.



Feels the balance and poetry that biodiversity brings to our planet. TCC also focuses on biodiversity, partnering with the Dr. Cecilia Koo Botanic Conservation Center to present 100 native Taiwanese fern species conserved by the Center. These ancient plants are vital to Taiwan's ecosystems and play a key role in Earth's ecological balance.

Fern Garden
THE 9TH FLOOR



Witnesses the sustainable vitality infused into the industry by the circular economy.

TCC DAKA Renewable Resource Recycling Center
THE 7TH FLOOR

Immerses in the warmth of history and engages in dialogue with the legacies of civilization, showcasing the evolution of human civilization and environmental change.

Nautilus Bibliotheca
THE 1ST FLOOR



For refreshments organized by the LDC Hotels & Resorts team, where people can enjoy views of the Pacific Ocean and reflect on the future.

THE 6TH FLOOR

"Future leaders not only adapt to changes but are also active drivers of transformation."
~
Chairman
Nelson
An-ping Chang

Driver AI Innovation & Electrification

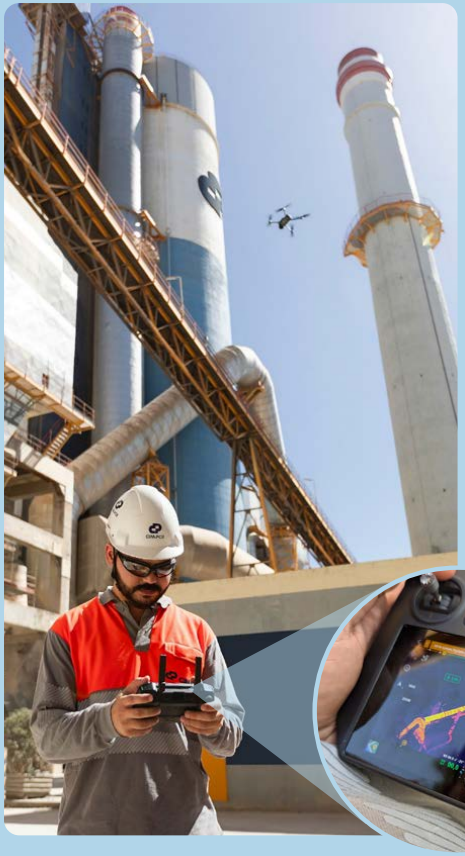


TCC is advancing a new industrial revolution through full AI integration. In low-carbon construction materials, AI supports smart quarrying, process optimization, quality control, and monitoring of equipment and green energy. European subsidiaries CIMPOR and OYAK CEMENT launched the IndustAI project, adding "smart brains" to production lines for real-time alerts and predictive maintenance. Engineers use RealWear AI smart glasses with AR for remote support and precise maintenance. At the Yingde Plant in Mainland China, AI-powered drones conduct autonomous inspections of solar fields and equipment. The Jurong Plant leads with unmanned electric mining trucks using AI for route planning and obstacle avoidance, paired with remote monitoring for safety and efficiency. In the new energy business, European subsidiary Atlante uses charging data and AI to analyze regional demand gaps and optimize station layout. In advanced ternary lithium batteries, a life prediction model supports low-carbon product development. In 2025, TCC launched the "Digital Intelligence Navigator (DIN)" program to recruit global, cross-cultural AI talents to lead key smart projects across its operations.

AI x IoT Machine Health Monitoring Project

CIMPOR partnered with UK startup FIZIX to develop an AI-powered IoT system for machine health monitoring. Smart sensors track equipment data such as vibration, temperature, noise, magnetic flux, and speed—to build digital twins that detect failures weeks in advance, improving reliability and cutting maintenance costs. By 2025, the system was deployed at 25 cement operations across six countries in TCC's global operations. Expansion to plants in Mainland China and Taiwan is planned for 2026.







Innovative inspection with Drones Fast and 5G to improve operational efficiency and safety





5G IoT Smart Factory Demonstration Site

CIMPOR Alhandra Plant

In 2024, CIMPOR collaborated with Vodafone, Ericsson and SAP to deploy a 5G Standalone Mobile Private Network at its Alhandra plant. This setup integrates smart sensors, indoor and outdoor drones, digital twin models, and AI smart glasses. Leveraging 5G's high-speed, low-latency connectivity in combination with AI-powered image analysis, the system enables intelligent inspections and environmental monitoring across the plant. It allows for early warnings of occupational safety risks and environmental anomalies, enhancing both operational efficiency and workplace safety.



Smart Sensors

Integrated with AI to build a cloud-based system for continuous remote monitoring of equipment. Abnormalities can be detected before failures occur, enabling predictive maintenance.

Digital Twin

By using drones equipped with thermal imaging cameras, 3D models of sites and equipment are created to generate digital twins, forming the foundation for Industry 4.0 integration.

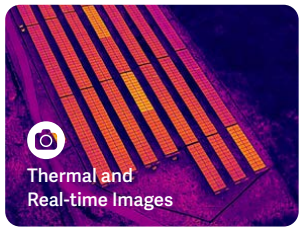
Indoor and Outdoor Drones

Used for monitoring indoor spaces, thermal imaging analysis, structural assessments, and volume measurements-greatly enhancing inspection safety and reducing maintenance costs.

AI Smart Glasses

Engineers wear AI smart glasses linked to the SAP system, enabling hands-free control via voice commands. They can access data, connect with remote support, and perform maintenance tasks efficiently and safely.

Aerial Patrol: AI Cloud Platform with Built-in Thermal Imaging Sensors



Yingde Plant

The Yingde Plant has implemented an AI drone inspection system that autonomously flies along preset routes, coordinated by a centralized cloud platform. Each drone is equipped with dual-sensor cameras that simultaneously display thermal and visible light images, significantly improving the accuracy of inspection assessments. With an integrated AI recognition system, the drones can instantly detect issues such as equipment overheating, insulation damage, and hazardous heat sources. The system also performs photovoltaic field inspections, safety and environmental patrols, plant perimeter monitoring, 3D modeling and measurement, and inventory checks-replacing high-risk manual tasks and greatly enhancing inspection efficiency and plant safety resilience. Hoping Plant in Hualien is also scheduled to adopt the system in 2025.




Managing multiple drones in one cloud platform

Smart Quarry: Resilient, Low-carbon, and High-efficiency Operations

Annual Performance	Operating Cost Savings	Carbon emissions reduction (metric ton CO_2e)
Jurong Plant	**CNY6.12 million** (equivalent to NT$27.21million)	**1,542**
Yingde Plant	**CNY9.3 million** (equivalent to NT$41.35million)	**3,344**
Guigang Plant	**CNY2.48 million** (equivalent to NT$11.03million)	**1,017**
Longshan Plant	**CNY1.78 million** (equivalent to NT$7.91million)	**737.18**

Jurong Plant

First Unmanned Smart Quarry Transportation System in Mainland China

By applying optimal route algorithms, TCC's AI system adapts to real-time road conditions and optimizes charging schedules to enhance electric vehicle performance and energy efficiency. This technology's rollout began with the Jurong Plant's full adoption of unmanned electric mining trucks in 2022. In 2024, the Yingde Plant added 10 unmanned electric mining trucks, planning a full transition by 2025, while the Guigang Plant introduced an electric forklift, with three more electric mining trucks scheduled for 2025. Concurrently, the Longshan Plant added three electric mining trucks in 2024 and is actively promoting full fleet automation. The Hoping Plant plans to introduce electric mining trucks and a dedicated 5G private network in 2025, with its unmanned driving technology scheduled for commissioning in the second half of the year.


Emergency Control Station

AI and AutoML Supported Operational Control of Cement Process

CIMPOR has adopted the Alcemy intelligent system at its cement and concrete plants, integrating machine learning with sensor data. Now applied at Alhandra and Betão Liz sites in Portugal, the system predicts clinker quality, NOx emissions, free lime, kiln stability, and compressive strength (accuracy over 95%). It also improves heat efficiency, alternative fuel use, and grinding fineness for better product quality and energy efficiency.





Clinker and Cement 28-Day Strength Prediction: 49.06 (Normal), falling within the first 59.65% of the historical data range

Concrete Strength Prediction and Ready-Mix Process Model

Concrete's 28-day compressive strength is crucial for customer acceptance but varies with weather and moisture. CIMPOR now digitizes the entire ready-mix workflow by capturing sensor data from plants and mixer trucks, giving end-to-end quality monitoring. TCC's Sustainability R&D Center, RMC plants, and IT team have built an AI model that predicts 28-day strength in real time by combining plant, customer, and transport data, cutting resource waste. Next, the system will recommend mix parameters based on target strength, enabling intelligent control of concrete production.

AI Enhancement Project	Description
Carbon Emissions Monitoring and Reduction	AI tracks carbon emissions throughout the concrete production process and recommends low-carbon mix designs. For example, replacing Type I cement concrete with IL limestone concrete can lower emissions based on analyzed data.
Waste Recycling and Reuse	Through image recognition and data analysis, AI can monitor the quality of recycled materials, such as recycled aggregates and waste concrete, thereby improving reuse efficiency.

AI Governance

To ensure the safe and responsible use of AI across the Group, TCC has developed an internal AI governance policy based on multiple international frameworks.

The Company continues to strengthen oversight mechanisms to balance operational efficiency with stakeholder trust.

TCC AI Policy

The strategy of "Local Cultivation, Global Deployment" demonstrates resilient risk resistance capability.

"We don't pursue short-term profits but focus on steady planning for long-term value."
~
Chairman Nelson An-ping Chang

CIMPOR & OYAK CEMENT Overseas Cement Business

Since 2018, TCC's localization strategy has driven global expansion and risk diversification. The 2024 acquisitions of Portugal's **CIMPOR** and Türkiye's **OYAK CEMENT** expanded TCC's operational footprint to Europe, Asia, and Africa, positioning the company as a key low-carbon cement supplier in Europe.

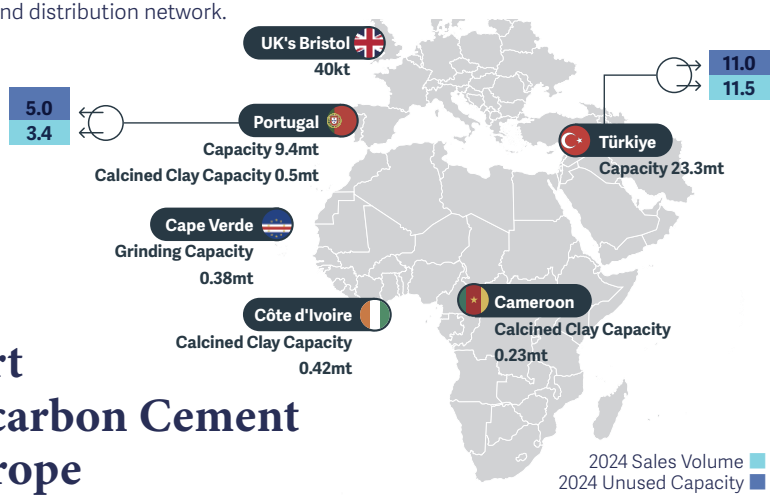
CIMPOR has coastal locations in Portugal, West Africa, and Central Africa that offer low logistics costs and export advantages. Leveraging its expertise in calcined clay and biomass fuel, CIMPOR is entering the EU low-carbon materials market and meeting growing cement demand in West/Central Africa by developing low-carbon cement tech using local clay, volcanic ash, and biomass.

OYAK CEMENT, with seven plants and proprietary ports across Türkiye at the intersection of Europe and Asia, is strategically positioned to serve the EU, Middle East, North Africa, and Black Sea regions. This also enables quick response to post-earthquake reconstruction in Türkiye and potential post-war demands in Syria and Ukraine.

With the EU's Carbon Border Adjustment Mechanism (CBAM) enforcement from 2026, low-carbon cement is a market entry requirement. EU standards allow up to 80% clinker substitution with blended materials, provided strength is maintained. As field pioneers, CIMPOR and OYAK CEMENT develop low-carbon solutions, integrating advanced technologies with local resources.

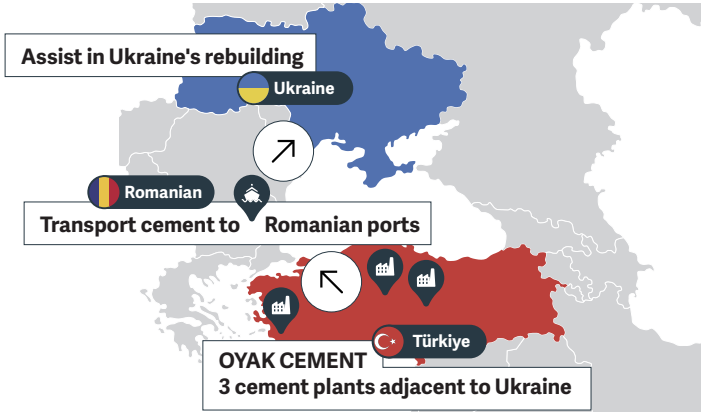
Bristol Port Storage Facility Expands CIMPOR's Export Market in the UK

In November 2024, TCC, through its subsidiary CIMPOR, secured rights to the UK's Bristol Port, including its 40,000 metric tons of storage. This strategic acquisition supports the UK's 30% cement import demand and boosts plant utilization in Portugal and West Africa. The dedicated port strategy enhances TCC's pricing control and strengthens its Europe-Africa production and distribution network.



OYAK CEMENT's Black Sea Hub Effectively Supports Reconstruction Needs

OYAK CEMENT operates three cement plants on Türkiye's southern Black Sea coast, near Romania and Ukraine. One-day shipping to the northern coast enhances this strategic position. With the pending Türkiye–Ukraine free trade agreement, trade may grow from $6 billion to $10 billion. As Turkish builders are active in Ukraine, TCC is well-positioned to support post-war reconstruction.



OYAK CEMENT Aslan Plant Türkiye's Oldest Cement Plant


Alternative Fuel Pre-treatment Center

Aslan Plant, Türkiye's first cement factory, was founded in 1910. Its complex includes a production factory, quarry, and port facilities, located on the Gulf of Izmit in the Sea of Marmara. This strategic position serves as a hub between the Black Sea and the Mediterranean, ensuring flexible transportation. The Aslan Plant is equipped with a waste heat recovery system and an alternative fuel pre-treatment center, which not only reduce carbon emissions during production but also surpass industry standards in alternative fuel utilization.




CIMPOR Alhandra Plant

CIMPOR Alhandra Plant as an Innovation Base for Low-carbon Cement

Established in 1894, the Alhandra plant is Portugal's oldest cement plant and now CIMPOR's largest production base. Its central lab is PS EN ISO/IEC 17025 certified and focuses on low-carbon construction material research. In 2025, a €155 million R&D center was launched to develop low-clinker cement, carbon capture, alternative fuels, circular concrete, and 3D printing. The plant is EMAS-certified and will complete energy efficiency upgrades by 2025, reflecting its shift toward sustainable operations.


Central Laboratory

CIMPOR's R&D Capabilities

X-Clinker
Low-carbon Clinker

X-Clinker adopts electrified processes technology. By 2024, a full electrified plant feasibility study was completed, with ongoing work with top research institutes. Patented in the US, Europe, and Brazil, with plans to launch near-carbon-neutral green products in the future.



- Compared to traditional Portland cement, it reduces CO_2 emissions from clinker by 48%
- Using construction waste as 100% of production raw materials can reach a 75% reduction in carbon emissions

X-Clinker Experiment

deOHclay
Calcined Clay

CIMPOR uses calcined clay to replace high-carbon clinker, with production underway in Ivory Coast and Cameroon and expansion planned in Ghana. It continues assessing clay potential across Europe and Africa and works with C5Lab and Spain's Instituto Eduardo Torroja to enhance performance and applications.

- Compared to traditional Portland cement, it reduces CO_2 emissions from clinker by 90%.



Natural Pozzolan
Replaces Clinker

'Cape Verde,' which means 'Green Cape' in Portuguese, possesses abundant natural pozzolan resources. When used as an alternative to clinker, for example, in CEM II 42.5 type cement, it can replace traditional clinker, which emits 750-800 kg of CO_2 per metric ton, with zero carbon emissions per metric ton, of pozzolan.

CIMPOR Cameroon Clinker-free Cement Plant



CIMPOR Cameroon Clinker-free Cement Plant



Utilizing cocoa & cashew shells as biomass fuel

In 2024, CIMPOR launched the world's first innovative cement process plant in Cameroon, using low-carbon calcined clay and local biomass fuels like cocoa and cashew shells to replace clinker and coal, cutting carbon emissions by 40% compared to traditional cement plant.

" Employees are the cornerstone to the sustainable development at TCC."

Chairman Nelson An-ping Chang emphasizes that a company's survival hinges on three pillars: societal contribution (air), profitability (food), and employee welfare (water). Neglecting employee care can lead to a company's downfall. At "human-centered" TCC, all employees form a "family" that cares for each other for the common good.

Driver Diversity and Inclusion

TCC's First Year of Globalization

A Multinational Corporation Spanning 11 Industries and 14 Countries

2024 marks TCC's first year of globalization. After seven years of low-carbon transformation, TCC expanded into 11 industries and 14 markets through acquisitions in Türkiye and Portugal, with staff from 46 countries. Its business now covers low-carbon materials, recycling, green energy, storage, and lithium batteries. Cross-border collaboration is routine. To address demographic changes, TCC promotes intergenerational teamwork and rehires senior talent for knowledge transfer and innovation.

Interdisciplinary Transfer for Talent Empowerment & International Teams for Professional Exchange

To enhance cross-industry synergies, TCC promotes international collaboration. The cement and energy storage business co-host Team Excellence Workshops to strengthen leadership amid technical and market challenges. Monthly English meetings integrate creative thinking and language training to build shared values. Quarterly internal transfers further support career growth and cross-domain innovation.



Corporate Alignment Workshop in Istanbul

Cross-national and Cross-business Integration Conference

In April 2025, TCC hosted a Corporate Alignment Workshop in Istanbul, as well as an employee conference for its Italian subsidiary, NHOA Energy, bringing together global cross-business unit leaders for in-person exchange. Through discussions on regional operations, products, ESG plans, and market strategies, the event fostered knowledge sharing, team alignment, and common goal-setting.

M-shaped Workforce

Cross-generational Empathy and Integration To Establish Technical Support Teams

With a workforce spanning six generations, TCC values knowledge transfer, launching the "Specialist Team" to rehire retired employees with core technical skills. Through training and mentoring, this initiative transforms senior experience into a corporate asset and fills talent gaps. For specific projects, TCC also retains retired employees as internal senior advisors to offer young teams strategic and technical guidance, sparking innovation. Intergenerational communication is further fostered through Town Hall Meetings, employee camps, family days, road races, and regular retiree gatherings.

360-degree Career Planning

From entry-level to leadership positions, TCC provides comprehensive career development paths and all-round benefits

Internal Transfer Mechanism
Build cross-functional experience and expand global perspective

Carbon Academy
From GHG basics to EU EPD, strengthening carbon skills

Cross-domain Technical Exchange
Share expertise across subsidiaries, nurturing global professionals

MIT Insights
Access frontier knowledge via MIT partnership

Big Family of TCC for All-round Career Care Scheme

- TCC Carbon Academy
- Flexible Working Hours
- Employee Stock Option Program (ESOP)
- Maternity Bonus & Family Support Program
- Paid Family Care Leave
- Green Transport Promotion System
- Retiree Group Insurance & Health Checkup
- TCC PIONEERS



Sporting a beard, Nicolà Catalano, an engineer from Italy, is working for TCC subsidiary NHOA Energy and is stationed in Taiwan. This year, he joined the TCC Dragon Boat team. From training to competing in the championship, he not only gained a deeper understanding of the Chinese Dragon Boat Festival culture but also more profoundly experienced teamwork and integrated into the larger TCC family. More details are available in the TCC Sustainability E-newsletter.



MIT AI Forum

Insight & Strategy
The Impact Of Generative Ai On Industries

TCC hosted an MIT seminar on generative AI's role in reshaping content creation, data analysis, and business models. This empowered 3,084 employees(including senior executives) to leverage digital transformation, boosting innovation, efficiency, and reinforcing TCC's technological competitiveness.

Just Transition

The Paris Agreement emphasizes

The imperatives of a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities.

Achieving Social Equity and Inter-generational Well-being Through Green Transformation

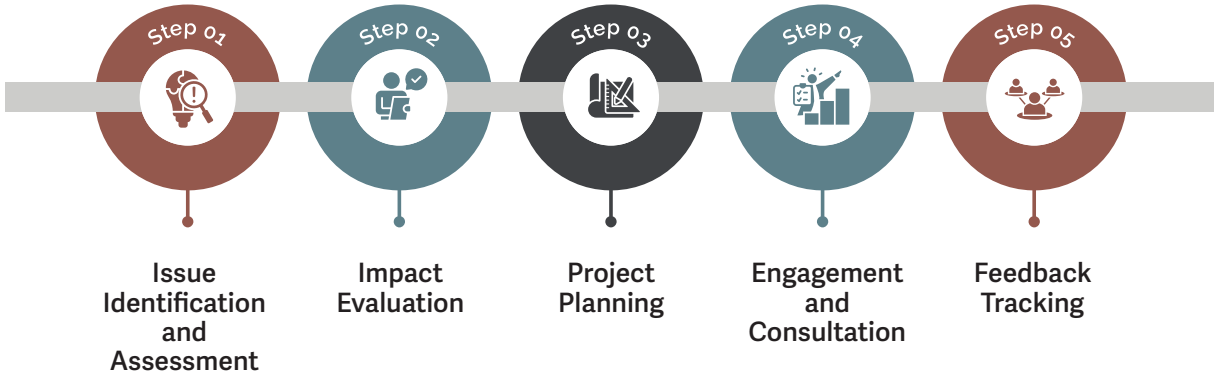
The Paris Agreement emphasizes a just transition for the workforce. In its net-zero transformation, TCC follows its "Stakeholder Engagement Policy," maintaining dialogue with employees, local communities, suppliers, and consumers. TCC aims to tailor engagement strategies, understand stakeholder expectations, assess potential impacts, and build consensus.



TCC
Just Transition
Workshop

Stakeholder Identification Process

Through internal workshops and a prioritization assessment based on influence, impact, and dependency, TCC identified key stakeholders affected by the net-zero transition—primarily employees, local communities, suppliers, and consumers. We will continue to advance relevant initiatives to assist various stakeholder groups in addressing the challenges brought by the transition.



Stakeholders

Employees

Potential Impact

Human capital is vital to a company's sustainable development. In the net-zero transition, employees may face skill gaps or role changes, especially in fuel replacement and digital transformation. TCC upholds the principle of diversity, inclusivity, and equal employment opportunities by offering support and training to help employees grow through the transition.

Action Strategies

Green Collar Skills Development

TCC Carbon Academy provides courses from basic sustainability to specialized topics like GHG inventory and green power trading, covering soft skills, cross-industry, and industry-specific green collar skills. It also promotes sustainability awareness and critical soft skills across the workforce. As of April 2025, 2,722 employees have participated.

Just Transition Awareness Enhancement

Since the end of 2024, top-down, diverse, just transition empowerment and capacity-building programs have been implemented.

- **Board of Directors Governance Courses:** Introduce core concepts of just transition through international case studies.
- **Carbon Academy:** Offers online courses to help employees gradually understand just transition issues.
- **Ho-Ping Power Plant Project:** Adopts an interactive discussion model, guiding employees through just transition and plant transformation challenges. Courses and workshops address livelihood impacts from the plant's decommissioning, future risks for coal-fired plants, carbon fee pressures on cement, and the urgent adoption of alternative raw materials and fuels for carbon reduction.

Retraining and Transfer Programs

According to the World Economic Forum's Future of Jobs Report 2025, automation and intelligence will create an estimated 156 million new jobs by 2030, while 92 million—mainly low-skill, routine roles in manufacturing and operations—will be replaced. Low-skilled and older workers face higher employment risks.

- **Creating New Positions:** TCC is generating green jobs through renewable energy, energy storage, and green electricity trading, while offering regular internal transfer opportunities.
- **Internal Transfer System:** To improve efficiency and reduce energy use, TCC is introducing unmanned and intelligent equipment (e.g., autonomous mining trucks at Jurong, Yingde, and Chongqing Plants). Affected employees are offered training for dispatcher roles or support in transferring to other in-plant positions.

Stakeholders

Local Communities

Potential Impact

As part of the community, our plants strive to create positive impacts during the net-zero transition. By strengthening local ties, we raise awareness and support for carbon reduction, encouraging joint efforts to build sustainable communities.

Action Strategies

Awareness and Dialogue Enhancement

Since 2022, we have promoted the Carbon Reduction Parent-child Bankbook to foster joint action with local communities, spreading environmental knowledge, boosting carbon reduction awareness, and communicating plans like the decommissioning of Ho-Ping Power Plant's thermal coal units.

- The program engages nearby elementary students with a bankbook and "carbon coin" rewards, connecting daily energy-saving actions to low-carbon product incentives.
- It also extends to local communities, providing reusable tableware at village sports events to reduce single-use plastics. Partnering with the Heping Tribe's "Mothers' Class", the initiative integrates sustainability into community life, ensuring inclusive green transition benefits.



Stakeholders

Suppliers

Potential Impact

In collaborating with suppliers towards sustainable development, TCC is committed to establishing a cooperation-based value system. The core principle is to promote the low-carbon transition of the supply chain while upholding human rights, protecting the environment, and fostering biodiversity, thereby building sustainable partnerships.

Action Strategies

Green Transportation Solutions

TCC subsidiaries are developing green transportation solutions. Taiwan Transport & Storage adopted electric tractors, cutting emissions by 32% versus traditional vehicles, while Ta-Ho Maritime used eco-friendly vessels, reducing emissions by 16%.

- Using 2023 as the base year, TCC aims to cut Scope 3 upstream and downstream transportation emissions by 3% each by 2030.
- Guigang Plant successfully encouraged transport providers to purchase electric trucks in 2025 to support green transportation.

Education and Guidance Resources

Physical: Carbon inventory camps and reduction workshops help
- suppliers calculate emissions and prepare greenhouse gas reports. Governance workshops further support SMEs and tier-1 medium-high risk suppliers in building sustainability systems, policies, and targets.

Online: Launching in the second half of 2025, a 24/7 supplier
- sustainability learning platform will offer training covering safety and health, environmental protection, ethical governance, new sustainability knowledge, and TCC procurement regulations.

Communication and Engagement

Engage in carbon and sustainability-related communications with
- suppliers annually through sustainability questionnaires and annual supplier conferences.

Partnered with 19 Taiwanese suppliers, forming the Green
- Supplier Alliance, committing to provide product carbon footprint information by 2025 and setting a target to reduce their own carbon emissions by 10% before 2030, achieving low-carbon transformation goals.

Stakeholders

Consumers

Potential Impact

Comprehensively assist value chain partners, including customers and consumers, in achieving sustainable development and low-carbon economic transformation. Also ensure consumers' rights to stable electricity consumption through energy business operations.

Action Strategies

Continuing to Develop Low-carbon Construction Materials

Continue to develop low-carbon construction materials, with the goal of exclusively producing and selling low-carbon cement and concrete.

Developing Diverse Green Energy Sources

Through its subsidiary TCC Green Energy Corporation, TCC is actively developing a diverse range of green energy sources (solar power, onshore wind power, geothermal energy, aquavoltaics, and ocean thermal energy conversion, etc.), and installing solar panels at operating sites across Taiwan and Mainland China to achieve self-generated and self-consumed renewable energy.

- Established NHOA.TCC, integrating technical resources, and continuing to build energy storage systems in Taiwan, Mainland China, and Europe to support stable power grids.

Communication and Engagement

- Continue to promote Portland Limestone (IL) cement concrete and low-carbon mix concrete to customers.
- Partnered with representatives from over 100 construction companies to establish the Low-Carbon Construction Pioneer Alliance to jointly promote low-carbon cement concrete through practical actions.



Just Transition Engagement and Key Achievements

In 2024

TCC was chosen by Yilan County Government as a Just Transition Pilot Partner, highlighting local industry transformation. Following the Ho-Ping Power Plant's retirement plan, TCC is promoting green energy development focused on OTEC and deep seawater use, balancing industrial shift with local growth and job stability.

In 2025

TCC plans to expand Carbon Academy courses using real cases, enhancing engagement and practical low-carbon knowledge through digital learning, performance incentives, and instructor rewards.

Event Purpose	Event Name/Cooperating Units	Participants and Number of Attendees
Cement and traditional power generation are carbon-intensive industries facing strong transition pressure. To promote just transition awareness, TCC held governance courses for directors and managers to deepen their knowledge and identify stakeholders impacted by the transformation.	**Corporate Governance Course for Directors and Managers — The Path to Net-Zero Just Transition for Taiwan's Hard-to-Abate Sectors** — Taiwan Institute for Sustainable Energy	**Directors, managers, and senior executives of TCC and its subsidiaries** ATTENDEES 55
	TCC Just Transition Workshop — Taiwan Climate Action Network	**Office of Responsibility and Sustainability, Human Resources Department, Engineering Affairs Department, Ho-Ping Power Company, Cement Plants** ATTENDEES 22
TCC joined Yilan's "J-Path" net-zero transition series, shared practices, and partnered with Shih Min Elementary School to promote climate literacy, supporting local climate action.	**J-Path: The Path is Easier with You Net-Zero Just Transition Series — Yilan Key Carbon-emitting Industries Net-Zero Just Transition Symposium** — Environmental Protection Bureau, Yilan County	**Key carbon intensive industry operators in Yilan County** ATTENDEES 40
	Net-Zero Field Environmental Education — Climate Citizenship Literacy Course Series — Environmental Protection Bureau, Yilan County	**6th grade students of Shih Min Elementary School and their parents** ATTENDEES 45



Guided Aohua Village residents from Yilan on a tour of Ho-Ping Power Plant

Product & Service Value Chain

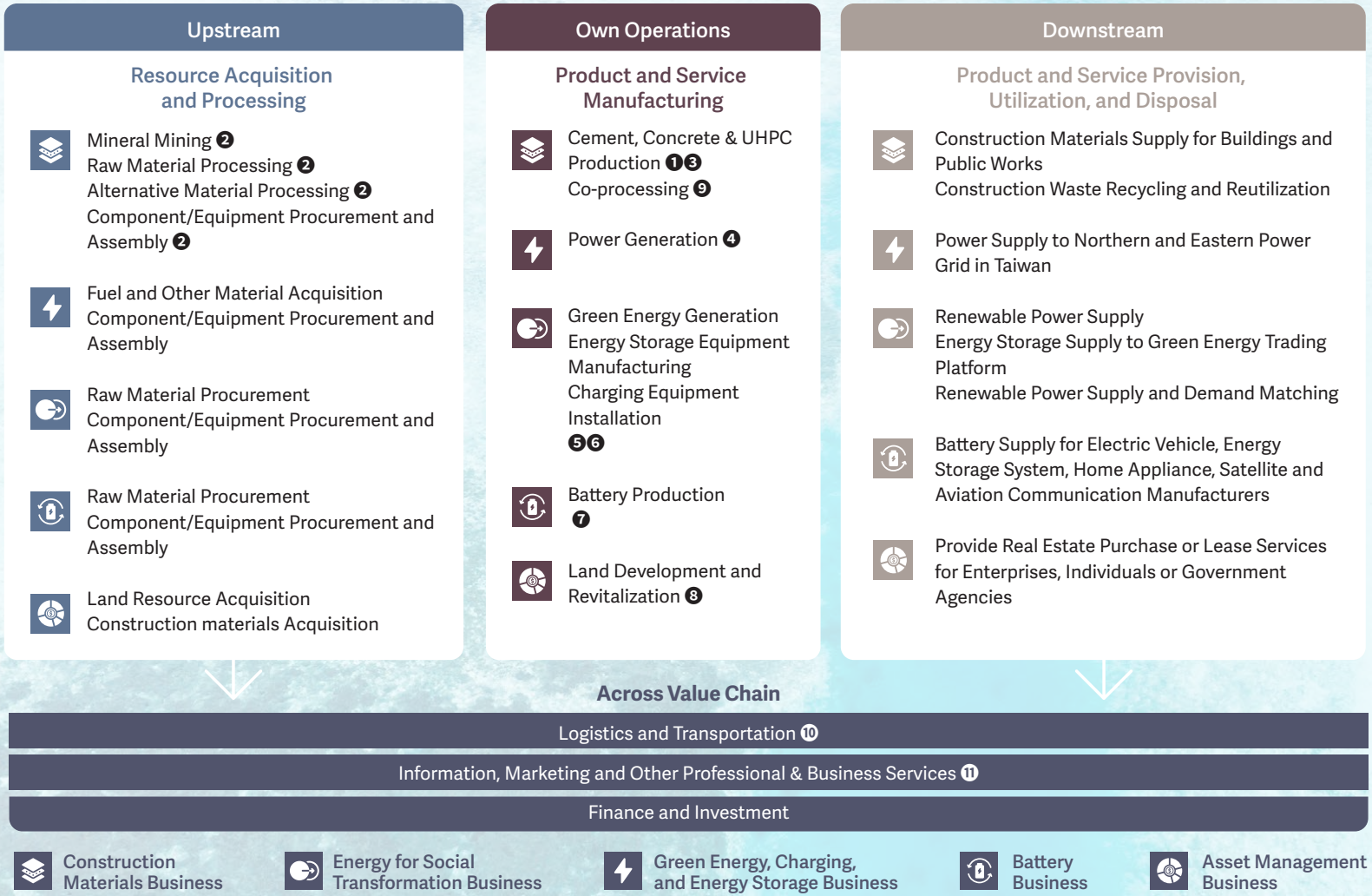
TCC's value chain, per SASB industry standards, comprises own operations, upstream, and downstream activities. Own operations focus on Construction Materials, Energy Transition, Green Energy Charging & Storage, Battery, and Asset Management.

Upstream: Procuring resources (e.g., raw materials, energy, equipment) from external and internal suppliers.

Own Operations: Involving core business activities focused on product and service manufacturing.

Downstream: Covering product delivery and end-of-life stages, including material supply and waste recycling.

Horizontal Support: Providing cross-chain support (logistics, IT, professional services, finance) that forms the TCC operational system.



TCC Industry Category

❶ **Construction Materials** — TCC, CIMPOR, OYAK CEMENT ❷ **Mining** — Ho Sheng Mining Co., Ltd., Jiangsu Mining Industrial Company Limited, etc ❸ **Applied Construction Materials** — Kuan-Ho Refractories Industry
❹ **Energy for Social Transformation** — Ho-Ping Power Company ❺ **Green Energy** — TCC Green Energy Corporation
❻ **Energy Storage & Charging** — NHOA.TCC, Energy Helper TCC Corporation, NHOA.TCC Charging Service, NHOA Energy, Atlante ❼ **Batteries** — Molicel ❽ **Property Management** — TCC Asset Management and Developmen
❾ **Waste Management** — Environmental Protection Technology Company ❿ **Transportation** — Taiwan Transport & Storage, Ta-Ho Maritime, Hoping EcoPort ⓫ **IT** — TCC Information Systems

Sustainability Goals and Tracking

			PERFORMANCE 2024	TARGET 2025	TARGET 2030	TARGET 2050
GHG Management ◆ Base year 2016 Unit: metric tons of CO_2e/metric ton of cementitious materials	Taiwan & Mainland China ▨		0.673	0.645	0.552	Committed
	CIMPOR		0.649	-	0.538	0.033
	OYAK CEMENT		0.657	-	0.610	0.033
Water Management–Fresh Water Withdrawal Intensity	Taiwan & Mainland China ▨ / Unit: megaliter/metric ton of cementitious materials		0.000377	-	0.000248	-
	CIMPOR / Unit: megaliter/metric ton of cementitious materials		0.00020	0.00020	0.00020	-
Thermal Substitution Rate (TSR) of Alternative Fuels ◆	Taiwan & Mainland China ▨		15.4%	25%	35%	50%
	CIMPOR		33.8%	60%	70%	-
	OYAK CEMENT(Grey Cement)		24.5%	30.5%	58%	-
Ratio of Alternative Raw Materials ◆	Taiwan & Mainland China ▨		17.4%	21%	22%	25%
	CIMPOR		3.6%	4%	5%	-
	OYAK CEMENT		1.86%	2.09%	5%	-
Clinker Ratio	Taiwan & Mainland China ▨		0.789	0.796	0.780	0.570
	CIMPOR		0.80	0.67	0.625	-
	OYAK CEMENT		0.80	0.79	0.73	-
Energy Efficiency	Taiwan & Mainland China ▨ / Unit: GJ/t Formula: total petrochemical energy consumption / cementitious materials production volume		2.7	2.460	2.306	1.998
	CIMPOR / Unit: GJ/t		3.6	-	3.3	-
Air Pollution Management	Taiwan & Mainland China / Unit: grams emissions /metric ton of clinker	NOx	309	380	370	BACT Minimum
		SOx	37	40	39	BACT Minimum
		TSP	22	21	20	BACT Minimum
	CIMPOR /Unit: grams emissions /metric ton of clinker	NOx	996	< 1000	<500	-
		SOx	291	< 250	<200	-
		TSP	10.8	< 5	< 5	-
	Taiwan & Mainland China (co-pressing) / Unit: metric ton	Mercury	0.22	0.192	0.187	BACT Minimum
	CIMPOR /Unit: grams emissions /metric ton of clinker	Mercury	0.004	<0.01	<0.005	-
On-site Waste Management-Proportion of Waste Converted into Renewable Resources and Energy	Cement Plant in Taiwan & Mainland China		100%	100%	100%	100%
Renewable Energy / Unit: MW	Group		203MW	235MW	400MW	750MW
Carbon Capture R&D Budget / Since 2011 / Unit: NT$ / Cumulative investment	Taiwan & Mainland China		188 million	1.3 billion	-	-
Carbon Capture / Unit: metric ton/year	Taiwan & Mainland China		TCC now prioritizes oxygen-enriched combustion for immediate emission reductions		100,000	1.6million
Conservation of Plant Species (Endangered Plants included) / Since 2007 / Unit: taxa	Worldwide		34,671	≧35,000	≧40,000	≧45,000
Biodiversity Management Plan (BMP) Proportion of Native Species Maintenance in Quarry	Taiwan		88.23%	-	90%	90%
Community Engagement (CEM) / Since 2022 / Unit NT$ / Cumulative investment	Taiwan & Mainland China		933 million	800 million	1.8 billion	5.8 billion
Education Investment / Since 2022 / Unit NT$ / Cumulative investment	Taiwan		30.02 million	33.5 million	73.5 million	230 million
Employee Education & Training / Since 2020 / Unit NT$ / Cumulative investment	Taiwan		102 million	125 million	250 million	750 million
	CIMPOR		9.9million	14.7 million	17.4 million	19.1 million
Sustainability Questionnaire Collection Ratio of Significant Tier-1 Suppliers (by procurement amount)	Taiwan & Mainland China		78.65%	-	80%	-

Note 6: Taiwan follows CNS 61, while Mainland China adheres to GB 175 for chloride ion limits in fuel substitution rates; Note 7: ◆ Climate-related management indicators and targets; ▨ weighted average; Note 8: BACT: Best Available Control Technology; Note 9: Significant Tier-1 Suppliers: Direct suppliers deemed significant due to their impact on product quality and delivery, their procurement volume meeting a defined threshold, or their high ESG risk profile.

2024 Honors and Recognition

Sustainability Initiatives

TCC / CIMPOR & OYAK CEMENT

Science Based Targets initiative SBTi Members

Global Cement and Concrete Association GCCA Members

TCC

TCFD Supporter

TNFD Early Adopters

ISSB Partnership for Early Awareness of Sustainability-Disclosure Today

EP100 Member

Business for Nature Statement Signatory / It's Now For Nature



Sustainability Recognitions

TCC

CDP Climate Change "A"

CDP Water "A-"

CDP Supplier Engagement Rating (SER) "A"

TIME Magazine Global TOP 500 Sustainable Companies

CommonWealth Magazine Excellence in Corporate Social Responsibility Award 3rd Place

BSI Sustainability Resilience Award - Pioneer

Taiwan Corporate Sustainability Awards Top 10 Sustainable Model Enterprise & Sustainability Report Platinum Level

Business Weekly

- Carbon Competitiveness TOP 100
- Top 100 Senior-Friendly Enterprises
- Senior-Friendly Employer Award

Common Health Magazine Corporate Healthy Responsibility Award

Best Companies to Work for in Asia

CRIF Credit Information Service Asia TOP 1000 Companies

China Building Materials Federation

- Rating of ESG in the Building Materials Industry A+
- Exemplary Practice of ESG in the Building Materials Industry

Suao Plant

Outstanding Corporate Air Pollution Response Action Silver Award, MOE

The 6th Corporate Environmental Protection Bronze Award

Hoping EcoPort

The 9th National Environmental Education Awards Outstanding Honor

Da-Ho Maritime Corporation

Qualship 21 – High-Quality Shipping in the 21st Century

NHOA Energy

Bloomberg NEF Tier 1 Energy Storage Suppliers

EcoVadis Bronze Medel

EthiFinance Platinum Medal

Atlante

GRESB 5 Stars

EcoVadis Silver Medel

Guigang Plant

China Cement Association "Top Ten Mines" ranking

Water Efficiency Leader for Key Water-Using Enterprise Parks

Guangxi Environmental Protection and Ecological Civilization Construction Contribution Award Advanced Group

Yingde Plant

Yingde City Manufacturing Industry "Craftsman" Vocational Skills Competition Outstanding Organization Award

Guangdong Province's Top 500 Manufacturing Enterprises

Yingde City Top Ten Enterprises by Production Value

Longshan Plant

The 6th Guangdong-Hong Kong-Macao Greater Bay Area Cement Testing Technology Comparison Project Excellence Award

Guangdong Workers' Reading Room Award

Advanced Enterprise in Power Consumption for Cement Preparation Section in Guangdong Cement Industry

Liaoning Plant

Specialized, Refined, Characteristic and Innovative Small and Medium-sized Enterprise

Shaoguan Plant

Energy Efficiency Benchmark Level

The 2nd Building Materials Industrial Design Innovation Competition

Third Prize | Guigang & Jurong Plant

The 19th Cement Chemical Analysis Grand Competition - Tianbao Huarui Cup

Excellence Award | Huaying Plant, Kaili Plant, Longshan Plant

Merit Award | Anshun Plant and Guigang Plant

Full Qualification Award | Chongqing Plant

CIMPOR

COTEC Innovative Status

The 15th UK-Portugal Business Awards International Investment Award

Doing Business in Africa Award 2024 Second Prize | Cameroon Plant

OYAK CEMENT

Capital500 Türkiye's Top 500 Companies List

Türkiye's Top 500 Industrial Enterprises

Green Certifications

Taipei, Taichung, Dadu, Chiayi, Tainan, and Kaohsiung RMC Plants & E.G.C. Cement Corp.

Outstanding Green Procurement, MOE

Taipei RMC Plant

Outstanding Enterprises in Green Procurement Performance, New Taipei City EPD

Kaohsiung RMC Plant

Outstanding Net-Zero Green Lifestyle Unit

Hoping Plant

Resource Recycling Excellence Enterprise Silver Award

Concrete Engineering Excellence Award

Hualien County Outstanding Green Procurement Enterprise

TCC DAKA Renewable Resource Recycling Center

Outstanding Architecture Project Award by the Taiwan Concrete Institute

About the Report

GRI 2-1 / 2-2 / 2-3 / 2-5 / 2-14

This is the 2024 Sustainability Report (hereinafter referred to as the "Report") of the TCC Group Holdings (hereinafter referred to as "TCC" or the "Company"). Upholding the principle of openness, transparency, and good faith, the Report discloses TCC's engagement in stakeholders and sustainability issues. Through this Report, TCC endeavors to live up to the business philosophy of reciprocity with stakeholders, realizing "In Service of Life."

Reporting Period

TCC publishes Sustainability Report on an annual basis. This Report covers the reporting period from January 1 to December 31, 2024, available in Chinese and English.
Publication date of the previous issue: August 2024
Publication date of the current issue: August 2025
Publication date of the next issue: August 2026

Boundaries and Scope of Disclosure

The operations of TCC include low-carbon construction materials, resource recycling, and green energy. The Report discloses information from TCC's key operations, accounting for more than 90% of the operating revenues in the consolidated financial statements. If the scope of quantitative information has any other significance, it will be footnoted for clarity.

TCC Group Holdings (TCC), founded 1946 and privatized 1954, began its green transformation and internationalization in 2018. Developing three core businesses—low-carbon construction materials, resource recycling, and green energy—TCC operates across 11 industries and 14 markets. In May 2024, TCC was officially renamed TCC Group Holdings.

Guided by sustainability and technology, it drives a dual transformation in AI and green energy toward smart manufacturing and a low-carbon future.

The Scope of Disclosure — TCC's Key Operating Bases

Low-carbon Construction Materials Business	**Cement Plants:** All sites located in Taiwan and Mainland China. **Ready-Mixed Concrete (RMC) Plants:** All plants and affiliated distribution stations, located in Taiwan. **Grinding Plants:** All sites located in Mainland China. **Consolidated Entities:** ▪ CIMPOR ▪ OYAK CEMENT ▪ Feng Sheng Enterprise Company ▪ E.G.C. CEMENT CORP. ▪ Hong Kong Cement Company Limited
Resource Recycling Business	Guigang TCC Dongyuan Environmental Protection Technology Co., Ltd./TCC Jiuyuan (Guangan) Environmental Technology Co., Ltd./Kaili TCC Environmental Technology Co., Ltd., etc.
Green Energy Business	TCC Green Energy Corporation / TCC Energy Storage Technology Corporation / NHOA Energy S.R.L Atlante S.R.L / E-One Moli Energy Corp. / Molie Quantum Energy Corporation
Others	**Offices:** ▪ TCC Operation Headquarters ▪ Operations Center in Hangzhou **Mining Business:** ▪ Ho Sheng Mining Co., Ltd. ▪ TCC Yingde Mining Industrial Company Limited ▪ TCC Guigang Mining Industrial Company Limited ▪ TCC Jiangsu Mining Industrial Company Limited **Social Transformation Energy:** ▪ Ho-Ping Power Company

Reference Guidelines for the Report

Publisher	Guidelines/Regulations
Global Reporting Initiative (GRI)	GRI Universal Standard 2021
Sustainability Accounting Standards Board (SASB)	Construction Materials
Global Cement and Concrete Association (GCCA)	GCCA Sustainability Guidelines
International Sustainability Standards Board (ISSB)	IFRS Sustainability Disclosure Standards, i.e., IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information and IFRS S2 Climate-related Disclosures
Financial Stability Board (FSB)	TCFD recommendations on climate-related financial disclosures
United Nations (UN)	Sustainable Development Goals (SDGs)
Taiwan Stock Exchange (TWSE)	Taiwan Stock Exchange Corporation Rules Governing the Preparation and Filing of Sustainability Reports by TWSE Listed Companies

Information Disclosure

Financial information disclosed in this Report is based on the CPA-certified published consolidated financial statements, with all figures presented in New Taiwan Dollars (NT$). TCC's financial data is disclosed in accordance with the International Financial Reporting Standards (IFRSs), as required for all TWSE and TPEx-listed companies since 2013. Other data has been aggregated, calculated by TCC, and rounded to the nearest common value. This Report is also available on the TCC's official website.

Information Quality Management

Internal Audits

Information is sourced from the Corporate Sustainable Development Committee functional groups and departments, compiled by the Office of Responsibility and Sustainability, confirmed by department heads, externally assured, published following Board of Directors' approval.

External Assurance

Independent third-party Deloitte offered limited assurance, following the "Assurance Engagements other than Audits or Reviews of Historical Financial Information" standard, issued by Accounting Research and Development Foundation and referencing the International Standard on Assurance Engagements 3000 (Revised).

External Verification

Independent third-party BSI Taiwan conducted the verification in accordance with the GRI Standards, achieving a "Moderate" assurance level under Type 1 of the AA1000 Assurance Standard (AA1000AS v3). Detailed methodologies and results are provided in the appendix.



Contact Information

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TCC Official Website

ESG Section

TCC Facebook

TCC Instagram

Sustainable E-Newsletter

chapter 1

Governance

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8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Corresponding SDGs



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

1.1

Governance Structure

GRI 2-9 / 2-10 / 2-11 / 2-12 / 2-13 / 2-15 / 2-16
2-17 / 2-18 / 2-19 / 2-20 / 405-1

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

TCC KEY FACTS

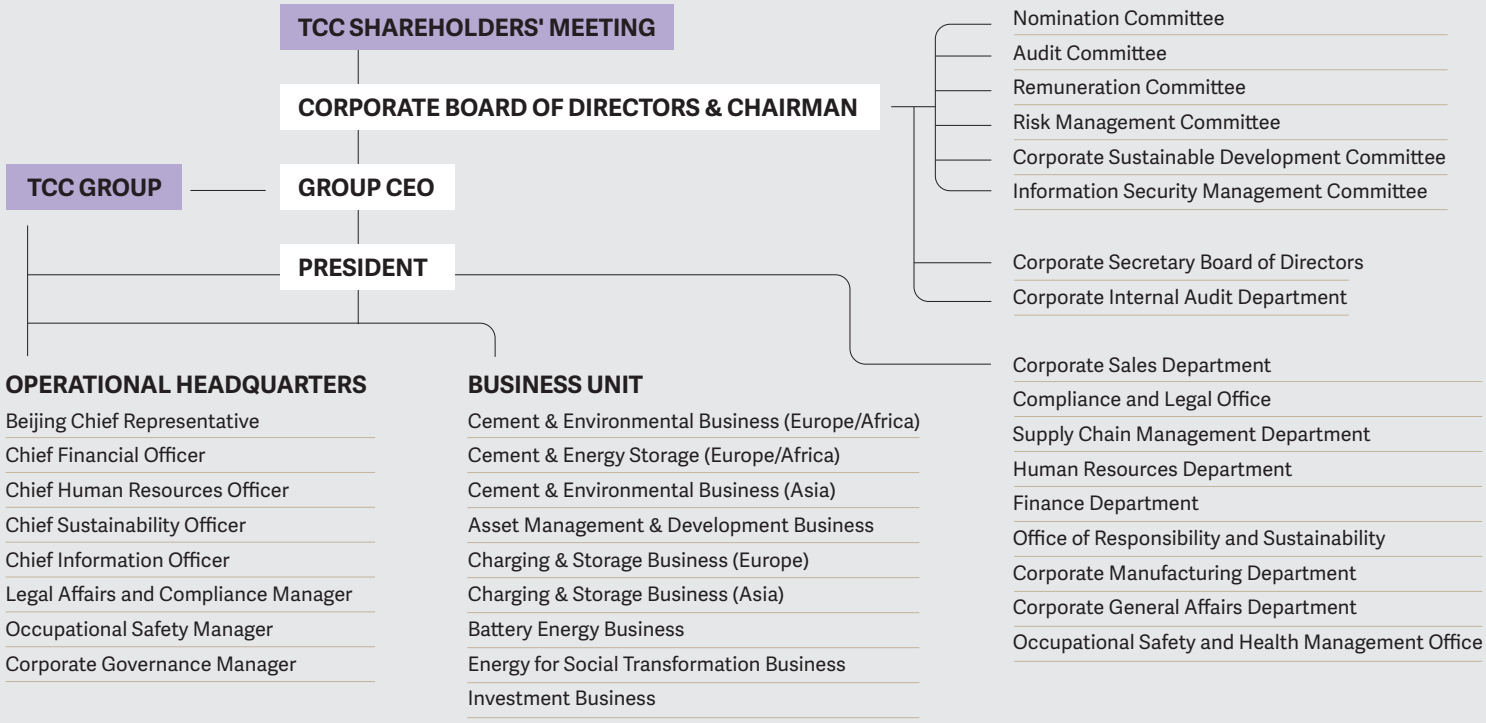
Retained for three consecutive years

Top 5%

in Taiwan Stock Exchange (TWSE) Corporate Governance Evaluation

The only construction materials company on the list

TCC Group Holdings Organization Structure



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

The 25th Board of Directors

15 Directors | 33% Independent Directors | 33% Female Directors

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

TCC Board members serve re-electable three-year terms. The current Board's average tenure is 9.8 years. Re-elected on May 21, 2024, the 25th Board includes five directors with construction materials experience. The independent director proportion exceeds the FSC's "Listed Companies Sustainable Development Action Plan" requirements. Director experience spans energy, environmental protection, cement, M&A/investment, and IT, covering operations, international markets, risk management, accounting/financial analysis, legal, and ESG.

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

Table of the 25th Board of Directors

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

■ Representative of Corporate Director □ Independent Director

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

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

Board Operations

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

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

Director ESG Training Program

TCC actively enhances directors' sustainability knowledge to support their supervisory roles and regulatory compliance. Training courses focus on emerging sustainability risks. In 2024, ESG training averaged 8.6 hours per director, totaling 120.5 training hours. Topics covered included sustainable financial disclosure, just transition to net-zero, corporate governance, and sustainable development. For details on directors' training, please refer to 2024 Annual Report.

Outstanding External Evaluation of Board Performance

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

Functional Committees

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

Audit Committee 94.74% 100%
Establishing and amending internal control systems, procedures for handling significant financial and business activities, reviewing securities, financial reports, and matters involving directors' own interests.

Remuneration Committee 100% 100%
Establishing and reviewing performance assessment and remuneration policies for Directors and Managers and regularly evaluating their performance to determine remuneration.

Risk Management Committee 100% 100%
Executing risk management decisions approved by the Board of Directors, supervising the establishment of TCC's risk management mechanisms, and overseeing the implementation and coordination of overall risk management operations.

Corporate Sustainable Development Committee 100% 100%
The decision-making and supervisory units for the Company's sustainable development work covers three key areas including corporate governance (G), environment (E), and social (S). This is to strengthen the Company's management system, promote environmental conservation, and fulfill social responsibilities, enabling the Board of Directors to effectively safeguard the rights and interests of the Company, its employees, shareholders, and stakeholders.

Nomination Committee 88% 100%
Formulating the selection criteria for directors (including independent directors) and senior managers, establishing and regularly reviewing directors' development plans, operational performance, Board member evaluations, and succession plans for senior managers.

Information Security Management Committee 100% 100%
Establishing and reviewing the information security management framework and policies, regularly examining the development, implementation, and execution of the Company's relevant mechanisms.

Actual Attendance | Including Attendance by Proxy | Committee Charter

1.2

Sustainability Management Framework

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

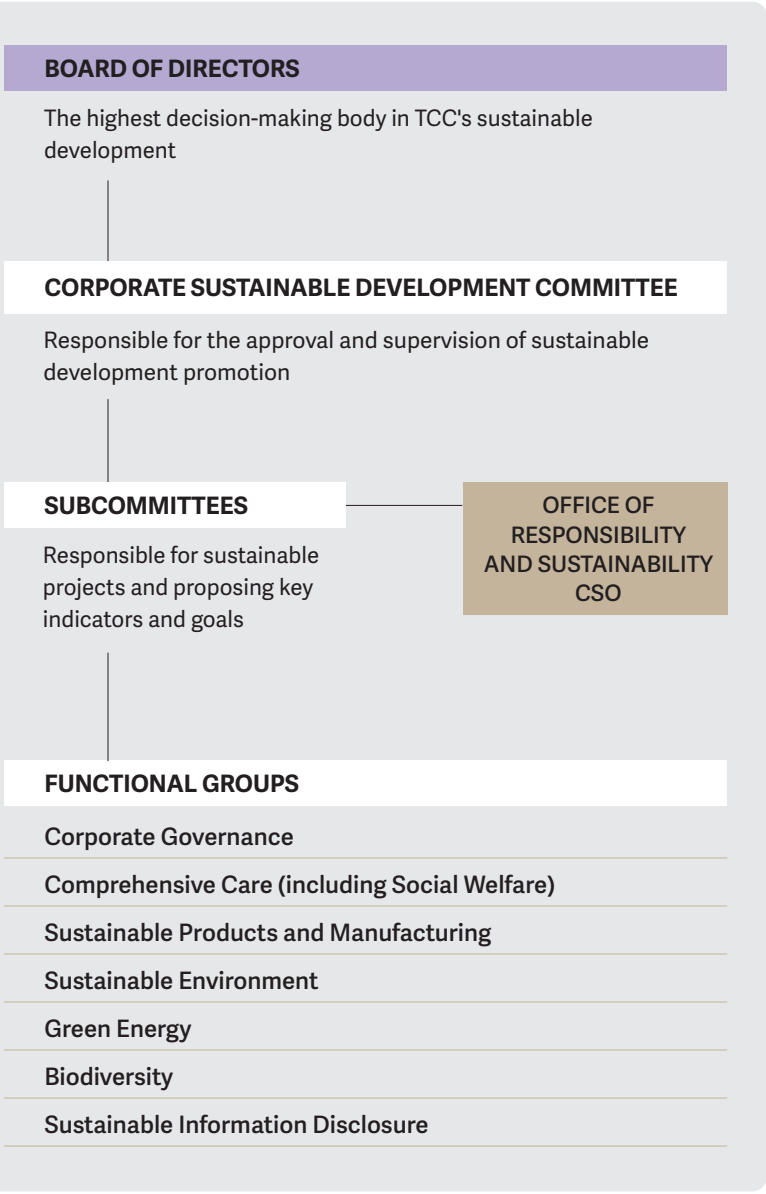
TCC KEY FACTS

Selected by TIME Magazine
The World's
Top 500
Sustainable Companies in 2024

Sustainable Development Best Practice Principles

Sustainable Development Decision-making and Supervision Process

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



2024 Board Supervision of Sustainability Project Implementation Results

Sustainability Disclosure Standards S1 and S2

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

Net Zero Emissions

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

Value Chain Influence

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

Biodiversity

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

Management Succession Plan

TCC conducts annual training courses for key personnel, including the Chairman, President, Managers, and middle-level executives, to strengthen their competencies and leadership skills. Through project assignments, mid-to-senior management evaluations across group subsidiaries, cross-business unit rotations, and overseas postings, TCC effectively develops a robust talent pipeline. These initiatives, combined with annual performance assessments, form the basis for management succession and establish a solid succession mechanism for key management positions. TCC has also established a CEO succession plan to ensure continuity in company strategy and operations.

Step 1	Assess key positions and management talent to identify the required professional expertise and leadership qualities.
Step 2	Establish a talent pool of potential successors through management discussions and selection processes.
Step 3	Through annual meetings, managers and high-potential talent clarify their understanding of TCC's sustainability vision and global industry trends. They engage in discussions on strategic planning and apply these insights to upstream, midstream, and downstream industry operations.
Step 4	Regular management programs for middle and senior executives offer a structured curriculum for identifying optimal solutions. The courses emphasize practical exercises to enhance cross-domain collaboration, strategic thinking, agility, situational leadership, and talent development skills, thereby establishing a shared management language.
Step 5	Periodically review individual performance and assign talent to target positions following successful management-level evaluations.

Management Team Remuneration Policy

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

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

1.3

Risk Management Framework

GRI 2-16

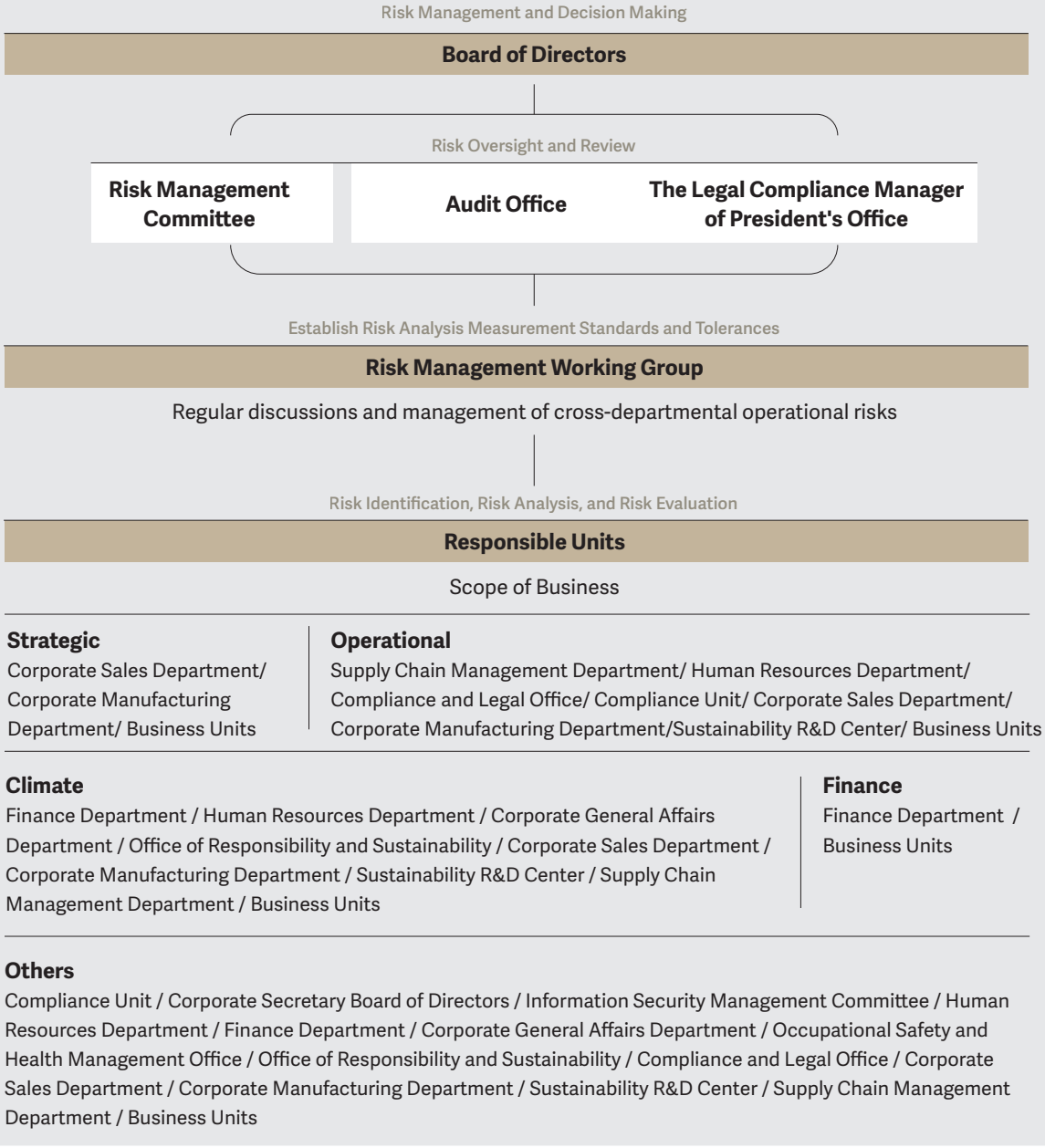
TCC's Board oversees risk management for the Group's various business entities, using a three-lines-of-defense model. Operational units manage risks as the first line. The cross-departmental Risk Management Working Group sets control standards and manages risks as the second. The third line, comprising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

TCC KEY FACTS

Employee risk education training hours

710.7 hours Number of participants 8,901

Risk Management Policy



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

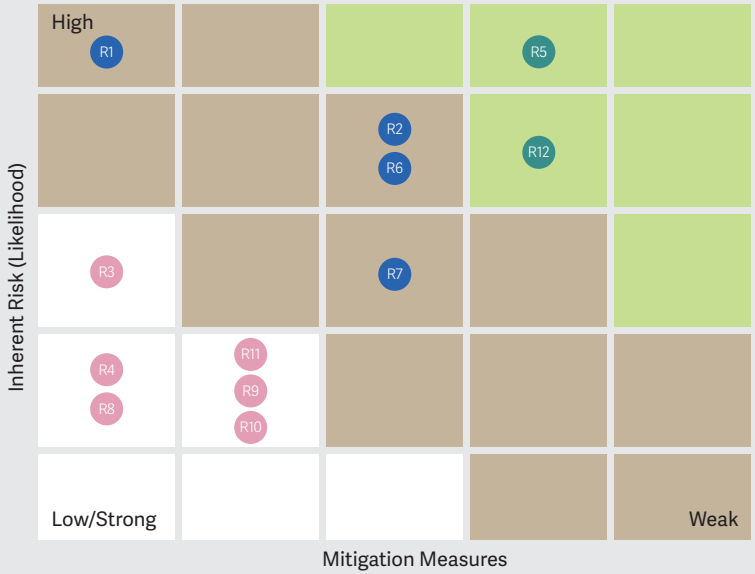
Risk Assessment Method

TCC benchmarks its risk identification against sources like the WEF Global Risks Report 2025, peer analyses, SASB standards, and internal policy. The process covers four major risk dimensions: strategy, operations, finance, and climate. It also considers factors such as the geographical location of operating sites and the value chain, while assessing potential risks that could lead to significant company losses, such as biodiversity risk, geopolitical risk, and information security risk Using a hybrid top-down/bottom-up approach, TCC integrates internal/external factors and stakeholder concerns via scenario analysis and questionnaires. Each risk's value, based on likelihood and impact, is evaluated against company risk appetite to set a level and formulate a response, underpinning the management cycle.

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

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

2024 TCC Risk Matrix



R5 Natural Disaster (Earthquake)
R12 Geopolitical Risk

R2 Poor Occupational Health and Safety Management
R6 Fluctuation in Product and Raw Material (Energy) Prices
R7 Inflation - Tariffs
R1 Industry Development and Competition - Mainland China Cement Market

R11 Interest Rate/Exchange Rate Fluctuations
R9 Improper Use of Alternative Raw Materials/Fuels/Waste Resource Recycling
R10 Support Intensity from Insurance and Financial Institutions for Investment and Financing
R3 Insufficient Information Security Management
R4 Losses Due to Ineffective Strategic Management
R8 Carbon Trading/Carbon Fees/Carbon Tax for Total Carbon Emissions Control

Related to material topics

Emerging Risk Mitigation Measures

TCC also identifies emerging risks that could have an impact within the next 3 to 5 years. It pays particular attention to two with a greater potential impact: "Generative AI" and "Geoeconomic Confrontation." These risks could significantly affect the company's long-term development and stability, and identifying them early helps TCC to monitor and plan mitigation measures to reduce their impact.

Emerging Risks	Generative AI	Geoeconomic Confrontation
Category	Technology	Economic
Risk Factor Description	Generative AI relies on user-provided data, making it vulnerable to hacking if data isn't protected or models have flaws. Inconsistent input data can also lead to unreliable content. Furthermore, employee resistance due to job displacement fears or work process changes may hinder AI adoption.	The US government is promoting the reshoring of manufacturing and implementing protective trade measures, including equivalent tariffs to encourage overseas manufacturers to set up factories in the US. The US has imposed a tariff on Taiwan, and has announced plans to expedite related negotiations. As of April 2025, the Taiwanese government has stated that it will not implement retaliatory tariff measures.
Impact	◒ Integrate external AI systems risks leaking customer data and trade secrets, potentially leading to litigation, fines, reputational damage, and loss of customer trust. ◒ Content generated from biased or inconsistent data can cause flawed decision-making, reduce operational efficiency, and incur correction costs, thereby eroding employee trust and decreasing AI adoption. ◒ Low employee engagement, sluggish AI implementation, failure to fully leverage AI advantages to improve efficiency, and setbacks in digital transformation process.	◒ A new wave of international trade barriers may lead to the restructuring of regional trade organizations. Failure to join these organizations could further slow domestic economic growth, indirectly impacting demand for cement and energy products in domestic and foreign markets.
Mitigation Measures	◒ Establish AI policies to guide TCC's information security team. ◒ Develop a proprietary, closed AI system on ChatGPT's foundational model, ensuring data privacy while training TCC-specific models to minimize content bias. ◒ In collaboration with MIT, TCC Lyceum offers ten on-demand AI courses to ease employee anxiety regarding the AI transformation.	◒ Mitigate import tariffs and trade barriers by establishing production bases or joint ventures in major markets. ◒ Mitigate coal price volatility from trade barriers by establishing a flexible, diversified supply chain through expanded procurement sources and long-term agreements.

Business Continuity Plan (BCP)

To ensure the timely recovery of critical operations in the face of disruption risks, TCC has established business continuity management policies and objectives. This framework was advanced in 2024 with the Business Continuity Management Guidelines for TCC's cement manufacturing and sales operations. Based on ISO 22301 principles, these guidelines define response mechanisms, organizational responsibilities, and mandate regular drills. In the future, we will evaluate the formal implementation of ISO 22301 certification. In a disaster, TCC establishes a Command Team—led by the Chairman as Chief Commander and senior executives as Deputies—to activate the response plan and confirm the Maximum Tolerable Period of Disruption (MTPD), Recovery Point Objective (RPO), and Recovery Time Objective (RTO) based on operational impact. A supporting Operations Team of plant and corporate managers handles loss assessment, disaster prevention, equipment recovery, and external coordination. In line with TCC's guidelines, each plant and unit must develop its own business continuity plans, assessing equipment risks and proposing countermeasures. TCC also maintains BCPs for critical IT systems and services. For details, please refer to CH1.6 Information Security.

On April 3, 2024, following a magnitude 7.1 earthquake in Hualien, TCC promptly activated its BCP to sustain essential operations and expedite the return of normal operations, minimizing the disaster impact. TCC continues to strengthen its operational resilience and response to natural disasters according to the four stages of disaster management (mitigation, preparedness, response, and recovery).

	Mitigation	Preparedness	Response	Recovery
Objective	Minimize disaster likelihood and impact, safeguard personnel and assets, and maintain operational continuity.	Enhance response readiness to ensure timely action and minimize losses during an incident.	Rapidly control incidents to safeguard employee safety, minimize property damage, and sustain critical operations.	Restore normal operations, strengthen long-term resilience, and incorporate lessons learned for future events.
Measures	◒ Strengthen the seismic design of facilities and equipment, and performing regular inspections and maintenance. ◒ Develop and implementing strict safety standards and operational protocols, and conducting ongoing risk assessment and management.	◒ Develop detailed contingency plans, including emergency evacuation routes and shelters. ◒ Conduct regular emergency drills to build employee response capabilities for various disaster scenarios. ◒ Stock necessary emergency supplies and equipment.	◒ Establish real-time communication networks to gather post-disaster information. ◒ Activate business continuity plans to maintain critical business operations. ◒ Establish emergency rescue teams to perform immediate rescue and repair work. ◒ Promptly evacuate affected employees and provide temporary accommodation and supplies.	◒ Repair damaged facilities to restore operational capabilities. ◒ Assess disaster impacts, activate recovery plans, and strengthen the disaster resilience of facilities and systems. ◒ Provide counseling and support to assist employees in returning to normal work and life.

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

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

Action Spotlight

From Compliance to Innovation: How CIMPOR Transforms Compliance into Advantage



Özge AŞÇIOĞLU

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

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

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

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

1.4

TCFD —

Climate-related Risks & Opportunities

GRI 201-2

2024 TCFD Report

Governance

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

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

Risk Management

Climate-related Risk and Opportunity Management Process

TCC has established the Risk Management Policy and Risk Management Committee Charter, holding regular meetings to monitor climate action progress. This approach helps to keep potential risks from various operations within acceptable limits and establishes sound risk management operating principles.

Step 1 / Risk and Opportunity Identification

Building on previous climate risk and opportunity identification results, international scientific and technical reports, and industry trends in local operational regulations, TCC updates climate-related risk and opportunity issues.

Based on the SASB standards applicable to individual industries involved in key operations and their disclosure topics, the Company is gradually identifying and incorporating climate-related risks and opportunities across various industries.

RESULTS

10 key climate risks and 5 climate opportunities identified

Step 2 / Risk and Opportunity Analysis

Hold cross-departmental workshops to understand the substantial impacts, timing, sources, and expected financial impacts of various risks and opportunities on TCC.

Analyze and evaluate questionnaire results, and incorporate perspectives from external experts and senior executives to identify key risks and opportunities.

RESULTS

Distribute 32 internal assessment questionnaires, ultimately identifying three major key risks and three opportunities

Step 3 / Response and Adaptation

Link climate policies, operational production, products and services, and external communication to current climate mitigation and adaptation strategies to develop and implement six major climate action plans.

RESULTS

Six Major Climate Actions

Step 4 / Management and Supervision

Regularly hold meetings to track the progress of the six major climate actions in response to risks and opportunities, monitor cement plant carbon reduction effectiveness through the carbon reduction management platform, and finally have the Risk Management Committee submit climate risk-related indicators and target tracking reports to the Board of Directors.

RESULTS

Management Indicators and Non-financial Performance Indicators for the Six Major Climate Actions

Climate Risk, Opportunity Identification, and Assessment Methods

TCC's Board of Directors functions as the highest decision-making authority on risk management, overseeing a comprehensive identification and assessment framework spanning four dimensions: strategic, operational, climate-related, and financial risks. Climate-related risks have been fully integrated into the company's enterprise risk management (ERM) system. Aligned with the TCFD framework, TCC categorizes climate risks into acute and chronic physical risks and transition risks over short- and long-term horizons. Evaluated risk types include current and emerging regulations, technological disruption, legal exposures, market volatility, and reputational impacts. In practice, TCC supplements internal analysis with international climate policy and regulatory trend monitoring to assess the potential implications of climate-related events across its subsidiaries and affiliated entities.

To enhance analytical robustness and forward-looking capability, TCC applies scenario-based risk assessment tailored to risk typology. It employs the IPCC's high-emissions scenario (SSP5-8.5) to simulate the potential impact of worsening climate extremes on operations and physical assets. Concurrently, the IEA's Net Zero Emissions by 2050 (NZE) scenario is used to capture risks and opportunities arising from accelerated policy tightening, rapid market shifts, and technological transformation. Climate risk assessments are conducted across short-, medium-, and long-term horizons with financial quantification, enabling the company to evaluate how various climate pathways may affect its strategic positioning, operating model, and financial performance. These assessments inform TCC's climate resilience planning and strategic decision-making.

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

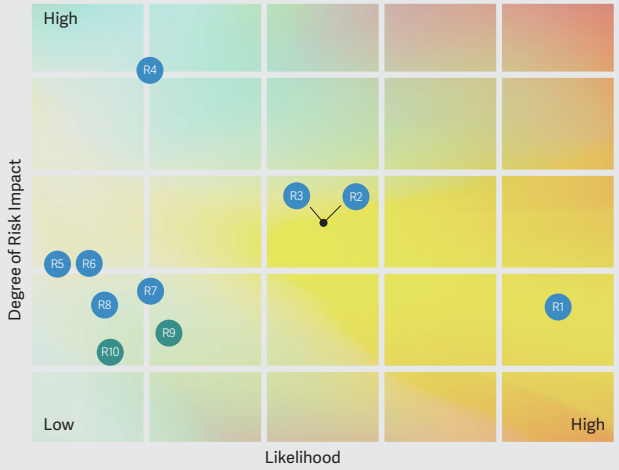
Time Horizon	Definition	Link to Strategic Decision-making
Short Term	**Within 2 years (2025–2026)**	**Annual review and rolling adjustment of strategic initiatives planned for the upcoming 1–2 years.**
Medium Term	**2 to 4 years (2027–2029)**	**Aligned with the typical 4-year cycle for major strategic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

Climate Risk Matrix, Climate Opportunity Matrix

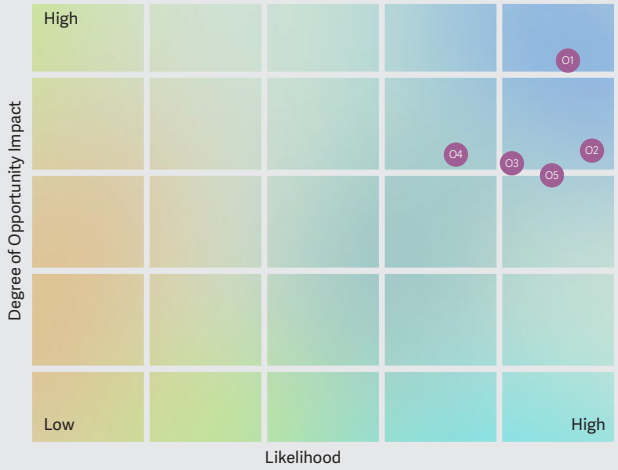
Short, Medium, and Long-term Climate-related Risks and Opportunities

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

Climate Risk Matrix



Climate Opportunity Matrix



Transition Risks

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

Physical Risks

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

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

Strategy

TCC identifies climate-related risks and opportunities with high impact levels and likelihood, further evaluates whether current measures and strategies are sufficient to address them and examines TCC's resilience under different climate risks and opportunities. Through this process, TCC simultaneously analyzes the impact of the aforementioned risks and opportunities on current financial conditions, using it as a decision-making basis for strengthening risk management and resource allocation.

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

	Expected Reasonable Time Period	Impact on Business Model and Value Chain	Strategy and Decision-making	Correspond to Six Major Climate Action Plans	Estimated Response Cost[8]
R1	Short-term to medium and long-term	**Business Model** — Cement Production — Energy Generation **Value Chain** Downstream: Customers in the Construction Industry, Ready-mixed Concrete Producers, and other Electricity Customers	◒ Implementation strategies include clinker substitution, alternative raw materials, alternative fuels, process improvements, waste heat power generation, renewable energy, carbon capture, and carbon sinks. ◒ Promote internal carbon pricing in cement business.	Low-carbon Circular Production Low-carbon Supply Chain Low-carbon and Negative Carbon Technology Innovation	Approximately NT$7.99 billion
R2	Short-term to medium and long-term	**Business Model** Financing Activities & Insurance	◒ 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 Ho-Ping Power Plant by 2040.	Low-carbon Circular Production Leading the Industry in Low-carbon Construction Materials Low-carbon and Negative Carbon Technology Innovation Smart New Energy Business	Approximately NT$510 million
R9	Short-term to medium and long-term	**Business Model** — Cement Production — Energy Generation **Value Chain** — Upstream: Raw Material Supplies — Downstream: Product Transportation	◒ Construct detention and sedimentation ponds and build 2-meter-high earth embankments on the quarry 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.	Climate Adaptation	Approximately NT$500 million

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

	Impact on Business Model and Value Chain	Correspond to Six Major Climate Action Plans	Strategy and Decision-making	Estimated Response Cost[8]
O1	**Business Model** Low-carbon New Energy Products and Services Sales **Value Chain** Downstream: Customers with New Energy Demands	Smart New Energy Business	◒ 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 electric vehicle and charging station markets	Approximately NT$8.33 billion
O2	**Business Model** Cement Production	Low-carbon Circular Production	◒ Implementation of artificial intelligence for production efficiency ◒ Co-processing of household waste and hazardous waste in cement kilns	Approximately NT$30 million
O3	**Business Model** Low-carbon Products and Services Sales **Value Chain** Downstream: Construction Industry, Ready-mixed Concrete Manufacturers, and Charging Service Customers	Low-carbon Circular Production Leading the Industry in Low-carbon Construction Materials Low-carbon Supply Chain	◒ Actively develop low-carbon cement and concrete and low-carbon products such as UHPC ◒ 100% sales of Portland Limestone (IL) low-carbon cement in Taiwan	Approximately NT$40 million

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

Scenario Analysis

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

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

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

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

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

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

Note 9: Referenced from IEA WEO 2024, the Regulations Governing the Collection of Carbon Fees (2024), and Carbon pricing options for Taiwan (2020).
Note 10: Referenced the IEA 2024 World Energy Outlook.

Transition Risks —

Analyze carbon price impacts brought by domestic and international carbon regulations

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

To strengthen operational resilience and manage decarbonization risks, TCC expanded its global presence in 2024, raising its stake in Türkiye's OYAK CEMENT to 60% and acquiring full control of Portugal's CIMPOR. These moves enhance access to advanced low-carbon technologies. CIMPOR's African sites have achieved 90% biomass fuel substitution rate, and it operates the world's first large-scale calcined clay cement plant, reducing CO_2 emissions by at least 40%. These advantages help TCC respond to global carbon pricing and the EU's CBAM, while improving long-term carbon cost competitiveness.

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

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

Analysis shows that without proactive emissions reduction, TCC sites would face carbon costs exceeding internal abatement thresholds under all climate scenarios—especially under NZE 2050, where projected costs surpass those under STEPS and APS. In contrast, achieving internal targets across all sites would significantly reduce carbon fees and reliance on external credits. Estimated savings will be disclosed in TCC's 2024 TCFD Report. Without strong emissions control, all TCC sites risk major financial impact from carbon pricing. In response, TCC has accelerated facility- and group-level decarbonization targets as the foundation of its net-zero strategy, aiming to reduce transition risks from stricter climate policies and rising carbon costs.

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

Physical Risks —

Frequency and Intensity of Extreme Precipitation Events

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

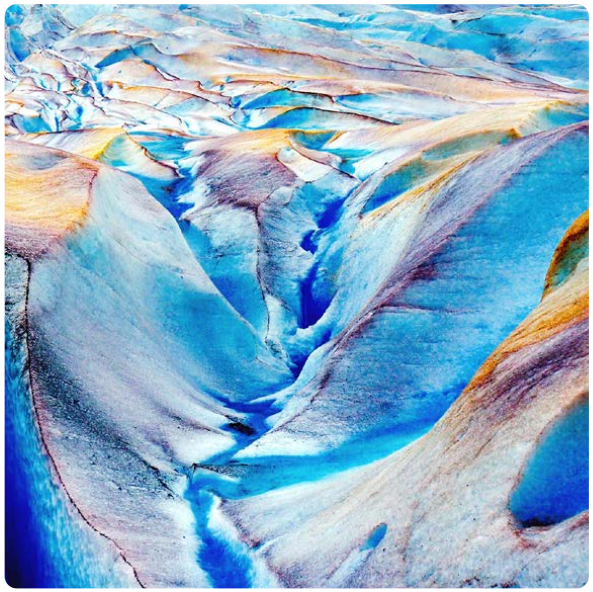
Metrics and Targets

Climate-related Management Metrics

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

Internal Carbon Pricing System

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



1.5

Ethical Management

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

SASB：EM-CM-520a.1

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

TCC KEY FACTS

ZERO corruption incidents occurred.

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

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

Zero Tolerance for Bribery and Corruption

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

Corruption and Bribery Risk Assessment and Due Diligence

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

TCC KEY FACTS

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

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

	Business Partners [12]	Employees	Operating Procedures
Execution Frequency	● Irregular execution before initial cooperation ● Once a year after cooperation	At least once a year	At least once a year
Risk Assessment Process	● Conduct a corruption and bribery risk assessment based on six major aspects [13] High-risk areas / High-risk significant value activities High-risk business arrangements / High-risk partners Reputational incidents / Policies and procedures ● Conducting corruption and bribery risk due diligence based on assessment results Low-risk entities: Basic due diligence procedures High-risk entities: Enhanced due diligence procedures	● Corruption and bribery risks are assessed separately by department and by employee level within each department. ● Aggregating departmental risks and position-level risks to calculate overall risk levels.	● Identifying stakeholder needs and expectations to ensure the management system can effectively respond to them. ● Identifying corruption and bribery risk scenarios within operational activities. ● Assessing the level of impact based on the likelihood of risk occurrence and its potential consequences. ● Evaluating the effectiveness of relevant control measures. ● Determining residual risk based on the assessed impact and control levels.
Risk Response and Treatment	● Parties that fail the assessment will be blacklisted, eliminating the possibility of future cooperation. ● Anti-corruption and anti-bribery clauses are included in standard contract terms with business partners, who are also required to sign relevant codes of conduct.	● All employees must complete due diligence procedures before being hired or assuming their roles and sign the Statement of Integrity and Ethical Conduct. ● Employees of departments assessed as medium-high risk sign the Statement of Integrity and Ethical Conduct and Integrity Code at least once a year. ● Linking compliance with anti-corruption and anti-bribery systems to employee performance incorporating it into annual performance evaluations.	● Implementing corresponding measures according to the residual risk level. High-risk: Requires immediate development of improvement plans or enhanced control measures. Medium-risk: Responsible unit must re-examine control mechanism completeness and appropriateness, providing a review plan. Low-risk: Managed through standards procedures. ● After the risk assessment results and response plans are reviewed by the promotion groups of each unit, they are compiled by the Compliance and Legal Office and submitted to the President for approval before being forwarded to the Audit Committee for final approval.

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

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

Integrity and Ethics Education Training

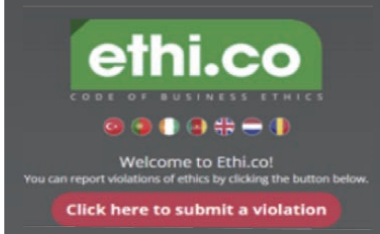
In 2024, integrity management training was provided to directors, business partners, employees, new recruits, and interns, extending to global operational sites (except CIMPOR Cameroon plant, where implementation is expected in 2025).

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

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

Whistleblowing Mechanism and Whistleblower Protection

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



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

Whistleblowing mailbox: mp.buster@taiwancement.com
Whistleblowing mailbox for high-level integrity management related issues: tccwhistle@taiwancement.com

2024 Summary Table of Whistleblowing and Grievance Cases

Whistleblowing and Grievance Channels	Whistleblowing Mailbox	Audit Committee Mailbox	Employee Grievance Mailbox	Online Peace of Mind Platform
Number of Cases Received	241	7	0	0

Number of Cases Related to Violations of Integrity Management	176
Number of Cases Related to Harassment (Including Sexual Harassment)	68
Number of Cases Related to Bullying (Including Discrimination)	4

Violation of Internal Guidelines

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

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

Audit and Internal Control Management System

TCC Audit Personnel

22% hold CPA certification



44% of personnel have obtained audit certification, including
ISO Lead Auditor and International Computer Audit Software Professional (ICCP)

CIMPOR & OYAK CEMENT Audit Personnel

25% hold CPA certification

38% of personnel have obtained audit certification, including
Certified Internal Auditor (CIA)
Certified Fraud Examiner (CFE)
Certified Financial Services Auditor (CFSA)
Certified Information Systems Auditor (CISA)
Certification in Risk Management Assurance (CRMA)



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

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

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

Step 1 Formulation of Audit Plan

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

Step 2 Issuance of Audit Report

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

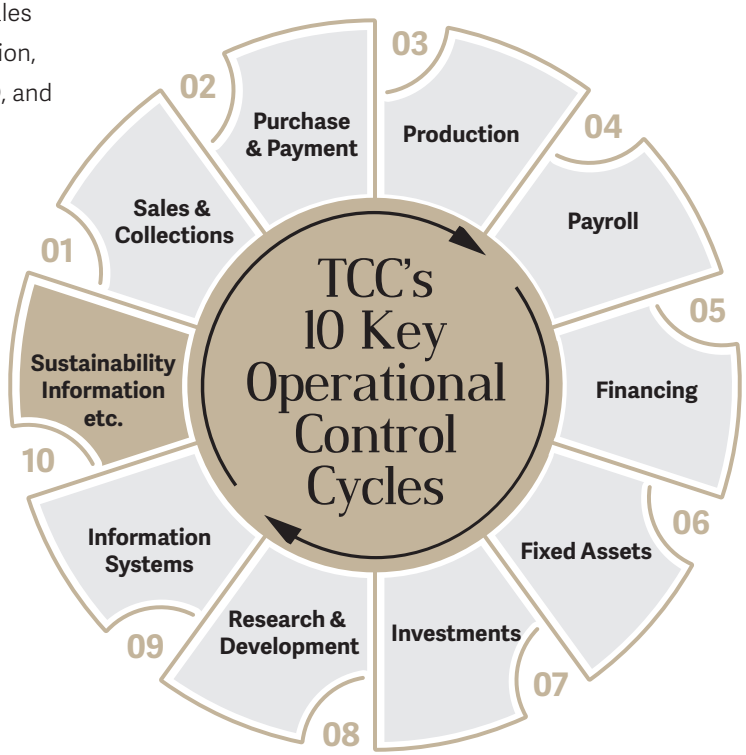
Step 3 Follow-up on Audit Findings

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

Incorporating Sustainability Information into Internal Control Cycles

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

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



External Sanctions Violations

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

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

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

1.6

Information Security

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

TCC KEY FACTS

ZERO critical information security incidents[17] occurred. incidents of customer or employee information leakage occurred.

100% new recruits signing the Information Security Statement
| Taiwan and Mainland China cement operations, subsidiaries CIMPOR's European plants, and OYAK CEMENT
| Planning underway for CIMPOR's African plants

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

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

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

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

TCC KEY FACTS

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

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

Information Security Specialized Team

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

Information Security Incident Reporting and Handling Mechanism

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

Information Security Management Programs

Information Business Continuity Plan

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

Cybersecurity Education and Training to Enhance Employee Awareness

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

Regularly Conduct Third-party Vulnerability Analysis and Internal Audits

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

Action Spotlight

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

Comprehensive Information Security Management

Information Security Strategy	Specific Management Procedures and Measures
PREVENTION	
Information Security Risk Assessment Mechanism	TCC regularly conducts annual assessments of all IT-related departments and information systems. Following its security-risk assessment mechanism, TCC analyzes risks across three dimensions: asset value x vulnerability x threat, and implements mitigation actions to fulfill the spirit of information security management.
Network-related Security Procedures	Establish firewall access rules, intrusion detection and prevention mechanisms (IDS/IPS), web application firewalls (WAF), web traffic filtering and analysis (Akamai), internet behavior monitoring systems (L7), enhanced remote connection mechanisms (VPN with two-factor authentication), to ensure internal network security and reduce the risk of hacker intrusion.
Ransomware Protection	Deploy enterprise-wide endpoint protection measures (EDR) and malicious connection detection mechanisms (DDI). Engage external professional security teams for 24/7 monitoring and analysis of abnormal events (MxDR), with 48 security threats detected and immediately blocked in 2024.
Regularly Review Audit Trails	Regularly review audit trails of core systems and equipment, using correlation analysis to identify potential threat events, ensuring there are no abnormal access behaviors from internal or external sources.
Join Security Threat Intelligence Center	Join TW-CERT, Trend Micro, and other security threat intelligence centers to receive real-time security risk information. In 2024, a total of 223 pieces of security intelligence were received, all of which were immediately processed and risks blocked.
Face Recognition Mechanism for Copiers	The headquarters, along with E One Moli Corporation and Molie Quantum Energy Corporation, have implemented a print management system that incorporates OCR image recognition to detect sensitive content. The system utilizes facial recognition and monitoring mechanisms to track abnormal printing activities, preventing employees from printing sensitive information.
Lens-free Smartphone Project	◒ Colleagues in the information department at the headquarters are prohibited from bringing camera-equipped 3C devices into sensitive areas and office areas to prevent sensitive data leakage. ◒ E One Moli Corporation and Molie Quantum Energy Corporation have designated sensitive data areas, redesigned personnel movement routes, prohibited carrying personal smartphones, and provided lens-free smartphones for communication, while also installing metal detection gates and security posts to ensure safe entry and exit of equipment.
DETECTION	
Vulnerability Scanning and Penetration Testing	◒ Vulnerability scanning is conducted quarterly, covering core critical systems and all information systems within the Group, with requirements to remediate high-risk vulnerabilities within two months and complete retesting to confirm the effectiveness of the patches. ◒ In 2024, a total of two penetration tests were conducted, identifying 23 risks, of which three were high-risk and all were remediated within two months.

Information Security Strategy	Specific Management Procedures and Measures
DETECTION	
Red Team vs. Blue Team Cybersecurity Exercises	◒ Through simulated internal network attacks, lateral movement, and lurking, we identify potential system risks and continuously strengthen security mechanisms. ◒ The 2024 exercise results recommended enhancing detection and response mechanisms, conducting regular reviews of AD system settings, addressing weak password issues, and upgrading outdated operating system versions.
Honeypot System and Simulated Hacker Attacks	In 2024, 526 attacks were effectively blocked, suspicious connections were interrupted and incidents were investigated, ensuring no security incidents occurred.
Expanded Endpoint Security Review	Security audit operations have been expanded to factories in Mainland China, requiring factory sites to assign personnel as security seed members, with headquarters security team providing training and security compliance items, ensuring that factory sites have adequate security protection measures.
Third-party Security Risk Scoring	Utilizing Trend Micro products to analyze the security risks of endpoint devices and conducting security maturity assessments based on the NIST CSF framework to continuously improve security protection levels and management efficiency.
OPERATIONS PROTECTION	
Privileged Access Management (PAM)	◒ All high-privilege accounts are documented in sealed paper records kept by the Chief Information Security Officer. When access is needed, users must submit an application; after use, the security team will reset the password before resealing the record. ◒ Core business systems are regularly inventoried annually and appropriate permissions are granted based on the Need-to-use principle, with security controlled through the Privileged Access Management (PAM) system.
Sensitive File Encryption System | External File Transfer Control	◒ Implementing a sensitive file encryption system to prevent hackers from stealing trade secrets from core business data, which could impact operations. ◒ Strictly control external file transfer channels, including portable devices (such as USB), cloud drives, instant messaging software (IM), file transfer protocol (FTP), and email sending mechanisms.
Two-factor Authentication Mechanism (MOTP)	◒ Highest-privilege account logins and enterprise group remote connections use the Mobile One-Time Password system (MOTP) as two-factor authentication. ◒ Core areas use dual-factor authentication with facial recognition and employee ID card scanning.
Real-time Monitoring and Warning Mechanism (PRTG)	Core business systems and equipment all have real-time monitoring and warning mechanisms (PRTG) established, which can immediately notify system administrators for emergency response if abnormal conditions occur.
Dedicated ChatGPT Project	◒ Establish a dedicated TCC ChatGPT system and train TCC's proprietary AI model. ◒ ChatGPT uses two-factor (2FA) authentication and simultaneously records user login trails.

1.7

Supply Chain Management

GRI 2-6 / 204-1

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

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

TCC KEY FACTS

Obtained

ISO 20400

Sustainable Procurement Certification

Supplier Management Policy Statement
Supplier Code of Conduct
TCC Procurement Portal

Sustainable Supply Chain Management Framework

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

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

Sustainable Supply Chain Management Goals Setting 7 Targets

95% locally-procured non-raw materials

Achievement Rate in 2024 96.71%

100% new suppliers & existing Significant Tier-1 Suppliers signed the Supplier Code of Conduct
(excluding state-owned enterprises)

Achievement Rate in 2024 100%

100% contractors signed the Safety and Health Responsibility Commitment

Achievement Rate in 2024 100%

100% High-risk Significant Suppliers supported by improvement plans

Achievement Rate in 2024 100%

100% reviewed conducted to Significant Tier-1 Suppliers
(desk/ on-site assessment)
(excluding state-owned enterprises)

Achievement Rate in 2024 93.63%[18]

80% by 2030 Sustainability Questionnaire Collection Ratio of Significant Tier-1 Suppliers
(by procurement amount)
Taiwan and Mainland China

Achievement Rate in 2024 78.65%

Supplier Carbon Footprint Inventory | Taiwan
- Accumulated total of 35 suppliers by 2025
- Accumulated total of 40 suppliers by 2030

In Progress

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

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

Action Spotlight

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

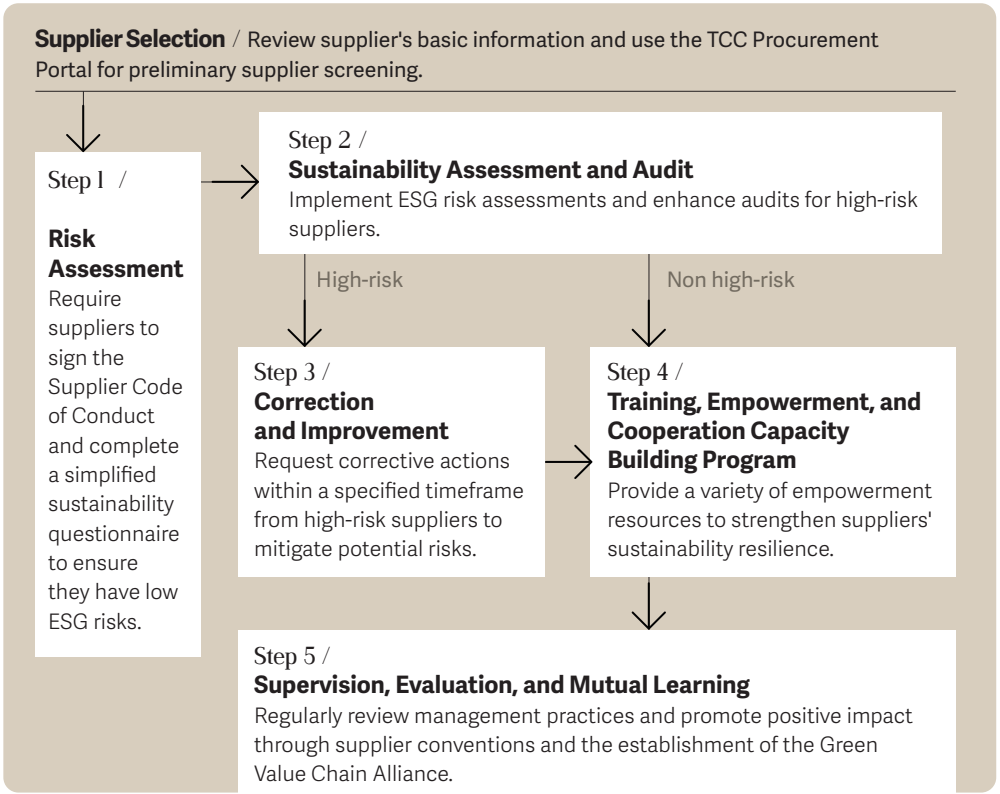


At the 2024 Supplier Convention, TCC officially established the Green Value Chain Alliance, bringing together 19 key transportation and raw material partners from Taiwan and Mainland China. The alliance is committed to completing product carbon footprint by 2025 and achieving 10% autonomous carbon reduction by 2030. In response to the United Nations' Kunming-Montreal Global Biodiversity Framework, TCC has mobilized ten major supplier partners of the Hoping EcoPort and Power Plant to jointly participate in the "Little Tern Conservation Project-Hoping Welcomes You". For details, please refer to CH4.7.

Sustainable Supplier Management Process and Performance

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

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



Local Procurement and Green Procurement

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

Procurement Percentage in 2024

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

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

Education and Training for Company's Buyer

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

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

Step 1

Risk Assessment

Approaches at TCC

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

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

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

2024 Performance and Future Plans

TCC Procurement Portal enhances supply chain AI screening mechanism

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

TCC KEY FACTS

100%

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

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

Step 4

Training, Empowerment, and Cooperation Capacity Building Program

Approaches at TCC

GHG Inventory Practical Camp & GHG Reduction Workshop

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

Sustainability Governance Workshop

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

Annual Supplier Convention

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

2024 Performance and Future Plans

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

Step 5

Supervision, Evaluation, and Mutual Learning

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

Suppliers with excellent performance

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

Green Supply Chain Alliance

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

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

Guigang Plant suppliers cooperate to promote electric vehicles

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

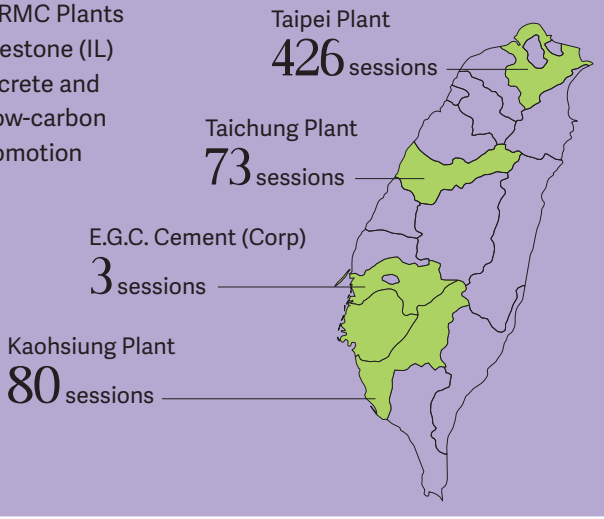
1.8

Customer Communication

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

TCC KEY FACTS

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



Clients' Rights and Interests Protection Policy

Product Health and Safety Management

TCC's global plants are all ISO 9001 certified, ensuring the health and safety of cement and concrete products. TCC employ rigorous three-tier quality control and independent inspection systems, delivering six quality assurances and certifications, including six raw material and six third-party certifications. TCC actively adopts regularly tests products for no adverse health or safety impact during use, with information labeled locally.

TCC provides customers with safety information through product labels, packaging bags, and delivery notes at all global sites, along with detailed Safety Data Sheets (SDS) to ensure safe usage. Concrete products in Taiwan meet Green Building Material Label standards, all products certified as non-radioactive, asbestos-free, and pass heavy metal leaching tests (Cd, Cr, Cu, Pb, Se, Cr(VI), Hg, As), with no chloride ions detected. Cement products in Taiwan and Mainland China are tested by laboratories before delivery to ensure stability and non-toxicity. Annual customer satisfaction surveys are conducted to proactively communicate and confirm that TCC products pose no health risks. CIMPOR strictly monitors Cr^{6+} content, ensuring compliance through production tests and reducing agents, with regular sampling of exports to maintain safety standards.

TCC offers on-site product application instructions to ease customer concerns. For packaging, CIMPOR bagged cement uses recycled paper bags from its factory, with FSC™ certified bags coming in 2025. Taiwan plans to prioritize recycled packaging for low-carbon products by 2025. All Taiwan office paper is eco-labeled recycled, with 80% recycled pulp.

TCC's cement and concrete products consistently offer stable quality and engineering reliability across diverse uses and over time. Concrete made with TCC cement shows superior compressive strength at 3, 7, and 28 days versus traditional concrete. Using TCC construction materials ensures overall structural safety and durability, effectively extending service life.

Concrete Compressive Strengths (MPa) of TCC Cement

Type	3 days	7 days	28 days
Portland Type I Cement Concrete	191.4	297.5	484.8
Portland Limestone (IL) Cement Concrete	206.3	363.1	498.8

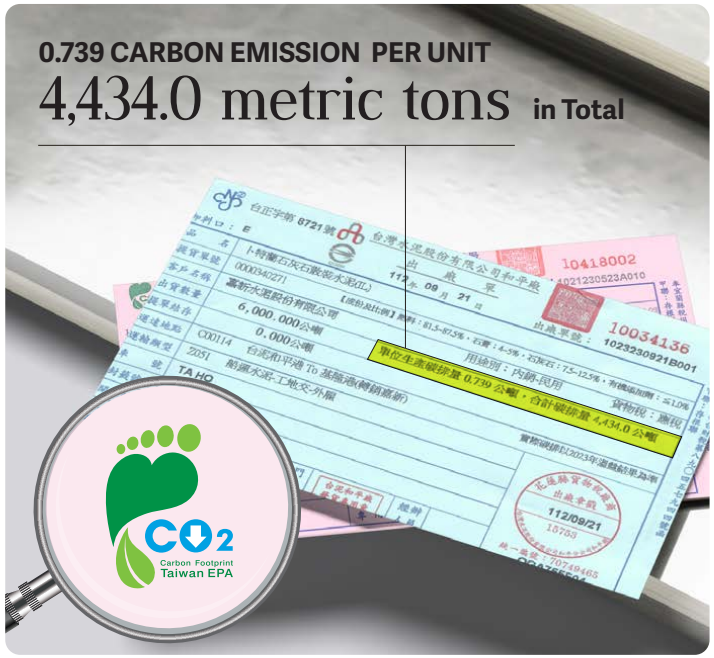
The strength of TCC concrete products at 3, 7, or 28 days consistently **exceeds CNS standard values.**

Management Mechanism	Inspection Systems
Three-tier Quality Control System	◒ Tier 1: Branch plants conduct material inspections according to SOP ◒ Tier 2: The parent plant goes to the branch plant for regular random inspections ◒ Tier 3: The independent third-party research laboratory performs irregular visits to the plant for random inspections
Six Raw Material Inspections	Cement, sand and gravel, slag, fly ash, chemicals, and mixing water, passed the tests by TAF laboratories like those of TCC, SGS, etc.
TCC Portland Series	Cement: • Carbon Footprint Label, MOE Taiwan • Carbon Footprint Reduction Label, MOE Taiwan • Gold-rated Green Mark, MOE Taiwan • Low-carbon Product Certification, Mainland China ISO 14064 ISO 14067 Concrete: •Carbon Footprint Label, MOE Taiwan •Carbon Footprint Reduction Label, MOE Taiwan •Green Building Material Label, MOI Taiwan •Low-carbon Circular Building Material Certification, MOI Taiwan ISO 14067
Third-party Product Certifications	◒ Concrete Specimen Compressive Strength Report ◒ Good Ready-mixed Concrete Label ◒ TCRI product traceability certification ◒ EPD Type III Environmental Product Declaration (For more information, please refer to Carbon Competitiveness)
Product Resume	Strength specifications, cement source, slag source, chemical admixtures, quality assurance certificate, sand and gravel source, fly ash source, aggregate source, carbon emission information, chloride ion report, 28-day compressive strength report, external certification, and TCRI product traceability certification.

Engage with Clients on Climate and Water to Broaden Environmental Impact

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

To enhance customer service quality, TCC has established a Product Safety Traceability System that incorporates AI assistance and user-oriented design. Customers can access information on raw material mixing ratios, sources, carbon emission intensity, and inspection reports via QR Codes, disclosing product details in line with food resume specifications. At the same time, TCC integrates e-commerce APP, launching the "TCC News" function, facilitating order placement and real-time delivery of its sustainability information. To ensure customers receive high-quality, reliable products and professional support, TCC regularly trains its employees on product safety, cement application guidance, and formula recommendations. In 2024, a total of 71 participants, accumulating 497 hours.



Client Satisfaction Survey

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

	2021	2022	2023	2024
Client Satisfaction Rate (%)	96.67	96.86	98.64	93.50 [21]
Coverage (%)	100	100	100	100

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

Complaint Mechanism to Protect Client Rights

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

Complaint Channels
Corporate Sales Department Client Service:
tccsales@taiwancement.com

1.9

Intellectual Property Management

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

TCC KEY FACTS

Obtained

TIPS Certification

(Taiwan Intellectual Property Management System)

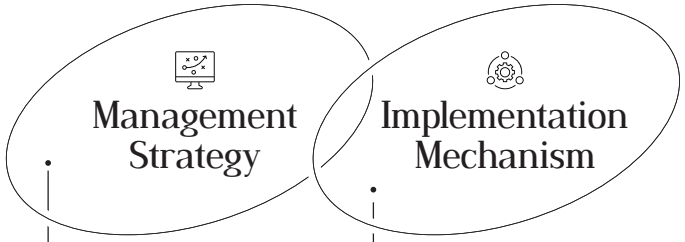
100% Employee Confidentiality and IP Ownership Agreement signed rate

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

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

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

Intellectual Property Management Policy



- Innovation and R&D Strategy
- Comprehensive Protection Strategy
- Global Deployment Strategy
- Patent Application and Registration System
- Education and Training System
- Confidentiality Classification System

TCC KEY FACTS

Trademarks

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

Trade Secrets

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

TCC KEY FACTS

Patents[22]

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

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

Copyrights

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

Data scope (as of November 26, 2024): TCC's Taiwan & Mainland China Cement businesses, OYAK CEMENT, CIMPOR, and NHOA Energy.
Note 22: Patent information is sourced from the GPSS Global Patent Search System. The statistical count of patents does not include 176 expired approved patents and 62 patents not continued for review.

Action Spotlight

EnergyArk Energy Storage Cabinet Multi-national Patent Family

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

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

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

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



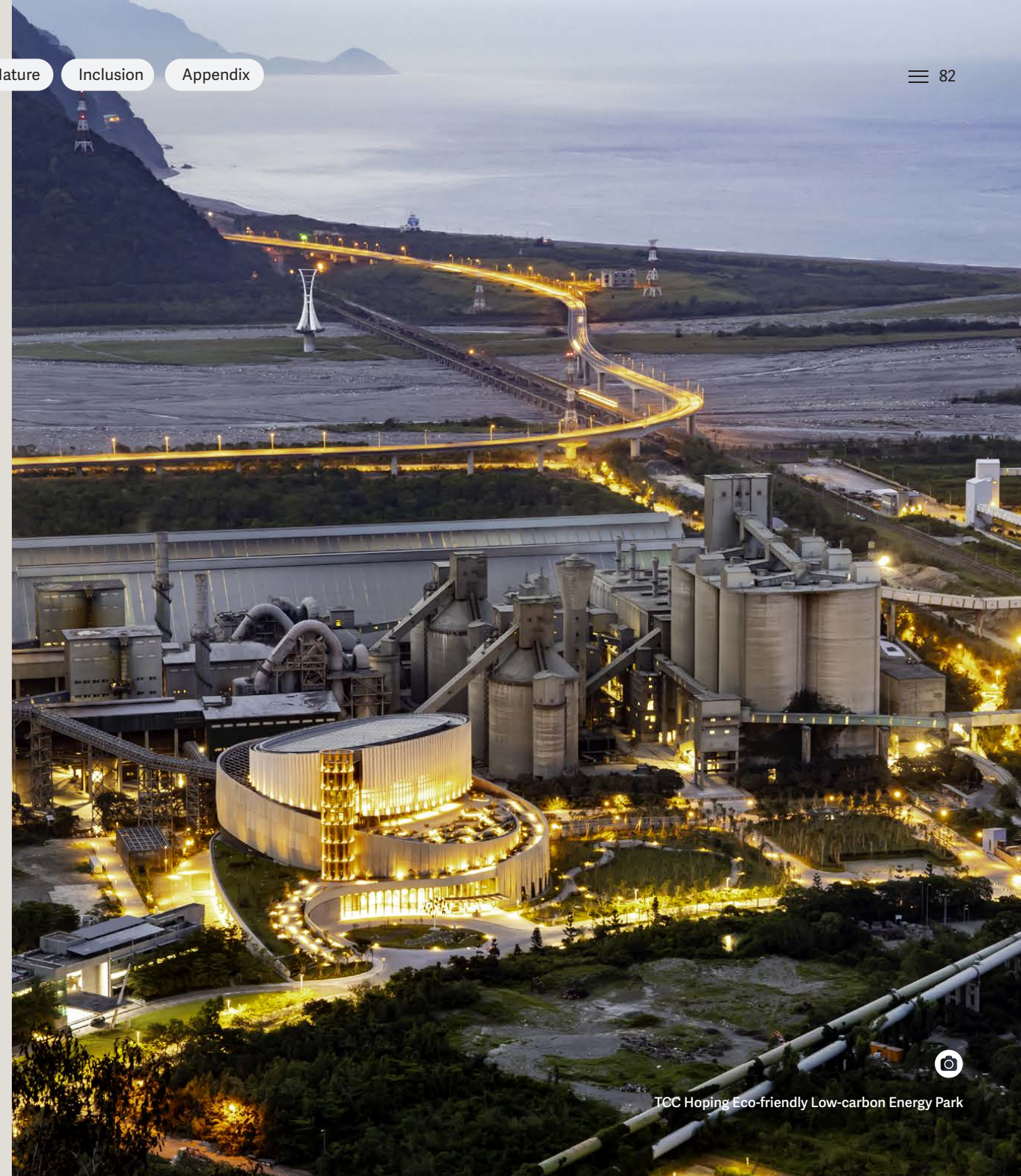
chapter 2

Carbon Reduction

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2.3 Resource Recycling	99

6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION

Corresponding SDGs



TCC Hoping Eco-friendly Low-carbon Energy Park

2.1

Low-Carbon Construction Materials

TCC's products sold in Africa, Europe, Central Asia, and in Taiwan and Mainland China have all achieved the "low-carbon" rating from the Global Cement and Concrete Association (GCCA). TCC is the only company in Taiwan whose cement and concrete products have met third-party certified low-carbon standards.
--Chairman Nelson An-ping Chang



TCC is the Only Company to be Listed in Both Global Cement and Concrete Low-Carbon Ratings

In April 2025, the GCCA released the world's first Low Carbon Rating (LCR) standards for cement and concrete. TCC is Taiwan's sole construction materials manufacturer whose cement and concrete products meet these GCCA low-carbon standards. Our low-carbon products made in Mainland China, Türkiye, Portugal, and West Africa also fully comply.
However, unlike Europe's 20% clinker and 80% additive allowance, Taiwan's 50-year-old regulations still govern its cement industry, resulting in TCC's Taiwan-produced cement having the highest carbon emissions regionally. Despite being Taiwan's only compliant company, it only achieves GCCA's basic 'F' grade. Therefore, TCC continues to communicate with the government, suggesting they reference European experience to relax relevant regulations, thereby jointly driving the domestic cement industry to accelerate its green transformation.

Global Cement and Concrete Association LCR standards

TCC Low-carbon Cement Products		TCC Low-carbon Concrete Products
	Near Zero AA	
	A	
	B	
OYAK CEMENT CEM III 32,5N **OYAK CEMENT** CEM VI 32,5N	C	**Taiwan** Portland Limestone (IL) Cement Concrete 3000-6000psi
OYAK CEMENT CEM II 32,5N **OYAK CEMENT** CEM V 32,5N	D	**Taiwan** Portland Type I Cement Concrete 3000-6000psi
OYAK CEMENT CEM II 42,5R **OYAK CEMENT** CEM V 32,5R **CIMPOR** CEM II 32,5N	E	
Suao & Hoping Plant – Portland Limestone (IL) Cement **Yingde & Jurong Plant** – PO 42.5R	F	

TCC

TCC will exclusively produce and sell low-carbon cement and concrete

CIMPOR

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

By 2030, CIMPOR will reduce the clinker ratio in cement production to below 65%

OYAK CEMENT

- The proportion of CEM-I in gray cement sales will decrease from 23.4% to 12.2%
- The clinker ratio in cement production will decrease to 73%

Low-Carbon Products - Reducing Carbon Without Compromising Strength

The UN's 2050 Global Buildings Net Zero Pathway calls for over a 40% reduction in embodied carbon from construction materials in new buildings by 2030. The 2024 Emissions Gap Report adds that using low-carbon cement with clinker alternatives like limestone could cut global CO_2e emissions by 400 million metric tons by 2035.

Cement

- Carbon reduction
- Low heat of hydration
- Highly resistant to environmental impacts
- High workability
- High sulfate resistance



CO_2e −23.8%

TCC Branded Cement
Portland Limestone (IL) Cement
Higher early strength; suitable for general construction and engineering
Carbon footprint 754.82 kg CO_2e per metric ton of cement



Mainland China
PO 42.5R
Better workability and higher durability compared to PC type. Can be used for general construction and engineering



OYAK CEMENT
CEM II 32,5 N
Suitable for sewage treatment plant engineering



OYAK CEMENT
CEM III 32,5 N
Suitable for foundation improvement, coastal and port structures, and offshore structure engineering projects



OYAK CEMENT
CEM V 32,5 R
Suitable for sewage treatment plant engineering



OYAK CEMENT
CEM VI 32,5 N
Suitable for sewage treatment plant engineering



CIMPOR
CEM II 32,5 N
Suitable for various mortars and general construction projects

Concrete

TCC Low-Carbon Concrete | Portland Limestone (IL) Concrete

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

Action Spotlight

Portland Limestone Cement Concrete User Manual

During the initial introduction of limestone cement concrete in Taiwan, due to ready-mixed producers' early application concerns, TCC, Taiwan Construction Research Institute and Taiwan Concrete Institute to jointly compile this manual. It provides a reference guide for project authorities, design and construction units, construction companies, and ready-mixed concrete industries, offering concrete guidance for green construction. The manual covers limestone cement characteristics, application benefits, mix design, construction precautions, and quality management. It aims to ensure engineering quality and promote proper Portland limestone cement concrete use.

Sustainable and Innovative Low-Carbon New Construction
Ultra-High Performance Concrete (UHPC)

What is UHPC ?

Ultra-High Performance Concrete (UHPC) is a new concrete developed in recent decades. Its discontinuous pore structure inhibits harmful substance penetration (e.g., chlorides), surpassing traditional concrete in mechanical properties and durability. As UHPC excels over traditional concrete in structural form, constructability, and aesthetics, its global use is expanding. Applied in over 400 US highway bridges, it also shows amazing sculptural plasticity in international landmarks like France's Mucem Museum and Shanghai Grand Opera House. UHPC achieves comprehensive breakthroughs from structural strength to architectural aesthetics, redefining modern construction material possibilities.

Carbon emissions in construction originate from component manufacturing, and differ based on architectural design, logistics, and equipment usage. UHPC's lifecycle can reach 100 years, with less material consumption than traditional concrete. Replacing ordinary reinforced concrete with UHPC reduces component thickness, material quantity, weight, and carbon emissions. TCC's UHPC team, not limited to precast methods, developed cast-in-place formulations. The team further integrated 3D printing, fully expanding market applications. Learn more at TCC Sustainable E-Newsletter.



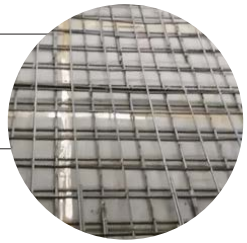
UHPC KT Slab (Precast K-Truss Slab)

- Precast product, eliminating the need for formworkers and floor supports
- Reduce structural net load
- Reduced number of steel bar tying workers & low carbon emissions
- Shortened construction time

VS

Traditional Slabs

- Depression, water accumulation
- Insufficient carrying capacity





UHPC Bricks

- **Grass pavers**
  With resistance to heavy pressure and high durability, allowing the land to breathe
- **Paving bricks**
  High compressive and flexural strengths

VS

Traditional grass pavers & paving bricks

- Depression, water accumulation
- Insufficient load-bearing capacity
- Uneven surfaces & prone to loosening



TCC UHPC Applications



TCC DAKA RRRC Curtain Wall

- TCC DAKA RRRC Curtain Wall
- UHPC EnergyArk
- National Highway Bureau, Zhongli Engineering Office - Roof Waterproofing Project:
  520 square meters of 2 cm thick UHPC was cast on-site, highlighting the material's superior compactness and mechanical properties, replacing traditional base concrete.

Low-Carbon Construction Materials: Key to Reducing Building Embodied Carbon

TCC Actively Engages Industry, Government, Academia

According to UN estimates, 68% of the population will be urban by 2050, with city buildings and public works causing 43% of global carbon emissions. Embodied carbon, from materials, transport, construction, renovation, and disposal, accounts for roughly 35% of this. TCC's low-carbon construction material product line—low-carbon cement, concrete, and UHPC—integrates R&D, process, and application innovations to offer sustainable material solutions. Concurrently, TCC actively dialogues with regulators to drive construction industry decarbonization, accelerating the cement industry's green transformation.

Communication Unit	Key Engagement Focus Areas
European Cement Research Academy (ECRA)	Exchanging latest cement and concrete technology knowledge and research findings, committed to industry sustainability and innovation.
CarbonZero	CIMPOR CTO Berkan introduced CIMPOR's deOHclay innovation to reduce cement manufacturing carbon, aiding 2050 net-zero goals.
Bureau of Energy, Ministry of Economic Affairs	Introduced TK cement industry tech applications with experts, accelerating cement industry energy and resource efficiency.
Industrial Development Bureau, Ministry of Economic Affairs	Shared TCC's net-zero pathway and related industrial applications, helping industries turn challenges into net-zero opportunities.
Building Research Institute, Ministry of the Interior	Discussed mineral admixture use in cement and concrete design and evaluated incorporating low-carbon sustainability goals.
Industrial Development Bureau, Ministry of Economic Affairs	Shared TCC's low-carbon production experience, exchanging views on cement's 2050 net-zero outlook and international energy reduction issues.
Ministry of the Interior	Showcased UHPC products at the low-carbon recycled materials ceremony to promote them to potential customers.

Prioritizing Customer & Market Needs

Share Sustainable Construction Materials Applications

TCC promotes sustainable construction materials applications through "market communication" and "customer promotion," extending to overseas subsidiaries to boost global brand influence. TCC actively joins seminars and sharing sessions, collaborating with government, academia, and low-carbon certification personnel to discuss low-carbon material tech and market trends. We also tailor diverse promotion strategies for clients, proactively briefing group construction firms, large export plants, and renowned local builders. We liaise with supervision units on specifications, aiding client understanding of low-carbon cement's compliance and applications, boosting adoption confidence. TCC actively participates in construction alliances and briefings, sharing success stories to enhance market awareness of low-carbon cement performance and international trends, integrating low-carbon solutions from the design stage to accelerate material adoption.

Invited to the Ministry of Environment's Growth Alliance

The Ministry of Environment plans to introduce a carbon pricing system integrated with the cap-and-trade system. To learn from international experience, the Ministry established the Green Growth Alliance in April 2025, inviting businesses and relevant ministries. TCC was the sole cement company representative invited in the first wave.

Action Spotlight

CIMPOR Participates in Tektónica International Building Exhibition



CIMPOR attended the Tektónica International Building Exhibition in Lisbon, Portugal, in April 2025. The Portuguese Minister of Economy visited its booth. Through an interactive display, CIMPOR showcased its latest innovations and low-carbon solutions, strengthening customer and partner relationships.

Innovative R&D Capacity:
TAF Certified Sustainability R&D Center

To bolster technical capability and competitive advantage in low-carbon construction materials, the Sustainability R&D Center was established in January 2023. It features TAF-certified labs for cement and civil engineering materials, analyzing components, controlling quality, and continuously developing new low-carbon materials, technologies, and products. The R&D Center also expanded third-party certification for Portland limestone (IL) cement, securing CNS 15286 testing capability in Feb 2024. Type IL cement holds carbon footprint certification, with 2025 plans for Ministry of Environment carbon label and Type III EPD. Long-term durability and hydration heat tests are ongoing for future public works. Focus also extends to forward-looking research like 3D printing. Facing labor shortages and stricter environmental rules, the construction industry seeks innovative methods like 3D concrete printing for its efficiency and flexibility. It aims to simplify processes, shorten construction times, reduce labor, and cut mold consumables, lessening environmental and human reliance. CIMPOR also invests in innovative R&D. For details, please refer to Overseas Cement Business.

3D Printing

CIMPOR plans to install large-scale 3D equipment at its Alhandra Plant in Portugal in 2025, developing low-carbon slurry combining calcined clay, slag, white cement, and recycled materials. The standard mortar formula was completed in 2024; more recycled raw materials will be introduced to promote circular economy.



Hoping Plant and NHOA.TCC Jurong UHPC Production Base

TCC's UHPC Production Center demonstrates comprehensive application capabilities. The Hoping Plant applies UHPC technology to building facades, grass pavers, and EnergyArk products. Also, the Jurong UHPC Production Base has begun trial production, capable of mass producing EnergyArk casings. The UHPC Production Center boasts advanced R&D and integrated production capacity, achieving seamless transition from lab innovation to industrial manufacturing.


UHPC Production Center at Hoping Plant

Industrial Academic Publications

Journal	Publication Highlights
Journal of the Chinese Institute of Engineers Vol.97 No.2	**Circular Economy in Cement Industry** The cement industry uses kilns to co-process waste as alternative raw materials and fuels, cutting process carbon emissions and advancing the circular economy. The article outlines domestic and international trends in alternative raw materials and fuels, as well as waste treatment's current status, also briefly detailing TCC Group's co-processing situation.
Journal of Concrete Technology Vol.18 No.2	**UHPC Application in 3D Printing Technology Development** The article introduces basic properties of TCC's independently developed 3D printing UHPC materials, showcasing art installations and products made using 3D printing technology, thus enhancing UHPC's application value.

2.2

Low-Carbon Production Management

TCC is committed to reducing the environmental impact of its product manufacturing processes, actively implementing full lifecycle management and introducing international management systems. Environmental education and training for employees are conducted through certification guidance courses, TCC Lyceum, new employee training, and Town Hall Meetings. These cover topics including energy efficiency, water resource efficiency, and waste reduction. This extends to the TCC Carbon Academy to enhance employees' sustainability awareness and management efforts.

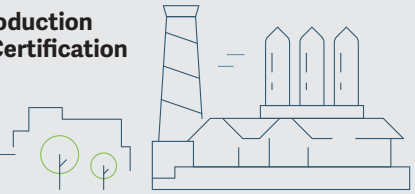
TCC KEY FACTS

100% ISO 14001 Certification Obtained

Environmental Protection Policy

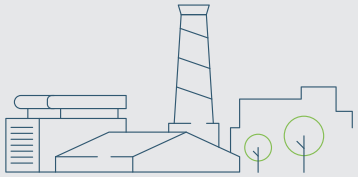
Cement Plants

- ISO 14001 — **Environmental Management**: Taiwan, Mainland China, OYAK CEMENT and CIMPOR
- ISO 14046 — **Water Footprint**: Taiwan, Mainland China
- ISO 14064 — **Greenhouse Gas Inventory**: Taiwan, Mainland China
- ISO 14067 — **Carbon Footprint**: Taiwan
- ISO 46001 — **Water Efficiency Management**: Taiwan
- ISO 50001 — **Energy Management**: Taiwan, Mainland China, OYAK CEMENT CIMPOR (In Progress)
- Alliance for Water Stewardship — **Water Management Platinum Level**: Taiwan
- BS 8001 — **Circular Economy**: Taiwan
- 綠色工廠 Green Factory — **Green Factory Label** / **Clean Production System Certification**: Taiwan



RMC Plants Taiwan

ISO 14001 | ISO 14046 | ISO 14064 | ISO 14067 | ISO 46001 | ISO 50001



Clean Production System of Green Factory Certification: 綠色工廠 Green Factory; BS 8001

Office Taiwan

ISO 14001 | ISO 50001



Environment Management Process

Step 1 /
Conduct Management System Audits & Identify Opportunities

Implement ISO system audits to identify performance improvement opportunities, leveraging international management systems like ISO 50001, ISO 46001, ISO 14001, ISO 14046, and ISO 14064 to pinpoint key enhancement areas.

Step 2 /
Environmental Management Goal Setting

Establish clear goals across key environmental areas, including Energy Efficiency, Water Resource Efficiency, Waste Reduction, Air Pollution Reduction, and Greenhouse Gas Reduction.

Energy
Cement Plants (Taiwan & Mainland China): Join EP100, aiming to increase energy productivity by 50% by 2040 (2016 baseline).

Operational Headquarters: Achieve a 1% annual electricity saving.

Water Resources
Cement Plants (Taiwan & Mainland China): Reduce water withdrawal intensity to 0.000248 million liters/metric ton of cementitious materials by 2030; reduce water withdrawal by 1.2% annually for plants in water-stressed areas.

Taiwan RMC Plants: Reduce freshwater withdrawal intensity for concrete by 0.5% by 2025, 1.5% by 2030, and 3.5% by 2050 (2023 baseline).

CIMPOR: Reduce water withdrawal intensity to 0.0002 million liters/metric ton of cement by 2030.

Waste
Cement & RMC Plants (Taiwan & Mainland China): Achieve a 0.5% annual reduction in household waste.

Step 3 /
Develop and Implement Action Plans

Develop specific action plans for each goal area. Key actions include:

- **Energy & GHG**: Implement energy-saving actions, use clean or renewable energy, and invest in innovation and R&D to reduce energy consumption.
- **Water Resources**: Execute water-saving programs, promote water recycling and reuse, and implement water recycling technology.
- **Waste**: Implement waste reduction actions and recycling programs, and invest in innovative technologies.

Step 4 /
Enhance Employee Capability

Build employee capacity and awareness through targeted programs:

- **Training Courses**: Offer ISO System Certification Training and TCC Carbon Academy to deepen professional knowledge and align with international standards.
- **Awareness Programs:** Utilize platforms like the TCC Lyceum and New Employee Training to deepen sustainability awareness and integrate it into daily work.
- **Leadership Communication**: Conduct Town Hall Meetings, chaired by the Chairman, to communicate the company's sustainability strategy directly to employees.

Step 5 /
Engage with Stakeholders

Communicate environmental policies, requirements, and progress to all internal and external stakeholders. This is achieved through multiple channels, such as:

- **Sustainability Newsletter**
- **Supplier Conference**
- **Product Promotion Events and Conferences**

Note 1: For targets related to greenhouse gases, air pollution, water consumption, CIMPOR energy and waste, please refer to Sustainability Goals and Tracking.

Internal Carbon Pricing & Internal Carbon Trading

In response to the EU CBAM and Taiwan's carbon fee, TCC is implementing an internal carbon pricing system to conduct cost-benefit analysis. The system anticipates carbon cost impacts on operations and investments and is an economic incentive to drive low-carbon investments, enhancing risk awareness for capital expenditure, operational decisions, and reduction initiatives. Additionally, TCC launched an internal carbon trading platform in 2024. By calculating site-specific emission allowances and effectiveness, this platform will strengthen responsibility, foster collaboration, and encourage technological innovation. Also, CIMPOR and OYAK CEMENT established internal carbon pricing based on forecasts from the European Cement Association (CEMBUREAU), IEA, and BNEF. For their 2025 investment sensitivity analysis, both use a projected 2030 external carbon price of EUR 150 per metric ton CO_2e.

TCC is also piloting a water pricing system. From 2025, cement operations in Taiwan and Mainland China will use a water cost model based on each unit's water intensity, regional water risks, and price trends. The goal is to drive water conservation actions through economic incentives. The pricing for Taiwan and Mainland China is (local water price + NTD 3) and (local water price + CNY 0.75) respectively, per m^3 of water withdrawal. For more information on greenhouse gas management, please refer to the Carbon Competitiveness and CH 2.3.

Internal Carbon Pricing	Taiwan	Mainland China
GHG Scopes Covered	100% of cement business's Scope 1 + Scope 2 (including cement plants, RMC plants, and grinding stations)	
Type of Internal Carbon Price	Shadow price	
Pricing Method	Set with reference to recommendations from the 5th Carbon Fee Review Committee in 2024	Set based on IEA's World Energy Outlook Report STEPS scenario and local carbon market prices
Carbon pricing for 2025	NT$500 per Metric Ton CO_2e	CNY 105 per Metric Ton CO_2e

Respond to Green Office Practices and Implement Daily Low-Carbon Management

To implement green office practices and daily low-carbon management, TCC integrates net-zero concepts into daily operations, from procurement and equipment management to office habits. Taiwan and Mainland China offices promote the reduction of single-use items, with priority given to purchasing eco-labeled and FSC-certified materials. Smart energy monitoring and energy-saving facility upgrades are also being implemented. These management processes will be replicated overseas to deepen employees' green awareness.

Key Focus Actions for 2024:

- Strengthening copier control and sending monthly paper usage comparison reports
- Installing smart systems in meeting rooms
- Replacing paper cups with glass cups to reduce single-use items
- Reducing the number of trash cans to decrease the use of garbage bags and plastic consumables
- Installing hand dryers in restrooms to reduce paper towel usage


Outdoor Office Area, TCC C. F. Koo Building

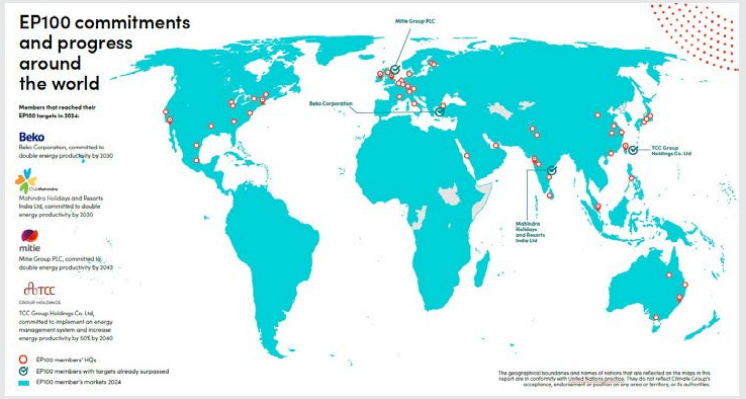
Energy Efficiency Management

All cement plants in Taiwan and Mainland China have implemented the ISO 50001 energy management system, integrated with smart systems, to identify opportunities for improving energy performance and evaluate equipment enhancement plans (please refer to CH 6.1). TCC actively optimizes energy efficiency and autonomous power management, improving energy use through process conservation, energy storage systems, and both self-generated and purchased renewable energy. Furthermore, the installation of waste heat recovery systems and the introduction of flash evaporation technology have enhanced heat and power generation efficiency, reducing external manufacturing power purchases by 20-30%.

	Power Generation by Waste Heat Recovery (million kWh)	Equivalent to Purchased Electricity for Manufacturing Process
Taiwan	79	18%
Mainland China	858	44%

Exceeding Targets!
TCC Listed on EP100 Surpass Map

The EP100 initiative's April 2025 annual report urged businesses to harness energy efficiency's potential. Since joining in 2022, TCC has met its targets for two consecutive years and was listed on the annual Surpass Map. This demonstrates TCC's energy efficiency surpasses international benchmarks, affirming the effectiveness of its sustained investment in energy conservation and governance.



CLIMATE GROUP EP100

Action Spotlight

Suao Plant's Waste Heat Recovery Upgrade Boosts Power Generation by Over 100%



Following renovation completion and grid connection in February 2025, power generation per metric ton of clinker, under normal operation, increased from 14.89 to 32.33 kWh/ton. Control parameters are continuously optimized to minimize purchased electricity.

Self-Generation and Consumption of Renewable Energy to Fulfill Obligations as an Energy Heavy Industry

Rather than relying solely on purchasing renewable energy certificates, TCC pursues a dual strategy of on-site generation and external green power procurement. Globally, TCC is installing solar power systems on rooftops and unused areas at its operational headquarters, plants, and subsidiaries. Concurrently, the company supports the green power market by strategically increasing external procurement annually. In 2024, on-site generation at Taiwan's cement sites totaled 5,736,025 kWh, or 1.2% of their total consumption. The Hoping and Suao plants, designated 'obligated renewable energy users,' fulfilled these requirements ahead of schedule in 2023. In Mainland China, on-site generation reached 20,517,710 kWh. The combined renewable energy usage of TCC's cement operations in Taiwan and Mainland China accounted for 2.1% of total electricity consumption.

Enhancing Energy Resilience and Efficiency with Integrated Solar and Storage

TCC is actively deploying energy storage systems to support on-site power demands and participate in the electricity trading market by regulating peak and off-peak power. During events such as natural disasters or outages, these storage systems can immediately discharge to provide backup power, maintaining the electricity required for essential production processes. In parallel, cement plants in Mainland China and CIMPOR's operations in Portugal are prioritizing a "solar + storage" integration strategy.

By the end of 2025, the total installed energy storage capacity is projected to reach 335.04 MWh across TCC's cement plants in Taiwan and Mainland China, its RMC plants in Taiwan, and the operations of CIMPOR. This includes commissioning behind-the-meter systems at the Hoping (28 MWh) and Suao (11 MWh) plants, featuring black start capability to provide backup power for emergency material discharge into the kiln during sudden outages.

TCC KEY FACTS

Yingde and Guigang Plant
Energy Storage System Capacity 140.96MWh

Annual Operating Costs
Saving
NT$880 million

Green Power Procurement Targets

Since 2025
Taiwan-
Additional 100,000 kWh annually
Mainland China-
Additional 10 million kWh annually



Action Spotlight

CIMPOR Secures EU Funding for On-Site Solar Project in Portugal

CIMPOR received funding from the EU's NextGeneration EU program, via the Portuguese Recovery and Resilience Facility (RRF), for its on-site solar generation project at the Maia commercial center in Portugal. The installation will generate approximately 1,300 MWh annually, cutting CO_2e emissions by 450 metric tons and achieving a 40% power self-sufficiency rate for the site.

Water Resource Management

Although the cement industry is not considered water-intensive, TCC proactively strengthens its water management. Following the Task Force on Nature-related Financial Disclosures (TNFD) framework, TCC identifies its dependencies on surface and groundwater, water flow, and water quality to comprehensively understand resource risks.

In 2024, a priority assessment was conducted on Taiwan's quarry and cement sites. Using the WRI Aqueduct Water Risk Atlas, TCC assessed all locations in Taiwan and Mainland China, identifying three cement plants—Anshun, Guigang, and Huaying—as being in high-risk, water-stressed regions. Key risks for these plants include potential production halts from water shortages (physical risk) and stricter discharge regulations (transition risk). Violations could lead to fines or stoppages with maximum daily losses of up to NT$10.98 million (approx. US$366,000). Poor management could also impact local community and agricultural water supplies.

As this assessment expands to CIMPOR and OYAK CEMENT locations in 2025, TCC will further set risk mitigation targets, implement tiered resource management at its production sites, and begin promoting low-water-impact products.

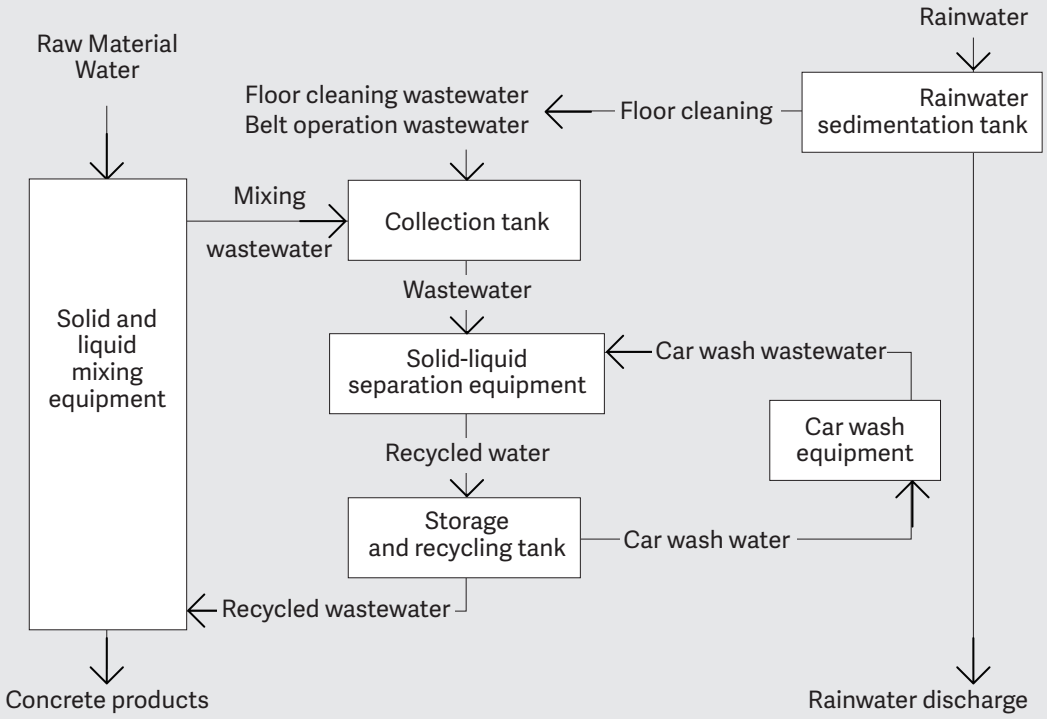
	Scope	Quarries	Plants
Dependencies Ecosystem Services	1 Surface water	HIGH	VERY HIGH
	2 Ground water	HIGH	VERY HIGH
	3 Water flow maintenance	HIGH	
	4 Water quality		LOW

VERY HIGH HIGH MODERATE LOW VERY LOW

Closed-Loop System Achieves Zero Wastewater Discharge in Concrete Production

At TCC's RMC plants, all process water—from mixing, floor cleaning, and belt washing—is treated through sedimentation and separation for reuse in production and equipment cleaning. Rainwater collection facilities are also installed for floor cleaning, with the resulting runoff directed into the same recycling system. This closed-loop approach achieves 100% water resource recycling and reduces dependence on tap water and groundwater.

Water Balance Diagram of RMC Plants



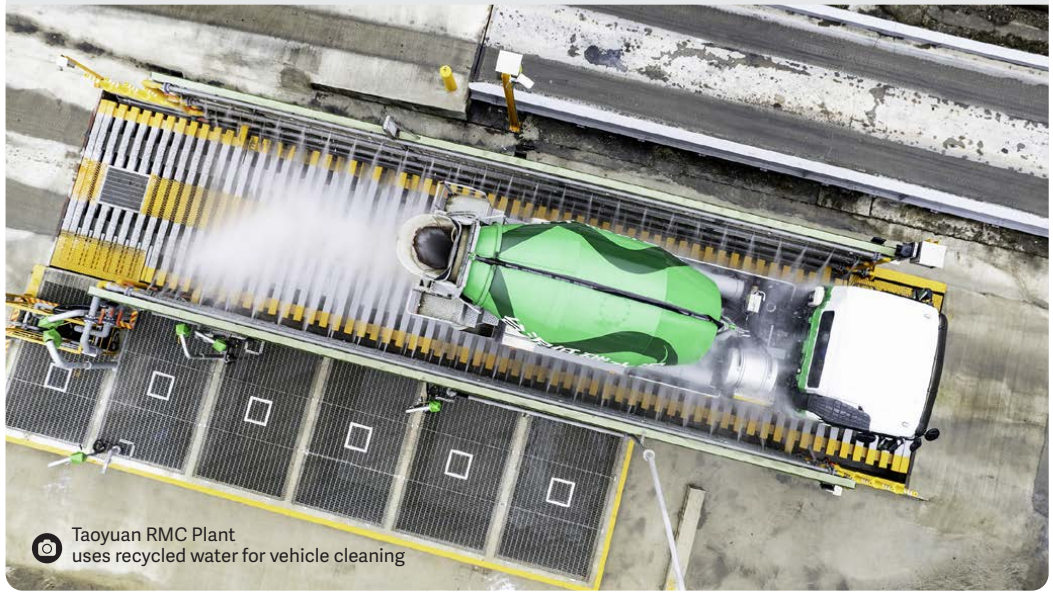
RMC Plant Water Balance Diagram

Water Resource Smart Management

Since 2022, TCC has strengthened water management across its Taiwan and Mainland China cement plants using a dedicated footprint platform. This system monitors water supply, consumption, recycling, and discharge, providing real-time recycling rates. In 2024, Taiwan cement plants surpassed the Water Resources Agency's 30-80% industry benchmark for water recycling rates. Taiwan plants also monitor intake water quality; for example, Hoping Plant sets quality standards for cooling water from the industrial zone and annually tests groundwater. TCC's conservation efforts include rainwater recycling systems and regular maintenance. In Portugal, CIMPOR sites reduce freshwater consumption by using dry cleaning methods and developing water-saving dry-mix mortar alternatives.

To enhance water recycling and pollution prevention, TCC implements localized and digital water management solutions at its plants. Key examples include:

- **Hoping Plant**: Uses a Membrane Bioreactor (MBR) to treat domestic wastewater for reuse in irrigation and site cleaning.
- **Taoyuan RMC Plant**: Deploys a self-developed system that recycles car wash water, removing mortar and solids for reuse in vehicle and site cleaning.
- **CIMPOR Loulé Plant (Portugal)**:
  - Operates a facility that recycles treated domestic wastewater and filtered rainwater for cooling and washing operations.
  - Future plans involve a large-scale pipe replacement and implementing new IoT water meters and abnormal monitoring systems. This will enhance water management efficiency and response capabilities by enabling real-time monitoring and rapid leak detection.



Taoyuan RMC Plant uses recycled water for vehicle cleaning

Wastewater Management

TCC's cement and RMC plants have established water pollution management systems with regular internal and external testing for indicators like COD, SS, and pH to ensure compliance with discharge standards. At cement plants, wastewater from process cooling and domestic sewage is centrally treated to meet Ministry of Environment standards. Compliance is verified through internal monitoring and regulatory inspections to prevent harm to ecosystems and communities. Cement plants in Mainland China achieve 100% zero process wastewater discharge, while plants in Portugal and Türkiye are also fully equipped with treatment facilities. RMC plants operate a closed-loop system where wash water from trucks and equipment is collected, aggregates are separated, and the water is reused in the process. All global operations comply with their respective regional environmental standards.

Incident Response and System Enhancement

Corrective Actions for the Tainan RMC Plant Water Overflow

Following a late-2024 overflow incident at the Tainan RMC Plant, where heavy rain caused suspended solids to exceed standards, TCC immediately reported the event, initiated response protocols, and completed cleanup. By Q1 2025, initial improvements like retention ponds and pre-treatment facilities were completed, followed by comprehensive actions including upgrading the water treatment system, extending risk assessments to other plants, and strengthening early warning capabilities.

Waste Management

TCC's waste management is based on the ISO 14001 environmental system. For in-plant treatment, bottom ash, waste oil, and waste refractory materials are fed into rotary kilns as alternative raw materials and fuels. Shredded employee domestic waste, plastics, rubber, and paper are also utilized as alternative fuels. Off-site, qualified contractors recycle valuable metals like scrap iron for reuse in steel plants. Based on these management regulations, TCC's global operations are setting their own waste reduction targets to enhance group-wide resource recycling efficiency.

OYAK CEMENT Obtained Türkiye's Zero Waste Certification

Nine OYAK CEMENT-managed cement plants and one RMC plant have earned zero waste certification from Turkish authorities by implementing comprehensive waste management. This includes on-site sorting, tracking, and recycling, alongside employee education and source reduction initiatives like packaging redesign and material substitution. These efforts maximize reuse and minimize outsourced waste disposal.

E One Moli Corporation Plans to Implement UL 2799 Zero Waste to Landfill Certification

To achieve UL 2799 certification, which emphasizes waste transparency and recycling rates, the E One Moli Corporation (Tainan Plant) will first inventory waste sources, classify materials, and establish recycling indicators. Subsequently, these classifications and recycling paths will be optimized to progressively achieve the goal of zero waste to landfill.

Action Spotlight

INVESTMENT IN INNOVATION TO MINIMIZE WASTE

Food Waste Processing Center

Yingde Plant

The Yingde Plant operates an integrated center that processes 8.7 metric tons of food waste from its employee cafeteria each month. This process yields three main products: solid matter is fermented into 1.25 metric tons of granular organic fertilizer; wastewater is processed into liquid fertilizer for greening the plant and its quarry; and recovered oil is refined to make soap, hand wash, and crayons. Beyond its internal operations, the center also recycles food waste from nearby villages, providing fertilizer back to the community, thereby addressing both waste reduction and social inclusion.



Food Waste Becomes Nutritional Fertilizer for Happy Farm

Hoping Plant

In 2021, the Hoping Plant installed food waste processing equipment to recycle waste from TCC DAKA and nearby food stalls. Using bacterial decomposition, the waste is converted into soil improvement materials and provided free of charge to local villagers for agriculture or gardening. The plant established the 'Happy Farm,' inviting local families to plant crops and experience the results of this recycling firsthand. This hands-on initiative teaches residents about the circular economy and environmental sustainability. From 2020 to the end of 2024, the project received a cumulative investment of NT$24.35 million.

Air Emissions Management

TCC employs a range of advanced technologies across its global operations to manage and control air pollutants. Key measures include:

Gaseous Pollutant Management

- Installation of Selective Non-Catalytic Reduction (SNCR) denitrification equipment across sites in Taiwan, Mainland China, OYAK CEMENT, and CIMPOR Portugal.
- Utilization of low-sulfur coal in Taiwan and Mainland China to reduce sulfur oxide emissions.
- Deployment of Low-NOx burners in Taiwan, Mainland China, and at CIMPOR sites in Portugal and Ivory Coast.
- Use of multi-stage combustion equipment in Taiwan, Mainland China, and CIMPOR Portugal.

Particulate Pollutant Management

- Continuous optimization of bag filters to enhance dust collection efficiency in Taiwan, Mainland China, and OYAK CEMENT.
- Implementation of enclosed transport systems to minimize fugitive dust emissions in Taiwan, Mainland China, and CIMPOR Ivory Coast.
- Ongoing optimization of hybrid systems combining bag filters and electrostatic precipitators for kilns in Taiwan and Mainland China.
- Installation of highefficiency electrostatic precipitators at OYAK CEMENT.

Continuous Automatic Monitoring of Air Pollutants

TCC has installed Continuous Emission Monitoring Systems (CEMS) at its cement plants in Taiwan, Mainland China, OYAK CEMENT, and at CIMPOR sites in Portugal and Ivory Coast. To enhance transparency, the CEMS in Taiwan and Mainland China are linked in real-time to local environmental agencies for comprehensive stack monitoring.

Air quality stations are established in surrounding communities in Taiwan, Mainland China, and OYAK CEMENT (Türkiye) to enable rapid emergency response. Independent verification is also conducted via quarterly third-party air quality testing and semi-annual environmental impact assessments to ensure full regulatory compliance.



Enclosed Corridors, Hoping Plant

Hilltop Platform Mining Combined with Enclosed Corridors to Reduce Dust Dispersion

The Hoping Plant extracts limestone using a hilltop platform mining method combined with a vertical shaft transport system. Both crushing and transportation within the mine occur inside tunnels, preventing noise and dust pollution, significantly reducing environmental impact, and ensuring the safety of transport personnel. After being processed by the vertical shaft and crusher, the limestone is transported directly to the plant via enclosed corridors, which reduces approximately 1,600 diesel truck trips daily and cuts annual carbon emissions by about 23,000 metric tons.

Transportation Management

First Company in Taiwan to Use Electric Tractors for Cement Transportation to Reduce Scope 3 Carbon Emissions

TCC and its subsidiary, Taiwan Transport & Storage, began using electric tractors for cement delivery in April 2024, expecting a 32% carbon reduction. Its ready-mix concrete plants and subsidiary Feng Sheng are replacing diesel mixers with eco-friendly models, reaching 92% and 57% adoption respectively by the end of 2024. TCC continues to expand its green fleet, currently operating 2 electric tractors, 2 electric heavy-duty trucks, and 1 patented electric compressor truck, with plans to add 10 more electric tractors and 4 electric trucks by 2025.

Action Spotlight

Fully Adopt Electric Tractors by 2025

Guigang Terminal

Through offering 'priority delivery rights', Guigang Plant encourages suppliers to participate in electrification by introducing 60 electric tractors on the 38-kilometer delivery route from plant to terminal. This has reduced costs by 15% and achieved an 87% annual carbon reduction per vehicle compared to diesel vehicles.



Baisha Port, Guangxi

Actively Responding to the International Maritime Organization's (IMO) Emission Strategy

Ta-Ho Maritime Targets 40% Carbon Reduction by 2030

TCC subsidiary Ta-Ho Maritime exceeds IMO requirements by equipping all cement vessels with shore power. The upcoming TAHO COMPLIANCE eco-vessel (2025) is estimated to achieve a 23.7% carbon reduction below EEDI Phase I using an intelligent management system and enclosed technology. The bulk carrier fleet also surpasses IMO's EEXI and CII standards, with 86% achieving A-grade. Ta-Ho continually reduces EEOI carbon intensity via AI shore power and smart routing. Full compliance with the Ballast Water Management Convention protects marine ecosystems, leading to the sterilization of 2.367 million metric tons of ballast water and offloading of 611 metric tons of waste oil to qualified facilities.

- Carbon reduction for cement vessels exceeded 2,300 metric tons.
- Installing Propeller Boss Cap Fins (PBCF), optimizing hull design, and route planning achieved over 2% fuel savings.
- Retrofitting 2 bulk carriers with high-power LED lighting saved over 208,000 kWh of electricity.
- During dry-dock maintenance, 6 vessels were fully coated with 11,304 liters of new AFS-compliant, energy-saving paint. Free of organotin, the paint prevents marine bio-adhesion, reducing navigation resistance for a 3% fuel saving.

Patented Electric Compressor Truck Deployed

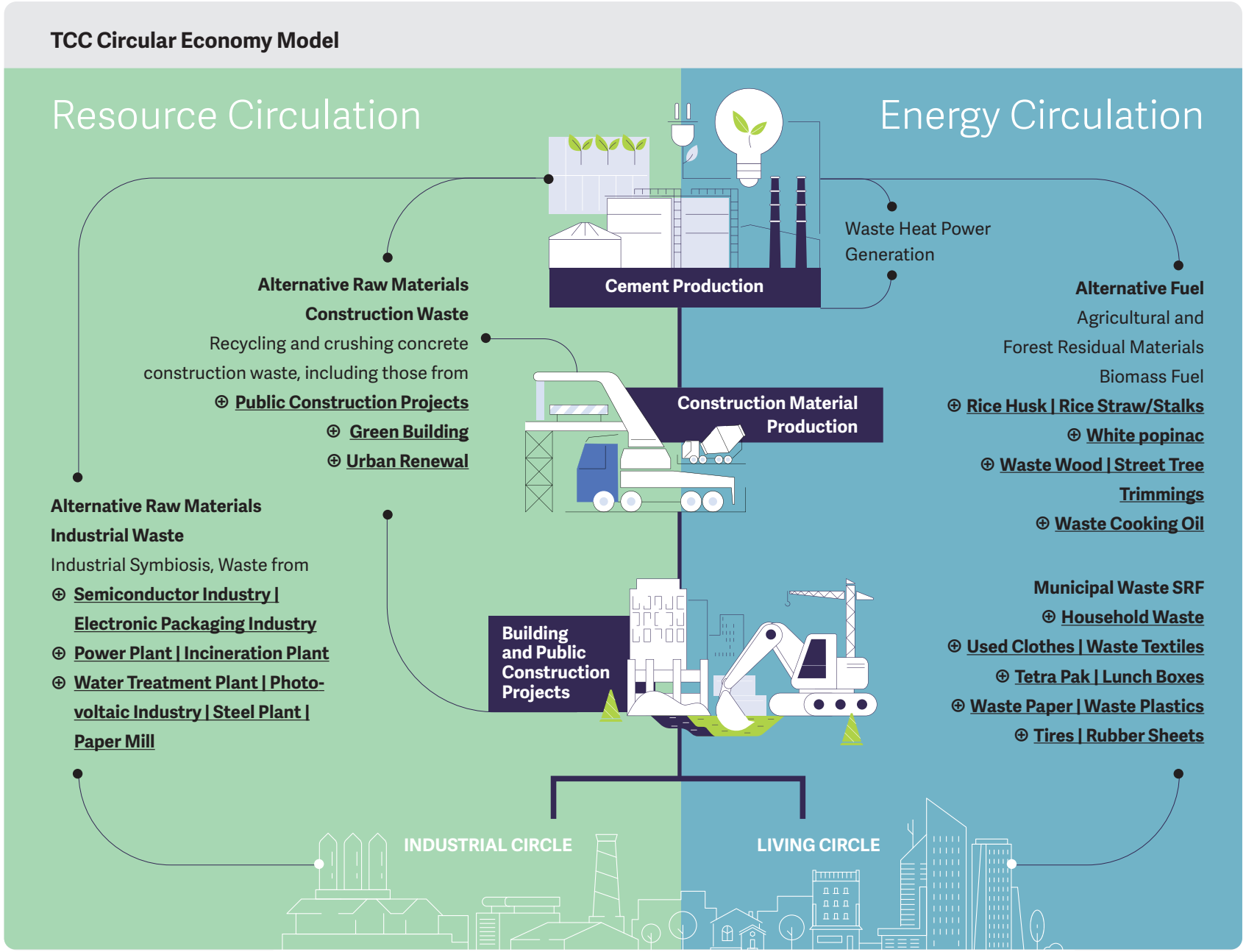
TCC's subsidiary, Taiwan Transport & Storage, developed a patented electric compressor truck, licensed in 2024, which uses an independent permanent magnet synchronous motor (PMSM) to power its compressor. It now transports SRF (Solid Recovered Fuel) for the Hoping Plant and external clients.

2.3

Resource Recycling

The co-processing technology used in cement kilns, known as the venous industry, detoxifies waste and enables the circular use of resources. According to a research report by the WBCSD, cement kilns, with an average temperature above 1,300˚C, can break down dioxins that incinerators are unable to process. They can also convert most human-generated waste into renewable resources that substitute for cement raw materials and fuels, thereby reducing both carbon emissions and fossil fuel consumption.

TCC Circular Economy Model



Alternative Raw Materials, Fuels, and Clinker

The GCCA states that alternative raw materials and fuels are fundamental to the cement industry's transformation, enabling a circular production model that reduces natural resource consumption. Utilizing these materials is a key method for reducing carbon emissions in clinker and cement manufacturing. TCC actively develops and applies diverse alternative materials, considering the geographical characteristics, industrial, and regulatory structure of each plant location, and collaborates with local governments and enterprises to secure stable material sources for trials. Furthermore, reports from the IEA and WBCSD identify reducing the clinker-to-cement ratio as another key decarbonization strategy

Accordingly, TCC incorporates materials like limestone, volcanic ash, and kaolin into cement products, guided by local regulations, permits, and market demand. For 2024 usage data in Taiwan, Mainland China, and at our CIMPOR and OYAK CEMENT subsidiaries, please refer to CH6.1 ESG Data Sheet. However, our cement plant sites in Taiwan must adhere to CNS 61, where chloride ion limits are stricter than global cement standards. These regulations hinder efforts to effectively raise the thermal substitution rate for alternative fuels or expand their use. Consequently, while developing material sources, TCC actively engages with regulatory bodies to discuss the feasibility of adjusting these CNS 61 chloride limits.

Low-carbon and Circular Economy Engagement Initiatives

- Adjustment of the chloride ion limit in the CNS 61 Portland Cement standards issued by the Bureau of Standards, Metrology and Inspection.
- Revision of the Public Construction Commission's Construction Specification.
- Matters related to the use of alternative fuels in coordination with the Ministry of Environment.
- Participate in discussions with the Ministry of Environment's Climate Change Agency to provide a definition for low-carbon cement.
- Participated in review meetings for draft amendments to the Environmental Protection Administration, Executive Yuan Guidelines for the Promotion of Carbon Footprint of Product Management.
- Supported the establishment of Green Factory Evaluation Criteria by the Industrial Development Administration, MOEA.

Action Spotlight

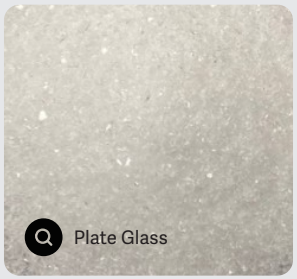
Alternative Raw Material

Waste Glass Fiber

Waste glass fibers from PCB manufacturing cannot be directly recycled as glass raw materials due to their irregular dimensions and surface contaminants. To address this, TCC is collaborating with PCB manufacturers to develop technology for using this waste fiber as an alternative raw material, with the goal of applying for reuse permits by year-end 2025.

Glass Powder

To mitigate potential shortages of common supplementary cementitious materials (SCMs) like fly ash and slag powder, developing new materials is crucial. Recycled and ground glass, a silico-aluminate material, can function as a pozzolanic SCM. TCC secured the related patents in 2025.


Plate Glass


Waste Container Glass

To address resource scarcity, TCC implements a circular economy. Materials rich in silicon, aluminum, iron, and calcium can be potential raw materials for cement production; therefore, waste from other industries can be reused. In concrete, we also substitute cement with slag and fly ash, reducing both material use and carbon emissions.

Extensive testing is required to stabilize alternative fuels due to their varying characteristics like calorific value and moisture. Suao Plant and the Industrial Technology Research Institute jointly completed the construction of a "Cement Kiln High Calorific Value SRF Co-firing and Clean Integration System" in 2023. This system is now undergoing performance verification. Successful SRF/wood chip tests in March 2025 defined an optimal mixing ratio.

TCC is actively developing clinker alternatives. The Cape Verde plant has abundant local pozzolanic volcanic ash. This resource enables the production of CEM II 42.5 cement, which replaces traditional clinker and its 750–800 kg/metric ton of CO_2 emissions, achieving carbon reduction without compromising strength. The enduring strength of the ancient Roman Pantheon built in 128 CE, suggests pozzolanic volcanic ash is a key to concrete's longevity. Additionally, kaolinite from Ghana serves as a clinker substitute that also improves energy efficiency, as it can be calcined at lower temperatures. The Ghana plant is scheduled to commence production by year-end 2025.

In 2025, TCC's Taiwan plants will also assess building a slag powder storage system to ensure stable supply and utilization. For products developed using alternative clinker, please refer to Carbon Competitiveness and CH2.1.

TCC KEY FACTS

2024 Alternative Fuel Usage Status	
Waste textiles	In continued use
Waste paper	
Waste plastics	
Waste wood	
Construction waste	
Rubber sheet	
Leucaena wood waste	
Non-hazardous oil sludge	Obtained case-by-case reuse application

2024 Alternative Clinker Usage Status	Plant/Facility
Limestone	Taiwan/Mainland China
Fly ash	Taiwan/Mainland China
Furnace slag powder	Taiwan
Calcined clay	Mainland China/Ivory Coast /Cameroon
Volcanic ash	Cape Verde
Kaolinite (requires calcination at 700-900°C)	Ghana Quarry

Action Spotlight


Chlorinated Ash Washing System At Guangan Plant

Alternative Raw Material

In 2024, the Guangan Plant implemented a fly ash washing system to remove water-soluble chloride ions. The washed ash is reused as an alternative raw material in raw meal, while the process yields sodium and potassium chloride by-products, maximizing resource use. Since 2021, the Jurong Plant has also utilized its "Fly Ash Water-washing for Dechlorination (FWD) with Zero Liquid Discharge and Salt Separation" technology to process municipal waste incineration fly ash for local power plants.

Alternative Fuel Fire Control

Rising global wildfires, intensified by drought and high temperatures, threaten ecosystems and industrial operations. For the cement industry, which heavily relies on biomass and solid recovered fuels (SRF) as alternative fuels, this escalates the risk of fire or spontaneous combustion, particularly when exposed to high temperatures, low humidity, or electrical anomalies. TCC mitigates this with rigorous fire protection standards, implementing temperature monitoring, water spray cooling, and automatic extinguishing systems from intake to feeding. For immediate detection, twelve plants in Mainland China and Taiwan's Suao Plant use infrared monitoring and sensors integrated with automatic sprinklers.

Cross-Industry Circular Symbiotic Network

Supporting Waste Resource Utilization Across Various Industries

Cement kilns feature high temperatures, long retention times, and high turbulence, ensuring complete combustion of materials without residue or dioxin formation. Leveraging these characteristics, TCC offers co-processing services to help various industries manage hard-to-treat waste. These industries include power, construction, steel, semiconductor manufacturing and packaging, chemical fiber, paper, waste incineration, and environmental recycling. By co-processing waste as alternative raw materials and fuels, TCC collaborates with industry, government, and local communities to build a circular economy. In 2024, TCC co-processed industrial waste in Taiwan, Mainland China, Türkiye, Europe, and Cameroon. For details, please refer to CH 6.1 Data Table.

TCC KEY FACTS

Total industrial waste treatment volume reached

9,157,049.3 metric tons

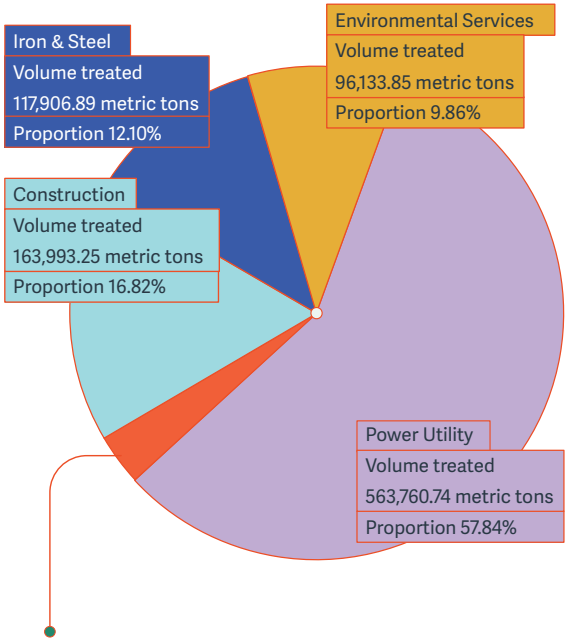
Taiwan plants processed a total of 974,744.29 metric tons

Mainland China processed a total of 7,475,785.32 metric tons

OYAK CEMENT & CIMPOR
processed a total of 706,520 metric tons

Taiwan — Source of Waste

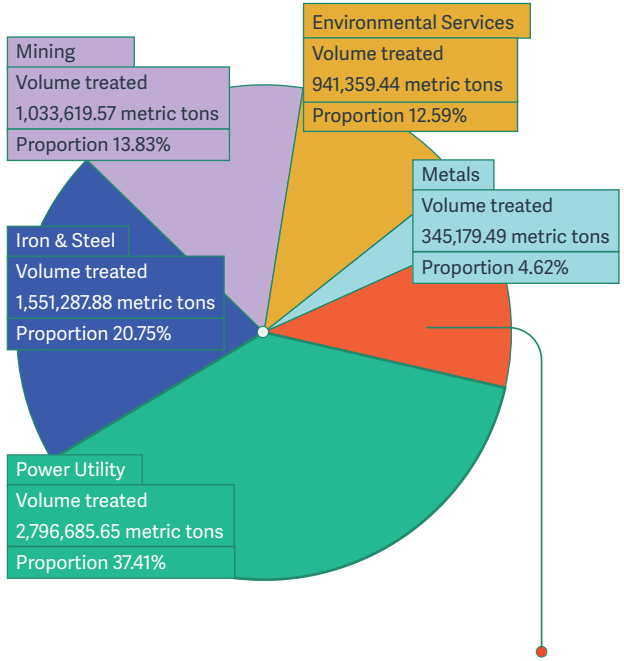
Industry Proportion %



Source Industry of Wastes	Volume treated (metric ton)	Proportion
Semiconductor	14,379.35	1.48%
Waste Incineration	5,671.55	0.58%
Self-treated	4,079.71	0.42%
Petrochemical	3,744.87	0.38%
Metals	2,782.59	0.29%
Paper	1,957.86	0.20%
Semiconductor Assembly	214.92	0.02%
Water Treatment Plant	118.71	0.01%

Mainland China — Source of Waste

Industry Proportion %



Source Industry of Wastes	Volume treated (metric ton)	Proportion
Chemical	307,392.28	4.11%
Construction	294,514.90	3.94%
Paper	172,163.00	2.30%
Tire	33,063.35	0.44%
Agroforestry	519.76	0.01%

Urban Sustainability Solution -
Household Waste Resource Utilization

Cities face two major waste challenges on the path to net-zero: construction and household waste. A 2021 National Oceanic and Atmospheric Administration report showed the largest atmospheric methane increase in 40 years. Methane's warming potential is 27.9 times that of carbon dioxide. Over 150 countries have signed the Global Methane Pledge, acknowledging landfills as a major methane source. In 2023, TCC launched TCC DAKA RRRC, Taiwan's first facility combining a cement kiln and gasifier to process local waste. It helps Hualien County process up to 200 metric tons of household waste daily, with the generated heat replacing some kiln fuel. The residual ash from gasification is also reused as a raw material in cement. TCC's cement plants in Mainland China collectively process over 600 metric tons of waste daily. TCC also uses its core cement expertise to provide waste treatment services that help local governments address methane pollution from landfills. To strengthen its material supply chain and cost control, TCC established a dedicated environmental technology business in Mainland China to secure material sources.

TCC KEY FACTS

2024 TCC Household Waste Co-processing Status (Unit: metric ton)

Plant/Facility	Household Waste Co-processing Volume	Reduced Methane Emissions
TCC DAKA RRRC	41,420.77	2,071.04
Shaoguan Plant, Guangdong	6,771.35	338.57
Anshun Plant, Guizhou	62,788.80	3,139.44
Jingzhou Plant, Hunan	41,828.10	2,091.41
Total	152,809.02	7,640.46

Action Spotlight

Household Waste Disposal Expanding Alternative Fuel Applications

Jingzhou Plant



The household waste treatment equipment at the Jingzhou Plant in Hunan was commissioned in September 2022, collecting household waste from townships around Huaihua City through a professional fleet. To further enhance the efficiency of waste resource utilization, plans are underway to introduce screening equipment in 2025, employing cyclone separation technology to efficiently extract combustible materials for use as alternative fuels. During the initial construction phase, the Jingzhou Plant reserved additional processing capacity to enable future expansion of its service areas to include municipal waste from Tongdao County and Huitong County.

Full Life Cycle Service for Buildings — Construction Waste Solutions

"We are currently dealing with astronomical figures in handling construction waste after demolition, and the handling is not adequate. In the future, what we hope to do is to recycle and reuse all the ready-mixed concrete after building demolition, which will not only reduce carbon emissions but also will not affect the strength quality."
--Chairman Nelson An-ping Chang

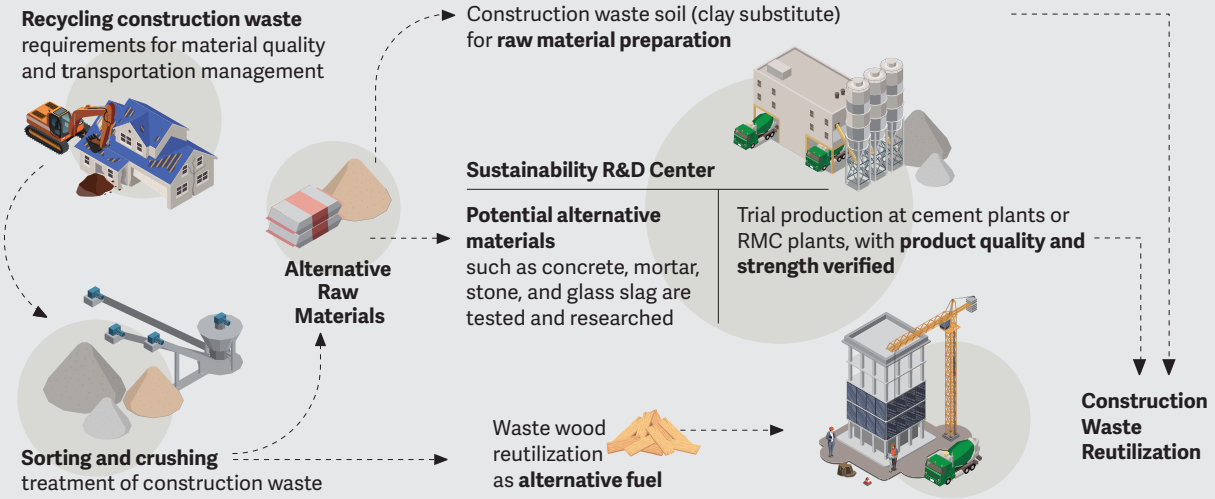
Taiwan generates over 2.1 million metric tons of construction waste annually (2022), with many recyclers unlicensed, making legal disposal a government priority. TCC addresses this by reusing construction waste (e.g., soil, wood) as alternative materials and fuels in its Taiwan and Mainland China plants. In 2023, TCC launched a new treatment project in Taiwan, completing trials by late 2024 and receiving approval for 12,000 metric tons/month, pending final permit. Also in 2024, Yingde Plant partnered with its municipal government to recycle urban renovation waste into materials for cement and roads through sorting, crushing, and analysis—establishing a circular model meeting all quality, strength, and emission standards.



Permeable concrete

Note 2: Reference: PTS News (2023)
https://news.pts.org.tw/article/668911

Construction Waste Disposal Process



OYAK CEMENT and CIMPOR Construction Waste Research and Development

After the magnitude 7.8 earthquake in 2023 that collapsed 300,000 buildings, Türkiye's Ministry of Environment invested in crushing and screening facilities for reconstruction. In 2024, OYAK CEMENT added auxiliary equipment to enhance processing efficiency, aiming to use 100% recycled aggregates from construction waste in concrete production, with full operations by end-2025.

CIMPOR's central laboratory in Portugal is developing technologies to turn construction waste into recycled concrete matching traditional performance. It's also advancing Prior Carbonation of concrete fines and by-products to create carbon sinks. Successful large-scale validation will accelerate recycling innovations in concrete, SCMs, and artificial aggregates.

TCC KEY FACTS

Construction Waste Processing Volume

Excluding existing alternative raw materials and fuels such as construction waste soil and waste wood

Taiwan Trial
3,500 metric tons

Yingde Plant (Guangdong)
21,832 metric tons

chapter 3

Energy Transition

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7 AFFORDABLE AND CLEAN ENERGY

Corresponding SDGs



TCC C.F. Koo Building's
Solar Charging & Storage Integrated system

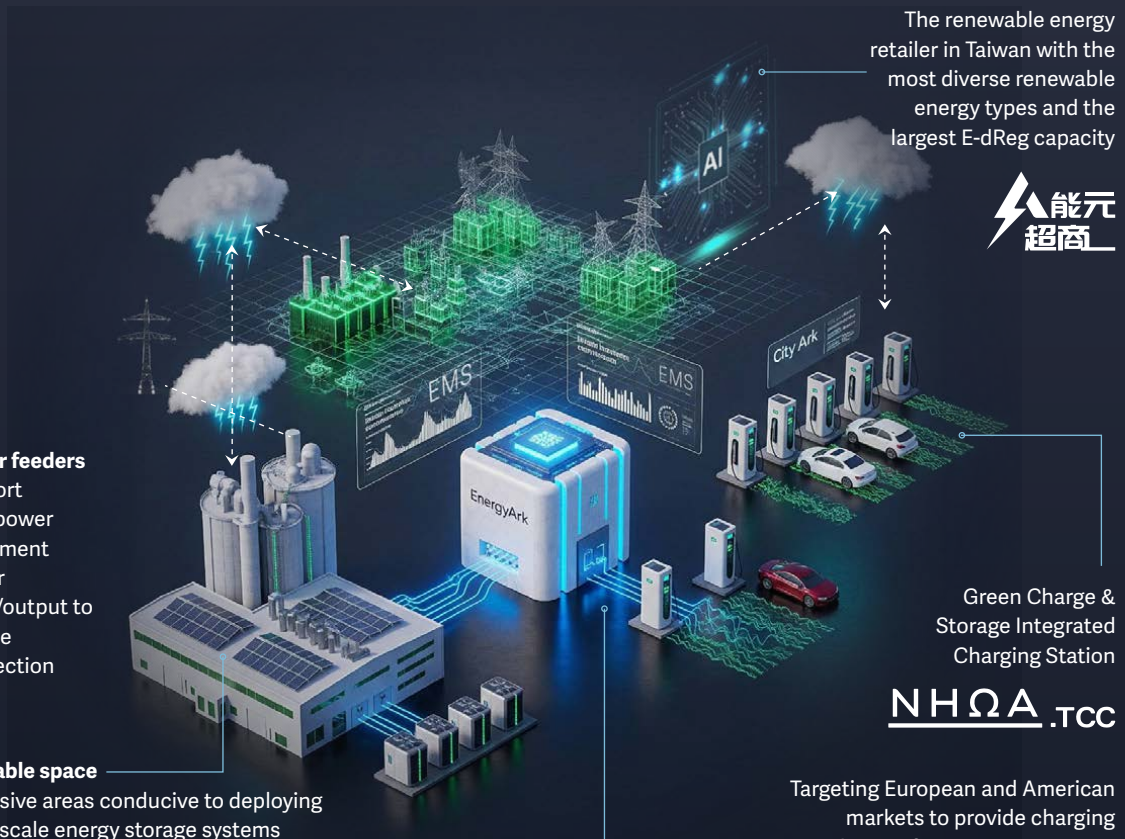
Cement and Power Integration Leading Global Markets

There can be no uncertainty in energy! High temperatures are inherent to the cement production process, so the managing and balancing of fire is a core competency TCC has honed for decades
---Chairman Nelson An-ping Chang

TCC leveraged its cement expertise to enter the energy sector, developing fire- and weather-resistant UHPC for EnergyArk storage cabinets. By integrating experience in batteries, storage, and power systems, TCC provides the stable, safe energy infrastructure cities urgently need.

Cement Plants as the Optimal Application Sites

Cement plants, with dedicated land and high-voltage feeders, are well-suited for energy storage to support peak shaving, demand response, and electricity trading. By aligning production with load management, they become regional energy hubs. Charging & Storage Integrated Charging Station reduce peak loads and costs, while data platforms and AI enable smart energy management, including price prediction and equipment monitoring.



The renewable energy retailer in Taiwan with the most diverse renewable energy types and the largest E-dReg capacity

能元超商

Power feeders
Support high-power equipment power input/output to reduce connection costs

Available space
Extensive areas conducive to deploying large-scale energy storage systems

Controllable loads
Controllable loads that can participate in demand response according to grid requirements

Green Charge & Storage Integrated Charging Station

NHOA .TCC

Targeting European and American markets to provide charging solutions for various scenarios.

atlante

Providing integrated services for green electricity, energy storage equipment, energy management, charging, and smart microgrids

NHOA .TCC

Global Tier 1 Energy Storage Supplier

NHOA ENERGY

TCC GROUP HOLDINGS

Building Urban Grid Stability through Distributed Energy and Virtual Power Plant

TCC centers its operations on virtual power plants. EnergyArk systems and fast-charging stations offer safety and urban adaptability, supporting load balancing, black start, and islanded operation. By integrating electricity trading and fast-charging services, it helps ease peak demand and support microgrid operations.

Comprehensive New Energy Integration Solution

TCC, as a virtual power plant operator, offers versatile energy integration solutions across user types and continually refines its product portfolio with modular EnergyArk systems tailored for diverse applications.

- Energy Storage
- Electricity Trading
- Charging
- Renewable Energy

Tech Plants & Factories

Backup Power:
During emergencies, a black start or uninterruptible power system mode is used to stabilize factory grid and reduce power outage risks

Energy Storage Peak Shaving:
Peak loads are regulated and contract capacity is reduced to help save electricity costs and additional grid charges.

Launched power service solutions offer 10% discount on peak electricity rates to help large power users reduce electricity costs and eliminate the investment burden of energy storage.

Charging Station Operators

Low-Carbon Fast Charging:
Green Charge & Storage Integrated Charging Station energy storage with EV chargers to ensure stable fast charging and deliver low-carbon charging services.

One-Stop Smart Management:
Charging and storage equipment is monitored, managed and maintained centrally, providing real-time charging and operational performance settlement

Save Contract Capacity Costs:
Energy storage is installed to reduce charging pile contract capacity, equivalent to saving about 50% in costs

Low-carbon Buildings

Pure Green Virtual Power Plant Towards RE100:
The smart energy management platform integrates green power and energy storage to increase green power usage.

AI Dispatch Driving EV100:
Integrated charging stations with energy storage meeting EV100 standards are established to achieve low-carbon transportation transformation

Grid Side

Distributed Power Stabilizes Grid:
Modular design enables quick installation and scalability, reducing the impact of intermittent renewable energy to ensure reliable Electricity supply

Participate in Power Auxiliary Service Trading: Energy storage systems respond quickly, can adjust grid frequency effectively over long periods, and supply power according to dispatch needs, reducing national grid resource waste

3.1

Energy Storage
Key to Energy Transition

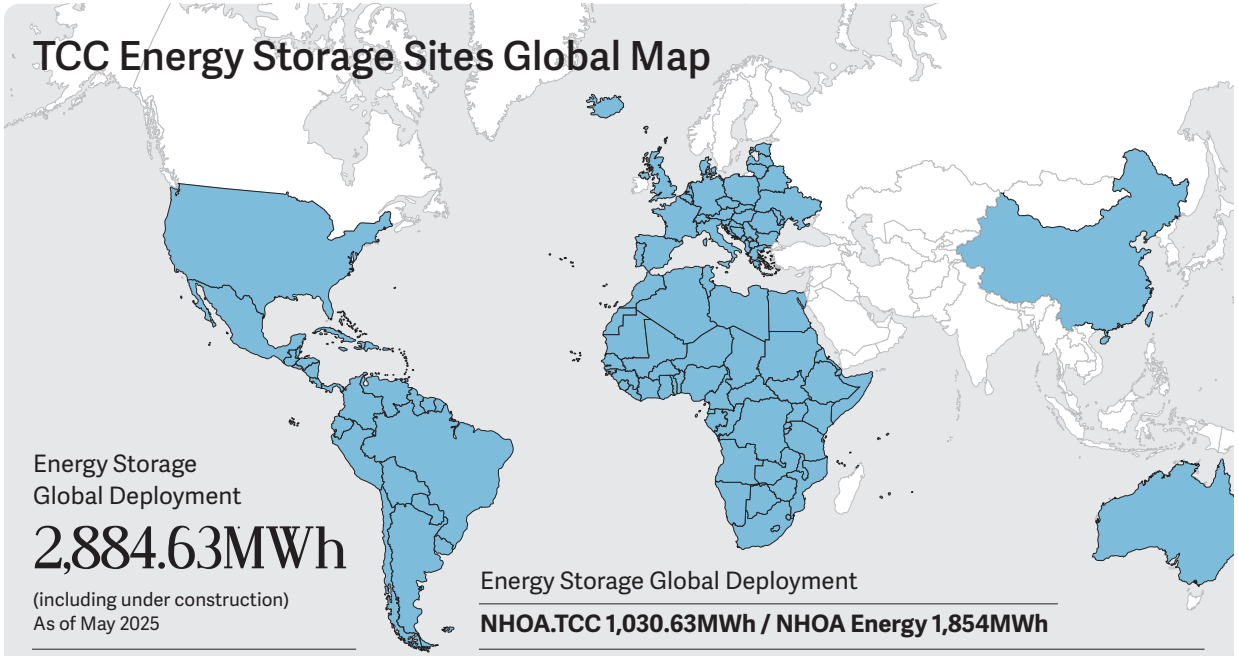
Energy storage is crucial in stabilizing energy transition. The International Energy Agency (IEA) indicates that global energy storage capacity needs to increase by 1,500GW before 2030 to regulate green power fluctuations. Recent large-scale power outages in Spain and Portugal further highlight the urgency of this challenge. TCC established NHΩA.TCC in 2020, and in 2021 acquired European EngieEPS which was renamed to NHΩA, integrating global energy storage technologies. Positioning itself as a virtual power plant operator, it focuses on urban small-scale energy storage scenarios, building distributed power systems across countries to accelerate global energy transition.

NHΩA is derived from the name NOAH of Noah's Ark, symbolizing hope for emerging from disaster and the creation of a new era. The lines beneath NHΩA's logo represent a new horizon, while the O is replaced by the Greek letter Ω, resembling a rising sun. Ω is also the unit of resistance in Ohm's law related to electricity. Facing the horizon of new green energy, NHΩA brings a new beginning and mission, revitalizing the energy business brand.

NHΩA.TCC NHΩA ENERGY

NHOA.TCC NHOA Energy

TCC Energy Storage Sites Global Map



Energy Storage Global Deployment

2,884.63MWh

(including under construction)
As of May 2025

Energy Storage Global Deployment

NHOA.TCC 1,030.63MWh / NHOA Energy 1,854MWh

America

NHOA Energy Expansion of the microgrid in California for ANZA Electric Cooperative



Europe

NHOA.TCC First European Virtual Power Plant At A.Roma Hotel In Rome, Italy



Taiwan

NHOA.TCC's Latest Energy Storage Site – TCC Hualien Plant



Mainland China

NHOA Energy TCC Yingde Plant, the Largest Energy Storage Site in Mainland China's Cement Industry



Action Spotlight

Strategic Deployment In Mainland China's Urban Power Grids



NHΩA.TCC Energy Storage Team

To meet Mainland China's strict GB/T standards for energy storage safety and grid stability, NHOA.TCC launched a new EnergyArk for high-power charging, urban centers, and industrial users. Integrating solar-charging-storage systems, with the first station established at Operations Center in Hangzhou.

Hangzhou Operations Center- TCC C.F. Koo Building uses a 6.18MWh EnergyArk and an 824 KWh Solar Charging & Storage Integrated system, with 54 low-carbon fast chargers. The storage system powers chargers, building operations, and emergency backup, achieving peak shaving and valley filling. A 16.6 MWh system will follow at Jurong plant for solar stabilization and electricity trading. NHOA.TCC will also establish an Ultra-High Performance Concrete (UHPC) factory in Jurong, producing low-carbon EnergyArk cabinets in partnership with local suppliers to expand the market.



TCC C.F. Koo Building uses NHOA.TCC EnergyArk-1000 energy storage cabinet, the illustration on the cabinet was created by China Academy of Art, themed on "Growth." It depicts a young girl and a tree growing together toward a better future

Innovative Energy Storage Leasing Service

In 2024, NHOA.TCC launched energy storage cabinet installations and an innovative pay-as-you-go leasing model. By deploying storage systems at Volkswagen dealership charging stations and partnering with Energy Helper TCC Corporation to support Taipower's ancillary services, the initiative helps reduce peak electricity costs and cut carbon emissions — achieving over 40 metric tons of annual carbon reduction per station.

NHOA Energy Storage Deployment Strengthens Global Market Leadership Position

In 2024, NHOA received AUD 87 million in performance bond support from BNP Paribas and Italian insurance and financial group SACE.

- **Asia:** Total online capacity exceeds 550MWh, with expected annual power generation to reach approximately 1000MW
- **Europe:** Completed a 50MWh energy storage system for ERG Power in Italy, supporting wind farms in Sicily. Also collaborated with Statkraft, Europe's largest renewable energy producer, to provide 113MWh battery storage services for UK grid stabilization. Partnered with Spanish power companies to build Southern Europe's largest transmission asset (SATA) projects with 140MW and 105MW capacity, demonstrating solid strength in European green energy deployment
- **Oceania:** In 2024, successfully delivered the 238.5MW/477MWh Blyth Battery in Australia for Neoen, stabilizing South Australia's power grid and providing 70MW of renewable power to BHP

Patented EnergyArk Provides A Secure Home For New Energy



EnergyArk™

The safety of lithium battery storage systems has raised growing concern. In response, NHOA.TCC developed the EnergyArk cabinet with 2-hour fire resistance at 1,050°C, a thermal runaway system capable of injecting 9,000 liters of water in 5 minutes, and a 24/7 EMS smart monitoring platform. With triple-layer protection covering materials, structure, and systems, it ensures both efficiency and safety.

FIREPROOF & EXTINGUISHING GUARANTEE	Fireproof and Explosion-proof Multi-Level Anomaly Detection Fire Suppression Assurance Flood Barrier
TEMPERATURE & WEATHER RESISTANT	Suitable for a wide range of environments Low thermal conductivity Low energy consumption Low carbon emissions, high durability
FLEXIBILITY & TENACITY	Single-unit modular design Flexible modular integration Suitable for a wide range of applications
COMPREHENSIVE PROTECTION	24/7 EMS system monitoring Comprehensive 24/7 after sales service Product insurance

Patents for movable cabinet and energy storage device: I813064, I800157, TW111145031, TW111142615, TW111130061, TW110142301, TW111138119

EnergyArk-1000 received Carbon Footprint Verification in 2025
Cabinet: CNS12514-1&-8 (2HR 1000°C Fireproof)
System Certification: IEC62933-5-2, UL1642, UL1973, UL9540A, IEC62619, IEC62477-1, UN38.3, UL9540

According to Taiwan's 2050 Net-Zero Emissions Pathway and Action Plan, distributed energy systems are key to building smart urban grids and enhancing grid resilience. NHOA.TCC is committed to deploying distributed energy storage systems across cities in Taiwan, Europe, and Mainland China. Deployment speed, product stability, and cloud-based operation systems are critical to success.

NHOA.TCC has developed a range of products, from the EnergyArk 1000 for large-scale applications to the compact EnergyArk 400 for urban and commercial use, meeting diverse customer needs and supporting distributed energy deployment. Development also continues on smaller, indoor-friendly units with optimized height.

Action Spotlight



TCC's EnergyArk 400 is deployed at the Oncle Scott's Bretteville energy storage site in France

New Model EnergyArk 400 Accelerates Urban Energy Storage Deployment

In 2024, NHOA.TCC launched the new EnergyArk 400 model, a compact energy storage system occupying only one parking space. Its plug-and-play design accelerates deployment and reduces installation costs, making it suitable for charging stations, shopping centers, and commercial buildings. In 2025, 65 units of EnergyArk 400 are planned for deployment across Europe.

EnergyArk-400 Energy Storage Cabinet Highlights

Click to see more

Lower Environmental Impact	Optimized product design and transportation to reduce lifecycle carbon emissions. Fire suppression uses eco-friendly gas-fused gel instead of gas.
Lower Site Restrictions	Required water volume for fire suppression is significantly reduced, lowering the floor load requirement from 3.4 tons/m² to 2.4 tons/m² for installation sites
Improved System Durability	Battery cycles increased from 3,650 cycles to 7,300 cycles, doubling the durability compared to EnergyArk-1000

Innovative Business Model Reduces Energy Storage Investment Threshold

NHOA.TCC offers flexible models:
the Power Regulation Service, where NHOA.TCC fully invests and operates electricity trading for zero-cost usage; and the Co-sharing model, which sells equipment at preferential prices and shares electricity trading profits, improving capital flexibility and return predictability.

3.2

Energy Solution

Energy Helper TCC Corporation Assists Users With Contract Capacity Over 5,000kw, Customers With RE Goals, Private Power Plants, Or Self-Use Electricity Generation Equipment Users

Energy Helper TCC Corporation offers integrated green energy services, including RECs, green power transfer, online consulting, and carbon management. By combining energy storage and electricity trading, we help businesses cut carbon costs and use more green energy. We ensure a stable supply to support SMEs toward RE100 and sustainability goals.

TCC KEY FACTS

Over 50million kWh

of green electricity sold

485 members on the green ETP

— An annual growth rate of 33%

能元超商

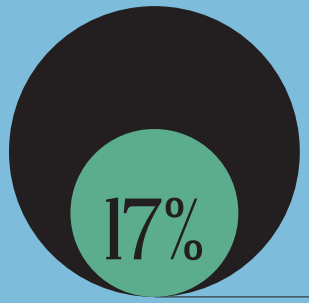
Energy Helper TCC Corporation

Energy Helper TCC provides integrated services for major electricity users, covering green electricity, storage, and carbon management, and uses AI matches users with optimal sources to reduce surplus and costs, while idle electricity is traded via Taipower to cut expenses and generate income. The Online Green Energy Consultant leverages big data to boost procurement efficiency.

TCC KEY FACTS

94%

of clients are non-affiliated companies, covering a wide range of industries including technology, semiconductors, manufacturing, optoelectronics, finance, and medical device and supply manufacturing.



of electricity resale customers in 2024 was SMEs

18% Semiconductor

9% Technology

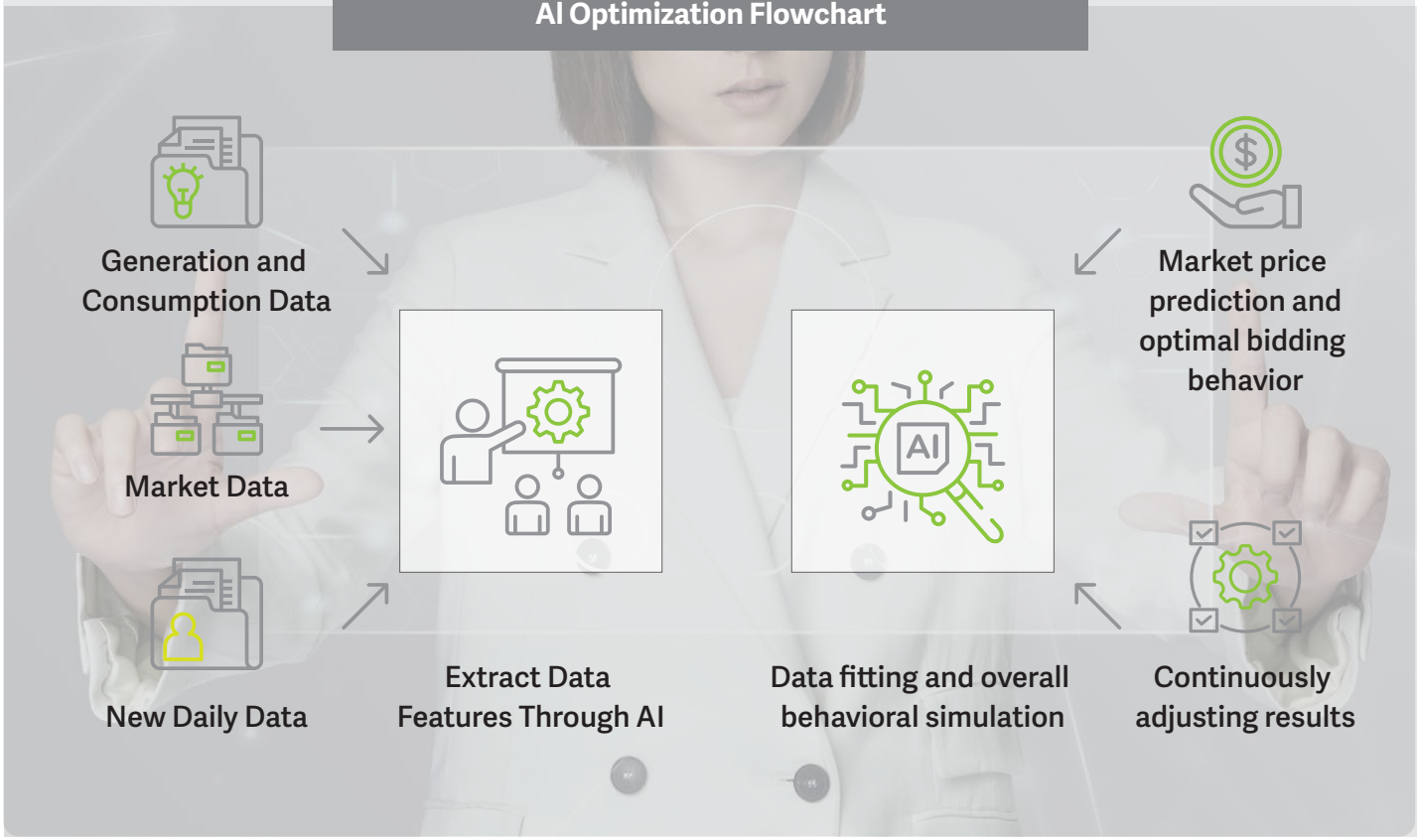
36% Manufacturing

9% Optoelectronics

Aggregating Energy - The Largest Ancillary Services Provider in Taiwan

Energy Helper TCC Corporation integrates green and storage sites from both TCC Group and clients to build a unified platform covering all Taipower trading services. By December 2024, trading capacity reached 226.2MW, including 170MW from E-dReg, capturing 39.4% market share and ranking first.

AI Optimization Flowchart



Action Spotlight

Hualien 4/3 Earthquake

Cloud EMS Stabilizes Post-Disaster Power Grid In Real-Time

In April 2024, Taiwan experienced its strongest earthquake in nearly 25 years. During the crisis, the Cloud EMS responded effectively, with Molicel's Molie Quantum Energy Corporation energy storage system instantly executing s-Reg, discharging 4MW for 13 minutes to stabilize grid frequency and prevent system failure. That month, three grid-connected sites in Yilan and Hualien also supported Taipower's emergency dispatch, executing E-dreg discharge reaching 263.75MWh. The energy storage system at E One Moli Corporation also supplied 7 MWh through Spinning Reserve to help stabilize the grid.

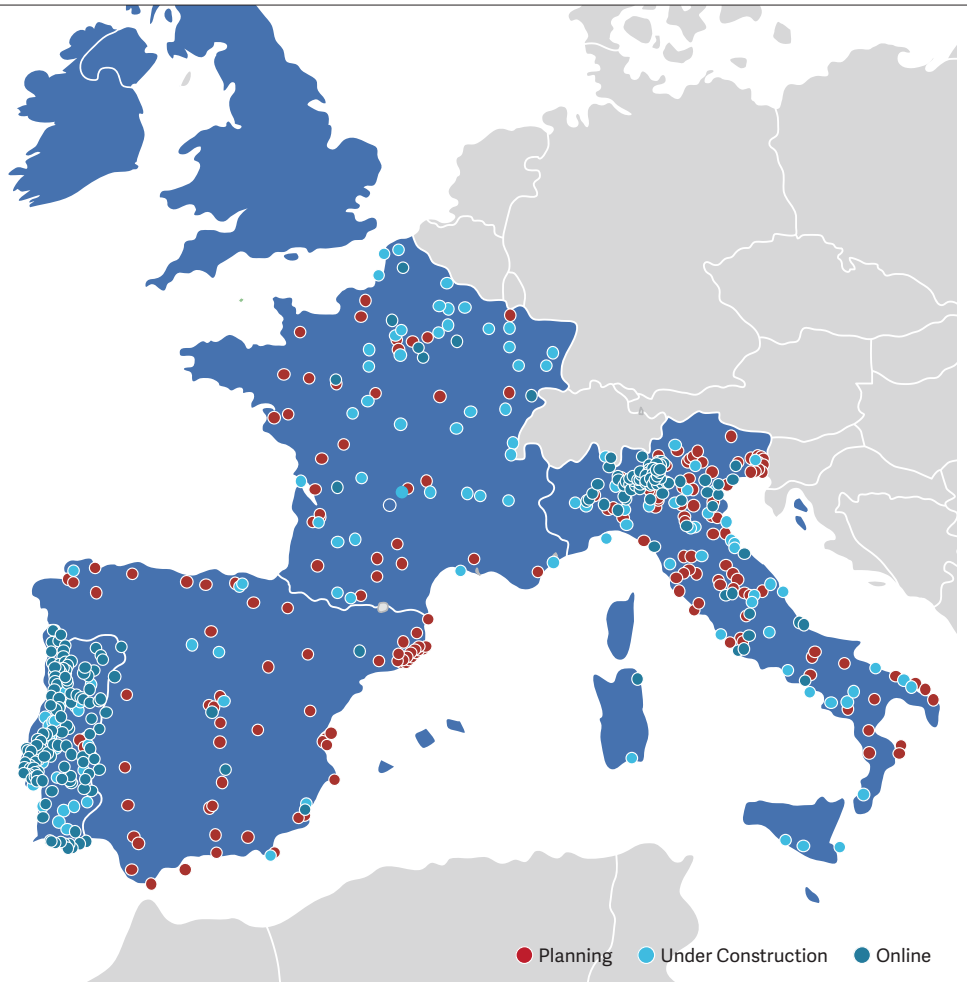
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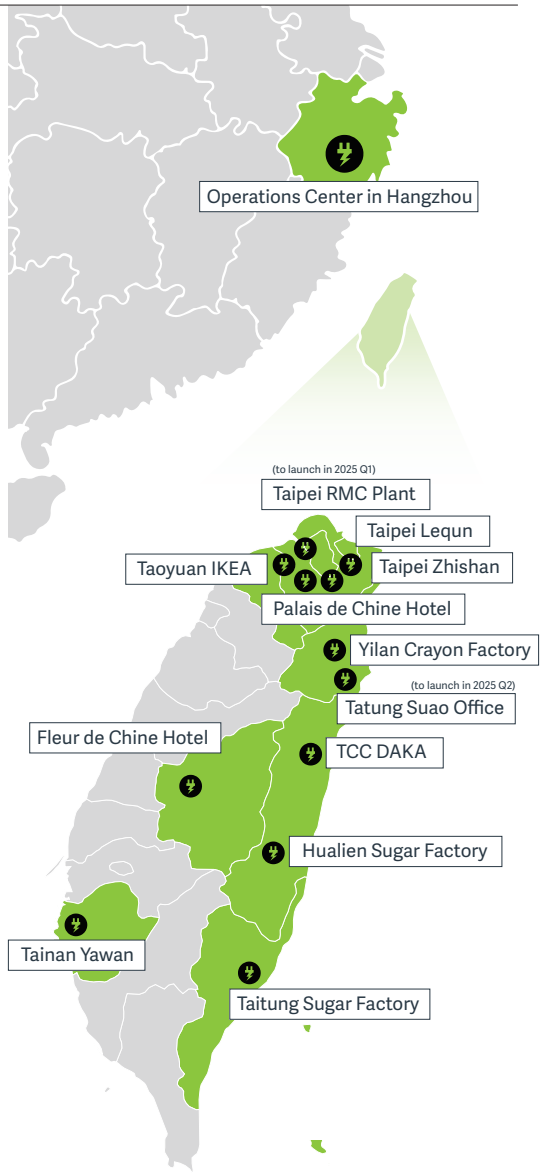
Energy Supply

Transportation accounts for 23% of global carbon emissions, with 70% from land transport. The electric mobility revolution is crucial to achieving net-zero. NHOA.TCC launched its charging brand, deploying Green Charge & Storage Integrated Charging Station that store electricity during off-peak hours and prioritize discharging to EVs during peak hours, easing grid load. Under the leadership of TCC Chairman Nelson An-ping Chang, European subsidiary Atlante was established in Italy in 2022 to promote electric mobility. Aiming to become Southern Europe's largest fast and ultra-fast charging network operator, Atlante integrates charging stations with national grids and actively advances the global energy transition.

NHOA.TCC Atlante

NHOA.TCC Atlante





Over 1,000
charging stations

3,500
Charging Points | Worldwide

2025
Build 70 EnergyArk Charge & Storage Integrated Fast Charging Station

2030
Build 35,000 fast-charging & ultra-fast-charging points

Action Spotlight



Virtual Power Grid Service

EV charging demands as much electricity as four convenience stores, placing stress on the grid. With growing renewable penetration, voltage fluctuations at grid endpoints are becoming harder for traditional distribution systems to manage. Enhancing grid resilience, control, and energy storage is key to energy transition. NHOA.TCC, approved by Taipower, is studying reverse power flow from low-voltage charging stations to supply electricity during shortages, strengthening grid endpoint resilience. The goal is for all stations to function as distributed power systems, supporting Taiwan's future virtual grid and electricity trading models. The Yilan Crayon Factory station will officially begin service as the first pilot sites in March 2025.

Yilan Crayon Factory Station

Invited To Participate In Load Enhancement Trials

By Taiwan Power Company & Industrial Technology Research Institute

To ease ramping pressure on traditional power units during evenings, Taipower and ITRI are testing load enhancement during high renewable penetration periods, aligned with Taipower's demand response program. From December 2024 to February 2025, six NHOA.TCC charging stations participated ein the trial, using AI to auto-adjust charging and discharging. Further optimization will follow Taipower's official program.

TCC KEY FACTS

Test data shows that NHOA.TCC's energy storage equipment effectively reduces

90% of grid load during peak periods

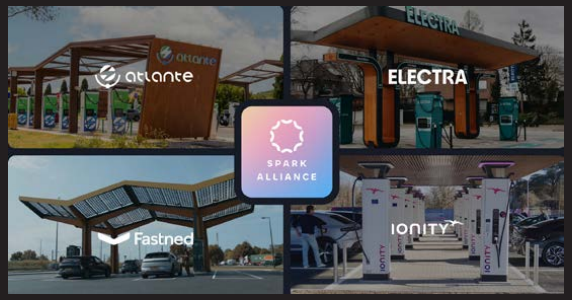
In February 2024 NHOA.TCC's Yawan station achieved 100% green electricity usage during peak hours through green electricity transfer, becoming Taiwan's first fast-charging station to achieve

RE 100 during peak periods

Action Spotlight

Atlante and European Charging Leaders Launch Spark Alliance

Connecting EV Networks In 25 Countries



In 2025, Atlante partnered with France's Electra, the Netherlands' Fastned, and Germany's IONITY to form the Spark Alliance—Europe's largest EV charging alliance. Covering 25 countries with over 1,700 stations and 11,000 high-power charging points powered entirely by renewables, the alliance supports carbon-neutral electric mobility. Starting from June, EV drivers can use any member app for cross-border charging and payment, with integrated station data improving long-distance travel convenience. The alliance aims to build stable cash flow and a scalable business model, accelerating the EV transition from early adoption to mass adoption.



International Collaboration Between Atlante & EV Platform Chargemap

In 2024, Atlante partnered with Chargemap to improve charging accessibility and convenience. Through Chargemap, two million users can seamlessly access Atlante's charging network with features such as location navigation, real-time station updates, and in-app payments. In high-share markets like France, Italy, and Spain, users can plan routes, monitor station availability in real time, and start charging with one click. The two companies will continue deepening data integration and developing value-added services.

TCC KEY FACTS

Installation of 19 fast and ultra-fast charging facilities powered by

100% Renewable Energy

Turin Airport, Italy

REN

Established a partnership with REN, Portugal's power grid operator, utilizing Speed-E grid connection patented technology to directly connect charging stations to 9,000 kilometers of transmission network for high-power charging

3.4

Energy Transmission

Molicel, the first firm to commercialize rechargeable lithium batteries, leverages innovation to build Next-Generation High-Performance Ternary Lithium-Ion Batteries for cutting-edge energy-transition applications. As a high-power pioneer, we support low-carbon transformation of various industries.

Molie Quantum Energy Corporation reported a fire incident on July 15, 2025. Please refer to the TWSE and TCC's official website for updates.

Molicel designs battery solutions that deliver high performance and reliability tailored the specific needs of three key areas: **AI applications, energy storage, and electric vehicles.**



AI Data Centers

To ensure uninterrupted computing, AI data centers invest in backup power systems. Molicel developed a dedicated BBU cell series for high-discharge and heat-resistant environments—ideal for generative AI and hyperscale data centers. These solutions enhance uptime and energy efficiency. In 2024, Molicel entered the AI data center supply chain, delivering 5kW modules to a major U.S. cloud service provider and co-developing next-gen batteries with three others. Leveraging its battery expertise and North American presence, Molicel continues regional expansion.

Energy Storage

The development of energy storage focuses on improving the space utilization of storage systems and reducing the overall carbon footprint. Molicel batteries excel in both energy density and cycle life, delivering high-efficiency, long-lasting solutions especially suitable for large-scale energy storage applications like industrial facilities, communication base stations, and off-grid systems.

Electric Vehicles

Molicel supports breakthrough applications in high-power, lightweight, and certified EV technologies. The Spéirling PURE, co-developed with McMurtry Automotive, set multiple track records, showcasing top-tier energy density and power. Molicel also powers Stark Future's VARG electric motocross bike, which beat combustion models at the UK indoor championship and received over 18,500 pre-orders. For FlyingBasket, a European heavy-lift drone maker, Molicel batteries extended flight range by 9% while carrying 100 kg payloads, enabling offshore and last-mile logistics.



Supporting
Electric Vertical Takeoff And Landing Aircraft (Evtol)

To Accelerate The Development Of The Low-Altitude Economy

Molicel's aviation-grade lithium batteries uniquely combine high-rate performance with aviation safety certifications. Their long cycle life boosts efficiency and mileage revenue. Molicel partners with global electric aviation startups. In 2024, Archer Aviation earned FAA certification and was named exclusive air taxi provider for the 2028 LA Olympics. Vertical Aerospace won the UK Aerospace Technology Institute's Shaping the Future Award, highlighting its market potential.

Product Lifecycle Management

Molicel adopts product lifecycle management as its core strategy, actively promoting a more resilient and forward-looking sustainable operation model through the adoption of international standards, local supply chain collaboration, and material recycling and reuse.

Carbon Reduction Target:
Decrease carbon footprint per battery by 5% by 2025 and 20% by 2030 Base year: 2023

Implementing ISO 14067 Carbon Footprint and EPD

To Enhance Carbon Competitiveness
Since 2023, Molicel has adopted ISO 14067 product carbon footprint certification.
In 2025, Type III Environmental Product Declarations (EPDs) will be introduced for P22S (E One Moli Corporation) and P45B/P50B (Molie Quantum Energy Corporation) to meet EU regulations and global brand requirements.

ISO 14067 Progress

- **E One Moli Corporation:** P42A certification obtained; P22S and P30B in progress
- **Molie Quantum Energy Corporation:** P45B and P50B in progress

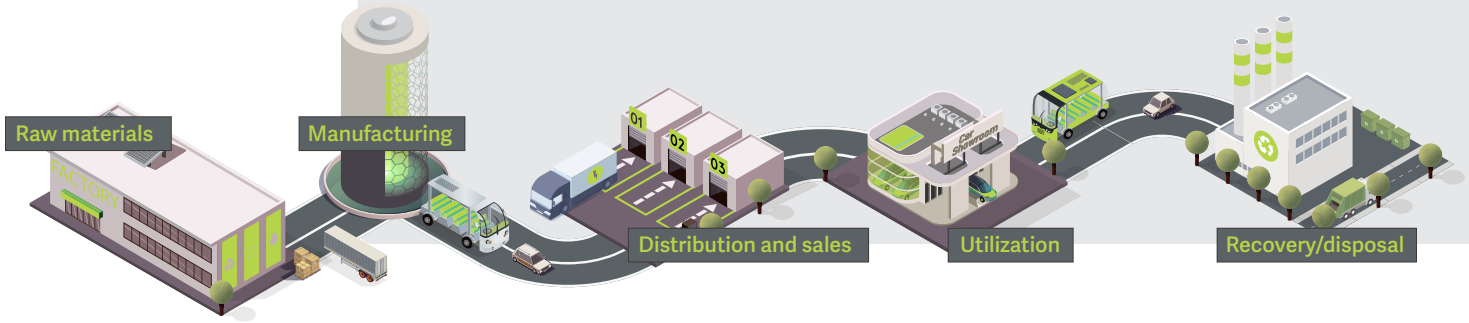
Eu Battery Regulation Response Plan

Building A Local Circular System With 75.2% Cathode Recovery Rate
Molicel works with local recyclers and suppliers in Taiwan to build a circular system for scrap and waste battery cells. In 2024, closed-loop trials recovered 126.3 metric tons of cathode scrap and produced 95 metric tons of black powder (75.2% recovery rate). The powder was sent for precursor testing and may be reused in cathode materials. Anode carbon is repurposed in cement production, reducing waste and emissions.

Supplier Collaboration

To Increase Recycled Material Rate
Molicel prioritizes the procurement of recycled materials and actively engages with suppliers, ensuring steady increases in the recycling rates of all critical materials.

Material Categories	Recycled Material Usage Ratio
Cathode Materials	Approx. 30%(precursor)
Anode Materials	Using low-carbon byproducts
Wooden Pallets	70%
Electrolyte Packaging Containers	100%
Copper Foil	80%
Aluminum Foil	17.5%
Steel Cans/Trays	10%



Molicel promotes sustainability through full life cycle management, advancing green production and resource circulation from design and manufacturing to recycling

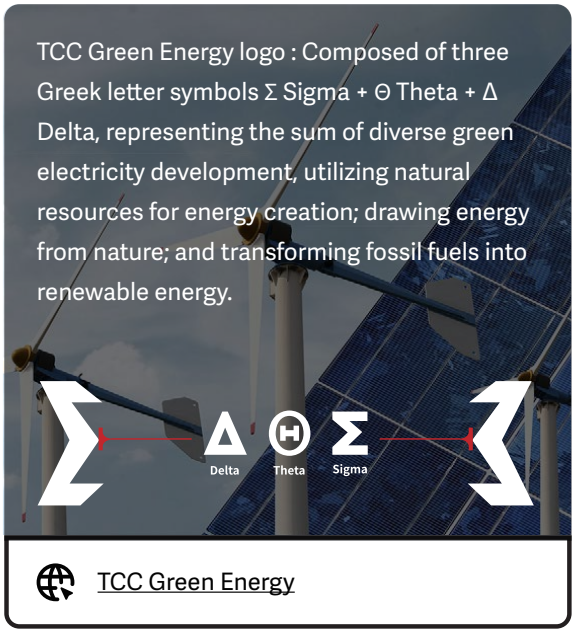
Molicel Carries Out Conflict Minerals Management To Ensure That All Supplies Of Raw Materials Comply With International Regulations

Molicel follows OECD guidelines to manage conflict minerals, avoiding sources linked to illegal mining or armed conflict. New suppliers must submit CMRT/EMRT reports and sign non-use declarations. Existing suppliers undergo regular due diligence and audits to ensure full compliance, supported by ongoing internal monitoring.

3.5

Energy Generation

Taiwan's diverse terrain presents vast potential for renewable energy. Established in 2018, TCC Green Energy Corporation has actively invested in wind, solar, geothermal, and marine renewable energy development. It pioneers hybrid project sites and is dedicated to advancing geothermal and ocean thermal energy conversion. With a focus on the coexistence of project sites with nature, TCC has invested in big data management and partnered with professional aquaculture teams to support industry transformation.



AI Smart Optimization of Power Plant Management

The International Energy Agency (IEA) estimates that global renewable energy capacity must triple by 2030 to meet the 1.5°C target. In 2018, the Changbin wind and solar power site delivered its first kilowatt-hour of green power. By 2020, TCC launched the Chiayi aquavoltaics and Vakangan geothermal projects, providing steady momentum for Taiwan's energy transition. TCC Green Energy applies big data management, with 100% of site equipment transmitting generation and environmental data in real time. AI analyzes historical output and weather patterns to issue alerts and guide timely maintenance, enhancing operational efficiency.

TCC KEY FACTS

2021-2024

Total of 20

energy project sites currently generating power or under construction.

Already generated 408 million kWh of green electricity, equivalent

-193,378 metric tons of CO_2e



Changbin Wind And Solar Power Site

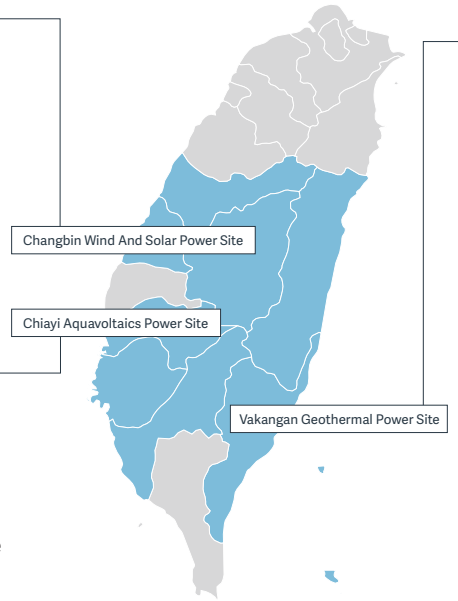
Phase II wind energy was connected to the grid and began operation in 2024. TCC is also committed to biodiversity, promoting solar grazing alongside solar energy development.



Chiayi Aquavoltaics Power Site

The full-area grid connection is expected to be completed in 2025.

TCC not only engaging in commercial farming but also exploring refined aquaculture practices through its aquaculture team.



Vakangan Geothermal Power Site

2024 local hiring rate

employee 86% | **contractor 100%**

Expected to complete grid connection for all units by 2025



Action Spotlight

Department of Sustainable Aquaculture Helps Upgrade the Aquaculture Industry



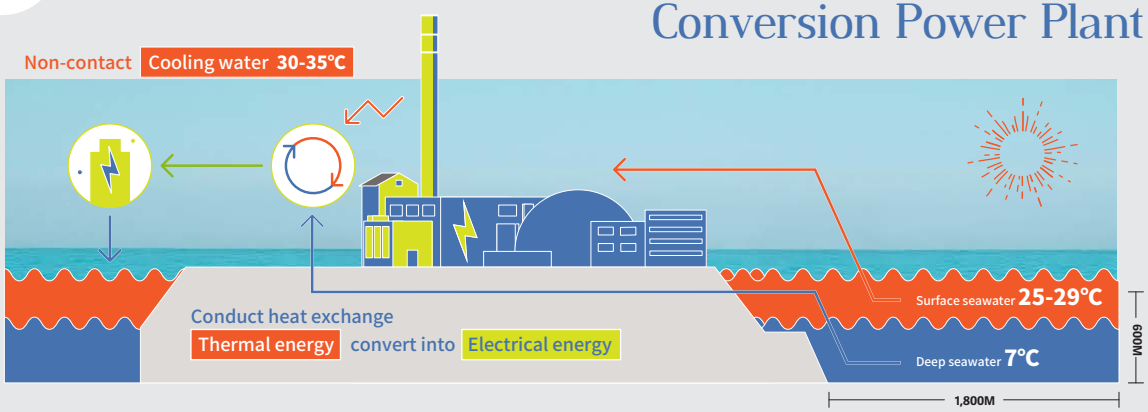
According to the UN FAO, climate change, overfishing, and warming seas may reduce global fish catches by 15% by 2050. With a short growth cycle and half the carbon footprint of livestock, aquaculture is seen as a sustainable protein source. TCC's Chiayi aquavoltaics site was the first to break ground. In line with the spirit as well as the letter of the tax laws and regulations, we worked with landowners—many of them former fish farmers to ensure continued aquaculture. With no existing model, we built a resilient framework and connected the project to the grid in 2022, supplying green power to Taiwan. Facing labor shortages and water quality challenges in fishing villages, TCC Green Energy established a "Department of Sustainable Aquaculture" with experts from Taiwan Ocean University and National Pingtung University of Science and Technology(NPUST). Rather than pursue industrial scale, the team focuses on quality, developing standard models to ease entry for young farmers and help experienced ones adapt. In 2024, TCC Green Energy began R&D on low-carbon feed and probiotics with NPUST, and started exploring bamboo powder reuse with the Bamboo Industry Association.

The Collective Achievements of Aquaculture Partners

In November 2024, TCC hosted a tasting event featuring bass and Thai shrimp from its aquavoltaics sites, prepared by LDC Hotels & Resorts chefs and paired with local produce. Aquaculture partners and community leaders joined the event. TCC's fishery-solar symbiosis sites steadily produce eel, bass, and milkfish. Around 100MW is under development. Beyond reducing deep-sea fishing's carbon footprint, the project also supports rural revitalization and encourages youth to return and grow aquaculture.



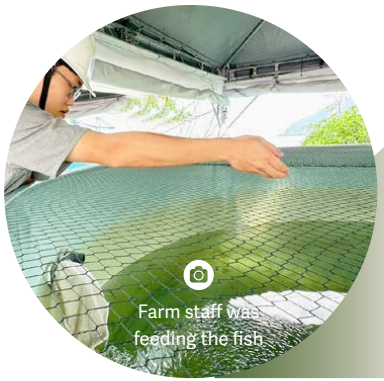
World's First Mw-Scale Ocean Thermal Energy Conversion Power Plant

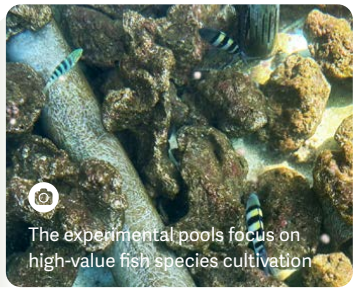


The consistent, 24-hour nature of ocean energy offers a reliable power source and a key enabler of the energy transition. TCC's main production site—the Hoping 3-in-1 of Port, Power, Cement Plant—sits near a 600-meter depth just 1.8 km offshore, making it ideal for ocean energy. TCC is investing in Ocean Thermal Energy Conversion (OTEC), using temperature differences between cooling water and deep seawater to drive turbines. Phase I targets 1–2 MW capacity, supplying 24,000 kWh daily — enough for 2,000 households. In 2024, underwater heritage review passed, and EIA for terrestrial and marine surveys was submitted to the Ministry of Environment. Grid connection is set for 2028, with commercial operation by end-2029.

Establishment of 4 Experimental Pools for Deep Sea Water Aquaculture Research

To explore high-value applications of deep seawater, TCC built four aquaculture pools in 2024, using seawater from Hoping EcoPort to cultivate sea grapes, gilt-head bream, grass shrimp, and local fish. In early 2025, a tasting event was held during the grass shrimp harvest to share the process with staff. TCC plans to collaborate with aquaculture tech firms and universities to assess the feasibility of land-based recirculating systems. After introducing power generation, efforts will continue to advance eco-friendly aquaculture.


Farm staff was feeding the fish


The experimental pools focus on high-value fish species cultivation

A Brief History of Ocean Thermal Energy Conversion

1973 large-scale research on Ocean Thermal Energy Conversion (OTEC) began with the first energy crisis.

1980 Saga University in Japan began investing in OTEC-related technology research and development.

2007 the United States and Japan restarted OTEC technology with the goal of developing commercial operation modules.

2008 the United States planned a 100MW commercial power plant construction project in Hawaii.

2009 the United States received Navy funding to build plants in Hawaii, Guam, Puerto Rico, Ryukyu, and Diego Garcia.

2013 Saga University in Japan collaborated with industry to build two 50kW OTEC demonstration power plants on Kumejima Island.

2015 the NELHA park in Hawaii completed the construction of a 105kW OTEC power plant.

2022 Ho-Ping Power Company visited Kumejima Island, Japan, planning to invest in MW-scale Ocean Thermal Energy Conversion.

3.6

Social Aspects of the Energy Transition

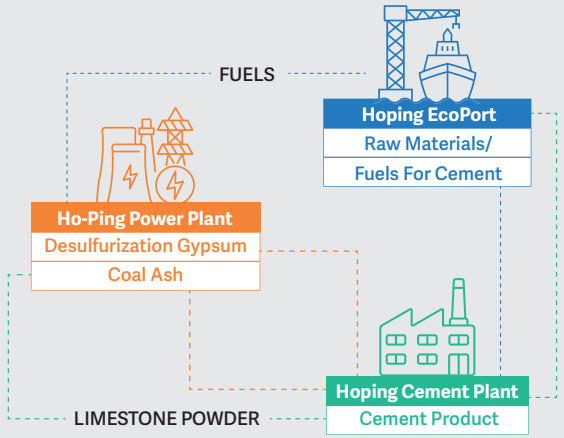
Ho-Ping Power Company Assumes Responsibility for Power Supply

According to Taiwan's latest National Power Supply and Demand Report, TCC's Ho-Ping Power Plant remains the only large-scale provider in eastern Taiwan and a vital power source for the northeastern grid until thermal coal power plant decommissioning begins in 2033. Through discussions with Taipower, Ho-Ping recognizes the challenges of energy transition under resource constraints. While committed to net-zero goals, TCC ensures the plant's continued operation to safeguard grid stability, supplying 95% of Yilan, 20% of New Taipei, and nearly 4% of Taiwan's electricity. In line with IEA recommendations and Taipower's contract and grid needs, coal-fired units will operate until the end of their design lifespan, ending in 2040. A just transition plan will be launched to address stakeholder concerns, with ocean thermal energy conversion (OTEC) included in future transformation efforts.



The Only Zero-Waste, Ash-Lagoo-Free Power Plant In The World

Ho-Ping Power Plant was built on zero-waste and environmental principles. Co-located with a cement plant and industrial port. Fly ash produced during power generation is transported to the cement plant via a sealed pneumatic conveying system, while boiler bottom ash and desulfurization gypsum are delivered by trucks. Coal ash and gypsum from the desulfurization process are fully recycled raw materials, making Ho-Ping Power Plant stands out as the world's only thermal coal power plant without ash lagoo.



Energy Transition Plan

Subcritical Unit Retrofit Plan

A retrofit starting in Q4 2024 will convert existing coal units to subcritical ones. Feasibility will finish in 2025, with construction in 2027. The upgrade will cut 728,500 metric tons of CO_2 annually and reduce coal use by 9%, saving 310,000 metric tons without lowering output.

Biomass Fuel Feasibility Study

In 2024, TCC began studying the co-firing of wood pellets and SRF. Due to bottom ash reuse issues, a second phase on gasification was launched to produce syngas for boiler use, targeting a 10% coal reduction. If the Q2 2025 feasibility study proves viable, TCC will assess boiler design, fuel logistics, port handling, and environmental impacts for full-scale planning.

TCC KEY FACTS

Pollution Emissions of −41%
| 2016 Base Year

Rainwater Recovery 53,082 cubic meters, with 100% utilization rate
| Independently developed nanofiltration membrane water recovery of 59,746 cubic meters.

Ho-Ping Power Plant was honored as an outstanding enterprise at the Ministry of Environment's 2nd Water Purification Sustainability Award in 2025.

Ho-Ping Power Company

Air Emission Management

SOx≦ 0.310Kg/MWh
NOx≦ 0.260Kg/MWh
Total Suspended Particulates
≦0.032 Kg/MWh

Waste Management

General Industrial Waste Recycling Rate 94%
(excluding coal ash, catalysts)

Taiwan's Only Thermal Coal Power Plant

With Patented Nanofiltration Technology For Wastewater Recycling

Ho-Ping Power Plant generates about 533 metric tons of operational wastewater daily. To reduce environmental impact, the plant has committed to cutting chemical agent usage in water treatment by over 70%. In 2021, Ho-Ping Power Plant independently developed and co-researched a solution with National Ilan University, and in 2024 implemented the patented nanofiltration and reverse osmosis membrane system (Patent No. I832462), enabling wastewater recycling and mineral separation. Calcium and magnesium ions are reused in the desulfurization system, reducing the need for additional limestone powder.



Comprehensive Sustainable Management

From the initial construction, Ho-Ping Power Plant has upheld standards that exceed regulatory requirements, following the principle of source reduction and waste-to-resource conversion. Ho-Ping Power Plant has established environmental management objectives in line with ISO14001.
Ho-Ping Power Plant has implemented flue gas treatment equipment. Since 2022, Ho-Ping Power upgraded its AQCS, GGH, AIG, and denitrification systems. Rooftop solar and a 10.8kW wind tree turbine support on-site renewables. Cooling seawater is reused for a 576kW micro-hydro project, set for 2026, generating 3.9 million kWh annually.



The Ho-Ping Power Plant with the Taroko Tribe totem

Implementing Human Rights Management:
Ho-Ping Power Plant Initiates CSDDD Survey For Suppliers

Ho-Ping Power Plant must keep coal ash below 12% and sulfur under 1%, stricter than the 20% ash limit at most Taiwanese coal plants. To meet this, it blends coal from Australia, Indonesia, and Russia. Russian coal offered low sulfur, moderate ash, and proximity. In September 2024, TCC clarified to ERF, CREA, and Ecodefense that its contract with Ashon was not renewed. The last shipment arrived in October, delayed by April earthquake damage at Ho-Ping EcoPort. TCC has launched EU-aligned human rights and environmental due diligence, expanding in 2025 to all subsidiaries' suppliers and contractors. See CH5.5 Human Rights Protection for details.

chapter 4

Nature

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Little Tern Conservation Project



Corresponding SDGs

4.1

TCC Nature Action

TCC places nature at the heart of its business philosophy, integrating natural carbon sinks into its 2050 net-zero strategy. In line with the Kunming-Montreal Global Biodiversity Framework adopted at COP15, TCC aligns its nature-related actions with global targets for 2030 and goals for 2050, aiming to live in harmony with nature and achieve positive outcomes for biodiversity.
Nature is the foundation of the global economy with over half of global GDP (over 44 trillion USD) depending on natural resources and ecosystems.

According to Swiss wealth manager Lombard Odier, 33% of global soil is moderately to severely degraded, and around 5 million hectares of forest—1.4 times Taiwan's area—are lost annually. As extreme weather worsens, sustainable investments must go beyond net zero and prioritize nature-positive growth.

"TCC remains committed to exploring ways for civilization and nature to coexist in harmony, serving life, always in service of life."
--Chairman Nelson An-ping Chang

TARGET

By 2040
Net Positive Impact (NPI)
No Net Deforestation

Biodiversity Policy
No Deforestation Commitment

TCC's Terrestrial and Marine Nature and Biodiversity Programs Mapped to 23 GBF Targets

Reducing threats to biodiversity	Fulfilling Human Needs through Sustainable Utilization and Benefit Sharing		Implementation tools and mainstreaming solutions		
3 Promote Hoping EcoPort as OECMs	**2 / 11** Formulate and Implement Quarry Rehabilitation Plan (QRP) Ho-Ping Ark Ecological Program	**12** Kaohsiung Shoushan Land Transformation to Detention Basin Park	**14** Ho-Ping Power Plant: Little Tern Environmental Education Hoping EcoPort: Harbor-type Environmental Education Site TCC DAKA Environmental Education	**19** Long-term Investment in Botanic Conservation Center and Forest, Soil, Marine Restoration and Research Projects	**22** Implementation of Consultation and Consent Rights for Indigenous Peoples
6 / 8 NbS Project: White popinac Removal	**8** NbS Project: Aquavoltaics Low-carbon Construction Materials Development	**9** Biodiversity Management Plan (BMP)	**13** Dr. Cecilia Koo Botanic Conservation Center (Conservation Center)'s Plant Gene Bank Assists Pharmaceutical Development		**23** Nature-related Project Team is Led by a Woman (the Chief Sustainability Officer)
4 Ex-situ Conservation Plan for Botanic Conservation Center			**15** Regular Monitoring of Quarry and Marine Ecosystems Release of Task Force on Nature-related Financial Disclosures (TNFD) Report		

Kunming-Montreal Global Biodiversity Framework available on CBD website

TCC Nature Management

Assessment and Management Conducted in Accordance with International Standards, the Task Force on Nature-related Financial Disclosures (TNFD), and SBTN

Taskforce on Nature-related Financial Disclosures

SCIENCE BASED TARGETS NETWORK
GLOBAL COMMONS ALLIANCE

Scope

TCC's cement operations in Taiwan, Mainland China, Türkiye, Portugal, West Africa, and its suppliers in Taiwan and Mainland China.

Locate

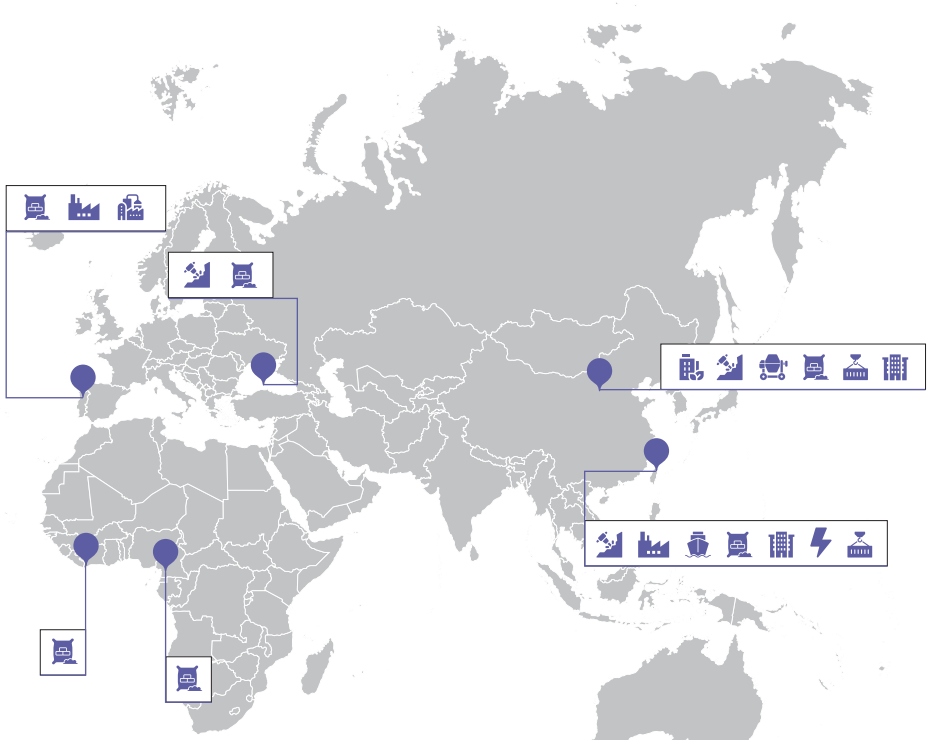
TCC, with National Taiwan University, conducted a TNFD LEAP analysis considering natural disasters and land use types.

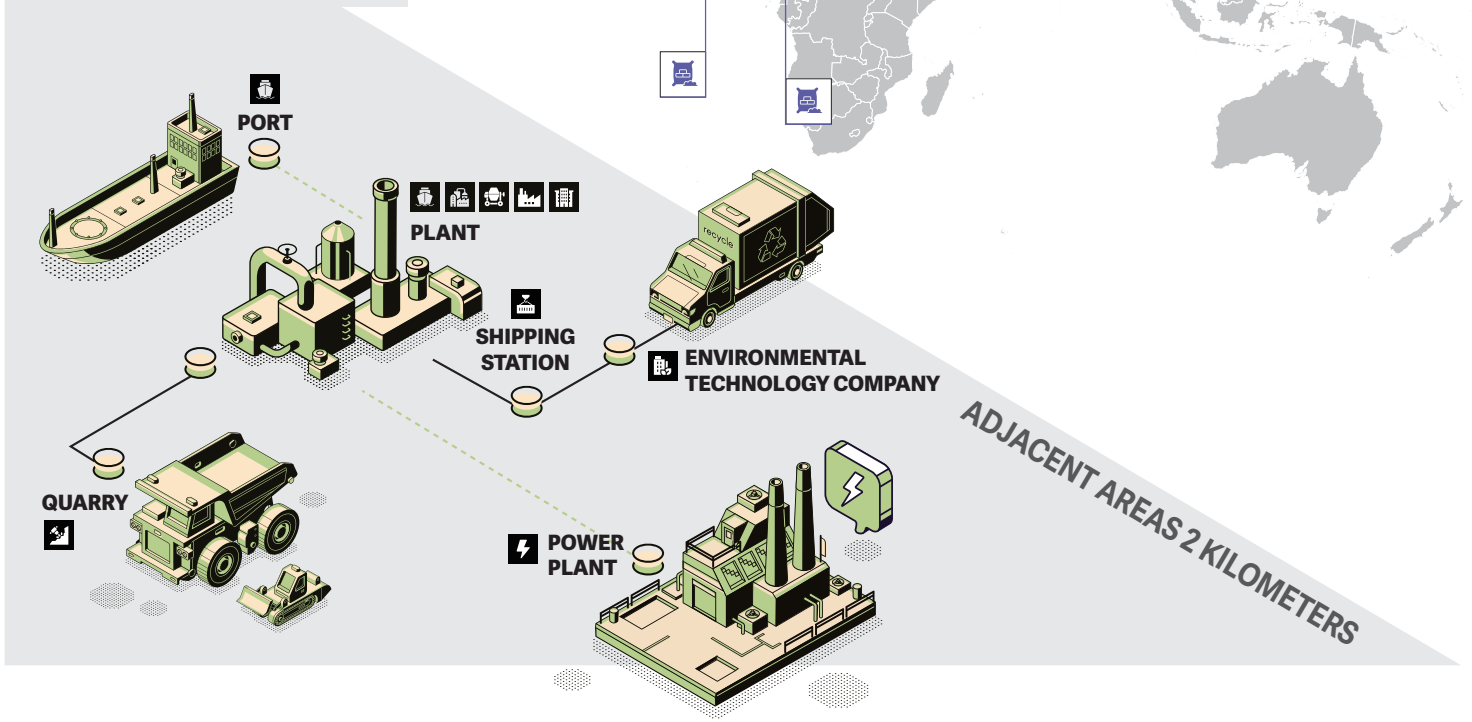
Upstream
QUARRY PORT

Adjacent Area
POWER PLANT

Own Operation
AGGREGATE PLANT CEMENT PLANT
RMC PLANT GRINDING STATION OFFICE

Downstream
SHIPPING STATION PORT
ENVIRONMENTAL TECHNOLOGY COMPANY





TCC Locate Methodology Description

Sites are evaluated based on two major criteria: Criterion I - Natural Sensitivity and Criterion II - Operational Impact.

- **Criterion I - Natural Sensitivity:** Composed of ecosystem sensitivity and species sensitivity
- **Criterion II - Operational Impact:** Taiwan sites add operational impact analysis according to actual conditions

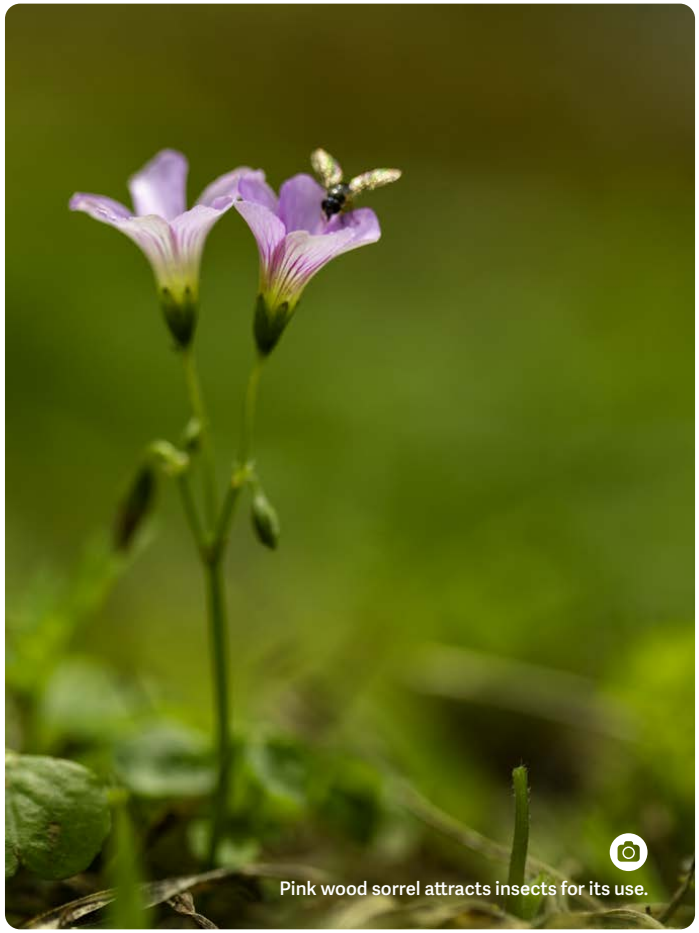
Taiwan	Mainland China	Overseas locations
Criterion I-1 - Ecosystem Sensitivity		
100% of TCC's operational sites are not situated within World Heritage areas or International Union for Conservation of Nature (IUCN) Category I-IV protected areas		
◒ Ministry of the Interior's National Land Function Zones ◒ Ministry of the Interior's Marine Resource Areas ◒ TCC's Dependency on Disaster Resilience	◒ National Protected Areas ◒ World Database on Protected Areas (WDPA) ◒ Key Biodiversity Areas (KBA) Database	◒ World Database on Protected Areas (WDPA) ◒ Key Biodiversity Areas (KBA) Database
Criterion I-2-Species Sensitivity: Assess the number of potentially threatened species around the site		
Taiwan Biodiversity Network Data	◒ China Natural Observation Species Distribution Database ◒ IUCN Species Distribution Database	Mean Species Abundance (MSA)
Criterion II-Operational Impact: Calculate the vegetation naturalness of the site based on current land use to determine the degree of operational impact on the environment		
Methodology for Assessing Plant Naturalness in Environmental Impact Assessments	—	—

Definition of Priority / Nature Sensitivity

VH	Contains important ecosystems, hosts multiple threatened species, and is located in areas with high naturalness; operations may have negative impacts on nature.
H	Contains important ecosystems, hosts multiple threatened species, and is located in areas with high naturalness.
M	Contains relatively important ecosystems, hosts a few threatened species, and is located in areas with relatively low naturalness.
L	Does not contain important ecosystems, has no distribution of threatened species, and is located in areas with low naturalness.

Locate Analysis Results

Value Chain Stage	Business Activities	VH	H	M	L
Own Operations	Taiwan Cement Plant	0	0	1	2
	Mainland China Cement Plant	1	0	1	13
	Taiwan RMC Plant	1	0	20	15
	Mainland China Grinding Station	0	0	1	2
	Office	0	0	1	2
Upstream	Taiwan Quarry	3	0	0	0
	Mainland China Quarry	3	2	3	16
Upstream/Downstream	Hoping EcoPort	0	0	0	1
Downstream	Taiwan Shipping Station	0	0	0	5
	Hong Kong Cement Shipping Station	0	1	0	0
	Mainland China Environmental Technology Company	0	0	0	2
Surrounding Areas	Ho-Ping Power Plant	0	0	0	1



Pink wood sorrel attracts insects for its use.

Note 1: Analysis of own operations in Europe and Africa, as well as suppliers in Taiwan and Mainland China, is still in progress.

Evaluate

In alignment with the TNFD methodology and Sector Guidance, TCC uses the ENCORE (Exploring Natural Capital Opportunities, Risks and Exposure) tool, jointly developed by the UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) and Finance Initiative (UNEP FI), to analyze the potential dependencies and impacts of operational sites on nature at a global scale.

The degree of impact and dependency is classified on a scale from 1 to 5, from low to high.

Using various scientific literature and databases-such as IPCC and UNEP-industries are assessed for their levels of impact and dependency on nature.

Definition of ENCORE

ENCORE Analysis for Own Operations, Upstream, Downstream, and Surrounding Areas

		Quarry	Cement Plant	RMC Plants	Grinding Station	Office	Port Area	Shipping Station	Environment Technology Company	Power Plant
Dependency	Flood mitigation services	4	3	3	3	1	4	1	1	3
	Global climate regulation services	4	1	1	1	1	1	1	1	3
	Dilution by atmosphere and ecosystems	3	2	2	2				3	
	Rainfall pattern regulation services	5	2	2	2	1	1	1	3	
	Soil and sediment retention services	4	2	2	2	1	2	3	1	3
	Solid waste remediation		3	3	3				5[3]	3
	Storm mitigation services	3	3	3	3	1	3	2	2	2
	Water flow regulation services	4	3	3	3	1	3	1	3	4
	Water purification services	5[2]	3	3	3				3	3
	Water supply	4	3	3	3	1	2	1	3	4
	Natural disaster protection	5	5	5	5	5	5	5	5	5
Impact	Area of freshwater use	4	3	3	3		1			3
	Area of land use	3	2	2	2	3	2	2	3	3
	Area of seabed use	4[4]					3			
	Disturbances (e.g, noise, light)	4	3	3	3	1	1	1	4	5
	Emissions of GHG	4	4	4	4	1	3	3	4	5
	Emissions of non-GHG air pollutants	4	4	4	4	1	2	2	3	5
	Emissions of nutrient pollutants to water and soil		3	3	3	1	3	1	4	
	Emissions of toxic pollutants to water and soil	4	5	5	5	1	2	1	4	5
	Generation and release of solid waste	2	3	3	3	1	2	2	3	4
	Introduction of invasive species	1						1	3	
	Other abiotic resource extraction	5								
	Volume of water use	3	3	3	3	2	2	2	3	3

For supply Chain Analysis and more, please refer to the ESG section of TCC's official website.

Note 2: TCC quarries only require water quality standards for plant restoration and have relatively low dependence on water quality.

Note 3: TCC Environment Technology Company uses high-temperature co-processing to treat industrial waste and household garbage, rather than relying on microbial or ecosystem functions through landfill. Therefore, this item is not applicable to TCC's operational model.

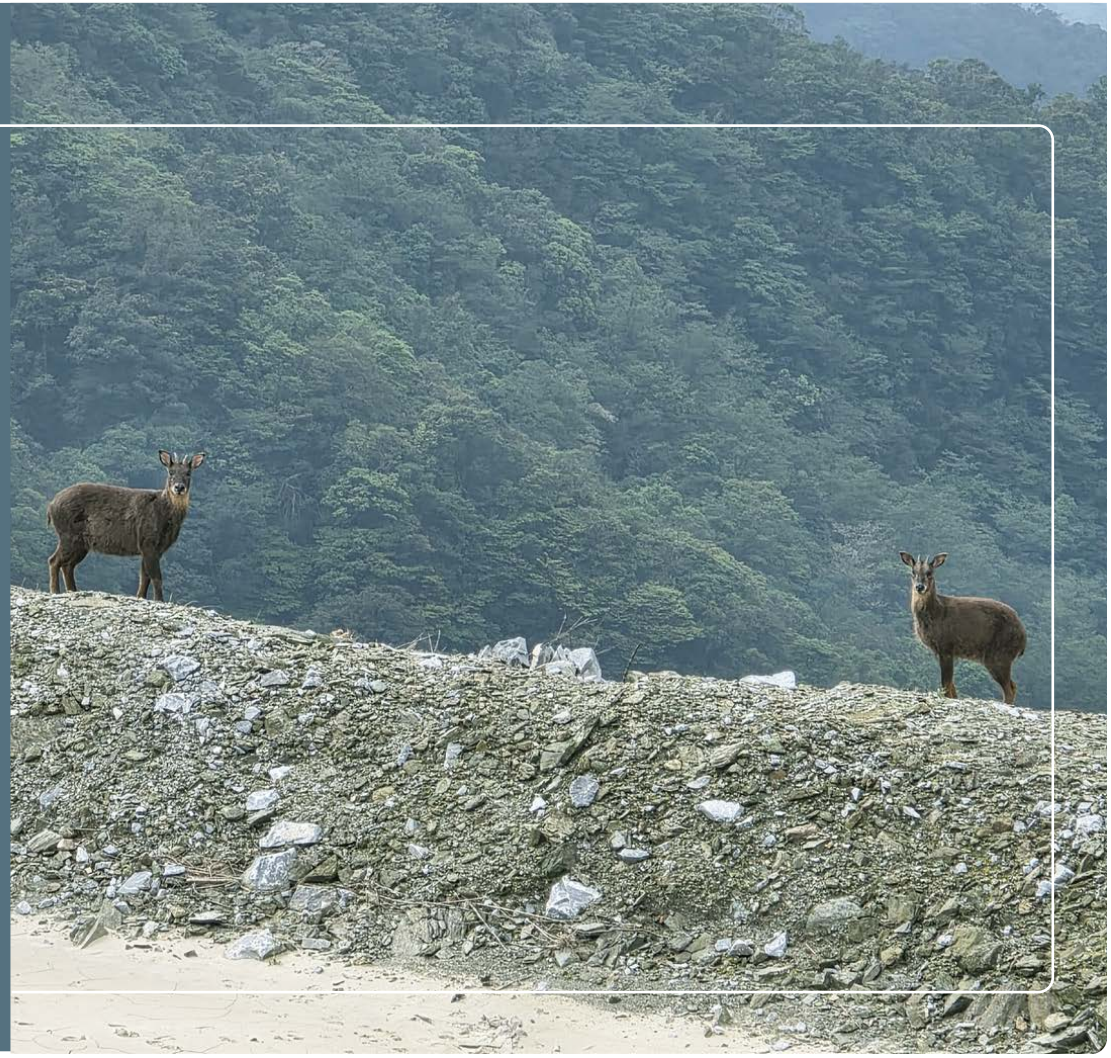
Note 4: All of TCC's quarries are located on land and do not affect seabed usage.

Comprehensive Analysis

Nature is both a fundamental prerequisite and the core spirit of TCC's development.

TCC has designated VH sites as top-priority management areas due to their high ecological vulnerability. Compared to H, M, and L sites, VH sites are located in close proximity to sensitive ecosystems such as nationally important wetlands, nature parks, and first-class coastal protection zones, and are potentially home to multiple threatened species. Maintaining a balance between operations and nature is one of TCC's core values. Failure to protect healthy ecosystems and threatened species may degrade ecosystem functions and reduce natural resilience, increasing the risk of disasters like landslides, floods, and extreme heat, leading to higher costs, production disruptions, and business losses.

Locate results show that VH sites are mainly within TCC's own operations and upstream value chain, especially six quarries. For cement plants, concrete plants, quarries, and suppliers in VH areas, TCC cross-assessed operations with ENCORE items rated 5 in dependency or impact to understand how each type of operation relies on and affects natural resources. Based on this, strategies and monitoring procedures were developed to reduce potential impacts, including informing suppliers of nearby protected areas, cautioning relevant activities, and engaging them in identifying feasible mitigation actions to reduce environmental impacts and promote biodiversity restoration around facilities.



Own operational sites in Taiwan

QUARRY
CEMENT PLANT
RMC PLANT

Locate & Evaluate Comprehensive Analysis Results

Location of VH Sites	Locate	Encore	Comprehensive Analysis Results	Adaptation Methods
Hoping Quarry **Taibaishan Quarry** **Shoushan Land**	Hoping and Taibaishan Quarry are adjacent to a first-class coastal protection zone and a land protected area; Shoushan Land is adjacent to Shoushan National Park, with the potential distribution of Pangolin, Fairy Pitta, Brown Wood Owl, and Yellow-margined box turtle.	Quarry depends on rainfall pattern regulation services to prevent severe damage from floods or landslides, while extraction activities alter land use and impact biodiversity.	Cross-analysis shows that extraction leads to ecological degradation, not only increasing the risk of landslides but also shortening the operational lifespan of the quarry. For detailed results, please refer to the TCC 2023 TNFD Report.	All quarries have established Biodiversity Management Plans to mitigate impacts on biodiversity and collaborate with academia to carry out scientifically based plant restoration efforts, to mitigate environmental impact, and ensure the sustainable use of quarry resources. For detailed information, please refer to 4.2 Forest and Soil Restoration Map.
RMC Zhongli Plant	The plant is located 740 meters from the Taoyuan Reservoir and Canal National Important Wetland, where protected species such as the black kite, gray water snake, and Taiwan red-legged frog may be present. The surrounding area is characterized by relatively low development and a higher proportion of natural forest distribution.	The operation of RMC Plants may cause greenhouse gas emissions and water pollution.	Through cross-analysis, we know that the plant's operations will result in the long-term discharge of highly alkaline wastewater with high concentrations of suspended solids into ecologically sensitive areas. Not only leads to soil alkalization and water pollution, exacerbating the difficulty of accessing water resources and increasing the maintenance costs of water infrastructure, but also disrupts ecological balance and weakens the plant's resilience to natural disasters.	The Zhongli Plant has zero process wastewater discharge and is equipped with a rainwater collection system to reduce dependence on water resources. Additionally, dust self-monitoring is conducted daily, and third-party dust and noise monitoring is conducted every six months to ensure that operational activities minimize impacts on surrounding biodiversity as much as possible.

Own operational sites in Mainland China

QUARRY

CEMENT PLANT

RMC PLANT

Locate & Evaluate Comprehensive Analysis Results

Location of VH Sites	Locate	Encore	Comprehensive Analysis Results	Adaptation Methods
Yingde Plant	Adjacent to the Qingyuan Yingde Black Tea Valley Local Forest Nature Park, with the potential presence of endangered species such as the Chinese giant salamander, three-lined box turtle, tokay gecko, pangolin, and black-headed ibis.	Cement plant operations may cause air and water pollution.	The outcome of the cross-analysis for Yingde Plant show consistency with those observed in RMC Zhongli Plant.	The Yingde Cement Plant has zero process water discharge and is equipped with a rainwater recycling system. It also utilizes multi-stage combustion equipment to reduce air pollution. Through continuous automatic air pollution monitoring and water pollution management mechanisms, the plant ensures all emission indicators remain below regulatory requirements.
Yingde Dapashan, Houyan Xishan and Qingshuijing, and Jingkoumianshan Quarry Shaoguan Beihushan Quarry	Two quarries in Yingde are adjacent to the Qingyuan Yingde Black Tea Valley Local Forest Nature Park, while the Shaoguan Quarry borders the Qingyuan Yingde Huashui Mountain Local Nature Reserve. These areas potentially host endangered species such as the Chinese giant salamander, three-lined box turtle, tokay gecko, pangolin, and black-headed ibis.	Quarry depends on rainfall pattern regulation services to prevent severe damage from floods or landslides, while extraction activities alter land use and impact biodiversity.	The outcome of the cross-analysis for quarries in Mainland China show consistency with those observed in Taiwan's quarries.	The quarries carry out revegetation and rehabilitation in accordance with the Biodiversity Management Plan, meeting the requirements of the National Green Mine assessment. Planning to launch flora and fauna monitoring and rehabilitation programs in 2025, collaborating with local universities to restore biodiversity in quarry through long-term systematic surveys and rehabilitation effort.

Assess

Please refer to
TCC 2023 TNFD Report

Prepare

Please refer to
TCC 2023 TNFD Report

Action Spotlight

TCC's four natural strategies recognized by Business for Nature – Sole construction materials company invited to share



TCC was invited by Business for Nature (BfN), supported by the United Nations, to speak at the 2025 Asia Nature Conference. BfN described TCC as a practitioner of natural and sustainable development within the construction materials industry, stating it is, "Championing nature and sustainability in the cement and materials sector." TCC aims to prove through practical action that working in harmony with nature is not only achievable, but also a catalyst for new value and opportunities.

TCC's Four Major Natural Strategy Features

- Formed a dedicated Biodiversity Group to identify and manage 10 nature-related risks and 12 nature-related opportunities, promoting corresponding initiatives .
- Uses alternative raw materials and renewable energy to cut emissions and reduce resource use, including repurposing invasive White popinac as biofuel.
- Collaborating with National Taiwan University and National Ilan University to conduct in-depth analysis of biodiversity in quarries, set 2040 nature net positive impact goals, and promote soil restoration projects.
- Sharing natural strategy with the goal of becoming a partner in the international It's Now for Nature initiative, engaging stakeholders in the issue through multiple channels, and promoting biodiversity mainstreaming.

Participation in the Pilot Group for Science Based Targets Network (SBTN)

TCC joined the SBTN Pilot Group promoted by BCSD Taiwan and ERM. Using Geographic Information Systems (GIS), the group assessed key environmental indicators like biodiversity sensitivity and water stress at plant sites. Following the steps of Scope, Locate, Evaluate, and Access, the group explored SBTN standards and identified challenges in meeting disclosure requirements. Cross-sector collaboration provided insights into biodiversity impacts across industries, supporting the development of targeted, forward-looking nature goals and interdisciplinary strategies.

The SBTN, built on the Science Based Targets initiative (SBTi), is a network of 80+ NGOs and business groups—including CDP, WRI, WWF, and IUCN—working with companies to drive positive outcomes for nature through alignment with global ecosystem initiatives.

SBTN AR3T



REGENERATE/RESTORE

- Quarry rehabilitation in Taiwan and Mainland China prioritizes native species and site-appropriate planting.
- Topsoil is collected at the Suao Plant and is mixed with spent mushroom substrate to restore plants.
- Hoping EcoPort established artificial wetlands, and nest boxes were installed in the quarries to provide ecological habitats and enhance urban resilience.
- TCC's restoration program promotes plant growth in quarries, while also restoring soil health and gradually increasing soil carbon sequestration.

REDUCE

- Remove invasive White popinac and repurpose it as biofuel.
- Time-controlled streetlights to reduce light pollution; sound-proofing reduces noise.
- Hoping Plant uses Membrane Bioreactor (MBR) technology to achieve 100% domestic wastewater-recycling and reuse, reducing environmental pollution.
- Hoping Quarry installed a vertical shaft transport system to reduce environmental dust.

AVOID

- TCC does not conduct extraction in any nationally designated protected areas.
- The quarries in Taiwan and Mainland China 100% passed environmental impact assessments.
- Cement plants in Taiwan and Mainland China, as well as RMC plants in Taiwan, have rainwater harvesting systems to reduce freshwater extraction.
- To avoid using herbicides, manual mowing or solar-grazing are used for weed control. To prevent the spread of invasive species, implement vehicle washing control.
- Use sustainable self-evaluate questionnaires to avoid suppliers with significant biodiversity impacts.

TRANSFORM

Shoushan Land transformed into a hiking area and detention pond park, serving as a recreational area and a flood prevention system.

Hoping EcoPort is planning to apply for recognition as OECMs.

Reuse wastes as alternative raw materials and fuels, cutting waste and emissions.

TCC offers scholarships, home repairs, emergency funds to cooperate with local communities.

4.2

Forest & Soil — TCC Restoration Map

TCC KEY FACTS



Biodiversity Management Plan coverage rate

BMP 100%

| Taiwan and Mainland China

Quarry Rehabilitation Plan coverage rate

QRP 100%

| Taiwan, Mainland China, CIMPOR, and OYAK CEMENT

HOPING QUARRY

88%
Native Species Preservation Ratio

ANTALYA PLANT, TÜRKIYE

12,000
plants restored

23 QUARRIES IN MAINLAND CHINA

2,726,317
plants restored

30%
restoration and revegetation rate

TAIBAISHAN QUARRY

89%
Native Species Preservation Ratio

53.8%[5]
restoration and revegetation rate

Note 5: The decrease in proportion was due to the aerial photography being taken during new tier mining operations, when rehabilitation had not yet begun

Forest Restoration

TCC follows the principle of simultaneous quarrying and rehabilitation. All quarries in Taiwan and Mainland China have established Biodiversity Management Plans (BMP) and Quarry Rehabilitation Plans (QRP) tailored to local requirements, which aims to restore ecosystem, accelerate ecological succession, and achieve Nature Positive. To rehabilitate native species in quarries, TCC has adopted two approaches. One is establishing nurseries and conduct hardening in collaboration with experts like Conservation Center and Professors. The other is promoting natural succession to enhance plant diversity. CIMPOR and OYAK CEMENT also advance biodiversity efforts beyond compliance.

Hoping Quarry, Hualien

Native Plant Restoration

Timeline: Environmental and ecological surveys since 2003 | Conducted long-term restoration projects since 2016

Team: Hoping Cement Plant and Ho Sheng Mining Co., Ltd.

Rehabilitation Method: Assisted natural regeneration, accelerating rehabilitation progress with minimal intervention

To enhance rehabilitation success, Hoping Quarry rehabilitation team has established nurseries in lower-altitude areas with stable environmental conditions. Seedlings are only transplanted to the quarry once they adapt and grow steadily, improving survival rates. The team also collects seeds to cultivate seedlings, which are then replanted in the quarry to preserve the genetic diversity of local native plants. After ten years of rehabilitation, the native species preservation ratio reached 88%. The restoration and reforestation rate has reached 52.39%, an increase of 3.29% compared to last year.



Taibaishan Quarry, Suao

Wind-Resistant, Drought-Tolerant, and Site-Specific Rehabilitation

Timeline: in 2017, Dedicated Ecological Restoration Project Launched

Team: Professor Ji-Wei Huang, Sustainable Landscape Laboratory, National Ilan University

Rehabilitation Method: Miyawaki method, achieving environmental protection through high-density planting of multiple species

The Taibaishan Quarry's karst terrain poses challenges for water retention. To address this issue, solar-powered drip irrigation system, windbreak nets, and rainwater harvesting have been implemented. Poor soil is enriched with chicken manure, spent mushroom substrate, and other organic matter to improve soil quality. Increased planting density reduces wind gaps, improving resilience. Under the guidance of Professor Ji-Wei Huang, rehabilitation methods have steadily advanced, achieving 81% vegetation coverage within one year.



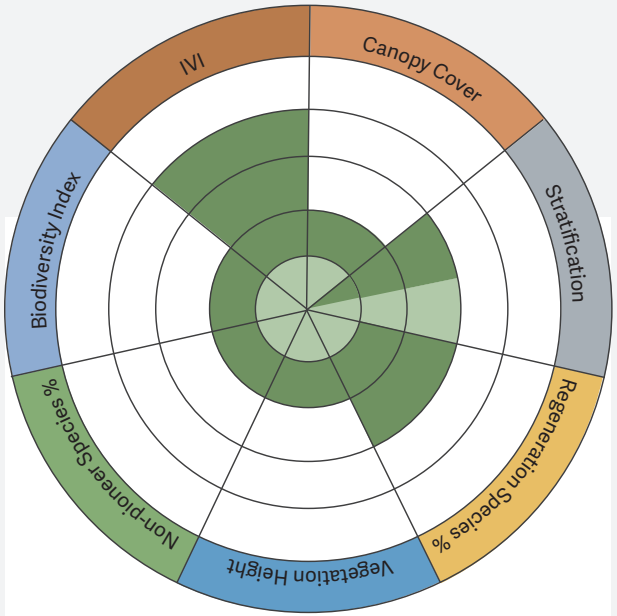
Restoration in quarries has attracted rare wildlife. The left image shows a Martes flavigula, and the right shows a Herpestes urva—both classified as protected species.

Ecological Recovery Wheel:

Seven Major Indicators to Evaluate Rehabilitation Progress

To assess quarry rehabilitation effectiveness, TCC introduced the Ecological Recovery Wheel based on the methodology of the Society of Ecological Restoration. It evaluates biodiversity using six major factors including ecosystem function, species composition, invasive species, and pollution. TCC applies key indicators related to quarry restoration to assess the progress of ecosystem rehabilitation. By 2025, the Ecological Recovery Wheel extended to Taibaisan Quarry. As Hoping Quarry adopts a semi-natural succession and Taibaishan Quarry prioritizes the restoration of non-pioneer species, separate wheels are used for each site. TCC will continue monitoring to ensure the effectiveness of ecological restoration.

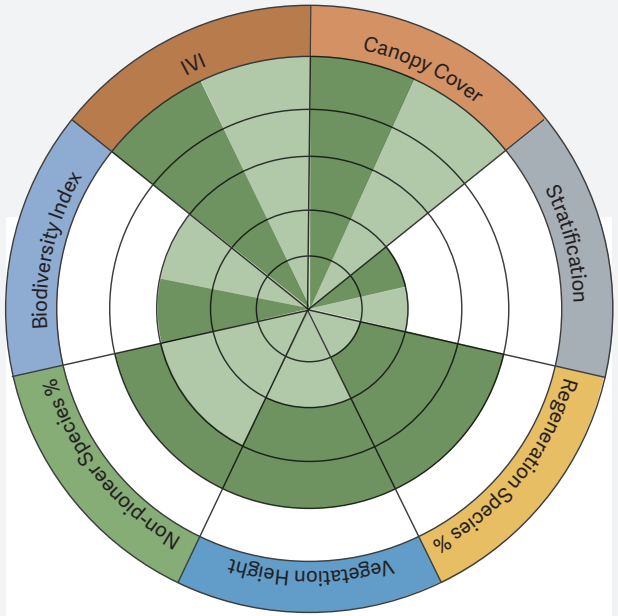
Hoping Quarry



Ecological Recovery Wheel

13 years restoration area | 1 year restoration area

Taibaisan Quarry



Ecological Recovery Wheel

7 years restoration area | 1 year restoration area

Definition

Canopy Cover
The vegetation coverage in the sample plot

Non-pioneer Species
Species are ranked by shade tolerance from levels I to V. Those at level III or above are non-pioneer species. Higher percentage suggests a more advanced forest succession stage

Stratification
Vegetation composition is visually assessed to evaluate stratification structure. More stratification support species coexistence, enhancing biodiversity

Vegetation Height
The average height of vegetation with a DBH ≧5 cm

Regeneration Species
Calculated as the percentage of species with DBH ≤ 5 cm relative to the total. A higher value indicates dominance by seedlings and fewer mature trees. The closer it is to a natural forest, the higher the score

Biodiversity Index
Shannon-Weiner Species Diversity Index adopted

IVI
Average coverage and frequency of native species are used to calculate IVI. A higher IVI indicates more native species in the plot

Items	Hoping Quarry	
	1st Year of Restoration (1020m)	13th Year of Restoration (1160m)
Canopy Cover	37%	83%
Non-pioneer Species	10%	29%
Stratification	Two layers (ground cover and shrubs)	Two layers (ground cover and shrubs)
Vegetation Height	1.87 meters	6 meters
Regeneration Species	100%	71%
Biodiversity Index	0.93	1.75
IVI	65%	98.7%

Hoping Quarry, with a larger rehabilitation area, uses assisted natural regeneration.
Initially the restoration areas were mainly composed of pioneer species that can tolerate harsh conditions like intense sunlight and wind. As soil conditions gradually improve and vegetation becomes more established, shade-tolerant plants begin to take root. Therefore, it takes a longer time to see improvements in indicators such as coverage and the proportion of non-pioneer species.

Items	Taibaishan Quarry	
	1st Year of Restoration (830m)	7th Year of Restoration (860m)
Canopy Cover	81%	93%
Non-pioneer Species	52.4%	70.0%
Stratification	Two layers (ground cover and shrubs)	Two layers (ground cover and shrubs)
Vegetation Height	2.6 meters	4.5 meters
Regeneration Species	98.18%	26.67%
Biodiversity Index	1.73 (Note: Because the restoration zone is small, monitoring data from the entire area is used)	
IVI	92.25%	95.72%

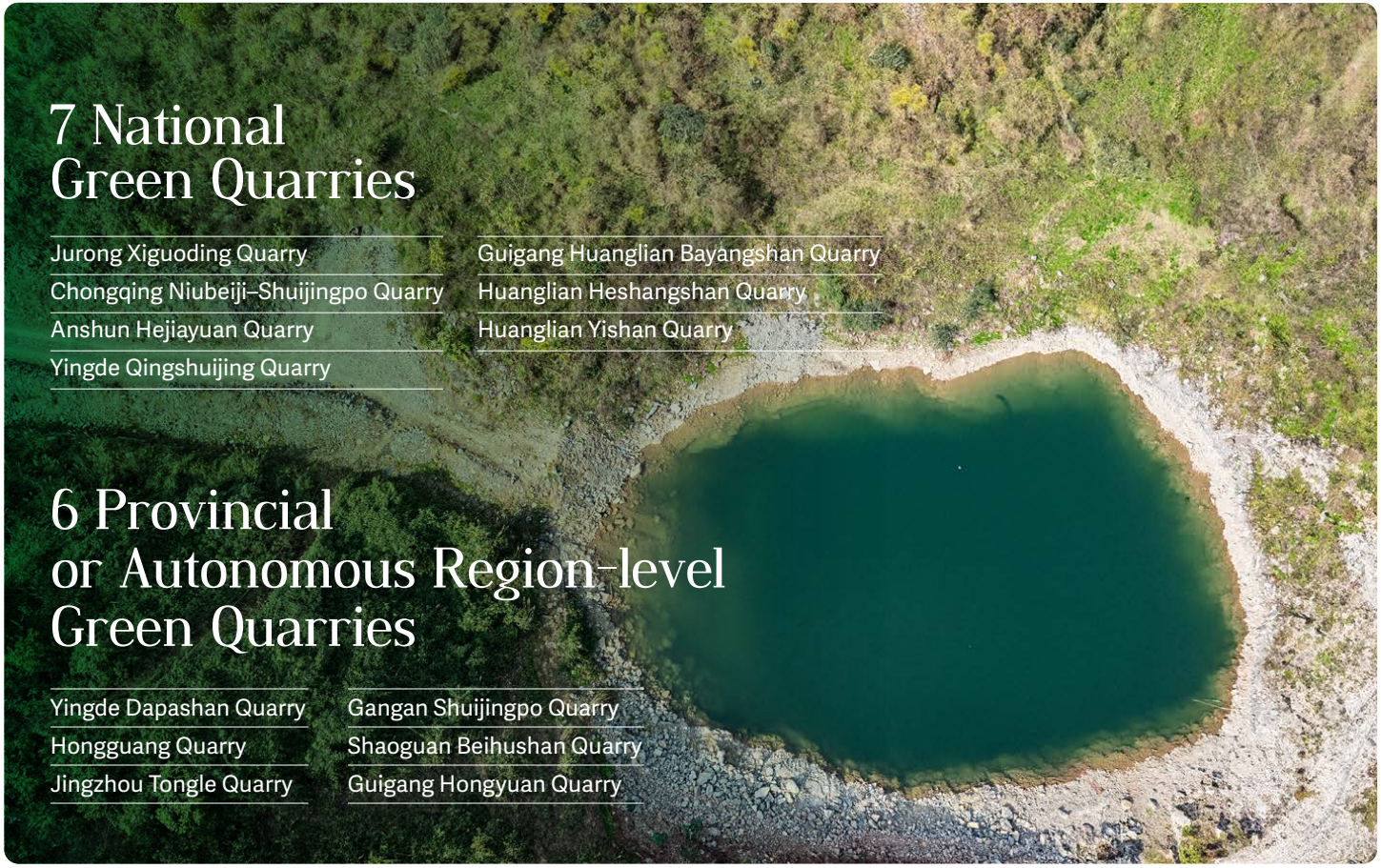
Taibaishan Quarry, with a smaller rehabilitation area, adopts the Miyawaki method
Miyawaki method featuring multi-species, multi-layered, dense planting and mixed-species planting strategies. This enables higher coverage and a greater proportion of non-pioneer species in the initial stage. After just one year, Taibaishan Quarry reached 52.4% non-pioneer species rate, while Hoping Quarry maintained only 29% after 13 years

These results indicate that long-term restoration at the Hoping Quarry has led to strong outcomes in forest stand height, biodiversity index, and IVI. In contrast, Taibaishan Quarry, through more intensive intervention, rapidly improved coverage, non-pioneer species proportion, and biodiversity. Although the two quarries adopt different restoration strategies, both show significant progress in enhancing biodiversity.

Comprehensive analysis: Due to different geographical conditions in each quarry, TCC adopts site-specific approaches.

Seven National-level Green Quarries - Mainland China

All plants in Mainland China have developed quarry geological environment protection and land reclamation plans, strictly following regulations and the principle of "restoring farmland to farmland, forest to forest". These efforts aim to create green quarries where humans and nature coexist in harmony. A stepped quarrying approach is adopted to minimize environmental impact. After extraction, limestone is transported using unmanned electric mining trucks and enclosed corridors to reduce air pollution and dust. In closed quarry, vegetation restoration is actively promoted through slope adjustment, topsoil preparation, soil covering, and tree planting. Biodegradable vegetation bags are used to protect slopes, and a nutrient-rich mixture is sprayed to complete the greening project.



Jurong Plant

Creates an Ecological Farm

The slope platforms are covered with soil for planting trees and shrubs, while the slopes are sprayed with seeds through netting. In the quarry, fruit trees and vegetable gardens are replanted to create a garden-like environment, and employees are encouraged to grow vegetables on the ecological farm.

Chongqing Plant

Carries out Timely Seeding and Restoration

The soil is relocated to the restoration area to support plant restoration, with shrubs and herbaceous plants seeded seasonally according to appropriate timing. The gently sloping quarry floor is designated as a crop cultivation area and orchard to stabilize soil and reduce dust.

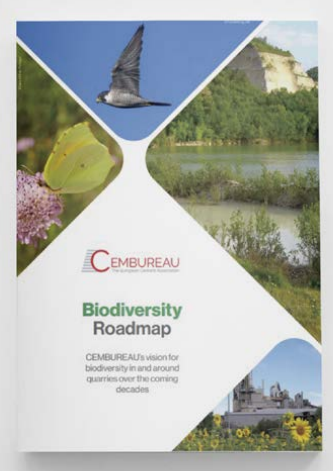
Shaoguan Plant

Improves Slope Restoration Methods

Multiple engineering methods are adopted to maintain the quarry environment. Ecological growth bags are placed on the slopes, followed by spraying topsoil and soil coverage on the slope surface to create a suitable environment for plant growth. Additionally, a 1.2 mu watermelon garden has been designated, making effective use of idle land.

CIMPOR & OYAK CEMENT

Aligns with the European Cement Association (CEMBUREAU)



Starting in 2025, CIMPOR is aligning its Biodiversity Policy in the next decade with the CEMBUREAU Biodiversity Roadmap, which it has already subscribed to. This new roadmap defines measures and goals by 2030, grouped into four focus areas: 1) ecosystem rehabilitation and services, 2) the EU Pollinators Initiative, 3) invasive species and 4) protected species.

In addition, CIMPOR will also consider the Sustainability Guidelines for Quarry Rehabilitation and Biodiversity Management, published by the GCCA and will comply with the Nature Restoration Regulation, which is aimed at establishing measures and goals for restoring land and sea areas for 2030 and 2050.

After the OYAK CEMENT Antalya plant ceased operations in 2017, it immediately began a three-year rehabilitation plan, replanting over 12,000 plants and establishing a drip irrigation system and water reservoir for wildlife use, aiming to restore the natural state of flora and fauna in the area.


The present of gray wolves suggesting the ecosystem is healthy and functioning.


TCC's sustainability team visit Aslan plant, OYAK CEMENT

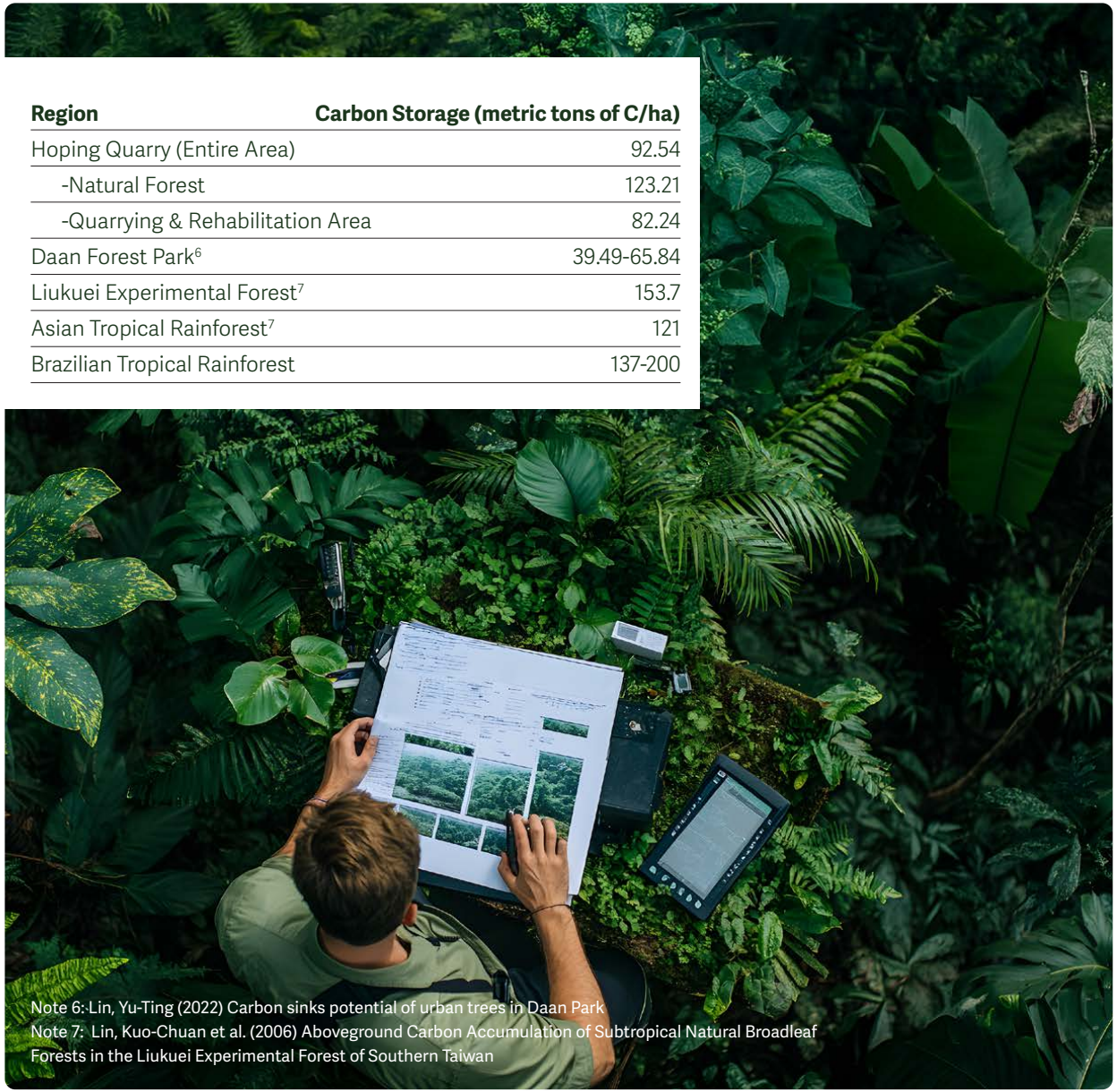
Forest Carbon Sink Research

At the end of 2023, we collaborated with Associate Professor Chyi-Rong Chiou's team from the Department of Forestry at National Taiwan University. Due to the April 3rd earthquake, the project was not completed until the end of 2024. First, the historical land use types, areas, and their changes over time at the quarry were analyzed. Findings showed high-density forest occupies the largest proportion of area, increasing from 63.08% in 2002 to 76.92% in 2022. Medium- and low-density forests have also shown a trend of transitioning into high-density forests, clearly indicating the effectiveness of the rehabilitation plan.

Hoping Quarry Carbon Sink Report

Sample sites at different altitudes were randomly selected for carbon sink surveys. The results show that the carbon storage in the Jinchang Quarry (natural forest area) was 123.21 metric tons per hectare, nearly double that of Daan Forest Park. In 2024, the survey area expanded to include both quarry and rehabilitation areas, with carbon storage capacity of 82.24 metric tons per hectare. Through restoration, the carbon storage capacity of the developed areas remains approximately 1.5 times higher than that of Daan Forest Park. When integrating natural forests with quarry and rehabilitation areas, the overall carbon storage capacity of the entire Hoping quarry reaches approximately 92.54 metric ton per hectare.

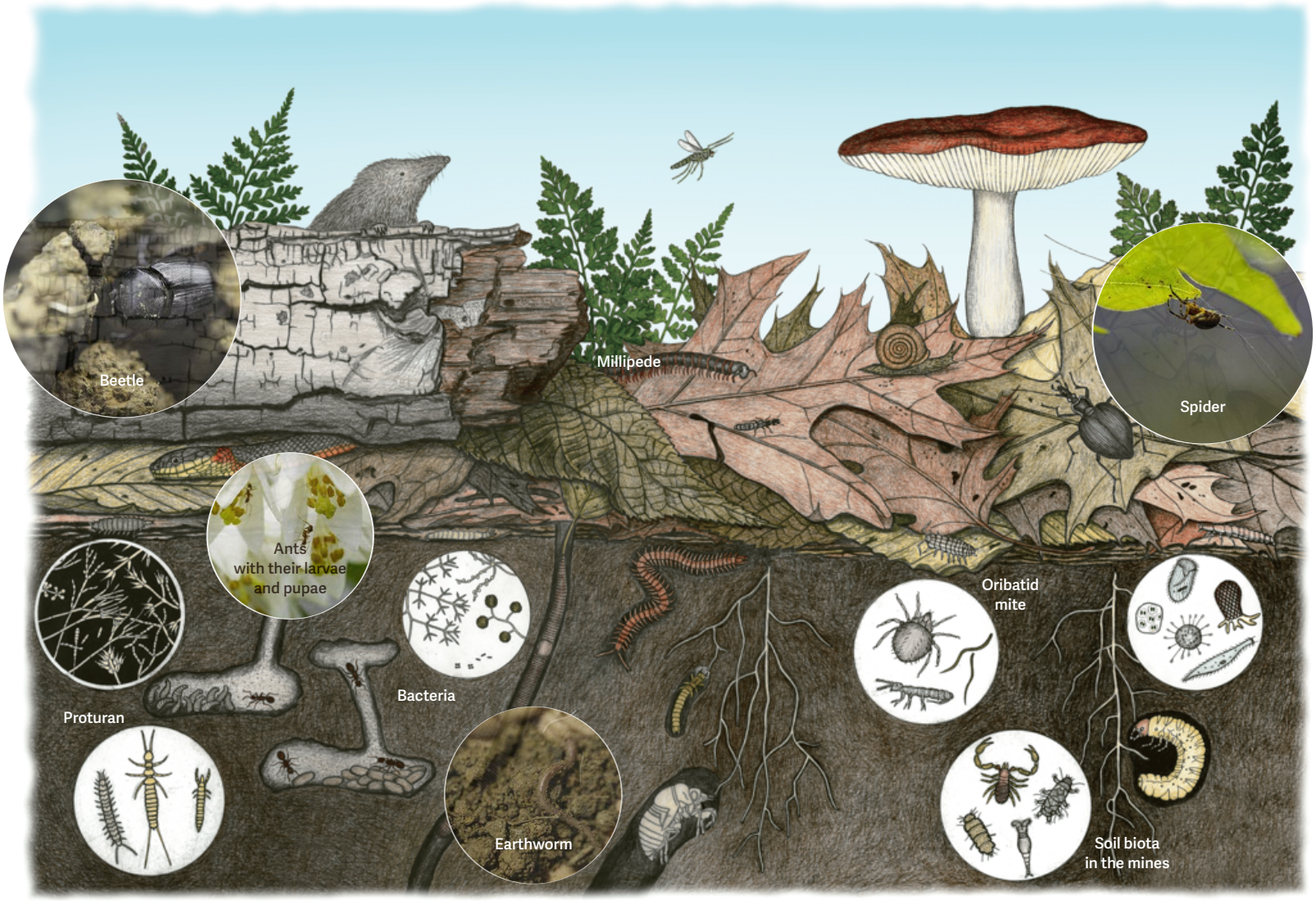
Region	Carbon Storage (metric tons of C/ha)
Hoping Quarry (Entire Area)	92.54
-Natural Forest	123.21
-Quarrying & Rehabilitation Area	82.24
Daan Forest Park[6]	39.49-65.84
Liukuei Experimental Forest[7]	153.7
Asian Tropical Rainforest[7]	121
Brazilian Tropical Rainforest	137-200



Note 6:Lin, Yu-Ting (2022) Carbon sinks potential of urban trees in Daan Park
Note 7: Lin, Kuo-Chuan et al. (2006) Aboveground Carbon Accumulation of Subtropical Natural Broadleaf Forests in the Liukuei Experimental Forest of Southern Taiwan

Soil Research

TCC began forest ecosystem restoration at its core industrial sites - Taibaishan Quarry and Hoping Quarry. However, past experience shows that even when excavated soil is returned shortly after quarrying, natural organic fertilizers are still needed to improve its physical and chemical properties. Quarrying disrupts soil biodiversity, prompting us to explore the vast subterranean ecosystem more deeply.



Reference: Life in the Soil: A Guide for Naturalists and Gardeners. By James B. Nardi.
Soil teems with life—from ants and earthworms to springtails, pseudoscorpions, and countless microbes essential to soil health.

TCC KEY FACTS

1.3 times
Organic carbon ratio
| 2021-2023

31.2 metric tons
Total Organic Carbon Storage (TOCS) in soil per hectare
| 2023

by 2035
Goal to Increase **60%**





Soil Carbon Sequestration Survey Report

Preliminary 2024 results showed that soil in restored areas of the Hoping Quarry over the past 16 years consistently holds more organic carbon than that in urban parks. Notably, a site at 1,060 meters elevation-restored for three years-shows a 1.3-fold increase in total organic carbon compared to a site at 1,020 meters, following topsoil coverage and vegetation restoration. This highlights the effectiveness of restoration in boosting soil carbon sequestration.

To assess the impact of new restoration methods, further soil analysis is planned for 2025, with survey results expected to be published in August 2025 on the ESG section of TCC's official website. In 2025, restoration strategies will also focus on improving seedling survival rates and accelerate biodiversity recovery.

Action Spotlight

Hoping Quarry's New Restoration Area at 1,015 meters —

Skill Improvement Program for Restoration Personnel

Implementation Team:
Ho Sheng Mining Co., Ltd. Restoration Group, comprising two Truku and two Atayal colleagues

Purpose:
Soil expert was hired to assess the soil health conditions on-site in the quarry and conduct team training, to accelerate the process of ecosystem restoration in the quarry.



Improved Restoration Methods:

1. Enhanced soil covering method: Adding stones of varying sizes to planting areas to improve soil porosity and prevent compaction that can hinder root development
2. Site-specific planting and seedling management: Moving up the planting schedule to reduce the physical burden on restoration staff and helping plants establish before their roots extend beyond the containers, thus minimizing the risk of root damage
3. Increase planting density: Raising the density from one plant every 3 meters to one plant every 1 meter

Follow-up Plans:

1. Establish a restoration manual and provide recommendations for species selection, soil improvement, and nursery management
2. Continue to improve professional capabilities in seedling cultivation and plant care
3. Regularly inspect and analyze seedling growth conditions
4. Conduct soil organic carbon surveys every five years to evaluate restoration effectiveness



Areas for Improvement:

Quarry rehabilitation now goes beyond regulatory compliance, aiming to restore full ecosystem functionality. However, harsh conditions and poor soils often lead to high plant mortality, requiring enhanced expertise from restoration teams. Through this training course, the expert identified issues in the planting process and offer practical solutions to ease staff workload. In the future, we will lead restoration team members in training, aiming to comprehensively improve the efficiency and quality of restoration work, from seed collection and seedling cultivation to tree planting.

Soil Talent Development

In 2024, TCC organized the Soil Award and Soil Camp to encourage younger generations to explore soil-related issues in depth. TCC plans to host the second Soil Award at the end of 2025, expanding its scope to include fundamental research, applied technology, and educational promotion. Through this ongoing initiative, we aim to strengthen academic focus and investment in soil research in Taiwan, continue to nurture outstanding talent, and inject fresh innovative ideas into land sustainability and environmental development.





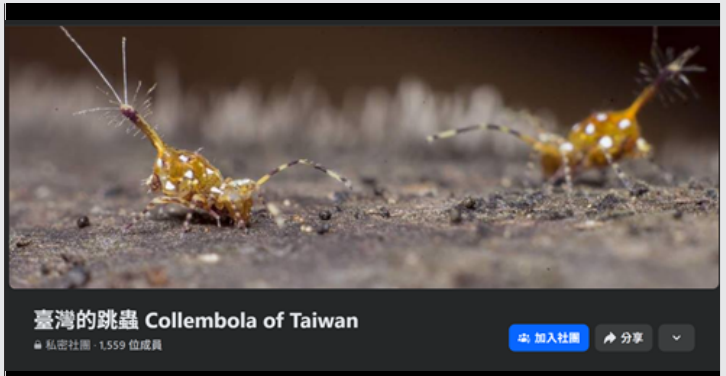
Hsiang-Yun LIN as instructor in 2025 Soil Camp

2024 Gold Award Winner,
also 2025 Soil Camp Instructor

Hsiang-Yun LIN

Master's degree from Institute of Ecology and Evolutionary Biology, NTU/Student Teacher at Sacred Heart High School

Pseudoscorpions are carnivorous soil animals. No new species had been discovered in Taiwan for over 80 years until Hsiang-Yun LIN discovered two species and proposed the phoretic relationships between pseudoscorpions and other insects. Starting in 2025, she began serving as a student teacher at Sacred Heart Girls High School, actively promoting science education and dedicating herself to inspiring students' interest and passion for the environment and land, giving back to society with her knowledge.



Administrator of Taiwan's Springtail Facebook Group

2024 Gold Award Winner

Hsin-Ju CHENG

Pursuing a doctoral degree at the University of Cologne, Germany

Springtails play important roles in both the food chain and nutrient cycling of soil ecosystems. Hsin-Ju CHENG updated Taiwan's springtail inventory from 26 to 58 recorded species, increasing species richness by 123%. Starting in 2024, she began pursuing her doctoral degree at the University of Cologne, Germany, focusing on taxonomic research of soil animals, specifically springtails, demonstrating her strong commitment and professional dedication to soil conservation.



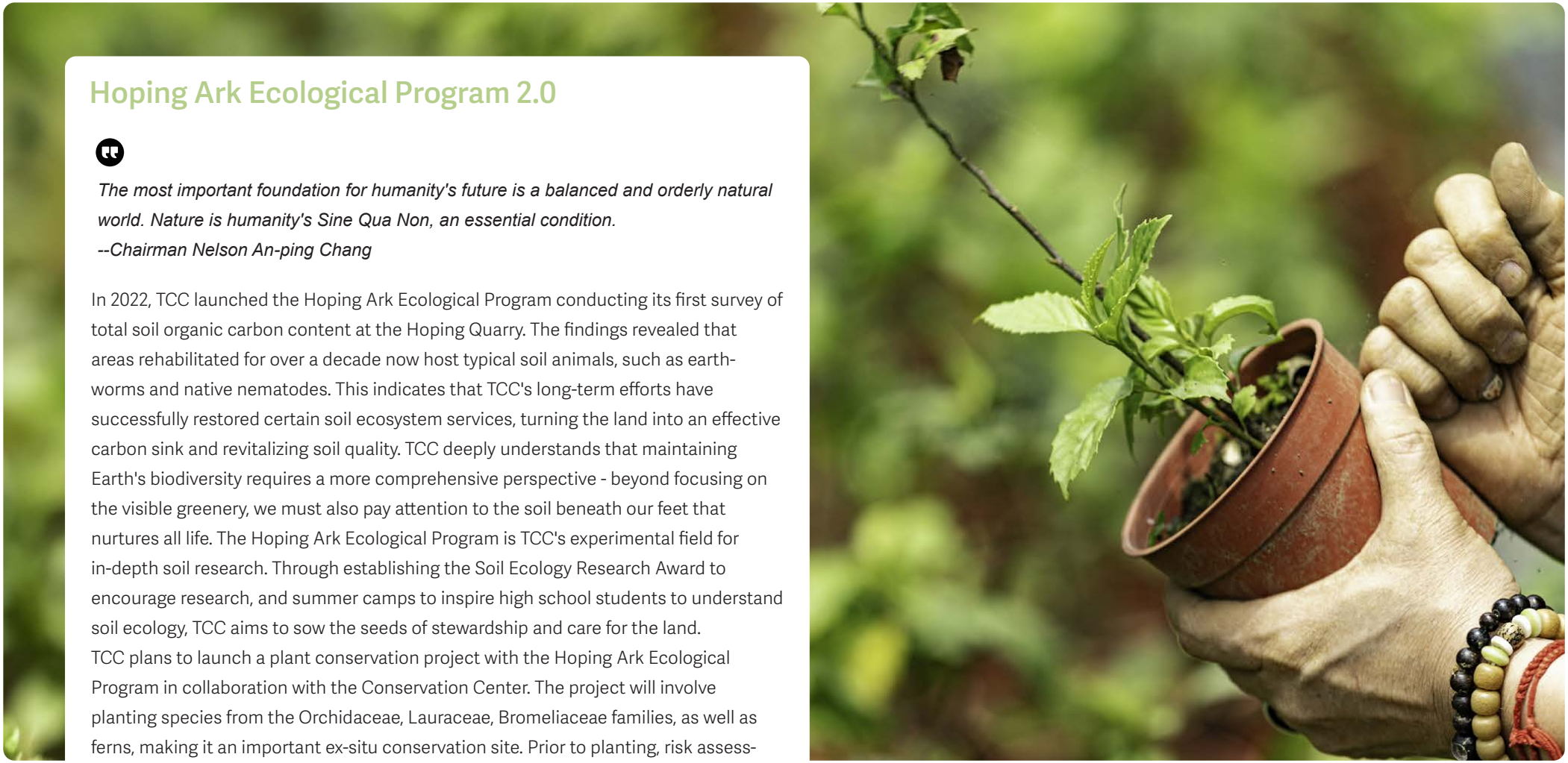
Field practice from the Soil Camp: measuring soil moisture outdoors.

The 2025 Soil Camp, aimed at high school students, covers topics ranging from basic soil properties and soil ecology to hands-on observation of soil invertebrates and practical applications of AI monitoring. The program is designed to guide students in developing a clear and accessible understanding of soil ecosystems and raise awareness about the urgency of soil degradation. Through professional courses and engaging experiments, the camp hopes to inspire students' interest in soil research and cultivate future talent in the field.





Award ceremony photo of the top-scoring student in the Soil Camp.



Hoping Ark Ecological Program 2.0

The most important foundation for humanity's future is a balanced and orderly natural world. Nature is humanity's Sine Qua Non, an essential condition.
--Chairman Nelson An-ping Chang

In 2022, TCC launched the Hoping Ark Ecological Program conducting its first survey of total soil organic carbon content at the Hoping Quarry. The findings revealed that areas rehabilitated for over a decade now host typical soil animals, such as earthworms and native nematodes. This indicates that TCC's long-term efforts have successfully restored certain soil ecosystem services, turning the land into an effective carbon sink and revitalizing soil quality. TCC deeply understands that maintaining Earth's biodiversity requires a more comprehensive perspective - beyond focusing on the visible greenery, we must also pay attention to the soil beneath our feet that nurtures all life. The Hoping Ark Ecological Program is TCC's experimental field for in-depth soil research. Through establishing the Soil Ecology Research Award to encourage research, and summer camps to inspire high school students to understand soil ecology, TCC aims to sow the seeds of stewardship and care for the land.
TCC plans to launch a plant conservation project with the Hoping Ark Ecological Program in collaboration with the Conservation Center. The project will involve planting species from the Orchidaceae, Lauraceae, Bromeliaceae families, as well as ferns, making it an important ex-situ conservation site. Prior to planting, risk assessments will be conducted to prevent the spread of non-native species. Additionally, TCC is collaborating with Chung Yuan Christian University on a construction surplus soil reuse project, attempting to increase the reuse ratio of construction surplus soil through innovative technologies, reduce waste treatment costs, and provide new possibilities for quarry soil improvement.

4.3

Marine Rehabilitation

TCC KEY FACTS

Coral Rehabilitation Plan

2024 Planting

155 coral individuals

2021/4-2024/7

80% coral survival rate

3 times growth area

Giant Clams Survey

3 species

98 individuals

Artificial Wetland

2025 Used by

14 species

Fish and Clams Survey

217 species

11,091 individuals

OYAK CEMENT
placed artificial reefs in the Marmara Sea

Little Tern Conservation Plan

TARGET

10% reproductive rate in 3 years

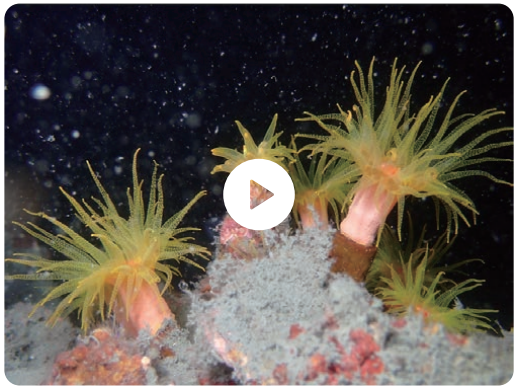
Chinese Spiranthes Survey

1,943 individuals in 1.3 hectares

Biodiversity of Hoping EcoPort's coral reef ecosystems

Hoping EcoPort

Hoping EcoPort is the only inward-dredged port in Taiwan. It was certified to APSN Green Port Award System (GPAS) in 2021, and in 2023, it renewed the PERS certification in 2023. Hoping EcoPort strives to minimize the environmental impact of its operations to the greatest extent possible and actively undertakes conservation efforts. This enables Hoping EcoPort to become an oasis within the marine ecosystem, providing diverse habitats for marine life to thrive.



The second phase of the coral restoration project at Hoping EcoPort has shown successful coral propagation, contributing significantly to the enhancement of marine biodiversity.



Coral Habitat Restoration
After coral sightings at Hoping EcoPort, TCC launched a coral species identification survey in 2020, and found numerous small branching corals growing in the fragile growth environment, making them vulnerable to wave action. In response, TCC collaborated with the Eco-Angel Environment Conservation Association to launch a Bio Cube Coral Creation Project in 2021, expanding coral coverage in suitable area and monitor their growth.

First Phase of the Bio Cubes Construction Project

In 2021, the team installed Bio cubes in calmer areas of the port. Leveraging TCC's core business, they used TCC's low-carbon cement as the base to attach coral fragments, broken due to natural factors or port waves, onto these ecological blocks, giving the corals a chance to grow. 2024 surveys found that earthquakes and typhoons had damaged some of the Bio cubes, affecting coral survival rates.

Second Phase of the Coral Planting Project with Grating Plates

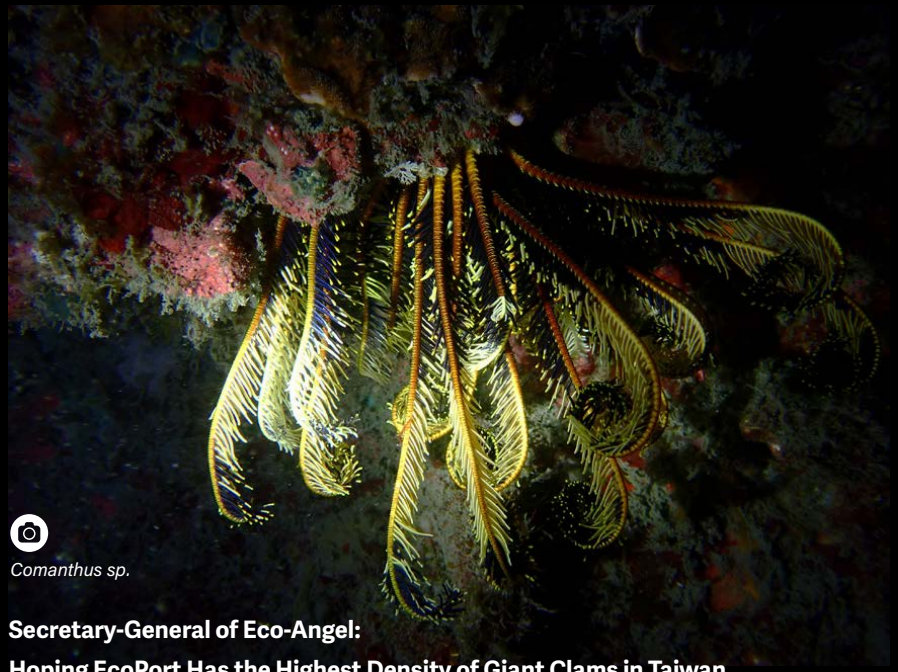
In January 2024, the team expanded construction areas including all coral habitats with grating plates, transplanting 713 coral colonies from 66 species in 16 genera. This project is Taiwan's first successful coral restoration project in an industrial port. Future plans include, public coral planting to promote marine conservation.

In mid to late 2024, typhoons Gaemi, Krathon and Kong-rey severely impacted Hoping EcoPort, causing 143 coral colonies lost in total. However, the coverage area decreased by only 4%, and the coral health score reached 4.9 out of 6, indicating the corals remain in a healthy condition.



Tambja morosa spotted on the seabed.

Giant Clam Survey



Comanthus sp.

Secretary-General of Eco-Angel:
Hoping EcoPort Has the Highest Density of Giant Clams in Taiwan

Giant clams, the world's largest protected bivalve, play a vital role in coral ecosystem by providing surfaces for coral, algae, and other marine organisms attachment and releasing nutrients that support marine life. However, their populations have declined due to climate change, hunting, and human interference. Hoping EcoPort's clear waters offer ideal habitat for these giant clams. In 2022, this rare species was accidentally discovered during a coral survey and the annual records have become valuable information on the growth of giant clams. In 2025, TCC commissioned Eco-Angel Environment Conservation Association to conduct an annual giant clam survey, and found 3 giant clam species, including 60 individuals of Tridacninae squamosa, 24 individuals of T. maxima and 14 individuals of T. noae – a total of 98 individuals. Notably, 88% of T. maxima and 55% of T. squamosa were mature, contrasting with the low maturity rates typically observed across Taiwan. This suggests Hoping EcoPort's stable environment supports successful growth. The port will continue exploring conservation strategies and monitor changes in clam size and health over time.

Surveys of Fish and Mollusks

Hoping EcoPort commissioned Taipei University of Marine Technology to conduct fish and mollusks surveys using Underwater Visual Census and underwater cameras for species identification. In 2024, across all four seasons, the survey recorded 10,431 individual fish from 207 species and 39 families, along with 660 individual mollusks from 10 species and 8 families.



Tridacninae noae



Goniobranchus albonares



Heniochus chrysostomus

The results showed that fish biodiversity was highest around the Bio cubes, suggesting that the cubes and the corals growing on them enhance environmental heterogeneity, allowing more species to coexist. Algae and other organisms attached to the corals and cubes also provide food, making the area more attractive to fish. Long-term monitoring will be conducted in the future to determine whether the biodiversity of fish and mollusks around the bio cubes increases over time.

Action Spotlight

OYAK CEMENT Launches Artificial Reef Project



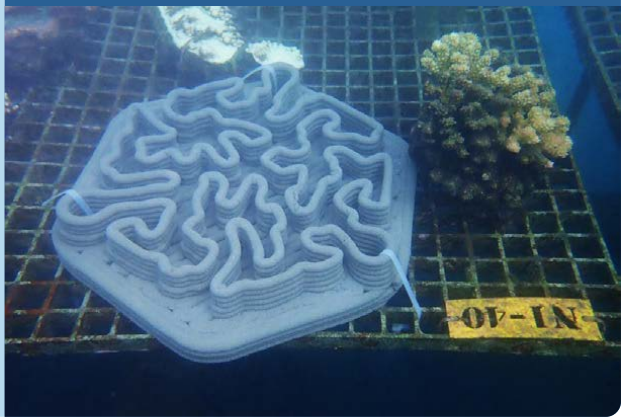
In 2025, OYAK CEMENT collaborated with Kocaeli University to construct artificial reefs using Duracem + CEM III/B (S) 32.5N-SR cement, the lowest carbon product in their series[8]. These reefs were deployed in Izmit Bay on International Biodiversity Day. Subsequently, they will assess the effectiveness in enhancing marine biodiversity and supporting small-scale fisheries.



Note 8: 294 kg carbon emission intensity per ton of cement

Optimization Directions for TCC's 3D Printed UHPC Restoration Bases

To further optimize the restoration efforts, TCC developed 3D-printed UHPC artificial bases with natural-like folds, cracks and porous structures that mimic coral reefs. These features promote coral and algae attachment. The project aims to compare algae and coral attachment to surfaces with varying degrees of roughness, as well as the impact of base shapes on fish hiding behavior and study the durability of UHPC in marine environments. In October 2024, three bases were installed on the grating plates at Hoping EcoPort.



Ecological Environment Protection Around the Port Area

Artificial Wetland and Bird Survey

In 2024, Hoping EcoPort expanded its ecological restoration efforts to land areas, transforming idle spaces into artificial wetlands designed to enhance urban climate resilience. These wetlands help regulate water resources and microclimates under extreme weather conditions, thereby strengthening overall environmental resilience. To improve the ecological integrity of the wetland system, native species such as the endemic *Aphyocypris kikuchii* were introduced, along with plantings of *Oenanthe pterocaulon* and *Nuphar shimadai*. As the ecosystem gradually stabilized, amphibians like the Ornate narrow-mouthed toad and the Rice field frog began to inhabit the area. The wetlands also naturally evolved into feeding and resting grounds for birds, reflecting the multifunctional environmental benefits of the artificial wetland. Hoping EcoPort collaborated with Associate Professor Xu-Yu Cheng from National Dong Hwa University to conduct bird surveys within and around the port. Infrared automatic cameras were installed to monitor bird activity. As of June 2025, 11 bird species have been recorded visiting the wetland, with further optimization measures to follow based on detailed survey results.



Chinese pond heron is a rare winter visitor, highlights the ecological importance of the wetland.

Chinese Spiranthes Survey

Chinese spiranthes, a terrestrial orchid listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) due to over-collection for traditional medicine and its anti-cancer properties, is thriving at Hoping EcoPort. The port's eco-friendly management-prohibiting herbicides and pesticides – supports the growth of native Taiwanese flora. A 2025 survey by Professor Yu-Yun Chen's team from National Dong Hwa University recorded 1,943 Chinese spiranthes in a 1.3 hectares area. The professor expressed surprise at this density, stating, "Even the Chinese spiranthes restoration area at Dong Hwa University doesn't have such a high density." During the blooming season, the area becomes a stunning landscape of flowers. Other rare species found include *Ophioglossum thermale* (Near Threatened in Taiwan), and *Eulophia dentata* (Endangered on the IUCN Red List). Hoping EcoPort's eco-friendly management system has effectively established it as an alternative sanctuary for these endangered plants. Ongoing monitoring will track changes in population size and fruiting success over time.





Professor Yu-Yun Chen's team from National Dong Hwa University conducted Chinese spiranthes survey at Hoping EcoPort.

4.4

OECMs

Other Effective Area-based Conservation Measures

What are OECMs?

An Other Effective Area-based Conservation Measures (OECMs), is a geographically defined area other than a Protected Area. Through effective governance and management, deliver long-term positive outcomes on ecosystem services. OECMs also incorporate cultural, spiritual, socio-economic, and other values relevant to local communities. According to the CBD, OECMs can be counted as conservation area and included in the scope of the 30x30 target. Therefore, the inventory and certification of OECMs have become key efforts pursued by countries worldwide.

OECMs Assessment Criteria:

- Not an official or traditional protected area established for ecological conservation purposes
- Provides in-situ biodiversity conservation functions
- Has effective governance and management systems
- Ensures the effectiveness of long-term protection

Experts and Scholars Visited Hoping Quarry and Hoping EcoPort

A team of experts and scholars from the Forestry and Nature Conservation Agency

2024/1
Preliminary Assessment
Hoping Quarry: Complies with the principle of long-term protection
Hoping EcoPort: Complies with the principle of in-situ restoration

Deputy Minister of Ocean Affairs Council Hsiang-wen Huang, along with authoritative coral expert Chang-feng Dai

2025/6
Assessment Result
Hoping EcoPort: Conducted an on-site ecological assessment and recommended applying for OECMs



OECMs Opportunities for TCC:

- Strengthen TCC commitments, and advance its sustainability influence through proactive ecological protection
- Support environmental education and tourism while creating employment opportunities
- **Multi-stakeholder collaboration:**
  - **Environmental groups:** Enable teaching and demonstration partnerships on OECMs
  - **Suppliers and partners:** Promoting cooperation as a best practice model
  - **Government departments:** Co-invest in marine ecological conservation
  - **Local residents:** Increasing educational resources

TCC Quarries and Hoping EcoPort Response Strategies:

- **Restoring native species in Quarry:** Implement long-term surveys and apply quantitative indicators to assess restoration results.
- **Establishing tourism and education parks:** Promote OECMs by creating education parks that generate local employment and tourism opportunities, foster knowledge exchange with government and academia.
- **Developing a Taiwan marine education platform:** Create a centralized platform to consolidate marine education resources related to OECMs.
- **Planning historical and cultural tours of quarries:** Preserve former production facilities and historic structures to support cultural tours that highlight its historical development.

For more information about TCC's TNFD analysis results, please refer to the 2023 TNFD report

4.5

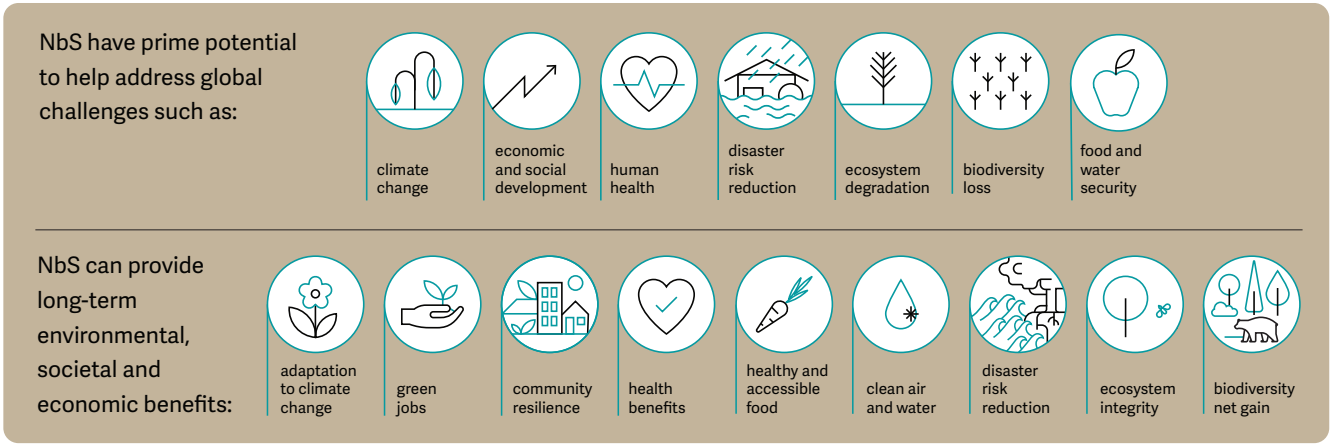
Nature-based Solutions (NbS)

Ovais Sarmad, former Executive Secretary of the United Nations Framework Convention on Climate Change (UNFCCC), stated, "We face a double crisis of climate change and nature. The two are inextricably linked. The mutual, intertwined destruction grows worse by the day. If nature and climate change are linked, it only stands to reason that Nature-based Solutions lie at the heart of addressing both." A joint IUCN and UNEP report estimates that NbS could reduce or remove at lease five billion metric tons of CO_2e by 2030, increasing to ten billion metric tons by 2050, which is crucial for achieving the Paris Agreement's 1.5°C target. Guided by the NbS approach, TCC manages environmental impacts of its operating sites, restores local ecosystems, and protects rare and endangered species, thereby contributing to climate change mitigation and creating positive impacts for nature. NbS reflects TCC's carbon reduction and green enhancement operational model.

What is NbS?

The International Union for Conservation of Nature (IUCN) defines Nature-based Solutions (NbS) as actions that protect, sustainably manage, and restore natural or modified ecosystems to address societal challenges, while delivering benefits for both human well-being and biodiversity.

Source: IUCN Nature-based Solutions



Reference: IUCN Nature-based Solutions

Remove White Popinac

Addressing Challenges:
Environmental Degradation and Biodiversity Loss
| Climate Change Mitigation and Adaptation
Creating Opportunities:
Becoming Zero-carbon Biomass Energy

White popinac, an invasive alien species that releases toxins to inhibit other plant growth. Originally introduced to Taiwan for pulp and timber production, its limited utility and poor management led to its spreading. Since 2023, Suao and Hoping Plants have partnered with the Industrial Development Bureau and local governments to mechanically remove White popinac from riverbanks and industrial areas. Then it is converted into zero-carbon energy via co-processing, addressing both ecological threats and reducing coal use. TCC will continue the invasive species removal and replant native species to safeguard biodiversity.

TCC KEY FACTS

2023-2024 White Popinac Processed
Hoping Plant : **218.88** metric tons
Suao Plant : **62.97** metric tons
Carbon reduction of
355.4 metric tons of CO_2e



TCC undertook large-scale removal of White Popinac, with centralized processing and effective utilization of its wood.

TO BE Marine Guardian: Hoping EcoPort Ecological Restoration Project

Addressing Challenges:
Environmental Degradation and Biodiversity Loss

Creating Opportunities:
Increasing Habitat Richness and Enhancing Biodiversity

Ports often generate jetty effects that alter coastlines and disrupt ecosystems, while industrial structures can further threaten marine life. Designed with ecological considerations, Hoping EcoPort is the only inward-excavated port in Taiwan and features gentle slope revetments to enhance habitat use by wildlife. It also employs low-impact dredging and continuous water quality monitoring. Since 2021, a coral creation project has been in place. In 2023, the project expanded to include coral planting using Grating Plates and UHPC restoration bases, along with indicator species surveys, such as giant clams. Comprehensive marine ecosystem monitoring is conducted through multi-taxa biological surveys.

Solar Grazing: Balancing Green Energy and Ecology

Addressing Challenges:
Environmental Degradation and Biodiversity Loss

Creating Opportunities:
Grazing for Weed Control and Soil Fertility Enhancement

Solar sites often used herbicides for weed control, harming ecosystems. TCC Green Energy and the Yingde Plant adopted solar grazing--using goats to manage weeds, cut coasts, and provide free feed. After ensuring equipment safety, TCC began goat grazing at the Changbin Solar and Wind Power Plant in 2024; added a maternity area, rain shelters and raised floors in 2025.

Yingde plant also started solar grazing in 2024, working with local farmers to ease land pressure and support elderly shepherds. This pesticide-free method produces healthier, leaner goats, with lambs selling up to 1.6 times the market average. Goat numbers ad kept within the land's capacity to avoid overgrazing. Their manure improves soil, creating a cycle of free feed and fertilizer, promoting sustainable land use.

TCC KEY FACTS

Yingde Plant 2023/5-2024/12

6.5 hectares goat grazing area

NT$1 million labor cost savings

1.423 metric tons
CO_2e carbon reduction
(estimated based on carbon emissions from mowing equipment)

Changbin Solar and Wind Power Plant 2024/10-12

0.95 hectares goat grazing area

NT $320,000 labor cost savings

31.2 kg
CO_2e carbon reduction
(based on estimated carbon emissions from mowing equipment)

Generating Green Power While Farming Fish and Shrimp

Addressing Challenges:
Climate Change Mitigation and Adaptation

Creating Opportunities:
Combining Renewable Energy Generation with Fishery Production



As demand raises, aquaculture is set to replace ocean fishing, requiring industry upgrades. Simultaneously, green energy is growing to combat climate change. Aquavoltaics--combining aquaculture and solar power--reflects both trends. At its Chiayi site, TCC Green Energy partners with local fish farmers to build ponds, with a professional team researching shrimp farming, beneficial bacterial, and water purification systems. By blending traditional know-how with modern tech, TCC aims to create a sustainable aquaculture model that drives industry change and boosts the local economy. See CH3.5 Energy Generation for details.

TCC KEY FACTS

Produced
217 metric tons
of fishery products
| 2024/1-2024/11

Generated
137 million kWh
of electricity
Equivalent to
66,000 metric tons of CO_2e

4.6

Natural Benefit Sharing

The three objectives of CBD are: 'The conservation of Biological diversity', 'The sustainable use of the components of biological diversity' and 'The fair and equitable sharing of the benefits arising out of the utilization of genetic resources'. Among these, GBF and the CBD COP 16 both emphasize the importance of benefit sharing, the fair and equitable use and sharing of genetic resources globally. TCC has long supported the Dr. Cecilia Koo Botanic Conservation Center in preserving genetic diversity, which has become the world's largest tropical and subtropical plant conservation base.

Plant collections are primarily cultivated in greenhouses
17 greenhouses & 2 temperature-controlled rooms

35,398m² (approximately 3.5 hectares)

TCC KEY FACTS

Conservation of Plants (Including Endangered Species) 34,714 taxa

Plants frozen in liquid nitrogen
8,709 species / 62,037 frozen specimens
Accumulated

6,500 samples for medical use

Dr. Cecilia Koo Botanic Conservation Center



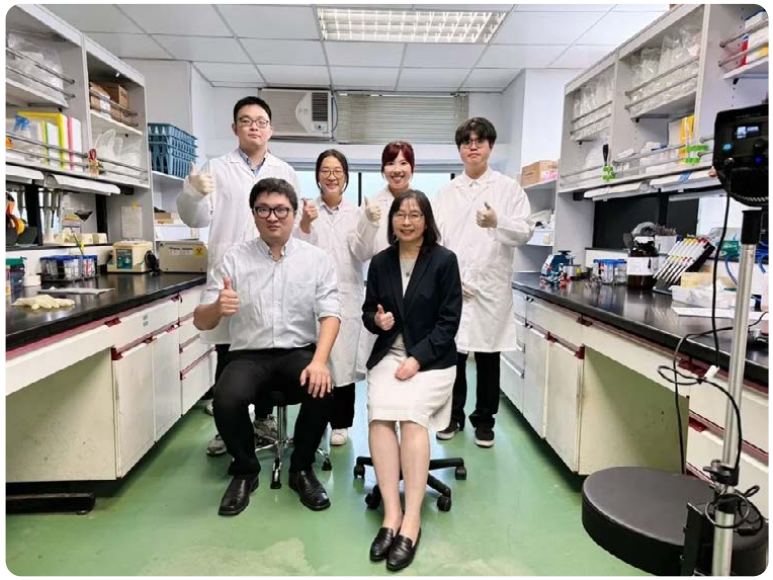
Since 2007, TCC has provided long-term support to the Dr. Cecilia Koo Botanic Conservation Center (the Conservation Center), currently led by Executive Director Chia-Wei LI, Chin-Tui Hou Chair Professor at National Tsing Hua University. The Conservation Center is located in Gaoshu Township, Pingtung County, the Conservation Center is dedicated to the global conservation of tropical and subtropical plants through ex-situ living preservation and academic research. Each plant is managed using scientific methods, including unique barcode labeling to each plant. It designs appropriate temperature, humidity, and sunlight conditions based on each plant's native habitat, with isolation greenhouses. The Center actively engages in international collaboration and conservation initiatives, such as a joint effort with National Taiwan University's Xitou Experimental Forest to preserve 1,385 cloud forest species. It has also partnered with the Southern Institute of Ecology (Vietnam Academy of Science and Technology) and Bidoup Nui Ba National Park, resulting in the discovery and publication of new fern species in the journal of the American Society of Plant Taxonomists[9].

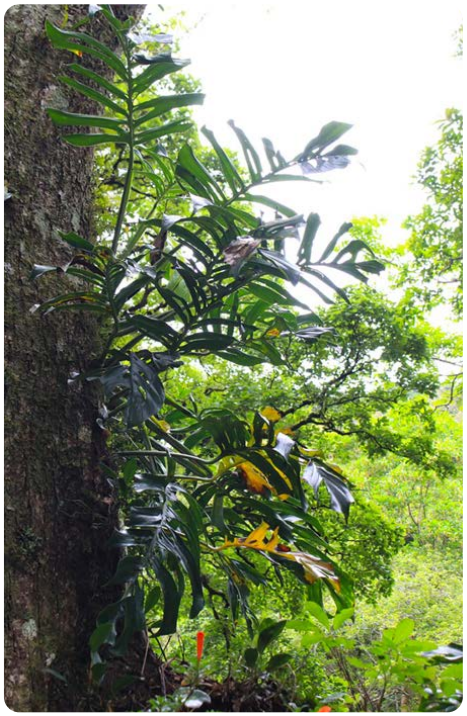
Note 9: A New Species and a New Record of Stegnogramma (Thelypteridaceae; Polypodiales) from Southern Vietnam Chen, Cheng-wei & Kuo, Li-Yaung & Huang, Yu-hsuan & Hsu, Tian-Chuan & Dang, Tri & Luu, Hong Truong & Wei, Shuo & Huang, Yao. (2019)

Helping to Develop Anti-cancer, COVID-19 Formulations and Patented New Drugs for Brain Injury

Plants have long been a vital foundation for drug development. Their secondary metabolites - alkaloids, flavonoids, and terpenoids - possess various pharmacological properties including antibacterial, antiviral, and anticancer properties, offering crucial clues for new medicines development. These natural compound libraries not only directly shape modern drug design but also inspire the development of synthetic medicines, underscoring nature's vast medical potential.

The Conservation Center places great emphasis on the application potential of genetic resources in medical development and offering them free of charge to research institution. In 2014, the Center collaborated with Kaohsiung Medical University to establish a medicinal library, which by the end of 2024 housed at least 83 families, 920 plant species, with 2,874 crude and fractionated extracts available for application, including drug formulations that can be used against influenza, cancer, and COVID-19. In 2024, the Center collaborated with National Tsing Hua University to successfully develop a patented new drug for brain injury treatment. The Institute of Molecular Medicine team conducted large-scale screening from over two thousand plant extracts and ultimately identified *Rhaphidophora hongkongensis*, a native Taiwanese plant from the Araceae family, as highly promising. With assistance from the Department of Chemistry for organic synthesis, they synthesized a novel small molecule compound. This innovative compound has obtained invention patent No. I823110 and international patent priority rights.





Monstera epipremnoides was found to have the ability of promoting nerve regeneration.

Supporting the Sustainable Preservation of Taiwanese Millet Entering the Agricultural Noah's Ark

In 2024, the Conservation Center partnered with National Central University's Taiwan Polar Research Center and the Agricultural Research Institute to jointly send millet seeds, which symbolize Taiwan's agricultural culture, to the Global Seed Vault located in Svalbard, Norway. Utilizing the stable low-temperature environment of permafrost and modern freezing preservation technology, the initiatives ensure that plant germplasm can be preserved and rehabilitated in the face of extreme disasters, thus safeguarding agricultural biodiversity. Millet is an important traditional crop of Indigenous peoples. Preserving more than 400 varieties of millet seeds in an international-level seed bank reflects a deep respect for Taiwan's Indigenous knowledge and native species, and a pledge to sustainability.

4.7

Environmental Education

TCC is committed to fostering harmonious coexistence with nature. Through its certified environmental education centers, TCC encourages employees, communities, and the public to actively engage in environmental protection and sustainable development practices.

TCC KEY FACTS

Cumulative to 2024

TCC DAKA

A total of 2,056 participants in ecological guided tours

8.77 million visitors exceeding

Hoping EcoPort

39 sessions of environmental education courses

A total of 2,043 participants



TCC DAKA Ecological Guided Tours

From its inception, TCC DAKA integrated environmental education, establishing a Bromeliad Garden showcasing a thousand plants from 147 different species. Exhibits range from the world's second-largest Giant Bromeliad on limestone cliffs to the smallest Spanish Moss Tillandsia growing on trees. Its intimate viewing design and guided tours offer visitors deeper insights into plant conservation and restoration. Additionally, following several bird-window collision incidents, the garden optimized its design in 2025 by incorporating bird-visible patterns, integrating bird-window collision prevention into its environmental education efforts.

Action Spotlight

Little Tern Conservation Project- Hoping Welcomes You

The Little Tern, a migratory bird, is the only Category II marine protected species that breeds on Taiwan's main island. In 2024, it was first recorded nesting and raising chicks near the Ho-Ping Power Plant's sea outlet. In response, the plant partnered with the Wild Bird Society of Hualien and initiating a three-year monitoring plan. The ten key suppliers of Ho-Ping Power Plant joined these efforts through the 2024 Supplier Convention.

TARGET

Increase the reproductive rate of Little Terns by 10% within three years





Join us in protecting the Little tern through these actions:

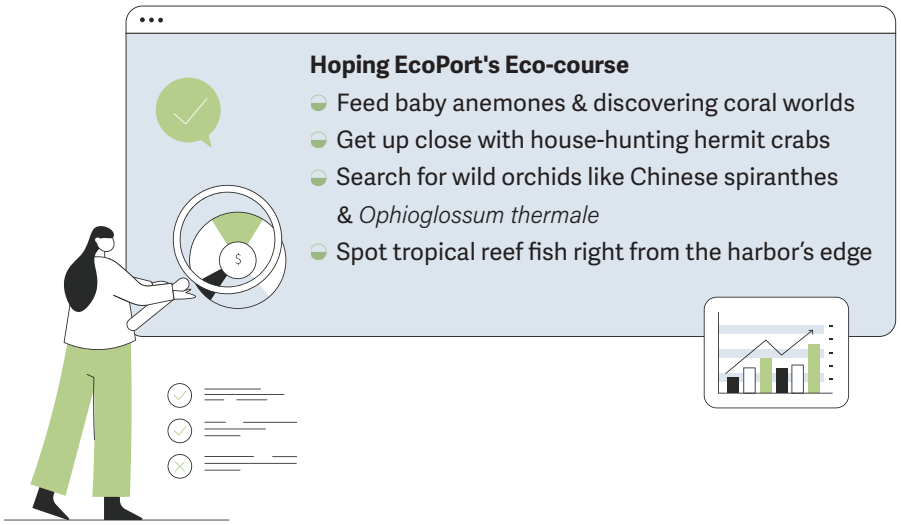
- Environmental Education Courses: Ho-Ping Power Plant and Hoping EcoPort jointly developed ‘Soaring with Nature - Little Tern’ and designed the board game ‘Little Tern - The Great Adventure Back to Hoping', allowing participants to learn about the ecological challenges faced by Little terns through courses and games.
- Patrol Team protects habitats: A 24-person team from the plant, port and suppliers patrols April-August to protect nesting sites, advise anglers, and deter stray animals to support the reproduction and growth of Little terns.
- Ecological observations led by the Taiwan Wild Bird Federation: Expert-guided observation using binoculars.
- Install beach information signs to remind anglers and local residents to reduce disturbances.

Hoping EcoPort Receives Highest Honor

First Prize in the Corporate Category
of the National Environmental Education Awards

In 2022, Hoping EcoPort earned environmental education certification to promote the ethos of "understanding, loving, and connecting with the sea." It established a "near marine" learning center, established Taiwan's first port-based environmental education facility. In 2024, a "Net-Zero Green Living" course was added to promote resource recycling awareness in local communities, connecting daily actions with ecological conservation. Hoping EcoPort believes that while one person may walk fast, a group walks far. Hoping EcoPort extends environmental education to employees and contractors, requiring at least one hour of training annually. In 2024, 30 employees and 14 contractors participated in this training.

Hoping EcoPort practices eco-friendly grassland management, avoiding chemical herbicides for weed control. This has allowed native wild orchids, like Chinese spiranthes and *Ophioglossum thermale* to thrive. Their abundance has prompted voluntary field surveys by professors and students from National Dong Hwa University. On Earth Day 2025, Hoping EcoPort held a parent-child eco-trip for environmental education, helping children reconnect with the land's natural vitality.





"Before joining Hoping EcoPort in 2022, I served on the Hualien County Environmental Protection Bureau's counseling committee for environmental education facilities. At that time, the Bureau invited me to assist with the certification for Hoping EcoPort. As a Hualien native, my impression of an industrial port was of gray skies and an oily sea. However, I instead saw a blue sea with coral clusters and schools of tropical fish, completely subverting my expectations. At that moment, I foresaw that Hoping EcoPort would become a leading model for environmental education."
by Sam Yu,
Environmental Education Manager at Hoping EcoPort

Taiwan Science Train: Advancing Marine Conservation and Energy Education

Ho-Ping Power Plant : Pursuing Environmental Education Facility Certification

Dong Hwa University and the National Science and Technology Council invited Hoping EcoPort and Ho-Ping Power Plant to join the 2024 Taiwan Science Train Activity, engaging 699 participants. Besides, Hoping EcoPort partnered with Yilan's Aohua Elementary School, teaching marine conservation through picture book storytelling. The Ho-Ping Power Plant plans to integrate its resources in renewable energy, circular economy, and marine conservation to create a learning environment that merges education with conservation. It aims to apply for Environmental Education Facility certification in 2025.

Guigang Ecological Environmental Education Practice Base

The Guigang Plant actively promotes the cement industry's green transformation. The plant earned the "Guangxi Ecological Environmental Education Practice Base" designation in 2023. Each year, the plant invites employees and local communities to the base to promote the harmonious coexistence of industry and nature, showcased the modern factory, and highlighted the importance of daily environmental protection efforts.

chapter 5

Inclusion

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4 QUALITY EDUCATION
5 GENDER EQUALITY
10 REDUCED INEQUALITIES

Corresponding SDGs



TCC Group Family Day | TCC DAKA Renewable Resource Recycling Center

5.1

Climate Action Talents

TCC is reaching out to the younger generation through its 2025 recruitment campaign, using diverse formats such as campus events, job fairs, exhibitions, and themed seminars to attract climate action talent. The 2025 recruitment theme, Mobilis in Mobili—the motto of the protagonist in Twenty Thousand Leagues Under the Sea—has been reinterpreted by Chairman Nelson An-ping Chang to mean: "Changing in a changing world." As AI reshapes industries, TCC seeks bold talent to challenge norms and shape the future. Digital Intelligence Navigators (DIN) will work under the Chairman's Office, lead key projects, and collaborate globally to gain industry insight and join TCC's core decision-making.

The Digital Intelligence Navigator (DIN) program is named not only for its acronym but also borrows from the meaning of 'din' as noise, symbolizing the powerful and positive transformation AI trends are bringing to the organization. We aim to recruit forward-thinking, practical talents who are innovative, and can harness various AI tools to drive organizational transformation.



AI Nelson An-ping Chang introduces Digital Intelligence Navigators.

Thinking and action are not only expected of all TCC employees but also serves as a key criterion in our talent selection process. With digital and green dual transformation as its core, TCC fosters both individual potential and corporate sustainability through diverse development and just transition mechanisms.





At the NTU recruitment event, TCC colleagues introduced various job opportunities to students

Headquarters Recruitment Information Session

In April 2024, TCC hosted a recruitment event at its headquarters themed "Becoming Climate Action Talent," highlighting the company's vision in green transition and low-carbon innovation. The event attracted 350 participants and featured interactive formats to explore TCC's culture and career paths.

Deep Campus Engagement

National Taiwan University's Taiwan Pathfinder Program - Cross-Disciplinary Internship Project

At "Alumni Talk," TCC's HR shared talent trends, while NTU alumni offered career and sustainability skill insight.

Summer Internship Program

TCC's summer internship combines sustainability, cross-disciplinary learning, and field visits, with senior mentors guiding interns through core businesses to cultivate and recruit top talent.

Campus Visit Programs And Lectures

- Hsing Academy with National Chung Hsing University: TCC served as a mentor, sharing real-world practices at the Changbin plant through lectures and site visits, connecting students with the green energy.
- "Innovative Practices of Smart Grid" Corporate Visit Program with Chung Yuan Christian University:Held a seminar and visited Zhishan Charging Station to help students understand energy tech and grid-scale storage applications.
- National Taipei University of Business Department of Business Administration/Industry-Academia Master's Program: Through visits and lectures, students learned how TCC builds an inclusive workplace and gained insights into its 70-year development as a private enterprise.
- Yilan University and National Taipei University of Technology Visits:In addition to learning about TCC's culture, students visited energy storage and charging sites to explore operations, and attended the construction materials expo to understand TCC's low-carbon solutions in practice.

Scholarships

- Dean's Award for Graduates, NTU College of Engineering.
- Scholarship for Master's and Ph.D. Graduation Thesis Exhibition, Chemical Engineering, NTU.
- TCC Summer Internship Grant.

Materials Sustainability Industry Program And Internship Project

TCC and Yilan University launched an industry-academia program at Ho-Ping Power Company to train applied electromechanical talent. As of March 2025, 43 interns were recruited, with five retained.

NTUST Institute of Applied Materials Industry-Academia Collaboration

In 2024, Molicel partnered with NTUST's Institute of Applied Materials on a hands-on industry-academia program, allowing students to understand industry practices while enhancing Molicel's process stability, R&D efficiency, and talent pipeline.

Action Spotlight



CIMPOR Academy

CIMPOR partners with universities to launch the CIMPOR Academy, a 12-month talent program for top students and graduates in technical and scientific fields.
It combines theoretical training to build professional knowledge with hands-on internships guided by experienced mentors. Participants gain practical experience, business insight, and a deeper understanding of CIMPOR, laying a strong foundation for future careers.

5.2

Employee Development

Talent is the core driver of corporate growth. TCC is committed to building a learning organization by offering diverse learning pathways, including instructor teaching, workshops, online courses, external programs, mentorship, and job rotation. Through varied approaches, employees strengthen their expertise and develop into "Climate Action Talent."

According to the National Development Council's 2024 report, Taiwan will become a super-aged society in 2025. The OECD reports that Portugal and Türkiye face aging populations and labor shortages due to brain drain. TCC responds by promoting cross-generational integration and cross-domain development to encourage knowledge sharing and build a diverse, people-centered workplace.

TCC KEY FACTS

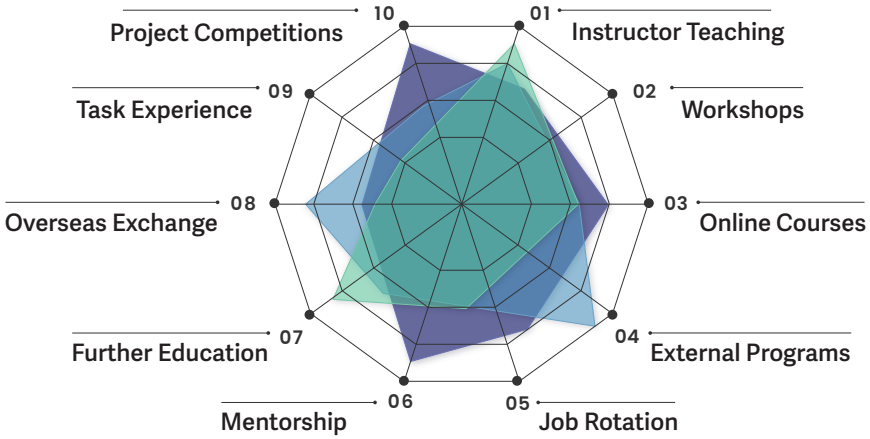
Number of internal transfers Increased by

4.5 times

compared to 2024



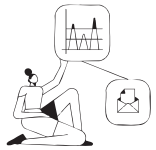
10 Types of Employee Development Methods



TCC Talent Development and Training System

- Executives
- Mid-level Managers
- Low-level Managers
- Talents with Potential
- Employees
- New Recruits

Sustainability



New Recruit Orientation

Carbon Academy

ISO and Important Policies

Sustainable Learning Action Program

Management



Management Courses for Executives

Mid-level/Low-level Management Courses

Industry-Academia Seminar

Cross-Industry Forum

Cross-Disciplinary



Creativity Courses

Thinking Courses

Self-management Courses

Interpersonal Intelligence Courses

Agility Management Courses

Developments

Humanity
— Internal Trainer Training
Education
— TCC Lyceum
Lifestyle
— Healthcare
Financial Management
Slasher Series
Language Proficiency
— English Study Subsidy

Sustainable Learning Program — Internationalization X Strong Generation

To drive sustainable transformation and globalization, TCC adopts 'learning for all' as its core strategy. In 2024, training emphasizes internationalization and strong generation through programs like the MIT Energy Initiative, language courses, and finance and health seminars, enhancing employee capabilities in ESG, global growth, and diverse prosperity.

MIT ILP
Industry Liaison Program

Since 2020, TCC has been a part of the MIT ILP. In 2024, this collaboration expanded to include the MITei, with a focus on energy and sustainability. The partnership's content, integrated into the internal TCC Lyceum platform, helps talent advance TCC's dual transformation.

Language Learning

English Small Talk
To support international expansion, TCC offers online themed language courses to strengthen cross-border communication skills.
English Small Group Classes
Four small-group English classes, covering current events, conversation, business communication, and writing—help employees improve workplace communication.

Financial Management Seminars

TCC caters to its 'strong generation' staff, the family's financial mainstay, with targeted retirement and risk seminars for enhanced financial literacy and employment stability.

External Training Programs

Taiwan Sites (including Subsidiaries)

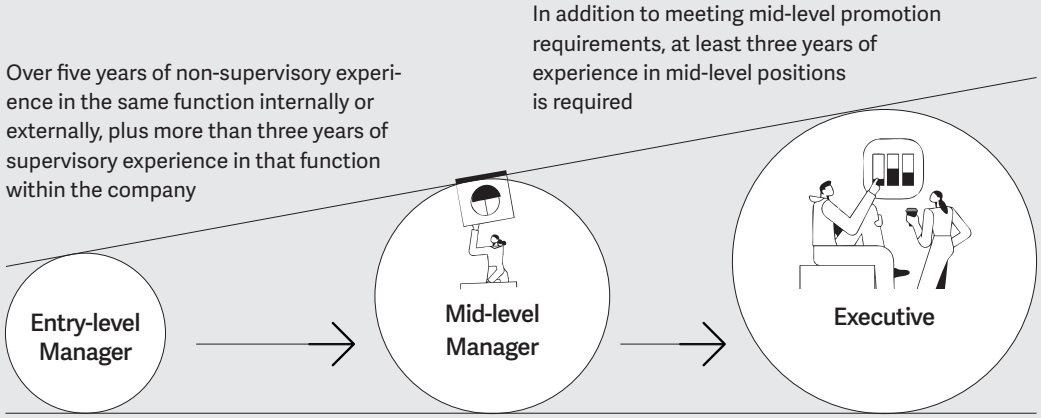
TCC subsidizes employees' participation in short-term external courses, professional seminars, and workshops to learn about the latest industry trends and technologies, broadening their professional knowledge and skills. The applicable areas include eight categories: work safety, professional skills, certification acquisition, legal compliance, environmental hygiene, general education, management, and others. Employees may apply based on their job requirements to strengthen their career competitiveness.

969 participants
Subsidy amount NT$2,902,219
Total hours reached 9,824.2 hours

Transparent Promotion Channels

TCC promotes key talent through a transparent system based on performance and potential. Candidates must have two years of strong evaluations and meet organizational needs.

The process includes reviews, assessments, and supervisor nominations to ensure fairness and support career growth.



Promotion background and skills: Bachelor's degree or above, possessing professional technical expertise, related practical capabilities, and required certifications for the position.

Cross-Generational Integration: Starting with Understanding

The manufacturing industry relies heavily on experience to accelerate site setup. Emphasizing knowledge and skill transfer, TCC adopts hands-on mentorship and resource deployment across fields. It fosters cross-generational collaboration to strengthen teamwork and support young talent.

Providing a Stage for Young Talents

11 Categories of Professional Internship Program

- Focusing on Early Experience, Early Cultivation, and Talent Selection
- Five Major Features
  - Cross-Domain Proposal Competition
  - Exclusive Workplace Mentors
  - Build Workplace Networks
  - Cross-Sector Site Visits
  - Diverse Thematic Courses
- Offering Summer, Semester, and Academic Year Options

Middle-Generation Succession & Expert Hub

Cross-business Unit Transfer Mechanism: Promote middle-generation succession training and support young teams .

- **Retiree Rehiring:** TCC rehired 20 retired employees in 2024 to provide expert insights and guidance for specific projects.
- **Expert Hub:** Noting retirees' desire to stay active for fulfillment or financial reasons, TCC plans to launch the"Expert Hub" in 2025. The program will support retirees in maintaining purpose and engagement, aligned with government mid-to-senior employment initiatives through flexible strategies.



2024
Internship Program
Participants

Cross-Disciplinary Talent Development

TCC's talent strategy centers on co-creation, global vision, and mobility to drive cross-department collaboration and international development. By integrating diverse expertise, TCC cultivates T-shaped talents with deep skills and broad capabilities. Flexible career paths, global programs, and internal transfers promote innovation and cross-domain growth. In 2024, internal transfers increased 4.5 times from 2023, with plans to expand globally.

TCC KEY FACTS

Internal Position Replacement Rate

82%

Action Spotlight

"I Never Realized How Vast the World of Green Energy Truly Is."

After 23 years at Ho-Ping Power, I was fully familiar with plant operations. By chance, I transferred to TCC Green Energy. Though both focus on power generation, green energy presents far greater challenges. Managing solar PV projects across diverse sites has brought constant learning and made this the most rewarding phase of my career. This transition taught me the value of lifelong learning. I encourage both mid-career and younger colleagues to seize opportunities and prepare for the future.



TCC Green Energy Manager Chih-Chien Lin

Employee Development Programs

Employee Learning Methods — / Workshop / Instructor Teaching Scope: Operational sites in Taiwan & Mainland China

Program Name	Training Aspects	Target Audience and Content	Indicators Linked to Company Operations
New Employee Training Participants: 142 Employee Percentage: 1.84%	**New Employee Development**	Target — New Employees Key Corporate Policies and Internal Regulations / Occupational Safety and Health Training Sustainability Practices Overview / Internal Systems Training	Overall Employee Retention Rate 92.94% Internal Position Replacement Rate 82% Internal Transfer Rate 6% Internal Promotion Rate 6%
TCC European Journey Participants: 3,835 Employee Percentage: 49.68%	**Culture**	Target — All Employees Understand European Cultural Heritage and Modern Development / Establish Diverse Thinking and Promote Sustainable Practices	
Cultural Inclusion Program Participants: 329 Employee Percentage: 25%	**Culture**	Target — Molicel Employees TCC subsidiary Molicel has launched a series of cultural inclusion initiatives aimed at fostering integration and teamwork among employees of diverse national and cultural backgrounds. "We Are Family " Taiwan–Philippines Exchange Activity: By learning each other's everyday and workplace language, employees from Taiwan and the Philippines gain a better understanding of cultural and communication differences, thereby improving cross-cultural collaboration. Interactive Experience Workshops: Molicel organized a Cultural Experience Seminar, inviting colleagues from the Philippines and Vietnam to share their home countries' culture, history, and language. These exchanges help deepen cultural understanding and respect, further strengthening intercultural awareness and team cohesion.	
Leadership Program Participants: 33 Employee Percentage: 0.43%	**Leadership**	Target — New Managers Management Capabilities and Practical Applications / Establish a Common Language Provide Practical Management Tools and Methods / Strengthen Practical Application Abilities	Post-course satisfaction: 96% Post-course test average: 88.1/100
Advanced Technology Capability Development Participants: 3084 Employee Percentage: 39.95%	**Digital Transformation**	Target — All Employees Latest Developments in Generative AI / The Impact of AI on Industry Transformation Opportunities and Challenges Brought by AI	The AI x IoT Machine Health Monitoring Program has been deployed at 25 cement sites worldwide. Four plants have adopted AI to optimize mining routes in Mainland China.
Carbon Academy Participants: 633 Employee Percentage: 8.2%	**Sustainable Transformation Leadership**	Target — All Employees Greenhouse Gas Inventory Workshop / Product Carbon Footprint Workshop Scope 3 Inventory Trends and Practical Training / Engineering Carbon Footprint Training Course Supplier Carbon Footprint Course / Emission Reduction through Alternative Raw Materials & Fuels / Innovative IP – Fire-Resistant Low-Carbon Cement Storage Cabinets	Revenue from low-carbon products grew by 84% The Carbon Academy offers greenhouse gas inventory training, carbon management training, and product carbon footprint workshops, saving the Company external training costs of NT$7,097,144.

Note 1 : For the information of European subsidiaries CIMPOR, OYAK CEMENT, NHOA Energy, and Atlante, please refer to their respective sustainability reports.

TCC Carbon Academy

TCC launched Sustainable Learning Program to build internal climate talent and cross-domain sustainability expertise, driving sustainable products and supply chains. The 2024 course theme is Addressing Climate Challenges and Creating Opportunities for Net-Zero Transition, aiming to strengthen carbon management capabilities, align with international standards, and enhance accurate carbon communication. In-person training is provided for key staff, with open registration for all employees. A point-based system links learning results to annual reviews to boost engagement. The program also extends to suppliers to strengthen sustainability across the value chain.

Foundation Programs
Cognition Programs
Skill Development Programs

Foundation Programs

- The Future Is Worth It
- TCC's International Investment and Financing
- East Meets West, North Balances South: TCC's Low-Carbon Commitment Amid Global Shifts
- Sustainability by the Numbers: The GM's Briefing on TCC's Green Growth Achievements
- Carbon Trends and Management
- Challenges and Responses to Climate Change
- How Much Do You Know About Carbon Terms
- Introduction to the Sustainable Transformation of TCC

Skill Development Programs

ISO

- In-person Class: ISO 14064-1: 2018-Practical Training for Quantification and Reporting of GHGs Emissions and Removals at the Organization Level
- In-person Class: Practical training for Corporate Value Chain (Scope 3) Accounting and Reporting
- In-person Class: ISO 14067: 2018 Greenhouse gases CarbonFootprint of Products
- In-person Class: Trends and Applications of Environmental Product Declaration
- In-person Class: ISO 20400: 2017-Practical Training for Sustainable Procurement
- In-person Class: ISO 50001: 2018-Energy Management Systems

Workshop and Visit

- Workshop: Towards Net-Zero Green Electricity Trading Practical Workshop
- Workshop: Practical Workshop on Carbon Trends and Power Trading
- Workshop: Hazards and Adaptations under Climate Change
- Workshop: The Workshop for TCC's Just Transformation
- Visit: On-site Visit to Forest Carbon Sink Base and Biodiversity Conservation Area

Training of National License Test

- Fundamentals of Net Zero Carbon Planning and Management
- Summary of Greenhouse Gas Inventory Specifications
- Training for Financial Supervisory Commission sustainable development basic ability qualification

Cognition Programs

Low-carbon Materials and Resource Recycling

- New trends in Low-Carbon Construction Materials
- Cross-Industry Circular Symbiosis: Alternative Raw Materials and Fuels to Reduce Carbon Emissions
- CIMPOR's Experience Sharing: Cement Plant without Cement Kiln

Renewable Energy and Energy Transition

- TCC's Diversified Green Power Development
- The Key to Net-Zero Transition: Renewable Energy Combined with Energy Storage
- Innovation: Fireproof and Low Carbon EnergyArk
- New Blue Ocean Strategy for Net-Zero: Molicel's High Efficiency Ternary Lithium Battery
- Atlante's European Experience: The Low-carbon Charging Station Model
- Practice of TCC's Ancillary Services to Participate in Energy Trading
- Concepts and Practices of Green Electricity Trading

Carbon Competitiveness

- Green Supply Chain: From Scope 3 to Net-Zero Emissions
- The Trend of Carbon Assets and the Practice of Carbon Trading
- TCC's Challenges and Opportunities in the Era of Carbon Pricing
- Influence Transformation: Introduction to TCC's Influence of Global External Carbon Reduction
- Reduction Strategies of the Construction Industry for "Near Zero Emissions"
- Experience Sharing on Electrification and Low-carbonization of Transportation

Climate Change and Global Trends

- Water Resources Management and Water Saving Practices
- Sharing on TCC's TNFD Report
- Net-Zero Emissions and Just Transition
- Sustainable Finance: ESG-related Financial Disclosures

Sustainable Living

- Lifestyle Suggestions to Avoid Leftovers
- Green office: TCC Employees' 21 Days for Sustainability
- Green Mobility: The Most Environmentally Friendly Way for Commuters

Internal Trainer Development

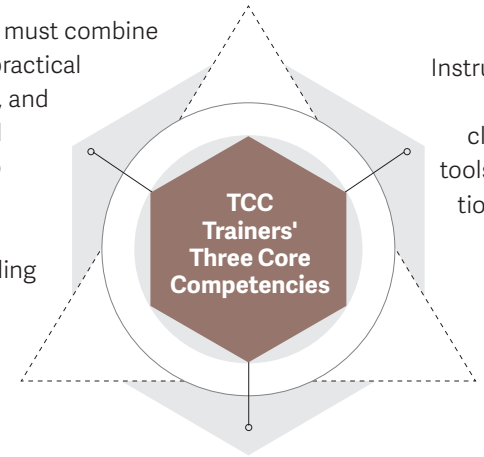
TCC fosters a culture of continuous learning and experience sharing by training skilled and passionate employees to become internal instructors. At TCC Carbon Academy, some courses are led by internal supervisors, including mid-to-senior managers with strong communication skills and external speaking experience. Instructors are selected based on the professional needs of the energy and cement business units to ensure a balance of theory and practical insight. Internal trainers are required to demonstrate three core competencies. TCC supports course creation by helping instructors define objectives, improve delivery skills, and design accessible, professional materials to ensure high-quality online learning.

Professional Knowledge

Instructors must combine expertise, practical experience, and case-based teaching to support learner understanding

Teaching and Communication Skills

Instructors should convey ideas clearly and use tools and interaction to enhance learning efficiency



Guidance and Empathy Skills

Instructors should understand learners, guide discussions, and foster an engaging environment

Action Spotlight — Internal Trainer Case



CIMPOR CTO - Berkan Fidan

Non-kiln Cement Plant

Sharing how CIMPOR applies AI and digital transformation to support cement decarbonization.

Engineering Affairs Department Manager - Gibbs Chang

Industrial Symbiosis: Emission Reduction through Alternative Raw Materials & Fuels

TCC supports industrial waste treatment by using it as alternative fuels and raw materials, reducing carbon emissions.





NHOA.TCC Manager - Mark Ma

TCC Carbon Academy Key to Net-Zero

Transition: Renewable Energy Combined with Energy Storage

Sharing how TCC's low-carbon storage solutions address the intermittency of renewables.

5.3

Employee Remuneration and Benefits

TCC upholds a people-oriented approach and values every effort made by its employees. Through fair remuneration and comprehensive benefits, we motivate growth, drive innovation, and shape the future together.
TCC has proposed a fair wage philosophy by referencing local prices and cost of living. Through analysis of publicly available data, the company continuously reviews local living costs and salary structures, aiming to gradually advance toward the goal of 'decent work'.

TCC KEY FACTS

100% of TCC employees are eligible for the Employee Stock Option Program (ESOP)
Taiwan locations (including subsidiaries)

2017-2024 | Taiwan, Mainland China (including subsidiaries)
Childbirth and maternity benefits and subsidies
Over NT$1.47 Million Disbursed
650 TCC Babies Born

Remuneration Policy and Shared Profits

Fair Evaluation System with 100% Performance Appraisal
TCC offers competitive market salaries and generous performance bonuses to motivate employees. TCC's remuneration policy reflects a commitment to sharing operational performance, with employee compensation determined by factors including performance and job responsibilities. Discrimination based on gender (including sexual orientation), race, class, age, marital status, language, thought, religion, political affiliation, place of origin, birthplace, appearance, facial features, or disabilities is strictly prohibited.

TCC has established a fair performance appraisal system, ensuring employee objectives align with company strategy. Combining quantitative individual goals and qualitative competency assessments, employee performance is closely linked to overall company profitability. In 2024, 100% of employees received performance evaluations, excluding those within their three-month probation period.



Performance Appraisal Mechanism

Type	Objectives and Content	Frequency
Goal-Oriented Management	Direct and second-level supervisors conduct initial and secondary evaluations for all employees. Evaluation indicators are 60% quantitative work objectives and 40% qualitative competency indicators(including Sustainable Action by All).	At least yearly
Agile Dialogue	Departments hold regular monthly or weekly meetings for continuous communication, with supervisors encouraged to provide proactive feedback during quarterly reviews.	At least quarterly
Multi-Dimensional Performance Appraisal	By integrating competency metrics into the assessment mechanism, performance appraisals are aligned with company culture, core values, and sustainability goals.	At least yearly
Team Performance Appraisal	Evaluate the performance of cross-team or cross-business project working groups and provide appropriate recognition to encourage them.	At least yearly

Annual Performance Appraisal Linked to Sustainability Indicators

For details on senior executives' remuneration, please refer to CH1.2

Sustainable Action by All

Annual performance indicators for all TCC employees (including President, Vice President, and Managers) include “Sustainable Action by All” and "Sustainable Learning Action Program" participation, accounting for 10%. This directly aligns with the Company's sustainability goals. Indicators include emission and carbon reduction, water reuse, waste management, supply chain and partner engagement, risk mitigation, talent development, and anti-corruption and anti-bribery measures.

SBT-Linked Remuneration

Cement plants in Taiwan and Mainland China set individual carbon emission targets based on SBT goals, incorporated into quarterly and annual bonus KPIs. The KPI is based on carbon emission intensity per ton of cementitious materials, with achievement directly correlating to quarterly and annual bonuses.

Sound Remuneration

Taiwan locations (including subsidiaries)

Employee Stock Option Program (ESOP)

TCC launched its ESOP in 2019, matching monthly employee contributions 1:1 into a trust. Two annual lump sums are also allowed, with a 10% company match. Employees eligible for retirement at 60 receive amplified contributions. This not only retains talent but also helps employees build wealth and plan for their retirement.



Employee Savings Mutual Fund

TCC encourages employee savings with age-based deposits made in January and July. The Employee Welfare Committee adds 50%, and all funds go into a benefit trust. In 2024, 1,325 employees joined, totaling over NT$2.3 million.



Treasury Shares Program

TCC has established the Treasury Shares Program as a long-term incentive, linking performance evaluations to sustainability goals like carbon reduction.

Quarterly and Performance Bonuses

100% of Group employees receive quarterly bonuses. TCC introduced the quarterly bonus system in 2018 to share results, evaluating quarterly EPS and key indicators, plus each plant's SBT carbon emission intensity target achievement.

Based on operational and individual performance, TCC's bonus system aims to share profits. Relevant risk and sustainability indicators are integrated into evaluation criteria:

- **Environmental:** Pollution control, SBT target achievement
- **Social:** Occupational safety
- **Governance:** Quality, information security, anti-corruption, and anti-bribery

Note 2: For the information of European subsidiaries CIMPOR, OYAK CEMENT, NHOA Energy, and Atlante, please refer to their respective

Creating a Vibrant Workplace

Action Spotlight

TCC Sustainable Healthy Living

TCC GROUP HOLDINGS
Monday at 11:00 AM

✨ Looking for a Dynamic Workplace? Exciting Activities and Challenges Await at TCC!
TCC values employees' health and encourages them to maintain exercise habits
The Company actively forms teams to participate in competitions | Ongoing self-organized events:
🏊 Sun Moon Lake Swimming Carnival - Guaranteed entry spots, plus accommodation at 5-star Fleur de Chine Hotel
🚣 Dragon Boat Racing - TCC Dragon Boat teams that win national competitions are rewarded with honorary leave
🚴 Round-Island Cycling Relay - Embark on a nine-day team challenge to push your limits
🎁 Weekend Getaway - Five generations come together along Dagou Riverside to make lasting memories

【TCC Hosts Sustainable Healthy Lifestyle Festival to Foster Mutual Employee Motivation】
🏅 A total of 842 TCC employees enthusiastically joined health point, calorie, and walking challenges.
Accumulated running 39,030 km + cycling 60,573 km = circling Taiwan 106 times!
🔥Total 6.77 million calories burned, equivalent to 880 kg weight loss!


TCC Annual Tradition – "TCC Dragon Boat Championship"


TCC Island Cycling Relay



TCC's Intergenerational Urban Forest Adventure —
Dagou Riverside Hike

In July 2024, TCC organized an ecological tour along Dagou Riverside , using nature to foster intergenerational connection among employees spanning six generations.

"As we climbed steeper slopes and covered more ground, I realized that my companions had changed several times along the way, yet mutual encouragement propelled us to the finish. Colleagues of varying ages shared stories and experiences during the hike. I was pleasantly surprised to see senior colleagues transform from professional and serious at work to relaxed and chatty after hours, revealing how different everyone becomes once their work shirts are off."

-HR Huang, Chia-Chi and Hsu, Yu-Chia

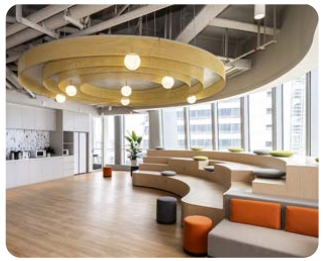
TCC Selected as

Business Weekly X 104 Job Bank | 2024
- Top 100 Enterprises for Senior Workers
- Senior-Friendly Employer Award

Common Health Magazine | 2024
- CHR Corporate Healthy Responsibility Award
- Best Companies to Work for in Asia

Employee Support Program

TCC is committed to fostering a healthy work environment. Through the Employee Support Program, we provide comprehensive care from physical and mental to family aspects, fulfilling TCC's long-term commitment to employee well-being.





Work Autonomy and Flexibility

Flexible Hours and Agile Working

Hybrid Agility to Work /Time Difference Leave — Employees working across time zones may apply for time difference leave the following morning.

Flexible Office Attendance — Employees can adjust their working hours as needed, with flexible attendance periods available. In 2024, 239 employees applied.

Diverse Leave Benefits

Paid Personal and Sick Leave — Employees are entitled to 3 days of fully paid leave to support employees through various life events.

Physical, Mental Health and Safety

Sports and Health Programs

New Assistance Programs to Promote Physical and Mental Health —

TCC will launch the Employee Assistance Program (EAP) in 2025

- One-on-one Consultation | Once per Year
- Toll-free Employee Care Hotline
- Regular Stress Relief Seminars

Family Care and Support

Maternity Protection and Support

Nursing Care Service — Pregnant employees receive one prenatal and one postnatal consultation, plus occasional phone calls for health education. In 2024, on-site services totaled 551 uses.

Nursing Room — Facilities are available at all operational locations, with unlimited access during lactation, with time counted as regular working hours.

Family Care and Support



Childbirth Incentive & Celebration Bonus — NT$10,000 for the first child, NT$20,000 for the second, NT$50,000 for the third, plus an additional celebration bonus.

- In 2024, 192 employees applied with a total of NT$1,714,903
- 544 TCC babies were born in Taiwan from 2017 to 2024.

Paid Maternity & Parental Leave — Taiwan legally provides female primary caregivers with 8 weeks of paid maternity leave and 6 months (26 weeks) of parental leave at 80% of insured salary. In Mainland China, female primary caregivers are entitled to 3 weeks (15 days) of paid maternity leave by law. They also receive a total of 32 weeks of paid parental leave, including 83 days paid based on the department's average monthly wage and 80 days of fully paid childcare leave.

Paid Parental Leave — Spouses receive 7 days of paid paternity leave and 6 months of childcare leave at 80% of the insured salary.

Hybrid Agility to Work

Paid Family Care Leave — Offers 3 days paid leave, exceeding legal requirements. In 2024, 157 applied, totaling 2,684 hours.

Work from Home — Office employees with childcare needs for children under 12 may work from home 3 days monthly.

5.4

Occupational Health and Safety

GRI 403-1 / 403-2 / 403-3 / 403-4 / 403-5 / 403-6 / 403-7 / 403-8 / 403-9 / 403-10

"Whether they are colleagues or contractor personnel, we are responsible for anyone who enters our company premises to work. 2024 is a time for us to strengthen occupational safety. Let's work together to build a safe and sustainably operated TCC."
--Chairman Nelson An-ping Chang

Occupational Health and Safety Management

Committed to a safe workplace and zero occupational injuries, TCC's "Internal Control Policies for Occupational Safety and Health Management" apply to all Group employees, outsourced workers, and contractors. The safety regulations include "Occupational Safety and Health Management Regulations," "Occupational Safety and Health Management Plan," and "Occupational Safety and Health Code of Practice," promoting a safety culture through behavior-based management. CIMPOR and OYAK CEMENT also prioritize employee OHS in their Integrated Management System Policy.

To drive management intensity, TCC, CIMPOR and OYAK CEMENT have clear remuneration linkage mechanisms: TCC's management team's annual performance bonuses are adjusted based on OHS performance; 10% of CIMPOR employees' variable pay is directly linked to OHS performance; OYAK CEMENT's OHS incentive program rewards employees for promoting safety awareness among partners and visitors.

TCC KEY FACTS

ISO 45001
Certified
Taiwan and Mainland China Cement Business & OYAK CEMENT
Planning underway for CIMPOR, E.G.C. Cement Corp and Feng Sheng Enterprise Company Limited

100% of contractors signed the Safety and Health Responsibility Commitment
Taiwan and Mainland China

Occupational Safety and Health Policy Statement

TARGET

TCC

2016-2018 Average Baseline
Lost Time Injury Frequency Rate (LTIFR)
Total Recordable Injury Frequency Rate (TRIFR)
-35%
reduction in the past 3 years
(including contractors)

CIMPOR & OYAK CEMENT

By 2030
Lost Time Injury Frequency Rate (LTIFR)
reduced to below 1

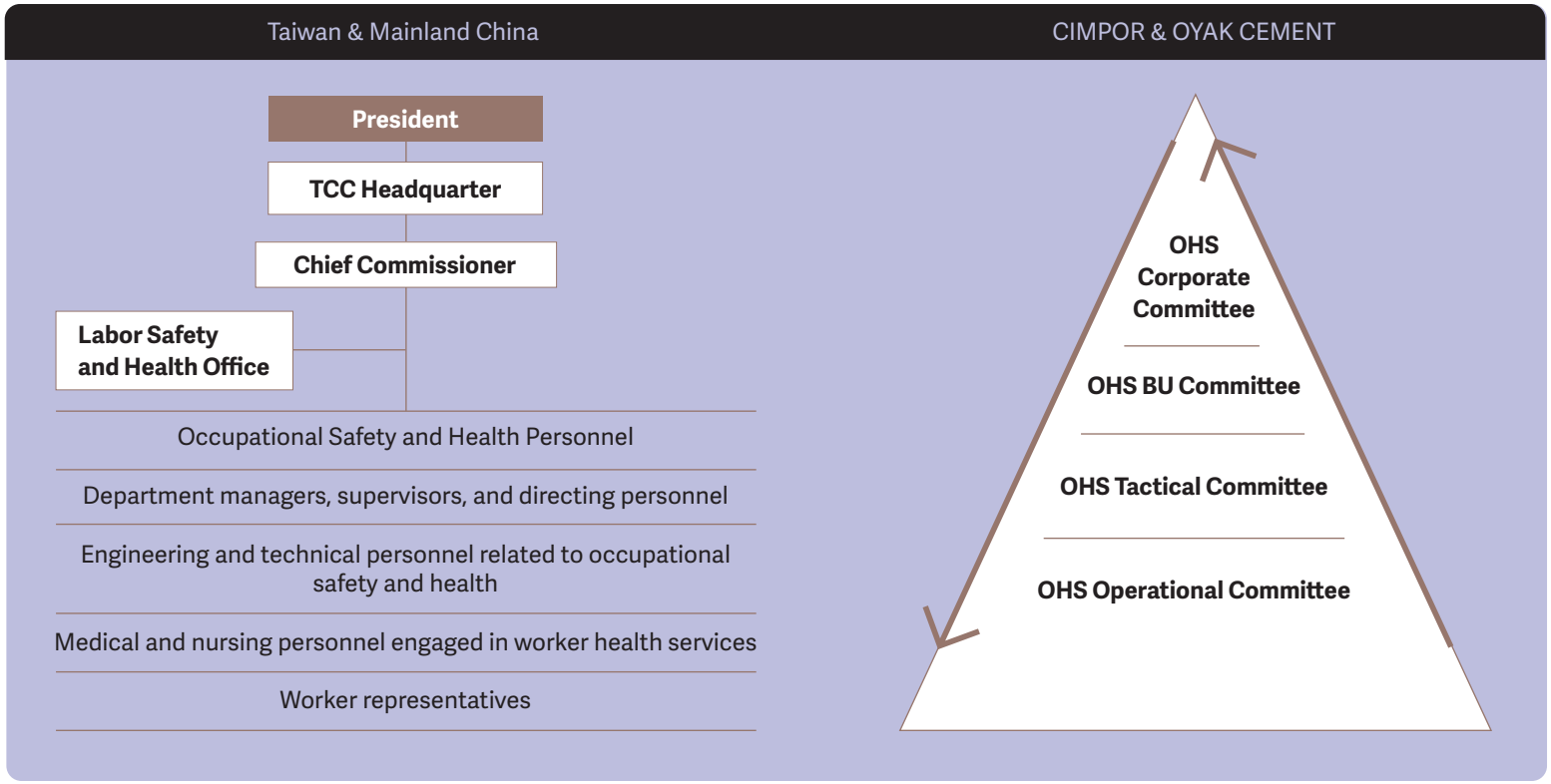
Lost Time Severity Rate (LTISR)
reduced to below 0.001

Occupational Safety and Health Committee

TCC prioritizes employee workplace safety. Monthly TCC meetings, chaired by the Chairman, begin with OHS performance and improvement plans. TCC's OHS management system includes legally required Labor Safety and Health Offices (LSH Offices) at each site. Taiwan sites hold quarterly OHS meetings, while Mainland China plants meet monthly; led by the Chief Commissioner, these meetings track progress, review improvements, decide OHS matters, and report to headquarters. In 2025, "Safety Improvement Promotion Teams" were formed at each plant to boost OHS performance and prevent accidents. Monthly "Group OHS Meetings" are held, with headquarters Occupational Safety and Health Management Office overseeing plant improvements and implementation. Safety awareness is also reinforced via presidential-approved disciplinary actions.

For CIMPOR and OYAK CEMENT, the CIMPOR Group's Board of Directors supervises their OHS Committee's operations. A digital OHS monitoring platform consolidates accident reports and data, enabling the committee to continuously identify, manage risk events, and analyze trends.

Occupational Safety and Health Committee Organization



Action Spotlight

OYAK CEMENT promotes DOST (Turkish for "friend"; Davranış Odaklı Saha Turları – Behavior-Based Field Inspections). This program prevents accidents through safety dialogues, observations, and risk discussions. It optimizes OHS management via employee feedback collected by the Focal Point system. An annual OHS Roadmap sets targets for all plant areas, incorporating monthly KPI tracking. Employees are encouraged to report OHS risks, and managers regularly inspect plants, reporting back to Headquarters.

CIMPOR's European and African operations use the INTELEX OHS management system to integrate incident recording, notification, risk control, and data analysis. All workplace incidents are logged, and dedicated units conduct investigations and report to boost efficiency and transparency.

dost
Davranış Odaklı Saha Turları

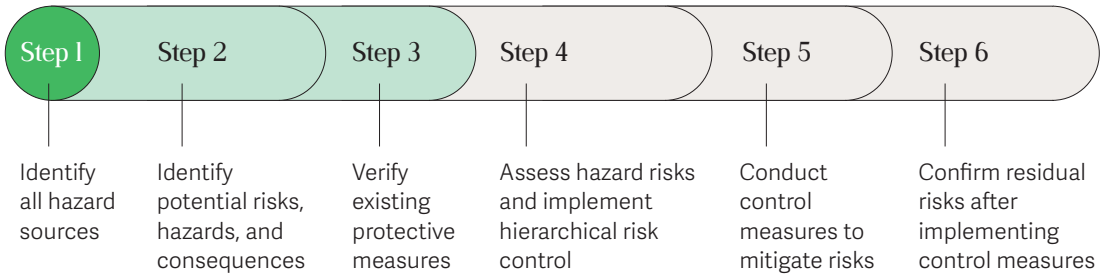
Occupational Safety Reporting Mechanism

To enhance OHS management efficiency, TCC transitioned from "Occupational Safety Monthly Reports" (2021) to "Weekly Reports" (December 2024) for improved data tracking. These reports cover work injury statistics, audit findings/improvements, contractor violations/outcomes, and OHS training. Since October 2024, Taiwan cement plants daily report high-risk operations and control effectiveness for immediate correction. In 2024, two OHS monthly meetings discussed performance, enhancements, and the Safety Improvement Promotion Team's implementation in Taiwan and Mainland China.

TCC has established occupational disease management and tracking mechanisms, with sites adhering to local regulations. TCC commissions accredited bodies for regular environmental monitoring (quarterly or biannually), and enhances plant safety facilities and signage to protect employees, who can legally refuse dangerous work. Sites employ contracted or full-time medical staff who grade health checks, provide proactive care, and conduct special operational checks. Employees in Taiwan undergo roving health check-ups every three years; Mainland China employees receive annual health assessments. Occupational diseases are diagnosed by occupational physicians or qualified institutions. To enhance management, all CIMPOR on-site medical staff are under the OHS Office, gaining real-time insights from health examinations and periodic care.

Hazard Identification and Risk Assessment

TCC conducts hazard identification and risk assessment for routine and non-routine operations. This involves evaluating hazardous workplaces and assessing the severity and frequency of OHS risks across various processes and activities to calculate OHS risk indicators. From identified hazards, TCC assesses their OHS risks and implements relevant measures, considering regulations and the effectiveness of existing controls.



Road Safety Management

Taiwan Transport & Storage

All vehicles at TCC subsidiary Taiwan Transport & Storage are equipped with safety features like lane departure warnings, fatigue driving alerts, and tire pressure monitors. Daily alcohol tests and driving behavior monitoring ensure driver focus and safety. Regular driver training promotes safety awareness. Vehicle incidents are reviewed monthly in management meetings and converted into training cases.

Heat Hazard Project

Following 2024 human rights due diligence for Taiwan suppliers, TCC launched a Heat Hazard Project. This project promotes high-temperature work guidelines, manages heat-related illnesses, and provides protective measures exceeding legal requirements in its Taiwan and Mainland China plants. Measures include renovated, air-conditioned rest areas for employees/contractors, replaced water dispensers for continuous clean drinking water, and permitting temporary sun umbrellas for contractors. From 2025, during the annual heat hazard prevention period, outdoor technical personnel at TCC's Taiwan and Mainland China plants will receive high-temperature allowances and cooling sprays to enhance workplace safety.



Work Injury, Fatality, and Near-Miss Incident Investigation & Improvement Process

In 2024, incident reporting was conducted via email. Starting in 2025, the official launch of the occupational accident reporting system will require incidents to be reported within one hour of their occurrence. Its integrated form design enhances accuracy and efficiency, standardizing reporting channels and enabling real-time updates for transparency.

	Work Injury and Fatality Incidents	Near-Miss Incidents
Incident Occurrence	Major occupational accidents require immediate reporting to the OSH Office and supervisors. Contractors must notify the supervision unit within 30 minutes, contacting fire and medical units as per regulations. Taiwan plants report major accidents to local labor inspection authorities within 8 hours; Mainland China plants, within 1 hour.	◒ Near-miss incidents require same-day reporting to the supervisor. ◒ The Investigation Form must be completed and submitted to the OSH Office for records.
Incident Cause Investigation	Following a major occupational accident, the OSH Office aids units in establishing an "Occupational Accident Investigation Taskforce" for on-site inspections with labor representatives and department supervisors. After submitting an "Accident Prevention Report" to the President, the accident's course and handling are reviewed in a meeting within one week.	◒ The originating unit analyzes the incident and submits evidence for OSH Office review. ◒ The OSH Office verifies root cause management and action completeness. ◒ If necessary, the matter is reported and discussed at monthly "Group OHS Meetings."
Incident Review & Improvement	Units track and review improvements from Taskforce findings until completion. Major accident sites are photographed for evidence and, along with investigation reports, forwarded to the OSH Office as training case studies to prevent recurrence.	The OSH Office conducts on-site re-inspections to verify the effectiveness of improvement measures.

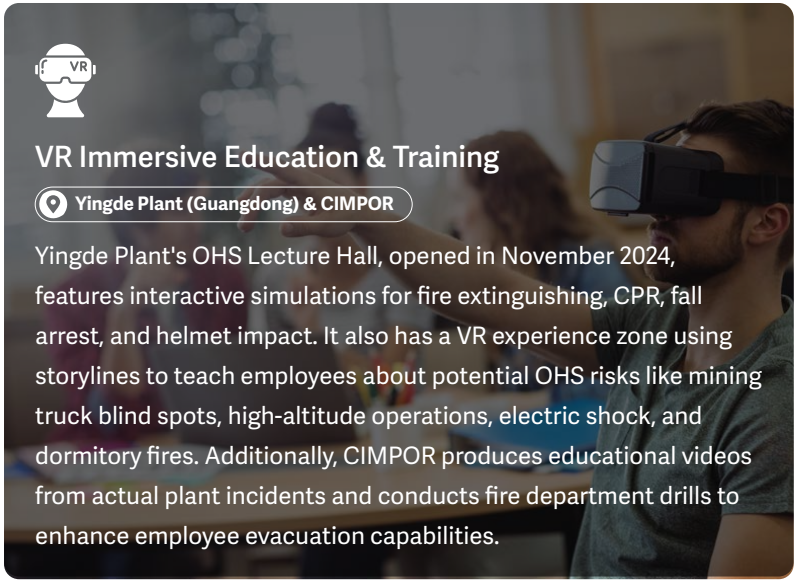


In 2024, minor work injuries in Taiwan and Mainland China stemmed from entanglement, falling objects, and falls. Post-incident, TCC investigated root causes and boosted inspections in high-risk areas. For example, Ho-Ping Power Plant conducts regular supervisory audits and monthly area inspections by department OHS representatives. The company also increased plant visit frequency and added training to prevent recurrence, aiming for "**zero workplace injuries**."

Contractor Safety Management

> "When you join TCC,
> you become part of our family."

To ensure contractor safety on-site, TCC established "Contractor OHS and Environmental Management Rules," mandating OHS compliance. All contractors must sign a "Safety and Health Responsibility Commitment" and complete OHS education upon entry, also completing "Workplace Environmental Hazards Notice" and "Notification." Digital safety training tests assess personnel, boosting OHS awareness and ensuring adherence to environmental safety and health regulations for all on-site workers. OYAK CEMENT strengthens contractor safety by categorizing them into four risk levels during procurement and contracting, adhering to its "Occupational Health, Safety and Environmental Regulations" with specific rules for each category. CIMPOR manages contractors via its "Occupational Health and Safety Contractor Management Manual."



VR Immersive Education & Training

Yingde Plant (Guangdong) & CIMPOR

Yingde Plant's OHS Lecture Hall, opened in November 2024, features interactive simulations for fire extinguishing, CPR, fall arrest, and helmet impact. It also has a VR experience zone using storylines to teach employees about potential OHS risks like mining truck blind spots, high-altitude operations, electric shock, and dormitory fires. Additionally, CIMPOR produces educational videos from actual plant incidents and conducts fire department drills to enhance employee evacuation capabilities.

Health & Safety Education Training to Enhance OHS Awareness

TCC conducts annual labor, occupational safety, and disaster prevention training per government regulations. Employees regularly undergo new and refresher training for certifications in first aid, oxygen-deficient operations, hazardous equipment, and OHS supervision. The Company also actively participates in government-organized disaster prevention seminars and certification training.

Taiwan	Mainland China	CIMPOR	OYAK CEMENT
2025 Plan			
Annual Training Hours 10 hours annually for all employees (including general staff and managers at all levels)	**Annual Training Hours** ☑ Mining personnel: minimum 72 hours ☑ Other employees: minimum 24 hours	**Annual Training Hours** 14 hours annually for all employees	**Annual Training Hours** 16 hours annually for all employees and contractors
Topics include Enhanced on-site operational environmental safety regulations	**Annual "Safety Re-education" Training** ☑ Mining personnel: minimum 20 hours ☑ Other employees: minimum 8 hours	**Topics include** Work at heights, confined space operations, 7 Life-Saving Rules, first aid, and fire drills	**Strengthening Occupational Safety Culture Training** ☑ Managers ☑ Employees in high-risk roles (specialized training)

TCC KEY FACTS

Occupational Health and Safety Education Training
| Taiwan, Mainland China, CIMPOR, and OYAK CEMENT
Accumulated Employee Training Attendance

118,358 participants

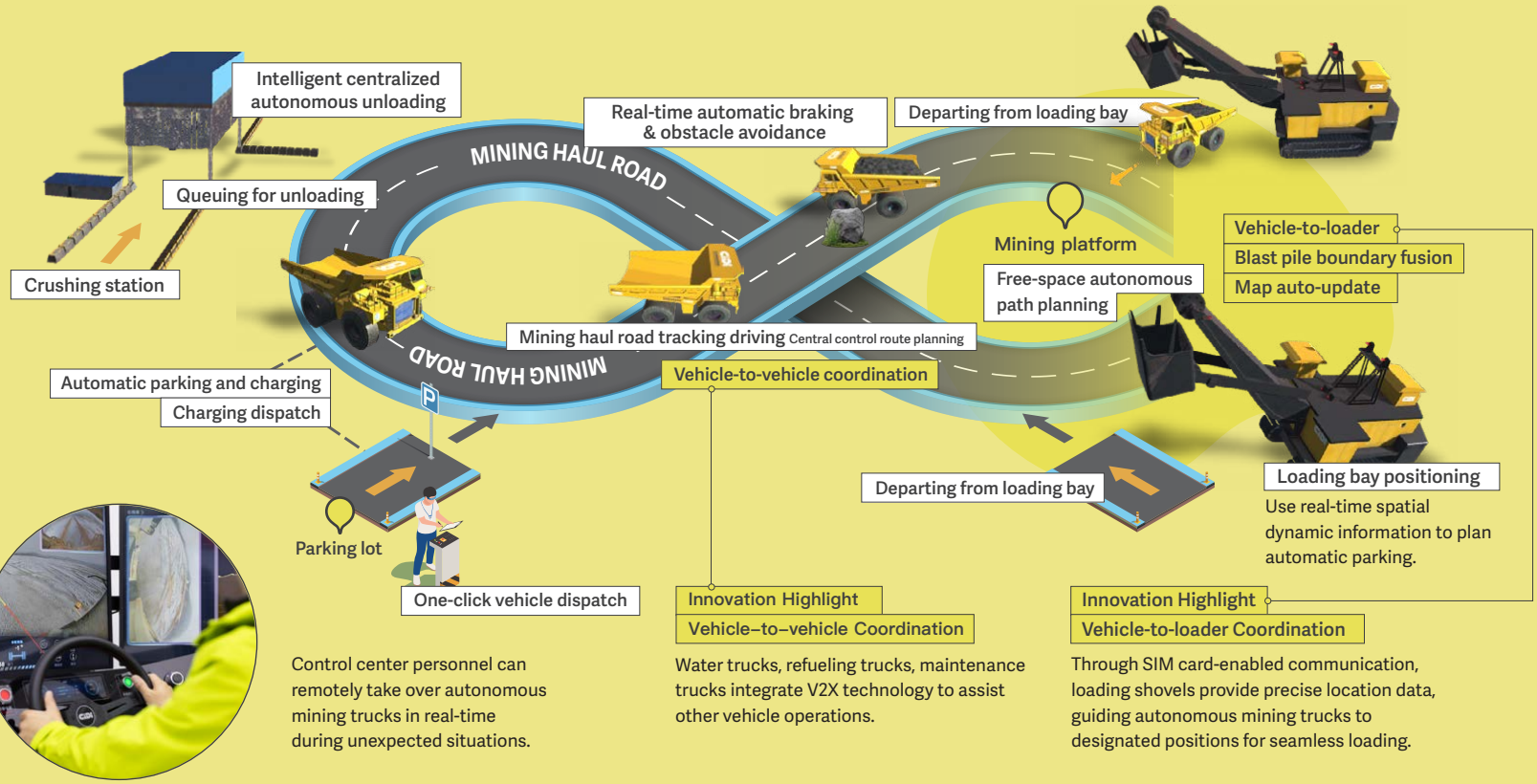
Training Hours — 62,482 hours



AI Smart Monitoring & 5G Applications Enhance OHS Management Efficiency

All TCC workplaces feature clear warning signs and safety boards (risk reminders, PPE requirements, emergency contacts), as well as evacuation cards and the 7 Life-Saving Rules (entry guidelines). Employees who identify immediate danger while working can cease operations and evacuate to a safe location. TCC is committed to maintaining production site safety. This includes using automated equipment to keep employees from high-risk areas and leveraging 5G technology and AI systems to enhance management and provide real-time OHS risk alerts.

AI Unmanned Mining Sites | **Fully Autonomous Transportation**



Control center personnel can remotely take over autonomous mining trucks in real-time during unexpected situations.

Innovation Highlight
Vehicle–to–vehicle Coordination

Water trucks, refueling trucks, maintenance trucks integrate V2X technology to assist other vehicle operations.

Innovation Highlight
Vehicle-to-loader Coordination

Through SIM card-enabled communication, loading shovels provide precise location data, guiding autonomous mining trucks to designated positions for seamless loading.

Jurong, Yingde, Chongqing, Guigang, Guangan, and Anshun Plants

Unmanned mining relies on digitalized mines, featuring 3D modeling and dedicated 5G networks. Centralized 3D visual control enables closed-loop management, significantly improving safety and efficiency. Guigang and Chongqing plants have completed digital mine construction. Jurong Plant fully adopted unmanned mining trucks, with Yingde Plant activating 10. Guangan and Anshun plants are in the process of implementation.

Yingde, Guigang, Jurong, and Chongqing Plants

In 2025, TCC will upgrade its smart mine capabilities with new AI recognition for safety helmets, hazardous behaviors, and personnel clearance. Deployment will be expanded, integrating drone technology with the smart platform for automated flight and remote supervision, driving a comprehensive intelligent upgrade of mining operations.

Yingde Plant

AI Intelligent Driving Supervision

AI cameras in mining vehicles detect driver drunk driving, fatigue conditions, and unsafe behaviors, automatically alerting the control center with screenshots. Personnel intervene via intercoms to prevent accidents. All Taiwan RMC trucks will adopt similar intelligent supervision systems for real-time alerts.

Ho-Ping Power Plant

Digital Periodicals

Monthly OHS management updates are shared with all employees via digital periodicals, and staff must complete OHS knowledge questionnaires.

Guangan Plant

Real-Time Notification

The "Grid Safety Management System" clarifies risk levels and OHS responsibilities by role. Integrating a "Safety Production Management Tool APP" and "WeChat Safety Management Groups," employees at all grid levels can use their phones on-site for inspections, pre-work safety pledges, hazard/accident reporting, and OHS training/assessments. This significantly boosts the timeliness and convenience of risk reporting.

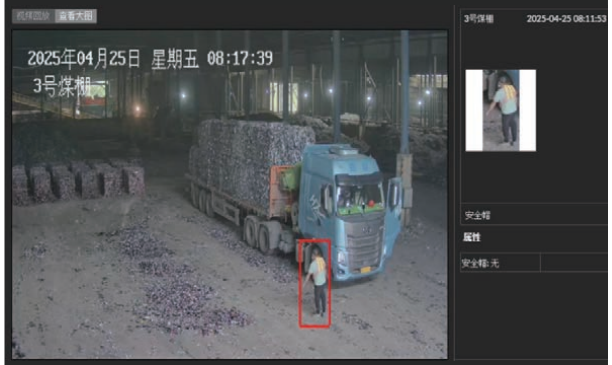
AI Image Recognition

Suao Plant, Taipei RMC Plant, CIMPOR & OYAK CEMENT

In 2024, Taiwan plants completed their AI-assisted recognition system proof of concept, planning priority implementation in cement plants by 2025. Türkiye and Portugal plants will install 60 AI cameras to record occupational safety incidents, identifying improvement opportunities.

Guigang Plant

Using AI camera recognition, the system monitors personnel safety compliance (helmets, seat belts, masks, reflective vests) and fire protection system safety, with continuous optimization through added monitoring items.



Hoping Plant, Suao Plant

AI Facial Recognition Management

In 2025, these plants will be demonstration sites for a single-entry and exit management system. Employees and contractors will use separate facial recognition systems for biometric access, integrating with the OSH Office's digital engineering surveillance to boost contractor management. Ho-Ping Power Plant had already implemented contractor facial recognition in 2019 and an employee system in 2020.

Ta-Ho Maritime

Remote Medical Services

In 2024, TCC subsidiary Ta-Ho Maritime partnered with Taipei Medical University to launch a 24/7 remote healthcare network for seafarers. This service provides zero-time-difference medical contact and emergency consultation, enhancing seafarer health. Training covers medication, first aid, psychology, and general healthcare. Doctors provide video consultations, prescribing from ship inventory, dispensed by certified onboard colleagues. The service also includes five remote follow-up consultations per patient, with nurses monitoring, which effectively reduces medical detours, lowering carbon emissions and conserving energy.

5.5

Human Rights Protection

GRI 2-24 / 2-25 / 2-30

Aligning with Global Standards: First Human Rights and Environmental Due Diligence Report Released

TCC launched human rights due diligence in 2019, triennially assessing 100% of its operations, value chain, and new business relationships (e.g., M&A, JVs)across all locations (including Mainland China, subsidiaries, affiliates) to identify risks. Global expansion to other business groups begins in 2025.

In 2024, TCC released its first Human Rights and Environmental Due Diligence Report, aligning with the EU CSDDD and other guidelines. Initial implementation focused on TCC Operation Headquarters, Taiwan cement, and RMC plants. The 2025 scope will expand to include Mainland China employees, Taiwan subsidiaries, and Molicel Taiwan plant, with methodology discussions for European subsidiaries starting in 2025.

The 2024 report identified priority rightsholders (employees, local communities, customers, suppliers, contractors) based on five principles, including female employees and indigenous people. Most critical issues are controlled by existing measures; remaining risks are integrated into remedial mechanisms for effective governance.

TCC firmly prohibits child labor, human trafficking, and forced labor, and complies with all relevant wage and working hour regulations to ensure timely payment of fair wages. At the same time, we foster a safe and healthy work environment, supporting employees in maintaining good physical and mental health and work-life balance.

Human Rights Policy

Anti-discrimination, Anti-harassment, and Anti-bullying Policy

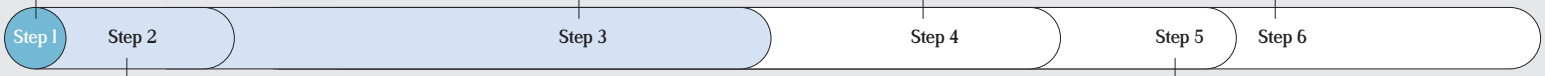
Human Rights and Environmental Due Diligence Process

Policy and Governance
Integrate due diligence into its corporate policies and management systems, committing to avoid adverse impacts on human rights and the environment through its governance and operational processes.

Prevention, Termination, and Mitigation
Terminate negative impacts and prevent future ones. If impacts persist, mitigation measures are put in place.

Tracking Effectiveness
Regularly evaluate if measures effectively prevent or mitigate negative impacts.

Remediation and Grievance
Provide remedial measures for any negative impacts, ensuring 100% site implementation. Additionally, corporate grievance mechanisms are established.



Risk Identification and Assessment

- Issue Collection: Broadly gather potential human rights and environmental issues affecting stakeholders during operations, compiling topics from UN, EU, OECD, and ILO guidelines.
- Assessment Frequency: Every three years, we assess operations, the value chain, and new business relationships (e.g., M&A, JVs) for potential human rights risks. The first due diligence was in 2024, with regular execution planned.
- Risk Assessment: Consult with stakeholders to evaluate human rights and environmental risks, including current and future systemic risks like climate change, aging, and net-zero transition risks.

Communication and Disclosure
Disclose relevant information and communicates with stakeholders.

Human Rights and Environmental Risk Assessment & Verification

Following ISO 31010 risk assessment methods and the Due Diligence Guidance for Responsible Business Conduct, TCC conducts questionnaire surveys and stakeholder consultations to understand human rights and environmental risk items across six rightsholders categories. Prioritization of due diligence issues is based on their high likelihood and significant impact.

Following human rights and environmental due diligence, TCC proposes prevention and mitigation for potential impacts on critical human rights and environmental issues, and remediation for existing impacts. To verify adequate handling of potential/negative impacts, quantitative or qualitative indicators referencing the UN Guiding Principles on Business and Human Rights track management, effectiveness, and grievance remediation via a dashboard. Existing management and prevention/mitigation measures reduce most risks to low residual levels; remaining risks are remediated with strengthened preventive management. However, with systemic risks like climate change, an aging population, and net-zero transition, challenges are severe. More comprehensive prevention and mitigation strategies are needed to strengthen overall response. For detailed information, please refer to TCC's 2024 Human Rights and Environmental Due Diligence Report.

2024 Human Rights Due Diligence Results

	% of total assessed
Own operations	100%
Contractors and Tier I suppliers	80%
Joint ventures	100%



Supply Chain Human Rights & Environmental Due Diligence

Through questionnaires to TCC employees and personnel from suppliers and contractors in office and factory operations, we identify human rights risk issues among significant tier-1 suppliers and contractors. Issues include, but are not limited to: forced labor, human trafficking, child labor, freedom of association, collective bargaining, wages and benefits, bullying and harassment, climate change, biodiversity, and environmental degradation.

Key Tasks for Human Rights & Environmental Due Diligence in 2025

In 2025, TCC will continue its human rights and environmental due diligence, gradually expanding scope to other global business groups. Workshops, qualitative interviews, and questionnaires will foster active rightsholder participation, ensuring findings align with actual needs. TCC will also strengthen international supply chain human rights management, continually referencing UN, ILO, and other international conventions and guidelines. Combined ISO risk assessment methods and management standards to establish a human rights and environmental risk management mechanism tailored to global business entity needs.

Gender Neutral Toilets
TCC DAKA Graffiti Hall





Strengthen Human Rights Management

Human Rights Education & Training

TCC includes its "Human Rights Policy, " "Statement of Integrity and Ethical Conduct, " and "Anti-discrimination, Anti-harassment, and Anti-bullying Policy" as mandatory annual training. All employees must read the policy documents and complete tests yearly. In 2024, online reading rates for Taiwan and Mainland China employees reached 98%, totaling approximately 2,215 hours (calculated based on 15 minutes reading/test time). CIMPOR and OYAK CEMENT plan to launch in 2025.

TCC KEY FACTS

Human Rights Education & Training Hours
2,215 hours

Engagement Rate

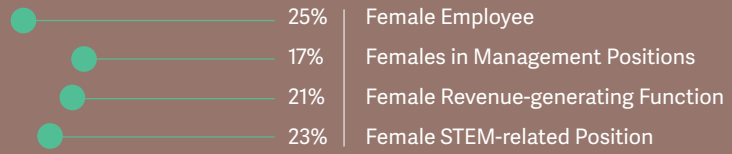
87%

TCC KEY FACTS

Female Employee Composition in 2024 — Cement & Battery Business, NHOA Energy

2025 TARGET: 22% Female Employees

International Employees 7%



Zero Tolerance for Misconduct & Bullying

TCC values employee rights and promotes a safe, inclusive workplace. An "Anti-discrimination and Anti-harassment Policy" guides employees in preventing and addressing misconduct. In Q1 2025, anti-bullying measures will be added into the "Anti-discrimination, Anti-harassment, and Anti-bullying Policy," strictly banning all forms of bullying and providing secure grievance channels. Training and promotion further support awareness and a respectful work environment.

TCC provides a Employee-Friendly secure online platform and confidential feedback channel to protect whistleblower privacy and prevent retaliation. Policies and grievance mechanisms are in place to prevent discrimination and harassment, ensuring employee well-being. In 2024, TCC recorded zero violations of the Gender Equality in Employment Act worldwide.

Gender Equality

Valuing Employee Diversity by Respecting & Accepting Individual Differences

- TCC's construction materials business involves physically demanding roles, often attracting more male applicants. To reduce groupthink, TCC sets female representation targets, with NHOA Energy and Atlante aiming to increase female engineers tenfold.
- TCC developed an AI resume analysis system that uses big data to match talent, reducing bias in manual reviews. Recruitment ads must use gender-neutral language to avoid stereotypes.

Cultural Integration

Exchanging Cultural Heritage

- Food is a gateway to cultural understanding. TCC fosters cross-cultural exchange through activities like sharing Italian cuisine at Christmas and Taiwanese snacks at birthdays. In 2024, TCC co-hosted "Dante Movie Night" with the Italian Economic, Trade and Cultural Promotion Office, pairing Italian food with casual networking.
- TCC supports foreign colleagues in Taiwan with rental matching, medical assistance, and transport to energy sites, helping them adapt and integrate into the workplace.



Action Spotlight

A European Journey Through the Eyes of TCC People

A total of 3,835 participants

In 2024, TCC launched a diversity and inclusion lecture series covering humanities, history, lifestyle, environmental sustainability, and industry development, aiming to foster cross-cultural interaction, intergenerational integration, and gender-inclusive career development. The first session featured Chairman Nelson An-ping Chang and cross-business unit colleagues sharing "A European Journey Through the Eyes of TCC People" via guided reading and panel discussion, exploring Europe—a climate change leader—through its culture, history, and cuisine.



Listen to Employees' Deepest Concerns & Help Identify Occupational Burnout



Daniele Cassioli, a blind water skiing world champion, serves as NHOA Energy's Ambassador for Inclusion

TCC actively prioritizes employee mental health. NHOA Energy pioneered the AI-powered Beaconforce platform in 2022, which analyzes daily responses to identify potential burnout. In 2023, NHOA Energy partnered with nilo.health to offer anonymous 1-on-1 and team psychological counseling in over 32 languages (10 hours per person biannually). Online courses and retired athlete consultants also guide stress relief through exercise. In 2024, employee participation reached nearly 70%, with full implementation at Atlante. TCC will leverage this success for gradual global expansion, with an Employee Assistance Program (EAP), including counseling services, set for 2025 implementation.

In 2024, Molicel enhanced diversity and inclusion for foreign colleagues, offering cultural experiences, Mandarin courses, and 24-hour translation and life assistance to aid their integration into Taiwan's workplace. Molicel also upholds human rights by enforcing zero recruitment fees and ensuring equal promotion and career development opportunities for foreign staff, demonstrating strong commitment to ethnic integration.



Molicel Committed to Creating a Friendly & Inclusive Workplace

Employee Engagement Survey

TCC has conducted annual employee engagement surveys since 2019, using questionnaires to gather diverse employee perspectives. TCC analyzes results across survey dimensions, communicating findings to unit supervisors and employees to develop improvement and optimization plans. Regular meetings then review, track, and oversee implementation effectiveness. The 2024 survey covered all employees (including Mainland China, affiliates); future surveys will include overseas subsidiaries.

In 2024, a third-party organization conducted an anonymous engagement survey for all employees in Taiwan, Mainland China, and affiliated companies, with a 98% response rate. The survey, which was the first to use an international standard model, found an overall average engagement of 87%. This new international standard will serve as a key benchmark for future tracking and optimization, with overseas subsidiaries planned for inclusion.

	2021	2022	2023	2024
Engagement Survey Results	96.1%	90%	92.96%	87%
Response Rate	96.71%	97.6%	95%	98%

Freedom of Association and Collective Bargaining

To foster a harmonious labor-management relationship, TCC has established labor unions across all its Taiwan plants and signed collective bargaining agreements. In 2024, the proportion of all employees who joined a union across TCC's cement businesses in Taiwan and Mainland China, as well as Ho-Ping Power Plant, was 91% of the total workforce. To protect the rights of all employees in Taiwan, the terms of both collective agreements and work rules apply to all employees, who are not treated differently based on any factors, including their membership status or willingness to join a union. TCC holds quarterly labor-management and/or union meetings for open communication and discussion on various issues. Additionally, regular Town Hall Meetings feature the chairman's keynote speech and offer live and anonymous online Q&A to address employee needs promptly.

Engagement Survey Items

JOB SATISFACTION

If a suitable opportunity arises, I would recommend others to work at the Company.
I am willing to take on additional work to help the Company succeed.

2025 Improvement Plan: TCC plans career development paths, facilitate new employee onboarding, and implement 6-month/1-year growth dialogue. The TCC Connect Guide strengthens real-time supervisor-employee communication and feedback, boosting work engagement and satisfaction.

PURPOSE

I understand how my work contributes to the Company's goals.
I clearly understand the Company's overall goals.

2025 Improvement Plan: The TCC Culture Guide promotes identifying with corporate mission/vision by promoting corporate cultural communication, hosting Townhall events, and diverse engagement activities.

HAPPINESS

My work gives me a sense of achievement.

2025 Improvement Plan: Through the TCC Well-being Guide, we promote welfare-enhancing activities, encouraging employees to cultivate a sustainable lifestyle with physical and mental balance.

STRESS

I do not encounter major obstacles in completing my work.
My department/team is capable of handling our work challenges.

2025 Improvement Plan: Promote the TCC Well-being Guide, implement Employee Assistance Program (EAP), provide psychological support services and stress management courses, and add health seminars and family-friendly childcare facilities.

5.6

Social Engagement Partners

GRI 413-1 / 413-2

Social Engagement Policy | Doing Better, Together

For TCC, social welfare goes beyond financial donations, it is about leveraging our core business, integrating technology and services, and implementing comprehensively in environmental, social, and governance aspects.

TCC KEY FACTS

Cumulative to 2024

TCC DAKA cumulative visitors

8,772,095 people

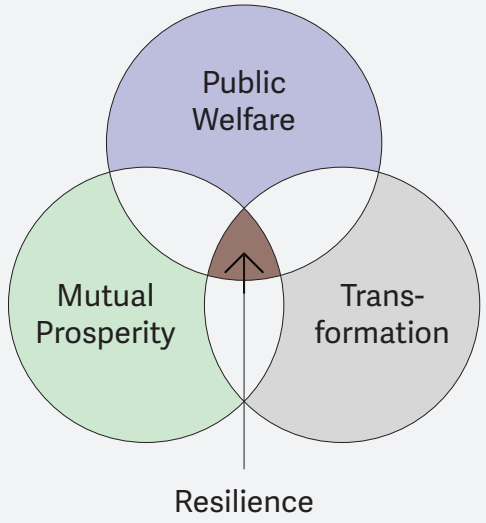
Hoping Sustainability Charity Foundation subsidy amount
NT$2,861,136

Ho-Ping Power Company
Maritime Emergency Relief subsidy amount
NT$750,000



Opened in January 2020, TCC DAKA Open Ecological Circular Factory (TCC DAKA) is Taiwan's first open tourist factory in heavy industry. Its creation followed a 2019 Hualien County Government invitation for TCC to manage household waste via a private BOO (Build-Operation-Own) project for cement kiln co-processing, initiating TCC's industry and community inclusion efforts. Through open communication, TCC transformed community opposition into mutual trust. Guided by Chairman Nelson An-ping Chang's philosophy that "a factory cannot exist isolated; it is always connected with surrounding communities. A factory should become a part of society and local life," TCC opened the Hoping Plant as a non-profit initiative, aiming to coexistence with the community and fostering dialogue between industry and society.

Activities, social networks, and visiting opinion leaders serve as vital communication channels. By integrating residents' expectations and needs into its strategies across public welfare, co-prosperity, and transformation, TCC actively works to build a resilient community.



Affected by earthquakes and typhoons, Hualien was the focus of social engagement in 2024. TCC extended care to stakeholders near the Hoping Eco-friendly Low-carbon Energy Park by promoting the Carbon Reduction Parent-Child Bankbook, utilizing social media to encourage online purchases for eco-friendly local brands. TCC also strengthens the community safety net with home repair services, the Hoping Care Bus, and the Hoping Sustainability Charity Foundation.

Daily Support Without the Fireworks — Building Hoping into a Resilient Community



To foster engagement and trust with community, TCC welcomed 7-Eleven and Starbucks to TCC DAKA. Instead of traditional rent, TCC earmarks a revenue percentage for a local fund, making every DAKA consumer a contributor. This cross-industry collaboration has taught TCC how to create social impact with diverse sectors, exemplified by Starbucks becoming Asia's first community store. Hoping Village's development is a shared goal with TCC. The village faces an aging population and economic hardship, particularly the systemic gap between low-to-middle income and impoverished families. This creates diverse needs, including educational resources, medical care, and support for elderly living alone. Beyond academic support from the Cement Academy (CH5.7), TCC is moving beyond profit-sharing to directly invest in emergency assistance and education.

Action Spotlight

Hoping Sustainability Charity Foundation

Established in October 2022, the foundation operates under a co-decision system, with the Hoping Village chief and three indigenous chairpersons as directors. It created the Hoping Emergency Relief Fund to aid impoverished children and families facing financial hardships. As of 2024, 74 cases have been approved. Following this model, the nearby Ho-Ping Power Company established the Ho-Ping Power Maritime Emergency Relief Fund in 2023. This fund assists fishing vessels in distress within the Suao Fishermen's Association's jurisdiction, as well as fishermen and their families. Its management committee was formed in collaboration with the Fishermen's Association and fishing groups.



Heping Elementary School ETA
(English Teaching Assistant)
TCC has sponsored the ETA program since 2020, enabling a foreign teacher stationed at Heping Elementary School for English teaching. With TCC DAKA's fund, the school further hired foreign teachers for two-hour weekly English courses within the community, supporting parents' continuing education and students' after-school tutoring.

Cultivating Local Sports Talent in Hoping
The Hoping Plant has established reward measures since 2022, covering competitions and overseas training to encourage local excellence in sports, arts, culture, and traditional skills. By 2024, applications were received for national and regional sports events, and total of NT$205,500 has been distributed. Scholarships for local students are also provided to cultivate outstanding talent.

Program for Electrical Engineering Technicians
In partnership with National Dong Hwa University, TCC launched an Industry-Academia Program for Electrical Engineering Technicians at Hualien Siwei High School. This program offers local admission without an entrance exam, helps students gain professional certifications, and encourages careers in new energy. Graduates receive priority for TCC job openings, fostering local technical talent.



Market Venders in DAKA

TCC DAKA as Local Residents' Living Circle

From 2020 to 2022, TCC's "Local Co-prosperity" program created non-manufacturing jobs through the DAKA Market and local tour guide hires. TCC also combined its resources with local expertise, forming a home repair team and launching care buses to bolster community safety. The DAKA Market specifically championed female empowerment, enabling Indigenous women to run stalls and expand into e-commerce, turning recreational classes into full-time careers. In December 2021, a certified SROI analysis showed that every NT$1 invested generated NT$3.54 in social value. The success underscores the community's potential and active participation. The engaged tribal mothers fuel the third phase of TCC's Social Engagement initiative-- Joint Action (2023-2025).

Home Repair Services and Hoping Care Bus

In 2022 and 2024, TCC DAKA and Suao Plant established home repair service centers. These centers provide basic components free of charge, building an efficient, high-quality professional reputation. The Hoping Village Care Bus was launched afterward with accessible bus standards, equipped with automatic lifts to accommodate passengers with disabilities. Local drivers are hired to transport villagers, fulfilling daily needs. By 2024, it had completed 2,082 trips, with medical visits accounting for 61% of the usage. In June 2024, the Hoping Plant was invited to share its experience at the local Health Center.

TCC KEY FACTS



A 79-year-old grandmother living in Suao: " It's such a relief that TCC could fix the utilities for our elders. We are truly grateful."

Hoping Plant

Accumulated total of
200 households
684 repair cases
Total of
1,665.5 hours committed

Suao Plant

Accumulated total of
38 households
61 repair cases
Total of
97 hours committed

Action Spotlight

From Food Delivery to Hundred — million Entrepreneur

The top-performing bento shop at DAKA Market was founded by local resident Huang-Wen Zheng, who previously delivered for his mother's bento business. After brand discussions with TCC, he saw significant first-year income. During the pandemic, he pivoted to high-end tourist car rentals using premium cars and licensed tour guide drivers. This strategy captured returning tourists post-pandemic, growing his venture into an enterprise exceeding NT$100 million in revenue.





Carbon Reduction Parent-child Bankbook — Connecting Schools with Families for Carbon Reduction

In 2023, TCC's social engagement evolved into "collective action," moving beyond one-way support to deep community collaboration. This shift aims to address climate change and industrial transformation challenges, and mitigate the economic and social impacts of the Ho-Ping Power Plant's 2040 decommissioning. That year, TCC launched the Carbon Reduction Parent-child Bankbook program. This initiative boosts residents' environmental awareness through waste reduction, recycling, and energy saving. TCC's team quantifies these actions, converting them into "carbon coins" as rewards to encourage participation and foster carbon reduction habits in families. Daily eco-friendly actions now translate into tangible rewards: products with carbon labels traded using carbon coins.

The program, initially engaging 85 students and 60 parents, expanded in 2024 to include Dong Ao Elementary, Ho-Ping Power Plant employees, and Heping Indigenous Mothers' Classroom. TCC's courses for employees and indigenous mothers directly address livelihood challenges from the plant's 2040 decommissioning. For instance, energy-saving courses, co-organized with the Hualien Wilderness Protection Association, openly discuss the challenges of thermal coal power plants, carbon fee impacts, and the urgency of industrial transformation through carbon reduction and alternative materials. TCC also outlines plans for electric mining trucks and ocean thermal energy conversion, clarifying the transformation's future impact for stakeholders. To amplify carbon reduction, TCC introduced eco-friendly tableware at local sports events, promoting reduced disposable plastic, weaving sustainability into the community fabric. This multi-faceted engagement reached 170 parents and children in the first year, expanding to 300 villagers in 2024, demonstrating TCC's deep community commitment and guidance towards sustainability. Please refer to the 'Carbon Reduction Parent-child Bankbook' video on YouTube, which showcases neighborhood life transformation.

TCC KEY FACTS

Participants in 2024
Carbon Reduction Parent-child Bankbook Program

Dong Ao Elementary School (Yilan) — 55 students, 38 parents, and 8 teachers
Hoping Plant (Hualien) — 68
Ho Sheng Mining Co., Ltd. (Hualien) — 38
Ho-Ping Power Plant — 6
Indigenous Mother's Classroom — 20 (Heping), 19 (Hezhong)

Two-year cumulative carbon reduction

5,426.56 kg CO_2e

Action Spotlight

Recycle with Peace (Hoping) Now!

TCC DAKA installed GEMMA smart recycling machines and packaging-free laundry detergent stations in cooperation with the Hualien County Environmental Protection Bureau, encouraging people to bring containers when purchase while reducing waste and carbon emissions.

Total sales of packaging-free laundry detergent : 2,945 liters

Total sales of packaging-free dishwashing detergent: 1,516 liters

Annual Carbon Reduction

892,646.1 kg CO_2e











Open Tours at the Shaoguan and Yingde Plant

TCC's first open ecological circular factory in Mainland China - the Shaoguan Plant and Water Park, was inaugurated in November 2021. It spans nearly 10,000 m^2 and features areas for water play, family entertainment, rest plaza, comprehensive service, and green trail leisure. Water is heated by cement kiln and maintained at room temperature. The facility is open free of charge to surrounding communities.



With the "social industry, co-prosperity and greenery" concept, the Yingde Plant open factory covers approximately 80,000 m^2. Since its opening at the end of 2024, the park has welcomed over 40,000 visitors by April 2025. It features cement crafting workshops, red tea soap-making workshops, family entertainment zones, green fitness areas, and animal interaction zones. Taking biodiversity and diversified development as opportunities, residents are naturally drawn to the plant to learn while enjoying leisure activities, transforming it from a mysterious, high-walled building into a welcoming place where residents can explore, experience, and enjoy.

Long-term Water Support for the Community

The Chongqing Plant has long provided daily water free of charge to its surrounding community. This commitment began in 2009 after a landslide isolated nearby Shaxichang Town and damaged its water supply, prompting the plant to dispatch water trucks as immediate aid. Since 2012, a direct pipeline from the plant has ensured a permanent water supply, securing basic needs and forging a lasting, friendly relationship.



Major Earthquake on April 3rd

Building Industrial and Community Resilience Together

On April 3, 2024, at 7:58 AM, a 7.3 magnitude earthquake, the strongest since the 921 Earthquake, shook Hualien for nearly a minute.

TCC's Hoping Eco-friendly Low-carbon Energy Park experienced intensity 6+ shaking. Ho-Ping Power Plant suffered boiler damage, causing a 36-day shutdown. Hoping EcoPort's equipment was damaged, with parts falling into the sea, and a displacement of over 50 cm occurred between the plant and the port. Equipment repairs, though expected to take a year, required longer rehabilitation, with internal damages emerging until early 2025. Subsequent rains and typhoons repeatedly damaged mining roads, at times isolating the Hoping Plant and impacting operations through mid-2025. Total earthquake repair costs exceeded NT$2.3 billion, marking a significant unexpected incident for TCC.



Strengthening Post-disaster Resilience: Advancing Restoration and Response Capabilities

Following the earthquake, Ho-Ping Power Plant repairs were delayed by aftershocks until April 15. The first unit reconnected on April 16, with the second unit following on May 13 after annual maintenance. Coal silo reinforcement finished late 2024, foundational repairs early 2025. Hoping EcoPort largely completed coal unloader and cement ship loader restoration by February 2025.

Post-earthquake, all units optimized response. Ho-Ping Power Plant increased emergency food reserves, fire drills, and physical exercises. Hoping plant secured backup mining access roads and improved equipment seismic resistance. Suao plant completed structural reinforcement of mining ropeway towers, enhancing transportation stability.

The April 3rd Earthquake Highlighted RRRC's Crucial Role in Handling Hualien's Household Waste

The Su-Hua Highway disruption halted waste collection for months, leading to a surge of furniture and construction waste in Hualien. This increased landfill reliance and environmental burden. With RRRC's gasification furnace resuming operations in late May 2024, it continues its vital waste processing, reducing landfill dependence and odors, improving local life, and achieving circular economy and co-prosperity goals.

Continuously Support the Development of Resilient Communities

Following a year of review and action, TCC honed its focus on equipment repair, operating systems, and community resilience. It established a disaster prevention management mechanism, encompassing equipment seismic reinforcement, employee safety training, and community evacuation support, to build a more resilient environment for the Hoping area.
The recent earthquake validated the foresight of their joint emergency relief fund. This fund was swiftly mobilized to cover home repairs, supplies for evacuation centers, and temporary renovations of outdated offices, providing approximately NT$200,000 in emergency relief items.

Life Resilience

Post-earthquake Employee Support
TCC partnered with the Hualien County Health Bureau and counseling centers to offer stress relief seminars, one-on-one counseling, on-site services, and hotline support. These initiatives helped employees cope with earthquake-related stress and improve mental well-being.

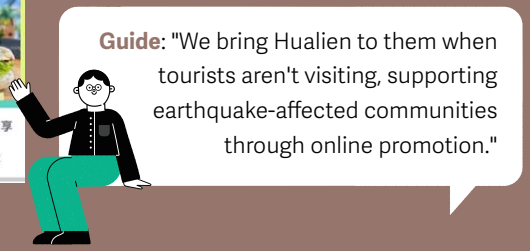
Care Buses Assist Residents' Daily Purchases
After a ten-day suspension due to transport disruptions, the Hoping Care Bus partially resumed service from April 16th to 26th. Offering four daily round trips, the wheelchair-accessible buses helped residents with shopping and medical visits, ensuring independent travel for those with limited mobility.

Home Repair Hotline for Affected Households
To assist residents, the Hoping plant's home repair team resumed services just three days after the earthquake. They immediately repaired residential water/electricity systems and public facilities, including restoring water supply to elderly residents' tanks/pipes and reconnecting broken pipelines, minimizing inconvenience.

Economic Resilience



TCC Supports Local Brands During Hualien's Slack Tourism
TCC leverages its influence to support Hualien's eco-friendly brands and products via social media. TCC DAKA guides filmed travel show-style content to promote online shopping and delivery of indigenous delicacies. They also encouraged employee group purchases for post-disaster recovery, reporting a 10% sales increase.



Disaster Prevention Resilience

TCC Hoping Shelter Activated:
First Corporate-initiated Disaster Relief in Hualien
Frequent natural disasters, including the April 3rd earthquake and 2024 typhoons, often cut off transportation and displace Hoping Village residents for months. TCC responded by renovating its former office into the Hoping Temporary Shelter, now an official emergency evacuation site managed by the Xiulin Township Office. Drawing on experiences assisting victims and noticing the village's primarily composition of elders with chronic illnesses, women, and children, TCC created a safe, comfortable, and dignified living space that emphasizes privacy, convenience, and spatial diversity.


Kitchen with water dispensers and refrigerators

2023 Major Earthquake in Türkiye

One of the Most Painful Days

On February 6th, 2023, Türkiye was hit by back-to-back 7.7 and 7.6 magnitude earthquakes, devastating Kahramanmaraş and affecting 11 provinces.

Fortunately, TCC's subsidiary OYAK's plants in Adana, Mardin, and İskenderun, though near the epicenter, sustained no damage or casualties.
In response to this rare disaster, OYAK CEMENT is actively supporting community reconstruction and providing resources for medium and long-term recovery.

While ensuring product quality for Türkiye's rebuilding efforts, OYAK CEMENT is also advancing green building, urban development, transportation, and living initiatives. Their goal is to create a safer, more livable environment for residents and pave the way for a green future.

OYAK CEMENT, through its "Children of the Republic Türkiye's Future Project," helps earthquake-affected children create lasting memories. This includes organizing earthquake resilience workshops for elementary and middle school students, where they gain hands-on understanding of building seismic resistance.





Provided assistance for airport road repairs



5.7

Educational Equity

Cement Academy

Scholar Harmony | Eager to learn | Rooted in education

The Cement Academy was founded by former TCC Chairman KOO Chen-Fu. The name of the program in Chinese, "Shih-Ming," comes from the English for "cement". "Shih" denotes a talented individual and "Ming" means diligent, reflects a passion for learning. The name embodies the hope that this initiative and act of love will be carried forward and endure in the future.

Since the establishment of the Cement Academy in 2012, TCC has upheld the core principles of "character, academic excellence, and quality" as its core principles, helping underprivileged elementary students near TCC's cement plants across Taiwan and Mainland China continuously access proper educational resources.



Guizhou
Jinyin Elementary School (Anshun Plant)

Guangxi
Daguo Elementary School (Guigang Plant)
Yaoshan ElementarySchool (Guigang Plant)

Chongqing
Yanjing Elementary School (Chongqing Plant)
Xiangluzhan Primary School (Chongqing Plant)

Sichuan
Guixing Town Elementary School (Guangan Plant)
Zhengdong Central Elementary School (Xuyong Plant)
Xikou ElementarySchool (Huaying Plant)

Guangdong
Chengbei Primary School (Yingde Plant)
Yinghongzhen Central Elementary School (Yingde Plant)
Pukou Elementary School (Jingzhou Plant)
Luyang Central Elementary School (Huaihua Plant)

Liaoning
Xidayao Town Central Elementary School (Liaoning Plant)

Taiwan
Shih Min Elementary School (Suao Plant)
Yongle Elementary School (Suao Plant)
Dong Ao Elementary School (Suao Plant)
Heping Elementary School (Hoping Plant)
Shanwei Elementary School (CSRC Linyuan Plant)
Jhongyun Junior High school (CSRC Linyuan Plant)

TCC KEY FACTS

2021-2024
The Cement Academy has benefited

5,128

students cumulatively | Taiwan and Mainland China

Cement Academy Creates a Stage Where Dreams Take Flight

After-school tutoring in English, computer skills, and talent courses helps children explore their interests and unlock their potential.

Nutritious meals including tasty lunch boxes, bread, snacks, and milk, provide the energy needed for healthy growth.

Holiday activities including Children's Day games and exciting summer camps allow children to grow through learning and playing.

Annual Christmas performances highlight their progress and every moment on stage is a testament to their growth.

Material donations, such as stationery and learning resources, help ease the burden on students so every child can learn with peace of mind.

Action Spotlight

Heping Elementary School's Graduating Class Explores TCC Headquarters on A Fascinating Graduation Trip

Heping Elementary School, near our Hualien Hoping Plant , arranged a special graduation trip to visit TCC Headquarters. TCC shared its sustainability and new energy efforts via electric vehicles and interactive games with sustainable themes. This offered children a deeper understanding of how their family's workplace actively impacts the environment The exchange was also particularly meaningful for colleagues.

"Seeing the curiosity in the children's eyes made me realize that my daily work has the power to shape the future. I hope this exchange has planted a seed of environmental sustainability in their hearts."

by Sally
Human Resources Department



Hualien Heping Elementary graduates visit TCC's Low-Carbon construction materials exhibit

The CIMPOR Avec Vous Program Provides Learning Resources for African Children

Avec Vous is derived from French, meaning "together with you."
CIMPOR launched the Avec Vous program in Attinguié, Ivory Coast in February 2025, achieving quality education through high-quality infrastructure. The kindergarten, fully funded and newly equipped by the Ivory Coast plant, is now open, offering learning supplies to students. Collaborating with surrounding communities, CIMPOR aims to continue creating opportunities for children to explore the world.



Guests at the event included Mrs. Belmonde DOGO, Minister of National Cohesion, Solidarity and the Fight against Poverty; H.E. Deniz ERDOĞAN BARIM, Ambassador of Türkiye to Ivory Coast; Mr. Cem Çelik, CEO of CIMPOR Africa; Mr. YASİN TEKİNARSLAN, CIMPOR Côte d'Ivoire Country Director; local authorities and community leaders; and school pupils

5.8

Cultural Preservation

Culture encompasses the lifestyle, values, and beliefs of an ethnicity and reflects social integration.
Traditional cultural arts, whether performed on stage or expressed in everyday behavior, offer valuable guidance and support

TCC KEY FACTS

2024 Supporting Cultural Development Invested over

NT$ 11.8 million

Including an annual donation of NT$10.5 million to the C.F. Koo Foundation.

TaipeiEYE

133
Performances

A total of
13,126 participants
Japan 36% Korea 28%
Europe and America 16%

Koo Cloud Theater 2020-2024 Accumulated 990,436 views

Peking Opera Neo-Classics "THE CONFIDANTS" **4 Performances**
Metropolitan Hall, Taipei & National Taichung Theater - Playhouse

The C.F. Koo Foundation

TCC has long supported cultural development, providing key aid to the C.F. Koo Foundation in preserving and promoting various traditional operas and endangered performing arts. The Company also sponsors events such as the Children's Folklore & Folkgame Festival, Lanyang Mazu Cultural Festival, encouraging public engagement with arts and cultural activities. With "cultural conservation" as its mission, the C.F. Koo Foundation established the Taipei Li-yuan Peking Opera Theatre in 1997. Led by veteran Li, Bao-chun and young professionals, the theatre conserves traditional opera, produces "New Old Plays," and performs newly adapted works. It promotes traditional opera, cultivates performers, and builds audiences, ensuring cultural continuity. Furthermore, via domestic and international tours, the "TaipeiEYE" tourist theater, and the "Koo Cloud Theater" YouTube channel, the beauty of traditional culture is shared worldwide.



Peking Opera's "THE CONFIDANTS" is a "newly adapted Peking opera" brand, based on Guo Qihong's play of the same name. It marks Li Pao-Chun's first attempt to create a work combining Peking Opera and Kunqu Opera

International Tourist Theater Company TaipeiEYE, Showcase of Chinese Culture

#RootedInTradition
#ProsperityInDiversity
#OnstageBackstageInteraction

Three weekly performances at TaipeiEYE offer an artistic feast, led by the Taipei Li-yuan Peking Opera Theatre. It features top troupes in Peking Opera, puppet shows, indigenous song and dance. Content is adapted from famous myths, legends, and historical stories, making it both familiar and fresh, vivid and interesting. Before the performance, "onstage and backstage" activities like costume try-ons, face painting demos, headdress demos, traditional music, prop handling, paper crafts, and rubbings allow deep cultural immersion. During major festivals, added folk art interactions highlight local traditions and enrich the audience experience.

Masters Personally Pass Down the Torch of Traditional Performing Arts

The Taipei Li-yuan Peking Opera Theatre promotes traditional opera by bringing Peking Opera to campuses annually, based on major production themes. This guides younger generations to appreciate opera, starting with understanding performance characteristics. In 2024, masters personally taught, introducing the essence of Peking Opera and Kunqu Opera fusion. Troupe members also hone their skills; for instance, lead Jinghu player Tseng, Hsiao-Chu, sought guidance from the Tianjin Peking Opera Theatre on bowing, fingering, and musical interpretation during Mainland China tours and Taipei performances, significantly enhancing her artistry. In 2024, 17 lectures and workshops were held, with 930 participants.

Action Spotlight

Celebrating TCC's 70th Privatization Anniversary with Taipei Li-yuan Peking Opera Theatre's Creative Performances

The Taipei Li-yuan Peking Opera Theatre presented a performance themed around "Reducing Carbon and Cherishing Resources." Master Li, Bao-Chun led three sheng and dan role performers in singing, while other performers waved large blue flags symbolizing clear skies, along with red and blue ribbons representing sunlight and seawater. Using Peking Opera movements like turns, tiger-presses, somersaults, and tumbles, they symbolically swept away black-clad carbon spheres, purifying them to restore clean air, water, and land to humanity. This creative performance demonstrates TCC's determination to actively engage in low-carbon transformation, embrace green energy, and serve life.





一切遇見 皆涯於此

Where Visionaries Converge

Master Li, Bao-Chun's Remarks at the Completion Ceremony of TCC. C. F. KOO Building in Hangzhou:

"TCC has inherited former Chairman Koo Chen-Fu's mission of social service, embracing loyalty, righteousness, and cultural identity cherished by global Chinese communities. The vast realm of art, like a boundless ocean, revealed to me in conversations with Uncle Koo many "opera reflects life" philosophies.

Witnessing the C.F. KOO Building's innovative design at today's ceremony, it embodies the insight: "without inheritance, there is confusion; without innovation, there is stagnation." This illustrates that progress requires inseparable tradition and new ideas. The piano-accompanied Zhuge Playing the Zither segment exemplifies this seamless blend of Chinese and Western music.

In the performance of Eternal Loyalty and Righteousness, through the familiar character Guan Yu, using the form of Peking opera to weave together the lines: "Mountains and clouds may move but noble spirit endures," "Loyalty and righteousness passed down through the ages for thousands of years."

Stakeholder & Material Topic Analysis

GRI 2-12 / 2-25 / 2-29 / 3-1 / 3-2 / 3-3

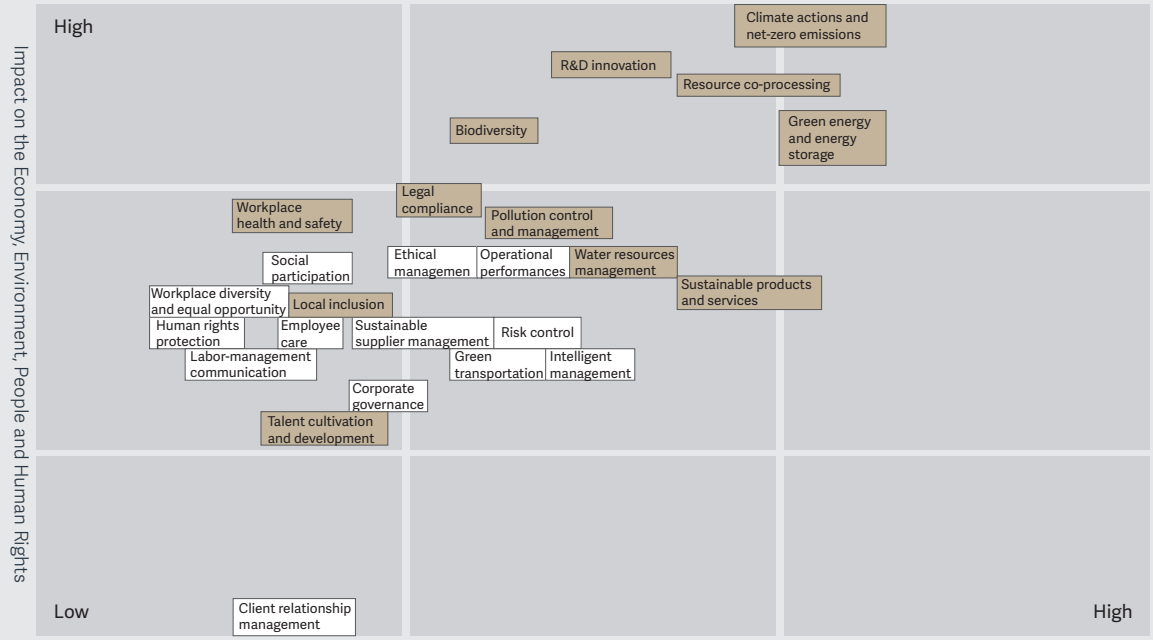
Double Materiality Analysis of Sustainability Issues

TCC conducts a sustainability issue assessment every two years. This year, the Company adopted the Double Materiality analysis principle in accordance with the GRI Universal Standards 2021. In compiling the sustainability issue list, TCC comprehensively considered global sustainability development trends, international sustainability rating frameworks (such as MSCI, S&P CSA, and CDP), sustainability disclosure standards (such as GRI Standards, and SASB Standards), industry characteristics, and best practices of industry peers. Stakeholders' opinions on each issue were surveyed, evaluating both the impact on corporate value and impact on the economy, environment, people, and human rights. A thorough evaluation of positive and negative impacts was conducted from both internal and external organizational perspectives. Material sustainability topics for the year were then identified based on the level of impact and likelihood of occurrence.

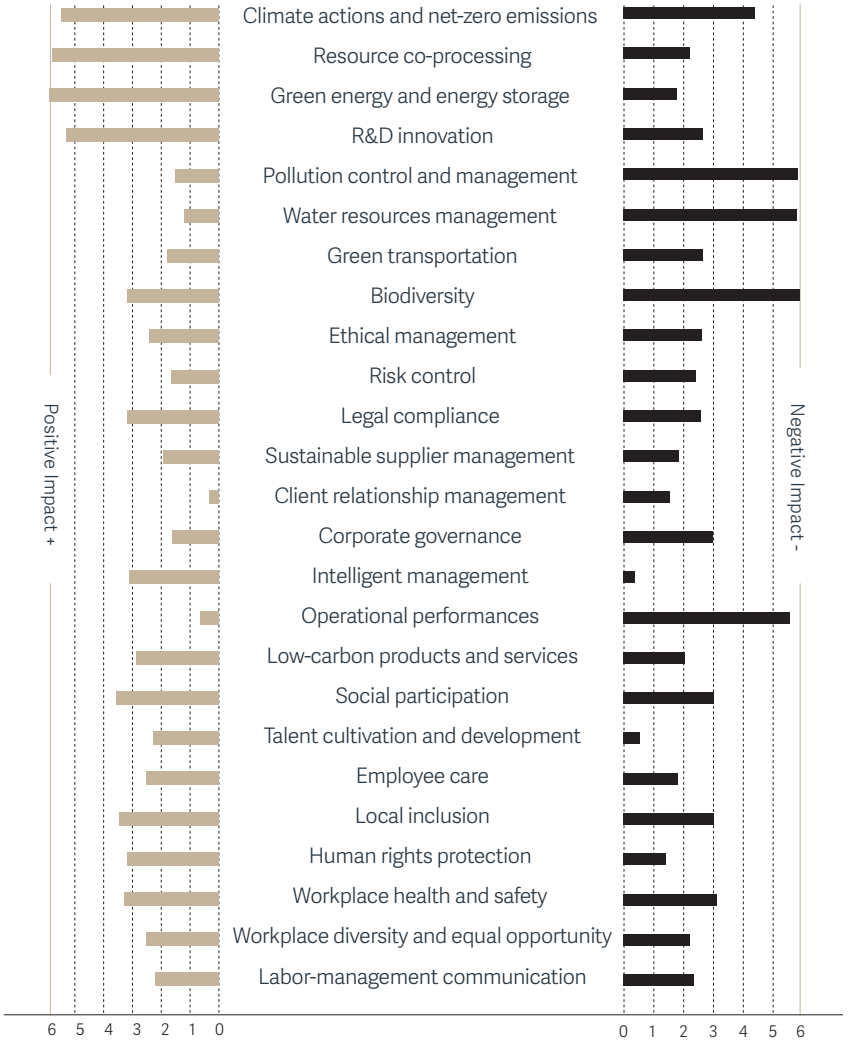
Through the double materiality analysis, eight material sustainability topics were identified, including “climate action and net-zero emissions”, “resource co-processing”, “green energy and energy storage”, “R&D innovation”, “low-carbon products and services”, “biodiversity”, “legal compliance” and “workplace health and safety”. Meanwhile, considering that “pollution control and management” and “water resources management” have a higher negative impact on the economy, environment, people and human rights, and are the focuses in the industry disclosure of various sustainability disclosure standards, both are also included in the material sustainability topics this year. In addition, in the human-centered, TCC puts employee inclusion and common good into practice. After discussion at the management meeting, “talent cultivation and development” and “local inclusion” are included in the material topics this year as well.

TCC has maintained the 12 material sustainability topics identified in the 2023 analysis. The results of the materiality assessment were approved by the Board of Directors. Also, the development and achievement on these material sustainability topics are linked to the executive remuneration. The materiality analysis process and results have been independently assured by **Deloitte Taiwan**, a third-party assurance provider, in accordance with ISAE 3000 (Revised), and verified by **BSI Taiwan** in accordance with the **GRI Standards and AA1000AS v3 Type 1 Moderate Assurance Level**.

2024 TCC Double Materiality Matrix



2024 Positive/Negative Impacts on the Economy, Environment, and People and Human Rights



Stakeholder and Material Topic Assessment Process

	Process	Approach	Key Performance
1	Identify Stakeholders	TCC's key stakeholders were identify through questionnaires completed by Department heads and relevant personnels.	Identified 10 categories of stakeholders
2	Focus on TCC's Sustainability Issues	Design a list of sustainability issues with reference to international sustainable development trends and international sustainability rating standards.	25 sustainability issues cover corporate governance, economy, environment, and people and human rights
3	Assess the Impact of Sustainability Issues on the Economy, Environment, People, and Human Rights	Conducted a materiality assessment workshop, inviting executives at Vice President level and above to identify actual and potential positive and negative impacts. Additionally, departments distributed questionnaires to internal and external stakeholders to understand the level of impact on each issue.	337 questionnaires collected
4	Assess the Impact of Sustainability Issues on Operations	Members of the Corporate Sustainable Development Committee, along with executives at Vice President level and above, assessed the impact of sustainability issues on operations. They determined the significance of each issue based on its severity and likelihood of its potential positive and negative impacts on TCC's operations.	8 VP-level and above supervisors discussed at management meeting
5	Double Materiality Assessment	Summarize internal/external survey results, map double materiality matrix, link issues and TCC sustainability strategies, and decide material topics for 2024.	12 material topics identified by the Corporate Sustainable Development Committee
6	Determine Material Topics	Submit the 12 material topics identified to the Board of Directors to ensure these material topics are aligned with the business risks and strategies of TCC.	Submitted to the Board of Directors compliance of in sustainability and integrity

Stakeholder Identification Results

Referring to the AA1000 Stakeholder Engagement Standard (SES), TCC identifies and prioritizes the key stakeholders based on the five principles, i.e., Responsibility, Influence, Tension, Diverse Perspectives, and Dependency.

Government & Competent Authorities
They affect policy and industry development and care TCC's legal compliance

Industry Associations/ Industrial & Academic Organizations
They partner to advance the industry and share business insights

Shareholders and Investors
They fund TCC and care for operational performance and sustainability

Media
They help TCC in disclosing and communicating sustainability-related actions

Clients
They value TCC's quality, services, operations, compliance, and environmental protection efforts

Local Communities
Residents near TCC sites concern about its local operations

Employees
The key for ongoing breakthroughs and innovations as a crucial human capital at TCC

Sustainability Associations
They are concerned about TCC's sustainable actions, and share the latest trends with TCC

Suppliers/Contractors
Partner in quality improvement and jointly address environmental and social issues

Environmental Groups/NGOs
They value TCC's environmental, employee, and community efforts and urge more progress

Impact Management of Material Topics

Supply Chain | TCC Operations | Products/Services | Local Communities

Material Topic	GRI Topics/ SASB Indicators	Significance to TCC (Operational Materiality)	Significant Impacts	Impacts to Value Chain	Policy Commitment	Management Actions	Chapters of Disclosures
Climate Actions and Net-Zero Emissions	GRI 201: Economic Performance 2016 GRI 302: Energy 2016 GRI 305: Emissions 2016 SASB Topic: Greenhouse Gas Emissions	The cement industry is a high-carbon industry that has a negative impact on the climate. TCC proactively adopts emission reduction measures to bring positive impacts to climate change via innovative technologies.	+ Climate-related opportunities - Climate-related risks	Supply Chain, TCC Operations, Products/Services	TCC participates in the global low-carbon transition and stays aligned with the "Paris Agreement" to limit global warming to 1.5°C or lower.	Seven Carbon Reduction strategies have been formulated, aiming to march towards the goal of 'Net Zero by 2050'.	Carbon Competitiveness Chapter 2
Resource Co-processing	GRI 306: Waste 2020 SASB Topic: Waste Management	TCC extends its core power as services through the co-processing technology of cement kilns to help the society and industries resolve waste issues while creating positive impacts like circular use of resources.	+ Circular economy of resources + Good interaction with society	TCC Operations, Products/Services, Local Communities	TCC is committed to resource recycling and using recycled materials with low environmental impact for the sustainable use of resources of Earth.	Industrial wastes of various industries are co-processed leveraging the high temperature property of cement kiln. In addition, TCC DAKA Renewable Resource Recycling Center was established to facilitate the treatment of domestic wastes for the local residents in Hualien.	Carbon Competitiveness Chapter 2
Green Energy and Energy Storage	GRI 302: Energy 2016 SASB Topic: Energy Management	TCC develops green energy in response to the government's energy transition policy, which helps reduce the industry's dependence on fossil fuels, mitigating climate change. This also yields positive impacts on the overall economy and society.	+ Technological and product innovation + Climate-related opportunities	Supply Chain, TCC Operations, Products/Services	Setting out from its 3 core businesses, TCC created new living models of low-carbon new energy, so as to build all-round EV low-carbon cities for the future.	Actively invest in the development of renewable energies, smart energy storage, and integrated services with solar, charging and storage applications; launch EnergyArk Energy Storage Cabinet that is fireproof and fire-extinguishing.	Carbon Competitiveness Chapter 3

Note: +indicates a positive impact; -indicates a negative impact.

Material Topic	GRI Topics/ SASB Indicators	Significance to TCC (Operational Materiality)	Significant Impacts	Impacts to Value Chain	Policy Commitment	Management Actions	Chapters of Disclosures
Low-Carbon Products and Services	GRI 301: Materials 2016 SASB Topic: Product Innovation	Committed to product lifecycle management, TCC continuously researches and controls its processes to reduce the carbon content of products and the water resources used in manufacturing. This ensures that its products meet client needs and comply with environmental standards	+ Technological and product innovation + Climate-related opportunities		Aiming for low carbon, energy saving, and zero waste in TCC products, TCC demands the partners in the value chain to implement sustainability management in facets of production, manufacturing, transportation, and services.	Introduce various ISO management systems to systematically manage the production process and improve the green content in products by setting production targets such as product's carbon emission intensity.	Chapter 2 Chapter 3
Legal Compliance	GRI 205: Anti-corruption 2016 GRI 206: Anti-Competitive Behavior 2016 SASB Topic: Pricing Integrity & Transparency	Legal compliance not just reduces operational risks and penalties but also improves overall operational performance. TCC has established a corporate culture on the basis of integrity to ensure that all operational procedures comply with relevant legal and regulatory requirements.	- Operational risks such as penalties or losses arising from regulation violation		TCC has established rigorous internal control and legal compliance systems, prevent compliance risks, and protect the Company's reputation. TCC also prohibits any conduct of unfair competition and upholds a free-market competition mechanism.	Identify and track matters such as law amendments and competent authority requirements through the "Internal/External Issues Registry" on a regular basis. Meanwhile, establish the reporting system and whistleblower protection mechanism to establish compliance awareness among employees.	Chapter 1
Workplace Health and Safety	GRI 403: Occupational Health and Safety 2018 SASB Topic: Workforce Health & Safety	Failure to properly implement workplace safety measures will expose employees to potential occupational safety risks, possibly lead to safety incidents, increasing losses and legal liabilities. TCC attaches great importance on workplace environment, establishing a safe workplace without concerns for employees.	+ Healthy and safe workplace -Occupational hazards		"OHS Policy" has been stipulated at TCC, 100% applied to all employees and contractors. Also, TCC has been aiming for "zero work-related injuries" among employees and contractors.	The ISO 45001 OHS management system has been introduced and 100% applied to the cement plants, RMC plants, and Operation Headquarters of TCC. Additionally, the workplace safety awareness of personnel is strengthened via safety management and promotion for contractors, occupational health and safety education and training, etc.	Chapter 5

Note: ○+ indicates a positive impact; ○- indicates a negative impact.

Material Topic	GRI Topics/ SASB Indicators	Significance to TCC (Operational Materiality)	Significant Impacts	Impacts to Value Chain	Policy Commitment	Management Actions	Chapters of Disclosures
R&D Innovation	Self-defined material topic SASB Topic: Product Innovation	TCC continues to invest in the research and development in basic construction materials, energy storage equipment, and carbon capture technology, actively improves product and business values, introduces energy for innovation to the industry.	+ Technological and product innovation + Climate-related opportunities		Continuously invest in the research of low-carbon products and technologies, develop innovative and eco-friendly products and services, and boost added value.	Establish R&D centers and new units dedicated to business promotion, actively seek opportunities to collaborate with international entities, and harness energy for innovation.	Carbon Competitiveness Chapter 2 Chapter 3
Biodiversity	GRI 101: Biodiversity 2024 SASB Topic: Biodiversity Impacts	The quarrying of limestone, the primary raw material for cement, may lead to destruction of the ecosystem on land. Committed to restoring the original ecosystem services and maintaining biodiversity, TCC actively reduces the negative impacts potentially arising from operations.	+ Maintaining biodiversity systems - Loss of biodiversity		With the "Biodiversity Policy" and "No Deforestation Commitment" formulated Committed to prevents and reduces impacts of development to nature, and engages in restoration projects.	TCC has implemented biodiversity protection measures on land and at sea. Also, it has become one of the TNFD Early Adopters. TCC is engaged in indigenous species ecosystem restoration projects and soil research programs in its mines.	Chapter 4
Local Inclusion	GRI 413: Local Communities 2016	TCC actively participates in community development and charitable activities, establishes various channels to connect with local communities, as well as promotes inclusion of enterprises and local residents.	+ Social impact increase - Reputation damage		The EARTH HELPER initiative communicate sustainability value in collaboration with sustainability partners.	Organize EARTH HELPER carbon reduction sustainability actions, Carbon Reduction Parent-Child Bankbook, etc., and establish Hoping Sustainability Charity Foundation.	Diversity and Inclusion Chapter 5

Note: ○+ indicates a positive impact; ○- indicates a negative impact.

Material Topic	GRI Topics/ SASB Indicators	Significance to TCC (Operational Materiality)	Significant Impacts	Impacts to Value Chain	Policy Commitment	Management Actions	Chapters of Disclosures
Talent Cultivation and Development	GRI 404: Training and Education 2016	Improving the professional level of personnel and meet the development needs of the Company, drive innovation and enhance competitiveness, help mitigate the talent gap, and construct a vibrant talent system.	+ Increase in the corporate talent asset competitive-ness - Talent loss		Talents constitute the crucial cornerstone of sustainable business operations. Committed to cultivating diversified developments of its employees, TCC endeavors to maximize their potential.	Offering interdisciplinary and diversified opportunities, TCC launched the "TCC Climate Action Talent Recruitment Program," and provides support through employee development blueprint and training resources.	Diversity and Inclusion Chapter 5
Pollution Control and Management	GRI 305: Emissions 2016 SASB Topic: Air Quality	TCC rigorously manages the pollution of noise, wastewater, and exhaust gas through reduction, collection, and control technologies, thereby reducing the negative impacts of the company's operations on the environment.	- Pollutions and impacts on the surrounding environment		Aiming for "zero pollution and zero emission/dis-charge," TCC adopts the best available pollution preventive and control technologies and measures.	TCC has strengthened its environmental protection and treatment facilities to prevent water, air, and soil pollution, including the internal monitor-ing of wastewater and high standards for managing air emissions.	Chapter 2
Water Resources Management	GRI 303: Water and Effluents 2018 SASB Topic: Water Management	TCC actively enforces various water consumption and conservation plans in order to address the potential negative impacts arising from water shortage and the impacts from water withdrawal on communi-ties where it operates.	+ Water resources management and reuse - Water resources consumption and pollution		Aiming for "not a drop of water wasted," TCC seeks a sustainable use of water resources, improves water resources management to increase water use efficien-cy.	Effectively managing the use of water resources through the implementation of water conservation programs, certification to the ISO Manage-ment System, and establish-ment of a systematic water footprint management platform, among other initiatives.	Chapter 2

Note: ○+ indicates a positive impact; ○- indicates a negative impact.

chapter 6

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6.1

ESG Data Sheet

6.1.1 TCC Key Indicators — Governance

2024 TCC Tax Information Unit: NT$1,000

Jurisdiction	Taiwan	Mainland China (Hong Kong included)	South Europe	Türkiye	United States	Netherlands	Africa	Others	Total
Operating Revenue	66,762,889	40,639,659	27,200,539	41,967,348	1,055,650	6,114	3,876,915	6,774,607	188,283,721
Income Tax Accrued	2,072,918	439,016	1,568,094	465,107	6,874	-	62,219	148,546	4,762,774
Income Tax Paid	3,944,262	211,809	1,668,929	1,445,205	174,898	60,622	64,894	24,537	7,595,156
Cost-to-income Ratio	51.93%	2.79%	21.98%	19.03%	2.30%	0.80%	0.85%	0.32%	100%
Primary Activities	Cement manufacturing and distribution, logistics transportation, manufacturing and distribution of slag powder, sand and gravel screening and ready-mixed concrete sales, waste removal and disposal, resource recycling technology development, etc.		Investment holding, renewable energy and energy storage system construction, renewable energy and charging business, electric vehicle charging equipment.	Manufacturing of Cement, Clinker and Concrete.	Renewable energy and energy storage system construc-tion, electric vehicle charging equipment.	Investment holding and electric vehicle charging equipment.	Cement Grinding and Manufacturing.	Investment holding, manufacturing and sales of cement and ready-mixed concrete, renew-able energy and charging business, battery research, development and sales, shipping transportation, and other activities.	
Effective Tax Rate				31.55%					
Cash Tax Rate				33.26%					

Note 1: The data in the table above has not been adjusted to offset transactions with related parties that should be included in the consolidated entities.
Note 2: For the number of employee, please refer to Section CH6.1 ESG Data Sheet - 2024 Employee Diversity Composition.

Financial Performance for the Past Three Years Unit: NT$ for EPS & DPS; NT$1,000 for the remainders

Type	Items	2022	2023	2024
Economic Value Generated	Operating Revenue	113,929,706	109,314,335	154,606,511
	Operating Income (Loss)	1,162,138	10,030,160	17,126,617
	Non-operating Income and Expenses	5,483,959	4,326,671	5,706,142
Economic Value Distributed	Operating Costs	103,794,557	88,780,566	121,878,486
	EPS	0.74	1.06	1.45
	DPS	0.5	1	1
	Cash Dividend per Share	0.5	1	1
	Stock Dividend per Share	0	0	0
	Income Tax	2,489,012	4,352,218	7,203,262
	Employee Wages and Benefits	9,769,560	10,606,016	18,140,124
	Community Investments	276,550	356,825	466,015
Economic Value Retained	Retained Earnings	66,527,594	70,576,781	72,771,952

Table of Significant Environmental Law/Regulation Violations in 4 Years

Items	2021	2022	2023	2024
Violations of Legal Obligations/Regulations	1	1	0	6
Amount of Fines as the Result of Significant Penalty Cases(Unit: NT$1,000.) Above	434	425	0	20,610
Accrued Year-end Penalty Amount (Unit: NT$1,000.)	0	0	0	0

Note 1: A major penalty event is defined as any single penalty with an amount exceeding USD 10,000.

Contributions & Other Spending in 4 Years Unit: NT$

Total Invested Amount	2021	2022	2023	2024
Lobbying, Interest Representation or Similar	0	0	0	0
Local, Regional or National Political Campaigns / Organizations / Candidates	0	800,000	700,000	10,000
Trade Associations or Tax-exempt Groups (e.g. Think Tanks)	57,338,014	54,230,375	45,175,671	55,945,099
Other (e.g. Spending Related to Ballot Measures or Referendums)	0	0	0	0
Total	57,338,014	55,030,375	45,875,671	55,955,099
Data Coverage	100%	100%	100%	100%

Note 1: The scope expanded in 2024 due to the merger with the European subsidiary, resulting in an increase in public participation expenses compared to the previous three years.

Table of Supply Chain Procurement Amount in 2024 Unit: NT$

Six Major Categories	Taiwan and Mainland China	
	Procurement Amount (NT$)	Procurement Amount Percentage (%)
Raw Materials	25,152,909,759	69.53%
Outsourcing & Subcontracting	442,441,229	1.22%
Equipment & Parts	5,710,769,642	15.79%
Transport	2,159,220,717	5.97%
Construction	2,424,030,509	6.70%
Explosives	283,842,438	0.78%
Total	36,173,214,294	100.00%

Note 1: The scope covers cement business in Taiwan and Mainland China

Number of Significant Suppliers and Procurement Share in 2024

Items	Taiwan and Mainland China	
Total number of Tier-1 suppliers	2,644	
Total number and Share of significant suppliers in Tier-1	251	9.49%
Share of total spend on significant suppliers in Tier-1	81.87%	
Total number of significant suppliers in non Tier-1	45	
Total number of significant suppliers	296	

Note 1: The scope covers cement business in Taiwan and Mainland China

Supplier Assessment Performance and Goals for 2024

Supplier Assessment	FY 2024	Target for FY 2024
Total number of suppliers assessed (via desk assessments/on-site assessments)	275	100%
Results		
Number of suppliers assessed with substantial actual/potential negative impacts	14	
Share of suppliers with agreed corrective action/improvement plan	100%	
Number of suppliers that were terminated	2	
Supplier corrective plan performance and targets		
Total number of suppliers with substantial actual/potential negative impacts expected to be supported in corrective action plan implementation	14	100%
Total number of suppliers supported in corrective action plan implementation	12	
Performance and goals of suppliers capacity building programs		
Total number of suppliers in capacity building programs	262	183

Note 1: The scope covers cement business in Taiwan and Mainland China

Mean Salary and Median Salary of Full-Time, Non-Managerial Employees and Their Historical Differences Unit: NT$1,000

Items	2023	2024	Difference
“Mean Salary” of Full-Time, Non-Managerial Employees	992	1,003	11
“Median Salary” of Full-Time, Non-Managerial Employees	870	877	7

Note 1: This table discloses salary information for Taiwan based on the "Instructions for Reporting Salary Information of Full-Time Employees Not Holding Supervisory Positions" issued by the Taiwan Stock Exchange.

6.1.2 TCC Key Indicators — Construction Materials

TCC Key Indicators — Environmental

GHG Emissions in 4 Years Unit: tCO_2e

Items		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	23,612,270
	CIMPOR & OYAK CEMENT	-	-	-	9,183,229
	Total	30,666,623	25,029,617	20,882,254	32,795,500
Scope 2 (Location-based method)	Taiwan	220,392	218,480	195,702	208,671
	Mainland China	1,094,397	846,574	656,627	698,270
	Subtotal	1,314,789	1,065,054	852,329	906,941
	CIMPOR & OYAK CEMENT	-	-	-	482,671
	Total	1,314,789	1,065,054	852,329	1,389,612
Scope 2 (market-based method)	Taiwan	220,392	218,480	195,702	208,631
	Mainland China	1,094,397	846,574	656,627	682,879
	Subtotal	1,314,789	1,065,054	852,329	891,510
	CIMPOR & OYAK CEMENT	-	-	-	537,745
	Total	1,314,789	1,065,054	852,329	1,429,255
Scope 1+Scope 2 (market-based method) Total	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

Note 1: The newly disclosed scope in 2023 includes Ho Sheng Mining Co., Ltd. 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 2: CIMPOR and OYAK CEMENT were officially included in the Company's consolidated financial statements starting from March 2024. Therefore, the GHG emissions presented above only account for the period from March to December 2024.
Note 3: The GHG emissions were inventoried in terms of operational control. The formula used is emissions = activity data × emissions factor (EF) × global warming potential (GWP).
Note 4: The scope 3 emissions cover all 15 categories defined by the GHG Protocol.
Note 5: To comply with the requirements of the Financial Supervisory Commission, this table adopts the greenhouse gas GWP values from IPCC AR6 for calculation.

Total Emissions of Various Greenhouse Gases for Scope 1 in Two Years Unit: tCO_2e

Items		2023	2024
CO_2	Taiwan	3,451,687.86	3,311,669.45
	Mainland China	22,786,777.11	20,316,085.00
	Total	26,238,464.97	23,627,754.45
CH_4	Taiwan	1,436.22	1,946.25
	Mainland China	849.88	693.96
	Total	2,286.10	2,640.21
N_2O	Taiwan	6,086.47	6,555.26
	Mainland China	597.49	377.72
	Total	6,683.96	6,932.97
HFCs	Taiwan	406.82	630.87
	Mainland China	7,380.32	1,421.41
	Total	7,787.14	2,052.28
PFCs	Taiwan	-	-
	Mainland China	-	-
	Total	-	-
SF_6	Taiwan	-	-
	Mainland China	395.14	314.99
	Total	395.14	314.99
NF_3	Taiwan	-	-
	Mainland China	-	-
	Total	-	-

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.
Note 2: To comply with the requirements of the competent authority, the Ministry of Environment, this table adopts the greenhouse gas GWP values from IPCC AR5 for calculation.

Energy Use in 4 Years

Energy Usage | Raw Consumption		2021	2022	2023	2024
Coal (thousand metric ton)	Taiwan	757	703	499	464
	Mainland China	4,446	3,369	2,822	2,321
	Total	5,203	4,072	3,321	2,785
Diesel (KL)	Taiwan	1,435	1,776	1,473	4,786
	Mainland China	16,991	13,239	12,143	11,680
	Subtotal	18,426	15,015	13,616	16,467
	CIMPOR & OYAK CEMENT	-	-	-	27,132
	Total	18,426	15,015	13,616	43,598
Gasoline (KL)	Taiwan	154	195	187	694
	Mainland China	340	252	262	301
	Subtotal	494	447	449	995
	CIMPOR & OYAK CEMENT	-	-	-	1,181
	Total	494	447	449	2,176
Purchased Electricity (GWh)	Taiwan	456	445	800	425
	Mainland China	2,272	1,601	1,361	1,972
	Subtotal	2,728	2,046	2,161	2,396
	CIMPOR & OYAK CEMENT	-	-	-	1,901
	Total	2,728	2,046	2,161	4,297
Power Generation by Waste Heat Recovery (GWh)	Taiwan	138	108	64	79
	Mainland China	1,034	811	738	858
	Subtotal	1,172	919	802	937
	CIMPOR & OYAK CEMENT	-	-	-	84
	Total	1,172	919	802	1,021
Natural Gas (m^3)	Taiwan	3,750	1,723	1,742	9,541
	Mainland China	-	-	-	0
	Total	3,750	1,723	1,742	9,541

Energy Use in 4 Years

Energy Usage — Raw Consumption		2021	2022	2023	2024
Alternative Fuel (GJ)	Taiwan	-	668,807	1,322,967	1,724,940
	Mainland China	1,141,467	5,667,469	8,539,446	13,131,664
	Subtotal	1,141,467	6,336,276	9,862,413	14,856,604
	CIMPOR & OYAK CEMENT	-	-	-	10,423,490
	Total	1,141,467	6,336,276	9,862,413	25,280,094
Renewable Energy (kWh)	Taiwan	272,778	307,778	2,803,611	5,836,025
	Mainland China	-	889,444	14,029,722	63,755,710
	Subtotal	272,778	1,197,222	16,833,333	69,591,736
	CIMPOR & OYAK CEMENT	-	-	-	185,808,077
	Total	272,778	1,197,222	16,833,333	255,399,812

Energy Usage — In terms of Gigajoule (GJ)					
Coal	Taiwan	17,632,953	16,355,419	11,577,410	10,806,676
	Mainland China	102,356,312	77,566,859	64,978,651	53,561,704
	Total	119,989,265	93,922,278	76,556,061	64,368,380
Diesel	Taiwan	50,489	62,451	51,753	168,288
	Mainland China	597,444	465,515	426,977	410,714
	Subtotal	647,933	527,966	478,730	579,002
	CIMPOR & OYAK CEMENT	-	-	-	954,021
	Total	647,933	527,966	478,730	1,533,023
Gasoline	Taiwan	5,097	6,366	6,128	22,637
	Mainland China	11,115	8,228	8,575	9,837
	Subtotal	16,212	14,594	14,703	32,474
	CIMPOR & OYAK CEMENT	-	-	-	38,576
	Total	16,212	14,594	14,703	71,050
Purchased Electricity	Taiwan	1,640,996	1,602,000	1,490,608	1,528,627
	Mainland China	8,179,002	5,763,600	4,899,412	7,097,867
	Subtotal	9,819,998	7,365,600	6,390,020	8,626,494
	CIMPOR & OYAK CEMENT	-	-	-	6,843,536
	Total	9,819,998	7,365,600	6,390,020	15,470,030

Energy Use in 4 Years

Energy Usage — In terms of Gigajoule (GJ)		2021	2022	2023	2024
Power Generation by Waste Heat Recovery	Taiwan	497,725	388,800	228,780	286,155
	Mainland China	3,723,552	2,919,600	2,565,800	3,088,559
	Subtotal	4,221,277	3,308,400	2,794,580	3,374,715
	CIMPOR & OYAK CEMENT	-	-	-	301,356
	Total	4,221,277	3,308,400	2,794,580	3,676,071
Natural Gas	Taiwan	139	58	58	320
	Mainland China	-	-	-	0
	Total	139	58	58	320
Alternative Fuel	Taiwan	-	668,807	1,322,967	1,724,940
	Mainland China	1,141,467	5,667,469	8,539,446	13,131,664
	Subtotal	1,141,467	6,336,276	9,862,413	14,856,604
	CIMPOR & OYAK CEMENT	-	-	-	10,423,490
	Total	1,141,467	6,336,276	9,862,413	25,280,094
Renewable Energy	Taiwan	982	1,108	10,093	21,010
	Mainland China	-	3,202	50,507	229,521
	Subtotal	982	4,310	60,600	250,530
	CIMPOR & OYAK CEMENT	-	-	-	668,909
	Total	982	4,310	60,600	919,439

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 yet included the cement plant in Cameroon) and OYAK CEMENT.
Note 2: The coal calorific values for cement plants in Taiwan are converted based on each plant's specific settings. The conversion factors are as follows: Su'ao Plant – 5,532.69 kcal/kg; Hoping Plant – 5,570.14 kcal/kg; other cement plants in Taiwan – 5,512.66 kcal/kg. Conversion factors for other fuels are: diesel – 8,400 kcal/l, gasoline – 7,800 kcal/l, electricity – 3,600 GJ per million kWh, and natural gas – 8,000 kcal/m^3. For Mainland China, CIMPOR, and OYAK CEMENT, calorific values are calculated in accordance with local practices and regulations.
Note 3: Energy consumption data is based on reports submitted to the Energy Administration.
Note 4: In light of the schedule, information on coal and natural gas usage by CIMPOR and OYAK CEMENT will be disclosed in the ESG section of TCC's official website.

2024 Energy Conservation Projects

Operation Sites	Energy Conservation Project	Cumulative Period	Energy Saved	Base Year
Hoping Plant	Compressed air system intelligent management optimization performance management system (ESCO project)	2023/06-2024/05	Electricity savings of 1,410,775 kWh	compared before and after the implementation of the plan
	2K clinker cooler renovation and upgrade project	2023/08-2024/07	Electricity savings of 1,227,332 kWh	
	1K clinker cooler renovation and upgrade project	2024/04-2025/03	Electricity savings of 2,540,601 kWh	
	Plant-wide electrical room water-cooled packaged air conditioner replacement and renewal	2024/12-2025/11	Electricity savings of 29,215 kWh	
Suao Plant	#6K preheater dust cleaning backup air compressor replacement and renewal - 1 unit	2024/06-2024/12	Electricity savings of 103,395 kWh	
	Cooler air blast tank compressor replacement and renewal - 1 unit	2024/12-2024/12	Electricity savings of 14,770 kWh	
Taipei Plant	Installation of automatic start-stop control for material receiving conveyor belt	2024/08-2024/12	Electricity savings of 4,978 kWh	2024
	Office lighting power improvement	2024/09-2024/12	Electricity savings of 216 kWh	2024
Tucheng Plant	Replacement of energy-saving lighting fixtures (sensor lights and LED)	2024/01-2024/12	Electricity savings of 802 kWh	2023
Bade Plant	Water dispenser energy saving	2024/01-2024/12	Electricity savings of 10.62 kWh	2023
Taoyuan Second Branch	Water dispenser energy saving	2024/01-2024/12	Electricity savings of 840 kWh	2023
Kaohsiung Plant	Water dispenser energy saving	2024/02-2024/12	Electricity savings of 4,020 kWh	2024
Taichung Plant	Air compressor replacement	2024/01-2024/12	Electricity savings of 8,229 kWh	2023
Yingde Plant	Yingde TCC 1K Clinker Cooler Energy-Saving Technical Upgrade Project	2024/03-2025/03	Savings of 6,282 metric tons of standard coal	2023
	Yingde TCC #5, 9C Cement Production Line Green Manufacturing Technology Upgrade Project	2022/10-2024/12	Savings of 979 metric tons of standard coal	2022
Guigang	#7C Mill Dispersion Machine Return Material Added L-Separator	2024/1-2024/12	Electricity savings of 428,301 kWh	2023
	#3C Mill Dispersion Machine Return Material Added L-Separator	2024/1-2024/12	Electricity savings of 107,237 kWh	2023
	Longzushan Corridor Photovoltaic Project	2024/6-2024/12	Electricity savings of 1,202,610 kWh	2023
	High Energy Consumption Motor Replacement	2024/1-2024/12	Electricity savings of 565,044 kWh	2023
	#8C Replace Diamond Hardfacing Roll, Increase Roll Width from 800mm to 900mm (Including Roll Sleeve Repair)	2024/6-2024/12	Electricity savings of 563,500 kWh	2023
	Waste Heat Power Generation TG1 Main Circulating Water Pump B Frequency Conversion	2024/7-2024/12	Electricity savings of 163,392 kWh	2024
Jurong	Cement Mill Energy-Saving Technical Modification	Already put into operation in June 2024	Electricity savings of 16,380,000 kWh/year	2020
Guangan	Modification of Coal Feeding Magnetic Levitation Fan in Coal Mill System	2024/05-2024/12	Electricity savings of 22,065 kWh	2024/4/1
	Cement Mill A System Fan Modification	2024/06-2024/12	Electricity savings of 197,428 kWh	2023/11/1

2024 Energy Conservation Projects

Operation Sites	Energy Conservation Project	Cumulative Period	Energy Saved	Base Year
Anshun	Replacement of Louver Valves in Kiln Tail Bag Filter at Clinker Plant	2024/06-2024/12	Electricity savings of 557,465 kWh/ton	2024
	Replacement of Mill Grate Plates at Cement Plant	2024/01-2024/12	Electricity savings of 53,196 kWh/ton	2024
Kaili	Replacement of AQC Heat Exchange Tubes on Line 2	-	Increased power generation by 1,332,100 kWh	2024 H1
	Deactivation of Line 1 and 2 Transformers (During Kiln Shutdown Period)	-	Electricity savings of 257,083 kWh	2023
Lungshan	Raw Mill System Fan Frequency Conversion Renovation Project	-	Electricity savings of 3,652,500 kWh/year	2024
	Three Kilns Using RDF Biomass Alternative Fuel	2026/01-2026/12	Coal savings of 44,900 metric tons/year	2024-2025
	Yingde Lungshan Company 11.8MWp Distributed Photovoltaic Power Generation Project	2026/01-2026/12	Electricity savings of 12,000,000 kWh/year	2024
Tsing Yi Plant	Compressed Air Delivery and Replacement Project for Air Compressors		Electricity savings of 22,500 kWh/year	2024
	Electric Official Vehicle Procurement Project		Diesel savings of 200 liters	2024
Total Energy Savings Converted to GJ	1,357,933 GJ			
Capital Investment	NT$ 1,994,543,000			
Operating Expenses	NT$ 262,996,000			
Costs Saved	NT$ 225,299,000			

Air Pollutant Emissions in 4 Years Unit: metric ton

Items	Unit	Site	2021	2022	2023	2024
NOx	metric ton	Taiwan	6,473	5,427	4,923	4,481
		Mainland China	9,908	8,207	5,053	4,740
		Subtotal	16,381	13,634	9,976	9,221
		CIMPOR & OYAK CEMENT	-	-	-	17,949
		Total	16,381	13,634	9,976	27,170
SOx	metric ton	Taiwan	113	65	97	58
		Mainland China	997	1,096	962	1,057
		Subtotal	1,110	1,161	1,059	1,115
		CIMPOR & OYAK CEMENT	-	-	-	3,354
		Total	1,110	1,161	1,059	4,469

Air Pollutant Emissions in 4 Years Unit: metric ton

Items	Unit	Site	2021	2022	2023	2024
Particulate Matter	metric ton	Taiwan	214	158	168	182
		Mainland China	569	317	402	466
		Subtotal	783	475	570	648
		CIMPOR & OYAK CEMENT	-	-	-	1,170
		Total	783	475	570	1,818
VOC/THC	metric ton	Taiwan	0.0042	0.0043	0.0042	0.0043
		Mainland China	-	-	-	0.0113
		Total	0.0042	0.0043	0.0042	0.0157
PCDD/F	g I-TEQ	Taiwan	-	0.7576	0.0299	0.0505
		Mainland China	-	-	-	0.00000024
		Total	-	0.7576	0.0299	0.0505
Mercury Emissions (Hg)	metric ton	Taiwan	0.2788	0.2264	0.1669	0.1729
		Mainland China	-	-	-	0.2058
		Subtotal	0.2788	0.2264	0.1669	0.3787
		CIMPOR & OYAK CEMENT	-	-	-	0.0110
		Total	0.2788	0.2264	0.1669	0.3897

Note 1: Emissions are calculated either through direct measurement or based on specific on-site data. The emission factors are sourced from the "Emission Factors, Control Efficiencies, and Other Measurement Regulations for Particulate Pollutants, Lead, Cadmium, Mercury, Arsenic, Hexavalent Chromium, and Dioxins from Stationary Pollution Sources in Public and Private Premises." These include Appendix 1: Emission Factors for Particulate Pollutants from Industrial Processes, and Appendix 3: Emission Factors for Lead, Cadmium, Mercury, Arsenic, Hexavalent Chromium, and Dioxins from Industrial Processes, as well as emission factors, control efficiencies, and other measurement regulations for volatile organic compounds (VOCs), process units (including equipment components), as specified for the declaration of air pollution control fees for stationary pollution sources.
Note 2: The nature of operations at product plants involves cement product mixing and transportation; therefore, no air pollutant emissions are generated.
Note 3: Emissions of mercury, dioxins, and furans (PCDD/Fs) from Mainland China are disclosed starting from 2024.
Note 4: In 2024, additional heavy metal emissions were recorded. For Heavy Metals 1 (HM1, including thallium, cadmium, lead, arsenic, and their compounds), emissions totaled 0.7424 metric tons in Taiwan and Mainland China, and 0.0630 metric tons in CIMPOR and OYAK CEMENT. For Heavy Metals 2 (HM2, including beryllium, chromium, tin, antimony, copper, cobalt, manganese, nickel, vanadium, and their compounds), emissions totaled 1.3715 metric tons in Taiwan and Mainland China, and 1.4050 metric tons in CIMPOR and OYAK CEMENT.
Note 5: In 2024, the newly added disclosure scope included 22.17 metric tons of fluorides, 33.51 metric tons of hydrogen chloride, 3.63 metric tons of hydrogen fluoride, 115.93 metric tons of ammonia, and 16.75 metric tons of total organic carbon.
Note 6: 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 yet included the cement plant in Cameroon) and OYAK CEMENT.
Note 7: In light of the project timeline, the data on PCDD/F and VOC/THC for CIMPOR and OYAK CEMENT will be disclosed in the ESG section of TCC's official website.

Water Resource Use in 4 Years Unit: million liters

Items		2021	2022	2023	2024
Water Withdrawal					
Third-Party Water_Municipal Water	Taiwan	322	309	289	282
	Mainland China	405	373	523	539
	Subtotal	727	682	812	821
	CIMPOR & OYAK CEMENT	-	-	-	236
	Total	727	682	812	1,057
Third-Party Water_Industrial Water	Taiwan	1,039	819	722	1,086
	Mainland China	516	456	782	586
	Subtotal	1,555	1,275	1,504	1,672
	CIMPOR & OYAK CEMENT	-	-	-	719
	Total	1,555	1,275	1,504	2,391
Surface Water_Rivers	Taiwan	-	-	-	13
	Mainland China	12,319	8,325	8,177	10,925
	Subtotal	12,319	8,325	8,177	10,938
	CIMPOR & OYAK CEMENT	-	-	-	211
	Total	12,318	8,325	8,177	11,149
Surface Water_Mines	Taiwan	-	-	-	-
	Mainland China	-	-	33	94
	Subtotal	-	-	33	94
	CIMPOR & OYAK CEMENT	-	-	-	-
	Total	-	-	33	94
Surface Water_Lakes	Taiwan	-	-	-	-
	Mainland China	348	135	99	137
	Subtotal	348	135	99	137
	CIMPOR & OYAK CEMENT	-	-	-	5
	Total	348	135	99	142
Surface Water_Rainwater/Spring Water	Taiwan	-	-	694	37
	Mainland China	-	6	448	967
	Subtotal	-	6	1,142	1,004
	CIMPOR & OYAK CEMENT	-	-	-	24
	Total	-	6	1,142	1,028

Water Resource Use in 4 Years Unit: million liters

Items		2021	2022	2023	2024
Groundwater	Taiwan	1,102	1,173	1,123	1,460
	Mainland China	520	350	-	263
	Subtotal	1,622	1,523	1,123	1,723
	CIMPOR & OYAK CEMENT	-	-	-	7,507
	Total	1,622	1,523	1,123	9,230
Seawater	Taiwan	0	0	0	0
	Mainland China	0	0	0	0
	Subtotal	0	0	0	0
	CIMPOR & OYAK CEMENT	-	-	-	19,929
	Total	-	-	-	19,929
Discharged Reclaimed Water	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	13,510
	Subtotal	16,675	12,059	12,962	16,478
	CIMPOR & OYAK CEMENT	-	-	-	28,641
	Total	16,675	12,059	12,962	45,118
Water discharge					
Surface Water	Taiwan	-	-	-	464
	Mainland China	-	-	-	0
	Subtotal	-	-	-	464
	CIMPOR & OYAK CEMENT	-	-	-	5,308
	Total	-	-	-	5,772
Groundwater	Taiwan	-	-	-	0
	Mainland China	-	-	-	0
	Subtotal	-	-	-	0
	CIMPOR & OYAK CEMENT	-	-	-	77
	Total	-	-	-	77

Water Resource Use in 4 Years Unit: million liters

Items		2021	2022	2023	2024
Seawater	Taiwan	-	-	-	0
	Mainland China	-	-	-	0
	Subtotal	-	-	-	0
	CIMPOR & OYAK CEMENT	-	-	-	19,929
	Total	-	-	-	19,929
Third-Party Water	Taiwan	-	-	-	30
	Mainland China	-	-	-	118
	Subtotal	-	-	-	148
	CIMPOR & OYAK CEMENT	-	-	-	96
	Total	-	-	-	244
Total	Taiwan	-	-	-	494
	Mainland China	-	-	-	118
	Subtotal	-	-	-	612
	CIMPOR & OYAK CEMENT	-	-	-	25,410
	Total	-	-	-	26,022
Water Consumption					
Water Consumption	Taiwan	2,566	2,414	2,900	2,474
	Mainland China	14,109	9,645	10,062	13,391
	Subtotal	16,675	12,059	12,962	15,865
	CIMPOR & OYAK CEMENT	-	-	-	3,231
	Total	16,675	12,059	12,962	19,096

Water Resource Use in 4 Years Unit: million liters

Items		2021	2022	2023	2024
Recycled water					
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	-	-	-	0
	Total	-	-	54	467

Note 1: In Mainland China, water discharged to third parties refers to water provided for use by other organizations.
Note 2: At TCC's Hoping Plant in Taiwan, rainwater intake in 2023 was estimated based on projected runoff from rainfall, while in 2024, rainwater meters were installed to record the actual volume of rainwater collected. As a result, differences in water intake between the two years are due to differences in calculation methods.
Note 3: The water discharge has been disclosed starting from 2024.
Note 4: 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 yet included the aggregate plant in Cabo Verde) and OYAK CEMENT.

Water Resource Use in Water-Stressed Areas over the Past Three Years Unit: Million Liters

Items		2022	2023	2024
Water Withdrawal	Taiwan	-	-	-
	Mainland China	1,471	1,932	1,718
	Subtotal	1,471	1,932	1,718
	CIMPOR & OYAK CEMENT	-	-	2,383
	Total	1,471	1,932	4,101
Water Discharge	Taiwan	-	-	-
	Mainland China	-	-	-
	Subtotal	-	-	-
	CIMPOR & OYAK CEMENT	-	-	109
	Total	-	-	109
Water Consumption	Taiwan	-	-	-
	Mainland China	1,471	1,932	1,718
	Subtotal	1,471	1,932	1,718
	CIMPOR & OYAK CEMENT	-	-	2,274
	Total	1,471	1,932	3,992
Recycled Water	Taiwan	-	-	-
	Mainland China	-	-	69
	Subtotal	-	-	69
	CIMPOR & OYAK CEMENT	-	-	399
	Total	-	-	467

Note 1: TCC assesses future water availability using the WRI Aqueduct Water Risk Atlas. Some locations in Mainland China, as well as sites operated by CIMPOR and OYAK CEMENT, are situated in areas with high water stress, while the remaining sites are not located in water-stressed regions.

2024 Water Conservation Project

Operation Sites	Water Conservation Project	Cumulative Period	Total Water Saved	Base Year
Hoping Plant	3A shaft tunnel water resource recovery and reuse	2021/05-2024/12	25,430 cubic meters of water saved	-
	1B shaft tunnel water resource recovery and reuse	2023/03-2024/12	6,077 cubic meters of water saved	-
	Rainwater collection facility	2024/05-2024/12	4,538 cubic meters of water saved	-
Suao Plant	RD01 effluent water recovery pipeline expansion project	2024/03-2024/12	36,719 cubic meters of water saved	2024
Taipei Plant	Driver water control system	2024/11-2024/12	496 cubic meters of water saved	2023
Zhongli Plant	Rainwater recycling system	2024/12-2024/12	125 cubic meters of water saved	2023
Tucheng Plant	Rainwater recycling system	2024/01-2024/12	539 cubic meters of water saved	2023
Hsinchu Plant	Rainwater recycling system	2024/03-2024/12	2,661 cubic meters of water saved	2023
Guishan Branch	Rainwater recycling system	2024/11-2024/12	7 cubic meters of water saved	2024
Kaohsiung Plant	Water-saving equipment in administrative building restrooms	2024/08-2024/12	89 cubic meters of water saved	2024
	Rainwater recycling system	2024/01-2024/12	5,106 cubic meters of water saved	2023
Taichung Plant	Rainwater recycling system	2024/05-2024/12	38 cubic meters of water saved	2023
Shengang Plant	Rainwater recycling system	2024/04-2024/12	299 cubic meters of water saved	2023
Jurong Plant	Waste heat power generation wastewater recycling	2024/01-2024/12	81,847cubic meters of water saved	2020
Anshun Plant	Rainwater Recovery	2024/08-2025/01	94,318 cubic meters of water saved	
Total Water Savings			258,289 cubic meters	
Capital Investment			NT$ 26,274,000	
Operating Expenses			NT$ 1,207,000	
Cost Saved			NT$ 1,916,000	

Waste Treatment in 4 Years Unit: metric ton

Total Waste			2021	2022	2023	2024
Quantity of in-house waste reused	Non-Hazardous Waste	Taiwan and Mainland China	3,881.23	9,673.86	7,811.95	11,181.09
	Hazardous Waste	Taiwan and Mainland China	-	-	-	0

Waste Treatment in 4 Years Unit: metric ton

Total Waste				2021	2022	2023	2024
Outsourced treatment volume of in-house waste	Off-site Waste landfilled	Non-Hazardous Waste	Taiwan and Mainland China	-	-	-	131.24
		Hazardous Waste	Taiwan and Mainland China	-	-	-	1.24
	Off-site Waste incinerated with energy recovery	Non-Hazardous Waste	Taiwan and Mainland China	-	-	-	841.60
		Hazardous Waste	Taiwan and Mainland China	-	-	-	4.54
	Off-site Waste incinerated without energy recovery	Non-Hazardous Waste	Taiwan and Mainland China	1,091.74	212.71	1,686.68	278.97
		Hazardous Waste	Taiwan and Mainland China	-	-	-	49.06
	Off-site Waste sent to recycle/reuse	Non-Hazardous Waste	Taiwan and Mainland China	12,751.75	11,352.67	7,710.54	21,939.22
		Hazardous Waste	Taiwan and Mainland China	-	-	-	502.74
Total		Non-Hazardous Waste	Taiwan and Mainland China	17,724.72	21,239.24	17,209.17	34,372.11
		Hazardous Waste	Taiwan and Mainland China	-	-	-	557.58

Note 1: The newly disclosed scope in 2024 includes Longshan, Huaihua, and Liaoning cement plants; Fuzhou and Liuzhou grinding plants; Feng Sheng Enter-prise Company, 123 Environmental Protection Technology Co., Ltd., Beijing TCC Environmental Technology Co., Ltd., TCC (Guangdong) Renewable Resources Technology Company Limited.
Note 2: In light of the project timeline, the data on waste treatment for CIMPOR and OYAK CEMENT will be disclosed in the ESG section of TCC's official website.

Raw Material Use in 2024 Unit: metric ton

Category	Item	Taiwan	Item	Mainland China	Item	CIMPOR & OYAK CEMENT
		Usage Amount		Usage Amount		Usage Amount
Recycled Materials	Alternative Clay	494,130	Desulfurization Gypsum	1,116,458	Steel Slag	355,138
	Coal Ash	269,099	Coal Slag	759,878	Other Combustibles	155,319
	Gypsum	217,485	Coal Gangue	715,858	Waste Concrete and Concrete Sludge	88,178
	Construction Waste Soil	163,993	Fly Ash	571,783	Construction Waste	58,612
	Iron Slag	143,250	Steel Slag	457,816	Reduction Slag	41,287
	Bottom Ash	77,176	Construction Waste Soil	279,141	Fly Ash	29,892
	Reduction Slag	29,674	Copper Slag	265,050	Iron Ore Waste	28,327
	Calcium Fluoride Sludge	14,379	Furnace Slag	231,205	Flotation Waste	22,984
	Others	48,847	Iron Tailings	221,931	Bottom Ash and Boiler Dust	22,369
			Others	2,315,283	Others	73,278
	Subtotal	1,458,033	Subtotal	6,934,403	Subtotal	875,384
Non-Renewable Materials	Limestone	5,494,419	Limestone	36,188,402	Limestone/Chalk	9,304,957
	Low-Alkali Sand	202,506	Siltstone	824,743	Limestone	4,473,816
	Silica Sand	35,915	High-Silica Sand	759,773	Clay/Shale/Slate/Kaolin	3,600,773
			Clay	681,515	Cement Composite Materials	1,203,407
			Sandy Shale	308,606	Marlstone	1,169,925
			Waste Rock	282,672	Natural Gypsum	396,067
			Shale	266,513	Volcanic Ash	344,404
			Sulfuric Acid Residue	225,251	Clinker	177,075
			Overburden	206,349	Silica Sand	138,814
			Others	610,867	Others	535,148
	Subtotal	5,732,840	Subtotal	40,354,691	Subtotal	21,344,386
Total Amount of Recycled Materials Used (A)						9,267,820
Total Amount of Non-recycled Materials Used						67,431,917
Total Amount of Materials Used (B)						76,699,737
Proportion of Recycled Materials Used (A/B; %)						12.08%

Note 1:The calculation of raw material use in Taiwan covers only cement plants.

2024 Consumption of Alternative Raw Materials and Fuels Unit: metric ton

Taiwan

Resource Reused	Alternative Type	Usage Amount
Fly Ash	Alternative Raw Materials	227,432
Construction Waste Soil	Alternative Raw Materials	163,993
Desulfurization Gypsum	Alternative Supplementary Materials	217,485
Wood Chips	Alternative Fuel	84,737
Bottom Ash	Alternative Raw Materials	77,176
Mineral Sludge	Alternative Raw Materials	58,307
Waste Co-Processing	Alternative Fuel	41,421
Coal Ash	Alternative Raw Materials	41,667
Calcium Fluoride Sludge	Alternative Raw Materials	14,379
Reduction Slag	Alternative Raw Materials	29,674
Air-Cooled Slag	Alternative Raw Materials	12,670
SRF	Alternative Fuel	8,187
Furnace Slag Powder	Alternative Raw Materials	8,353

Mainland China

Resource Reused	Alternative Type	Usage Amount
Desulfurization Gypsum	Alternative Supplementary Materials	690,269
Waste Textiles	Alternative Fuel	566,734
Coal Gangue	Alternative Raw Materials	549,721
Steel Slag	Alternative clinker	508,096
Fly Ash	Alternative Supplementary Materials	477,710
Furnace Slag	Alternative Raw Materials	380,781
Fly Ash	Alternative Raw Materials	368,909
Coal Slag	Alternative Supplementary Materials	304,509
Coal Slag	Alternative Raw Materials	291,609
Construction Waste Soil	Alternative Raw Materials	279,141
Steel Slag	Alternative Raw Materials	219,483
Desulfurization Gypsum	Alternative clinker	196,409
Coal Slag	Alternative clinker	195,268
White Mud	Alternative Raw Materials	172,163
Silica Slag	Alternative clinker	154,025
Copper Slag	Alternative Raw Materials	150,539
Iron Tailings	Alternative Supplementary Materials	134,523
Desulfurization Gypsum	Alternative Raw Materials	134,014
Iron Ore Beneficiation Sludge	Alternative Raw Materials	125,803

CIMPOR & OYAK CEMENT

Resource Reused	Alternative Type	Usage Amount
Refuse Derived Fuel/Solid Recovered Fuel (RDF)	Alternative Fuel	456,191
Cement	Alternative Raw Materials	226,935
Other Waste (Biomass)	Alternative Fuel	127,314
Tires	Alternative Fuel	76,037
Earthwork	Alternative Raw Materials	33,396
Fly Ash	Alternative Supplementary Materials	24,741
Olive Pomace and Other Plant Biomass	Alternative Fuel	22,725
Waste Tire Shreds	Alternative Fuel	21,649
Steel Slag	Alternative Raw Materials	20,871
Lime Sludge	Alternative Raw Materials	11,004
Wood Chips	Alternative Fuel	7,660
Concrete	Alternative Raw Materials	6,274
Boiler Ash	Alternative Raw Materials	6,020
Olive Pomace and Chunks	Alternative Fuel	5,707
Water Treatment Plant Sludge	Alternative Raw Materials	5,302
Liquid Waste	Alternative Fuel	5,095

2024 Consumption of Alternative Raw Materials and Fuels Unit: metric ton

Taiwan			Mainland China			CIMPOR & OYAK CEMENT		
Resource Reused	Alternative Type	Usage Amount	Resource Reused	Alternative Type	Usage Amount	Resource Reused	Alternative Type	Usage Amount
Incinerated Recycled Aggregate	Alternative Raw Materials	5,672	Iron Tailings	Alternative Raw Materials	102,067	Construction and Demolition Waste (CDW)	Alternative Raw Materials	4,603
Mineral Fines	Alternative Raw Materials	4,474	Others	Alternative Fuel/Alternative Raw Material/Alternative Clinker/Alternative Auxiliary Material	1,474,010	Hazardous Waste (Liquid)	Alternative Fuel	3,165
Waste Refractory Materials	Alternative Raw Materials	3,910				Cementitious Materials	Alternative Raw Materials	2,838
Desulfurization Inorganic Sludge	Alternative Raw Materials	3,745				Coal Ash	Alternative Fuel	2,271
Waste Ceramics	Alternative Raw Materials	2,559				Others	Alternative Fuel/ Alternative Raw Material	13,349
Others	Alternative Fuel/Alternative Raw Material	10,808						
Subtotal		1,016,649	Subtotal		7,475,785	Subtotal		1,083,148
Total								9,575,582

TCC Key Indicators — Social

2024 Employee Diversity Composition

Employee Headcount Statistics

Items/By Category	Female					Male					Total
Employment	Taiwan	Mainland China	Subtotal	CIMPOR & OYAK CEMENT	Total	Taiwan	Mainland China	Subtotal	CIMPOR & OYAK CEMENT	Total	
Permanent Employee	276	1,282	1,558	390	1,948	1,046	4,821	5,867	3,934	9,801	11,749
Temporary Employee	5	-	5	37	42	12	-	12	205	217	259
Non-guaranteed Hours Employees	-	-	-	-	-	-	-	-	-	-	-
Contract Type											
Full-Time Employees	276	1,282	1,558	425	1,983	1,046	4,821	5,867	4,136	10,003	11,986
Part-Time Employees	5	-	5	2	7	12	-	12	3	15	22
Total	281	1,282	1,563	427	1,990	1,058	4,821	5,879	4,139	10,018	12,008

Full-time Employee Headcount Statistics

Items/By Category	Female					Male					Total
Age	Taiwan	Mainland China	Subtotal	CIMPOR & OYAK CEMENT	Total	Taiwan	Mainland China	Subtotal	CIMPOR & OYAK CEMENT	Total	
Under 30	38	84	122	101	223	104	288	392	692	1,084	1,307
30-50	204	1,180	1,384	248	1,632	647	3,496	4,143	2,698	6,841	8,473
Over 50	34	18	52	77	129	295	1,037	1,332	746	2,078	2,207
Education Level											
Doctoral Degree	-	-	-	1	1	5	-	5	3	8	9
Master's Degree	58	9	67	84	151	107	16	123	204	327	478
Bachelor's Degree	190	159	349	222	571	547	383	930	628	1,558	2,129
Associate Degree	26	275	301	-	301	304	804	1,108	-	1,108	1,409
Senior Secondary Education or Below	2	839	841	118	959	83	3,618	3,701	3,297	6,998	7,957
Job Category											
Senior-Level Supervisor	5	3	8	7	15	13	99	112	34	146	161
Mid-Level Supervisor	34	38	72	35	107	96	264	360	151	511	618
Entry-Level Supervisor	32	94	126	44	170	70	685	755	269	1,024	1,194
Professionals	93	270	363	284	647	158	804	962	712	1,674	2,321
Direct Employees	112	877	989	55	1,044	709	2,969	3,678	2,969	6,647	7,691

Number of Workers Who Are Not Employees

Items/By Category	Female					Male					Total
Workers Who Are Not Employees	Taiwan	Mainland China	Subtotal	CIMPOR & OYAK CEMENT	Total	Taiwan	Mainland China	Subtotal	CIMPOR & OYAK CEMENT	Total	
	103	218	321	71	392	260	209	469	1,366	1,835	2,227

Note 1: In Taiwan, senior management is defined as department directors and associate general managers or above; middle management refers to managers and deputy managers; first-line supervisors are section chiefs; professionals include engineers, specialists, researchers, and management trainees; direct personnel refer to all other positions, such as batching plant operators, machinery operators, and clerks.
Note 2: In Mainland China, senior management is defined as deputy general manager level or above; middle management refers to mid-level managers; first-line supervisors correspond to job grades 1-3; professionals are at job grades 4-5; and direct personnel are those at job grades 6-10.
Note 3: Non-employee workers include personnel dispatched from external companies, such as cleaning staff, security guards, chefs/kitchen workers, pump operators, and landscaping personnel.
Note 4: Part-time employees include rehired senior workers.
Note 5: As of 2024, the number of employees with disabilities across cross-strait cement operations (including Wanching, Hesheng, Mining Company, Envi-ronmental Technology Company, and Hong Kong Cement) includes 3 female and 35 male employees.
Note 6: The above information is based on the number of employees as of December 31, 2024. The scope of disclosure covers the Low-carbon Construction Business, including cement plants, RMC plants, grinding plants, and consolidated entities. Newly added in 2024: Huaihua, and Liaoning cement plants; Fuzhou and Liuzhou grinding plants, 123 Environmental Protection Technology Co., Ltd., Beijing TCC Environmental Technology Co., Ltd., TCC (Guangdong) Renewable Resources Technology Company Limited, CIMPOR and OYAK CEMENT.

Employee Nationality Diversity Composition in 2024 Unit: Persons

Items/By Category	Full-time Employee				Number of Employees in Management Positions			
Ethnicity	Taiwan	Mainland China	Total	Percentage in the Total Workforce	Taiwan	Mainland China	Total	Percentage in the Total Workforce
Asian (Han Chinese + All Ethnic Minorities)	1,250	5,252	6,502	87.6%	243	1,018	1,261	88.3%
Indigenous Peoples	72	851	923	12.4%	2	165	167	11.7%
Total	1,322	6,103	7,425	100%	245	1,183	1,428	100%

Items/By Category	Full-time Employee				Number of Employees in Management Positions			
Nationali-ty/Region	Taiwan & Mainland China	CIMPOR & OYAK CEMENT	Total	Percentage in the Total Workforce	Taiwan & Mainland China	CIMPOR & OYAK CEMENT	Total	Percentage in the Total Workforce
Taiwan	1,355	-	1,355	11.5%	276	-	336	16.5%
Mainland China	6,050	1	6,051	51.4%	1,145	1	1,146	56.3%
Türkiye	-	3,100	3,100	26.3%	-	321	321	15.8%
Portugal	-	895	895	7.6%	-	-	-	8.0%
Others	20	358	378	3.2%	2,933	163	3,069	3.4%
Total	7,425	4,354	11,779	100%	4,354	1,488	4,839	100%

Note 1: Other countries include Indonesia, Canada, the Philippines, Vietnam, Kenya, Benin, Burkina Faso, the Central African Republic, Cameroon, Ghana, Guinea, Togo, Côte d'Ivoire, Mali, the Democratic Republic of the Congo, the United States, Angola, Argentina, Brazil, the United Kingdom, Cape Verde, Guinea-Bissau, Moldova, Mozambique, Romania, Spain, Ukraine, and Venezuela.
Note 2: Indigenous peoples and ethnic minorities include the Sakizaya, Truku, Amis, Atayal, Puyuma, Saisiyat, Seediq, Rukai, Bunun, Paiwan, Li, Yi, Gelao, Chuanqing, Hui, Bai, Tujia, Mongol, Shui, Ge, Yao, Mulao, She, Bouyei, Zhuang, Miao, Dong, and Manchu, among others.
Note 3: The above information is based on the number of employees as of December 31, 2024. The scope of disclosure covers the Low-carbon Construction Business, including cement plants, RMC plants, grinding plants, and consolidated entities. Newly added in 2024: Huaihua, and Liaoning cement plants; Fuzhou and Liuzhou grinding plants, 123 Environmental Protection Technology Co., Ltd., Beijing TCC Environmental Technology Co., Ltd., TCC (Guangdong) Renewable Resources Technology Company Limited, CIMPOR and OYAK CEMENT.

New Hires and Departures in 2024

		Taiwan		Mainland China		Subtotal		CIMPOR & OYAK CEMENT		Total	
New Hires		Headcount	Percentage	Headcount	Percentage	Headcount	Percentage	Headcount	Percentage	Headcount	Percentage
Gender	Female	78	5.90%	8	0.13%	86	1.16%	115	2.52%	201	1.68%
	Male	114	8.62%	18	0.29%	132	1.78%	816	17.89%	948	7.91%
Age	Under 30	64	4.84%	9	0.15%	73	0.98%	377	8.27%	450	3.75%
	30-50	125	9.46%	17	0.28%	142	1.91%	492	10.79%	634	5.29%
	Over 50	3	0.23%	0	0.00%	3	0.04%	62	1.36%	65	0.54%
Total		192	14.52%	26	0.43%	218	2.94%	931	20.41%	1,149	9.59%
Departed Employees											
Gender	Female	45	3.40%	163	2.67%	208	2.80%	44	0.96%	252	2.10%
	Male	117	8.85%	495	8.11%	612	8.24%	497	10.9%	1,109	9.25%
Age	Under 30	58	4.39%	95	1.56%	153	2.06%	245	5.37%	398	3.32%
	30-50	70	5.30%	466	7.64%	536	7.22%	136	2.98%	672	5.61%
	Over 50	34	2.57%	97	1.59%	131	1.76%	160	3.51%	291	2.43%
Total		162	12.25%	658	10.78%	820	11.04%	541	11.86%	1,361	11.35%
Voluntary Departures											
Gender	Female	31	2.34%	79	1.29%	110	1.48%	44	0.96%	154	1.28%
	Male	83	6.28%	343	5.62%	426	5.74%	497	10.9%	923	7.7%
Age	Under 30	42	3.18%	68	1.11%	110	1.48%	245	5.37%	355	2.96%
	30-50	59	4.46%	301	4.93%	360	4.85%	136	2.98%	496	4.14%
	Over 50	13	0.98%	53	0.87%	66	0.89%	160	3.51%	226	1.89%
Total		114	8.62%	422	6.91%	536	7.22%	541	11.86%	1,077	8.99%

New Employee Hiring Statistics for the Last Four Years

Item	2021	2022	2023	2024
Taiwan & Mainland China	145	114	213	218
CIMPOR & OYAK CEMENT	435	467	888	913
Total	580	581	1,101	1,149

Note 1: Voluntary departures exclude retirees
Note 2: The new hire and turnover rates are calculated based on the total number of employees in cement business units (including mining operations) in each region.
Note 3: The scope of disclosure covers the Low-carbon Construction Business, including cement plants, RMC plants, grinding plants, and consolidated entities. Newly added in 2024: Huaihua, and Liaoning cement plants; Fuzhou and Liuzhou grinding plants, 123 Environmental Protection Technology Co., Ltd., Beijing TCC Environmental Technology Co., Ltd., TCC (Guangdong) Renewable Resources Technology Company Limited, CIMPOR and OYAK CEMENT.

Internal Job Vacancy Fulfillment Rate in Taiwan and Mainland China in 4 Years

Item	2021	2022	2023	2024
Taiwan & Mainland China	48%	44%	44%	82%

Scope of Employee Engagement Surveys Conducted in 4 Years

Item	2021	2022	2023	2024
Employee Engagement Survey Scores	96.10%	90%	92.96%	87%
Response Rate	96.71%	97.60%	95%	98%

2024 Training Hours and Investment

Items	Taiwan		Mainland China		Subtotal		CIMPOR & OYAK CEMENT		Total Hours	Average Hours
Age	Female	Male	Female	Male	Female	Male	Female	Male		
Under 30	3,097.10	6,415.10	4,727.23	16,443.57	7,824.33	22,858.67	7,516.00	27,787.15	65,986.15	50.49
30-50	5,001.80	26,991.00	44,551.80	162,117.02	49,553.60	189,108.02	9,631.13	91,273.98	339,566.73	40.08
Over 50	860.30	7,132.50	287.62	48,541.77	1,147.92	55,674.27	749.25	15,485.64	73,057.07	33.10
Job Level										
Senior-Level Supervisor	63.40	244.70	17.18	1,588.20	80.58	1,832.90	324.30	767.28	3,005.06	333.90
Mid-Level Supervisor	941.90	4,705.80	1,977.63	8,322.60	2,919.53	13,028.40	782.58	5,805.71	22,536.22	47.15
Entry-Level Supervisor	799.70	3,860.00	3,428.95	23,887.75	4,228.65	27,747.75	2,448.75	16,365.75	50,790.90	23.86
Professionals	4,248.40	9,058.90	13,316.58	29,943.43	17,564.98	39,002.33	12,730.00	31,644.83	100,942.15	71.64
Direct Employees	2,905.80	22,669.20	30,826.40	163,360.37	33,732.20	186,029.57	1,017.75	82,023.20	302,802.72	38.05
Total Hours	8,959.20	40,538.60	49,566.65	227,102.35	58,525.85	267,640.95	17,896.38	134,546.77	478,609.95	-
Average Hours	31.88	38.32	38.66	47.11	37.44	45.52	41.91	32.51	-	39.93
Average Training and Development Cost per Full-time Employee										NT$ 135,557.71

Note: The scope of disclosure covers the Low-carbon Construction Business, including cement plants, RMC plants, grinding plants, and consolidated entities. Newly added in 2024: Huaihua, and Liaoning cement plants; Fuzhou and Liuzhou grinding plants, 123 Environmental Protection Technology Co., Ltd., Beijing TCC Environmental Technology Co., Ltd., TCC (Guangdong) Renewable Resources Technology Company Limited, CIMPOR and OYAK CEMENT.

Return on Human Capital Investment in 4 Years

	2021	2022	2023	2024
Return on Human Capital	12.7	11.7	10.3	8.7

Note 1: Return on Human Capital Investment = (Operating Revenue - (Operating Expenses - Employee Benefits Expenses)) / Employee Benefits Expenses

Note 2: The scope of disclosure covers the Low-carbon Construction Business, including cement plants, RMC plants, grinding plants, and consolidated entities. Newly added in 2024: Huaihua, and Liaoning cement plants; Fuzhou and Liuzhou grinding plants, 123 Environmental Protection Technology Co., Ltd., Beijing TCC Environmental Technology Co., Ltd., TCC (Guangdong) Renewable Resources Technology Company Limited, CIMPOR and OYAK CEMENT.

Parental Leave Usage in Taiwan for the Past Two Years

Items	2023		2024	
	Female	Male	Female	Male
Number of Employees Eligible for Parental Leave in the Year (A)	22	72	6	36
Number of Employees Who Applied for Parental Leave in the Year (B)	4	1	4	2
Expected Number of Employees Returning to Work in the Year (C)	3	3	2	1
Actual Number of Employees Who Returned to Work (D)	1	2	2	1
Number of Employees Still Employed 12 Months After Returning to Work (E)	4	1	0	0
Return-to-Work Rate After Parental Leave (D/C)	33%	67%	100%	100%
One-Year Retention Rate After Returning to Work (E/Previous Year's D)	100%	100%	0%	0%

Note 1: The number of employees eligible for parental leave in the year refers to full-time employees who have worked for six months or more.
Note 2: The scope of disclosure covers the Low-carbon Construction Business, including cement plants, RMC plants, grinding plants, and consolidated entities. The scope of the above statistics does not yet include Fong Sheng Industrial.

2024 Occupational Injury Statistics

Site	Occupational Accident			Fatality Rate	Rate of High-consequence Work-related Injuries	Total Recordable Injury Frequency Rate (TRIFR)	Lost Time Injury Frequency Rate (LTIFR)	Actual Working Hours
	Fatalities	Number of High-consequence Work-related Injuries	Number of Recordable Work-related Injuries					
Work-related Injuries of Employees								
Taiwan	0	0	4	0	0.00	1.18	1.18	3,385,334
Mainland China	0	1	14	0	0.07	1.01	1.01	13,865,459
Subtotal	0	1	18	0	0.06	1.04	1.04	17,250,792
CIMPOR & OYAK CEMENT	0	8	34	0	0.84	3.58	3.58	9,503,042
Total	0	9	52	0	0.34	1.94	1.94	26,753,834
Work-related Injuries of Contractors								
Taiwan	1	0	4	0.52	0.00	2.08	1.56	1,919,376
Mainland China	3	0	5	2.28	0.00	3.80	1.52	1,314,128
Subtotal	4	0	9	1.24	0.00	2.78	1.55	3,233,504
CIMPOR & OYAK CEMENT	0	5	27	0.00	0.76	4.09	4.09	6,601,174
Total	4	5	36	0.41	0.51	3.66	3.25	9,834,678

Note 1: Occupational injury data calculations are primarily based on monthly occupational accident statistics reported by each plant. Note 2: The main types of occupational injuries include entanglement, impact, falling, and cuts. Note 3: Fatality Rate = (Number of Fatalities / Total Actual Working Hours) x 1,000,000. Note 4: Rate of High-consequence Work-related Injuries = (Number of High-consequence Work-related Injuries / Total Actual Working Hours) x 1,000,000. Note 5: Rate of Recordable Work-related Injuries = (Number of Recordable Work-related Injuries / Total Actual Working Hours) x 1,000,000. Note 6: Injury Rate = (Number of Recordable Work-related Injuries - Number of Fatalities / Total Actual Working Hours) x 1,000,000. Note 7: Some actual working hours are estimated by multiplying the number of entries by 8 hours. Note 8: The scope of disclosure covers the Low-carbon Construction Business, including cement plants, RMC plants, grinding plants, and consolidated entities. Newly added in 2024: Huaihua, and Liaoning cement plants; Fuzhou and Liuzhou grinding plants; 123 Environmental Protection Technology Co., Ltd., Beijing TCC Environmental Technology Co., Ltd., TCC (Guangdong) Renewable Resources Technology Company Limited, Feng Sheng Enterprise Company, E.G.C. Cement Corp., Ho Sheng Mining Co., Ltd,Wanching Mining Co., Ltd, , TCC Jiuyuan (Guangan) Environmental Technology Co., Ltd.,Hangzhou Operations Center, Guangdong–Guangxi Operations Center, TCC Yingde Mining Industrial Company Limited, TCC Guigang Mining Industrial Company Limited, TCC Jiangsu Mining Industrial Company Limited , Hong Kong Cement, CIMPOR and OYAK CEMENT.

Occupational Injury Statistics in 4 Years

Site	2021			2022			2023			2024		
	Number of Fatalities	Lost Time Injury Frequency Rate (LTIFR)	Total Recordable Injury Frequency Rate (TRIFR)	Number of Fatalities	Lost Time Injury Frequency Rate (LTIFR)	Total Recordable Injury Frequency Rate (TRIFR)	Number of Fatalities	Lost Time Injury Frequency Rate (LTIFR)	Total Recordable Injury Frequency Rate (TRIFR)	Number of Fatalities	Lost Time Injury Frequency Rate (LTIFR)	Total Recordable Injury Frequency Rate (TRIFR)
Employees	0	0.32	0.32	0	1.59	1.59	0	1.70	1.70	0	1.94	1.94
Contractors	0	0	0	1	2.20	2.20	1	1.70	1.70	4	3.25	3.66

Note 1: The scope of disclosure covers the Low-carbon Construction Business, including cement plants, RMC plants, grinding plants, and consolidated entities. Newly added in 2024: Huaihua, and Liaoning cement plants; Fuzhou and Liuzhou grinding plants; 123 Environmental Protection Technology Co., Ltd., Beijing TCC Environmental Technology Co., Ltd., TCC (Guangdong) Renewable ResourcesTechnology Company Limited, Feng Sheng Enterprise Company, E.G.C. Cement Corp., Ho Sheng Mining Co., Ltd,Wanching Mining Co., Ltd, , TCC Jiuyuan (Guangan) Environmental Technology Co., Ltd.,Hangzhou Operations Center, Guangdong–Guangxi Operations Center, TCC Yingde Mining Industrial Company Limited, TCC Guigang Mining Industrial Company Limited, TCC Jiangsu Mining Industrial Company Limited , Hong Kong Cement, CIMPOR and OYAK CEMENT.

Total Injury Rate in Taiwan Over the Past Three Years

Site	2022			2023			2024		
	Frequency Rate (FR) per Million Working Hours	Severity Rate (SR) per Million Working Hours	Full Spectrum Injury Rate (FSI)	Frequency Rate (FR) per Million Working Hours	Severity Rate (SR) per Million Working Hours	Full Spectrum Injury Rate (FSI)	Frequency Rate (FR) per Million Working Hours	Severity Rate (SR) per Million Working Hours	Full Spectrum Injury Rate (FSI)
Taiwan									
Employees	1.65	81	0.36	0.81	25	0.14	0.17	47.7	0.09
Contractors	1.72	14	0.15	1.7	6,810	3.4	0.61	1,855	1.07
Ho Sheng Mining Co., Ltd,									
Employees	0	0	0	0	0	0	0	0	0
Contractors	0	0	0	0	0	0	0	0	0

Note 1: The scope of disclosure covers the Low-carbon Construction Business, including cement plants, RMC plants, grinding plants, and consolidated entities. Newly added in 2024: Feng Sheng Enterprise Company, E.G.C. Cement Corp. and Ho Sheng Mining Co., Ltd

6.1.3 TCC Key Indicators — Energy for Social Transformation

TCC Key Indicators — Environmental

GHG Emissions in 4 Years Unit: tCO_2e

Site	Items	2021	2022	2023	2024
Ho-Ping Power Company	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 Emissions	7,530,932	7,381,565	7,995,243	6,939,117

Energy Use in 4 Years

Site			2021	2022	2023	2024
Ho-Ping Power Company	Energy Usage | Raw Consumption	Coal (thousand metric ton)	3,210	3,162	3,402	2,990
		Diesel (KL)	3,896	7,599	3,697	8,633
		Gasoline (KL)	17	15	8	7
		Purchased Electricity (GWh)	1	2	0	6
		Renewable Energy (kWh)	-	322,501	660,338	808,122
	Energy Usage | In terms of Gigajoule (GJ)	Coal	74,838,190	73,735,718	79,333,950	69,716,746
		Diesel	136,996	267,204	130,002	303,557
		Gasoline	546	486	246	224
		Purchased Electricity	2,356	5,451	10	20,312
		Renewable Energy	-	1,161	2,377	2,909
		Total	74,978,088	74,010,020	79,466,585	70,043,748

Air Pollutant Emissions in 4 Years Unit: metric ton

Site	Items	2021	2022	2023	2024
Ho-Ping Power Company	NOx	2,267.25	2,129.32	2,193.51	1,857.43
	SOx	2,945.41	1,993.20	1,945.75	1,866.56
	Particulate Matter	278.21	249.52	183.27	132.21
	VOC/THC	0.31	0.32	0.31	0.33
	PCDD/F	0.0944	0.0687	0.0591	0.0419
	Mercury Emissions (Hg) (Unit: g I-TEQ)	0.0436	0.0485	0.0291	0.0127

Water Resource Use in 4 Years Unit: million liters

Site	Ho-Ping Power Company			
Items	2021	2022	2023	2024
Water Withdrawal				
Third-Party Water_Municipal Water	29	25	21	29
Third-Party Water_Industrial Water	1,514	1,533	1,676	1,482
Surface Water_Rivers	-	-	-	-
Surface Water_Mines	-	-	-	-
Surface Water_Lakes	-	-	-	-
Surface Water_Rainwater/Spring Water	-	-	-	53
Groundwater	-	-	-	-
Seawater	1,209,710	1,231,339	1,274,384	1,219,195
Discharged Reclaimed Water	247	230	194	139
Total	1,211,500	1,233,127	1,276,275	1,220,898
Water discharge				
Surface Water	244	217	184	184
Groundwater	-	-	-	-
Seawater	1,209,710	1,231,339	1,274,384	1,219,195
Third-Party Water	-	-	-	-
Total	1,209,954	1,231,556	1,274,568	1,219,379
Water Consumption				
Water Consumption	1,546	1,571	1,707	1,519
Recycled water				
Process Recycled Water	147,510	167,255	141,238	77,465
Other Recycled Water	99,507	62,921	52,557	61,197

Note 1: Ho-Ping Power Company is not located in a water-stressed area.

Waste Treatment in 4 Years Unit: metric ton

Total Waste	2021	2022	2023	2024
Non-Hazardous Waste	1,385.45	4,260.46	799.88	2,262.02
Hazardous Waste	-	-	-	-
Total	1,385.45	4,260.46	799.88	2,262.02

Total Waste		2021	2022	2023	2024
In-House Waste Reuse Amount		-	-	-	-
Outsourced Waste Disposal Amount	Landfilling	286.60	311.82	40.32	-
	Off-site Incineration (with energy recovery)	-	-	34.58	116.19
	Off-site Incineration (without energy recovery)	-	-	-	-
	Off-site Recycling and Reuse	1,098.85	3,948.64	724.98	2,145.83
Total		1,385.45	4,260.46	799.88	2,262.02

TCC Key Indicators — Social

2024 Employee Diversity Composition

Items/By Category		Female	Male	Total
Employment Relationship	Permanent Employee	30	264	294
	Temporary Employee	0	0	0
	Non-guaranteed Hours Employees	0	0	0
Contract Type	Full-Time Employees	30	264	294
	Part-Time Employees	0	0	0
Total		30	264	294

Statistics of Full-time Employees

Items / Breakdown by Type		Female	Male	Total
Age	Under 30	8	24	32
	30-50	14	166	180
	Over 50	8	74	82
Education Level	Doctoral Degree	-	-	-
	Master's Degree	4	15	19
	Bachelor's Degree	16	56	72
	Associate Degree	7	106	113
Job Category	Senior Secondary Education or Below	3	87	90
	Senior-Level Supervisor	-	6	6
	Mid-Level Supervisor	-	17	17
	Entry-Level Supervisor	5	25	30
	Professionals	9	86	95
	Direct Employees	16	130	146

Non-Employee Workers

Items / Breakdown by Type	Female	Male	Total
Total Number of Non-Employee Workers	33	18	51

Note 1: Management definitions: Senior managers are Directors and Assistant Vice Presidents (and above), middle managers are Managers and Deputy Managers, entry-level managers are Supervisors, professionals are Engineers, Administrators, Researchers and Management Trainees, direct employees are other positions such as Mixer Operators, Machine Operators, Clerks.
Note 2: Non-employee workers such as personnel stationed by external companies: Cleaning Staff, Security Personnel, Chefs/Kitchen Workers, Pump Operators, Landscaping Staff, Packaging and Shipping Personnel, Long Belt Corridor Workers, Mining Explosives Storage Workers, Central Control Room Personnel, Fire Safety Inspectors/Elevator Maintenance Personnel
Note 3: The definition of part-time employee includes re-hired senior personnel
Note 4: The above information is based on employee headcount statistics as of December 31, 2024

Employee Nationality Diversity Composition in 2024 Unit: Persons

Ho-Ping Power Company		Full-Time Employees		Management Staff	
Items/By Category		Headcount	Percentage of Total Workforce	Headcount	Percentage of Total Workforce
Ethnicity	Asian (Han Chinese + All Ethnic Minorities)	225	76.5%	49	92.5%
	African American	-	0.0%	-	0.0%
	Hispanic or Latino	-	0.0%	-	0.0%
	White	-	0.0%	-	0.0%
	Indigenous Peoples	69	23.5%	4	7.5%
Nationality/Region	Taiwan	294	100.0%	53	100.0%
	Mainland China	-	0.0%	-	0.0%
	Türkiye	-	0.0%	-	0.0%
	Portugal	-	0.0%	-	0.0%
	Others	-	0.0%	-	0.0%
Total		294	100.0%	53	100.0%

Note 1: Definition of Indigenous Peoples and Ethnic Minorities: Includes the Truku, Atayal, Seediq, Bunun, Sakizaya, and Amis peoples.
Note 2: The above information is based on employee headcount statistics as of December 31, 2024

New Hires and Departures in 2024

		Ho-Ping Power Company	
New Hires		Headcount	Percentage
Gender	Female	9	3.06%
	Male	12	4.08%
Age	Under 30	6	2.04%
	30-50	13	4.42%
	Over 50	2	0.68%
Total		21	7.14%
Departed Employees			
Gender	Female	9	3.06%
	Male	80	27.21%
Age	Under 30	18	6.12%
	30-50	52	17.69%
	Over 50	19	6.46%
Total		89	30.27%
Voluntary Departures			
Gender	Female	3	1.02%
	Male	8	2.72%
Age	Under 30	5	1.70%
	30-50	5	1.70%
	Over 50	1	0.34%
Total		11	3.74%

Note 1: Voluntary departures exclude retirees.
Note 2: New hire and departure rates are calculated based on total employees headcount of Ho-Ping Power Company.

2024 Training Hours and Investment

Items		Training Hours		Total Hours	Average Hours
		Ho-Ping Power Company			
		Female	Male		
Age	Under 30	521.4	1,183.3	1,704.7	53.3
	30-50	455.4	5,761.2	6,216.6	34.5
	Over 50	309.3	2,620.0	2,929.3	35.7
Job Level	Senior-Level Supervisor	-	156.7	156.7	26.1
	Mid-Level Supervisor	137.8	1,661.8	1,799.6	105.9
	Entry-Level Supervisor	39.4	138.2	177.6	5.9
	Professionals	299.9	3,702.1	4,002.0	42.1
	Direct Employees	809.0	3,905.7	4,714.7	32.3
Total Hours		1,286.1	9,564.5	10,850.6	-
Average Hours		42.9	36.2	-	36.9
Average Training and Development Cost per Full-time Employee					NT$ 4,875

Parental Leave Usage in 2024

Ho-Ping Power Company	2024	
Items	Female	Male
Number of Employees Eligible for Parental Leave in the Year (A)	30	264
Number of Employees Who Applied for Parental Leave in the Year (B)	0	2
Expected Number of Employees Returning to Work in the Year (C)	0	2
Actual Number of Employees Who Returned to Work (D)	0	2
Number of Employees Still Employed 12 Months After Returning to Work (E)	0	0
Return-to-Work Rate After Parental Leave (D/C)	0%	100%
One-Year Retention Rate After Returning to Work (E/Previous Year's D)	0%	0%

Note 1: Number of employees eligible for parental leave in the year refers to full-time employees who have worked for six months or more

2024 Occupational Injury Statistics

Site	Occupational Accident			Fatality Rate	Rate of High-consequence Work-related Injuries	Total Recordable Injury Frequency Rate (TRIFR)	Lost Time Injury Frequency Rate (LTIFR)	Actual Working Hours
	Fatalities	Number of High-consequence Work-related Injuries	Number of Recordable Work-related Injuries					
Employee	0	0	0	0	0	0	0	597,636
Contractors	0	0	0	0	0	0	0	524,404

Total Injury Frequency Index (FSI) in Taiwan Over the Past Three Years

Site	2022			2023			2024		
	Frequency Rate (FR) per Million Working Hours	Severity Rate (SR) per Million Working Hours	Full Spectrum Injury Rate (FSI)	Frequency Rate (FR) per Million Working Hours	Severity Rate (SR) per Million Working Hours	Full Spectrum Injury Rate (FSI)	Frequency Rate (FR) per Million Working Hours	Severity Rate (SR) per Million Working Hours	Full Spectrum Injury Rate (FSI)
Employees	1.81	54	0.31	1.75	52	0.3	0	0	0
Contractors	0	0	0	0	0	0	0	0	0

Note 1: Occupational injury data calculations are primarily based on monthly occupational accident statistics reported by each plant
Note 2: The main types of occupational injuries include entanglement, impact, falling, and cuts
Note 3: Fatality Rate = (Number of Fatalities / Total Actual Working Hours) x 1,000,000
Note 4: Rate of High-consequence Work-related Injuries = (Number of High-consequence Work-related Injuries / Total Actual Working Hours) x 1,000,000
Note 5: Rate of Recordable Work-related Injuries = (Number of Recordable Work-related Injuries / Total Actual Working Hours) x 1,000,000
Note 6: Injury Rate = (Number of Recordable Work-related Injuries - Number of Fatalities / Total Actual Working Hours) x 1,000,000
Note 7: Some actual working hours are estimated based on the number of plant entries x 8 hours

6.2

Sustainability Disclosure for the Listed Cement Companies

Cement Industry Sustainability Disclosure Indicators

Cement Industry Sustainability Disclosure Indicators

The calculation scope of indicators 2 to 4 includes Construction Materials operations in Taiwan, Mainland China, CIMPOR and OYAK CEMENT.

For detailed energy consumption information, please refer to 6.1.2 TCC Key Indicators | Construction Materials

	Indicator	Indicator Type	2024 Disclosure Status	Unit	Notes
1	Total energy consumption, percentage of purchased electricity, and utilization rate[1]	Quantitative	The energy consumption by operational sites in Taiwan and Mainland China: 92,088,519GJ Percentage of purchased electricity: 9.37% Renewable energy usage rate: 0.27%	Gigajoule (GJ) Percentage (%)	1.The percentage of purchased electricity represents the ratio of purchased electricity consumption to total energy consumption. 2.The renewable energy usage rate represents the ratio of renewable energy consumption to total energy consumption.
2	Total water withdrawal and total water consumption	Quantitative	Total water withdrawal: 45,118 thousand cubic meters Total water consumption: 19,096 thousand cubic meters	thousand cubic meters (1,000m³)	
3	Weight of waste generated, percentage of hazardous waste, and percentage of recycling[1]	Quantitative	The weight of waste generated by operational sites in Taiwan and Mainland China: 34,930 metric tons Percentage of hazardous waste: 1.6% Percentage of waste recycling: 98.4% Note1: In light of the project timeline, the data on waste treatment for CIMPOR and OYAK CEMENT will be disclosed in the ESG section of TCC's official	Tonnnes(t) percentage(%)	1.The percentage of hazardous waste represents the percentage of hazardous waste weight over total waste weight. 2.The percentage of waste recycling represents the percentage of total weight of waste recycled both on-site and off-site (excluding waste incinerated for power generation) over total waste weight.
4	Number of employees in and rate of occupational accidents	Quantitative	For TCC employee and contractor occupational injury numbers and rates, please refer to 6.1.2 TCC Key Indicators | Social - 2024 Occupational Injury Statistics	Quantity rate(%)	
5	Production by product category	Quantitative		Metric tons	

Product Category	Taiwan	Mainland China	OYAK CEMENT+CIMPOR	Total
Clinker	4,224,284	25,613,238	12,818,111	42,655,633
Cement	4,323,185	26,866,352	16,419,579	47,609,117
Cementitious materials	4,598,399	31,818,605	16,988,667	53,405,671
280 specification concrete	6,262,643	-	-	6,262,643
350 specification concrete	2,062,133	-	-	2,062,133
420 specification concrete	1,167,822	-	-	1,167,822
Concrete subtotal	9,492,597	-	18,201,033	27,693,631

Climate-related Information for TWSE/TPEx Listed Companies - Climate Change Risks and Opportunities for the Company and Related Response Measures Taken

	Items	Corresponding Sections	Page Number
1	Describe the board of directors' and management's oversight and governance of climate-related risks and opportunities.	Please refer to the 2024 Annual Report	97
2	Describe how the identified climate risks and opportunities affect the business, strategy, and finances of the business (short, medium, and long term).	Please refer to the 2024 Annual Report	97-98
3	Describe the financial impact of extreme weather events and transformative actions.	Please refer to the 2024 Annual Report	98
4	Describe how climate risk identification, assessment, and management processes are integrated into the overall risk management system.	Please refer to the 2024 Annual Report	98
5	If scenario analysis is used to assess resilience to climate change risks, the scenarios, parameters, assumptions, analysis factors and major financial impacts used should be described.	Please refer to the 2024 Annual Report	99
6	If there is a transition plan for managing climate-related risks, describe the content of the plan, and the indicators and targets used to identify and manage physical risks and transition risks.	Please refer to the 2024 Annual Report	99-100
7	If internal carbon pricing is used as a planning tool, the basis for setting the price should be stated.	Please refer to the 2024 Annual Report	100
8	If climate-related targets have been set, the activities covered, the scope of greenhouse gas emissions, the planning horizon, and the progress achieved each year should be specified. If carbon credits or renewable energy certificates (RECs) are used to achieve relevant targets, the source and quantity of carbon credits or RECs to be offset should be specified.	Please refer to the 2024 Annual Report	100
9	GHG inventory and assurance status, reduction targets, strategies, and specific action plans	Please refer to the table below	

Greenhouse Gas Inventory Information

Company Basic Information:

•Companies with capital of NT$10 billion or more, steel industry, and cement industry.

•In accordance with the Sustainable Development Guidemap for TWSE/TPEx Listed Companies, the minimum disclosure requirements are: Parent company entities shall begin inventory from 2023, and subsidiaries included in consolidated financial statements shall begin inventory from 2025.

The consolidated company has established a greenhouse gas inventory mechanism in accordance with the ISO 14064-1 greenhouse gas inventory standard published by the International Organization for Standardization (ISO). Since 2016, we have conducted regular inventories of our parent company entities, and since 2005, we have gradually extended greenhouse gas emission inventories for subsidiaries included in consolidated financial statements. This enables comprehensive monitoring of greenhouse gas usage and emissions, and verification of the effectiveness of reduction actions. In addition, the greenhouse gas inventory data for the past two years has been compiled using the operational control approach, including greenhouse gas emissions from the company and all subsidiaries in the consolidated financial statements, as described below:

Items	2023		2024	
Parent Company	Emissions (metric tons CO_2e)	Intensity (metric tons CO_2e/million NTD revenue)	Emissions (metric tons CO_2e)	Intensity (metric tons CO_2e/million NTD revenue)
Scope 1	3,459,664	133.0	3,303,179	126.7
Direct greenhouse gas emissions				
Scope 2	195,661	7.5	206,001	7.9
Indirect greenhouse gas emissions				
Subsidiaries in Consolidated Financial Statements				
Scope 1	-	-	36,500,100	279.0
Direct greenhouse gas emissions				
Scope 2	-	-	1,256,511	9.6
Indirect greenhouse gas emissions				
Total	3,655,324	140.5	41,265,791	266.9

Note 1: The parent company's direct emissions (Scope 1) and energy indirect emissions (Scope 2) data coverage includes: The Company's cement and concrete operations in Taiwan, including cement manufacturing at Hoping Plant and Suao Plant of Hoping Branch; ready-mixed concrete manufacturing at Taipei, Taichung, and Kaohsiung RMC Plants and their 22 subordinate locations, Kaohsiung and Taichung Port shipping stations; as well as offices including the Group Operations Headquarters and Low-carbon R&D Center.

Note 2: The energy intensity for the parent company in 2024 and 2023 was calculated using TCC's standalone net revenue of NTD 26,077,189 thousand and NTD 26,021,513 thousand, respectively. The energy intensity for subsidiaries in consolidated financial statements in 2024 was calculated using net revenue of NTD 154,606,511 thousand.

Note 3: The Company's direct emissions (Scope 1) and energy indirect emissions (Scope 2) data for 2024 and 2023 have been verified by third-party organizations, including British Standards Institution (BSI) Taiwan Branch and SGS Taiwan Ltd. The relevant certificates can be viewed on the Sustainability Certification page of the Company's official website.

Note 4: The operating revenue of subsidiaries OYAK CEMENT and CIMPOR has been officially included in the Company's consolidated financial statements since March 2024. The greenhouse gas emissions of OYAK CEMENT and CIMPOR from March to December 2024 are disclosed in the above table. If GHG Protocol's all-year option is applied to include OYAK CEMENT and CIMPOR's full-year greenhouse gas emissions for 2024, the direct and indirect greenhouse gas emissions of subsidiaries in consolidated financial statements for 2024 would amount 38,010,464 and 1,340,890 metric tons CO_2e, respectively. Furthermore, assuming OYAK CEMENT and CIMPOR's operating revenue was included in the Company's consolidated financial statements from the beginning of 2024, the pro forma revenue for 2024 would be NTD 139,305,507 thousand. Based on this, the energy intensity of subsidiaries in consolidated financial statements for 2024 would be calculated as 272.9and 9.6 metric tons CO_2e per million NTD revenue for direct and indirect greenhouse gas emissions, respectively.

Greenhouse Gas Assurance Information

The Company's minimum assurance coverage requirements as specified in the Sustainable Development Guidemap for TWSE/TPEx Listed Companies:

- The parent company's standalone entity should begin assurance implementation starting in 2024.
- Subsidiaries in consolidated financial statements should begin assurance implementation starting in 2027.

The Company's greenhouse gas inventory assurance status for the past two years is described below:

Items		2023 Emissions (metric tons CO_2e)	2024 Emissions (metric tons CO_2e)
Parent Company	Scope 1	3,459,664	3,303,179
	Direct greenhouse gas emissions		
	Scope 2	195,661	206,001
	Indirect greenhouse gas emissions		
	Total	3,655,324	3,509,180
	Percentage of disclosed inventory data	100%	100%
Assurance Agency		British Standards Institution (BSI) Taiwan Branch and SGS Taiwan Ltd.	British Standards Institution (BSI) Taiwan Branch
Assurance Description		Assurance Standard ISO 14064-3:2019	Assurance Standard ISO 14064-3:2019
Assurance Opinion and Conclusion		Unqualified Opinion	Unqualified Opinion

Greenhouse Gas Reduction Targets, Strategies, and Specific Action Plans

Please refer to the Total Climate Commitment section

6.3

Global Reporting Initiative Index

Statement of Use	TCC Group Holdings CO., LTD. has reported in accordance with the GRI Standards for the period from January 1, 2024, to December 31, 2024.
GRI 1 Adopted	GRI 1: Foundation 2021
Applicable GRI Sector Standards	GRI 14: Mining Sector

GRI Standards/Disclosures	Corresponding Sections	Page Number	Notes/Omission Justification	Reference number of disclosures in GRI Sector Standards
General Disclosures				
GRI 2: General Disclosures 2021				
2-1 Organizational details	About This Report	37		
2-2 Entities included in the organization's sustainability reporting	About This Report	37		
2-3 Reporting period, frequency and contact point	About This Report	37		
2-4 Restatements of information	-		No restatements of information in 2024	
2-5 External assurance	About This Report	37		
	Appendix AA1000 Assurance Statement	267		
	Appendix ISAE3000 Assurance Report	267		
2-6 Activities, value chain and other business relationships	Appendix ISAE3000 Assurance Report	267	In 2024, TCC expanded its operational scope to include overseas subsidiaries OYAK CEMENT and CIMPOR	
	TCC Vision & Drivers | Product and Service	34		
	Value Chain			
	1.7 Sustainable Supply Chain Management	71		
2-7 Employees	6.1 ESG Data	227.237		
	TCC Key Indicators | Social			
2-8 Workers who are not employees	6.1 ESG Data	227.237		
	TCC Key Indicators | Social			
2-9 Governance structure and composition	1.1 Governance Structure	40		
2-10 Nomination and selection of the highest governance body	1.1 Governance Structure	40		

GRI Standards/Disclosures	Corresponding Sections	Page Number	Notes/Omission Justification	Reference number of disclosures in GRI Sector Standards
2-11 Chair of the highest governance body	1.1 Governance Structure	40		
2-12 Role of the highest governance body in overseeing impact management	1.1 Governance Structure Stakeholder and Material Topic Analysis	40 197		
2-13 Delegation of responsibility for managing impacts	1.1 Governance Structure	40		
2-14 Role of the highest governance body in sustainability reporting	About This Report	37		
2-15 Conflicts of interest	1.1 Governance Structure	40	For important Board resolutions and directors' recusal due to conflicts of interest, please refer to the Board of Directors Section on TCC's official website	
2-16 Communication of critical concerns	1.1 Governance Structure 1.3 Risk Management Framework	40 46	For related communication matters, please refer to the Board of Directors and Sustainability Committee meeting minutes in the Investor Relations - Committees section on TCC's official website	
2-17 Collective knowledge of the highest governance body	1.1 Governance Structure	40		
2-18 Evaluation of the performance of the highest governance body	1.1 Governance Structure	40		
2-19 Remuneration policies	1.1 Governance Structure	40	Please refer to TCC Group Holdings CO., LTD.'s Annual Report for details on the remuneration paid to directors, supervisors, President and Vice Presidents. Currently, TCC does not have a clawback mechanism for remuneration	
2-20 Process to determine remuneration	1.1 Governance Structure	40	Please refer to TCC Group Holdings CO., LTD.'s Remuneration Committee Charter	
2-21 Annual total compensation ratio	-		In 2024, the median ratio of the total annual remuneration of the highest-paid internal manager to the total annual remuneration of general employees was 44:1 (remuneration includes: salary, year-end bonus, and variable bonus) The total remuneration change rate for 2024 was -10% (The above ratios were calculated based on the renumeration of the Chairman of TCC, Mr. Nelson An-ping Chang)	

GRI Standards/Disclosures	Corresponding Sections	Page Number	Notes/Omission Justification	Reference number of disclosures in GRI Sector Standards
2-22 Statement on sustainable development strategy	Letter to Our Stakeholders	04		
2-23 Policy commitments	TCC Vision & Drivers	08		
2-24 Embedding policy commitments	5.5 Human Rights Protection	180		
2-25 Processes to remediate negative impacts	Stakeholder and Material Topic Analysis	197		
	5.5 Human Rights Protection	180		
2-26 Mechanisms for seeking advice and raising concerns	1.5 Ethical Management	61		
2-27 Compliance with laws and regulations	1.5 Ethical Management	61	All fines paid in the year 2024 were incurred due to violations of regulations that occurred within the current reporting period. There were no fines paid for violations that occurred in previous reporting periods.	
2-28 Membership associations	-		Please refer to the ESG section on the TCC website for details on TCC's membership in associations.	
2-29 Approach to stakeholder engagement	Stakeholder and Material Topic Analysis	197		
2-30 Collective bargaining agreements	5.5 Human Rights Protection	180		
			Taiwan & Mainland China 91% CIMPOR &OYAK CEMENT 51% Total 76% Note: The scope of Taiwan & Mainland China includes cement plants (not yet included Longshan), RMC plants, grinding plant, Ho Sheng Mining Co., Ltd., and Ho-Ping Power Company. The scope of CIMPOR & OYAK CEMENT not yet include included the cement plant in Cameroon.	
Material Topics				14.1.1
GRI 3: Material Topics 2021				14.2.1
3-1 Process to determine material topics	Stakeholder and Material Topic Analysis	197		
3-2 List of material topics	Stakeholder and Material Topic Analysis	197		14.2.2
Material Topic | Climate Action and Net-Zero Emissions				
GRI 3: Material Topics 2021				
3-3 Management of material topics	Stakeholder and Material Topic Analysis	197		
GRI 201: Economic Performance 2016				
201-2 Financial implications and other risks and opportunities due to climate change	1.4 TCFD	51		

GRI Standards/Disclosures	Corresponding Sections	Page Number	Notes/Omission Justification	Reference number of disclosures in GRI Sector Standards
GRI 302: Energy 2016				
302-1 Energy consumption within the organization[1]	6.1 ESG Data Sheet TCC Key Indicators | Environmental	209,234	In 2024, the energy consumption by operational sites in Taiwan and Mainland China was 92,088,519 GJ, comprising 90,306,520 GJ of non-renewable energy and 1,781,999 GJ of renewable energy. Renewable energy fuel types include coal, diesel, gasoline, natural gas, purchased electricity, waste heat power generation, and non-renewable alternative fuels, of which non-renewable alternative fuels totaled 13,325,135 GJ. Renewable energy sources include renewable biofuels and self-generated solar power for internal use. Renewable biofuels equivalent to approximately 1,531,469GJ. Self-generated solar power for internal use is converted at a rate of 3.6 GJ per thousand kWh, equivalent to approximately 250,530GJ.	14.1.2
302-3 Energy intensity	Sustainability Goals and Tracking	35		14.1.3
302-4 Reduction of energy consumption	6.1 ESG Data Sheet TCC Key Indicators | Environmental	209,234	In 2024, the plant's energy-saving projects saved 42,850 thousand kWh of electricity and 52,161 metric tons of coal, and 200 liters of diesel, equivalent to 1,357,933 GJ. Please refer to 6.1.2 TCC Key Indicators | Construction Materials - 2024 Energy Conservation Programs.	14.1.4
GRI 305: Emissions 2016				
305-1 Direct (Scope 1) GHG emissions	6.1 ESG Data Sheet TCC Key Indicators | Environmental 6.2 Sustainability Disclosure for the Listed Cement Companies	209,234 242	Greenhouse gases include CO_2, CH_4, N_2O, and HFCs, with no emissions of PFCs, SF_6, or NF_3.	14.1.5
305-2 Energy indirect (Scope 2) GHG emissions	6.1 ESG Data Sheet TCC Key Indicators | Environmental 6.2 Sustainability Disclosure for the Listed Cement Companies	209,234 242		14.1.6
305-3 Other indirect (Scope 3) GHG emissions	6.1 ESG Data Sheet TCC Key Indicators | Environmental 6.2 Sustainability Disclosure for the Listed Cement Companies	209,234 242		14.1.7
305-4 GHG emissions intensity	6.1 ESG Data Sheet TCC Key Indicators | Environmental 6.2 Sustainability Disclosure for the Listed Cement Companies	209,234 242		14.1.8

Note1: In light of the schedule, information on Energy consumption by CIMPOR and OYAK CEMENT will be disclosed in the ESG section of TCC's official website.

GRI Standards/Disclosures	Corresponding Sections	Page Number	Notes/Omission Justification	Reference number of disclosures in GRI Sector Standards
Material Topic | Resource Co-processing				
GRI 3: Material Topics 2021				
3-3 Management of Material Topics	Stakeholder and Material Topic Analysis	197		14.5.1
GRI 306: Waste 2020				
306-1 Waste generation and significant waste-related impacts	2.2 Low-Carbon Production Management	89		14.5.2
	2.3 Resource Recycling	99		
306-2 Management of significant waste-related impacts	2.2 Low-Carbon Production Management	89		14.5.3
	6.1 ESG Data Sheet	209,234		
	TCC Key Indicators | Environmental			
306-3 Waste generated	6.1 ESG Data Sheet	209,234		14.5.4
	TCC Key Indicators | Environmental			
306-4 Waste diverted from disposal	6.1 ESG Data Sheet	209,234		14.5.5
	TCC Key Indicators | Environmental			
Material Topic | Green Energy and Energy Storage				
GRI 3: Material Topics 2021				
3-3 Management of Material Topics	Stakeholder and Material Topic Analysis	197		
GRI 302: Energy 2016				
302-1 Energy consumption within the organization[1]	6.1 ESG Data Sheet	209,234	In 2024, the energy consumption by operational sites in Taiwan and	
	TCC Key Indicators | Environmental		Mainland China was 92,088,519 GJ, comprising 90,306,520 GJ of	
			non-renewable energy and 1,781,999 GJ of renewable energy.	
			Renewable energy fuel types include coal, diesel, gasoline, natural gas,	
			purchased electricity, waste heat power generation, and non-renewable	
			alternative fuels, of which non-renewable alternative fuels totaled	
			13,325,135 GJ. Renewable energy sources include renewable biofuels	
			and self-generated solar power for internal use. Renewable biofuels	
			equivalent to approximately 1,531,469GJ. Self-generated solar power for	
			internal use is converted at a rate of 3.6GJ per thousand kWh, equiva-	
			lent to approximately 250,530GJ.	
302-3 Energy intensity	6.1 ESG Data Sheet	209,234		
	TCC Key Indicators | Environmental			

Note1: In light of the schedule, information on Energy consumption by CIMPOR and OYAK CEMENT will be disclosed in the ESG section of TCC's official website.

GRI Standards/Disclosures	Corresponding Sections	Page Number	Notes/Omission Justification	Reference number of disclosures in GRI Sector Standards
302-4 Reduction of energy consumption	6.1 ESG Data Sheet TCC Key Indicators | Environmental	209,234	In 2024, the plant's energy-saving projects saved 42,850 thousand kWh of electricity and 52,161 metric tons of coal, and 200 liters of diesel, equivalent to 1,357,933 GJ. Please refer to 6.1.2 TCC Key Indicators | Construction Materials - 2024 Energy Conservation Programs.	
Material Topic | Low-Carbon Products and Services				
GRI 3: Material Topics 2021				
3-3 Management of Material Topics	Stakeholder and Material Topic Analysis	197		
GRI 301: Materials 2016				
301-2 Recycled input materials used	6.1 ESG Data Sheet TCC Key Indicators | Environmental	209,234		
Material Topic | Legal Compliance				
GRI 3: Material Topics 2021				
3-3 Management of Material Topics	Stakeholder and Material Topic Analysis	197		
GRI 205: Anti-corruption 2016				
205-3 Confirmed corruption incidents and actions taken	1.5 Ethical Management	61		
GRI 206: Anti-competitive Behavior 2016				
206-1 Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	1.5 Ethical Management	61	TCC had no incidents of anti-competitive behavior, anti-trust, and monopoly practices in 2024	
Material Topic | Workplace Health and Safety				
GRI 3: Material Topics 2021				
3-3 Management of Material Topics	Stakeholder and Material Topic Analysis	197		14.16.1
GRI 403: Occupational Health and Safety 2018				
403-1 Occupational health and safety management system	5.4 Occupational Health and Safety	173		14.16.2
403-2 Hazard identification, risk assessment, and incident investigation	5.4 Occupational Health and Safety	173	In accordance with Article 18 of the Occupational Safety and Health Act, workers who identify potential hazards may leave work conditions they believe could cause injury or illness and must immediately report the situation to their direct supervisor without facing disciplinary action	14.16.3
403-3 Occupational health services	5.4 Occupational Health and Safety	173		14.16.4
403-4 Worker participation, consultation, and communication on occupational health and safety	5.4 Occupational Health and Safety	173		14.16.5
403-5 Worker training on occupational health and safety	5.4 Occupational Health and Safety	173		14.16.6
403-6 Promotion of worker health	5.4 Occupational Health and Safety	173		14.16.7

GRI Standards/Disclosures	Corresponding Sections	Page Number	Notes/Omission Justification	Reference number of disclosures in GRI Sector Standards
403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	5.4 Occupational Health and Safety	173		14.16.8
403-8 Workers covered by occupational health and safety management system	5.4 Occupational Health and Safety	173		14.16.9
403-9 Work-related injuries	6.1 ESG Data Sheet: TCC Key Indicators | Social	227,237		14.16.10
403-10 Work-related ill health	5.4 Occupational Health and Safety 6.1 ESG Data Sheet: TCC Key Indicators | Social	173 227,237	In 2024,there were no reported cases of occupational diseases at TCC's Taiwan plants. However, at Mainland China facilities, two employees were diagnosed with occupational diseases, both involving hearing impairment. Following labor-management agreements, these cases were managed according to occupational injury procedures. Due to equipment limitations, direct equipment noise reduction was not feasible. Subsequently, on-site management procedures were adjusted, requiring workers to wear protective equipment consistently and to minimize time spent in the affected work area, aiming to reduce occupational injuries.	14.16.11
Material Topic | R&D Innovation				
GRI 3: Material Topics 2021				
3-3 Management of Material Topics	Stakeholder and Material Topic Analysis	197		
Material Topic | Biodiversity				
GRI 3: Material Topics 2021				
3-3 Management of Material Topics	Stakeholder and Material Topic Analysis	197		14.4.1
GRI 101 Biodiversity 2024				
101-1 Policies to halt and reverse biodiversity loss	4.1 TCC Nature Action	126		14.4.2
101-2 Management of biodiversity impacts	4.1 TCC Natural Action 4.2 Forest & Soil - TCC Restoration Map 4.3 Marine Rehabilitation 4.4 OECMs (Other Effective area-based Conservation Measures) 4.5 Nature-based Solutions (NbS)	126 136 148 153 154		14.4.3
101-3 Access and benefit-sharing	4.6 Natural Benefit Sharing	156		
101-4 Identification of biodiversity impacts	4.1 TCC Nature Action	126		14.4.4

GRI Standards/Disclosures	Corresponding Sections	Page Number	Notes/Omission Justification	Reference number of disclosures in GRI Sector Standards
101-5 Locations with biodiversity impacts	4.1 TCC Nature Action	126	▌For detailed information, please refer to TCC's 2023 TNFD Report	14.4.5
101-6 Direct drivers of biodiversity loss	4.1 TCC Nature Action	126	▌In 2023, the TNFD LEAP methodology was applied to analyze cement	14.4.6
101-7 Changes to the state of biodiversity	4.1 TCC Nature Action	126	plants and mines in Taiwan, Ho-Ping Power Company, and Hoping	14.4.7
101-8 Ecosystem services	4.1 TCC Nature Action	126	EcoPort. Future plans include expanding the assessment scope to	14.4.8
			cover other operational sites and suppliers	
Material Topic | Local Inclusion				
GRI 3: Material Topics 2021				
3-3 Management of Material Topics	Stakeholder and Material Topic Analysis	197		14.10.1
GRI 413: Local Communities 2016				
413-1 Operations with local community engagement,	5.6 Social Engagement Partners	185	▌The Hoping Plant has completed comprehensive local community	14.10.2
impact assessments, and development programs			communication and impact assessments, accounting for 50% of	
413-2 Operations with significant actual and potential	5.6 Social Engagement Partners	185	cement plant operating sites in Taiwan	14.10.3
negative impacts on local communities			▌In 2024, the Hoping Emergency Relief Fund approved assistance for	
			74 cases for assistance, with a subsidy amount of NTD 750,000	
			▌TCC introduced Social Return On Investment (SROI) and received	
			verification from Social Value International, UK, in December 2021,	
			confirming that for every NTD 1 invested in the overall DAKA project,	
			NTD 3.54 of social value is generated.	
			Related Report Content Please refer to TCC's SROI Report	
Material Topic | Talent Cultivation and Development				
GRI 3: Material Topics 2021				
3-3 Management of Material Topics	Stakeholder and Material Topic Analysis	197		14.17.1
GRI 404: Training and Education 2016				
404-1 Average hours of training per year per employee	6.1 ESG Data Sheet	227,237		14.17.7
	TCC Key Indicators | Social			
404-3 Percentage of employees receiving regular	5.3 Employee Remuneration and Benefits	169		
performance and career development reviews				
Material Topic | Pollution Control and Management				
GRI 3: Material Topics 2021				
3-3 Management of Material Topics	Stakeholder and Material Topic Analysis	197		14.3.1
GRI 305: Emissions 2016				
305-7 Nitrogen oxides (NOx), sulfur oxides (SOx),	6.1 ESG Data Sheet	209,234		14.3.2
and other significant emissions	TCC Key Indicators | Environmental			

GRI Standards/Disclosures	Corresponding Sections	Page Number	Notes/Omission Justification	Reference number of disclosures in GRI Sector Standards
Material Topic | Water Resource Management				
GRI 3: Material Topics 2021				
3-3 Management of Material Topics	Stakeholder and Material Topic Analysis	197		14.7.1
GRI 303: Water 2018				
303-1 Interactions with water as a shared resource	2.2 Low-Carbon Production Management	89		14.7.2
303-2 Management of water discharge-related impacts	2.2 Low-Carbon Production Management	89		14.7.3
303-3 Water withdrawal	6.1 ESG Data Sheet	209,234	Water withdrawn at operational sites in Taiwan and Mainland	14.7.4
	TCC Key Indicators | Environmental		China was fresh water.	
303-4 Water discharge	6.1 ESG Data Sheet	209,234		14.7.5
	TCC Key Indicators | Environmental			
303-5 Water consumption	6.1 ESG Data Sheet	209,234		14.7.6
	TCC Key Indicators | Environmental			
Topic-specific Disclosures				
GRI 204: Procurement Practices 2016				
204-1 Proportion of spending on local suppliers	1.7 Supply Chain Management	71		
GRI 401: Employment 2016				
401-1 New employee hires and employee turnover	6.1 ESG Data Sheet	227,237		
	TCC Key Indicators | Social			
401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees	5.3 Employee Remuneration and Benefits	169	In 2024, TCC also employed part-time staff who are not fully eligible for the benefits provided to full-time employee, such as inclusion in the Employee Welfare Committee	
401-3 Parental leave	6.1 ESG Data Sheet	227,237		
	TCC Key Indicators | Social			
GRI 405: Diversity and Equal Opportunity 2016				
405-1 Diversity of governance bodies and employees	1.1 Governance Structure	41		
	5.2 Employee Development	163		
	6.1 ESG Data Sheet	227,237		
	TCC Key Indicators | Social			

GRI Standards/Disclosures	Corresponding Sections	Page Number	Notes/Omission Justification	Reference number of disclosures in GRI Sector Standards
405-2 Ratio of basic salary and remuneration of women to men			2024 TCC salary ratio: female to male employees (Female : Male)	

Employee Level	Base Salary	Base Salary + Other Cash Incentives
Top management level (executive level)	109:100	132:100
Management level	104:100	109:100
Non-management level	102:100	101:100

Note 1: The top management level is defined as Assistant Vice President and higher; the management level covers positions from Supervisor to Senior Manager; and the non-management level consists of individual contributors, such as staff, administrators, engineers, and researchers.
Note 2: The term "base salary" is defined to include the year-end bonus.
Note 3: The major operating sites of TCC correspond to the scope of operations as outlined in this report.

Note 1: The disclosure topics without corresponding GRI Sector Standards are not of the material topics identified this year, including topics 14.6, 14.8 to 14.15, and 14.18 to 14.25.
Note 2: The Material Topic “Talent Cultivation and Development” corresponds to the disclosure items in “Topic 14.17 Employment practices” of GRI 14; nevertheless, since items 14.17.2 to 14.17.6 and 14.17.9. to 14.17.10 have low relevance to talent cultivation and development, they are not applicable to the Material Topic.
Note 3: Information for disclosure items 14.1.9, 14.5.6, 14.10.4, and 14.16.9 have not been fully collected yet for the company's mining-related subsidiaries, as GRI 14 will be issued in 2024. The information will be disclosed once it is complete.

6.4

Sustainability Accounting Standards Board Index

Topic	Code	Category	Metric	Page		
Greenhouse gas emissions	EM-CM-110a.1	Quantitative	Global Scope 1 Emissions	(ESG Data Sheet)	The proportion of global regulated emissions is approximately	
			Percentage covered under emissions-limiting regulations	-	6.50 %.	
	EM-CM-110a.2	Qualitative	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Carbon Competitiveness Science Based Targets (SBT) Reduction Goals		
Air Quality	EM-CM-120a.1	Quantitative	Air emissions of the following pollutants: (1) NOx (excluding N_2O), (2) SOx, (3) particulate matter (PM10), (4) dioxins/furans, (5) volatile organic compounds (VOCs), (6) polycyclic aromatic hydrocarbons (PAHs), and (7) heavy metals	(ESG Data Sheet)	Disclosure scope primarily focused on stationary sources.	
Energy Management	EM-CM-130a.1	Quantitative	Total Energy Consumed[1]	-	In 2024, the energy consumption by operational sites in Taiwan and Mainland China was 92,088,519 GJ.	The energy consumption by operational sites in Taiwan and Mainland China in 2024, including alternative fuel consumption, is 14,856,604 GJ
			Percentage grid electricity	-	9.37%	The proportion of grid electricity refers to the share of purchased electricity in the total energy consumption.

Note1: In light of the project timeline, the data for CIMPOR and OYAK CEMENT will be disclosed in the ESG section of TCC's official website.

Topic	Code	Category	Metric	Page		
Energy Management	EM-CM-130a.1	Quantitative	Proportion of Alternative	-	Taiwan: 11.85% Taiwan and Mainland China (weighted average): 16.13%	"The proportion of alternative energy refers to the share of alternative fuels (including wood chips, SRF, waste paper, etc.) in the total energy consumption."
			Percentage renewable	-	Taiwan: 0.14% Taiwan and Mainland China (weighted average): 0.27%	The proportion of renewable energy refers to the share of self-generated and self-used renewable energy in the total energy consumption.
Water Management	EM-CM-140a.1	Quantitative	Total Water Storage Volume	(ESG Data Sheet)	The percentage of water withdrawal from areas with high or extremely high water stress accounts for 9% of the total water withdrawal.	
			Total Water Consumption	(ESG Data Sheet)		
			Percentage in regions with High or Extremely High Baseline Water Stress	-	The percentage of water consumption in areas with high or extremely high water stress accounts for 21% of the total water consumption.	
Waste Management[1]	EM-CM-150a.1	Quantitative	Amount of waste generated	-	The weight of waste generated by operational sites in Taiwan and Mainland China: 34,930 metric tons Percentage of hazardous waste: 1.6% Percentage of waste recycling: 98.4%	
			Percentage hazardous	-		
			Percentage recycled	-		
Biodiversity Impacts	EM-CM-160a.1	Qualitative	Description of environmental management policies and practices for active sites	-	TCC (Taiwan Cement Corporation) has committed to achieving zero net deforestation by 2040, and aims to reach No Net Loss and move toward a Nature Positive Impact. All operational sites will be 100% located outside of UNESCO World Heritage areas and IUCN Protected Areas Categories I–IV. TCC has also established a Biodiversity Management Policy, with 100% of mining sites in Taiwan and Mainland China having Biodiversity Management Plans (BMP), and 100% of mining sites in Taiwan, Mainland China, Türkiye, and Portugal having Quarry Rehabilitation Plans (QRP).	
	EM-CM-160a.2	Quantitative	Terrestrial acreage disturbed	-		
			Percentage of impacted area restored	-		

	Mined Area	Rehabilitated Area
Taiwan	144.85	76.37
Mainland China	765.01	230.76
Combined Total	909.86	307.13

Note1: In light of the project timeline, the data for CIMPOR and OYAK CEMENT will be disclosed in the ESG section of TCC's official website.

Topic	Code	Category	Metric	Page	
Workforce Health & Safety	EM-CM-320a.1	Quantitative	Total recordable incident rate (TRIR) for full-time employees and contract employees	(ESG Data Sheet)	
			Near miss frequency rate (NMFR) for full-time employees and contract employees	-	Near Miss Frequency Rate (NMFR) in Taiwan: 1.30 per 200,000 working hours Near Miss Frequency Rate (NMFR) in Mainland China: 0.23 per 200,000 working hours. Near Miss Frequency Rate (NMFR) in CIMPOR & OYAK CEMENT: 5.49 per 200,000 working hours.
	EM-CM-320a.2	Quantitative	Number of reported cases of silicosis	-	No cases of silicosis reported at TCC in 2024.
Product Innovation	EM-CM-410a.1	Quantitative	Percentage of products that qualify for cred-its in sustainable building design and construc-tion certifications		TCC's low-carbon products in Taiwan include the Portland Type I cement, Portland Type II (MH) cement, and Portland limestone cement that have obtained carbon reduction labels and Gold-level environmental protection marks, as well as concrete with a cement content below 50% of the binder and concrete made with Portland limestone cement. In Mainland China, low-carbon products refer to cement products certified as low-carbon products. For CIMPOR and OYAK CEMENT, low-carbon products refer to cements other than Portland Type I and the concrete produced using those cements. The Taiwan and Mainland China operating sites generated revenue of NT$32,672,421 thousand from low-carbon products meeting the above definitions in 2024. After TCC's consolidation of CIMPOR and OYAK CEMENT in March 2024, according to CIMPOR and OYAK CEMENT's definitions of low-carbon cement and concrete, low-car-bon product revenue included in consolidated operating revenue from March to December 2024 totaled NT$39,599,537 thousand.
	EM-CM-410a.2	Quantitative	Total addressable market and share of market for products that reduce energy, water, and/or material impacts during usage and/or production		TCC is the largest cement manufacturer in Taiwan, seventh in Mainland China, and the largest in both Portugal and Türkiye. Across all markets, TCC is committed to offering low-carbon cement products to reduce environmental impact.
Pricing Integrity & Transparency	EM-CM-520a.1	Quantitative	Total amount of monetary losses as a result of legal proceedings associated with cartel activi-ties, price fixing, and anti-trust activities	-	None
Activity Metrics	EM-CM-000.A	Quantitative	Production volume of main product lines	(Sustainability Disclosure Indicators for the Cement Industry)	

6.5

European Sustainability Reporting Standards Index

ESRS Number	Disclosure Requirements	Corresponding Material Topics	Corresponding Sections	Page Number	Notes
ESRS 2 General Disclosures					
ESRS 2 BP-1	General Basis for Preparation of Sustainability Statements	Legal Compliance	About This Report	37	Required Disclosures
			1.9 Intellectual Property Management	80	
ESRS 2 BP-2	Disclosures Related to Specific Circumstances		About This Report	37	Required Disclosures
			1.9 Intellectual Property Management	80	
ESRS 2 GOV-1	Roles of Administrative, Management and Supervisory Bodies		1.1 Governance Structure	40	Required Disclosures
ESRS 2 GOV-2	Information Provided to and Sustainability Issues Addressed by the Undertaking's Administrative, Management and Supervisory Bodies		1.2 Sustainability Management Framework	43	Required Disclosures
ESRS 2 GOV-3	Integration of Sustainability-related Performance in Incentive Schemes		1.2 Sustainability Development Implementation Framework - Management Team Remuneration Policy	45	Required Disclosures
ESRS 2 GOV-4	Due Diligence Statement		5.5 Human Rights Protection	180	Required Disclosures
ESRS 2 GOV-5	Risk Management and Internal Control of Sustainability Reporting		1.3 Risk Management Framework	46	Required Disclosures
			1.5 Ethical Management - Audit and Internal Control Management System	61	
ESRS 2 SBM-1	Strategy, Business Model and Value Chain		Product & Service Value Chain	34	Required Disclosures
ESRS 2 SBM-2	Stakeholder Interests and Perspectives		Stakeholder and Material Topic Analysis	197	Required Disclosures
ESRS 2 SBM-3	Significant Impacts, Risks and Opportunities and Their Interaction with Strategy and Business Model		Stakeholder and Material Topic Analysis	197	Required Disclosures
ESRS 2 IRO-1	Description of Process for Identifying and Assessing Significant Impacts, Risks and Opportunities		Stakeholder and Material Topic Analysis	197	Required Disclosures
ESRS 2 IRO-2	Disclosure Requirements in ESRS Covered by Corporate Sustainability Statement		Stakeholder and Material Topic Analysis	197	Required Disclosures

ESRS Number	Disclosure Requirements	Corresponding Material Topics	Corresponding Sections	Page Number	Notes
ESRS 2 MDR-P	Policies Adopted for Managing Material Sustainability Matters		Stakeholder and Material Topic Analysis	197	Required Disclosures
ESRS 2 MDR-A	Actions and Resources Related to Material Sustainability Matters		Stakeholder and Material Topic Analysis	197	Required Disclosures
ESRS 2 MDR-M	Indicators Related to Material Sustainability Matters		Sustainability Goals and Tracking	35	Required Disclosures
ESRS 2 MDR-T	Monitoring the Effectiveness of Policies and Actions through Targets		Sustainability Goals and Tracking	35	Required Disclosures
ESRS E1 Climate Change					
E1 - ESRS 2 GOV-3	Incorporating Sustainability Performance into Incentive Plans	Climate Action and Net-Zero Emissions	5.3 Employee Remuneration and Benefits	169	Required Disclosures
DR E1-1	Transition Plans for Climate Change Mitigation	Green Energy and Energy Storage	Driver | Carbon Competitiveness	11	This Topic is Not Material
E1 - ESRS 2-SBM-3	Significant Impacts, Risks and Opportunities and Their Interaction with Strategy and Business Model		1.4 TCFD	51	Required Disclosures
E1 - ESRS 2-IRO-1	Description of Processes for Identifying and Assessing Material Climate-related Impacts, Risks and Opportunities		1.4 TCFD	51	Required Disclosures
DR E1-2	Policies Related to Climate Change Mitigation and Adaptation	Climate Action and Net-Zero Emissions	Driver | Carbon Competitiveness	11	This Topic is Not Material
DR E1-3	Actions and Resources Related to Climate Change Policies	Climate Action and Net-Zero Emissions	Driver | Carbon Competitiveness	11	This Topic is Not Material
DR E1-4	Goals Related to Climate Change Mitigation and Adaptation	Climate Action and Net-Zero Emissions	Driver | Carbon Competitiveness	11	This Topic is Not Material
DR E1-5	Energy Consumption and Mix	Climate Action and Net-Zero Emissions	6.1 ESG Data Sheet TCC Key Indicators | Environmental	209,234	This Topic is Not Material
DR E1-6	Scope 1, 2, 3 and Total Greenhouse Gas Emissions	Climate Action and Net-Zero Emissions	6.1 ESG Data Sheet TCC Key Indicators | Environmental	209,234	This Topic is Not Material
DR E1-7	Greenhouse Gas Removal and Emission Reduction Projects Funded Through Carbon Credits	Climate Action and Net-Zero Emissions	6.1 ESG Data Sheet TCC Key Indicators | Environmental	209,234	This Topic is Not Material

ESRS Number	Disclosure Requirements	Corresponding Material Topics	Corresponding Sections	Page Number	Notes
DR E1-8	Internal Carbon Pricing	Climate Action and Net-Zero Emissions	2.1 Low-Carbon Construction Materials	83	This Topic is Not Material
DR E1-9	Expected Financial Impact of Material Physical and Transition Risks and Potential Climate-Related Opportunities	Climate Action and Net-Zero Emissions	1.4 TCFD	51	This Topic is Not Material
ESRS E2 Pollution					
E2 - ESRS 2-IRO-1	Description of Process for Identifying and Assessing Material Pollution-Related Impacts, Risks and Opportunities		2.3 Resource Recycling	99	Required Disclosures
DR E2-1	Pollution-Related Policies		2.3 Resource Recycling	99	This Topic is Not Material
DR E2-2	Pollution-Related Actions and Resources		6.1 ESG Data	209,234	This Topic is Not Material
			TCC Key Indicators | Environmental		
DR E2-3	Pollution-Related Targets		2.3 Resource Recycling	99	This Topic is Not Material
DR E2-4	Air, Water and Soil Pollution		6.1 ESG Data	209,234	This Topic is Not Material
			TCC Key Indicators | Environmental		
DR E2-5	Substances of Concern and Substances of Very High Concern		-		This Topic is Not Material
DR E2-6	Expected Financial Impacts of Material Pollution-Related Impacts, Risks and Opportunities		-		This Topic is Not Material
ESRS E3 Water and Marine Resources					
E3 - ESRS 2-IRO-1	Description of Processes for Identifying and Assessing Material Impacts, Risks and Opportunities Related to Water and Marine Resources		4.3 Marine Rehabilitation	148	Required Disclosures
DR E3-1	Water and Marine Resources-Related Policies		4.3 Marine Rehabilitation	148	This Topic is Not Material
DR E3-2	Water and Marine Resources-Related Actions and Resources		6.1 ESG Data Sheet	209,234	This Topic is Not Material
			TCC Key Indicators | Environmental		
DR E3-3	Water and Marine Resources-Related Targets		Sustainability Goals and Tracking	35	This Topic is Not Material
			2.2 Low-Carbon Production Management	89	
DR E3-4	Water Consumption		6.1 ESG Data Sheet	209,234	This Topic is Not Material
			TCC Key Indicators | Environmental		
DR E3-5	Expected Financial Impacts of Material Impacts, Risks and Opportunities Related to Water and Marine Resources		-		This Topic is Not Material

ESRS Number	Disclosure Requirements	Corresponding Material Topics	Corresponding Sections	Page Number	Notes
ESRS E4 Biodiversity and Ecosystems					
DR E4-1	Consideration of Biodiversity and Ecosystems in Transformation Plans, Strategies and Business Models	Biodiversity	4.1 TCC Nature Action	126	
E4 - ESRS 2-SBM 3	Significant Impacts, Risks and Opportunities and Their Interaction with Strategy and Business Model		4.1 TCC Nature Action	126	Required Disclosures
E4 - ESRS 2-IRO-1	Description of the Process for Identifying and Assessing Material Biodiversity and Ecosystem-Related Impacts, Risks, Dependencies and Opportunities		4.1 TCC Nature Action	126	Required Disclosures
DR E4-2	Biodiversity and Ecosystem-Related Policies		4.1 TCC Nature Action	126	This Topic is Not Material
DR E4-3	Biodiversity and Ecosystem-Related Actions and Resources		4.1 TCC Nature Action	126	This Topic is Not Material
DR E4-4	Biodiversity and Ecosystem-Related Targets		4.1 TCC Nature Action	126	This Topic is Not Material
DR E4-5	Impact Indicators Related to Biodiversity and Ecosystem Changes		-		This Topic is Not Material
DR E4-6	Expected Financial Impacts of Material Biodiversity and Ecosystem-Related Risks and Opportunities		-		This Topic is Not Material
ESRS E5 Circular Economy					
E5 - ESRS 2-IRO-1	Description of processes for identifying and assessing impacts, risks and opportunities related to material resource use and circular economy	Co-processing of Renewable Resources	2.3 Resource Recycling	99	Required Disclosures
DR E5-1	Policies Related to Resource Use and Circular Economy	Low-Carbon Products and Services	2.3 Resource Recycling	99	This Topic is Not Material
DR E5-2	Actions and Resources Related to Resource Use and Circular Economy		2.3 Resource Recycling	99	This Topic is Not Material
DR E5-3	Targets Related to Resource Use and Circular Economy		2.3 Resource Recycling	99	This Topic is Not Material
DR E5-4	Resource Inflow		2.3 Resource Recycling	99	This Topic is Not Material
DR E5-5	Resource Outflow		2.3 Resource Recycling	99	This Topic is Not Material
DR E5-6	Expected Financial Impacts and Impacts, Risks and Opportunities Related to Material Resource Use and Circular Economy		-		This Topic is Not Material

ESRS Number	Disclosure Requirements	Corresponding Material Topics	Corresponding Sections	Page Number	Notes
ESRS S1 Own Workforce					
S1 - ESRS 2-SBM-2	Stakeholder Interests and Perspectives	Talent Cultivation and Development	Stakeholder and Material Topic Analysis	197	Required Disclosures
S1 - ESRS 2-SBM-3	Significant Impacts, Risks and Opportunities and Their	Workplace Health and Safety	5.2 Employee Development	163	Required Disclosures
	Interaction with Strategy and Business Model		5.4 Occupational Health and Safety	173	
DR S1-1	Policies Related to Own Workforce		5.2 Employee Development	163	This Topic is Not Material
			5.4 Occupational Health and Safety	173	
DR S1-2	Process of Engaging with Own Workforce and Employees		5.2 Employee Development	163	This Topic is Not Material
	Regarding Impact Statements		5.4 Occupational Health and Safety	173	
DR S1-3	Process for Remedying Negative Impacts and Channels		Stakeholder Engagement		This Topic is Not Material
	for Employees to Raise Concerns				
DR S1-4	Actions Taken to Address Significant Impacts on		Stakeholder and Material Topic Analysis	197	This Topic is Not Material
	Employees, Methods for Managing Significant Risks and				
	Seeking Significant Opportunities Related to Employees,				
	and the Effectiveness of These Actions				
DR S1-5	Targets Related to Managing Significant Negative		Stakeholder and Material Topic Analysis	197	This Topic is Not Material
	Impacts, Advancing Positive Impacts, and Managing				
	Significant Risks and Opportunities				
DR S1-6	Characteristics of Business Entity Employees		6.1 ESG Data Sheet	227,237	This Topic is Not Material
			TCC Key Indicators | Social		
DR S1-7	Characteristics of Non-Employee Workers Among the		6.1 ESG Data Sheet	227,237	This Topic is Not Material
	Organization's Workforce		TCC Key Indicators | Social		
DR S1-8	Collective Bargaining Reporting and Social Dialogue		5.5 Human Rights Protection	180	This Topic is Not Material
DR S1-9	Diversity Indicators		5.2 Employee Development	163	This Topic is Not Material
DR S1-10	Adequate Wages		5.3 Employee Remuneration and Benefits	169	This Topic is Not Material

ESRS Number	Disclosure Requirements	Corresponding Material Topics	Corresponding Sections	Page Number	Notes
DR S1-11	Social Protection		5.5 Human Rights Protection	180	This Topic is Not Material
DR S1-12	Persons with Disabilities		5.5 Human Rights Protection	180	This Topic is Not Material
DR S1-13	Training and Skills Development Indicators		5.1 Climate Action Talents	161	This Topic is Not Material
			6.1 ESG Data Sheet	227,237	
			TCC Key Indicators | Social		
DR S1-14	Health and Safety Indicators		5.4 Occupational Health and Safety	173	This Topic is Not Material
DR S1-15	Work-Life Balance Indicators		5.3 Employee Remuneration and Benefits	169	This Topic is Not Material
DR S1-16	Remuneration Indicators		5.3 Employee Remuneration and Benefits	169	This Topic is Not Material
	(Pay Gap and Total Compensation)				
DR S1-17	Incidents, Complaints and Significant Human Rights		5.5 Human Rights Protection	180	This Topic is Not Material
	Impacts				
ESRS S2 Employees in Value Chain					
S2 - ESRS 2 SBM-2	Stakeholder Interests and Perspectives		Stakeholder and Material Topic Analysis	197	Required Disclosures
S2 - ESRS 2 SBM-3	Significant Impacts, Risks and Opportunities and Their		1.7 Supply Chain Management	71	Required Disclosures
	Interactions with Corporate Strategy and Business				
	Model				
DR S2-1	Policies Related to Value Chain Employees		1.7 Supply Chain Management	71	This Topic is Not Material
			2.2 Low-Carbon Production Management	89	
DR S2-2	Process of Engaging with Value Chain Employees on		Stakeholder and Material Topic Analysis	197	This Topic is Not Material
	Impacts				
DR S2-3	Process for Remedying Negative Impacts and Channels		Stakeholder Engagement		This Topic is Not Material
	for Value Chain Employees to Raise Concerns				
DR S2-4	Actions Taken to Address Significant Impacts on Value		1.7 Supply Chain Management	71	This Topic is Not Material
	Chain Employees, Mitigation of Significant Risks and				
	Opportunities Related to Value Chain Employees, and				
	the Effectiveness of These Actions				
DR S2-5	Targets Related to Managing Significant Negative		6.1 ESG Data Sheet	227,237	This Topic is Not Material
	Impacts, Advancing Positive Impacts, and Managing		TCC Key Indicators | Social		
	Significant Risks and Opportunities				

ESRS Number	Disclosure Requirements	Corresponding Material Topics	Corresponding Sections	Page Number	Notes
ESRS S3 Affected Communities					
S3 - ESRS 2 SBM-2	Relevant Disclosure Requirements - Stakeholder Interests and Perspectives	Local Inclusion	Stakeholder and Material Topic Analysis	197	Required Disclosures
S3 - ESRS 2 SBM-3	Significant Impacts, Risks and Opportunities and Their Interactions with Corporate Strategy and Business Model		Just Transition	30	Required Disclosures
DR S3-1	Policies Related to Value Chain Employees		Just Transition	30	This Topic is Not Material
DR S3-2	Process for Engaging with Affected Communities Regarding Impacts		5.6 Social Engagement Partners	185	This Topic is Not Material
DR S3-3	Process for Remedying Negative Impacts and Channels for Affected Communities to Raise Concerns		Stakeholder Engagement		This Topic is Not Material
DR S3-4	Actions Taken to Address Significant Impacts on Affected Communities, Management of Significant Risks and Opportunities Related to Affected Communities, and the Effectiveness of These Actions		Just Transition	30	This Topic is Not Material
DR S3-5	Targets Related to Managing Significant Negative Impacts, Promoting Positive Impacts, and Managing Significant Risks and Opportunities		Just Transition	30	This Topic is Not Material
ESRS S4 Consumers and End-users					
S4 - ESRS 2 SBM-2	Stakeholder Interests and Perspectives		Stakeholder and Material Topic Analysis	197	Required Disclosures
S4 - ESRS 2 SBM-3	Significant Impacts, Risks and Opportunities and Their Interactions with Corporate Strategy and Business Model		Stakeholder and Material Topic Analysis	197	Required Disclosures
DR S4-1	Policies Related to Consumers and End-users		1.8 Customer Communication	77	This Topic is Not Material
DR S4-2	Processes for Engaging with Consumers and End-users on Impacts		-		This Topic is Not Material
DR S4-3	Processes for Remedying Negative Impacts and Channels for End-users to Raise Concerns		Stakeholder Engagement		This Topic is Not Material

ESRS Number	Disclosure Requirements	Corresponding Material Topics	Corresponding Sections	Page Number	Notes
DR S4-4	Methods for Taking Action on Significant Impacts on		-		This Topic is Not Material
	Consumers and End-users, Managing Significant		-		
	Risks Related to Consumers and End-users, Seeking				
	Significant Opportunities, and the Effectiveness of				
	These Actions				
DR S4-5	Targets Related to Managing Significant Negative				This Topic is Not Material
	Impacts, Advancing Positive Impacts, and Managing				
	Significant Risks and Opportunities				
ESRS G1 Business Conduct					
G1 - ESRS 2-GOV-1	Roles of Administrative, Management	Research,	1.9 Intellectual Property Management	80	Required Disclosures
	and Supervisory Bodies	Development,			
		and Innovation			
G1 - ESRS 2-IRO-1	Description of Process for Identifying and Assessing		1.9 Intellectual Property Management	80	Required Disclosures
	Significant Impacts, Risks and Opportunities				
DR G1-1	Business Conduct and Corporate Culture		1.5 Ethical Management	61	This Topic is Not Material
DR G1-2	Supplier Relation Management		1.7 Supply Chain Management	71	This Topic is Not Material
DR G1-3	Prevention and Detection of Corruption/Bribery		1.5 Ethical Management	61	This Topic is Not Material
DR G1-4	Corruption and Bribery Incidents		1.5 Ethical Management	61	This Topic is Not Material
DR G1-5	Political Influence and Lobbying Activities		6.1 ESG Data	227,237	This Topic is Not Material
			TCC Key Indicators | Social		
DR G1-6	Payment Practices		-		This Topic is Not Material

6.6

Third - Party Assurance Statement

AA1000 Assurance Opinion Statement

bsi.

bsi
By Royal Charter

INDEPENDENT ASSURANCE OPINION STATEMENT

2024 TCC Group Holdings Sustainability Report

The British Standards Institution is independent to TCC Group Holdings (hereafter referred to as TCC in this statement) and has no financial interest in the operation of TCC other than for the assessment and verification of the sustainability statements contained in this report.

This independent assurance opinion statement has been prepared for the stakeholders of TCC only for the purpose of assuring its statements relating to its sustainability report, more particularly described in the Scope below. It was not prepared for any other purpose. The British Standards Institution will not, in providing this independent assurance opinion statement, accept or assume responsibility (legal or otherwise) or accept liability for or in connection with any other purpose for which it may be used, or to any person by whom the independent assurance opinion statement may be read.

This independent assurance opinion statement is prepared on the basis of review by the British Standards Institution of information presented to it by TCC. The review does not extend beyond such information and is solely based on it. In performing such review, the British Standards Institution has assumed that all such information is complete and accurate.

Any queries that may arise by virtue of this independent assurance opinion statement or matters relating to it should be addressed to TCC only.

Scope

The scope of engagement agreed upon with TCC includes the followings:

1. The assurance scope is consistent with the description of 2024 TCC Group Holdings Sustainability Report.
2. The evaluation of the nature and extent of the TCC's adherence to AA1000 AccountAbility Principles (2018) in this report as conducted in accordance with type 1 of AA1000AS v3 sustainability assurance engagement and therefore, the information/data disclosed in the report is not verified through the verification process.

This statement was prepared in English and translated into Chinese for reference only.

Opinion Statement

We conclude that the 2024 TCC Group Holdings Sustainability Report provides a fair view of the TCC sustainability programmes and performances during 2024. The sustainability report subject to assurance is free from material misstatement based upon testing within the limitations of the scope of the assurance, the information and data provided by the TCC and the sample taken. We believe that the performance information of Environment, Social and Governance (ESG) are fairly represented. The sustainability performance information disclosed in the report demonstrate TCC's efforts recognized by its stakeholders.

Our work was carried out by a team of sustainability report assurors in accordance with the AA1000AS v3. We planned and performed this part of our work to obtain the necessary information and explanations we considered to provide sufficient evidence that TCC's description of their approach to AA1000AS v3 and their self-declaration in accordance with GRI Standards were fairly stated.

Methodology

Our work was designed to gather evidence on which to base our conclusion. We undertook the following activities:

- a top level review of issues raised by external parties that could be relevant to TCC's policies to provide a check on the appropriateness of statements made in the report.
- discussion with managers on approach to stakeholder engagement. However, we had no direct contact with external stakeholders.
- 52 interviews with staffs involved in sustainability management, report preparation and provision of report information were carried out.
- review of key organizational developments.
- review of the findings of internal audits.
- review of supporting evidence for claims made in the reports.
- an assessment of the organization's reporting and management processes concerning this reporting against the principles of Inclusivity, Materiality, Responsiveness, and Impact as described in the AA1000AP (2018).

Conclusions

A detailed review against the Inclusivity, Materiality, Responsiveness, and Impact of AA1000AP (2018) and GRI Standards is set out below:

Inclusivity

This report has reflected a fact that TCC has continually sought the engagement of its stakeholders and established material sustainability topics, as the participation of stakeholders has been conducted in developing and achieving an accountable and strategic response to sustainability. There are fair reporting and disclosures for the information of Environment, Social and Governance (ESG) in this report, so that appropriate planning and target-setting can be supported. In our professional opinion the report covers the TCC's inclusivity issues.

Materiality

TCC publishes material topics that will substantively influence and impact the assessments, decisions, actions and performance of TCC and its stakeholders. The sustainability information disclosed enables its stakeholders to make informed judgements about the TCC's management and performance. In our professional opinion the report covers the TCC's material issues.

Responsiveness

TCC has implemented the practice to respond to the expectations and perceptions of its stakeholders. An Ethical Policy for TCC is developed and continually provides the opportunity to further enhance TCC's responsiveness to stakeholder concerns. Topics that stakeholder concern about have been responded timely. In our professional opinion the report covers the TCC's responsiveness issues.

Impact

TCC has identified and fairly represented impacts that were measured and disclosed in probably balanced and effective way. TCC has established processes to monitor, measure, evaluate, and manage impacts that lead to more effective decision-making and results-based management within the organization. In our professional opinion the report covers the TCC's impact issues.

GRI Sustainability Reporting Standards (GRI Standards)

TCC provided us with their self-declaration of in accordance with GRI Standards 2021 (For each material topic covered in the applicable GRI Sector Standard and relevant GRI Topic Standard, comply with all reporting requirements for disclosures). Based on our review, we confirm that sustainable development disclosures with reference to GRI Standards' disclosures are reported, partially reported, or omitted. In our professional opinion the self-declaration covers the TCC's sustainability topics.

Assurance level

The moderate level assurance provided is in accordance with AA1000AS v3 in our review, as defined by the scope and methodology described in this statement.

Responsibility

The sustainability report is the responsibility of the TCC's chairman as declared in his responsibility letter. Our responsibility is to provide an independent assurance opinion statement to stakeholders giving our professional opinion based on the scope and methodology described.

Competency and Independence

The assurance team was composed of auditors experienced in relevant sectors, and trained in a range of sustainability, environmental and social standards including AA1000AS, ISO 14001, ISO 45001, ISO 14064, and ISO 9001. BSI is a leading global standards and assessment body founded in 1901. The assurance is carried out in line with the BSI Fair Trading Code of Practice.

For and on behalf of BSI:

Peter Pu, Managing Director BSI Taiwan

AA1000
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Statement No: SRA-TW-803868
2025-07-21

Taiwan Headquarters: 2nd Floor, No. 37, Ji-Hu Rd., Nei-Hu Dist., Taipei 114, Taiwan, R.O.C.

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6.6

Third - Party Assurance Statement

Independent Auditors' Limited Assurance Report

Deloitte.

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INDEPENDENT AUDITORS' LIMITED ASSURANCE REPORT

TCC Group Holdings CO., LTD.

We have undertaken a limited assurance engagement on the selected performance indicators in the Sustainability Report ("the Report") of TCC Group Holdings CO., LTD. ("the Company") for the year ended December 31, 2024.

Subject Matter Information and Applicable Criteria

See Appendix 1 for the Company's selected performance indicators ("the Subject Matter Information") and applicable criteria.

Responsibilities of Management

The management of the Company is responsible for the preparation of the Subject Matter Information in accordance with Taiwan Stock Exchange Corporation Rules Governing the Preparation and Filing of Sustainability Reports by TWSE Listed Companies, Universal Standards, Sector Standards and Topic Standards published by the Global Reporting Initiative (GRI), SASB Standards published by the Sustainability Accounting Standards Board (SASB), and the criteria specifically designed by the Company, and for such internal control as management determines is necessary to enable the preparation of the Subject Matter Information that are free from material misstatement resulted from fraud or error.

Auditors' Responsibilities

Our responsibility is to plan and conduct our limited assurance engagement in accordance with International Standard on Assurance Engagements 3000 (Revised) "Assurance Engagements Other Than Audits or Reviews of Historical Financial Information" issued by the International Auditing and Assurance Standards Board to issue a limited assurance report on whether the Subject Matter Information (see Appendix 1) is free from material misstatement. The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement and, therefore, a lower assurance level is obtained than a reasonable assurance.

We based on our professional judgment in the planning and conducting of our work to obtain evidence supporting the limited assurance. Because of the inherent limitations of any internal control, there is an unavoidable risk that even some material misstatements may remain undetected. The procedures we performed include, but not limited to:

- Inquiring of management and the personnel responsible for the Subject Matter Information to obtain an understanding of the policies, procedures, internal control, and information system relevant to the Subject Matter Information to identify areas where a material misstatement of the subject matter information is likely to arise.
- Selecting sample items from the Subject Matter Information and performing procedures such as inspection, re-calculation, re-performance, observation, and analytical procedures to obtain evidence supporting limited assurance.

Inherent Limitations

The Subject Matter Information involved non-financial information, which was subject to more inherent limitations than financial information. The information may involve significant judgment, assumptions and interpretations by the management, and the different stakeholders may have different interpretations of such information.

Independence and Quality Control

We have complied with the independence and other ethical requirements of the Norm of Professional Ethics for Certified Public Accountant in the Republic of China, which is founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior.

The firm applies Standard on Quality Management 1 "Quality Management for Public Accounting Firms" issued by the Accounting Research and Development Foundation of the Republic of China, which requires the firm to design, implement and operate a system of quality management including policies or procedures regarding compliance with ethical requirements, professional standards, and applicable legal and regulatory requirements.

Conclusion

Based on the procedures we have performed and the evidence we have obtained, nothing has come to our attention that causes us to believe that the Subject Matter Information is not prepared, in all material respects, in accordance with the applicable criteria.

Other Matters

We shall not be responsible for conducting any further assurance work for any change of the Subject Matter Information or the applicable criteria after the issuance date of this report.

Deloitte & Touche

Deloitte & Touche
Taipei, Taiwan
Republic of China

August 25, 2025

APPENDIX 1

SUMMARY OF SUBJECT MATTER INFORMATION

#	Subject Matter Information				Corresponding Section	Applicable Criteria
1.		Process	Approach	Key Performance	Stakeholder & Material Topic Analysis	GRI 3-1: 2021 Process to determine material topics
	1	Identify stakeholders	TCC's key stakeholders were identified through questionnaires completed by Department heads and relevant personnels.	Identified 10 categories of stakeholders		
	2	Focus on TCC's Sustainability Issues	Design a list of sustainability issues with reference to international sustainable development trends and international sustainability rating standards.	25 sustainability issues cover corporate governance, economy, environment, and people and human rights		
	3	Assess the Impact of Sustainability Issues on the Economy, Environment, People, and Human Rights	Conducted a materiality assessment workshop, inviting executives at Vice President level and above to identify actual and potential positive and negative impacts. Additionally, departments distributed questionnaires to internal and external stakeholders to understand the level of impact on each issue.	337 questionnaires collected		
	4	Assess the Impacts of Sustainability issues on Operation	Members of the Corporate Sustainable Development Committee, along with executives at Vice President level and above, assessed the impact of sustainability issues on operations. They deter-mined the significance of each issue based on its severity and likelihood of its potential positive and negative impacts on TCC's operations.	8 VP-level and above supervisors discussed at management meeting		
	5	Double Materiality Assessment	Summarize internal/external survey results, map double materiality matrix, link issues and TCC sustainability strategies, and decide material topics for 2024.	12 material topics identified by the Corporate Sustainable Development Committee		
	6	Determine Material Topics	Submit the 12 material topics identified to the Board of Directors to ensure these material topics are aligned with the business risks and strategies of TCC.	Submitted to the Board of Directors compliance of in sustainability and integrity		
2.	Procurement Percentage in 2024				1.7 Supply Chain Management	GRI 204-1: 2016 Proportion of spending on local suppliers
			Taiwan	Mainland China	Taiwan & Mainland China	
	Local Procurement		86.31%	99.99%	93.74%	

#	Subject Matter Information			Corresponding Section	Applicable Criteria
3.	Energy Use in 2024			6.1 ESG Data Sheet	GRI 302-1: 2016 Energy consumption within the organization
	Energy Usage | In terms of Gigajoule (GJ)		**2024**		
	Coal	Taiwan	10,806,676		
		Mainland China	53,561,704		
		Subtotal	64,368,380		
	Diesel	Taiwan	168,288		
		Mainland China	410,714		
		Subtotal	579,002		
	Gasoline	Taiwan	22,637		
		Mainland China	9,837		
		Subtotal	32,474		
	Purchased Electricity	Taiwan	1,528,627		
		Mainland China	7,097,867		
		Subtotal	8,626,494		
	Power Generation by Waste Heat Recovery	Taiwan	286,155		
		Mainland China	3,088,559		
		Subtotal	3,374,715		
	Natural Gas	Taiwan	320		
		Mainland China	0		
		Subtotal	320		
	Alternative Fuel	Taiwan	1,724,940		
		Mainland China	13,131,664		
		Subtotal	14,856,604		
	Renewable Energy	Taiwan	21,010		
		Mainland China	229,521		
		Subtotal	250,530		
	• 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. • Note 2: The coal calorific values for cement plants in Taiwan are converted based on each plant's specific settings. The conversion factors are as follows: Su'ao Plant - 5,532.69 kcal/kg; Hoping Plant - 5,570.14 kcal/kg; other cement plants in Taiwan - 5,512.66 kcal/kg. Conversion factors for other fuels are: diesel - 8,400 kcal/l, gasoline - 7,800 kcal/l, electricity - 3,600 GJ per million kWh, and natural gas - 8,000 kcal/m³. For Mainland China calorific values are calculated in accordance with local practices and regulations. • Note 3: Energy consumption data is based on reports submitted to the Energy Administration.				

#	Subject Matter Information	Corresponding Section	Applicable Criteria

4.

Unit: Million Liters

Items		2024
Water Withdrawal		
Third-Party Water - Municipal Water	Taiwan	282
	Mainland China	539
	Subtotal	821
Third-Party Water - Industrial Water	Taiwan	1,086
	Mainland China	586
	Subtotal	1,672
Surface Water - Rivers	Taiwan	13
	Mainland China	10,925
	Subtotal	10,938
Surface Water - Mines	Taiwan	-
	Mainland China	94
	Subtotal	94
Surface Water - Lakes	Taiwan	-
	Mainland China	137
	Subtotal	137
Surface Water - Rainwater/Spring Water	Taiwan	37
	Mainland China	967
	Subtotal	1,004
Groundwater	Taiwan	1,460
	Mainland China	263
	Subtotal	1,723
Seawater	Taiwan	0
	Mainland China	0
	Subtotal	0
Discharged Reclaimed Water	Taiwan	89
	Mainland China	-
	Subtotal	89
Total	Taiwan	2,968
	Mainland China	13,510
	Subtotal	16,478

Water Resource Use in Water-Stressed Areas — Unit: Million Liters

Items	2024
Water Withdrawal	
Taiwan	-
Mainland China	1,718
Subtotal	1,718

Note 1: TCC assesses future water availability using the WRI Aqueduct Water Risk Atlas. Some locations in Mainland China are situated in areas with high water stress, while the remaining sites are not located in water-stressed regions.

Corresponding Section: 6.1 ESG Data Sheet

Applicable Criteria: GRI 303-3: 2018 Water withdrawal

5. Water Resource Use

Unit: Million Liters

Items		2024
Water Discharge		
Surface Water	Taiwan	464
	Mainland China	0
	Subtotal	464
Groundwater	Taiwan	0
	Mainland China	0
	Subtotal	0
Seawater	Taiwan	0
	Mainland China	0
	Subtotal	0
Third-Party Water	Taiwan	30
	Mainland China	118
	Subtotal	148
Total	Taiwan	494
	Mainland China	118
	Subtotal	612

Water Resource Use in Water-Stressed Areas — Unit: Million Liters

Items	2024
Water Discharge	
Taiwan	-
Mainland China	-
Subtotal	-

Note 1: TCC assesses future water availability using the WRI Aqueduct Water Risk Atlas. Some locations in Mainland China are situated in areas with high water stress, while the remaining sites are not located in water-stressed regions.

Corresponding Section: 6.1 ESG Data Sheet

Applicable Criteria: GRI 303-4: 2018 Water discharge

#	Subject Matter Information	Corresponding Section	Applicable Criteria

6. Air Pollutant Emissions

Unit: Metric Ton

Items	Unit	Site	2024
NOx	Metric ton	Taiwan	4,481
		Mainland China	4,740
		Subtotal	9,221
SOx	Metric ton	Taiwan	58
		Mainland China	1,057
		Subtotal	1,115
Particulate Matter	Metric ton	Taiwan	182
		Mainland China	466
		Subtotal	648
VOC/THC	Metric ton	Taiwan	0.0043
		Mainland China	0.0113
		Subtotal	0.0157
PCDD/F	g I-TEQ	Taiwan	0.0505
		Mainland China	0.00000024
		Subtotal	0.0505

- Emissions are calculated either through direct measurement or based on specific on-site data. The emission factors are sourced from the "Emission Factors, Control Efficiencies, and Other Measurement Regulations for Particulate Pollutants, Lead, Cadmium, Mercury, Arsenic, Hexavalent Chromium, and Dioxins from Stationary Pollution Sources in Public and Private Premises." These include Appendix 1: Emission Factors for Particulate Pollutants from Industrial Processes, and Appendix 3: Emission Factors for Lead, Cadmium, Mercury, Arsenic, Hexavalent Chromium, and Dioxins from Industrial Processes, as well as emission factors, control efficiencies, and other measurement regulations for volatile organic compounds (VOCs), process units (including equipment components), as specified for the declaration of air pollution control fees for stationary pollution sources.
- The nature of operations at product plants involves cement product mixing and transportation; therefore, no air pollutant emissions are generated.
- Emissions of mercury, dioxins, and furans (PCDD/Fs) from Mainland China are disclosed starting from 2024.
- In 2024, additional heavy metal emissions were recorded. For Heavy Metals 1 (HM1, including thallium, cadmium, lead, arsenic, and their compounds), emissions totaled 0.7424 metric tons in Taiwan and Mainland China. For Heavy Metals 2 (HM2, including beryllium, chromium, tin, antimony, copper, cobalt, manganese, nickel, vanadium, and their compounds), emissions totaled 1.3715 metric tons in Taiwan and Mainland China.
- In 2024, the newly added disclosure scope included 22.17 metric tons of fluorides, 33.51 metric tons of hydrogen chloride, 3.63 metric tons of hydrogen fluoride, 115.93 metric tons of ammonia, and 16.75 metric tons of total organic carbon.

Corresponding Section: 6.1 ESG Data Sheet

Applicable Criteria: GRI 305-7: 2016 Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions

7. Waste Treatment

Unit: Metric Ton

Total Waste			2024
Total	Non-Hazardous Waste	Taiwan and Mainland China	34,372.11
	Hazardous Waste	Taiwan and Mainland China	557.58

Corresponding Section: 6.1 ESG Data Sheet

Applicable Criteria: GRI 306-3 2020 Waste generated

#	Subject Matter Information	Corresponding Section	Applicable Criteria
8.	2024 Occupational Injury Statistics Work-related Injuries of Employees Occupational Accidents: Fatalities; Number of High-consequence Work-related Injuries; Number of Recordable Work-related Injuries Fatality Rate; Rate of High-consequence Work-related Injuries; Rate of Recordable Work-related Injuries (TRIFR); Actual Working Hours Taiwan: 0; 0; 4; 0; 0.00; 1.18; 3,385,334 Mainland China: 0; 1; 14; 0; 0.07; 1.01; 13,865,459 Subtotal: 0; 1; 18; 0; 0.06; 1.04; 17,250,792 Work-related Injuries of Contractors Occupational Accidents: Fatalities; Number of High-consequence Work-related Injuries; Number of Recordable Work-related Injuries Fatality Rate; Rate of High-consequence Work-related Injuries; Rate of Recordable Work-related Injuries (TRIFR); Actual Working Hours Taiwan: 1; 0; 4; 0.52; 0.00; 2.08; 1,919,376 Mainland China: 3; 0; 5; 2.28; 0.00; 3.80; 1,314,128 Subtotal: 4; 0; 9; 1.24; 0.00; 2.78; 3,233,504 • Occupational injury data calculations are primarily based on monthly occupational accident statistics reported by each plant. • The main types of occupational injuries include entanglement, impact, falling, and cuts. • Fatality Rate = (Number of Fatalities/Total Actual Working Hours) x 1,000,000. • Rate of High-consequence Work-related Injuries = (Number of High-consequence Work-related Injuries/Total Actual Working Hours) x 1,000,000. • Rate of Recordable Work-related Injuries = (Number of Recordable Work-related Injuries/Total Actual Working Hours) x 1,000,000. • Some actual working hours are estimated by multiplying the number of entries by 8 hours.	6.1 ESG Data Sheet	GRI 403-9: 2018 Work-related injuries
9.	In 2024, there were no reported cases of occupational diseases at TCC's Taiwan plants. However, at Mainland China facilities, two employees were diagnosed with occupational diseases, both involving hearing impairment.	6.3 Global Reporting Initiative Index	GRI 403-10: 2018 Work-related ill health
10.	Unit: Metric Tons Product Category; Taiwan; Mainland China Clinker; 4,224,284; 25,613,238 Cement; 4,323,185; 26,866,352 Cementitious materials; 4,598,399; 31,818,605 280 specification concrete; 6,262,643; - 350 specification concrete; 2,062,133; - 420 specification concrete; 1,167,822; - Concrete subtotal; 9,492,597; -	6.2 Sustainability Disclosure for the Listed Cement Companies	SASB EM-CM-000.A Production by major product line

#	Subject Matter Information	Corresponding Section	Applicable Criteria
11.	Number of Significant Suppliers in 2024 Items; Taiwan and Mainland China Total number of Tier-1 suppliers; 2,644 Total number of significant suppliers in Tier-1; 251 Total number of significant suppliers in non Tier-1; 45 Total number of significant suppliers; 296 Note 1: The scope covers cement business in Taiwan and Mainland China	6.1 ESG Data Sheet	Specifically designed indicator 1: Supplier Screening Process 2024: Total number of Tier-1 suppliers, Total number and Share of significant suppliers in Tier-1, Total number of significant suppliers in non Tier-1, Total number of significant suppliers Tier-1 suppliers: Suppliers who engaged in direct transactions with the company in 2024 Significant suppliers in Tier-1: Suppliers who engaged in direct transactions with the company in 2024, and who have a significant impact on the quality and delivery of the company's products, or whose procurement amount meets a certain threshold or proportion, or who pose a high ESG risk. Significant suppliers in non Tier-1: Suppliers of tier-1 significant suppliers of Tier-1 suppliers Significant suppliers: A Significant Supplier is one crucial to product quality and delivery, meets specific procurement amount or ratio, or poses a high ESG risk, requiring management and evaluation.

<table>
<tr><th>#</th><th>Subject Matter Information</th><th>Corresponding Section</th><th>Applicable Criteria</th></tr>
<tr><td>12.</td><td>Supplier Assessment Performance and Goals for 2024
<table>
<tr><th>Supplier Assessment</th><th>FY 2024</th></tr>
<tr><td>Total number of suppliers assessed (via desk assessments/on-site assessments)</td><td>275</td></tr>
<tr><td>Results</td><td></td></tr>
<tr><td>Number of suppliers assessed with substantial actual/potential negative impacts</td><td>14</td></tr>
<tr><td>Number of suppliers that were terminated</td><td>2</td></tr>
<tr><td>Supplier corrective plan performance and targets</td><td></td></tr>
<tr><td>Total number of suppliers with substantial actual/potential negative impacts expected to be supported in corrective action plan implementation</td><td>14</td></tr>
<tr><td>Total number of suppliers supported in corrective action plan implementation</td><td>12</td></tr>
<tr><td>Performance and goals of suppliers capacity building programs</td><td></td></tr>
<tr><td>Total number of suppliers in capacity building programs</td><td>262</td></tr>
</table>
Note 1: The scope covers cement business in Taiwan and Mainland China</td><td>6.1 ESG Data Sheet</td><td>Specifically designed indicator 2:

Supplier evaluation process: The number of suppliers reviewed in 2024, the number of suppliers with whom cooperation was terminated, and the number of suppliers identified as having potential/actual significant negative impact.

Suppliers with potential/actual significant negative impact: Suppliers identified based on internal assessments as having significant actual or potential ESG negative impacts.</td></tr>
<tr><td>13.</td><td></td><td>6.1 ESG Data Sheet</td><td>Specifically designed indicator 3:

Number of Suppliers Improved: The number of suppliers with potential/actual significant negative impacts in 2024 who received support for improvement plans, implemented improvement plans, and participated in capacity-building programs.

Suppliers Receiving Improvement Plan Support: Suppliers who responded to the company's improvement notice and expressed their willingness to participate.

Suppliers Implementing Improvement Plans: Suppliers who received the company's improvement recommendations and underwent subsequent follow-up.

Suppliers in Capacity-Building Programs: Suppliers who responded to the company's carbon questionnaire or participated in sustainability governance workshops.</td></tr>
</table>

<table>
<tr><th>#</th><th>Subject Matter Information</th><th>Corresponding Section</th><th>Applicable Criteria</th></tr>
<tr><td>14.</td><td>Air Pollutant Emissions
Unit: Metric Ton
<table>
<tr><th>Items</th><th>Unit</th><th>Site</th><th>2024</th></tr>
<tr><td rowspan="3">Mercury Emissions (Hg)</td><td rowspan="3">Metric ton</td><td>Taiwan</td><td>0.1729</td></tr>
<tr><td>Mainland China</td><td>0.2058</td></tr>
<tr><td>Subtotal</td><td>0.3787</td></tr>
</table>
• Emissions are calculated either through direct measurement or based on specific on-site data. The emission factors are sourced from the "Emission Factors, Control Efficiencies, and Other Measurement Regulations for Particulate Pollutants, Lead, Cadmium, Mercury, Arsenic, Hexavalent Chromium, and Dioxins from Stationary Pollution Sources in Public and Private Premises." These include Appendix 1: Emission Factors for Particulate Pollutants from Industrial Processes, and Appendix 3: Emission Factors for Lead, Cadmium, Mercury, Arsenic, Hexavalent Chromium, and Dioxins from Industrial Processes, as well as emission factors, control efficiencies, and other measurement regulations for volatile organic compounds (VOCs), process units (including equipment components), as specified for the declaration of air pollution control fees for stationary pollution sources.
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• In 2024, the newly added disclosure scope included 22.17 metric tons of fluorides, 33.51 metric tons of hydrogen chloride, 3.63 metric tons of hydrogen fluoride, 115.93 metric tons of ammonia, and 16.75 metric tons of total organic carbon.</td><td>6.1 ESG Data Sheet</td><td>Specifically designed indicator 4:

Mercury Emissions in 2024</td></tr>
</table>

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