



# Taiwan Cement Corporation GREEN FINANCING FRAMEWORK

September 2023



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# 1. Introduction

## 1.1. TCC Overview

Taiwan Cement Corporation ("TCC" or "the Company", Stock code: 1101 TT) is a leading cement producer with over 75 years of industry experience. The state-run TCC was officially privatized in 1954 and became the first listed company in Taiwan in 1962. TCC, by expanding its services in line with concerned policies which enabled itself to grow together in sync with the industry and the society, takes pride in being a leading brand name in Taiwan.

Mr. Nelson An-ping Chang assumed the office as the Chairman in 2017 and the company undertook to start a full-scale overhaul in 2018, transforming its characteristics from cement manufacturing and sales into green environmental engineering via its acquisition of NHOA in 2021 and the continued investments in power battery and renewable energy developments, dedicated to the handling of the complex relationship between human civilization and the Nature, and further from an ECO-SOLUTION PROVIDER that actively addresses environmental issues into promoting an EARTH HELPER initiative.

The company's main business lines are as follows:

### Conventional Business

Cement	<ul style="list-style-type: none"><li>No. 1 cement manufacturer in Taiwan since inception, with over 30% market share and an annual capacity of 10.4mm tons, investment in low-emission and low-carbon cement and related material technology</li><li>Key cement producer in Mainland China, with leading position in Southern Mainland China with 66.5mm tons in annual capacity</li><li>Expanded into cement market in Turkey, Portugal, Ivory Coast and Cameroon by entering into a joint venture company with Turkey's OYAK</li></ul>
Conventional Power Generation	<ul style="list-style-type: none"><li>Key assets that form an important part of Taiwan's power supply combined with waste treatment services</li></ul>

### Transformation Business

TCC Green Energy	<ul style="list-style-type: none"><li>Installed capacity estimated to reach &gt;190 MW, and Renewable electricity generation &gt;288 million kWh by the end of 2023</li></ul>
NHOA	<ul style="list-style-type: none"><li>Offers advanced BESS (Battery Energy Storage Systems), fast charging devices for electric vehicles, and becoming one of the largest V2G providers</li></ul>
MoliceL	<ul style="list-style-type: none"><li>Manufacture high performance, superior quality lithium-ion power cells and battery pack products</li></ul>

## 1.2. TCC's Sustainability Strategy

Based on the Science Based Targets and the targets of Global Cement and Concrete Association, we rolled out our Roadmap to Net Zero by 2050 with "Low-carbon Cement," "Resource Recycling," and "Green Energy." Importantly, we have also formulated Science Based Targets for 2025 pursuant to the well-below 2°C scenario.

TCC adopts seven strategies including carbon reduction for basic construction materials, new energy charging/storage optimization, and carbon negative technologies, together with an AI-powered carbon management platform for tracking, to offer optimal carbon reduction recommendations for all business entities. To learn more about TCC's sustainability strategy, please refer to TCC's sustainability and TCFD reports<sup>1</sup>.

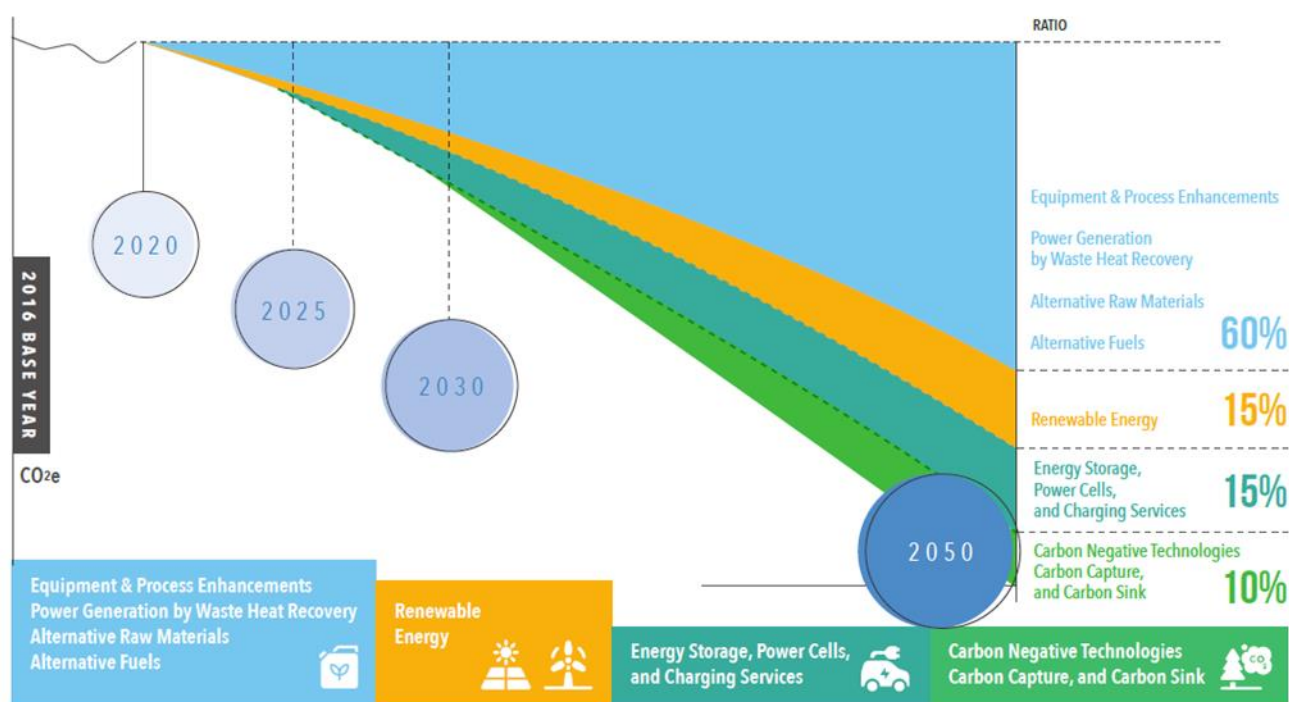
TCC joined the UN Climate Action and aims to solve the complex relationship between humans and nature and search for a balance between the development of civilization and the environment.

<sup>1</sup> [TCC Sustainability Reports](#)

Target Year	Targets
2025	<b>Taiwan (Science-Based Targets Verified)</b> <ul style="list-style-type: none"> <li>-11% Scope 1 carbon emission intensity (vs 2016)</li> <li>-32% Scope 2 carbon emission intensity (vs 2016)</li> </ul>
2030	<b>Taiwan</b> <ul style="list-style-type: none"> <li>-31% Scope 1 carbon emission intensity (vs 2016)*</li> <li>Net zero emissions in operation headquarters and offices</li> <li>Low-carbon R&amp;D center</li> </ul> <b>Mainland China</b> <ul style="list-style-type: none"> <li>-20% Scope 1 carbon emission intensity (vs 2016)*</li> </ul>
2050	<b>TCC Group</b> <ul style="list-style-type: none"> <li>Net Zero</li> <li>Carbon Neutral Concrete Products</li> </ul>

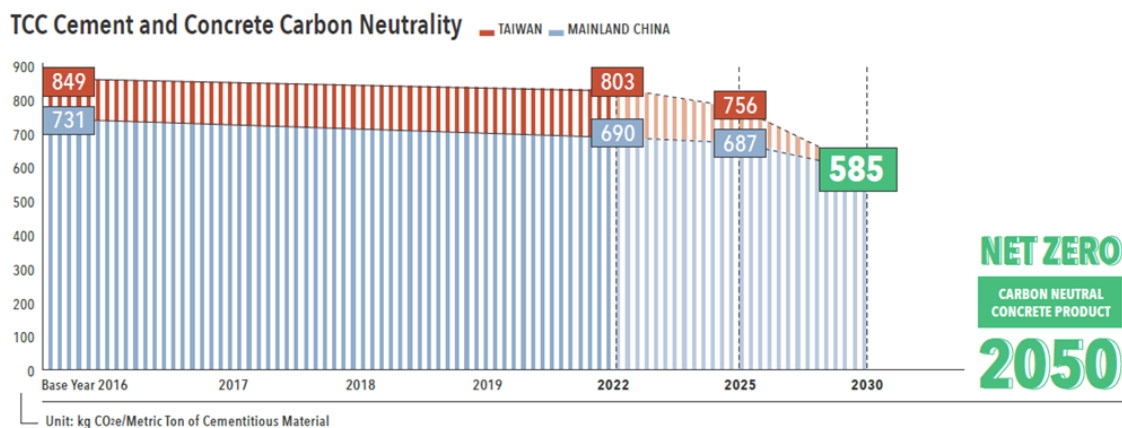
Note: \* The reduction will be implemented according to regulatory permissions and market demands

### TCC Group Roadmap and Strategies for Net Zero by 2050



Note: Energy storage regulating grids can reduce the load of coal-fired power plant units and the use of diesel generators; extend equipment service life; and reduce overall carbon emissions. According to ENERGIES, take the scenario of Italy for 2030 for example, when the annual power supply from energy storage system reaches 10,000 GWh, the carbon footprints of electricity will be reduced by 53%.

#### 1.2.1. Low-carbon Construction Materials





**The Only Company with Dual Carbon Labels of Cement and Concrete:** Upholding the goal of “zero waste, zero pollution, and zero emission,” TCC introduced international standards, including ISO 14001 Environmental Management, ISO 50001 Energy Management, ISO 14064 GHG Emissions Inventory, ISO 14067 Product Carbon Footprint, ISO 14046 Water Footprint Verification, ISO 46001 Water Efficiency Management System, and BS 8001 Circular Economy. In addition, TCC requires suppliers, contractors, subcontractors, and joint ventures to implement sustainable management in the processes of production, manufacturing, transportation and services.

**Low-carbon Cement & Concrete:** TCC introduced an Internal Carbon Pricing (NT\$300/metric ton) to drive low-carbon investment, improve energy use efficiency, and advance the carbon reducing ambition internally, supported by a Carbon Reduction System that TCC established to allow for real-time reporting of production data, and automated calculation of carbon emissions. TCC also launched a pilot internal carbon trading platform that allocated allowances based on the respective production capacity of individual plants and stipulated carbon intensity targets and carbon emissions caps.

**New Green Construction Materials:** TCC’s management’s approach is to continuously develop eco-friendly products and innovations to elevate the added value to products and to promote green products. An example would be TCC’s newly formulated ultra-high performance concrete (UHPC), an innovative cement material with ultra-high durability and high mechanically-compressive strength. Another example is the TCC-developed fly ash cement, Portland Cement Type IP, which reduces carbon by 15-30% compared to Type I cement.

**Low-carbon Construction Materials R&D Center:** In January 2023, the Low-carbon Construction Materials R&D Center with thermal, chemical, permeability, durability, and carbon neutral materials laboratories was established to improve aggregate quality and achieve TCC’s carbon reduction targets.

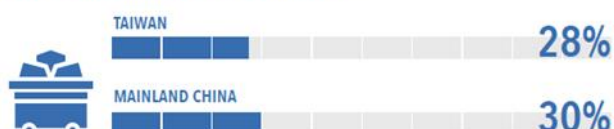
**Environmental Indicators Management:** TCC strengthens measures on environmental protection and management to avert pollution to water, air, and soil, reducing the negative impacts to human health and the environment. TCC also adopts best available measures and technology for prevention and control of pollution. As a member of EP100, TCC set the targets of 50% energy efficiency improvement by 2040, equipment and process enhancements, ISO systems introduction, and reductions of GHG emissions and carbon intensity of products.

### 1.2.2. Resource Recycling

**TCC DAKA Renewable Resource Recycling Center (RRRC):** World-class Iconic Green Building: TCC aims to increase resource use efficiency and promote sustainable use of Earth’s resources by utilizing environmentally friendly recycled materials. TCC DAKA RRRC, which will officially complete its construction in 2024, shall address Hualien City’s waste crisis and handle 200 metric tons of waste daily. This will prevent methane pollution from garbage piles, which is equivalent to an annual carbon reduction of 40,000 metric tons. The energy generated from processing the waste can also replace certain portion of fuels, leading to waste and carbon reduction benefits. RRRC will also become the first in Taiwan to use cement kilns for co-processing domestic waste at high temperatures and achieve carbon reduction through recycling.

**Alternative Fuels & Raw Materials:** TCC prioritizes natural resource and energy consumption issues by developing alternative fuels and raw materials and establishing annual product energy consumption indicators for coal and electricity to avoid unnecessary resource consumption. Through the circular economy model, TCC will not just reduce carbon emissions and natural resource usage, but further resolve waste issues for society and enterprises, bringing about synergy of circular economy.

Ratio of Alternative Raw Materials | 2025



The Thermal Substitution Rate (TSR) of Alternative Fuels | 2025



**Industrial Symbiosis Ecosphere:** TCC is committed to circular production, working with industries, governments, cities, and society to foster a circular economy sphere. TCC helps several industries manage difficult-to-dispose-of wastes and convert them into alternative cement raw materials and fuels.

### 1.2.3. Green Energy

TCC aims to create new living models of low carbon and green energy, including low-carbon construction materials, energy creation, energy storage, energy transmission, energy supply, and overall energy solution services, plus green logistics system service, to build all-round EV low-carbon cities for the future.

Category	Target year	Target
Energy Creation - Installed Capacity of Renewable Energy	2025	500MW
Energy Storage - Global energy storage capacity Charging infrastructure	2025	>2GWh 5,000 to 10,000 charging points
Energy Transmission (Power Cells) - Production Capacity	2024	3.3GWh/year

**Energy Creation:** Due to the high population density in Taiwan, TCC focuses on planning the very first wind-solar hybrid plant and fishery and electricity symbiosis project site with further engaging research on geothermal energy and marine energy.

**Energy Storage:** In 2021, TCC procured 60.48% of issue share capital of European energy storage company and renamed it as NHOA (New HOrizons Ahead). Combining European experience, NHOA.TCC serves from green energy, energy storage equipment, energy management systems (EMS), charging solutions, to integrated services for smart microgrids.

**Energy Transmission:** E-One Moli Energy Corp. and Molie Quantum Energy Corp. are in the advanced electric vehicle industry chain, focusing on the development of high-power cells. They are exclusive battery suppliers for advanced electric aircrafts.

**Energy Supply:** TCC was the first to introduce the DC-DC charging technology integrated with green energy and energy storage. The supply of mains electricity, green energy, and charging services are regulated via the energy management system (EMS), which allows TCC to develop customized low-carbon charging solutions. This helps in creating a green supply chain.

**Energy Solution:** As the renewable energy retailer with the most self-built project sites and the largest green energy available in Taiwan, TCC supports small and medium-sized enterprises and electricity users with small demands to rapidly gain access to renewable energy, and offers flexible and appropriate renewable energy use solutions.

### 1.2.4. Biodiversity Initiatives



**Ho-Ping Ark Ecological Program:** TCC acknowledges the importance of soil research and emphasizes the need for long-term studies and data accumulation to understand soil biodiversity. To support this, in 2022, TCC launched the “Ho-Ping Ark Ecological Program,” a 10-year project dedicated to soil species, which is globally unparalleled. TCC invited Dr. Chiao-Ping Wang from Taiwan Forestry Research Institute, and the team led by Professor Chih-Han Chang from the Institute of Ecology and Evolutionary Biology, National Taiwan University (NTU) to work on innovative ecological modeling, long-term monitoring and research on soil, and professional cultivation. This included mine soil sampling and testing, studying interactions between soil and plants, and researching the ecosystem function of soil in material cycles.

**Member of TNFD Pilot Program - The First Large Manufacturer in Taiwan Involved:** TCC actively mitigates environmental impacts and addresses potential natural risks, while promoting opportunities for harmonious

coexistence with nature. As the first traditional manufacturer in Taiwan to join the TNFD Pilot Program, TCC collaborated with Professor Chyi-Rong Chiou, the Director of the Biodiversity Research Center at NTU, and worked closely with the consultant team from Deloitte to assess the corporation's biodiversity impacts, nature-related risks, and explore nature-friendly opportunities.

**Protection of the Indigenous Species from Mines:** TCC upholds strict self-management standards and requirements for nature-related business activities. All TCC-owned mines undergo thorough environmental impact assessments, including impact projections and assessments, the proposal of countermeasures, or alternative solutions.

**Industrial EcoPort Coral Restoration Project:** TCC utilizes cement bio cubes to provide a solid foundation for coral growth, contributing to a sustainable underwater ecosystem and a diverse marine ecology. The port is now a thriving habitat for coral, attracting more marine creatures to the area.

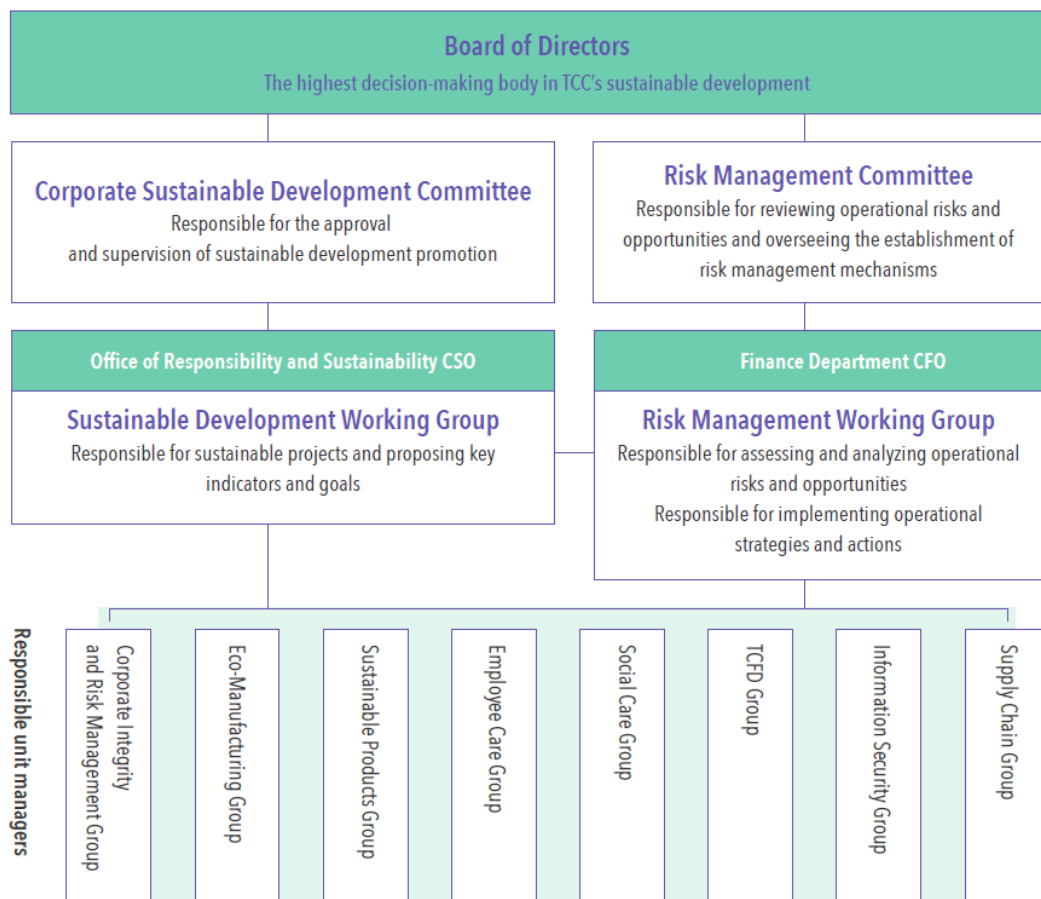
**Environmental Education Promotion:** TCC promotes biodiversity by fostering widespread participation. The Company is dedicated to environmental education, aiming to raise awareness of environmental protection and sustainable development among employees and the public. TCC encourages everyone to take eco-friendly actions and contribute to the sustainable development of nature.

**World-Class Botanic Conservation Base:** TCC prioritizes ecosystem balance and reconstruction, ceaselessly participates in restoration management, and contributes to international plant conservation efforts. We are dedicated to cultivating endangered species in Taiwan, aiming to protect the ecological environment and biodiversity.

### 1.3. Sustainability Management Framework

The Board of Directors is the top decision-making and oversight body for the sustainable development affairs of TCC, which directly supervises the promotion and governance framework of sustainable development.

#### Sustainability Management Implementation








## 1.4. External Recognitions and Partnerships






International Ratings	<ul style="list-style-type: none"> <li>2022 CDP Climate Change "A-"</li> <li>Supplier Engagement Rating (SER) "A"</li> <li>Supplier Engagement Leader</li> <li>2022 CDP Water "B"</li> </ul>
	<ul style="list-style-type: none"> <li>MSCI ESG Ratings "A" Upgraded for 4 consecutive years, 2019-2022</li> </ul>
	<ul style="list-style-type: none"> <li>S&amp;P Global CSA adopted in DJSI</li> <li>2023 Sustainability Yearbook Member</li> <li>Top 10% S&amp;P Global ESG Score, Construction Materials Industry</li> <li>Industry Mover</li> </ul>
	<ul style="list-style-type: none"> <li>Sustainalytics "ESG Top-Rated Company"</li> <li>The highest rating for 4 consecutive years</li> </ul>
	<ul style="list-style-type: none"> <li>Taiwan Ratings "twA+" / Liquidity Assessment: robust</li> <li>Greater China Business Sustainability Index "Pace-setter"</li> <li>TIP Customized Taiwan Dividend Highlight Index Constituent</li> <li>FTSE4Good TIP Taiwan ESG Index Constituent</li> </ul>
	<ul style="list-style-type: none"> <li>Top 5% in the 9th Corporate Governance Evaluation of TWSE</li> <li>ESG Investing Best Sustainability Reporting: Basic Materials - Top 3</li> </ul>
	<ul style="list-style-type: none"> <li>Taiwan Index Company's Taiwan Sustainability Evaluation ranks in the top 25% in the environmental module assessment</li> </ul>
Sustainability Initiatives	<ul style="list-style-type: none"> <li>Member of Science-Based Targets initiative (SBTi)</li> <li>TCFD Supporter</li> </ul>
	<ul style="list-style-type: none"> <li>Member of TNFD Pilot Program</li> <li>EP100 Member</li> <li>The 1st large manufacturer in Taiwan</li> </ul>
	<ul style="list-style-type: none"> <li>Business for Nature</li> <li>Make it Mandatory &amp; Call to Action signed</li> <li>Founding partner of BCSD Nature Positive Initiative</li> </ul>
	<ul style="list-style-type: none"> <li>Taiwan Alliance for Net Zero Emission</li> <li>"Green Mark" Net-Zero Label</li> </ul>
Sustainability Recognitions	<ul style="list-style-type: none"> <li>The 19th CSR and ESG Awards of Global View Monthly in 2023 Honor of the Model Award of Low-carbon Operations</li> </ul>
	<ul style="list-style-type: none"> <li>The 18th CSR and ESG Awards of Global View Monthly in 2022</li> <li>First Prize" of Traditional Industry</li> <li>First Prize" of Environmental Friendly Project</li> </ul>
	<ul style="list-style-type: none"> <li>No. 3 in 2022 CommonWealth Excellence in Corporate Social Responsibility</li> </ul>
	<ul style="list-style-type: none"> <li>The 15th TCSA in 2022</li> <li>Top 10 Sustainability Enterprise Paradigms</li> <li>Sustainability Report Platinum Award</li> <li>Sustainability Performance Awards in Circular Economy, Growth through Innovation, Social Inclusion, Information Security, etc.</li> </ul>
	<ul style="list-style-type: none"> <li>2022 BSI Sustainability Resilience Award - Pioneer</li> <li>2022 Best Taiwan Global Brands</li> <li>2022 Taiwan Best-in-Class 100</li> <li>HR Asia 2022 Best Companies to Work for in Asia</li> <li>Taiwan iSports, Ministry of Education</li> <li>Top 10 Circular Economy Manufacturing Pioneers (DailyView)</li> <li>[TCC Corporate Sustainable Development Committee]</li> <li>The 15th 100 MVP Managers Super MVP Category, MANAGERToday</li> <li>[TCC DAKA] No. 5 in the Top 10 Emerging Tourism Factory (DailyView)</li> <li>[Indigenous Residents in Taibai Mountains]</li> <li>"Top 10 Sustainable Micro-Movie" in the 2022 Taipei Golden Eagle Micro Movie Festival</li> <li>Asteroid No. 526460 named "Ceciliakooen"</li> <li>NHOA.TCC Charging Services recognized as LINE Official Account Success Case in Taiwan</li> </ul>



Green Certifications	<ul style="list-style-type: none"> <li>• TCC Hoping Plant</li> <li>• Product Award, Outstanding Award, and Sustainable Category Special Award from the 3rd Taiwan Circular Economy Awards</li> <li>• Golden Award in the Circulation Group in 2022 EPA Resource Circulation Outstanding Enterprises</li> </ul>
	<ul style="list-style-type: none"> <li>• TCC Suao Plant</li> <li>• Outstanding Enterprises in Industrial GHG Emissions Reduction 2022 from IDB, MEA</li> <li>• 2022 Low-carbon Product Awards - Outstanding Award from EPA Taiwan</li> </ul>
	<ul style="list-style-type: none"> <li>• Hanben Ocean Station</li> <li>• Golden Award, 2022 Outstanding Public Toilet Ratings of Yilan County</li> </ul>
	<ul style="list-style-type: none"> <li>• Hoping Industrial Port</li> <li>• Certified Environmental Education Facility, EPA Taiwan</li> <li>• TCC Taipei, Taichung, Dadu, Chiayi, Tainan, Kaohsiung RMC Plants</li> <li>• 2021 Excellence in Green Procurement from EPA Taiwan</li> <li>• 2022 Outstanding Enterprises in Green Procurement Performance of New Taipei City for TCC Taipei RMC Plant</li> </ul>

## 1.5. Supporting the UN Sustainable Development Goals ("SDGs")

SDG	Approaches at TCC
SDG4 - Quality Education 	EARTH HELPER Carbon Reduction Parent-Child Bankbook, Cement Academy, and Mine Environment Education
SDG7 - Affordable and Clean Energy 	For everyone to access the benefits of renewable energy, TCC develops renewable energy and builds energy storage systems to resolve the issue of intermittency in renewable energy supply. In addition, TCC invests in battery R&D and installation of chargers to break the distance limit for renewable energy access. Finally, to solve the predicament of inability to procure green energy by the small and medium-sized enterprises, Energy Helper TCC Corporation was established for all to have the right to renewable energy access.
SDG8 - Decent Work and Economic Growth 	TCC emphasizes the local development at the Heping Village, establishing TCC DAKA to provide whole new industries, types of works, and opportunities to the Heping area.
SDG9 - Industry, Innovation and Infrastructure 	TCC has integrated core capabilities to develop low-carbon products, Ultra-High Performance Concrete (UHPC), and introduce 3D printed construction materials. Concurrently, TCC is promoting carbon capture technologies, including pure oxygen combustion techniques.
SDG11 - Sustainable Cities and Communities 	Leveraging our own industrial characteristics, TCC assists the governments and enterprises in waste treatment.

SDG	Approaches at TCC
SDG12 – Responsible Consumption and Production 	Zero waste action on the plants Progress on the EARTH HELPER initiative
SDG13 – Climate Action 	With the TCFD framework introduced, TCC identifies risks and opportunities related to climate change and adopts coping strategies to elevate corporate resilience.
SDG14 – Life Below Water 	Attaching great importance to marine ecology, TCC transplants the coral fragments broken by waves outside the embankment of Hoping Industrial EcoPort in Hualien onto artificial reefs to restore coral ecology.
SDG15 – Life on Land 	TCC conducts “Ho-Ping Ark Ecological Program,” which is the first in Taiwan for comprehensive soil research, to study the materials needed for the ecological sustainability applications in the future through long-term monitoring of biodiversity in soil.
SDG17- Partnerships for the Goals 	TCC emphasizes international partnership for collective development and innovation to develop low-carbon cement.

## 2. Green Financing Framework

### 2.1. Rationale for Establishing a Green Financing Framework

At TCC, we are strongly committed to enhancing sustainability in our entire operations and value chain. This Green Financing Framework (the "Framework") is an important step in aligning our financing strategy with our sustainability commitments, as outlined in our sustainability strategy. The Framework will also offer a further opportunity to communicate with investors and other market participants on our commitments to creating shared value for the business, society and the environment. The aim will also be to diversify TCC's investor base and engage in a sustainable dialogue with socially responsible investors.

### 2.2. Alignment with Market Principles

The Framework is aligned with the Green Bond Principles<sup>2</sup> ("GBP") published in June 2021 (with June 2022 Appendix 1) as administered by the International Capital Market Association ("ICMA") as well as the Green Loan Principles<sup>3</sup> ("GLP") published in February 2023 as administered by the Loan Market Association ("LMA").

The Framework therefore adopts the four core components of the ICMA GBP and LMA GLP, which include:

- Use of Proceeds
- Process for Project Evaluation and Selection
- Management of Proceeds
- Reporting

The Framework also follows the key recommendation of the ICMA and LMA principles with regards to External Reviews.

This Framework has also been developed in line with the four key disclosure guidelines of the Climate Transition Finance Handbook 2023 as published by the ICMA<sup>4</sup>. In addition, the Framework, along with TCC Group's roadmap and strategies for net zero by 2050 and our 2025 Targets validated by the SBTi according to the Well Below 2°C Scenario illustrate TCC's:

- Climate transition strategy and governance;
- Business model environmental materiality;
- Science-based transition strategy, including targets and pathways; and
- Implementation transparency

This Framework may be updated from time to time to ensure continued alignment with voluntary market practices, emerging standards and classification systems. Any updated version of this Framework will either maintain or improve the current levels of transparency and reporting disclosures, including the corresponding External Review.

### 2.3. Use of Proceeds

Under this Framework, TCC can issue Green Financing Instruments, proceeds of which will be exclusively allocated to Green Projects as described further in this Use of Proceeds section. Green Financing Instruments may include bonds, convertible bonds, loans and other types of financing instruments.

An amount equivalent to the net proceeds from the issuance of Green Financing Instruments will be used to finance or refinance, in part or in full, Eligible Green Projects that meet the Eligibility Criteria set out in this

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<sup>2</sup> [ICMA Green Bond Principles \(GBP\) 2021](#) (with June 2022 Appendix 1)

<sup>3</sup> [LMA Green Loan Principles \(GLP\) 2023](#)

<sup>4</sup> [ICMA Climate Transition Finance Handbook 2023](#)

Framework. Eligible Green Projects may include assets, capital expenditures, operational expenditures including research & development expenses, and/or equity investments into pure play companies<sup>5</sup>.

Under the Framework, TCC and/or its subsidiaries, joint ventures and associates, including joint ventures entered into by its subsidiaries intend to use proceeds from Green Financing Instruments to finance or refinance Eligible Green Projects. For all long-term investments and capital expenditures, TCC intends to allocate all the proceeds aligning with our core businesses, associated with carbon reduction and green energy addition (CRGA) activities, including cement/concrete carbon reduction, renewable power generation, resource recycling, waste treatments, battery production, battery energy storage systems, charging stations, and electricity trading.


TCC intends to allocate all the proceeds from Green Financing Instruments to such Eligible Green Projects within three calendar years following issuance. For existing Eligible Green Projects, TCC has set a look-back period, limiting the allocation of proceeds to expenditures for projects implemented in the three calendar years preceding the issuance of Green Financing Instruments.

In the case of investments made via TCC's subsidiaries, joint ventures and associates, including joint ventures entered into by its subsidiaries, only the TCC's share of the investments will be applicable as an allocation to the Eligible Green Projects.

In the process of considering investments for allocation under the Green Financing Instruments, TCC will only allocate proceeds to the portion of the Eligible Green Projects that have not been already financed and/or refinanced by one or several other issuers (TCC's subsidiaries and owned entities, including joint ventures entered into by its subsidiaries) under their respective Green or Sustainable Finance Frameworks.






Expenditures related to cement manufacturing in the Alternative Fuels and Materials; Circular Economy Adapted Products, Production Technologies and Processes; Energy Efficiency; Pollution Prevention and Control; Sustainable Water and Wastewater Management; Renewable Energy categories will be limited to facilities that are expected to result in a carbon intensity below 0.585 tCO<sub>2</sub>e/t of cementitious product<sup>6</sup>.

## a) Eligible Green Projects









Eligible Green Category	Eligibility Criteria	Mapping to TCC Core Business
<b>Alternative Fuels and Materials</b>  Environmental Objective: Transition to a Circular Economy  	Financing related to the development and acquisition of: <ul style="list-style-type: none"> <li>Alternative fuels (such as bioenergy, solid recovered fuel, agricultural residual materials); and</li> <li>Alternative raw materials (such as calcium fluoride sludge)</li> </ul> These expenditures will reduce consumption, mining and procurement of natural raw materials such as coal, limestone, clay and silica sand.	Resource Recycling

<sup>5</sup> Equity participations in entities where at least 90% of the revenues can be attributed to one or more of the Eligible Green Project Categories described in Use of Proceeds section of this Framework. Financing provided by TCC to such business can be considered as allocated towards Eligible Green Projects even if the financing is used for general purposes, so long as the financing does not fund activities listed in the exclusions section set out below.

<sup>6</sup> The carbon intensity, which includes scope 1 and 2 emissions, aims at aligning with credible decarbonization pathways (such as the Transition Pathway Initiative) and TCC's decarbonization pathway to reach net zero by 2050. By limiting the use of proceeds to these facilities, the financing is expected to contribute to substantial climate change mitigation and is likely to avoid a lock-in of carbon-intensive assets.

Eligible Green Category	Eligibility Criteria	Mapping to TCC Core Business
<b>Circular Economy Adapted Products, Production Technologies and Processes</b>  Environmental Objective: Transition to a Circular Economy  	<p>Financing related to the development of waste co-processing and collaboration with industry partners to build a sustainable ecosphere through:</p> <ul style="list-style-type: none"> <li>Collection, management and recycling of wastes</li> <li>Conversion into harmless reusable resources and alternative cement raw materials and fuels</li> </ul>	Resource Recycling
<b>Energy Efficiency</b>  Environmental Objective: Climate Change Mitigation   	<p>Financing related to equipment and process enhancements, measures to increase energy efficiency that could result in increased energy efficiency based on our best efforts to ensure projects achieve at least a 30% energy efficiency improvement, including investments in energy efficiency systems, lighting upgrades, smart devices to optimize energy consumption, energy-efficient ventilation units.</p> <p>Expenditures related to utilization of heat energy from cement rotary kilns to generate electricity such as installations of waste heat electricity generation systems and flash distillation technology to enhance heat recovery efficiency and reducing purchased electricity.</p>	Low-Carbon Construction Materials
<b>Pollution Prevention and Control</b>  Environmental Objective: Pollution Prevention and Control  	<p>Financing related to investments in technology and related services to create a sustainable environment through reduction of environmental pollution, including:</p> <ul style="list-style-type: none"> <li>Technology to eliminate or significantly mitigate environmental pollutants in water, air, and soil (such as NOx control technologies and air quality monitoring stations)</li> <li>Waste prevention, waste reduction, waste recycling</li> </ul> <p>Financing projects aimed at reducing CO2 emissions and other major air emissions including the R&amp;D and installation of Carbon Capture Utilization and Storage (CCUS) systems in the cement manufacturing process aimed at reducing and controlling GHG emissions.</p>	Low-Carbon Construction Materials
<b>Sustainable Water and Wastewater Management</b>  Environmental Objective: Sustainable Use and Protection of Water and Marine Resources  	<p>Financing related to sustainable water management projects, including:</p> <ul style="list-style-type: none"> <li>Water efficiency and water-saving solutions, such as increasing the amount of wastewater treated and reused, water use control and rainwater harvesting</li> </ul>	Low-Carbon Construction Materials



Eligible Green Category	Eligibility Criteria	Mapping to TCC Core Business
<b>Renewable Energy</b>  Environmental Objective: Climate Change Mitigation   	<p>Financing related to the construction, development, acquisition, maintenance, and operation of renewable energy including solar, wind, geothermal, biomass, and marine with direct life cycle emissions of less than 100gCO<sub>2</sub>e/kWh.</p> <p>Financing related to the design, development, manufacture, installation and maintenance of the following projects:</p> <ul style="list-style-type: none"> <li>Solar-plus storage system which consists of solar PV and battery storage, aimed at transforming intermittent energy generated from solar PV into a dispatchable power supply</li> <li>Modular utility-scale battery storage systems to provide grid stabilization services and enable the integration of more renewable energy into the grid</li> <li>Industrial microgrids that combine distributed renewable energy sources, storage capacity and conventional backup to supplement or replace grid supply for both single and multiple users</li> </ul>	Clean Energy  Low-Carbon Construction Materials
<b>Clean Transportation</b>  Environmental Objective: Climate Change Mitigation   	<p>Financing related to the design, development, construction, acquisition, operation, maintenance and upgrades of zero-carbon and low-carbon transport vehicles, infrastructure and e-mobility solutions:</p> <ul style="list-style-type: none"> <li>Private and public charging solutions for electric vehicles (EV)</li> <li>Advanced charging technology that enables the use of parked electric vehicles as energy storage systems for grid stabilization</li> <li>EV charging infrastructure, equipment and stations</li> <li>Infrastructure projects associated with lower-carbon and electric vehicles</li> <li>Manufacturing facilities and manufacture of raw materials to produce devices and batteries for electric vehicles</li> <li>TCC's own low-carbon transport fleet</li> </ul>	Clean Energy
<b>Green Buildings</b>  Environmental Objective: Climate Change Mitigation; Climate Change Adaptation   	<p>Energy-efficient buildings which have obtained or will obtain:</p> <ul style="list-style-type: none"> <li>Minimum certification for e.g. "BREEAM Excellent", "LEED Gold", "EEWH Gold" or similar recognized standard</li> </ul> <p>Investments and expenditures relating to the renovation of buildings leading to a reduction of primary energy demand of at least 30%; or achieving one of the above-mentioned green building certification levels, as a result of retrofit.</p>	Clean Energy  Low-Carbon Construction Materials  Resource Recycling
<b>Environmentally Sustainable Management of Living Natural Resources and Land Use</b>  Environmental Objective: Protection and Restoration of Biodiversity and Ecosystems   	<p>Financing related to the maintenance and sustainable management of natural resources<sup>7</sup> such as land, water, air, minerals, forests, wild flora and fauna, including:</p> <ul style="list-style-type: none"> <li>Protection of the Indigenous species (such as coral restoration and conservation, restoration of local species and habitats by ecosystem rebuilding and modelling to address ecology challenges)</li> <li>Environmentally sustainable forestry, including afforestation or reforestation, and preservation or restoration of natural landscapes and resources</li> </ul>	Biodiversity Initiatives

<sup>7</sup> Expenditures will exclude remediation of any negative environmental impact of TCC's carbon-intensive operations.

## **b) Exclusions**

For the avoidance of doubt, financing related to the following activities are excluded from the financing by TCC's Green Financing Instruments:

- Fossil fuel energy; transportation activities that are dedicated to the transport of fossil fuels
- Investments related to pure Internal Combustion Engines (ICE)
- Nuclear energy
- Large hydropower projects with capacities > 20MW
- Gambling
- Tobacco
- Alcohol
- Weapons

## **2.4. Process for Project Evaluation and Selection**

TCC has established a Green Finance Committee (the "Committee") with responsibility for governing the selection and monitoring of the Eligible Green Projects.

The Committee will be chaired by the CEO and consists of senior members of the following teams: Finance, Corporate Sustainability, Operation. The Committee will be supported by members of sustainability teams, finance teams, and any other teams from across TCC, its divisions and its operating businesses, as appropriate. The Committee will meet on a quarterly basis, and as required for specific issuances.

### *Role of the Green Finance Committee*

The Committee is the oversight mechanism for:

- Reviewing, selecting and validating the Eligible Green Projects:
  - Members from different Project teams will quarterly recommend Eligible Green Projects to the Committee that meet the eligibility criteria.
  - The Committee will further screen and assess that the Eligible Green Projects meet the eligibility criteria laid out in section 2.3 of this Framework, as well as TCC's Sustainability Policies and Procedures;
- Annually reviewing the list of Eligible Green Projects against the eligibility and exclusionary criteria. If a project no longer meets the eligibility criteria set forth in this framework, the Eligible Green Project will be removed from the register and replaced as soon as a substitute has been identified;
- Overseeing, approving and publishing the Allocation and Impact reporting, including external assurance statements;
- Monitoring the on-going market evolution, particularly in relation to disclosure and reporting, to ensure TCC is in-line with market practices.

### *Identification and Mitigation of Environmental and Social Risks*

TCC has put in place a strong evaluation and selection process, that leverages its existing sustainability and risk management framework, to ensure the mitigation of potential environmental and social risks associated with the Eligible Green Projects. This is in addition to ensuring that Eligible Green Projects meet applicable national and international environmental and social standards and regulations.

The Risk Management Committee is responsible for the identification and management of risks associated with corporate operations, including the physical, transition, and emerging risks potentially arising from climate change, and leads the planning for relevant countermeasures. The Committee reports to the Company's Board of Directors on the risk management status annually. The Board adopted "Risk Management Policy and Principles" and "Risk Management Committee Charter" in 2020, to contain the risks potentially resulted from businesses thereof to a tolerable extent and to establish the risk management principles. For further details on risk management, please refer to TCC's sustainability report and/or TCFD report.

## **2.5. Management of Proceeds**

TCC's treasury team will manage the allocation of an amount equivalent to the net proceeds of its Green Financing Instruments on an aggregated basis for multiple green financing instruments (portfolio approach). To manage this process, TCC will establish a Green Financing Register which will be reviewed quarterly by Treasury.

TCC will strive to achieve a level of allocation to the Eligible Green Project Portfolio that matches or exceeds the balance of net proceeds of its outstanding Green Financing Instruments.

Pending full allocation of an amount equal to the net proceeds of outstanding Green Financing Instruments, the unallocated proceeds may be used for the repayment of outstanding indebtedness or held in temporary investments such as cash, cash equivalents and/ or other liquid marketable investments in line with TCC's treasury management policies, and will exclude any investments in activities listed in section 2.3.b) Exclusions.

## **2.6. Reporting**

For each Green Financing Instrument, TCC commits to publish on its website an allocation and impact report annually, starting one year after issuance for the life of the Green Financing Instrument(s).

### **a) Allocation Reporting**

TCC will provide information on the allocation of the net proceeds of its Green Financing Instruments on its website. The information will contain at least the following details:

- Net proceeds of outstanding Green Financing Instruments;
- Amount of net proceeds allocated to Eligible Green Projects as defined in the Use of Proceeds section of this Framework;
- Subject to confidentiality considerations, a list of the Eligible Green Projects financed through TCC's Green Financing Instruments, including a description of the projects and their geographical distribution where feasible;
- The proportional allocation of proceeds between existing projects (refinancing) and new projects;
- The remaining balance of unallocated proceeds, if any.

### **b) Impact Reporting**

TCC intends to align, on a best effort basis, with the reporting recommendations as outlined in ICMA's "Handbook - Harmonized Framework for Impact Reporting (June 2023)"<sup>8</sup>.

TCC will provide impact reporting at the Eligible Green Project Category level, including project level information where possible, which may include the following estimated Impact Reporting Metrics:

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<sup>8</sup> ICMA, [Handbook - Harmonized Framework for Impact Reporting](#) (June 2023)

Eligible Green Category	Potential Impact Indicators
Alternative Fuels and Materials	<ul style="list-style-type: none"> <li>Amount and type of alternative raw materials/ fuels used</li> </ul>
Circular economy adapted products, production technologies and processes	<ul style="list-style-type: none"> <li>Volume of used products collected from customers for recycling</li> <li>% reduction in carbon intensity in CO2 emissions intensity</li> </ul>
Energy Efficiency	<ul style="list-style-type: none"> <li>Annual energy savings in MWh/GWh (electricity) and GJ/TJ (other energy savings)</li> <li>Annual GHG emissions reduced/avoided in tonnes of CO2e</li> </ul>
Pollution Prevention and Control	<ul style="list-style-type: none"> <li>Amount of waste that is prevented, minimised, reused or recycled before and after the project in % of total waste and/ or in absolute amount in tonnes p.a.</li> <li>Amount of CO2 emissions captured/reduced/avoided (in tCO2 eq./year)</li> <li>Reduction of air pollutants: particulate matter (PM), sulphur oxides (SOx), nitrogen oxides (NOx), carbon monoxide (CO), and non-methane volatile organic compounds (NMVOCs)</li> </ul>
Sustainable Water and Wastewater Management	<ul style="list-style-type: none"> <li>Annual water savings (m3/a, reduction in water use in %)</li> <li>Annual volume of wastewater treated, reused or avoided (m3/a and p.e./a and as %)</li> </ul>
Renewable Energy	<ul style="list-style-type: none"> <li>Annual CO2 emissions reduced/avoided (in tCO2 eq./year)</li> <li>Annual connection of renewable energy generation in MWh/GWh (electricity)</li> </ul>
Clean Transportation	<ul style="list-style-type: none"> <li>Annual GHG emissions reduced/avoided in tCO2-e p.a.</li> <li>Amount of energy saved through production of devices and batteries for electric vehicles</li> <li>Number of clean vehicles deployed</li> <li>Estimated reduction in fuel consumption</li> </ul>
Green Buildings	<ul style="list-style-type: none"> <li>Certification Standards</li> <li>Type of scheme, certification level</li> <li>Annual GHG emissions reduced/avoided in tonnes of CO2 equiv/a</li> <li>Annual energy use reduced/avoided (kWh/a)</li> </ul>
Environmentally Sustainable Management of Living Natural Resources and Land Use	<ul style="list-style-type: none"> <li>Area covered by sustainable land and water resources management practices</li> <li>Maintenance/safeguarding/increase of natural landscape area (including forest) in km<sup>2</sup> and in % for increase</li> <li>GHG emissions removed/reduced/avoided CO2 equiv/a</li> </ul>

## 2.7. External Reviews

TCC's Green Financing Framework is supported by the following external reviews:

### a) Second Party Opinion ("SPO")

TCC has appointed Sustainalytics to provide a Second Party Opinion on the Green Financing Framework, to confirm alignment with the ICMA 2021 Green Bond Principles and LMA 2023 Green Loan Principles. The Second Party Opinion is available on TCC's website<sup>9</sup>.

### b) Post-Issuance External Verification on Reporting

TCC will request on an annual basis, starting one year after issuance and until full allocation, an assurance report on the allocation of Green Financing Instrument proceeds to Eligible Green Projects, provided by an external review provider.

## 3. Amendments to this Framework

TCC will review this Framework from time to time, including its alignment to updated versions of the relevant Principles as and when available in the market. Any major update will be subject to the review of Sustainalytics or any such other qualified provider of Second Party Opinion.

<sup>9</sup> [TCC Website](#)

## Disclaimer

The Framework is intended to provide non-exhaustive, general information. The information and opinions provided for in the Framework as at the date of this document are subject to change without notice. TCC does not assume any responsibility or obligation to update or revise any such statements, regardless of whether these statements are affected by the results of new information, future events or otherwise.

The Framework contains certain statements which are not historical fact and constitute "forward-looking statements". Although TCC believes that the expectations reflected in the forward-looking statements are reasonable, TCC gives no assurance that such expectations will prove correct. In addition, the forward-looking statements are subject to numerous factors, risks and uncertainties that are difficult to predict and generally beyond TCC's control, which could cause actual results and events to differ materially from those expressed or projected in the forward-looking statements.

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