

TCC GROUP 2020 Q3 INVESTORS' CONFERENCE



TCC Group Target

Cement is the Adhesive of Human Civilization

Stable Profits

Sustainability

Sound Financial Management

Diversification/ Internationalization

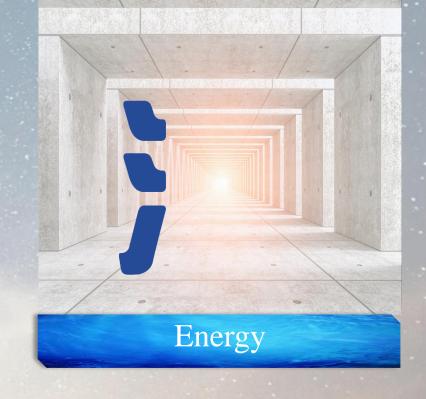
CO₂ Reduction

ESG

The New Low-Carbon TCC (3 Core Businesses)



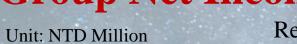


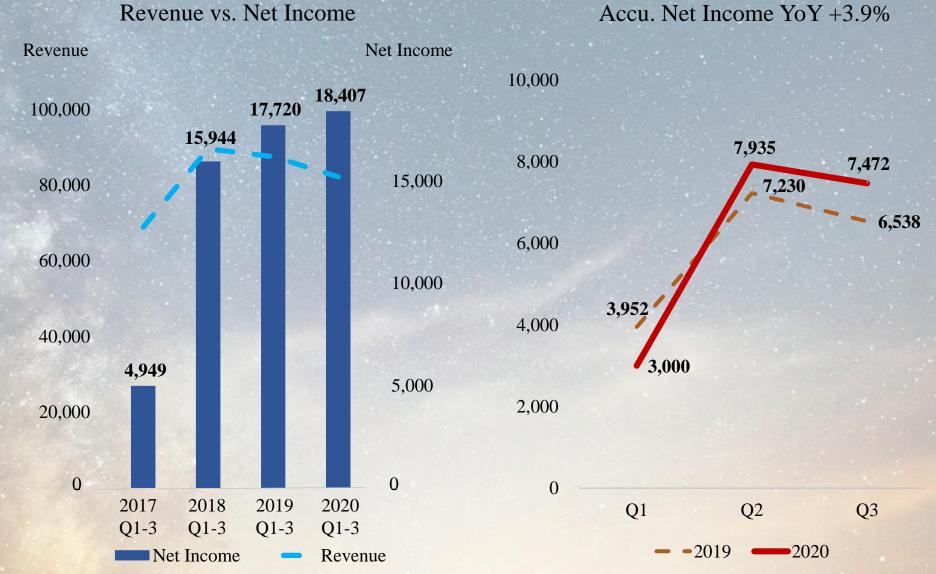


- Internationalization
- Carbon and Emission Reduction
- Stable Profits

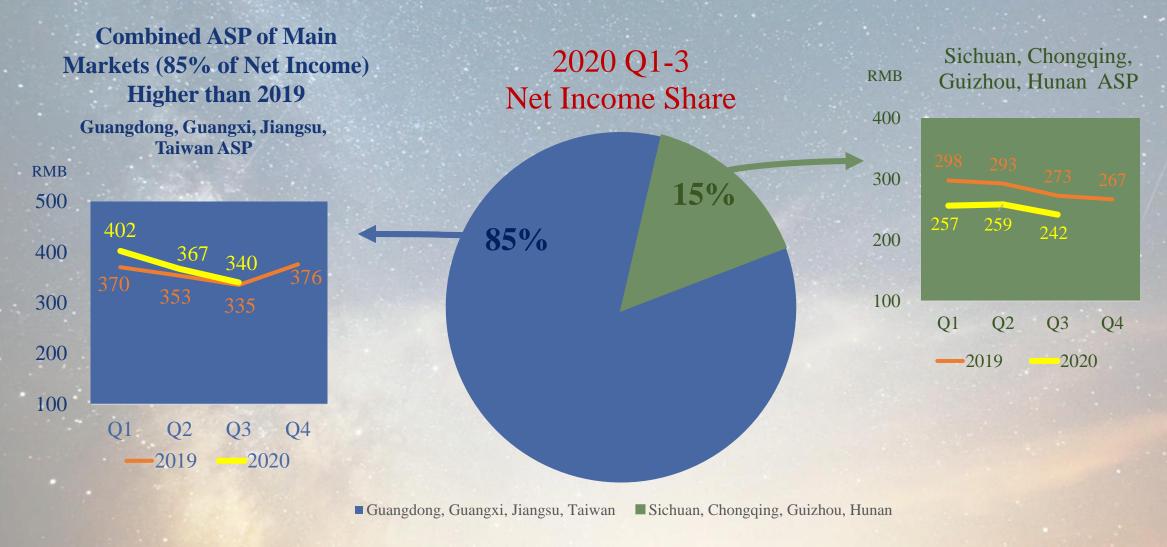
- Helping Society: Household/Industrial/Toxic Waste
- Carbon Reduction: Alternative
 Material & Fuel
- Renewable Energy: Wind, Solar, Geothermal
- Battery
- Energy Storage & Smart Grid

Group Net Income

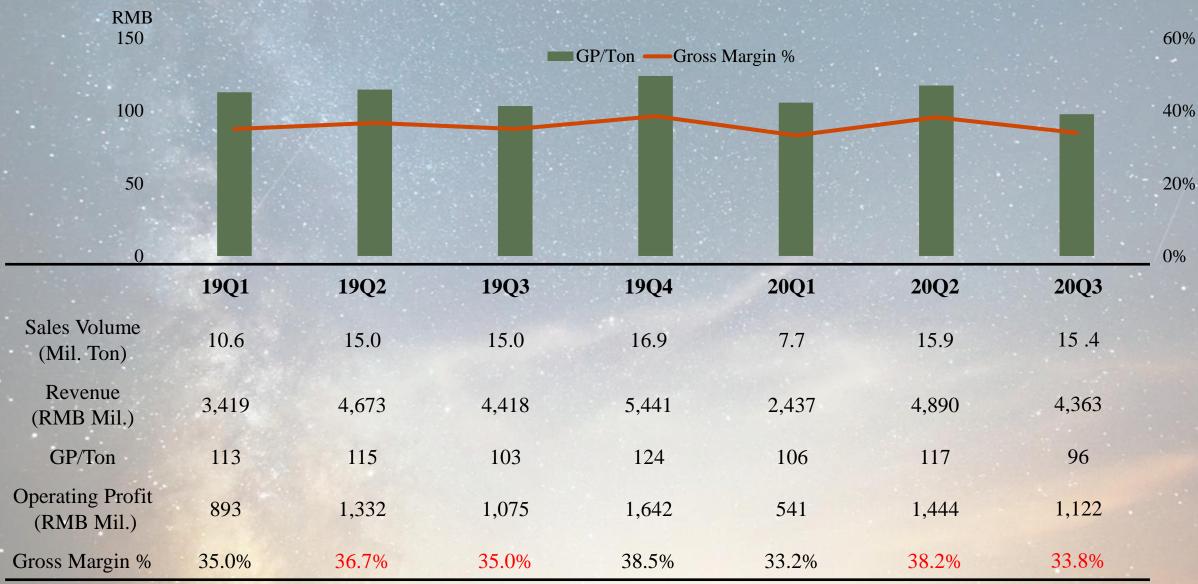




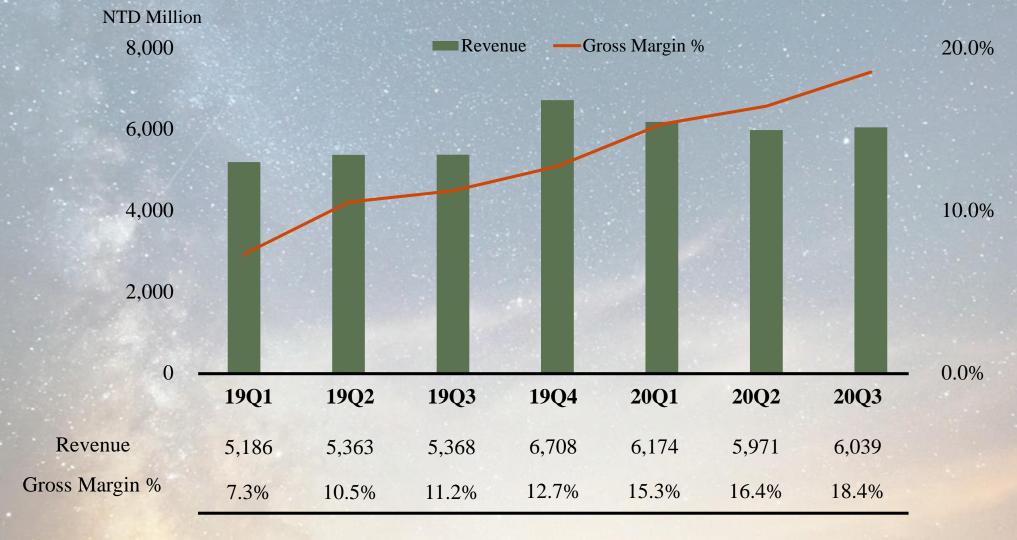
TCC Greater China Cement ASP and Net Income



Mainland China Cement



Taiwan Cement and RMC



Gross Margin % = Gross Margin/Revenue
Note : Due to different sales unit, no profit per unit provided

Zero Emission, Zero Waste Water Environmental RMC Plants

Taipei Plant

Hsinchu Plant





RMC Plants Join Carbon Reduction

- Carbon Footprint Verification: First RMC plant to obtain BSI 3000psi Verification
- Renewable Energy: Kaohsiung RMC Plant Rooftop Solar Panels (38KWh), October 2020 Installation of Other 23 Plants (Under Planning)







Product Carbon Footprint

Verification Opinion Statement

This is to verify that:

Taiwan Cement Corporation Taichung Plant No. 785, Sec. 3, Zhongqing Rd. Daya Dist. Taichung City 428437 台灣水泥股份有限公司 台中水泥製品廠 臺灣 台中市 大雅區 中清路三段 785 號

Iolds Statement No:

As a result of carrying out the verification of product life cycle greenhouse gas emissions, it is the opinion of BSI with reasonable assurance that:

- The product carbon footprint with the declared unit of one cubic meter of 3000 psi Ready-Mixed Concrete is 233.598 kilograms of CO₂ equivalent.
- No material misstatements in this product life cycle greenhouse gas emission statement were revealed.

The product life cycle GHG data quality was verified to be acceptable against the requirements of ISO 14067-2018.

This statement shall be valid for a maximum period of two years after the latest issue date on this certificate. Should there be a change in the life cycle of the product whose GHG emissions are being assessed, the validity of this opinion statement will cease.

Managing Director BSI Talwan, Peter Pu

For and on behalf of BSI:

Originally Registration Date: 2020-08-06 Latest Revision Date: 2020-08-06 Effective Date: 2020-08-06 Expiry Date: 2022-08-05

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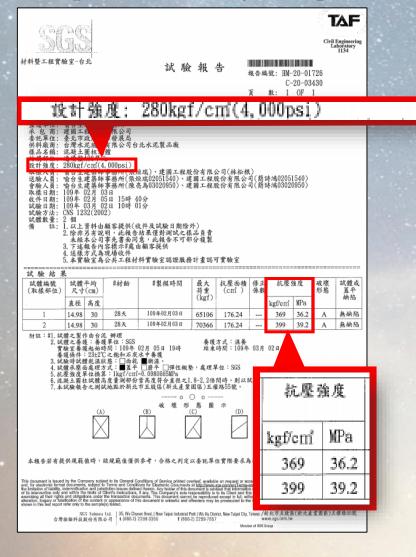


...making excellence a habit.



RMC Digital Product Résumé

Compressive Strength Report



Product Quality Guarantee



Traceable Résumé on Electronic Receipts

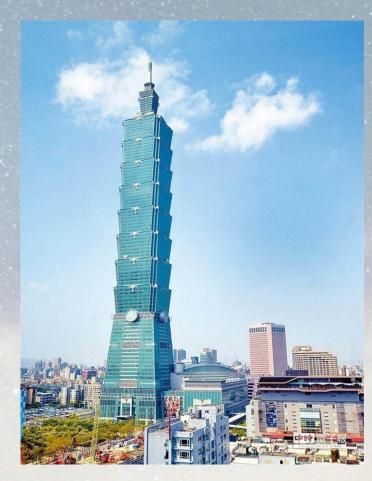


- 1. Transparent and Digitalized Product Information
- 2. Real-Time Résumé Available for Download

Landmarks with TCC Cement



Kaohsiung Marriott Hotel Strength: 12,000PSI



Taipei 101 Strength: 10,000PSI



Taichung Top 1 Global Trade Center Strength: 10,000PSI

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Mainland China Cement Market: Supply & Demand

Cement Sales Volume 2019 vs. 2020

Exception: Q1 Affected by COVID-19
2020 Cement Sales Volume Exceeded 2019



Demand

	<u>%</u>	Amount (2020Q1-3)
1. Investment in Fixed Assets	+0.8%	42.65 Trillion RMB
2. Investment of Real Estate	+5.6%	10.35 Trillion RMB
3. Floor Space of Real Estate Under Construction	+3.1%	8.598 Billion m ²

Supply

Official Policy*

- 1. Continue to ban new capacity
- 2. Modify cement capacity swap rules
- 3. Deploy off-peak production stoppage after 2020
- 4. Exert industry association influence

Mainland China 14th Five-Year Plan and Policy

Economic Target: Construct new development structure and uphold domestic demand expansion

Policy:

- 1. Centralized planning in promoting infrastructure
- 2. Deploy agricultural housing construction actions
- 3. Expand room for investments

Emission and Carbon Reduction Targets:

Carbon dioxide emissions aim to reach peak before 2030, and achieve carbon neutrality before 2060

Policy:

- Continue to reduce emission of major pollutants;
 Reduce carbon emissions steadily after reaching peak
- 2. Accelerate construction of national carbon trading market
- 3. Enhance environmental monitoring and inspection capabilities

🕰 十九届五中全会公报

二〇三五年基本实现 社会主义现代化远景目标

- 我国经济实力、科技实力、综合国力将大幅跃升,经济总量和城乡居民人均收入将再迈上新的大台阶,关键核心技术实现重大突破,进入创新型国家前列:
- 基本实现新型工业化、信息化、<u>城镇化、</u>农业 现代化,建成现代化经济体系:

🚫 十九届五中全会公报

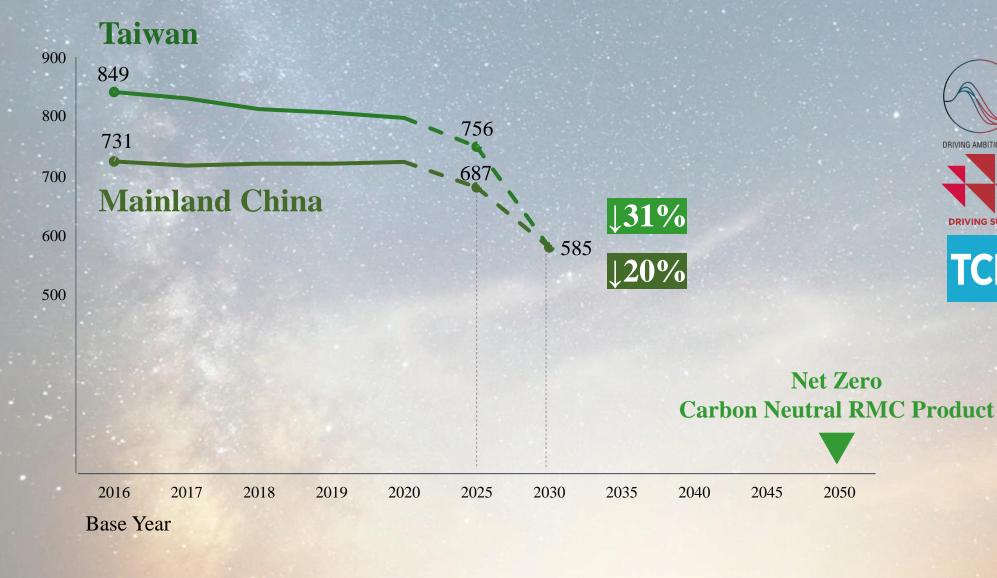
(D)人民日报

"十四五"时期 经济社会发展主要目标

■ 生态文明建设实现新进步,国土空间开发保护 格局得到优化,生产生活方式绿色转型成效显 著,能源资源配置更加合理、利用效率大幅提 高,主要污染物排放总量持续减少,生态环境 持续改善,生态安全屏障更加牢固,城乡人居 环境明显改善;

TCC Group's Roadmap to Carbon Neutrality

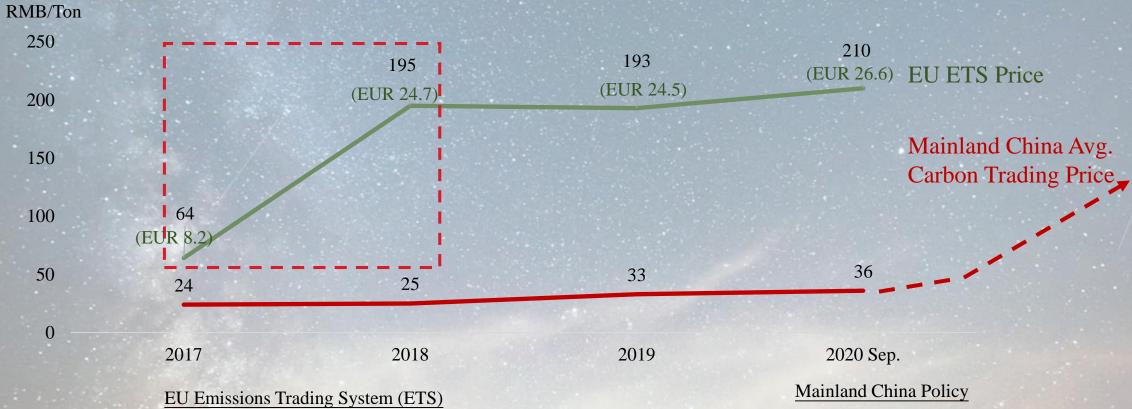
Unit: KG CO₂/Ton of Cementious Material



Carbon Reduction Action Plan 2020-2030

Segment	Project				
 Energy Waste heat recovery to reduce procured electricity by 33%-35% Rotary kiln and cement mill energy saving technology enhancements 					
Matarial	 Waste Treatment/Resource Recycling: 10 million tons in 2025 Alternative Material: Calcium fluoride sludge, steel slag, recycled pellets, calcium carbide slag, non-ferrous metal ash and coal ashetc. 				
Material	Clinker Replacement: Mineral powder, coal ash and nickel ballast powderetc.				
Fuel	 Biomass Fuel Target: 10% by 2025 Full Biomass: Wood chips, tree barks, and other agricultural wastes (such as rice straws and husks) Part Biomass: Waste tires, SRF (RDF), waste rubber products and sludgeetc. 				

Carbon Trading Market



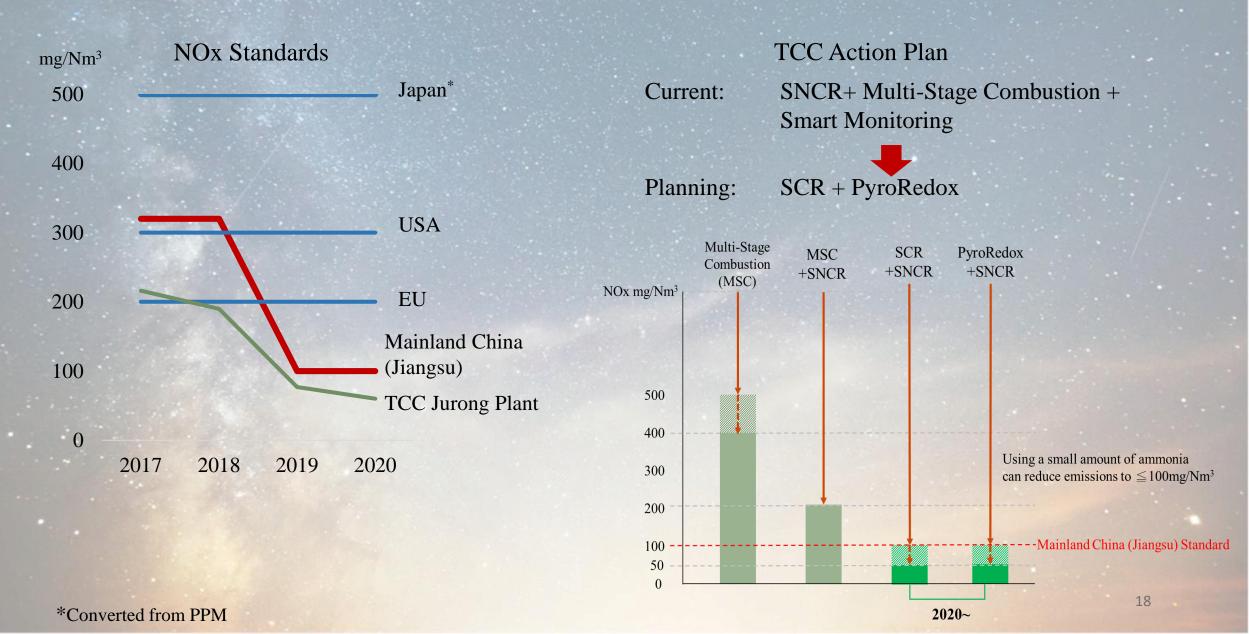
- 1. Announced Market Stability Reserve (MSR) program to buy up excess quota and increased price in 2017
- 2. Accelerated reduction of total emissions and expanded industry coverage
- 3. IMF suggests G20 countries' carbon tax should be US\$75/ton

- 1. Accelerate construction of national carbon trading market
- 2. Enhance environmental monitoring and inspection capabilities

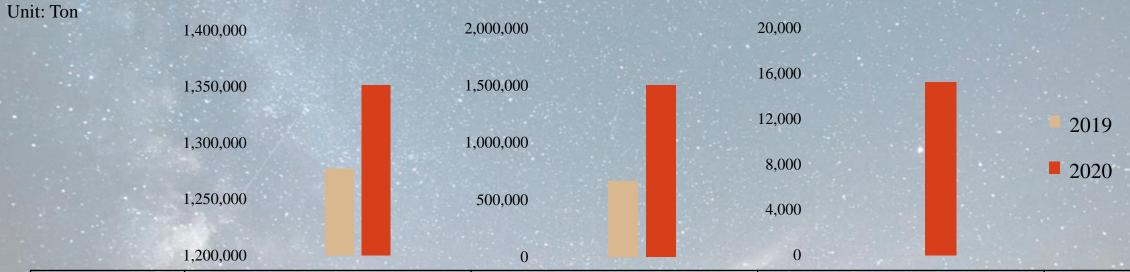
EU Carbon Trade and Carbon Tax

	Carbon Trade	Carbon Tax	Carbon Border Adjustment Mechanism (Under Discussion)
Method	 Set total emission volume Allocate emission quota Use market mechanism to buy/sell carbon quotas 	Tax by emission volume	 When domestic carbon emission regulations are tougher: increase cost of imported goods or provide tax breaks or subsidies to exported goods
Advantage	 Market mechanism decides the best carbon quota price 	Simple taxation procedure	 Prevent "carbon leakage" (industry moving away)
Disadvantage	Price can be volatile due to economic conditions	 Less incentive to reduce emissions Tax rate may not reflect real-time economic condition 	• EU ETS may provide extra carbon rights for importers to purchase and this may affect the operations of the current scheme
Effects on Cement Industry	Cement industry is currently und not included under carbon tax co	der the carbon trading system, hence is overage	 Under discussion, may affect the cement industry

NOx Standard and TCC Action Plan



Waste Treatment

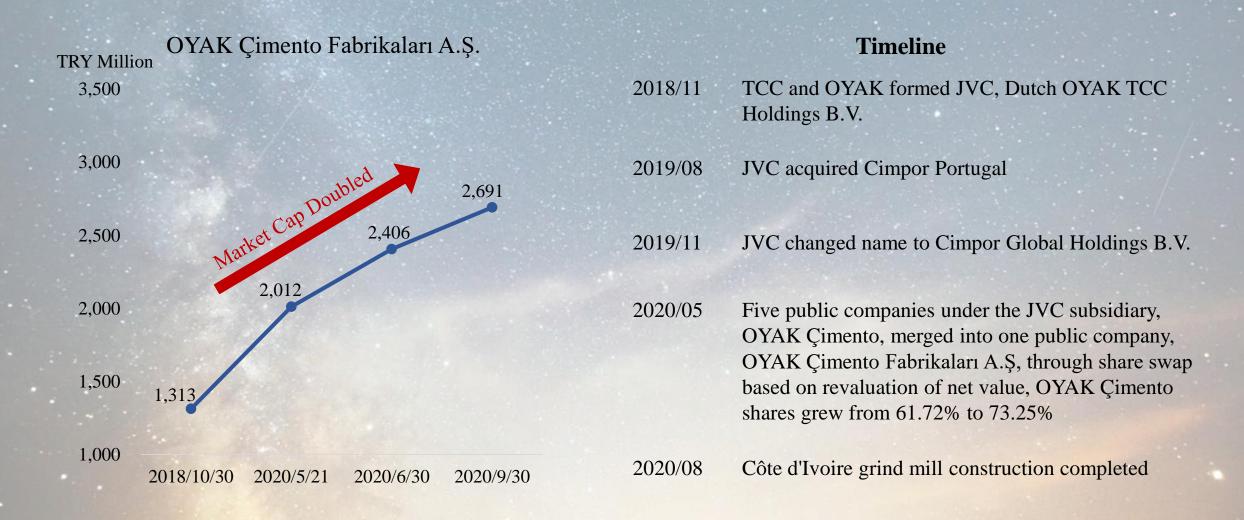


	House	hold Industrial		То	xic	Total	
	2019Q1-3	2020Q1-3	2019Q1-3	2020Q1-3	2019Q1-3	2020Q1-3	2020Q1-3
Taiwan	1,230,712	1,302,380	603,861	749,299	-	-	2,051,679
Mainland China	46,461	48,937	56,457	78,963	-	15,261	143,161
Total Volume	1,277,173	1,351,317	660,318	828,262	-	15,261	*2,194,840

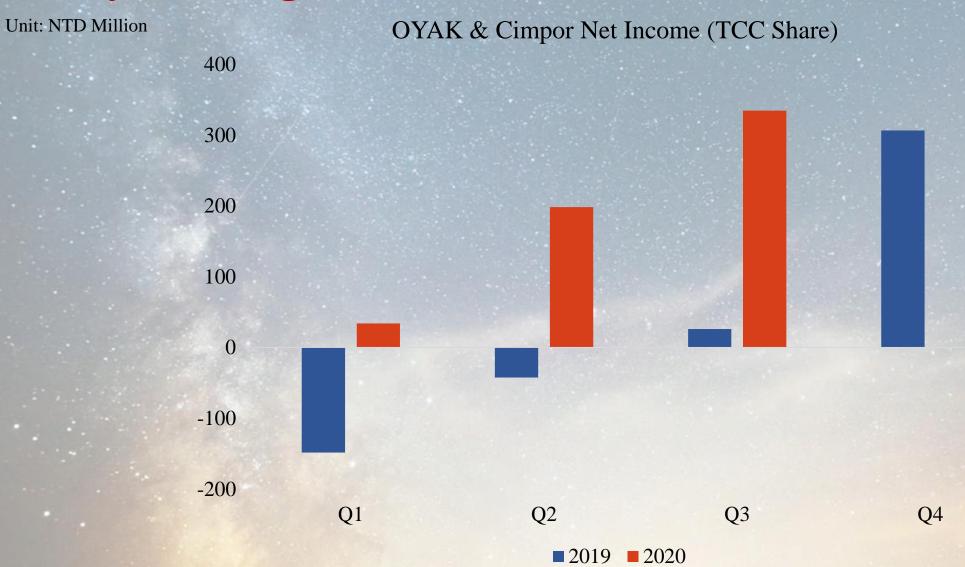
1. Reduce CO₂

2. Lower Costs

Turkey Investment



Turkey + Portugal



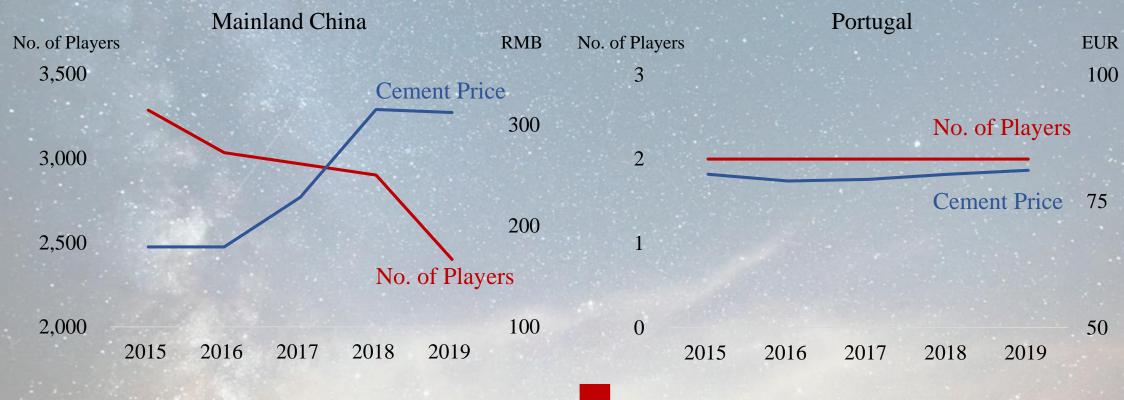
Turkey & Portugal Cement Demand Growth under COVID-19

Unit: Million Tons

Damand	Turkey			Portugal		
Demand	2019Q1-2	2020Q1-2	YoY	2019 Q1-3	2020 Q1-3	YoY
Infrastructure	11.69	11.63	-1%	0.08	0.06	-25%
Housing	7.52	9.34	24%	0.66	0.74	12%
Commercial	1.02	1.46	43%	1.47	1.59	8%
Others	1.37	0.78	-43%	0.42	0.56	33%
Total	21.60	23.21	+7%	2.63	2.95	+12%

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Turkey Cement Market Undergoing Consolidation

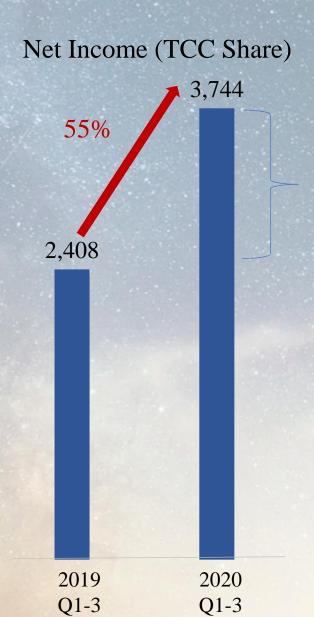




The Future of Turkey
Cement Market

Hoping Power

Unit: NTD Million

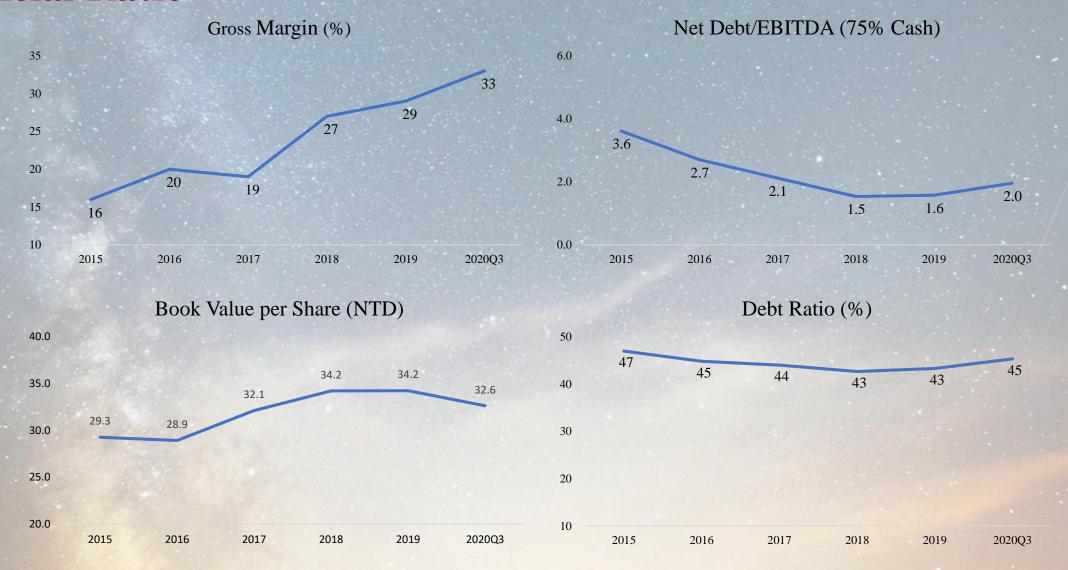


- 1. International Coal Price Dropped in 2020 Q1-3
- 2. Operating Hours Increased by 14% YoY

TPCC Tender and Public Listing Termination

	Reason		Timeline
1.	TPCC suffering from net losses	Nov. 5, 2020	TPCC EGM passed share swap
2.	Chemical segment is not TCC's main business	Nov. 6, 2020	TPCC applies termination of public listing
3.	Public offering termination can increase flexibility in future adjustments	Dec. 2020	TPCC applies termination of public offering
		Jan. 18, 2021	TCC and TPCC complete cash share swap
		Jan. 23, 2021	TCC makes payment for cash share swap

Financial Ratio



EPS and Dividend Policy

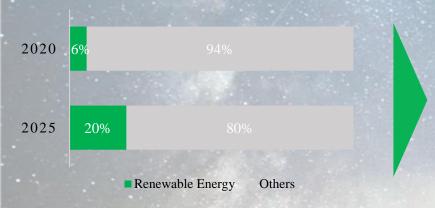


TCC Cash Dividend Payout Ratio Policy: 75%±5% (Exception: COVID-19)

TCC Renewable Energy Development

Policy

2025 Renewable Energy Share 6%→20% (27GW)

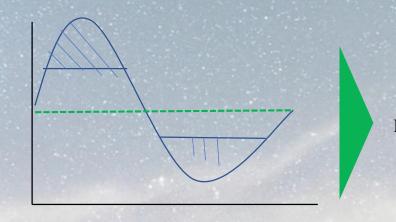


TCC Green Energy (Total:176MW)

		AND THE PARTY OF T	
	On Grid	Constructing	Planning
Solar	14MW	44MW	79MW
Wind	21MW		11MW
Geothermal		-	2MW
Energy Storage AFC		5MW	-

ESS

Stable Grid



Without ESS, renewable energy cannot

Battery Energy Storage System (BESS)

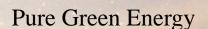
become baseload energy

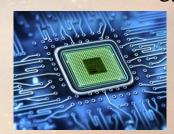
to provide grid stability

Development

TCC Advantage







RE100

Renewable Energy

Fishery + Solar

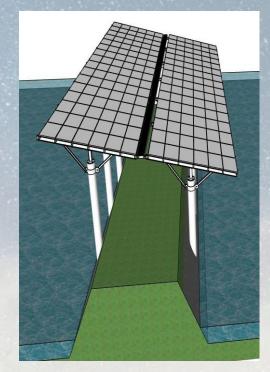
Chiayi Yizhu/Budai Fish Farm
 Solar Power Project

2. Total Power Generation: 43.4MW

3. Surface: 60.99 Hectares

4. Completion: Scheduled

commercialization in 2021



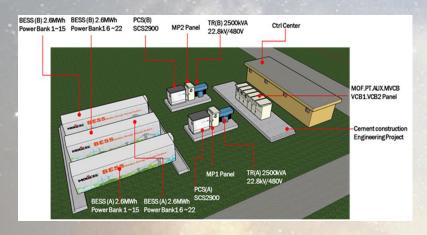


▲ Booster Station



Green Energy AFC (Automatic Frequency Control)

- 1. Commencement: Obtained Taipower's AFC Frequency Adjustment Assistance Service Project on July 5th, 2020
- 2. System:
- (1) Automatically adjusts electricity system frequency, helping to divert current power generator allocation pressure
- (2) Stabilizes renewable energy supply, reduces air emissions and power generation costs
- 3. Installation Capacity: 5MW (Largest capacity in a single lot under construction in Taiwan)
- 4. Commercialization: Scheduled to be on grid by end of April 2021







Energy Storage System Blueprint

Without ESS, Renewable Energy Cannot Become Baseload Energy

Market Drivers and Growth Forecast

Rapid

ESS

6.620GWh

(2030)

1.42x Growth

TCC Opportunities

TCC Strengths

One of few enterprises that can manufacture energy harvesting system, energy storage, self-critical components (battery cell), manage green energy farms, and provide complete ancillary services.

TCC Green Energy, 100% Owned by TCC, is one of the few domestic companies who owns both largescale wind and solar power farms.

E-One Moli is the largest domestic lithium-ion cell manufacturer in Taiwan that can produce ternary lithium battery, develop in-house battery management system, and has experience of grid-connected ESS.

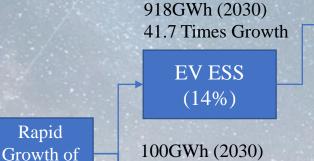
E-One Moli Energy Won Taipower Automatic Frequency Control (AFC) ESS Tender with TCCGE

Global Energy **Transforms Toward** Renewable Energy

Need to solve the problems of intermittency and unstable power supply

> **Booming EV** Demand

Driving lithium battery cost to reduce by more than 80% since 2010



100GWh (2030) 9.1 Times Growth

Stationary BESS (1.5%)

> Others (84.5%)

EV Battery Applications

- Electric car, super car, heavy motorcycle
- Air taxi
- Electric bus

918GWh(2030)

Grid-level ESS

- Frequency/voltage regulation
- Operating reserve
- Black Start
- Transmission/Distribution Investment Deferral

44GWh(2030)

Residential/Commercial/Industrial ESS

- Self-consumption solar power
- Demand charge reduction
- Backup power for plants (UPS)

56GWh(2030)

Source: IRENA (2017), Electricity Storage and Renewables: Costs and Markets to 2030, International Renewable Energy Agency, Abu Dhabi.

Reclaimed Land Projects





Old Kaohsiung Cement Plant Site (Under Planning)

ESG

Social Welfare Contributions

BAP Land Restoration

Change in CO₂ Emissions

DOING BETTER TOGETHER

Funding Spent on Education & Training

Reduction in SO

Reduction in Cement Plant Water Use

2010 2019 2020	2021	
GHG Management		
Taiwan CO2 Reduction Target (SBTi) 2025 -11%	 CO₂ Reduction Mid-Long Term Targets: Taiwan 2030 -31% Mainland China 2030 -20% TCC Group 2050 Carbon Neutral RMC Product 	
	• CO ₂ Emission Intensity Targets: 2030 585kg CO ₂ /Ton of Cementious Material	
Taiwan's First Cement Carbon Label		
Environment Management		
 Cement plants obtained ISO 14001 and ISO 45001 Environment Certification Constructed new Taipei and Hsinchu flagship zero emission environmental RMC plants 	 All cement and RMC plants obtain ISO 14001 and ISO 45001 Environment Certification 100% cement plants completed water footprint verification, 100% water recycling 100% of plants are new zero emission environmental RMC plants 	
Air Emissions and Waste Treatment/Resource R	ecycling	
 Alternative Fuel Target: 10% biomass by 2025 Set mid-long term reduction targets for NOx \ SOx \ TSP 	Alternative Fuel Target: 30% by 2030	

 $\begin{array}{cccc} CCC \\ 2018 \end{array} \longrightarrow \begin{array}{c} B \\ 2019 \end{array} \longrightarrow \begin{array}{c} BB \\ 2020 \end{array} \longrightarrow \begin{array}{c} A \\ 2021 \end{array}$

Energy Management

- Waste heat recovery reduced 1/3 of electricity use of cement plants
- 100% passed ISO50001 Energy Management Certification
- Renewable energy installations reach 500MW

- Commit to EP100
- Moving towards **RE100**

Innovative Technology

- Calcium Looping Carbon Capture Technology (CCS)
- Capture **450,000 CO₂** per year in 2030
- R&D new low-carbon cement products

Biodiversity

• Native species share to reach 83% in 2025

- Native species share to reach above 90% in 2030
- Achieve 95% biodiversity goal in 2030
- Set environment management department
- Business For Nature Partner

 $\begin{array}{cccc} CCC \\ 2018 \end{array} \longrightarrow \begin{array}{c} B \\ 2019 \end{array} \longrightarrow \begin{array}{c} BB \\ 2020 \end{array} \longrightarrow \begin{array}{c} A \\ 2021 \end{array}$

Labor Management

- Employee Stock Trust Plan
- Employee Engagement Survey

- Plan employee stock option (ESO) program
- Retired Employee Care Plan

Health and Safety

- Set mid-long term targets for occupational injury rate
- Groupwide zero injury workplace
- H&S audit plan covers 100% of suppliers and contractors
- AI smart management system covers 90% of plants

Community Rejuvenation

- Hualien Hoping TCC DAKA Open Eco Factory Jan.-Oct. 2020: 2.08 million visitors
 ~7,000 guided tour participants
- Hualien Hoping: Construct "DAKA Renewable Resources Center" in 2 years
- Yilan Aohua: Hanben Ocean Station Plan

Corporate Governance		
Employee Performance		
Employee salary links to sustainability performances		
Board of Directors Committees		
 Established Risk Management Committee Established Corporate Sustainable Development Committee Established Information Security Committee 		
Finance		
	 Adopt groupwide practice in line with ISO 37001 antibribery management system Adopt groupwide TCFD structure 	
Board Structure		
	 1/3 of board members are independent Board members with accounting and legal expertise 	

TCC DAKA Open Eco Factory

(Phase 1)



TCC DAKA Open Eco Factory

(Phase 2: Under Construction, Phase 3: Under Planning)





TCC Group Carbon Reduction Efforts (Non-Manufacturing)

	Effort	Reduction
	Solar Power Taipei HQ Rooftop Yilan Taibai Mt. Kaohsiung RMC TCC DAKA	Reduce 87 tons of CO ₂ /year
	Green Supply Chain	2023: 100% supplier GHG inspection 2030: Suppliers reduce 50% of CO ₂
	Digitalized Administration System	Reduce 14,000 kg CO ₂ /year
	HQ Building Energy Saving	Reduce 5.3% energy usage/year Reduce 78.4 tons of CO ₂ /year
	Procurement Portal	Reduce 12 tons of CO ₂ /year
27104	Smart Warehouse	Reduce 50 kg of CO2/year

Total: 191 Tons CO₂/Year

Join Us in Carbon Reduction, Thank You!

Disclaimer

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