

# TCC GROUP

2022 Q3 INVESTORS' CONFERENCE

NOVEMBER 14, 2022



## **CORPORATE PARTICIPANTS**

**TCC Chairperson Chang**

**NHQA CEO Carlalberto Guglielminotti**

**TCC Senior Vice President Huang**

**TCC Senior Vice President Lu**

**TCC Vice President Koh**

**TCC Vice President Wang**

**TCC Senior Assistant Vice President Yeh**

**TCC Assistant Vice President Lai**



**Host of the Conference:**

First, we invite Nelson Chang, Chairperson of Taiwan Cement Corporation (TCC) to give an opening speech.

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**TCC Chairperson Chang:**

Welcome to our investors' conference again! It has been nearly three years since we have been able to conduct a face-to-face investors' conference.

I think before we begin our main topic, some of you know, in the past two months, I have been travelling in Asia and Europe and I would like to report briefly on my view of this year and next year's macroeconomy.

I think later, NHQA Group CEO Carlalberto will give an introduction about what energy transition is.

At the beginning of this year, we know that incidents such as the war between Russia and Ukraine broke out, coupled with supply chain issues caused by COVID-19 and the lack of energy resources plagued the world. Since the beginning of this year, the economy has been sliding downwards while inflation around the world has been going up. Although the latest US CPI figure lowered to 7.7% from above 8%, it is still a high number. To control this high inflation problem, central banks around the world has been increasing interest rates and this will not stop until a target has been reached. This increase in interest rates have been causing great volatilities in the global currency market. Because of this factor, actually, we're relatively lucky in Taiwan because the effects are not as significant.

For the US, the economy is relatively better too. However, I think the US economy might face downturns due to several factors including the higher interest rate. I think corporate debt interest rate might reach close to double digits. What will happen to the US economy? We will see in the next couple of weeks, based on the indicators such as the Thanksgiving Black Friday or the Christmas sales. These will show us what consumption is like.

Europe has not been great this year and might get worse next year. For this year's winter, the energy shortage in Europe should be mild but the price is still very high. Like the UK, which already entered a recession, the European countries are all close to a recession and times are getting tougher.

For Japan, the GDP growth rate and inflation are both relatively stable. However, the Yen and US Dollar exchange rate did reach close to 150:1. This might be the first time it happened since 1990. I believe right now the currency exchange between the Yen and US Dollar has been falling a bit to 138:1 or 139:1, but it is still very high. Japan is an importer of energy, hence the currency depreciation can put a lot of pressure on Japan's economy.

Due to issues such as COVID-19, Mainland China's 2022 economy has not been ideal. I think it will also be tough in 2023, especially now, we don't know what will be the result of the meeting



between the General Secretary Xi and President Joe Biden. It looks like the economies of both Mainland China and the US and the contradictions between the two economies will cause some rifts, which may result in GDP growth rates to show slower growth.

In 2023, it looks like neither the US, Europe or Mainland China, these big economies, can lead the development of the global economy. I want to say that this means smaller economies will have a tougher time. Of course, this means Taiwan might have a tougher time. Due to the recent downturns in many economies, we can see that the COP27 meeting held in Egypt recently did not progress well as there were a lot of protests. I don't know if everyone knows this, this year's carbon emissions, instead of going down, it actually increased a bit, by 1%, but this 1% is severe to the environment.

As for the US, regardless of what President Biden said, the country saw carbon dioxide emissions increase by 1.5%. There is a prediction. If this increase continues, within 10 years, the global temperature will increase over 1.5°C. By 2050, the global temperature will increase to 2.8°C. According to some studies, in order to reduce carbon emissions and bring this temperature down by just 0.1°C will require US\$22 trillion, using current dollars. As we continue to push for economic growth, in fact, a lot of the economic growth figures represent a mirage. A lot of investors have been asking me about the macroeconomy, in particular, about the cement market. I have expressed my views way too many times, so this time, I would like to express by showing the cement market trend of various regions.

I will show you region by region. Like Germany and other cement markets, normally, there is a pattern. The cement markets usually reach a peak and then demand starts to fall. Next is France, you can see, for some markets, there will be a slight rebound after the trough in 5-10 years, but can never reach the peak again. Next is the UK, you can see, it fell from the peak sharply, even after the rebound, demand dropped sharply again. The next one is Spain, after the sharp fall from peak demand, the market never rebounded. Same as Portugal. As for the US, the cement consumption peak in 2005 was around 430kg per capita, even after the rebound, it only reached 338kg per capita in 2022. Japan, after peak demand happened in the 1990s, the fall continued. Japan saw cement consumption per capita around 700kg during the peak in 1991 and now it has dropped more than 50% to 315kg per capita. For South Korea, the market demand is relatively stable but comparing the current per capital consumption, it still has yet to reach the peak of around 1,400kg. For Thailand, the market demand fell sharply from the peak and then rebounded but never back to the level of the peak. For Taiwan, you can see clearly that peak consumption per capita reached around 1,400kg and as of 2022, the figure dropped to 560kg, a decrease around 40%. For Mainland China, you can see the peak has been lasting for a while. Some investors asked me if Mainland China is currently falling from its plateau state. I have to be honest, as a principle, we do not give forecasts. But everyone can see what the general trend is for cement markets around the world. So I would like to say that I am not optimistic about the cement market in the next 2-3 years.

But actually, I think the reduction of cement usage is not a bad thing. We are so used to continuous growth, like everything needs to grow. Some things don't need to grow. Instead, some things need



to be upgraded to make the usage more efficient. Like the cement industry, we need to reduce carbon emissions and better utilize the way we use cement. So I think Taiwan Cement's transformation from the cement industry to new energy represents a good opportunity.

In my recent travels to Europe, I was going to attend the Renaissance Awards in Florence, Italy, unfortunately, when I got to Europe, I caught COVID-19, so I couldn't attend the award show. Why did I plan to go to the Renaissance Awards? Because this award is focused on young people. In particular, those who are doing a lot of good things for the Earth and for society, not for themselves. Allow me to list out a few of the award items, the first is Social Just, the second is Environmentally Restorative, the third is Economically Inclusive, the fourth is Technologically Balanced and the other awards include Digital Creator and Change Maker. This award is for young people that have done a lot of things not for the advancements of their own careers but to contribute positively to the society.

Why did I mention this award in today's speech? Because it is closely related to our main topic. I believe those awards are also the core values of Taiwan Cement. Please allow me to take another 7-8 minutes to talk about our main topic, *Service for Life: A Millennium Proposition*.

From the beginning of time, under the market mechanism, the most basic value of a business person is to pursue profits. In the past, sunlight, air, water, soil and the ocean were never included in the core values of business costs. In the past, we overvalued economic growth and the market mechanism, resulting in the negligence of the care for Mother Nature and all the organisms within. This also means the costs of these externalities were also hidden when businesses continue to pursue growth. Same for consumers, as the cost of externalities has been hidden from them.

Humans have been enjoying the cleanness, friendliness, the seemingly endless God given gifts from nature since the beginning of time without realizing that we are taking out a loan from our own future environment. Humans have not thought about stopping to turn around and be grateful for everything that has been servicing all lives. We must understand that if the only lives living on Earth are humans and our domesticated animals and plants, the Earth's ecosystem will not be able to support further developments of the human life.

These "costs" are present today: shown through extreme changes in the climate and the ecosystem due to the unrestricted exploitative use of natural resources throughout civilization developments. Therefore, sunlight, air and water are no longer clean, the ocean is no longer friendly, and the soil is no longer organic and fertile. The signs of the four seasons we're so used to, such as flowers in Spring, Cicadidae in Summer, clear moon in Fall and snow in Winter and the livelihood of insects, marine animals, birds and land creatures that construct the beauty and spirits of nature will one by one disappear from our eyes and become extinct as our civilization becomes more barren each day.

Polar bears are facing extinction, bees are disappearing, corals are bleaching, and the tropical fish are reducing in numbers. The extinctions and disappearances seem far away from our daily lives, at



most, they just give a sense of helplessness and sadness. The disappearance of bees, which people are less aware of, actually presents a more severe threat to the food chain that is critical to human survival. Humans, we are probably going to be the last one to suffer retribution. The various climate change phenomena are signs that the Earth is tallying up each and every one of our debts.

Service for life is not an unfamiliar or strange topic. For thousands of years, it is a proposition that philosophers and humanity scholars have dedicated their lives to explore, but the proposition has only been mentioned at the morality and philosophical levels and has never been included in the core values of business operations. Furthermore, it has not been actualized by humans in the current reality.

Right now, the topic of “service for life” that we’re talking about is not just about morality, or a slogan, or an abstract concept, but top professionalism that must be included and embedded in daily business operations.

For enterprises, ESG requirements are a must: to comply with carbon reduction standards, to comply with various international regulations, to create new business models, to achieve economic cost efficiency, and to enhance manufacturing technologies. Enterprises also need to set up clear targets that can be executed step by step and withstand verification at each stage. These important rules need to be applied throughout the entire process from manufacturing, operation, sales to consumption.

But we should not be forced or passively conduct in carbon reduction and sustainability measures. These actions need to become a part of us, following our heart beats and turn into the stem cells of our enterprises. Allow living, manufacturing, the ecosystem and life to merge together naturally. These positive actions will help enterprises to breed new business opportunities, visions and creativity, and allow us to show great differentiations from our competitors.

From the point of view of an enterprise manager, I must make a bold statement: “Service for life” is the proposition for every business leader to think deeply about because it will become the rule for survival that every enterprise needs to strictly abide by and the “sine qua non” (essential condition) required for the future of the enterprises. Without considering this, it will be hard for enterprises to survive in the future.

Enterprises have two choices:

Keep trying to catch up with standards and regulations and come up with various ways to avoid being fined or punished; or raise self-awareness, prepare, and take actions to find their own best tempo and method. I pride myself as an industrial person and have been an industrial person for nearly 50 years. Therefore, having been moving TCC forward from a traditional industry like the cement industry, I believe no one understands more clearly and intimately as TCC about the difficulties of business transformation. Our preparations started out early in 2017 and we have been seeking solutions step by step when facing obstacles. TCC’s early awareness, fast response and problem-solving management to the rapid changes of the world is not the result based only on the emphasis of lowering emissions, improving care of the environment and fully understanding



the value of providing services to life, it is the result of TCC believing and setting these requirements as undisputed rules for our current and future business operations.

Sustainable business is not just a metaphor, it requires determined actions and a strong will to execute these actions, or else, the two words are just empty promises. This year has been the toughest year with extreme climate change, war, and the pandemic, but despite all that, we are still working hard to construct an archetype of our future. TCC has been actualizing every plan and blueprint with solid actions.

In our cement business, we have been enhancing the usage percentage of alternative fuel which has currently reached 20% and this not only helps to reduce carbon emissions during our manufacturing process, it also helps to lower production costs. TCC also continues to use our cement kilns to process city wastes. In the past three years, TCC's combined city and industrial waste co-processing volume in Taiwan and Mainland China reached over 27 million tons, that is equivalent to the annual volume of wastes produced of more than 30 Taipei cities. This undoubtedly has reduced the damages created by humans to Mother Nature. Even though the volume is not extremely large, it shows our effort.

In addition, we have set up four directions for TCC's renewable energy developments: wind, sunlight, earth and sea. Taiwan cannot rely on one or two types of renewable energy source to survive due to the limitations of our natural resources. Unlike Norway, we don't have numerous lakes and rivers to have a stable supply of hydroelectricity. Also, unlike Iceland, we don't have unlimited geothermal to generate electricity. Therefore, we need to focus and invest attentively to every type of renewable energy source, accumulate power from the day and from the night, and most importantly, to integrate sunlight, wind, geothermal and ocean thermal to stably construct a dynamic green energy enclave. Moreover, the green energy enclave needs stable energy storage so we can store the energy generated from Mother Nature. We built Taiwan's first large-size energy storage with automated frequency control (AFC) to help enhance the stability of the power grid and we continue to build and provide more comprehensive new energy solutions that integrate renewable energy, energy storage, and charging facilities. We treasure each 1% or 2% of renewable energy and slowly and steadily, we carefully store and use the power generated from them. Despite the small size, step by step, TCC has put plans into actions.

Undoubtedly the hardest part is to build the foundation but when the foundation is solid, performance will rapidly grow. With this understanding in mind, TCC develops our renewable energy and energy storage businesses despite knowing that this world-class road is filled with rigorous difficulties but will assuredly lead to a beautiful future.

We believe the lives of all living beings have always been interconnected, coexisted and codependent for survival. In the ecosystem, there are tens of thousands of lives such as germs, insects, animals and plants that rely on one another to survive.

Around the world, 95% of food are from the soil and there are 60% of biological species that were discovered within the soil. In a natural environment, one cubic meter of soil is the home of more



than 100 million protists, millions of roundworms, 100 thousand mites and insects, spiders and worms. Furthermore, soil is the most important carbon sink in the world.

With this in mind, TCC plans to begin the “Hoping Eco Ark Project” in Hoping, Hualien with Professor Chia-Wei Li, CEO of Dr. Cecilia Koo Botanic Conservation Center (KBCC), to protect the indigenous species above the ground and also to explore and study the rich and dynamic ecosystems deep within the soil.

We respond to Mother Nature’s cries with actions that abide the sustainability survival rule that makes enterprises and “life” inseparable.

As an enterprise, our mission is: Even when we are facing a world with the pandemic, war, climate change, and economic downturns, we are all fighters and we are also EARTH HELPERS, and all these identities must be proven through actions.

When humans leave this world, every self-serving action will become dusts, but every service to others will become your heritage, your legacy.

Life---strive to turn eternity into a possibility.

(Only living beings with kindness have the chance to achieve eternity.)

Vita, facta non verba, it’s Latin, and it means “Life, deeds not words”, thank you.

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#### **Host of the Conference:**

Thanks to the Chairperson for the opening speech. Next, let us welcome Mr. Randy Yu, CFO of TCC.

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#### **TCC CFO, Mr. Randy Yu:**

Chairperson Chang mentioned “Service for life is a survival rule that every enterprise needs to abide to in the future”, for TCC Group, we are already conducting sustainable business operations through actions.

In the past year, the world has been facing many serious problems such as the severe droughts that occurred in Europe, the West Coast of North America, and even the Nile River in Egypt. The wildfires in the West Coast of the US and Canada continue to exist, plus the lingering shadows of COVID-19 and the ongoing Russian-Ukrainian War that started at the end of February 2022. These global and economic instabilities have impacted all creatures.

There are some important numbers that show the worsening of the global economy. These actually deeply impacts everyone’s lives. The inflation (CPI) in the US, the European Union and the UK continue to increase and the US Federal Reserves has increased the Fed Funds Rate to 4%, that





is an increase of 1,500% on year. This also caused the US Prime Rate to increase to 7% and the 30-year mortgage rate to jump to 7.22%, the annual increases were 115% and 131% respectively.

The significant increase of interest rate in the US caused the US Dollar to appreciate strongly against Euro, the British Pound, the Japanese Yen and the New Taiwan Dollar. The depreciation of these currencies against the US Dollar caused prices of import goods to rise. We are also seeing the forecasted GDP growth rate of the main economies in the world show significant decrease compared to 2021. This means, it is very likely that the global economy will enter into a stagflation in 2023. In this volatile and unstable global and economic environment, TCC continues to show our commitments to sustainable business practices through actions based on our core belief of "Service for Life".

We are introducing the world's first zero-carbon mine. From the picture on the slide, you can see that is a moving driver-less electric mining truck. The location is at the mine of our Jurong Cement Plant in the Jiangsu Province. Building a zero-carbon mine is not just our responsibility in reducing carbon emissions, it also has economic benefits as it can drastically reduce labor and maintenance costs.

TCC continues to use the heat from our cement kilns to co-process city and industrial wastes. With our subsidiary, Ta-Ho Environment, in the past three years, TCC has processed over 27 million tons of wastes in Taiwan and in Mainland China, this number is almost equivalent to 75% of the annual city and industrial wastes produced in Taiwan. TCC helps to reduce the damage on the environment caused by human behaviors. At the same time, TCC continues to reduce emissions, as you can see from the slide, our emissions are all far below government standards. Especially dioxin emissions, which is what most people care about, TCC's emissions are less than 1% of the allowed emissions standard set by the government.

Through waste co-processing, we continue to increase and improve our alternative fuel and material usage. This not only helps to reduce the carbon emissions during the cement-making process, it also helps us to reduce production costs. We not only practice this technology in cement plants in Taiwan and Mainland China, we have been promoting this around the world as well, such as our cement plants in Turkey and Portugal, which you can see as the heat value percentage of cement plants in both countries have been increasing consecutively in the past few years.

As we mentioned in the beginning of this presentation, in 2022, there have been many regions that faced severe droughts. Water has become a scarce resource. Water is also the source of life. TCC's cement plants in Taiwan and Mainland China have been reducing water usage intensity every year. TCC is also the first cement company in the world to obtain water resource ISO certifications. Furthermore, our ready-mixed concrete (RMC) plants in Taiwan have been recycling 100% of the waste water for many years.

As for our new energy business, our green energy installations continue to move toward our 2025 target of 600MW. We have several ongoing projects in Taiwan and in Mainland China. We recently



completed a project in Chiayi, Taiwan, which is the first phase of our Chiayi's fishery and solar symbiosis with 43MW of green power connected to the grid in October 2022. This is the first complete fishery and solar symbiosis project to be connected to the grid with annual electricity generation of 54 million kWh, which is equivalent to the annual electricity usage of 15,000 households.

TCC's renewable energy has four directions: wind, sunlight, geothermal and ocean thermal, a dynamic green energy strategy. We have been investing into advanced renewable energy including the geothermal site at Hongye, Taitung. As of this moment, the drilling has reached 1,300 meters. We are also investing in ocean thermal energy conversion (OTEC) technology in Hoping, Hualien and we're waiting for government approval. Once approved, this might be the world's biggest OTEC project. Most importantly: Geothermal and OTEC are both renewable energy that will not be affected by weather conditions and can be considered as baseload power.

In addition to green energy installations, you need stable energy storage systems (ESS), to effectively store and use the electricity generated from nature. TCC has been expanding our ESS projects, in particular, our large-size 10MW ESS project in Hoping, Hualien is near completion and will be able to provide dReg, E-dReg, and spinning and supplemental reserve services to TaiPower. This helps to enhance grid flexibility. E-One Moli, a TCC subsidiary, has a battery plant located in Tainan Science Park which also has an 1MW ESS that began providing spinning and supplemental reserve services to TaiPower since April 11, 2022.

In 2021, we completed Taiwan's only self-made high performance automated frequency control (AFC) system that helped to stabilize Taiwan's grid within 0.1 seconds during the March 3, 2022 power outage.

TCC Group is not only installing ESS in Taiwan, our Italy-based France-listed subsidiary NHQA is installing ESS across five continents. Projects are located in Italy, the US, Australia, and in 2023, the projects in Mainland China and Peru are expected to be completed. In a moment, NHQA Group CEO Carlalberto will do a presentation regarding his view on energy transition and what NHQA has achieved so far.

TCC uses in-house technology to develop 100% self-made fire-resistant low carbon ultra high performance concrete (UHPC) as cabinets for our ESS. UHPC ESS cabinets can withstand internal temperature of 1,000°C for two hours, showing its safety against fire. UHPC ESS cabinets are also weather resistant, meaning it is unaffected by external weather conditions. We have already applied patents for this product.

In our fire-resistance testing video, you can see the flame. To pass this test, the average temperature on the backside of the point of the flame should be room temperature plus 140°C. Our current testing result after two hours is about 200°C. Fire integrity test has been passed but thermal resistance is slightly above standard. We already have a solution for this problem and we're 100% confident that we can pass this test.



Investors have been very curious about the development of our battery business. On this slide, on the top left, that is 2022 UK GoodWood Motor Circuit, which is a speed race for all motor vehicles. The champion of this year's race was an electric super racecar using our Molicel's batteries. The champion's time was 20% faster than the second place. Moreover, Molicel batteries can also be used in electric vertical take-off and landing (eVTOL) aircrafts. Furthermore, Molicel's super battery plant in Kaohsiung is scheduled to be completed and start pilot production in first-quarter 2023. As production capacity expands, in 2024, revenue is likely to show significant growth.

Now I wish to report our financial status. First, coal price. In the past year, whether is domestic coal in Mainland China or international coal, the price has been growing exponentially and this affected our cement and Hoping Power costs and profits.

Mainland China's cement market has been affected by the downturn of the property market and the COVID-19 lockdowns causing cement demand to fall drastically. The fall in demand also caused a wider gap between demand and supply in an already oversupply market. Our sales volume decreased. Although cement prices increased, the magnitude was smaller than the increase of coal costs. In 2022, GP per ton showed continuous decrease in the first three quarters.

Taiwan's cement market is relatively stable in terms of supply and demand. Therefore, it is more likely to adjust the sales price to reflect the rising coal costs. TCC's performance in the Taiwan cement market showed stable profits with gross margin around 20% in the first three quarters of 2022.

Many investors have been asking us about our investment in the cement plants in Turkey as the country's economy is currently being affected by high inflation and significant depreciation of its currency. Comparing OYAK's recent stock price to the stock price at the beginning of 2019, the market value of TCC-owned shares denominated in Turkish Lira has showed 353% growth and also 34% growth if it's denominated in US Dollars.

Turkey and Portugal's cement businesses have been able to increase cement prices to reflect rising costs. The contribution from Turkey and Portugal to TCC's net profits, in the first three quarters of 2022, showed YoY growth of 40%.

Hoping Power was affected by the significant increase of coal price and fewer working days. Hoping Power showed losses in the first and the second quarter of 2022. However, in third-quarter 2022, Hoping Power turned profitable. In fact, the losses from the past few quarters can be seen as subsidies for the end-consumers' electricity bills.

TCC continues to conduct in enterprise transition. Starting in 2018, TCC established TCC Green Energy, and in 2021, we expanded investments into new energy such as Italy-based France-listed ESS company NHQA and our own battery subsidiary, E-One Moli. Everyone can see the non-cement revenue share in the first three quarters of 2022 grew to 29% compared to 16% of the same period in 2021. Transition into new energy business is our way of showing that we provide service for life through actions.



The total net profits for the first three quarters of 2022 reached NT\$2.9 billion with the first quarter at NT\$1.2 billion, second quarter at NT\$200 million and third quarter returning to NT\$1.5 billion.

For the rapid changes in the financial environment, TCC is well prepared. In 2021, we began to enhance our financial structure starting with domestic corporate bonds and syndicated loans to lock down long-term capital and interest costs. We also issued convertible bonds with zero coupon rate and a fixed exchange rate to avoid losses from fluctuating exchange rates. On October 3, 2022, TCC successfully issued US\$425 million in GDR to lower our debt ratio. For the past two years, TCC raised a total of NT\$115.4 billion in capital. In addition, in the past five years, TCC Group has earned over NT\$100 billion in surplus for the shareholders.

Under the current volatile business environment, our financial ratios remain stable.

TCC established the Office of Sustainability and Responsibility in 2022 to integrate the Group's resources and synergy in order to promote sustainability practices around the world.

In 2023, TCC plans to begin the "Hoping Eco Ark Project" in Hoping, Hualien. This project will be led by the CEO of Dr. Cecilia Koo Botanic Conservation Center (KBCC), Professor Chia-Wei Li. The aim of this project is to explore and study the rich ecosystems within the soil in a semi-enclosed ecosystem experiment base. We actually know very little about the soil despite the fact that it is the source of life and also the largest carbon sink in the world.

In the past year, even with the ongoing pandemic prevention measures, TCC continues to cooperate with different industries, whether it is through online or physical, to launch the EARTH HELPER Initiative to promote sustainable lifestyles.

Our continuous efforts in sustainability have been recognized by international organizations. In 2022, we were selected by Dow Jones Sustainability Index (DJSI) as one of the top five companies in the global construction materials sector. For MSCI ESG Rating, TCC's rating has been upgraded for three consecutive years from 2019-2021 to BBB.

At the same time, TCC's efforts have been recognized by domestic institutions as well as the Company obtained various CSR-related awards. In particular, TCC was awarded by GlobalView Magazine for the Top Prize in Traditional Industry. This is the first time for a large-size manufacturing company to be listed as one of the top three companies.

We continue to work to provide services for life. We respond to nature with actions that abide the sustainability survival rule that makes enterprises and "life" inseparable. Life, deeds not words. We believe for a sustainable future, we need actions, not slogans.

Thank you for listening.



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**Host of the Conference:**

Thanks to CFO Yu for his presentation. Next, let us welcome Mr. Carlalberto Guglielminotti, CEO of NHQA Group.

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**NHQA Group CEO, Mr. Carlalberto Guglielminotti:**

Good afternoon, ladies and gentlemen. Thank you, Nelson, for your inspiring words and thank you for inviting me to participate in this very prestigious investor's conference. The mission we have at NHQA is actually very simple: We want to lead the energy transition, and we really believe that we must do it now. As Antonio Guterres told the world leaders just a few days ago at the opening of the COP27 UN Climate Summit in Egypt: "We are on a highway to climate hell with our foot on the accelerator". Our planet is fast approaching a tipping point that will make climate catastrophe inevitable and even more importantly irreversible. But the question we have to face first and foremost is, "What the energy transition stands for?"

This is true.

As the Chairperson mentioned, we do have global targets, to ensure increases in global temperature are less than 2°C above the pre-industrial era, with the target to go net zero by 2050. Most importantly, In the context of those very ambitious targets, we also have very concrete action plans to transform those global commitments from slogans to real and achievable targets. One example is the Fit for 55 Package that have been approved by the European Commission, a legislative measure that aims to reduce CO<sub>2</sub> and greenhouse gas emissions by 55% between now and 2030. You know, Europe is trying to be the first continent ever to become climate neutral by 2050. This goal was formalized back in 2019 by the European Green Deal, which has been signed by all 27 member states that recognized the imminent threat posed by climate change and took a binding and bold commitment,

First of all, a commitment that took place under special circumstances with skyrocketing energy prices, and with also very bold measures: like the full phaseout of internal combustion engine vehicles and cars by 2035. So this is not just our vision or hope. This is the reality.

So why was Antonio Guterres speaking of us still having our foot on the accelerator? The reality is that, as of today, we are already at plus 1.2°C today compared to the pre-industrial levels. The situation before is very urgent and critical. So, if we want to do something real in that direction, we have to understand what the drivers of the energy transitions are.

If we look at the breakdown of the direct CO<sub>2</sub> emissions by industry, we immediately realize that the first priority we should set is the emissions in transportation and power generation, which represent over 50%, almost 60% of the CO<sub>2</sub> footprint, which is the strong majority of greenhouse gas emissions globally. Then obviously, we have industrial emissions, we do have cement, residential, but transportation and power generation have to be priority number one. The first



thing to do is to play a massive shift in the power generation mix.

We clearly see what to do: Today, 84% of the power generation is represented by fossil fuels oil, gas, and coal – nuclear represents 6% and renewables 11%. So, what we have to do by 2050 is very simple, we simply need to inverse the power generation mix, we do have to radically turn the tables. We should reach 84% of renewables. The first question we have to face is: “How to do it?”

How to do it in principle is very simple because can we call in all renewables but we all know, unfortunately, that 85% of the renewable power generation is certainly not concentrated during the day. And unfortunately, the sun does not shine at night. On top of that, we must consider efficiency, because we all know that the nominal kW power of solar panels is not generating electricity 8,760 hours a year. Essentially, if you look at the irradiation data of Central Europe, we can consider just 12% as the yearly equivalent of solar production on average. So, the Sun does not shine at night. Efficiency is an Issue.

But even worse, we also have a second problem: which is grid stability, a very technical problem, but a very important one. Renewables are not baseload, not stable, and are intermittent, I mean, intermittency is stabilized today and has to be stabilized in order to put renewable energy into the grid and transform it to energy on demand. Which is what we need. Unfortunately, as of today, the reality is that we continue to use gas and coal power plants to cope with that intermittency, that's the reality all over the world. In order to give all of us renewable, and also stable power on demand. But you can clearly see that this is nonsense to use gas and coal to stabilize intermittent renewable power.

The easiest solution to that problem is obviously storing that electricity.

This is the reason why energy storage is by far the game changer of the next decade. It is a matter of fact: Today all over the world solar panels are being coupled with energy storage to transform renewables into dispatchable power. We can clearly see in this slide the exponential growth we will have in the next eight years in terms of the cumulative capacity of energy storage by region. We are talking about multiplying by more than 30 times the current installed capacity of energy storage and the rationale of that growth is obvious, generate stable renewable power even at night and cope with the instability generated by higher renewables penetration.

The second key element, remember, we are talking about power generation and then transportation. So, the second key element to consider when talking about energy transition is certainly the transportation sector. But again, we do need to focus first and foremost on the majority of those transportation emissions, and 70% of the transportation emissions are generated by road transportation, passenger cars in particular, and this needs to be set as priority number one. The solution also in this case is very easy which is obviously electric mobility.

The only problem is that car drivers and even EV drivers do not want to change their habits and customer journey: they are not ready to wait for hours to charge their vehicles particularly when before it only took a couple of minutes to refuel a petroleum car that everybody has grown used to since they were born. In Europe, we installed thousands of chargers, which is good news. The only



problem with that is we installed thousands of slow AC chargers that, unfortunately, charges at a very slow pace, taking hours to fully recharge a vehicle. This is obviously unacceptable from a customer standpoint, and therefore fast, and ultra-fast charging needs to be the top priority, in which charging vehicles in a matter of minutes is a necessity in order to unleash the real potential of electric mobility.

However, there's also the very last problem: Electric mobility would eventually pose a problem, again, at a grid level. From this slide, we can easily see three scenarios describing how much power we will need to reinforce and expand, in this case, our European grid's capacity, but the same reasons can be applied globally, because of EV penetration. Typically, the question is how much energy we need in order to charge a certain amount of electric vehicles. We do have the answer to this question. I mean between 9 and 12% of the current global energy demand, which is almost a negligible amount of energy given the current installed power capacity we have globally, but the point is that this is not the right question!

The real problem or the question is grid capacity, as to say the ability of the grid to absorb power instantly. To give you an idea, cars in general are parked 95% of the time, and when it comes to electric mobility, they are 95% of the time connected to the grid. We must assess their potential impact at the grid level in terms of instant power. Even in the most conservative scenario, you see here, the European Union will need, by 2030, over 53GW of power available for public charging. Just to give you an idea, slightly more, 55GW, that is the maximum peak power of a country like Italy with 60 million people in mid-July when it's very hot outside and all air conditioners are switched on. So, please imagine a grid reinforcement and grid expansion for something that has to manage a maximum power peak of a country. If we look at the more severe scenarios, like the one that we elaborated based on the ACEA data, the European Automobile Manufacturers Association, in 2030 we will need over 150GW of available instant power and over 400GW in 2040, which means almost 10x the maximum power peak of a country, in this case, it is Italy, but you can take any country as a reference. So, essentially a huge demand for instant power which will require a great expansion, which means eventually investments that will take years, if not decades, to be carried out in some areas and that will eventually need to be repaid by us in our energy bills.

Then, what is the solution? Again, the solution is exactly the same one. Which is storing electricity! Even if in this case is less obvious. Why? Let me explain this technical concept in the easiest possible way. If we use the grid with traditional AC-DC charging as you see on the left of the slide what we do today in Europe and all over the world we are going to use the same amount of grid power to charge the vehicle. 100KW from the grid, 100KW to charge the vehicle. Very simple. And as we've done on the right part of the slide. If we put energy storage in the equation, we convert that AC-DC charging into DC-DC charging, so that charging will require just 25% of the grid power to charge the same vehicles at the same speed because of energy storage, or, with the same power, we will be able to multiply at least by 4 times, and potentially up to 6 times, the number of cars that we can charge at the same time with the same grid power. In other terms, we reduce the impact of electric mobility at the grid level by 4 to 6 times. Reducing the investments needed by 4 to 6 times.



So, having now cleared what the energy transition stands for and what the priorities should be. Let's have a look at what we do and how we contribute at NHQA

The role that NHQA plays is quite simple. We essentially do two things. We build energy storage systems coupled with renewables typically to secure affordable 24/7 clean power and we develop our own EV fast and ultra-fast charging networks coupled with energy storage to secure a really sustainable and affordable fast-charging experience. Let me say, very simple, and very focused. And we can now have a quick look at the details.

NHQA Energy is our energy storage business line. Our technological heritage started 15 years ago and we have historically played an important part globally. We started with micro-grids, typically in developing economies, and then following the evolution of markets and technology, these small micro-grids coupled with small solar panels and small batteries evolved and turned into large-scale systems, like the ones we are installing right now all over the world.

Most importantly, also here in Taiwan, where we are building with TCC, one of the largest energy storage systems in the world with over 400MWh of capacity. You will remember when Elon Musk tweeted: "We are building the largest battery in the world!" That was a few years ago, those were only 100MWh. Ours is 4 times larger. From this map, you can clearly see what we did for five different continents, we're going to have over 1GWh of capacity online by 2023. So, the question is: "Where are we today?"

You can see from this picture one of our systems recently built, we are under the commissioning phase now. You see the number of containers that are storing over 200MWh of electricity, so the one we are building in Taiwan will be at least twice the capacity and you see a very complex 330,000 volts substation on the top right. We are extremely proud, thanks to the strategic and financial support of TCC, to be now one of the leading and largest energy storage system integrators worldwide today.

From the e-mobility perspective, not only are we building one of the largest EV fast charging network and infrastructures in Southern Europe, but we also have Free2move eSolutions, which is our joint venture with Stellantis, a business line devoted to further verticalize our play in eMobility. That joint venture essentially is manufacturing charging devices from residential applications, like wall boxes to public charging applications, like high-power chargers. And Stellantis is one of the largest car makers in the world with a 21% market share in Europe and a very important position in the US.

In the e-mobility space, we also developed a unique track record building the largest e-mobility charging hub in the world, 100% vehicle-to-grid (V2G). It means that essentially cars are at the same time, charging while delivering great ancillary services to grid operators, stabilizing the intermittency of renewables. In this system, there are over 500 cars fast-charging, and at the same time, stabilizing the European grid with over 25MWh of storage. I mean, a world premiere that has also been recognized by the European Commission.





Then, as far as Atlante is concerned, this business line is devoted to the infrastructure of our network for fast and ultra-fast charging points for electric vehicles in Southern Europe. We have clear goals. We will install and operate over 5,000 fast and ultra-fast points of charge by 2025 and 35,000 by 2030 in Italy, France, Spain, and Portugal.

Then you might be thinking: “Where is Atlante today?” Despite the objectives, I think the answer is quite easy, we are really more than on track, we are accelerating. We already have over 1,300 points of fast and ultra-fast charging online and under construction mainly in Italy and France, and progressively in Spain and Portugal. With a network strategically built around the most important cities, corridors, and industrialized areas of Southern Europe with almost 2,000 sites under development. Which is beyond the 2025 targets that we had.

Then moving to the financial perspective, these are our results. Obviously, we naturally recorded continuous growth. Since our listing on the Euronext Stock Exchange, which is the regulated market in Europe, we constantly grew over time – with a small exception in 2020 because of COVID-19, as you can imagine. After TCC acquired over 60% of our share capital, the pace and the opportunities we had, changed radically. And that's the reason why we're going to recognize between 140-160 million Euros in revenues this year. We have already recorded over 100 million Euros in revenues as of September 30 and we are confident we will achieve the high end of our guidance, which is 160 million Euros this year.

In EBITDA terms we are confident we will achieve breakeven, for sure at the NHQA Energy level. In reality, it has already happened in first-half of 2022. So, in the first semester, I think we are the first energy storage company pure play in the world to be profitable at the EBITDA level. Potentially also in Free2move eSolutions, but this will depend on the results of the fourth quarter in 2022. Then, we will keep on working with our outlook towards over 600 million revenues in 2025 in mind with 10% EBITDA margin, which is very prudent, but very realistic. And over 1 billion and a half revenues in 2030, with the ambition to achieve 15% EBITDA margin at the NHQA Energy and Free2move eSolutions

While Atlante will generate the first 100 million in revenues in 2025 and doubling the energy storage and e-mobility revenues in 2030 with an over 50% EBITDA margin given the structure obviously of the business.

This is what we're doing. And giving the commitment and passion that we have we firmly believe the best has yet to come, as we are clearly thinking of expanding our business and accelerating further, particularly leveraging the vision, support, solidity, and credibility of TCC. That has been a game changer in our equity story. Certainly, a game changer for NHQA, our employees, and our stakeholders. But most importantly, I genuinely think, a game changer for the future of our planet. And as I believe that there is a world of people that feels the responsibility to release our foot on the accelerator towards the highway to climate hell.

A world where people do not wait for things to happen.  
A world where people make things happen.



Dear investors, analysts, and media operators,

Welcome to that world, welcome to NHQA, and welcome to TCC.

Thank you all again for the opportunity to speak today and I am ready to take any questions you may have.

## Question and Answer Section

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### Host of the Conference:

Slips are submitted on the spot and if participants on the online meeting have any questions, please send your questions to [ir@taiwancement.com](mailto:ir@taiwancement.com). Now, the top management will respond to the questions listed on the tablets.

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### Chairperson Chang:

There are some questions submitted beforehand, let me read the questions and then provide the answers. Regarding the cement business, the first question is TCC's recent EPS has been the lowest in history, but the cement industry should be supported by Taiwan's Forward-Looking Projects with many Taiwanese companies returning to Taiwan to build manufacturing facilities and the promotion of renewing old buildings, all this should be beneficial to the cement industry. Also, in Mainland China, there are the waste treatment business. The only negative factors are the low demand of the Mainland China's property market and the rising coal price. So why is the EPS so low? Are there any other special reasons? Let me answer the question. Actually, in our presentation, we showed that coal prices did not just increase a little bit, but a lot. International coal price grew three times on year. Mainland China's coal price grew by 100%. Cement prices couldn't adjust with the rising costs. This had significant effects. Everyone saw on the presentation that Mainland China cement demand fell drastically. Different regions showed different magnitude of demand decrease. But of course, Mainland China has their own figures. I just want to say that the effects are more severe than the question mentioned. The main reason is the sharp rise of coal price and the sharp fall of demand caused EPS to be low. TCC is going through a transition, as in the past, most of our profits come from the cement market in Mainland China, therefore, when the cement price is not high and the cost rises sharply, our EPS will be negatively affected.

Another question is the outlook of the Mainland China cement market in the next 3-5 years. My answer is that we've showed a lot of data regarding the cement market trend. You can look at the data and make your own conclusions regarding the cement market trend in Mainland China in the next 3-5 years.

Another question that is similar is regarding the plateau of Mainland China's cement market and is it ending early. My answer to this question is that Mainland China's cement market plateau has



lasted very long compared to most regions. It's not ending early. As you can see from our presentation of cement market trends of other regions and the history of this trend. Actually, the current supply and demand of the cement market in Mainland China does not include the new kilns that are about to start production. I believe, the current demand is less than 60% of the total capacity. That is what I think.

The fourth question is regarding our investments in Turkey and Portugal cement markets and the outlook for 2023. My answer to this question is that we have shown our performance in Turkey and Portugal in the presentation and if you require more detailed numbers, you can contact us.

The fifth question we've received is about using wastes as alternative fuel and material and by 2025, how much will the costs increase. My answer is, the cost won't increase, it will decrease. As we mentioned in our presentation, using wastes not only solves society's problems, it also reduces our production costs. The reduction is quite significant. If our alternative fuel usage percentage did not reach 20%, our financial figures will actually be worse.

The sixth question is regarding Hoping Power. The question states that Hoping Power used to be one of the top earners within TCC Group, but this year, it became one of the biggest losses, rumors said that TaiPower agreed to increase power tariff starting in July 2022, what will the performance be from July to September 2022? Also, Asia Cement's power plant showed significant profits and began to expand its natural gas-powered plant capacity, it is both environmental and profitable, what is the possibility for Hoping Power to change from using coal to using natural gas? What are the potential pros and cons of this? My answer to this question, first of all, I don't think natural gas is environmental. Secondly, natural gas does not use international price. Coal price is an international price and is not subsidized by the CPC Corporation. Thirdly, Hoping Power cannot transform and use natural gas. Just the gas reserve bay alone, the environment of the location will not pass environmental assessments. Hoping Power did return to profitability in third-quarter 2022. However, it is not possible for Hoping Power to return to the profitability level of previous years. Because everyone knows, Taiwan's electricity price is one of the lowest in the world. If TaiPower doesn't increase price, it will be difficult for our power tariff to be increased. So we try our hardest in increasing our efficiency to see if we can make some profits. If investors believe Hoping Power can still achieve the level of profitability as previous years, it will depend on the government's energy policies. If the policies are similar as before, large profits for Hoping Power is unlikely. But we have a responsibility to make Hoping Power profitable. But unlikely to make the level of profits as before.

Another question about Hoping Power that is similar regarding the high coal price caused Hoping Power to suffer losses. My answer is the same as the previous question, we have a responsibility for Hoping Power to make profits but the profits are unlikely to reach the level of previous years.

The next question is regarding the coal price in fourth-quarter 2022 and TCC's view. My answer is the coal price has been falling recently, but how fast will it fall, we don't know. We believe the coal price will fall for a period of time. In 2023, the average coal price should be lower than the average coal price in 2022. But I don't think it will drop significantly, because in principle, there is a world-



wide shortage of energy and this problem will not be solved quickly. That's our view. When we purchase coal, we don't do much futures, most of our purchases are in the spot market.

Questions regarding the new energy business. One question is TCC's green energy and energy storage outlook and the contribution to TCC's performance. Will the revenue of the green energy business exceed the revenue from cement in 2025? My answer to this question is that in principle, we don't talk forecasts in our investors' conferences. But we have disclosed our target before, as in by 2025, we hope our non-cement revenue share and cement revenue share to be 50% and 50%, respectively. In fact, whether is green energy or energy storage, it's a complex business. There are a lot of regulations, new regulations, and restrictions such as feeder lines...etc. Therefore, we hope our new energy business, by 2025, and the cement revenue share to each be 50%, but this is a target, not a forecast.

Next question is regarding TCC's green energy and energy storage progress and capex. My answer is that all capital expenditure will go through the Board and after it is resolved, then we will make public announcements. So I cannot disclose this figure in today's conference. Because we're currently drafting budget and capex plans for 2023. Once they have been resolved by the Board, we will then make public announcements.

The next question is our green energy investments. The question asks when will the green energy contribution to net profits reach 5% of total net profits. My answer is that we have said many times, we can't, I can't, the Financial Supervisory Commission does not allow me to give forecasts. So we cannot answer this question.

The next question is asking about the business model of our new energy business. Let me ask our Vice President Wang to answer this question.

Vice President Wang:

Hi investors, regarding TCC's business model for the new energy business, there are a few types, the first is our green energy investment, which we sell power generated to TaiPower. But TaiPower also allows green energy providers to sell power to the private sector, therefore, other than selling to TaiPower, we are trying different ways to make profits. As for energy storage, everyone knows the energy storage systems (ESS) can participate in TaiPower's Electricity Trading Platform (ETP), including various types of service such as dynamic regulation reserve (dReg), static regulation reserve (sReg), spinning and supplemental reserve. For TCC, we plan to participate in all of them. We will construct different combinations, especially because we have extensive experiences in running a large-size manufacturing facility. We will combine our green energy, ESS, and our facility electricity need to analyze which combination will create the most profits. Like our 30MW spinning and supplemental reserve in our Hopping Plant. It is a combination of ESS and our own facility electricity usage adjustments to apply to TaiPower for a 30MW of electricity to serve as the spinning and supplemental reserve. We will test and analyze different combinations, just like this one, to achieve the highest profitability. Thank you.



Chairperson Chang:

Another question regarding ESS. The question asks why TCC's ESS did not obtain TaiPower's dReg certification.

Vice President Wang:

I think this is a misunderstanding. In fact, the current ESS projects owned by TCC are mostly focused on providing dReg services. Like I mentioned before, we have numerous large-size manufacturing facilities combined with small-size ESS, and by adjusting the electricity usage of the manufacturing facility, we can support and provide the spinning and supplemental reserve service. This not only provides additional profits, it can also stabilize our production. Like the super battery plant we're building in Kaohsiung, we will install about 10MW of ESS. This can also participate in the ETP. As everyone knows, there has been some power shortages in Southern Taiwan, so our ESS can help to stabilize production and also create profits from providing services to TaiPower via the ETP. Thank you.

Chairperson Chang:

The next question is whether or not TCC's green energy investments will enter other green energy fields. Let me ask our Senior Vice President Lu to answer this question.

Senior Vice President Lu:

For our green energy business, including solar and wind, and including the ones that are already connect to the grid and one that are currently under construction, the total is about 200MW. These are mainly solar and wind. As the Chairperson mentioned in the opening remarks that we need to have dynamic sources of renewable energy, so we have been developing geothermal energy and ocean thermal energy conversion (OTEC). Geothermal energy development is located in Taitung and the CPC Corporation is helping TCC Green Energy to conduct in drilling the trench well. As of today, we have reached 1,300 meters. The benefits of geothermal energy are that it can produce electricity 24 hours a day and has almost no effects on the environment. The other is OTEC. This is located close to Hoping Power Plant. We have geological advantages as the coastal slope is 20 degrees, on the west coast of Taiwan is about 5 degrees. That means in less than 2km of distance, we can reach 600 meters of depth. We are still assessing this technology, by obtaining cold sea water from the 600 meters with the temperature around 6.8°C, and use the warm water of the power plant to conduct in thermal energy conversion. Also, the warm water of the power plant can be used as a small-size hydroelectric generator. In other words, the water used after the thermal energy conversion with cold sea water can also have other uses such as purify into drinking water or for farming. More importantly, while we're constructing these different types of renewable energy, we are also cooperating with local communities to revitalize the local economy. Like in Honye, Taitung, in addition to drilling trench wells, we opened a Honye Valley (Vakangan) Green Energy Hot Spring Park. Within the park, 70% of the employees are young people from the local communities. Another example is our fishery and solar symbiosis in Chiayi, which the first phase has been connected to the grid in October 2022. After the completion, we're working with



the local fishery community on all fronts including farming, maintaining, and selling.

Chairperson Chang:

There are several questions left, one is does TCC have capital raising plans in 2023 and are there any overseas investment and capex plans. My answer is we don't have any capital raising planned for 2023. Any overseas investment plans will go through the Board first. Right now, we don't have capital raising plans for 2023 because we have enough capital. If there are any good opportunities, we will report to the Board and then make public announcements.

Another question is whether the dividend policy will remain 75% plus or minus 5%. My answer is the policy will change. But any change will need to go through the Board and the AGM and then we will make public announcements.

The last question is regarding our idle land in Gushan, Kaohsiung and are we developing the land. The answer is we are designing and applying for rezoning, it is still under the planning stage so we have yet to start any constructions.

I would like to say here that if you have an opportunity, we welcome you to ask NHQA's CEO questions regarding energy transition. A lot of people in Taiwan don't understand energy transition, but he understands it very well as he's been in this industry for decades. Secondly, very interesting, no one asked us about the UHPC product. This is very interesting because it is the solution to one of the biggest problems with ESS in the world, which is the fire issue, and once it is caught on fire, it is very hard to extinguish. Since no one asked questions about this means you might not have full understanding about ESS.

Are there anymore questions? No? Ok, just in case I want to mention this, the cement market I've talked about, as we reported in our presentation that our cement sales volume decreased by 30% on year, but, I don't know if any one of you noticed, our consolidated revenue increased by 5% on year. This means our revenue is already showing growth. Although our margin has yet to show growth, the transition has begun. In the presentation, everyone can see that our non-cement revenue share in first-third quarter of 2022 is close to 30% and this figure will grow in 2023. I encourage everyone to look at our UHPC ESS cabinets which can withstand internal temperature of 1,000°C for two hours, actually it can withstand that temperature for three hours, but we also have other solutions that we did not mention in our presentation. The second thing is that we put a lot of thoughts into the design of today's venue, if the audience has a chance, please feel free to walk around and take a closer look at the details, like tiny bugs and organisms in the plants behind me. Let us not forget about the importance and the diversification of these organisms. These diversified organisms help to support the whole ecosystem on Earth. Every life is important. If there are no more questions, I would like to conclude by asking everyone to provide services to life. Thank you everyone!

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**Host of the Conference:**



3Q22 Investors' Conference  
November 14<sup>th</sup>, 2022



This concludes our investors' conference. I wish you all good health and success in investments. Thank you.

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