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Taiheiyo Cement Corporation Sustainability Briefing Q&A

Date and Time: Thursday, March 27, 2025 from 10:00 a.m. to 11:00 a.m.

Attendees:

Hideaki Asakura (Director in charge of Sustainability Promotion Department)
Vice President and Representative Director
Masahiro Ban (Officer in charge of General Affairs Department)
Managing Executive Officer
Hiroyuki Takano (Officer in charge of Central Research Laboratory)
Managing Executive Officer

Q1. You mentioned the fact that cost is one of the problems you have encountered in putting the demonstration testing that you are making progress on into practical use. First of all, are there any other areas outside of cost that you feel are causing a bottleneck in the process? And secondly, back to the topic of cost causing a bottleneck, I'd greatly appreciate it if you could give us a rough estimate of how high of a cost we are looking at under the present circumstances.

A1. We are conducting experiments in Sanyo Onoda City, Yamaguchi Prefecture, with the goal of implementation at the Kawasaki Plant of DC Co., Ltd. as previously mentioned, and while the scale of these demonstrations range from small to medium and large, to put it in the simplest terms possible, the price of the resulting product is estimated to come out to around 60,000 yen per one tonne of cement. The commodity price of cement in Tokyo is around 16,000 yen in the current market, meaning that the cost would come out to about quadruple the standard amount. I personally have many different opportunities to speak directly with shareholders, and a common thread in these conversations is uncertainty over who exactly would be willing to buy cement at this exorbitant price. As such, and this is part of the ongoing dialogue we have with the Ministry of Economy, Trade and Industry, the best outcome would be to increase everyone's salaries to ensure that they are able to afford these prices. Alternatively, these costs are borne entirely by the government, especially as in Europe. Although we have progressed this far in terms of carbon neutrality, as mentioned at the beginning of this briefing, the people of Europe are experiencing a downturn in shareholder sentiment toward these efforts. With the imminent threat of further aggression from Russia and a fairly dark outlook on the general economic situation, it is evident that there has been a significant downturn in comparison to last year and the year prior. However, even amid these conditions, it seems clear that the people of Northern Europe still desire to encourage and propagate the carbon neutral technologies that have been developed up to this point. The common thought is that stable financial assistance must be provided by the national government as it is in Northern Europe, and we have expressed our desire for this to be the case in Japan as well.

Let me provide additional information on the technical challenges that we face in this process. We are expected to largely achieve our KPIs for the Green Innovation Fund project, specifically in regard to factors such as the concentration of recovered CO₂ and the recovery rate. However, as we have scheduled in the Green Innovation Fund project, we face the future challenge presented by the fact that this experimental equipment is still in the phase of experimentation, producing only five tonnes of clinker per day. This production rate must be increased to several thousand tonnes when it becomes actual equipment for practical utilization. This is on top of the one or two thousand tonnes being

produced at the DC Co., Ltd. plant. In scaling up our capabilities to this point, we intend to engage in a staged process of verification and seek to deploy the actual equipment by 2030. Furthermore, we plan to conduct these demonstrations at DC Co., Ltd., which operates on a relatively small scale in the context of our company as a whole, but at the same time, we have cultivated experience through the development of NSP, and are confident that we will be able to scale up our output once we have accumulated a selection of basic data on various relevant aspects. Be that as it may, we recognize that this verification process indeed presents us with a major challenge.

Q2. In your response to the previous question, you mentioned that the price of cement would come out to be 60,000 yen per tonne. In terms of the investment amount, can you give us an idea of what is to be expected?

A2. We estimate that the investment amount will reach tens of billions of yen, even at the relatively small scale for operations at the Kawasaki Plant of DC Co., Ltd. We are currently engaged in internal discussions on whether to replace all kilns in their entirety or whether significant experimentation is required to limit expenses to a more moderate scale, or to dial back our ambitions for size altogether, to abate the difficulties that are encountered in determining the exact zone.

Q3. You provided us with an explanation on the chlorine bypass system. Can you tell us what the current introduction rate is in relation to the total number of kilns? And how much would it cost to further increase this statistic?

A3. The chlorine bypass system has been installed in nearly all of the kilns in operation at our domestic plants. In this briefing, we were talking about our efforts to enhance the function of these systems. The current chlorine bypass function lacks the capacity to enable us to further increase the acceptable allowance of chlorine. Therefore, we are engaged in development to increase the efficiency of chlorine removal, targeting implementation in FY2027.

Our plan is to subsequently introduce these efficiency improvements at domestic plants, particularly those that handle waste plastic with a high chlorine content. We are currently working to estimate the investment amount that will be required, but have yet to arrive at a specific figure. However, we don't believe that this amount will be overly significant, and consider it to be an investment that will serve to enhance business profitability.

To provide slightly more information, I'd like you to note that this technology is patented by us, and our operations include both installation of chlorine bypass technology overseas as technology patents and sales of this system to cement companies in Asia. The result generally depends on the scale of the plant in question, but you can broadly think of the amount of investment in terms of billions of yen, with large plants naturally requiring a more significant amount while small plants can be accommodated with less.

Q4. I'd like to ask a question about blended cement. In regard to this topic, you previously mentioned the fact that demand is increasing overseas, but could you also explain what factors are creating barriers for increasing demand for this product in Japan? Please tell us more about aspects such as the difference in quality and the impact on concrete strength.

A4. Overseas markets include a variety of regions such as Asia and Europe, but the core issue is the difference in governing standards for cement. The fundamental thought process overseas revolves around regulations related to performance once cement becomes concrete, whereas in Japan, the industry is strictly and somewhat severely

regulated by Japanese Industrial Standards (JIS) for the materials and admixtures or the recipe that is used to produce cement in the first place. Cement contains supplementary cementitious components such as limestone (5% or less), but from around next fall, this rule is finally expected to be relaxed to allow us to mix in 5% more, and all of the cement manufacturers in Japan feel a sense of potential as we escape the limit of 5% and are able to consider, for example, the addition of limestone powder or fly ash. The Japanese market is hindered by the fact that although there is a standard for blast furnace slag cement, it is not a standard that allows for mixing in many different types of materials. Many Asian countries have created standards that take the best aspects of both ASTM and Japanese JIS that one could say attempt to get the best of everything to ensure that all sorts of materials can be mixed together as local production for local consumption. Therefore, these standards are fairly forgiving in as far as allowing a product to be a mixture of various materials such as fly ash, slag, and locally sourced basalt as long as they are able to maintain a certain level of performance. In that sense, there is a wide margin for what is considered acceptable practices. On our own behalf, we are putting energy into exports in seeking to increase the volume of exports to markets in which we excel such as, for example, Singapore and the Philippines.

To provide additional information on one further point, I'd like you to note that we have pursued action from the Japan Cement Association on revising the standards in Japan, resulting in the standards being scheduled for revision in FY2026 to increase the acceptable ratio of supplementary cementitious materials from 5% to 10%.

Seeing as the Japan Cement Association will officially start discussions on a new standard that will further increase the mixing ratio of limestone in the near future, we will also pursue action from the Ministry of Economy, Trade and Industry in convincing them that it will be necessary to establish new standards for Japan within the next several years.

Q5. Although today's briefing was supposed to be about sustainability management, much of the content involved becoming a leader in the cement industry in the context of the future vision targeting 2050, and how you are promoting circular economies and carbon neutrality as measures to reach this ambition. Outside of climate change, do you have any other policies or commitments in relation to sustainability management?

A5. We indeed selected the two subjects of carbon neutrality and circular economies as the main theme of today's briefing. Analysts and members of the general public alike have participated in tours of our plants in the Kanto region, located in both Hidaka City and Kumagaya City in Saitama Prefecture, and what I'd like to emphasize to you here today, is the absolute surprise they experienced when they were able to witness just how much waste a cement plant was able to accept, how adept we were at handling this waste, and how we were able to incorporate it into our operations without affecting the quality of the cement produced. We feel driven to make everyone further aware of this fact. This consumption technology did not come into existence overnight. We are proud of having steadily refined this technology into a legitimate technology for consuming waste, even when the cement industry was facing serious financial constraints after the end of the rapid growth that was previously mentioned. This era will eventually come for those in Asian countries as well, one way or another. As such, we are committed to contributing to society by spreading this technology as a technology for establishing circular economies. We believe that this is a major theme that deserves to be covered.

Q6. This is more of an appeal or a request than a question. In short, I'd like to see these challenges for circular economies and sustainability management integrated from a

slightly broader perspective and approached as a feature of your management strategy, not only from the perspective of climate change and carbon neutrality, but also in the form of a so-called life cycle assessment (LCA). I'm aware that your company is currently on the leading edge in promoting LCA analysis on an internal level. However, I also fully recognize that you are still at a stage where you are unable to provide results and reflect on your direction in an explanatory briefing such as today. Be that as it may, the future vision that you have set forth is to become a leader in global cement manufacturing. With this being the case, in light of the trend toward LCA analysis becoming mandatory, for example, with the LEED rating system for providing a functional evaluation for residential properties, rather than focusing exclusively on climate change and carbon neutrality when considering sustainability management, I'd like to see you promote LCA analysis to a slightly more evident extent and strive to adopt a broader perspective in considering this problem. I have tremendously high expectations for your company. Thank you for your consideration.

A6. Thank you for the valuable opinion. Although we did not touch on LCA in today's briefing, in the Green Innovation Fund project, LCA is indeed still a required step after the process has been studied. We would like to create another opportunity to announce the results of this assessment at a later date. In regard to circular economies, we have been working with the National Institute for Environmental Studies, which is linked with the Ministry of the Environment, for the past several years to document the implications in terms of LCA of utilizing waste plastics and waste and by-products, and we would like to announce these findings in a simple-to-understand format in the near future. Thank you very much.