Investor Day 2023 Progress on Activities Toward a Decarbonized Society Q&A

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Q1: Securing High ROI in the Next Generation Fuel Business

Can you tell us about the next-generation fuel business on page 4 of the presentation? You explained that accumulated invested capital would be around 500 billion yen, profit about 60 billion yen, and ROIC 12 percent. Recently, next-generation fuels has become highly competitive area, and there is a growing perception that ROIC is low. How would you be able to maintain a high ROIC in this field?

Sato: Ammonia and methanol are business domains where we have traditionally performed very well. We are also in a strong position in the Energy segment, having developed strong relationships with national oil companies and electric utilities.
In addition to trading, we have also developed relationships with manufacturers in the Chemicals segment. For example, we have built a network with CF Industries, the world's largest ammonia producer. The combination of these helps us increase profitability. At the same time, in the process of selecting from a large number of deals, we negotiate and obtain favorable terms to further increase profitability.
That is for the ROIC of the next-generation fuel business, but we are also building our business in adjacent areas, such as ships and aircraft that use next-generation fuels, including establishing business networks and trading. Our strategy is to use chains and clusters to ensure profitability.

Q2: Background Leading to the Promotion of Clean Ammonia

I would like to ask about clean ammonia. Clean ammonia is also being promoted by the Japanese government. I believe it is a great solution in terms of making effective use of existing coal-fired power generation.
On the other hand, some have pointed out that co-burning at coal-fired power plants may extend the life of those plants. What kind of internal discussions took place in response to these points of view, and how did you come to the decision to move

forward with clean ammonia? Alternatively, please explain how you respond when such observations are made by external parties.

Sato: Your question is not just about us but also stems from Japan's position. This is a very important problem, and yet one that will be quite difficult to get global agreement on.
Japan and South Korea already have coal-fired power generation, and in developing countries, especially in Asia, the reality we face is that coal-fired power plants are a must to ensure a stable energy supply.
If countries such as Japan and South Korea, which already have coal-fired power generation, were to switch entirely to nuclear power starting tomorrow, there would be a whole new set of challenges and issues even then. So, no matter what, a process of gradual transition is required. This is very similar to the concept of natural gas or gas-fired power generation.
When it comes to ensuring a stable supply of electricity while using existing coal-fired power generation and gradually reducing greenhouse gas emissions, ammonia plays a vital role whether it would be co-burning or single burning.
In the next-generation fuel business, our clean ammonia has applications not only in co-burning or single burning thermal power generation but also in the world of mobility, where it is used for ships powered by dual fuel with ammonia.
Furthermore, in other applications, such as traditional fertilizers and chemicals, the significant change in costs means the replacement will not happen right away, but the aim is to make a gradual shift to clean ammonia.
That last part deviated a bit from the question, but we are advancing our clean ammonia business based on the belief that it's necessary to promote a gradual transition in thermal power generation.

Q3: Direct Reduced Iron Business

In today's explanation, there was mention of steel making initiatives. You have been looking into the direct reduced iron business, including hydrogen reduced iron, together with Kobe Steel for some time. I believe you are now entering the stage where you can showcase the results.
In Europe, construction has already begun on commercializing the first unit using hydrogen-based reduction. In the development of this business, you will presumably start with a natural gas-based project in the Middle East, but considering the scalability and future of the business, if you can just secure the infrastructure for hydrogen, it seems that technically, you would be able to move on to the next step.

How will you include natural gas or hydrogen-based reduction in your vision as a first or next step in developing the direct reduced iron business? I know it's still early at this point, but if you could even just touch on the direction of the business, that would be great.

Sato: In Oman, we will begin manufacturing direct reduced iron using natural gas, employing Midrex® technology.
As explained, just doing this, we will produce less than half the greenhouse gas and CO2 emissions of the blast furnace method.
We will look to use CCS and CCUS to address the CO2 emissions, preventing them from being released into the atmosphere. CCS will not be launched at the same time as production begins, but we will work on it.
Midrex® technology itself has established the technical capability for hydrogen reduction at 100 percent hydrogen. They're also using Midrex® technology in Europe for hydrogen reduction. The difference is whether to start there or to change from natural gas-based direct reduction to hydrogen reduction.
The approach we are currently considering involves initially starting direct reduced iron production with conventional reformed natural gas and subsequently transitioning to hydrogen reduction. Hydrogen reduction requires clean hydrogen, so we would look at transitioning once enough is available.

Q4: ROIC and Profitability in Next-Generation Fuels Business

Based on the explanation on page 3 of the presentation, I understand that there are already various pipeline projects available and that you are currently in a very favorable situation of being able to choose from.
On the other hand, please tell us which of your businesses have the highest ROIC and how you approach choosing new investments when making major changes to your portfolio. Also, you mentioned earlier that you are aiming for profit of about 60 billion yen in the next-generation fuels business. What is the time frame for that?

Sato: It is common to hear that greener businesses, including business investments, may not be profitable, may have low profitability, or may take time to monetize, and in some areas, this is definitely true.
However, we believe the next-generation fuels business is an area where early cash return can be expected. For example, there are regulations for logistics involving ships running on heavy fuel oil, meaning a change in fuel is unavoidable and as such, there is considerable demand for this.

We believe this is a domain where we can gain the first-mover advantage by getting in ahead of the competition amid this demand. In our case, we established the Energy Solutions Business Unit four years ago and have been pursuing this domain from early on. In terms of being a first mover, e-methanol, for example, is expected to be the first business of its kind in the world.
In this way, we intend to ensure profitability by proceeding with these initiatives as a first mover. Demand will increase over the long term, and we will carefully select cost-competitive businesses.
The timing of profit contribution will, of course, vary from project to project. However, we have presented ROIC and other figures for the fiscal year ending March 2030, so we are looking at projects based on the assumption that those figures will show up by then.

Q5: Visualization of Revenue by Segment

I have a request. In projects jointly undertaken across multiple segments, I believe revenue recognition would also span multiple segments. In such cases, I hope you will take measures to ensure that the revenue from each project is visible to external stakeholders.

Sato: In our case, the boundaries between the various business units are very low, and in fact, we already have projects in which multiple business units collaborate. In such instances, as you may expect, revenue is allocated and recorded accordingly among the involved business units.
We disclose financial figures as results divided among segments, but of course, we want to make sure we present these figures in an understandable manner for investors and external parties, including continuity.
Whenever making changes, we will, of course, consult with all stakeholders and proceed with proper accountability.

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