Summary of Questions and Answers of on-line Briefing Session on New Technologies and Business Development Strategy of the Medium-Term Management Plan (2021-2025), held April 20, 2021, Summary

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1. General

Questions	Answers
How much percentage of share does TOYO target in SAF and fuel ammonia markets?	The expected market size is written from a macro perspective. We would like to focus on what our customers are interested in, whether TOYO can contribute to meeting customers' need, and demands are with power supply or fuel ammonia and so on. In any event we would like to work together with our customers & partners to create new markets and new value chains in order to realize carbon neutrality. As a result, we believe that we will gain market share accordingly.

2.SAF (Sustainable Aviation Fuel) Business

Questions	Answers
Do you think about biomass feedstock from a woody biomass? Are you sure if the feedstock of biomass can keep on sustainably being supplied?	As of today, we are targeting woody biomass and have proven technology. It is important for us to discuss the best candidate in which regions the SAF plant should be built on, in Japan or somewhere overseas including the logistics aspect with partners and trading companies that have conducted demonstration experiments. In future wood-based waste materials can also be used.
As for the woody biomass imported from abroad, what do you think of that there is an objection CO2 is generated even on the way importing from abroad?	We will consider how it is optimal to minimize CO2 emission for the entire value chain, including the Scope 3 when biomass feedstock to be supplied from abroad.

With regard to SAF, the target producing cost 100 yen per litter is shown in the presentation. Tell us how much is the current cost level? And what are the critical hurdles for cutting it down to the target level 100 yen per litter?	As described on page 7 of the presentation, the current producing cost of SAF is two to four times as expensive as that of current jet fuel, which is given by IATA and associations. In order to realize cost reductions, it is necessary to build a value chain that includes large-scale of plants and raw material procurement. There are large plants in the United States, the United Kingdom, and elsewhere that are planned or constructed. It could be the sample of our way forward, we can see how producing costs can be reduced as progress.
As far as the Japan domestic biomass power plant market is concerned, it could not have realized without subsidies (Feed-in Tariff law). In this sense, SAF seems to be also difficult without any assistance of the government. What is your idea?	Compared to the United States and other countries, which are rich in thinned wood, the construction of plants in Japan is difficult, but it is necessary to establish a Japan domestic value chain from the viewpoint of providing a stable supply of SAF to the Japanese aviation industry. The Government of Japan has a similar view, and the issue is how to build social mechanisms such as carbon pricing. If we don't do anything, the Japanese airlines may no longer be able to fly to Europe.
Some companies have already made SAF in Europe and U.S. who are the first-mover. What is the difference between theirs and Japan domestic value chain?	There is no technical difference. There are several projects planned and some of them are under construction in Europe and the United States. It is not necessarily that we definitely build SAF plant in Japan. We have to discuss the best location for SAF production, through the establishment of a SAF supply system through the establishment of a business entity, and the establishment of a value chain that can procure raw materials, etc.
What is the difference when SAF is viewed as a total ecosystem? In Europe, a social system for collecting waste oil has begun to be established. How do you think of your disadvantage against them?	In Europe, SAF from waste cooking oil has already been in the market. However, considering the cost of transportation from Europe to Japan, it won’t be competitive in Japan market. Therefore, it is meaningful to consider producing SAF in Japan and some countries close to Japan. Then it is expected that there will be an economic advantage.

3. Fuel Ammonia Business

Questions	Answers
Although fuel ammonia is said to be co-fired at a coal-fired power plant, is it difficult to burn it stably even at the demonstration level?	Technologically, 20% of co-firing is confirmed. The current challenge is to raise the level to 100% burning with ammonia. Burner and boiler vendors are demonstrating those goals. As pointed out the stabilization of combustion is one of the challenges. On the other hand, it would be necessary to supply 14 million tons/year fuel ammonia, if replacing fuel with 20% ammonia co-firing at all coal-fired power plants in Japan. In this case, the demand for large quantities of fuel ammonia will accelerate the current roadmap of the Government of Japan.
How much capital investment is required to upgrade the facilities, once ammonia is mixed with existing power generation facilities fueled by heavy oil or coal by 20 %?	Small upgrade is required, such as replacement of the burner equipment and store ammonia. On the other hand, the existing major equipment like power plant and boiler body can be handled without any changes.
On page 15, it is said that there are many inquiries from various regions regarding fuel ammonia. I would like to ask you any information which can be disclosed today.	It is difficult to answer to your query at this stage because each discussion with customers and partners is ongoing for development. We will actively disclose information as soon as we reach the stage of publication.
In the process of abolishing coal-fired power generation, I personally have doubt that ammonia will be needed for 100 million tons in the future on the assumption that coal will continue to be co-fired. Does anybody think about it would be better to develop hydrogen directly? In addition, it seems that ammonia is used for co-firing in gas turbines. If this happens, LNG may be a good alternate. Please explain how ammonia is really needed.	As shown on page 14, the current cost of ammonia is in the range of 20 yen per Nm3 in hydrogen equivalent. The Ammonia Council in Japan has also set up the goal is to reach the less than 20 yen in early 2030s. On the other hand, hydrogen target is at the level of 50 yen in 2030 and 30 yen in 2050 at the same terms and conditions, and there is a huge cost difference in between ammonia vs hydrogen. Ammonia is currently under active debate as it can be lowered to near the level of LNG. Furthermore, from the perspective of carbon neutrality, since LNG emits CO2 when burning, meanwhile ammonia does not emit CO2, which has been recognized as one solution. Referring to the report dated February 8, 2021 of the Council for the Introduction of Fuel Ammonia in Japan (conducted by METI), it is clearly indicated that the cost comparison between hydrogen and ammonia is very huge, with the proviso "as on today". Under the same conditions, transportation cost for hydrogen to Japan is 162 yen per Nm3, and ammonia is 2.3 yen per Nm3, so the two digits are different. We believe that even if we

	reduce the cost of transporting hydrogen over a period of two to three decades, the difference will not be zero. Therefore, given the realistic achievement of carbon neutrality in 2050, we believe that ammonia can be fully utilized during the energy transition.

4.CO2-EOR and CCS

Questions	Answers
With regards to CO2-EOR of P.19-20, it seems that TOYO's competitiveness rely on collaboration with Baker Hughes' technology. Please explain opportunities and risks, such as whether other competitors possess more technical capabilities and whether there are companies other than TOYO that cooperate with Baker.	As Sub-Surface Engineering Company, Baker Hughes, Halliburton, and Schlumberger are three of the largest firms in the field. TOYO does not stick to Baker Hughes. On page 22, we have started the collaboration with Baker Hughes since the Southeast Asian project. For before projects than this, TOYO by ourselves undertook subsurface design to some extent. Because of the clients' request, TOYO needs the deeper knowledge and speed in subsurface portion, we started the collaboration with Baker Hughes, who is the first priority position. TOYO can co-work with other subsurface engineering firms.
TOYO has announced that TOYO signed a comprehensive agreement with U.S company 8 Rivers. Could you please tell us the intent of the agreement and how it is related to TOYO's new technologies and business development strategy?	8 Rivers has technology for removing impurities in the gas. Mainly for H2S and CO2 Removal process are their strong area, typically shown in the flow diagram at the well in P.19. We expect to reach the target by utilizing 8 Rivers' technology in economical operation for removing H2S (hydrogen sulfide) and CO2 in more economical.
On P.21, there are more than 50 CO2-EOR projects. How much is TOYO's share in the market? Or could you give us a hint to judge TOYO's position?	As the basis, we would like to share the consensus that successful EOR can be achieved only by joint work by subsurface and surface technologies. In the past, the International Oil Company (IOC) managed the entire project and managed all of the technologies related to EOR. The change came at the time when the oil price exceeded $100/barrel. The Oil Production Country's National Oil Company (NOC) started to materialize EOR by themselves. To apply them in advanced technologies with a short period, NOC sought engineering companies who could simultaneously cover both subsurface and surface technologies. Usually, this type of the work would be operated by General Engineering Service Agreement (GESA). In the world, Approximate 10 engineering groups can cover this type of agreement. fortunately, TOYO is only Japanese company in this category. As both IOC and NOC show the interest to EOR at the initial stage, and as Oil Production Government will approve the field development by overall developing plan (Primary to EOR) with harmonizing environment. Thus, oil Company prefers to the engineering firm capable of overall plan development.

Is it correct to understand that CO2-EOR differs from ordinary CCS because not only storage CO2, oil can be extracted as by-products from injecting CO2?	As shown in the presentation, blue ammonia production cost is relatively more expensive than normal gray ammonia because of expensive CCS CAPEX cost, and of CO2 credits price is not high enough. To promote CO2 to store Reservoir, CO2-EOR would seems to be an initial preferable action for IOC/NOC on the points of more crude oil production with injected CO2 storage in the reservoir. It can reduce CAPEX for CO2 Injection with smooth introduction of CCS. When the reservoir is filled with CO2, the field is moved to CCS without additional CAPEX. In addition, there are 2 points to explain the difference between CCS & CO2-EOR. **#1**. From formation points of view, Water Reservoir is fitting for CCS, and oil field (Gas, Oil, Water Reservoir Combination) for CO2-EOR. Because of concept, CO2 Injection target in CCS is aquifer (Water) formation mainly "**above"** oil formation. As per the nature, it is difficult to monitor injected CO2 dissolved in water under high pressure and by existence flow in the aquifer reservoir. On the other hand, in case of CO2-EOR, the injected CO2 to oil field "**deeper than**" the aquifer, which means much less possibility to CO2 leaking to the ground. **#2**. Small pores in the oil reservoir, shown on P.18, can capture CO2. By this nature, CO2 stores in pores even at the CO2-EOR stage. Illustration on P.17 shows the water reservoir below the oil reservoir, which is the same structure as the oil reservoir. This shows the capability of CO2 capture. Therefore, if the injection layer of CO2 after the EOR is extended to this water reservoir, more CO2 can be stored. This is TOYO's approach to oil reservoirs and oil fields. Therefore, the oil field is considered the most ideal for the CCS purpose.
CCS is cheaper because it is shallow but there is a risk of CO2 leakage. On the other hand, although CO2-EOR is deep, it is payable if an income of the oil generated as by-products is also counted. Is this correct understanding?	It is difficult to say that CCS is cheaper only because from the view points of the depth. The oil/gas production field, where CO2-EOR is applied, originally has facilities for producing crude oil. Drilling to oil reservoir (Deep Well) is costly, but investment at the start of operation. Accordingly, when CO2-EOR is applied to oil fields, majority of facilities already exists. We expect less initial investment cost for CO2-EOR rather than pure CCS project.

Can CO2-EOR technology be used for coal reservoir?	Yes, it can also be applicable to coal reservoir. In the past, we used to recover coal gas by injecting CO2 into the coal reservoir.

(Note)

- In some cases, the contents have been reordered to help readers to naturally be understood.