

## Summary of the Sustainability Briefing, held on January 20, 2023

Asahi Kasei Corporation

### Participants

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### Presentation

#### 1. Sustainability with Green/Digital/People

Kudo: The Sustainability Briefing has been held since fiscal 2020, and this is the third such briefing. We are addressing transformation of “GDP,” which consists of Green, Digital, and People (human resources). I will give a presentation with particular focus on “G” and “P” today.

##### P. 4 Major changes in 2022

While the past year brought us a number of unpredictable changes, including the Russia–Ukraine situation, we also celebrated the 100th anniversary of our company’s founding in May 2022 and launched the Medium-Term Management Plan 2024–Be a Trailblazer (MTP). This has two meanings for us. First, it confirms for us that Asahi Kasei is a company that has grown over the past 100 years while undergoing change. Second, it is precisely because we are facing difficult times that we need to return to our roots and pursue our goals without wavering.

##### P. 5 Our aims

Our Group Mission is “We, the Asahi Kasei Group, contribute to life and living for people around the world,” and we conduct our business operations based on this. In addition to global warming and the COVID-19 pandemic, which have long been recognized as issues, energy shortages and price hikes due to growing international tensions, as well as inflation and rising interest rates, are making the environment surrounding us even more challenging. Against this backdrop, the pursuit of the two aspects of sustainability for us—“contributing to a sustainable society” and “sustainable growth of corporate value”—has become even more important for how we conduct management.

The four key themes shown on the right are the foundation and drivers of these efforts: Green Transformation, Digital Transformation, HR Transformation, and maximum use of intangible assets. As I mentioned at the beginning of this presentation, today I would like to focus on Green Transformation and HR Transformation in particular, and finally, I would like to share with you how we are strengthening our risk management.

#### 2. Green Transformation

##### P. 7 Initiatives regarding climate change

I will start with Green Transformation. Initiatives on climate change have been implemented by many countries since the Paris Agreement, and the momentum has been growing

significantly. On the other hand, global greenhouse gas (GHG) emissions, which temporarily decreased due to the economic slowdown caused by the COVID-19 pandemic, have begun to increase again as economic activities have resumed. Also, there have been moves to return to fossil fuels, including the resumption of coal-fired power generation due to recent energy problems, which is a cause for concern as a factor in increasing GHG emissions. However, in Europe, the U.S., Japan, and other countries, policies to accelerate the use of renewable energy and other energy sources that lead to decarbonization are being enhanced. There is no change in the current global trend toward decarbonization, and we will continue to contribute to achieving this goal.

The average global temperature is said to be +1.1°C above the level in pre-industrial times today, and there are a variety of climate change scenarios that may limit this to +1.5°C by the end of the century, or even +4°C or more. In this context, transition and physical risks will undoubtedly arise, and it is important for us to control these risks. On the other hand, obtaining opportunities for mitigation and adaptation is extremely important, both in terms of achieving sustainability in our business and contributing to the sustainability of society. The current MTP is focused on these issues, and the 10 growth-driving businesses designated as “10 Growth Gears” (GG10), “Asset Light,” “Structural Transformation,” and other key items are also significant in terms of our efforts to address climate change.

## P. 8 Risk control

In order to reduce and control transition risks such as decarbonization and changes in market structure, we must take actions to achieve carbon neutrality, develop recycling technologies and implement them in society, use biomass fuel, and optimize allocation of management resources.

Regarding physical risks such as serious storm and flood damage and rise in temperature, we are working on measures to deal with damage at manufacturing sites and supply chains, as well as measures to deal with worsening work environments due to rising temperature. For example, at construction sites in the Homes business, air-conditioned clothing and spot air conditioners have been installed.

These risk controls are also important in terms of capturing business opportunities, as implementing them ahead of time will give us a competitive advantage in business.

## P. 9 Action for carbon neutrality

One of our most important transition risk initiatives is our own GHG reductions, where we aim to achieve a reduction of at least 30% from 2013 levels by 2030. Although our GHG emissions have been reduced from about 12 million tons/year in the 1990s to about 4 million tons/year currently, a reduction to about one-third, we are now in the process of reexamining what we can do to become carbon neutral.

In order to achieve carbon neutrality, in addition to ground-breaking technological innovations, it is essential to change our business model. And so, we are identifying GHG reduction measures at each of our manufacturing sites, business units, and operating companies to implement every possible measure currently available to us toward 2030. One of the main reduction measures is low-carbonization of in-house power generation, and we are currently examining what is needed to stop using coal, and what the investment and costs would be if CO<sub>2</sub>-free methane, hydrogen, and ammonia were used as fuels for power generation. We are also making steady progress in renovating our hydroelectric power plants.

An example of process innovation is the use of biotechnology in the production of polyamide 66. Polyamide 66 is an engineering plastic with excellent strength and rigidity, and is expected to draw stable demand, especially for automobiles, but it currently uses raw materials derived from fossil fuels. By changing the raw material from fossil fuels to biomass and adopting innovative processes, we are currently working to evolve it into a plastic suitable for a sustainable society with low GHG emissions. The cost structure that will result from the implementation of these measures is a key point and will serve as the basis for future business strategies and business portfolio studies, and we are preparing scenarios and cost estimates for achieving our 2030 and 2050 goals. The possibility of collaboration with other companies is also under active consideration.

## P. 10 CFP calculation and systematization

In parallel with such GHG reduction measures from a macro approach, we are implementing carbon footprint of products (CFP) initiatives as a micro approach to meet individual customer requirements. Over the past year, requests for CFP from customers has continued to grow. We have organized our CFP calculation concept and calculation flow in a unified manner within the Group, and CFP calculations are being implemented in each of our businesses. In the Material sector, more than half of all divisions have already completed or are in the process of CFP calculation.

Currently, calculations are being made with priority given to grades that are highly requested by customers, and this has improved our calculation skills, making it easier for us to expand the scope of calculation. In order to meet the growing needs of our customers, we will establish a group-wide standard system for CFP calculation in fiscal 2023 to improve the calculation efficiency. Also, since the CFP calculation will visualize the GHG emissions of each manufacturing process, we will actively work to reduce our GHG emissions based on this information.

#### P. 11 Obtaining opportunities

Next, I will explain the opportunities brought by climate change. In the current MTP, we position GG10 as growth businesses and focus resource allocation to them, and we have verified whether the current direction of these businesses is indeed appropriate in light of the latest reports on climate change. The areas marked with double circles are seen as particularly relevant to climate change.

There are both types of businesses: those with significant opportunities in terms of mitigating climate change, such as reducing temperature increases, and those with significant opportunities in terms of adapting to the impacts of climate change. While we do not know which climate change scenario will be realized toward 2050, we believe that our focus businesses will have opportunities in all cases and will be able to increase our corporate value.

#### P. 12 Hydrogen market

As a specific example, I will explain the market for hydrogen, which will be increasingly needed as an essential element of a decarbonized society. Japan led the world in defining a hydrogen strategy, and the promotion of practical application is currently being promoted as a policy in many countries in Europe and other regions. With the Russia–Ukraine situation, countries are trying to accelerate their transition to renewable energy, and in response, support for wider use of hydrogen is being incorporated into national policies.

The chart on the left shows the market forecast for the amount of water electrolyzer installations, which is expected to increase exponentially from 1 GW in 2022 to 10 GW in 2025 and 85 GW in 2030. The chart on the right shows the trend of large-scale projects. While the number of projects increased from 2021 to 2022, only 10% of all projects reached the investment decision stage. Everyone is watching to see how far technological innovations will actually advance and whether they will be cost-effective.

Although there are still issues to be resolved in terms of profitability and technology, we believe that the hydrogen market will certainly emerge with the support of governments around the world.

#### P. 13 Accelerating commercialization in concert with industry associations and partner companies

To capture these business opportunities, we are implementing a project for large-scale alkaline water electrolysis system development and green chemical plant demonstration under the Green Innovation Fund. The key to the practical application of hydrogen is the development of infrastructure and the stable and inexpensive production of hydrogen. To this end, it is essential to realize large-scale electrolysis systems with low-cost electrolyzers, operating efficiently and stably, in addition to a low unit cost of electricity. While the unit cost of electricity depends on the region and national policies, we believe that we can gain a leading position in other areas.

We have been engaged in the electrolysis business for about 50 years, and have an accumulation of experience over these years. On this basis, we are currently operating a 10 MW-class facility in Namie town, Fukushima Prefecture, for verifying the technology. In addition, we plan to accelerate development by installing a new pilot facility at our Kawasaki Works. We aim to

complete a highly reliable electrolysis system and bring it to market in 2025 to meet the growing demand for hydrogen.

However, for hydrogen to be adopted in society as an energy source, hydrogen production must be connected to upstream and downstream infrastructures, etc. as a value chain. We are actively participating in initiatives involving various companies in such value chains to gather information, promote our technology, increase our presence, and seek opportunities for collaboration with other companies. One example is our participation in the Hydrogen Council, a major global initiative.

#### P. 14 Helping the chemical industry provide value for a sustainable society

Now, let me explain the potential of the chemical industry to provide value in a sustainable society. The chemical industry emits approximately 60 million tons/year of CO<sub>2</sub> in Japan, second only to the steel industry, which emits the most GHGs. While the chemical industry has many challenges in terms of GHG emissions, it manufactures materials and products that are used everywhere in our lives, and there is great value in making these materials and products low-carbon and decarbonized. We recognize that the industry has the potential to make a significant contribution to society.

There are four important elements: CO<sub>2</sub> separation and recovery, recycling used plastics, changing feedstocks from fossil fuels to biomass, and use of renewable energy. We are developing technologies and conducting businesses related to these elements, and we believe that we can contribute to the greening of the chemical industry.

#### P. 15 Our solutions

We are developing technologies to create basic feedstocks from bioethanol. The points related to it are described here.

The first point is that among the various candidates for biomass feedstocks, bioethanol has established technology and is available in the largest volume and at low cost. Currently, bioethanol is often blended with gasoline and used as a fuel, but as the electrification of automobiles increases in coming years, the demand for bioethanol as a fuel is likely to decrease.

Second, bioethanol can be used to produce basic feedstocks equivalent to naphtha cracking fractions, such as ethylene, propylene, and BTX (benzene, toluene, xylene), and we are developing this technology.

Third, the development of the technology will likely allow us to utilize existing petrochemical complexes and processes.

Fourth, GHG emissions from the manufacturing process will be reduced in the end, and fifth, more sustainable materials that are essential to society can be delivered. Further technological development and business models are needed to realize this, but it is being considered as a project targeting 2050.

Note that this technology is just one example, but I personally believe that a restructuring of the petrochemical industry will be essential to achieve carbon neutrality through the use of various technologies. Building cooperative relationships and incorporating new technologies may be the way to encourage this. And so, we would like to pursue various possibilities without any preconceptions.

#### P. 16 Outline of a carbon neutral and sustainable society

This diagram is an outline of a carbon neutral and sustainable society, and it shows areas where we can contribute in the flow from biomass-derived raw materials.

#### P. 17 Outline of a carbon neutral and sustainable society / Main initiatives of Asahi Kasei

The areas that we are working on are highlighted in the diagram. I explained earlier about hydrogen and biomass utilization technologies, but there are many other initiatives that we are working on. We believe that it is important to complete this cycle in cooperation with other companies and governments.

#### P. 18 Environmental contribution products

We define products that contribute to the reduction of GHG emissions throughout society as Environmental Contribution Products. Regarding GHG emissions, Scope 1 and Scope 2 are for

emissions from our own operations, and Scope 3 is for upstream emissions, emissions at the use stage by end users, and emissions at the disposal stage. We have also included GHG emissions during the residency period of Hebel Haus unit homes in Scope 3 as emissions from the use stage. Environmental Contribution Products, however, are evaluated over the entire life cycle, regardless of these classifications.

Currently, 20 products have been certified as Environmental Contribution Products based on discussions with third-party organizations, and four products are listed here as examples. We will continue to contribute to society by developing businesses and conducting R&D aimed at reducing GHG emissions in society as a whole, as well as reducing our own GHG emissions.

### **3. People / HR Transformation**

#### **P. 20 Characteristics of Asahi Kasei HR**

Next, I will explain the Human Resources (HR) Transformation. Here we introduce some examples of external evaluations of Asahi Kasei's HR. The data on the left side is from OpenWork, the workplace review site by employees. We were ranked 8th in the engaging company ranking in 2021, and 1st in the overall evaluation ranking in 2022 within the chemical, petroleum, glass, and ceramic industries.

Also, in the METI case study report on HR management in corporations in May 2022, our HR department was introduced as an example of HR management practice that creatively obtains personnel and enhance engagement as needed to create value in diverse businesses. In the HRX of The Year 2022 award, we received the excellence award for initiatives implemented under the phrase "People are our most valuable assets, everything starts from people."

#### **P. 21 The theory of evolution**

Our human resources and our efforts are thus highly regarded in various ways, and we also rank relatively high in the rankings of companies where people would like to work. I recognize that we have become a company that is well known to most people in Japan. At the same time, however, I have a sense of crisis that Asahi Kasei may be losing some of its original heritage, and in the current MTP, which started in fiscal 2022, I set out some words to spur our employees into action. I want our employees to be change agents, as shown here. I believe it is extremely important for Asahi Kasei to awaken the heritage that our company originally has.

#### **P. 22 Look back on the path we have travelled**

Founded in 1922, we celebrated our 100th anniversary in 2022, and during this time we have drastically transformed our business portfolio. In the 1960s, petrochemical and textile businesses accounted for the majority of our sales, but now we are operating in three sectors through business development aimed at solving issues in society. You can see that we have grown while also undergoing major transformation.

#### **P. 23 Requirements of personnel and organizations, outline of HR strategy**

In the current MTP, we have adopted the term "A-Spirit" as the attitude we seek in our employees, which means an aggressive spirit and the spirit of Asahi Kasei. Specifically, I tell our employees that I want them to be people and human resources who are not afraid to take on new challenges, being strongly conscious of four things: an ambitious motivation, a healthy sense of urgency, quick decisions, and a spirit of advancement.

With this in mind, we have coined the phrase "lifelong growth," in which employees seek challenges and growth on their own initiative. Also, we believe that "co-creativity," which leverages diversity, is extremely important. The basis for all of this is the intangible assets that the Asahi Kasei Group has cultivated over its 100-year history, including Group Values, diversity, and an open and frank corporate culture.

#### **P. 24 Human strategy – outline**

For "lifelong growth," it is important for each individual to develop his or her own career plan, to pursue learning and challenges for growth, and for leaders to strengthen their management

skills to maximize the strengths of individuals and teams. For “co-creativity,” various efforts are being made from the perspective of expanding and connecting diversity. We are currently implementing measures based on KPIs such as the number of Group Masters, growth behavior index, and diversified HR index.

#### **P. 25 Human resources KPIs**

Among the KPIs, the number of Group Masters is increasing steadily. We set a goal of 300 in fiscal 2024, and the number of Group Masters reached 294 in fiscal 2022, expecting to achieve the goal one year ahead of schedule. We intend to continue to increase the number of Group Masters beyond 300.

The growth behavior index is an item in the work engagement survey, which indicates the extent to which individual employees are taking actions that lead to growth. It has remained at about the same level, but has improved slightly. Since setting a numerical target for this index may make the means into an end and lead to answers that raise the number, we will not set a target for this indicator, but will carefully monitor changes over time. However, we would like to enhance these indexes, too, in light of the type of human resources we seek.

We have set a target of 10% in fiscal 2030 for the proportion of women working as managers and Group Masters. We believe the target can be reached, as the proportion has recently risen to 3.7%, and there are many promising human resources among those who have not yet reached managerial positions.

#### **P. 26 HR strategy – specific measures**

As specific measures for our HR strategy, for the “lifelong growth” in the upper section, we adopted an autonomous learning platform called CLAP (Co-Learning Adventure Place), which has more than 10,000 internal and external e-learning courses and allows employees to freely study what they need to learn, free of charge. The platform was adopted last month, and many employees have already started using it.

To improve management capabilities, in addition to the work engagement survey mentioned earlier, a talent management system has been adopted to visualize human resources. We are also focusing on the nurturing and obtaining of management executives, and have linked some HR-related KPIs to executive remuneration.

For the “co-creativity” in the lower section, we are implementing a Group Masters system to develop human resources with diverse expertise, as well as measures to promote active participation of women, and we are also promoting human resources acquired through M&A to senior management positions.

In addition, since we have a wide range of business sectors, we are also implementing HR measures for which business leaders within each business unit are responsible, to ensure that the measures are in line with the issues faced by each business.

Among these measures, I will explain in some detail the unique measures of the Group Masters system, the employees work engagement survey, personnel transfers across business sectors, and the utilization of overseas personnel.

#### **P. 27 Group Masters – overview**

The Group Masters system is to continuously develop professional human resources who contribute to new business creation and business enhancement, as well as to provide them with appropriate compensation. Appointments are made after a verifying process to ensure that the defined requirements are met. As well as creating new businesses, fostering the younger generation is clearly described as one role of the Group Masters, since we consider it to be extremely important, besides deepening and demonstrating his or her own expertise.

The system includes several types of positions according to the depth of expertise, from Expert and Lead Expert, which are equivalent to manager and general manager, to Executive Fellow, which is equivalent to executive officer. We recognize that Asahi Kasei has fertile ground to nurture unique and talented human resources, as several employees have received the Medal with Purple Ribbon in the past, including Honorary Fellow Dr. Akira Yoshino, who received the Nobel Prize in Chemistry in 2019.

#### P. 28 Group Masters – significance and operation

The significance of the Group Masters system is to develop, acquire, and retain the professional human resources necessary for business expansion, and to have them contribute to the creation of new businesses and enhancement of existing businesses.

As the business environment and strategies change, it is necessary to review from time to time which areas require professional human resources, and so the fields where Group Masters are appointed are reviewed annually. Recently, new fields have been added, including digital innovation, biotechnology, pharmaceutical marketing, China pharmaceutical business, and machine safety. It is also important that human resources from support function departments are eligible in the core platform field, as well as R&D and other technical personnel.

#### P. 29 Group Masters – creating new businesses, enhancing existing businesses

This is an overview map of Asahi Kasei's patents. The red area is where many of our patents, centered on our core technologies, are concentrated and where we have strengths. The circled areas are those related to GG10. The mission of Group Masters includes to connect these core technology areas, in addition to improving their own skills and fostering future generations.

#### P. 30 Personnel transfers across sectors

Here is an example of personnel transfers across sectors. Our Homes business has developed mainly in Japan, but we have recently expanded overseas. The expansion of our overseas operations has boosted our business performance and cash generation capabilities, and in developing this business, we have leveraged our business platform of the entire Group, including the human resources and expertise.

There are many other examples where personnel transfers across sectors have been successful, such as employees with experience in B2C business making use of it in B2B business, and vice versa.

#### P. 31 Vitality and Growth Assessment to improve work engagement (i)

We have adopted the Vitality and Growth Assessment, which visualizes the work status of individuals and the organization, and implement the PDCA cycle to enhance work engagement, action to take on challenges, and drive growth. Each year around summer, a survey is conducted and the results are fed back to each line manager at each workplace, and each workplace works to resolve issues with a sense of ownership.

This initiative has three key points. The first is measurement of not only the work environment and work engagement but also whether these factors actually result in actions driving growth. The second is that the questions were designed uniquely for ourselves in collaboration with Osaka University based on organizational behavior theory. The third is that Group Masters in the area of HR development and organizational development were appointed and a system was established to provide support to line managers mainly by the HR department.

#### P. 32 Vitality and Growth Assessment to improve work engagement (ii)

Of the indicators shown here, the second from the left is an indicator of employee empowerment, and is data that allows comparison with other companies. The results compare relatively favorably with those of the White Paper on the Labor Economy. The important point is to translate this into actual growth actions and challenges, and we are keeping a close eye on the actions driving growth in the graph next to it on the right as a KPI.

It is essential for line managers to have a sense of ownership and involve their members in this system, and we are closely monitoring the implementation rate of workplace dialogue. Although the implementation of dialogue has been steady, we will aim for an even higher level.

#### P. 33 Utilizing overseas personnel

Due in part to acquisitions of overseas businesses, the percentage of overseas personnel has increased from 8% in 2010 to nearly 40% today, and is expected to reach a majority in 2030. There are increasing cases where outstanding overseas personnel who have joined our Group through

acquisitions are promoted to be Executive Officer with responsibility for the business at the parent company.

In addition, fostering next-generation leaders is an issue, and in the discussions leading up to the formulation of the current MTP, we requested participation by the next-generation leaders selected from our overseas personnel.

#### **4. Risk Management**

##### **P. 35 Asahi Kasei Group risk management**

Finally, I will explain our risk management. While it is important to aggressively and boldly conduct management based on promotion of the “G,” “D,” and “P” mentioned at the outset and the use of intangible assets, risk management is also becoming extremely important in a business environment which is opaque and in flux. In fiscal 2022, we reinforced our risk management framework. We focus on clarifying the framework and roles, and enhancing the PDCA cycle.

Under the supervision of the Board of Directors, as President, I am responsible for overall risk management, and an Executive Officer assists me. The Executive Officer grasps the overall risk management and provides instructions and support to the heads of each division on individual risk countermeasures. The Risk Management Team monitors internal activities and provides support for specific risk countermeasures. The Risk Management & Compliance Committee, chaired by me as President, then disseminates management-level decisions and instructions regarding risk management to the heads of each division. We also recognize the extreme importance of the PDCA cycle.

#### **Questions and Answers**

Questioner 1: Traditionally, your company has had relatively low performance volatility in the industry and relatively high stock price valuations. However, in the recent uncertain business environment, your performance volatility has increased and your stock price has been stagnant. We appreciate the intangible assets and human resources that your company has cultivated over its 100-year history, but are you aware of any changes in the past few years, including the viewpoint of HR strategy?

Kudo: I take your point very seriously. When I took office as President and announced the current MTP, I explained that the business portfolio transformation in the Material sector was an urgent issue. Although we have been expanding into diverse businesses based on our open and frank corporate culture, we believe that the perspective of pursuing labor productivity was not sufficient. In order to improve labor productivity, it is important not only to increase the profitability and efficiency of each business, but also to concentrate resources on growth areas for the Group as a whole. In other words, it is important to transform the business portfolio. In the current MTP period, from fiscal 2022 to fiscal 2024, the global business environment is expected to be severe, but we would like to demonstrate how we will chart our growth strategy for the next era based on consideration of our past, including our perspective on reducing volatility, while also achieving a successful track record.

Questioner 2: You explained the Green Transformation and HR Transformation you are working on in pursuit of the two aspects of sustainability. It makes sense to me that those initiatives support diversity, which is one of your strengths, as a platform. On the other hand, your company is considered to be a conglomerate, and there is a view that you may be incurring unreasonable costs in having diverse human resources and business portfolio, and in risk management. With regard to the sustainability initiatives that you have explained today, are there any points where diversity is a positive factor, or are there any points where costs are not so high after all?

Kudo: We addressed labor productivity as a theme at an executive training session we held last year. As you pointed out, we have diverse business sectors, and each business seeks the support of specialized departments such as DX, production technology, and engineering in order to strengthen



and improve its business. If we tried to meet each of their needs, we would need more human resources in those departments, and it may become difficult to distinguish between businesses that need to be addressed intensively and those that do not. We are aware that the dispersion of limited resources is a major challenge as we have diverse business sectors, and we are working to improve this situation.

On the other hand, there are many cases where the strengths of the business platform are being leveraged in the business. When expanding businesses in the Health Care sector in Japan and overseas, it is difficult to advance strategies related to DX and intellectual property with only personnel in those businesses. In DX and intellectual property, we are proud that we are at a relatively high level and have many highly skilled human resources. For example, Asahi Kasei Pharma is not a large company in the pharmaceutical industry, but it has developed a competitive strategy for intellectual property and is highly regarded outside the Group. In the Homes sector, DX initiatives are also making considerable progress.

Questioner 2: I look forward to the conglomerate discount being eliminated through focused allocation of resources and greater efficiency.

Questioner 3: I would like to ask about the hydrogen-related business mentioned on pages 12 and 13 of the presentation material. It was reported that your company is aiming for annual sales of nearly 100 billion yen in this business in around 2030. What is your thought about monetizing methods, for example, sales of electrolyzers and membranes, and support of operations? Also, what are the particular challenges you face in terms of increasing the size of your systems, reducing costs, and building partnerships? In addition, as the market grows, there is a potential risk that Chinese companies will catch up with you. I would also like to know how you plan to build barriers to entry.

Kudo: The hydrogen-related value chain is very long. We have technologies for electrolyzers, membranes, and electrolytes, and we intend to start by selling these products to build up a track record, and we are also looking into the operation and monitoring of the systems. Our alkaline water electrolysis system is based on the technology of our ion-exchange membrane chlor-alkali electrolysis business, and we believe that we are the only company in the world that can supply everything from sales of components to system monitoring in the chlor-alkali electrolysis. We believe that membrane technology is particularly important, and by improving this, we aim to provide efficient electrolyzers.

With regard to operation and monitoring, we believe it is important to verify the durability of components and systems. In our ion-exchange membrane business, in addition to sales of components including replacement demand, we collect data during operation and propose efficient replacement and maintenance. We will utilize these technologies and expertise in the hydrogen-related business to create a business model unique to our company.

We believe that these efforts will serve as the barrier to entry that you asked about, but there will also be Chinese companies with high technological capabilities in the future. In light of geopolitical risks, there is a possibility that we will form partnerships with other companies in some regions. First, however, it is important for us to pursue the improvement of our own technologies and services.

Also, capturing where the markets are in the value chain including power supplies and applications, is fundamental to monetization, and we are working to form consortiums with upstream and downstream companies.

Questioner 3: On page 12 of the presentation material, the projected amount of electrolyzer installations is shown. What do you expect the ratio of PEM and alkaline water electrolysis to be in the future? What is your view on PEM?

Kudo: Both have their advantages and disadvantages. For example, PEM electrolysis system is relatively small, and some consider larger alkaline water electrolysis system to have better cost-performance. On the other hand, PEM is said to have superior response to fluctuations when using renewable energy with unstable output. Another point is that PEM uses a large amount of rare metals.

We are currently working to establish technology for larger-scale alkaline water electrolysis systems, but depending on the future business model, there is a possibility that we may need PEM technology as well. In that case, we will consider such options as joint ventures or consortiums with other companies, while keeping a close eye on the market.

My personal feeling is that there were more views that PEM would be superior until a short time ago, but recently, there is a growing view that alkaline water electrolysis also has advantages and both have their merits and demerits. Some companies that are developing PEM electrolysis are showing interest in our alkaline water electrolysis technology. We intend to consider various options without making any assumptions.

Questioner 4: I would like to ask about the patent map on page 29 of the presentation material. I understand that patents are concentrated in the fields of GG10, but would it be correct to consider the overlapping areas of the circles are fields where your company can have the unique strengths? On the other hand, for fields such as CO<sub>2</sub> chemistry, where there is little overlap with other fields, would it be better to, for example, license out rather than developing in-house? Please tell me how I should take this map.

Kudo: In fiscal 2022, we established a new organization named Intellectual Property Intelligence Department directly under the Executive Officer in charge of corporate strategy, transferring some personnel from the Corporate IP, which handles patents. By incorporating IP expertise, including IP landscaping, into the core of management, we are taking a bird's eye view of our business and utilizing it in strategic planning.

As you point out, the overlapping areas with concentrated patents are the business fields in which we have strength. And in slightly more isolated areas, such as CO<sub>2</sub> chemistry, we are more likely to consider a licensing business. In such areas, one of the key points is whether or not we have the facilities to demonstrate the technology and whether or not we can conduct proof of concept. If we are unable to do so ourselves, we may choose to partner with other companies that are capable of doing so.

In fact, for CO<sub>2</sub> chemistry, we will use it to reduce our own GHG emissions, but in the case of polycarbonate production technology that uses CO<sub>2</sub> as a raw material, we are also developing business operations based on licensing.

Questioner 4: If we look at this map that way, can we assume that there is high potential for the car interior material?

Kudo: Car interior material is a business that we have been involved in for a long time, and the Asahi Kasei Group aims to achieve the dominant position of number one in the world, led by Sage.

Questioner 5: Regarding human resources, you mentioned that you have a sense of crisis that Asahi Kasei is losing its original heritage. Please tell us about the specific changes you feel compared to the past and the background behind these changes. Also, of the HR strategies that you explained, which do you have particularly high expectations for?

Kudo: I joined Asahi Kasei in 1982. This was about 40 years ago, and due to the historical background of the time, there was an atmosphere of very lively debate within the company. Our company does not belong to any so-called *zaibatsu* group, and we have a history of strengthening our financial position and expanding into new businesses in order to continue growing by relying on our own strengths.

Recently, however, we are increasingly seen as a stable company, and I feel that the maverick spirit of creating new businesses on our own with a healthy sense of urgency may be fading. We have taken the phrase "Be a Trailblazer" as the key concept of the current MTP, but I feel that the spirit of taking on challenges has become a bit less pronounced compared to the past.

As for hiring, we are still acquiring very talented people, but I have told the HR department that I want them to hire people who will create the business models of the future on their own. The spirit to take on new challenges will be increasingly needed in the future.

Questioner 5: What do you think are the key aspects of reviving the spirit of taking on challenges?

Kudo: I believe that in companies and organizations where people do not take on challenges even when encouraged to do so, it is due to lack of follow-up when they fail. Failure is an inevitable part of any challenge, and it is important to have a culture in which the leader or organization encourages the employee to try again even after a failure toward the employee's growth. We have such a culture at Asahi Kasei. I would like to reawaken the spirit of ambitious challenge.

Questioner 6: I would like to ask about the GHG reductions on page 9 of the presentation material. You have set a target of reducing GHG emissions by 30% or more from the fiscal 2013 level by 2030, but the national target is a 46% reduction from the 2013 level. Some diversified chemical manufacturers have set higher reduction targets than your company, such as 40% and 50%. It is true that your company's GHG emissions are small relative to the scale of its operations, but in such context, what is the background behind the fact that the targeted reduction rate is not as large as other companies?

I believe that your company has reduced GHG emissions by about 100,000 tons/year from fiscal 2013 to fiscal 2021. On the other hand, the 2030 target can be achieved by reducing the emissions by about 50,000 tons/year in the future, and so I think the target can be raised a little higher. There may be various factors, such as the review of the business portfolio and the joint operation of naphtha cracker in Mizushima, but what do you think is necessary to make the target higher?

Kudo: First of all, the Asahi Kasei Group's overall target is to reduce emissions by 30% or more by 2030, including overseas, while for Japan, internal targets have been set with government targets in mind.

Although this target includes some of the GHG reduction effects from the business portfolio transformation, but not fully incorporated. We hope to achieve further reductions by 2030, with a minimum goal of a 30% reduction. However, even when considering an exit, we do not want to just hand over a business with high emissions to another company and be done with it. We will consider the business from the perspective including business growth and GHG emissions even after the business is transferred to another company. We cannot give details of our plans, but we are preparing to take various measures to achieve our goal.

Questioner 6: I saw some reports in the press that your company is planning to make green investments in Mizushima Works to make it a sustainable base. Is it correct to say that Mizushima will continue to be an important base for your company regardless of the business portfolio transformation?

Kudo: Yes, that would be correct.

Note: The forecasts and estimates mentioned in this document are dependent on a variety of assumptions and economic conditions. Plans and figures depicting the future do not imply a guarantee of actual outcomes.

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