With chemistry, we can.
Materials Innovation —

Today’s world presents us with innumerable challenges. They include

• Global environmental issues, such as climate change, conservation of resources and biodiversity;
• Health-related issues, such as safe water, food and health care; and
• New issues relating to digital revolution-initiated changes in the social structure brought by advancements in AI and IoT;
• Issues related to the development of a society where all people are respected and have hope for the future
Various materials are utilized to effectively manage these issues and challenges as well as to form the basis of products and mechanisms designed to improve the world.

By pursuing new possibilities for materials through the potential of chemistry, and contributing to the development of society and a sustainable global environment, JSR Group would like to ensure its own sustainable growth.

“Materials Innovation - We create value through materials to enrich society, people and the environment.”

It is our corporate mission to pursue such possibilities through the integration of business activities and CSR initiatives.
JSR’s Sustainability
Preparation for accelerating change in our times and society

Aiming to maintain sustainable growth in 2020 and beyond

The international situation has been undergoing dramatic changes in recent years. With such developments as the UK’s decision to leave the EU, the US president’s declaration of an “America first” policy, and the general secretary of the Communist Party of China’s declaration that his nation is becoming a world leader, the world’s power balance has collapsed and uncertainty about the future is growing. Meanwhile, advances in science and technology are gaining momentum in such areas as AI, big data, and “smart factories,” and the wave of digitalization is coming with greater speed. I would like to begin this Top Commitment by looking back at JSR Group’s course between FY2011 and FY2017 and examining how we have prepared for this age of accelerating change.

Aiming to achieve an ideal vision of itself in 2020 and beyond, JSR Group has been formulating and advancing mid-term business plans through three phases that began in FY2011 and will extend to FY2019. JSR2013 (FY2011 to FY2013) was the first phase. Seeing the Petrochemical Products Business and Fine Chemicals Business as key JSR businesses, it anticipated slower growth in the longer term due to a lack of new business opportunities. In FY2014, we opened the JSR-Keio JKI (Joint Knowledge Innovation Center) to develop through joint research with Keio University the innovative materials and semiconductors that will support new medical fields. Sales by the Life Sciences Business amounted to roughly 26 billion yen in FY2017 and are growing at a rate that should reach 40 billion yen in FY2018.

Looking ahead, JSR Group will strive to breathe new value into the life sciences market, using the strengths that come with being a chemicals company that is an “engineering” leader. As an example, we want to help lower swelling medical costs, which constitute a major social problem. Medical costs are skyrocketing primarily because of the long time and great expense required for new drug development. It is said that, on average, development takes about twelve years and costs between 300 billion yen and 3 trillion yen. We want to tackle this problem and spark innovation using the technologies JSR Group has developed in data science and other areas.

Responding to digitalization in specific business segments

We executed a series of actions in response to ever-accelerating digitalization in FY2017. The most important is the cultivation of data scientists. Some ten employees who received training at an American company last year can now handle programming on their own. They have produced tremendous results, including completing in two hours analyses that used to take three days.

However, what is important here is not simply to have data scientists available. Instead, it’s for all employees to eliminate their mental barriers to the dramatic changes that digitalization will inevitably bring, and for them to be ready to understand and utilize it. I think the first step toward responding to digitalization is to understand what programming is, what it can do, why it is necessary, and how it can be applied.

In our businesses, we executed a name change and reorganization of our Fine Chemicals Business’s segments to create a new “Digital Solutions Business.” Our aim here is to achieve a better fit with the coming digitalization age and generate greater growth.

Additionally, we are making steady preparations to fully revamp JSR Group’s core information system into a platform that will make our daily corporate activities responsive to the digitalization age. This effort is linked to our vision of the ideal JSR in 2020 and beyond.

Contributing to the arrival of a sustainable society

Deer its history, JSR Group has advanced its business with the aim of resolving social issues. It has done so with constant awareness of the impacts that it, a chemicals company that supplies materials, has on downstream companies and end users. At the present time, we place particular focus on three social issues: “the environment,” “work styles,” and “safety.”

For “the environment,” we are working under independently-set targets to tackle the challenges of Climate Change Mitigation and Environmental Impact Reduction. Within this context, we recognize that greenhouse gases and marine plastics are significant issues for us as a chemicals company. As for reducing our CO2 emissions, we are making preparations toward seeing what JSR Group can do, including applying new technologies, based on guidelines of the Japan Chemical Industry Association, which is a participant in the United Nations Environment Programme’s “Low Carbon Society.”

We see reexamination of “work styles” to be an important challenge in achieving productivity capable of responding to coming changes. We are thus advancing reform that emphasizes changing the quality of work styles, rather than simply reducing overtime hours. As part of this, we have renamed our effort “work-style innovation” in order to avoid falling into “reform for the sake of work-style reform.” However, in evaluating our efforts thus far, I keenly feel that a top-down approach is as indispensable as a bottom-up approach. For example, changing work styles sometimes requires tremendous investment for the renovation of information systems and the like. Decisions concerning such investment are made in management meetings. Therefore, I think it may be necessary to change how management meetings are run in some cases.

And in the area of “safety,” overall awareness of this issue is rising among employees based on our “Basic Philosophy for Occupational Health and Safety,” formulated in 2016, and the “Courses of Action” that was put in place to implement it. We are now seeing the effects of this. On the other hand, a number of significant matters have also become evident. They include the necessity of safety education for specific age groups and the full implementation of safety measures in Group companies. We are currently exploring specific measures for resolving these matters and achieving even greater safety awareness. We will continue pushing JSR2019 forward to address the challenges I have just described and realize a JSR Group that will grow sustainably in 2020 and beyond.

Moreover, we will practice corporate management that responds to the Ten Principles of the United Nations Global Compact and precisely grasps the SDGs and other social issues. And we will contribute to the arrival of a sustainable society as a chemical company that proudly stands by its Corporate Mission: “Materials Innovation - We create value through materials to enrich society, people and the environment.”

Mitsunobu Koshiba
President
JSR Corporation
Integration of management and CSR creates benefits for both society and JSR Group through its contribution to the development of a sustainable global environment and society.

JSR Group’s Corporate Mission and Priority Issues

Corporate Mission

Materials Innovation
We create value through materials to enrich society, people and the environment.

Management Policies:
Fundamental Pillars of Management
• Continuous Creation of Businesses
• Enhancement of Corporate Culture
• Increase in Corporate Value

Management Policies:
Responsibility to Our Stakeholders
• Responsibility to Our Customers/Business Partners
• Responsibility to Our Employees
• Responsibility to Society
• Responsibility to Shareholders

Course of Action: The 4Cs
CHALLENGE
COMMUNICATION
COLLABORATION
CULTIVATION

Business Plan

Innovation
Social Issues that JSR Group Can Help Resolve
• Eco-Friendly Products
• Health and Longevity
• Better Access to Healthcare and Medical Care
• Quality of Life and Happiness

Sustainability
Social Issues Attributable to JSR Group’s Corporate Activity
• Health and Safety Initiatives
• Environmental Impact Reduction
• Climate Change Mitigation
• Water Resources Conservation
• Waste Reduction
• Human Rights
• Labor Environment
• Diversity
• Supply Chain Management
• Communication with Stakeholders

Development of a Sustainable Global Environment and Society
Considering Work Styles of the Future

Progressing ‘digital society' and ‘current HR management challenges’—with invited experts. Through the discussion, we confirmed the identified priority issues with experts and presents details on those discussions in its CSR reports.

In the interest of integrating its management and CSR and helping realize a sustainable global environment and society, JSR Group discusses identified priority issues with experts and presents details on those discussions in its CSR reports.

Achieving JSR’s Sustainability: Considering Work Styles of the Future

In the interest of integrating its management and CSR and helping realize a sustainable global environment and society, JSR Group discusses identified priority issues with experts and presents details on those discussions in its CSR reports.

This year, we selected “work-style innovation x digitalization” as the theme for the FY2017 discussion. With attention to future work styles seen from the standpoint of digitalization, we approached this theme by discussing two subtopics—“future work styles in a progressing ‘digital society’” and “current HR management challenges”—with invited experts. Through the discussion, we confirmed the initiatives that we must take toward ensuring JSR’s sustainability.

Dialogue with Stakeholders

Hiroko Nomura
Mizuto Aoto
Outside experts (from the bottom left)
Professor, College of Humanities, Shukutoku University
Representative of DANCING EINSTEIN (DAE) and Neuro-Inventor
Daichi Suemasa,
Production Technology Department
Ikuyo Kamiya,
Satomi Inomata,
JSR Research and Development Department
Yoshikazu Yamaguchi,
Senior Officer

Future work styles in a progressing “digital society”

Considering the roles of artificial intelligence (AI) and people in the future

Aoto: Quite honestly, no one knows how people will be working in 2025 and 2030. Nonetheless, I think it’s important to take a look at what is and what’s not known and which doesn’t seem to have an answer.It is one of the abilities that people will need in the future. AI excels at work in which answers are drawn out quickly.

Suemasa: My department’s work is in R&D and the creation of new inventions, so I don’t think it will be replaced by AI. I believe that, for us, the question will be how to make such creative work more efficient.

Yasaka: I agree. The R&D of certain businesses that exist now can probably be made more efficient with AI. But if we’re starting a new business, no practical data exist, so AI cannot provide best performance. Indeed, I think humans must think about such areas where answers are not readily available.

Sawada: Right now, a lot of work is going into gathering data to advance AI’s application. However, this work will be eliminated in the future as IT advances. People will likely need skills in arranging and distinguishing vast amounts of data and further, creativity in utilizing the data.

Aoto: AI runs on programs and data that are provided to it by human beings. However, in the field of neuroscience, the mechanisms of the brain are being understood biologically, and the generation of AI based on speculation on how the brain may react to interpersonal services is already beginning. AI has the ability to randomly extract various forms of information, which is something people are not very good at. I sense that this will produce seeds for innovation. I feel that new creativity will be needed for determining how people will handle the seeds that AI produces.

What people will need as they learn to coexist with AI

Nomura: AI is writing articles on financial statement announcements for the Nikkei online edition. This and other developments show that AI is beginning to appear in fields that no one thought possible just a few years ago. A study by Oxford University created a stir when it concluded that 49% of Japan’s jobs could be replaced by AI and robots. The report stated that “creativity” and “cooperation” will be needed for the jobs that cannot be replaced by AI and that only people can do. The word “cooperation” can be replaced with “social intelligence.” We will need to polish this ability in the years ahead.

Aoto: One point that will become necessary for accepting future uncertainty is “adaptability.” The human brain has difficulty accepting new things. On the other hand, it can process information on things it is familiar with efficiently. It is for this reason that people tend to choose things they are familiar with.

We also know that men and women grasp environmental changes differently. First of all, we must consider things based on recognition of the nature and diversity of human beings.

Inomata: We will increasingly need communication skills in the future. If we look at tools for communication, first email and then LINE appeared. At first,

I thought, “I don’t need LINE.” But when I started using it, I found it to be quite handy. New and different communication tools will probably appear, so I think we must have the ability to adapt to those new tools.

LINE 
A communication app that was released in June 2011. It is reportedly used by more than 217 million people worldwide. Among its features are one-on-one and group chat functions and free calling.

Aoto: I think that as we hand over to AI more and more tasks that can be entrusted to it, people will become more human. What I mean is, we will act more with feeling, say emotion or a sense of unity. Even when viewed in terms of the brain, although we understand that each of the systems of theory and emotion operate in completely different parts of the brain, we largely see the significant degree to which emotional factors affect people’s decision-making. Right now, we are often told “Don’t get emotional” in the workplace. But I think that, conversely, it is possible that emotions will come to be valued.

Yamaguchi: Undoubtedly, there are many ways in which we move with emotion. Indeed, feelings of frustration can be a major driving force for people.

Aoto: Great value remains in human beings’ efforts to process information that is difficult to arrange into a pattern and non-linguistic information within the brain. For example, there is the feeling of “strangeness” that we experience from time to time. You feel that something is odd, but you can’t put it into words. I think the brain’s ability to produce this feeling is a very important capability.

Sawada: Certainly, unexpected malfunctions can occur at manufacturing sites, perhaps due to gradually aging equipment, but sometimes the people there sense that something is wrong before it happens.

Suemasa: Even if we have the ability to analyze the causes of a research failure, AI reaches the same conclusions because it makes an evaluation based on data supplied by human beings. We then consider what to do next using clues gleaned from people’s sense of strangeness and awareness.

Aoto: It’s not just a feeling of strangeness. If we sense that “something about this is interesting” or “this may go well,” that feeling can lead to innovation.

Isn’t it that the feeling that Steve Jobs and Kazuo Inamori were so exceptional at grasping?* 
* Kazuo Inamori: A distinguished Japanese businessman and corporate manager. He is the founder of Kyocera Corporation.

Kamiya: It is said that even academic researchers benefit from the hope of encountering serendipity in their research. What is necessary for researchers and developers is foresight, or thinking about things that seemingly have no answer. I think the question of how well engineers can refine this will become more and more important in the future.

Failure brings forward progress.

Aoto: Failure is also very important. Mistakes happen, and we can make new discoveries from them. This is also one of the values that people bring. If we view failures in a negative light only, we will learn nothing and be left with nothing more than a bad feeling. That’s why in our company we held weekly presentations to learn by finding ways to laugh about our failures.
Yuasa: In fact, until a great success is achieved, more than 90% of trial-and-error data results in failure. However, thanks to so many failures, remarkable improvements are made and eventually innovation occurs. It sometimes happens even in my own experience. Therefore, it is possible to think that humans will need to do something forward to fail to talk on challenges freely without constraints.

Aoto: To do this, it is important to have education that changes the way we look at failure. One of my favorite phrases is “As activity that stops at failure becomes a failure. If you continue until you succeed, the activity will become a success.” It adds that “A person who can see his failure as a good lesson is a person who will grow later.” Even when viewed from a scientific perspective, this conforms with the principle of reviving emotions. If you fail, it is important to find ways to view that failure positively.

Nomura: The company must have a culture that accepts failure. Failing the ability to learn from failure is also very important in career development. Yamaguchi: Looking at the importance of failure, in one sense, ten thousand prototypes are made but only twenty are accepted. What this means is that 9,980 failures are allowed. In recent years we have been hearing the phrase “fail fast,” but JSR has had such a culture for a long time. No one knows what will happen when something becomes a project or business. Those of us in management must convey this to our employees.

Current HR management challenges

Yuasa: In my opinion, the number of discussions and meetings. Even if we change the way we work by bringing in useful tools and the like, we end up losing time we can control for ourselves when and where meetings are scheduled.

Kamiyama: In my department, teams were forced to move meetings along by preparing an agenda and assigning facilitators (people who move the meeting along in a productive direction) and timekeepers. I think these teams have done a good job of shortening meeting times. We have also introduced the free address system to our offices. This system makes it easier for us to communicate with each other. In other ways, we feel we are beginning to make progress in improving job efficiency.

Nomura: As you just mentioned, you have positive examples for dealing with discussions and meetings. Why don’t you try extending them laterally to other parts of your organization? I also think that speaking frankly on a routine basis will help shorten meeting times. It might be a good idea to introduce mechanisms that support informal communication.

Kamiyama: We have been implementing various approaches, starting with work-life balance followed by work-style reform projects. But there is talk that these approaches are not about reducing overtime. So, honestly, we’re not really sure which direction we’re going. I get the sense these approaches haven’t penetrated well among ordinary employees.

Yamaguchi: That’s a problem on the management side. One item included in the fiscal 2018 schedule for the mid-term business plan is “reconfirm the vision and provided value of each department.” In other words, it is a call to reexamine why we do a certain operation—for what end, for whom, and for what purpose. This may eliminate the need to prepare documents and reduce work as a result. From this perspective, the way we work is work-style innovation.

Nomura: The true objective of work-style reform is not to reduce overtime work. So it is important for management to strongly communicate this message. If the purpose of the program is not communicated, overtime work might become something done for free and you could end up putting employees in a tough spot. With regard to the advancement of women’s participation and work-style reform, there is data showing that productivity does not improve much when only systems are changed but does improve when those efforts are combined with it. So you still have room to consider ways of combining them.

Connecting the ideas of young people to the next generation

Yamaguchi: Traditionally, if you mentioned the word “work,” people thought of doing a job and receiving pay for it. But I feel that there will be a change from this concept. When I was in university, I heard the phrase “the diarchitects that are in our heads contain the word kando (movement based on emotions) but not rules (movement based on reason).” I always thought that was the truth. We stay up to play games and read books even when we’re tired because we find them interesting. People do not act unless they feel some kind of empathy or inspiration. Looking at this from my perspective, I am reminded that getting employees to feel that in their work and working with enthusiasm is the challenge.

Aoto: Summing up our discussion today in my own way, I’d say that it’s about “enjoying Chaos as individuals.” A world heretofore unimaginable will be born and uncertainty will increase with the growing presence of AI. This means what we need is a state of mind oriented towards enjoying it. As a result, people will become more human and each individual will become more like him or herself. And I think that we will enter a time when individual differences are valued.

Nomura: I think we will enter a time when stronger human communication skills are required. Efforts to reform work styles and advance women’s participation are unlikely to succeed unless we practice a different kind of communication. For example, women who work short hours must talk with their supervisors about their current circumstances and their needs. Their supervisors won’t understand those matters unless women actively communicate with them. At the same time, supervisors must also create an environment that permits their subordinates to speak comfortably. In this sense, I think you could say that work-style reform equal communication reform.

Yamaguchi: We have had a very meaningful time today, having heard two experts and young JSR employees discuss some important topics. I feel that the most important thing is to link the ideas you, the members of the younger generation, expressed today to the next generation. It is our job in management to continuously lay the groundwork so that even one or two of the things we discussed today will be realized ten or twenty years down the line. The exact same thing will be applicable when the time comes for you young people to enter management. I think this will give JSR Group sustainability in its true sense. Thank you all for a very enlightening discussion.
Looking to ensure that the corporate body known as JSR Group continues to survive and grow over the next twenty or thirty years, we will resolve priority issues by seeing “business” and “CSR” as one and the same, and by establishing three points of attack: “Social Issues that JSR Group Can Help Resolve,” “Social Issues Attributable to JSR Group’s Corporate Activity,” and “Basic Issues in JSR Group’s Corporate Activity.” Particularly when it comes to “Social Issues that JSR Group Can Help Resolve,” we know that we must move quickly and boldly in response to changes in society’s needs. Quite simply, we will need to be a company with innovative strength and sustainability.

Our new mid-term business plan JSR20;9, which started in April of 2017, lays out growth scenarios for JSR Group in each of our main businesses: the Elastomers Business, the Digital Solutions Business, and Life Sciences Business. We will help resolve social issues through business activities that are in line with these three business growth scenarios.

SSBR: A Synthetic Rubber for Low Fuel-Efficient Tires with Great Potential in the Effort to Solve Global Environmental Issues

Fuel-efficient tires are environmentally-friendly products and yet maintain their ability to stop safely and securely. JSR Group’s solution polymerization synthetic rubber SSBR (SSBR) has received positive feedback from customers. JSR Group designed SSBR using technology that more readily facilitates rubber molecules and tire reinforcing material molecules to bond tightly, which reduces internal friction and rolling resistance.* In addition, this is achieved without changing the characteristics of rubber that enable tires to stop. SSBR allows large reductions in environmental impact through the entire lifecycle of the tire, from the material selection and its usage to disposal. Automobiles will still require tires even after automotive engines are replaced with electric motors. Thus, demand for SSBR is high both in countries and regions where they want to work.

* Rolling resistance: Resistance in the direction opposite to the direction of tire rotation. Caused by tire deformation, ground contact friction, and air resistance.

Automobiles will still require tires even after automotive engines are replaced with electric motors. Thus, demand for SSBR is high both in countries and regions where environmental standards are high, such as Japan and Europe. Additionally, production is scheduled to start at JSR MOL Synthetic Rubber in Hungary in 2018. We will continue helping to solve global environmental issues by meeting the global demand for fuel-efficient tires.

A New “Open Innovation” Base for Generating New Business

There are five R&D bases within the Yokkaichi Plant: The Performance Polymer Research Laboratories, which is associated with the Elastomers Business; and the Digital Solution Research Laboratories, Fire Electronic Materials Research Laboratories, Advanced Materials Research Laboratories, and Edge Computing Research Laboratories, which are associated with the Digital Solutions Business. The new research building will primarily focus on research oriented toward generating new business. For this reason, it will set research themes that anticipate market needs and enable a flexible research system that is highly responsive to customer demand based on close collaboration with the five research centers and laboratories. Moreover, to improve our ability to create innovation, which is the source of JSR’s competitiveness, we will give it an environment that produces spontaneous conversation and collaboration among diverse fields, making it a base for functional interaction among individual research centers and laboratories. We will also study its application in externally-linked research activity as a base for open innovation.

Purpose of the new research building

New research building: Exterior

Name: Center of Materials Innovation
Location: 100 Kawajiri-cho, Yokkaichi-shi, Mie (within the JSR Yokkaichi Plant)
Total floor space: 7,286 m²

Outline of the new research building

New research building: Free-address office

New research building: Space for interaction

Characteristics of the new research building

We will promote “cross-field interaction among research centers and laboratories” and “interorganizational team building” by establishing free-address offices and interactive spaces for the first time in a JSR research facility. The third-floor administrative office is a free-address office without fixed seating. Near the third-floor office, we set up spaces for personnel interaction by adjusting the floor height to create mezzanine-like floors (Floor 2.5, Floor 3.5, and Floor 4.5) and give employees the freedom to choose where they want to work.

SSBR production capacity

160,000 tons/year
Japan: 60,000 tons
Thailand: 100,000 tons

220,000 tons/year
Hungary: 60,000 tons
Japan: 60,000 tons
Thailand: 100,000 tons

To Contribute to the Evolving Digitalization-Based Society (Digital Solutions Business)

Society and the Coming Digital Revolution

Today, when life without computers and the internet is no longer imaginable, are about to happen. For now, computers can only be run by programs; however, they are gradually gaining the ability to learn on their own (in a phenomenon called “cognitive computing”). The devices which we use directly—the personal computers (PCs), tablet computers, and smartphones equipped with semiconductors, displays, cameras and the like—are in fact terminal devices that connect the virtual world (a vast aggregation of various data) with people and things. Cloud computing (the “Cloud”) stores and shares data through these terminal devices and the internet. The world of the Cloud is a growing virtual space composed of artificial intelligence (AI) and other technologies that dramatically become smarter by learning from enormous amounts of collected data. In the future, it will not be just “people” who are linked to this virtual space through their smartphones; indeed, many “things,” such as cars and manufacturing equipment, will also be linked to the virtual space as “edge devices” through various sensors (creating a phenomenon known as the “Internet of Things”: IoT). As a result, an unfathomably vast amount of data (“Big Data”) will be aggregated there. AI will continue to get smarter, and eventually the day when we “people” use advanced AI unconsciously in daily life will come. Furthermore, AI will make automation of diverse and complex operations through robotics possible. The application of such technical innovation and data will allow us to address “global social issues that true customer needs,” which is something we have been unable to fully address hitherto. This will encourage economic growth gained by utilizing new technologies and data and also help solve various international issues. Our goal is to help bring about a more prosperous society for each and every person of the world.

Global social issue

- Low birthrate and aging population
- Regional economy and commodity fatigue
- Energy issues/environmental issues
- Food problems
- Water resource problems etc.

Possibilities of a digital society

- Multidimensional innovation
- Total global optimization
- “Smart” communication
- “Smart” acquisition
- “Smart” creation
- Good health and active living
- Use of convenient infrastructure
- Effective learning
- Efficient sharing

Source: Prepared based on materials of the Ministry of Economy, Trade and Industry’s “New Industrial Structure Vision”

Examples of added value provided for social growth, using the development of Big Data and IoT as a driving force

- Contributing to creating technologies and businesses that will help solve quality-of-life-related social issues in humanics, an approach that “makes a science of capturing human movements in digital form and representing and assisting them digitally.” It further aims to see this as a starting point for creating technologies and businesses that will help solve quality-of-life-related social issues in the areas of sports, medicine, nursing, care-giving, and wellness.

Added Value for Society by the Digital Solutions Business

The digital solutions business of the cognitive computing age will need more than a materials-based approach whereby it simply supplies functional chemical products—specifically, differentiated high-value products. It will also require an approach that involves providing solutions that are matched to customers’ needs. For this reason, JSR’s Digital Solutions Business ascertains information and knowledge on cutting-edge social trends quickly and precisely as an organization, and with focus on the customer, it enables them to link to expendable solutions. It provides added value for the resolution of social issues through products. For example, to address the social issue of realizing a healthy and long-living society, it is developing materials for wearable devices that will make constant health management possible. Also, to tackle the social issue of ensuring equal educational opportunities, it is developing e-materials that will help to improve educational accessibility. JSR’s Digital Solutions Business will quickly respond to social change and contribute to the developing society utilizing IoT and Big Data.

Added Value for Society by the Digital Solutions Business

Working to Improve the Performance of Paralympic Athletes with 3D Technology Participation in the Sports and Health Innovation Consortium

JSR is a participant in the Sports and Health Innovation Consortium, a body led by Keio University’s Shonan Fujisawa Campus that conducts technical development to support athletes and others concerned. One of the activities of the consortium is research to improve performance by applying 3D technology to create equipment matched to individual athletes engaged in Paralympic competition. JSR joined the consortium in October 2015 as part of its effort to develop business through 3D printing and associated materials technologies. Since then we have been developing gloves for wheelchair competition.

Gloves for wheelchair competition take time to produce because they are hand-made by each athlete. Translating a glove’s original shape into 3D data and then producing gloves using a 3D printer makes it possible to repeatedly reproduce gloves that fit and also shorten the time required to make them. Furthermore, making slight adjustments to the 3D data can produce gloves that are even easier to use and can help improve athletes’ performance. We will continue to provide new value that is useful to society through collaborative industry-academia initiatives such as this.

Projected sales by digital solutions business

| FY2017   | 140 billion yen |
| FY2018 (P'lan) | 150 billion yen |

* Educational accessibility: The ability to access and use educational environments without physical, informational, institutional, or psychological impediments, regardless of disability or other physical or mental circumstances or living environment.
Contributing to a Healthy and Long-Living Society and Better Access to Healthcare and Medical Care
(Life Sciences Business)

One in every three Japanese persons is expected to be over 65 years of age by 2035 (according to the survey conducted by Statistics Bureau, Ministry of Internal Affairs and Communications in September 2014). This super-aging society is already creating issues such as increased medical care expenses and elder-to-elder nursing. Extending healthy life expectancy without daily assistance or care is now an issue that our society faces. Development of personalized medicines which enhance the efficacy of therapies by matching treatment methods more precisely to the condition of the individual patient will increase healthy life expectancy in the future. Healthcare methodologies and techniques will likely change during the coming years. Examples of this shift include the development of diagnostic technologies for early detection of disease as well as advances in highly effective treatments and pharmaceuticals to treat serious diseases at early stages.

JSR Group’s Life Sciences Business, which contributes to personalized medical care and other fields, is the Group’s third base business, following the Elastomers Business/Plastics Business and Digital Solutions Business.

Medical Care Trends and JSR’s Life Sciences Business Fields

Speeding up the practical application of advanced therapies for quick delivery to patients—that’s JSR’s challenge. As drug development becomes increasingly sophisticated, the cost and time required to develop drugs is growing and becoming a major issue within the pharmaceuticals industry. It has been reported that, between 2006 and 2014, the cost required for major pharmaceutical companies of the world to commercialize one molecule as a drug was between 3.2 and 33.2 billion dollars (roughly between 300 billion and 3 trillion yen).*1 Moreover, the average time of new drugs to reach the market was 12 years.*2

Advancements in innovation and analytical technologies as well as new understanding of biology have made drug discovery—and particularly the biogenics and precision medicine fields—more complex. In accordance with such medical care trends, JSR Group is developing businesses centered on the bio-pharmaceuticals and advanced diagnosis fields. Moreover, we will continue working to raise treatment development success rates, shorten development periods and improve treatment efficacy in bio-pharmaceuticals-centered fields.

Structure of the Life Sciences Business

JSR has built the structure of its Life Sciences Business through mergers and acquisitions to help bring greater efficiency and shorter time frames to the drug development process.

KBI Biopharma Inc., a company that became a consolidated subsidiary in 2015, possesses powerful technologies in biopharmaceuticals analysis and process development. It undertakes contracted analysis and manufacturing process development from pharmaceutical companies as well as contracted manufacturing of commercial drugs. Selexis S.A., which we acquired in July 2017, is a company that develops cell lines capable of efficiently and stably culturing proteins such as antibodies that become the basis of drugs. It accepts contracts for the development and supply of the optimal cell lines in accordance with proteins to be cultured. Combining Selexis’ high-performance cell lines and KBI’s analysis and process development technologies allows us to shorten the time required for drug development. JSR makes a contribution by using this capability in materials development to provide the various culture mediums and purification materials that are used in the manufacture of biopharmaceuticals. Using Selexis and KBI as platforms for evaluating such advanced materials and utilizing them for development helps us enhance the efficiency of our materials development.

JSR markets Amosphere A2, a high-capacity Protein A chromatography resin used in the process of manufacturing antibody drugs, and KBI plays a major role in developing and expanding the sales of this product.

Crown Bioscience Inc., which JSR acquired in 2018, provides services that can improve the efficacy of drug discovery research. Crown possesses the world’s largest number of PDx™ models. The use of diverse PDx models that are built from various patients’ cancer tumors permits drug testing in an environment approaching that of the human body prior to clinical trials in humans. This helps improve the probability of success at the clinical trial stage. Additionally, Crown also accumulates data on genes, proteins, and other components of various cancer tumor types. By testing proteins that will become drug candidates with PDx models and analyzing them with a database, Crown can identify candidates for factors (biomarkers) that influence drug effects. Doing this makes it possible to select only those patients who possess factors on which the drug is effective and permits the efficient planning of clinical trials. Furthermore, when a candidate drug substance being developed is actually approved and put to practical use, it becomes possible to evaluate its effects prior to drug administration by diagnosing the presence of biomarkers.

In this way, the contract research services that Crown provides contribute not only to greater efficiency in the drug development process but also to the development of precision medicine. Medical & Biological Laboratories Co., Ltd. (MBL), which became a consolidated subsidiary in 2015, supplies various research reagents that are used in the contract research services provided by Crown. It also contributes to the growth of precision medicine by turning biomarkers into diagnostic reagents. The JSR-Kets University Medical and Chemical Innovation Center (JKeCIC), an organization based on industry-academia collaboration that was launched with Keio University in October of 2017, is exploring seeds that will further precision medicine and developing screening models that will contribute to more efficient candidate drug substances screening. The results of these activities are being provided to society through Crown and other members of JSR Group and contributing to more efficient and shorter drug development processes and the growth of precision medicine.

By adding Crown, a contract research organization, to the Group, JSR can now eliminate gaps at contact points with customers who conduct exploratory drug research. Additionally, JSR has completed rebuilding its business operations framework through the series of M&As that was described above. As a result, JSR’s Life Sciences Business can now seamlessly provide value in areas ranging from the supply of products and services for drug discovery processes in the pharmaceutical industry to GMP™ manufacturing. It is expanding its strategic basic research, diagnostic, and treatment development, and contract drug discovery and development services on the upstream side of the drug development process, and also expanding everything from the establishment of cell strains to manufacturing process development and contract GMP manufacturing services in the biopharmaceuticals manufacturing processes on the downstream side. JSR Group will supply innovative services, products, and materials for all processes associated with the development of new treatments to pharmaceutical companies, biotech, and academia.

*1 GMP: Good Manufacturing Practice. An international standard pertaining to drug manufacture and quality control methods
*2 PDx: Patient Derived Xenograft. The transplantation of human patient-derived cancerous tissue into an immunodeficient mouse. It is more effective than conventional methods in the screening of anticancer drugs because assessments can be conducted in an environment that better approximates that of the human body.

Projected sales by the Life Sciences Business
Health and Safety Initiatives (Accident Prevention/Occupational Health and Safety)

**Philosophy**

Based on our “Basic Philosophy for Occupational Health and Safety” and “Course of Action,” we are “moving toward becoming a mutually enlightened organization” in terms of (1) extremely safe behavior, (2) enhanced human resources and organizational strength, and (3) optimal risk management and security measures” as a vision of where we want to be in FY2020.

**Basic Philosophy and Course of Action for Occupational Health and Safety**

(1) Basic Philosophy for Occupational Health and Safety

As JSR Corporation, safety is our highest priority and we will fully safeguard the health and safety of all of our activities. Accordingly, we will create safe workplaces and strive to maintain physical and mental health, with the goal of ensuring a safe return home at the end of each workday.

(2) Courses of Action

1. No matter the situation, we will act with safety foremost in mind.
2. We will comply with established rules and never fail to act in accordance with safety basics.
3. We will maintain safety by identifying and eliminating both actual and potential hazards.
4. We will strive to create comfortable work environments and promote physical and mental health.
5. Through communication and engagement, we will aim to achieve 100% employee participation in all safety activities.

**Health and Safety Vision for 2020**

(1) Extremely Safe Behavior

The Basic Philosophy for Occupational Health and Safety has penetrated through the organization, the Courses of Action are established as applying to everyone, and safety competency is improving through independent safety activities.

(2) Enhanced Human Resources and Organizational Strength

High personal skills, organizational ability, and a healthy organizational culture are being maintained with the establishment and execution of the education and training programs needed for organizational management.

(3) Optimal Risk Management and Security Measures

Security measures corresponding to risk importance are being efficiently and effectively implemented using improved new technologies.

**Notes:**

Medium-Term Plan

5. Through communication and ingenuity, we will aim to achieve 100% heretofore and worked to improve our safety technologies. We also continue improving and evaluating this questionnaire so that we may ascertain strengths and weaknesses at the company, business location, and workplace levels and use what we learn to shape our safety culture.

(4) The Safety and Health Activity Forum

The Safety and Health Activity Forum is a JSR Group initiative at which all business establishments of the Group present exemplary safety and health activities. Its objectives are to improve employees’ safety awareness and to raise the quality of safety and health activities. Each year, we select presentation themes after conducting a careful screening of examples of safety activities that were nominated by each establishment. The FY2017 forum was held on July 21, “Safety Day.” The following presentations were made. After the presentations, a panel discussion was held by the presenters and became the theme of a lively discussion on “eradicating unsafe behaviors.”
Climate Change Mitigation and Environmental Impact Reduction

Initiatives to reduce Greenhouse Gas Emissions in the Supply Chain

Amid a global trend whereby businesses are managing greenhouse gases indirectly emitted from their supply chains and disclosing their emissions, JSR Group has launched initiatives to calculate and ascertain emissions and reduce emissions based on the Basic Guidelines on Accounting for Greenhouse Gas Emissions Throughout the Supply Chain issued by Ministry of the Environment, Government of Japan.

- Excavation of raw materials
- Use of heat supplied by other companies
- Use of electricity supplied by other companies
- Disposal of goods and products
- Production of raw materials, etc.
- Transport of goods and products
- Use of goods and products
- Industrial process emissions
- Fuel combustion

Climate Change Mitigation and Environmental Impact Reduction

Working to solve Environmental Issues through Deployment of the E2 Initiative™

Because both humans and innumerable other living things share this planet Earth, we must make an earnest effort to deal with environmental issues. JSR Group has adopted its E2 Initiative™ as a concept to simultaneously reduce environmental impact and create new business opportunities using the environmentally-friendly aspects of our products. The E2 Initiative™ is based on “Eco-Innovation,” which is designed to create business opportunities based on the environment, and “Energy Management,” which is focused on reducing CO2 emissions. It is a concept that allows us to create value both in active and passive ways. As we shifted our concept of value from the conventional two approaches of “differentiation” and “cost,” our new concept of “environmental performance” has become essential.

By using the “Life Cycle Assessment (LCA)” to evaluate the “environmental impact” of our products from the design stage in the product development to the use of the product, we are working to solve environmental problems throughout business operations.

The E2 Initiative™ Concept

1. Verification tests at JSR plants and other facilities
2. Launching E2 products onto the market
3. Establishment of the E2 brand
4. Feedback of information needs and useful information

Introduction of a natural gas-fired turbine cogeneration system

The Yokkaichi Plant installed a natural gas-fired turbine cogeneration system in April 2010. By using natural gas instead of coal, a heavy oil-fired steam boiler and condensing steam turbine system, this new system helped us to cut CO2 emissions by approximately 35,000 tons in FY2017.

Communication with Customers

The Corporate Mission of JSR Group “Materials Innovation - We create value through materials to enrich society, people and the environment”. We believe that an important role of JSR Group is to offer innovative materials and excellent products that meet our customers’ needs through communication with them and to contribute to the making of a better society.

We also link communication with our business partners to improvements in our business activity.

Receipt of Infineon Technologies’ Best Quality Award 2017

At Global Supplier Day 2017, held on November 8, 2017, Corporate Vice President Quality Management Andreas Heitzer of Infineon Technologies, a world leader in semiconductor solutions (on the right in the photo), presented JSR Micro N.V. with its company’s Best Quality Award 2017. This prestigious award recognizes Infineon’s most outstanding supplier. It was presented to JSR Micro N.V. in appreciation for its long service as a high-quality supplier.

Communication with Shareholders and Investors

Shareholders’ Meetings

JSR Group has implemented a variety of measures to facilitate the exercise of shareholder voting rights. These include the holding of the general shareholders’ annual meeting at an earlier date to avoid the typical peak period of shareholders’ meetings, earlier notification for the meeting, the adoption of a voting system via Internet, participation in electronic platforms for the exercise of voting rights by institutional investors, the listing of invitations to shareholders’ meetings on our website in both Japanese and English, and the introduction of smartphone compatibility. We aim to make documents attached to invitations to our shareholders’ meetings easy to understand. To this end, we provide not only legally required content, but also other useful information, such as information regarding our products and an overview of our mid-term business plan. Additionally, we make effective use of graphs, photographs, and color printing. We also employ various methods to enhance understanding of JSR at ordinary general meetings of shareholders. They include displaying panels that present JSR explaining our business conditions with visual and audio media, and presenting a briefing on the mid-term business plan by the President. In FY2017, we participated in several seminars for corporate investment analysts. We hold a total of nearly 250 meetings for investors in Japan and overseas per year. Feedback on opinions and questions received through these meetings is shared with management on a regular basis.

With regard to the global development of JSR Group companies, we voluntarily introduced FROS® from March 2018 in an effort to improve the comparability of financial information regarding international capital markets.

*International Financial Reporting Standards

JSR held a briefing and observation tour for securities company analysts and the media. On February 21, 2018, we held a briefing on JSR Group’s Life Sciences Business for securities company analysts and members of the mass media. We also conducted an observation tour of the JSR-Keio University Medical and Chemical Innovation Center (KJOC), which is a joint research facility run by JSR and Keio University’s School of Medicine. During the Life Sciences Business briefing, we presented the business’s positioning within JSR and our strategy for it; the circumstances of the biopharmaceuticals market, which is the business’s client market; and the globally growing collaboration among Group companies that is being achieved through acquisitions. And during the tour of KJOC, which is built in the grounds of Keio University’s School of Medicine, we helped participants get a better understanding of the center by presenting its facilities and research.

On the left is JSR Micro N.V.’s President, Bart Debrand. The trophy awarded to JSR Micro N.V.
Communication with Employees and Society

Work-Style Innovation

For eight months that began in July 2017 and ended in February 2018, four teams selected from within JSR joined a work-style reexamination project organized by Work Life Balance Inc. The teams began with in-depth discussions on their objectives; specifically, what their essential mission is, what they want to become, and what they want to do with the time that is produced. They then moved to actual reexamination, where they gave continuous attention to the visualization and standardization of operations while acquiring know-how and methods from consultants. The project’s results were presented to the President and other members of management through a final report session that was held in February 2018. Additionally, seminars for managers were held in parallel with the teams’ activities for the purpose of broadly sharing know-how acquired through the project with other departments.

Work-style reexamination project: The process

- Step 1: Reexamination of work styles in meetings
- Step 2: Extraction of operational challenges
- Step 3: Identification of current work styles
- Step 4: Execution of reexamination measures

Jsr was Recognized under the 2018 Certified Health and Productivity Management Organization Recognition Program.

JSR was recognized as one of the “White 500” enterprises under the 2018 Certified Health and Productivity Management Organization Recognition Program (large enterprise category), a scheme run by the Ministry of Economy, Trade and Industry (METI) and Nippon Kenko Kaigi. This designation, which we also received last year, acknowledges our standing as a listed company that practices outstanding health and productivity management. Moreover, two members of JSR Group—JSR Micro Kyushu Co., Ltd. and Japan Coloring Co., Ltd.—were recognized under the Certified Health and Productivity Management Organization Recognition Program (SME category). Both companies were similarly recognized last year.

The “Certified Health and Productivity Management Organization Recognition Program” examines large enterprises, SMEs, and other organizations engaging in initiatives for overcoming health-related challenges in regional communities or for promoting health-conscious activities led by the Nippon Kenko Kaigi, and recognizes those enterprises engaging in particularly outstanding efforts for health and productivity management.

Participation in the “IkuBoss Company Alliance”

In May of 2017, JSR joined the “IkuBoss Company Alliance,” an initiative launched by a specified nonprofit organization called Fathering Japan (Chief Representative: Tetsuya Ando). The alliance is a network of companies that recognize those enterprises engaging in particularly outstanding efforts for health-conscious activities led by the Nippon Kenko Kaigi, and the “Certified Health and Productivity Management Organization Recognition Program (SME category).” Both companies were similarly recognized last year.

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Education and Social Education

JSR Group provides support for next-generation development and education opportunities through our continued efforts to provide education and internship opportunities to students both in Japan and abroad. We also provide career experience opportunities. The Yokkaichi Plant accepted nine students from a nearby high school for a workplace experience program. The participants learned about work and safety in the plant through a plant tour and practical activities in a miniature plant.

Environmental activities

JSR Group continues to help with local clean-up activities of roads, coastlines, and rivers at domestic and overseas offices and plants. Following last year, JSR BST Elastomer (Thailand) again participated in the International Coastal Cleanup event organized by the Ocean Conservancy NPO based in the US. In 2017, 75 employees and their families helped clean Makham Bay Beach and Namin Phayung Beach in cooperation with other companies located in the same industrial park, other local businesses, educational institutions, and community volunteers. This event is held on the third Saturday in September all around the world to clean beaches, lakes, seas, and rivers in various countries. The participation of nearly 500,000 people in 91 different countries makes this one of the largest marine conservation projects in the world.

Social Welfare Activities

The Table for Two Program

JSR Group’s Tokyo and Yokkaichi Districts have participated in the Table for Two (TFT) program since February 2010. The TFT program provides food to children in Africa through the sharing of meals. When a participant purchases TFT-specified food, it will provide both a healthy food alternative and an opportunity to donate 20 yen per meal, which is enough to pay for a single serving in developing countries with school lunch programs. In addition, Cup for Two beverages are also offered through vending machines at JSR Yokkaichi Plant.

In October 2017, employees of JSR’s Kashima Plant gave lessons for three different classes of second-year students (75 students) at Hasaki Daichi Junior High School in Kamisu City. Three experiments titled “Synthetic Rubber,” “Balls that Bounce and Balls that Don’t,” and “Unbreakable Plastic” were performed in the classes. The instructors used JSR’s mascots—known as Mr. Molecule—to help explain the peculiarities of materials and the relationship between molecules.

Visit to plants

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Our initiatives targeting “Basic Issues in JSR Group’s Corporate Activity” support our efforts to address “Social Issues that JSR Group Can Help Resolve” and “Social Issues Attributable to JSR Group’s Corporate Activity.”

Corporate Governance

Tackling Corporate Governance as an Important Management Challenge

JSR continues to focus on the enhancement of corporate governance as an important management challenge. As a company with Audit & Supervisory Board members, JSR principally monitors and oversees the execution of duties by directors and the management through its Board of Directors and Audit & Supervisory Board members. We have continuously strengthened the function of management supervision, improved efficiency in decision making and business duties execution, and enhanced the transparency and soundness of our business management to raise corporate value over the medium to long term. To that end, we have implemented measures that include the introduction of an officer system; the appointment of outside directors and Audit & Supervisory Board members who are independent from the company and have extensive business experience and expertise; the establishment of a Remuneration Advisory Committee and Nomination Advisory Committee; the majority of whose members are independent outside directors; and the introduction of performance-based remuneration covering the medium and long term. Additionally, we are strengthening our management monitoring and oversight functions by appointing two independent outside Audit & Supervisory Board members with extensive and sophisticated expertise (one is a lawyer and the other is a certified public accountant qualified as a certified public tax accountant) to the three member Audit & Supervisory Board. Moreover, we strive to ensure and improve the effectiveness of internal control by systematically conducting internal audits through an organization specialized in internal audit that is independent from business divisions and reports directly to the president (“Corporate Audit Department”), by strengthening collaboration between the Corporate Audit Department and Audit & Supervisory Board members, and by instituting a reporting system whereby important issues are reported by directors and employees to the Audit & Supervisory Board members when deemed necessary.

Compliance

Promoting Corporate Ethics Activities based on Three Pillars

To live up to our management policy, which requires us to fulfill all responsibilities to our stakeholders, we advance Group-wide corporate ethics activities, monitor and enhance our legal compliance, and promote respect and safeguarding of human rights in line with JSR Group Principles of Corporate Ethics.

(1) We ensure that employees at all Group companies become acquainted with JSR Group Principles of Corporate Ethics in their native language or in a language in which they are proficient. Moreover, we provide e-learning programs and training developed for all employees of JSR Group companies in Japan.

(2) We work to grasp and improve corporate ethics-related issues by conducting surveys on awareness of corporate ethics that target all JSR Group employees.

(3) We operate two types of hotline (internal reporting channel). For employees, we have an internal hotline connected to contact points for each JSR Group company or the Corporate Ethics Committee and an external hotline connected to a designated independent attorney. In addition, we have another external hotline connected to an independent and specialized outside organization that is capable of handling cases in Japan, English, Chinese, Korean, and Thai. Six reports were received via the hotlines in FY2017. We have also set up a “Helpline for Business Partners” for receiving reports from business partners of Group companies in Japan. No reports have been received since the hotline was opened in FY2014.

Legal Compliance Measures

Every JSR Group member defines legal compliance regulations that form the basis of its legal compliance. Moreover, in order to satisfy compliance, JSR Group regularly reviews and improves compliance by self-checking the degree to which the business operations of all Group companies are legally compliant each year. It also strives to increase awareness of laws and regulations by providing legal training and to instill commitment to compliance.

JSR Group is thoroughly publicizing important points that demand legal compliance among employees in Japan, South Korea, and China by issuing, Japanese, Korean, and Chinese versions of JSR’s Compliance Handbook. The Chinese Version is issued to not only Group companies in China but also JSR departments and Group companies that sell products, supply samples, or otherwise engage in business dealings with Chinese enterprises. Through it, we are working to ensure thorough understanding and practical use of legal compliance in China. We revised the Compliance Handbook’s Japanese version during FY2017 and redistributed to employees in April 2018. The revision covered content pertaining to recent cases of data fabrication and fabrication at other companies and revisions of related laws.

The number of Group companies is growing, particularly in the Life Sciences Business. In light of this, we are focused on supporting the formulation of legal compliance regulations in all Group companies.

Participation in the United Nations Global Compact

JSR Group became a participant in the United Nations Global Compact in April 2009. As such, we will more proactively fulfill our corporate social responsibilities with recognition that businesses operating on a global level must make a greater commitment to human rights, labor, the environment and anti-corruption, as expressed in the Ten Principles of the United Nations Global Compact. We will also advance initiatives oriented toward achieving the “Sustainable Development Goals” (SDGs) that were adopted by the United Nations in 2015 through our business activities.

The Ten Principles of the United Nations Global Compact

1. Businesses should support and respect the protection of internationally proclaimed human rights; and
2. make sure that they are not complicit in human rights abuses;
3. Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;
4. the elimination of all forms offorced and compulsory labour;
5. the effective abolition of child labour; and
6. the elimination of discrimination in respect of employment and occupation;
7. Businesses should support a precautionary approach to environmental challenges;
8. undertake initiatives to promote greater environmental responsibility; and
9. encourage the development and diffusion of environmentally friendly technologies;
10. Businesses should work against corruption in all its forms, including extortion and bribery.

Risk Management

Working to reinforce risk management

JSR Group believes that “preventing a major crisis from occurring” and “minimizing major crises’ impacts on business activities” are important management roles. The Group has formulated Risk Management Policies and established a Risk Management Committee through which it actively pursues risk management activities.

Every year, we identify potential risks that could have a particularly significant impact on business continuity. We organize those risks into the “JSR Group Risk Factors” and are executing countermeasures to reduce them. For example, in FY2016 we conducted an “information security incident” drill to prepare for a cyber attack, which is one of the JSR Group Risk Factors. We also held BCP training for JSR Group companies in Japan during FY2017. This BCP training was the first ever held for the purpose of strengthening the crisis response capabilities of headquarters for accident and crisis control in Group companies. Our senior management monitors these measures and regularly reviews the JSR Group Risk Factors and then reflects the results on risk management activities for the following fiscal year. Moreover, as an initiative aimed at business continuity, our Head Office formulates Business Continuity Plans (BCM) that envision scenarios in which our plants shut down for a certain period of time. We also systematically conduct disaster drills and evacuation drills at our plants and offices to improve our crisis responsiveness and minimize impact. As for our physical infrastructure, we are proceeding with step-by-step seismic reinforcement. In particular, we are conducting seismic retrofitting at our production bases and manufacturing facilities after establishing independent standards that are even stricter than those required by law.

The Sustainable Development Goals (SDGs)

The SDGs are comprised of 17 goals and 169 targets that all United Nations member states will strive to achieve by 2030 for the purpose of bringing sustainability to this global environment and people’s lives. In addition to conventional development goals, such as eradicating extreme poverty and hunger, the SDGs also cover challenges faced by developed countries, among them the promotion of gender equality, creation of a strong employment environment, rationalization of production and consumption, conservation of marine and forest resources, and development of safe communities.

UN SDGs: https://sustainabledevelopment.un.org/menus/1300
Evaluation by Outside Organization/JSR Group Profile

Inclusion in ESG indexes and socially responsible investment (SRI) indexes and stocks (Current as of July 1, 2018)

JSR Group CSR activities have been evaluated by outside organizations. We have earned inclusion in the following ESG indexes and socially responsible investment (SRI) indexes and stocks.

- We were selected by MSCI as an investment target of the MSCI Japan Domestic Excluding犯规 Index (HRI) for being a company with excellent gender diversity.
- We have been a member of the FTSE4Good Index Series since 2004.
- We have been selected as a company practicing outstanding health and safety management by the Ministry of Health, Labor and Welfare, Japan.
- We have been selected as one of the 120 companies that compose the Euronext Vigeo Eiris World 120 Index.
- Additionally, JSR Group has continually been ranked in the Global Compact 100 since FY2013.

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- We were selected by SNAM (Sompo Japan Asset Management Co., Ltd.) as a socially responsible investment brand for investment of the SNAM Sustainable Investment Index.
- We were selected by MSCI as an investment target of the MSCI Japan Domestic Excluding犯规 Index (HRI) for being a company with excellent gender diversity.
- We were selected as a company practicing outstanding health and safety management by the Ministry of Health, Labor and Welfare, Japan.
- We have been a member of the FTSE4Good Index Series since 2004.

JSR Group Companies (as of March 31, 2018)

JSR Group has continually been ranked in the Global Compact 100 since FY2013.

- We have been selected as a company practicing outstanding health and safety management by the Ministry of Health, Labor and Welfare, Japan.
- We have been a member of the FTSE4Good Index Series since 2004.
- We have been included in the FTSE Index since June 2017.
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Financial Information

<table>
<thead>
<tr>
<th>Major JSR Business Groups (as of March 31, 2018)</th>
<th>The manufacture and sale of the following products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of business</td>
<td>Main products</td>
</tr>
<tr>
<td>Synthetic rubbers</td>
<td>Synthetic rubber, thermoplastic rubber, ethylene-propylene rubber, and other synthetic rubbers and related products</td>
</tr>
<tr>
<td>Thermoplastic elastomers</td>
<td>Thermoplastic elastomers and related processed products</td>
</tr>
<tr>
<td>Elastomers</td>
<td>Elastomers for tire manufacturing, medical, industrial, and other applications</td>
</tr>
<tr>
<td>Functional chemicals</td>
<td>Functional chemicals for diverse applications</td>
</tr>
<tr>
<td>Other</td>
<td>Fine chemicals and other products</td>
</tr>
</tbody>
</table>

Operating Income (consolidated)

<table>
<thead>
<tr>
<th>Financial Information (consolidated)</th>
<th>Net Sales (in millions of yen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>3,943</td>
</tr>
<tr>
<td>United States</td>
<td>2,863</td>
</tr>
<tr>
<td>China</td>
<td>5,224</td>
</tr>
<tr>
<td>South Korea</td>
<td>1,668</td>
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<tr>
<td>Indonesia</td>
<td>236</td>
</tr>
<tr>
<td>Vietnam</td>
<td>1,436</td>
</tr>
</tbody>
</table>

Notes:
1. The JSR-Ko University Medical Center and Chemical Innovation Center opened on October 20, 2017.