



Your Success, Our Pride.

2021 Integrated Report

Year ended March 31, 2021

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Engineering for Sustainable Growth of the Global Community

As the economic development of humankind progresses, energy and environmental issues are becoming more and more highlighted on the planet on which we live.

Ever since TOYO ENGINEERING was founded, our business has been the development of the global economy through industrial infrastructure.

The role we are expected to play by society is also at a major turning point.

In an effort to contribute to the sustainability of the world and society, we have set "Engineering for Sustainable Growth of the Global Community" as our mission.

The business fields which we can serve are infinitely expanding.

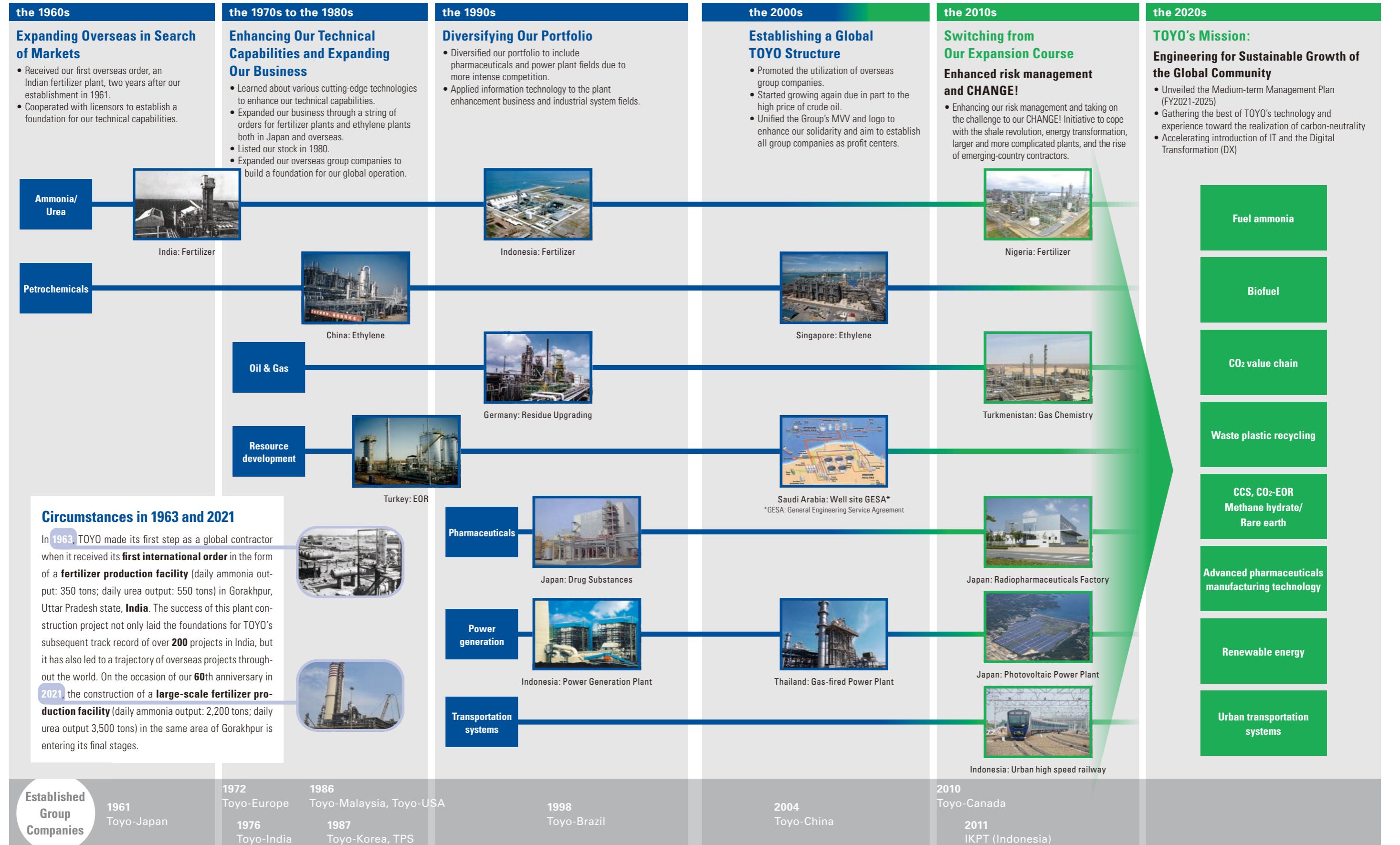
Based on our corporate slogan of "*Your Success, Our Pride.*,"

we will continue to evolve for the sake of our future as an engineering company.

60 Years of TOYO

TOYO welcomed its 60th anniversary this year. In addition to extending our heartfelt gratitude to all the stakeholders who have supported us so far, we ask for your continued support.

In order to enrich people's lives, TOYO has been engaged in a variety of plant construction and infrastructure development projects. Preservation of the Earth's environment has been highlighted as a common global issue. By mobilizing all of the engineering capabilities that we have cultivated thus far, we will contribute to the realization of a sustainable planet and society.



Circumstances in 1963 and 2021

In 1963, TOYO made its first step as a global contractor when it received its **first international order** in the form of a **fertilizer production facility** (daily ammonia output: 350 tons; daily urea output: 550 tons) in Gorakhpur, Uttar Pradesh state, **India**. The success of this plant construction project not only laid the foundations for TOYO's subsequent track record of over **200** projects in India, but it has also led to a trajectory of overseas projects throughout the world. On the occasion of our **60th anniversary** in 2021, the construction of a **large-scale fertilizer production facility** (daily ammonia output: 2,200 tons; daily urea output 3,500 tons) in the same area of Gorakhpur is entering its final stages.



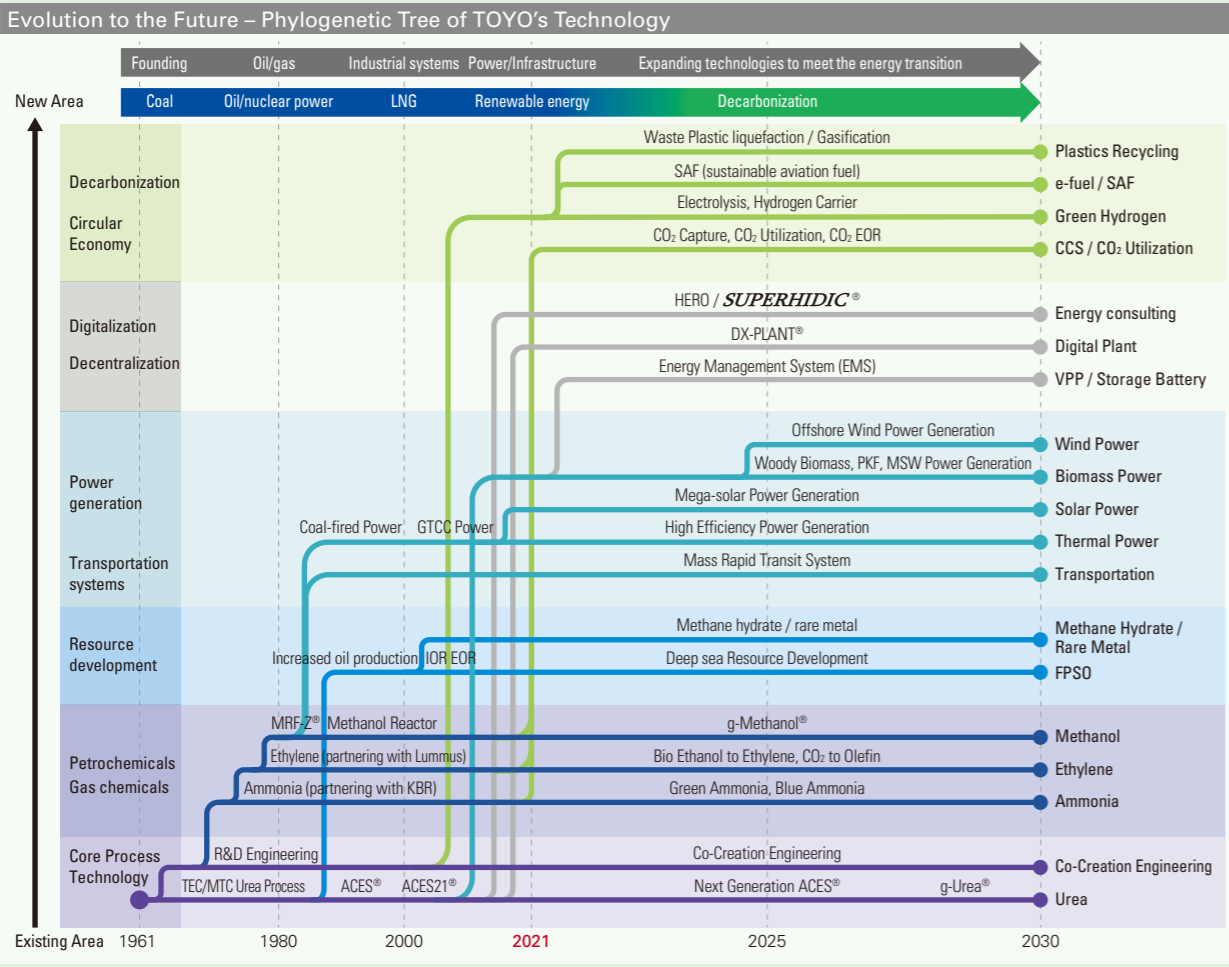
TOYO's Strengths

TOYO's competitiveness is supported by high-tech application capabilities to solve challenges and global operations that bring together the strengths of our group companies. With these two elements at our core, TOYO provides high quality engineering services.

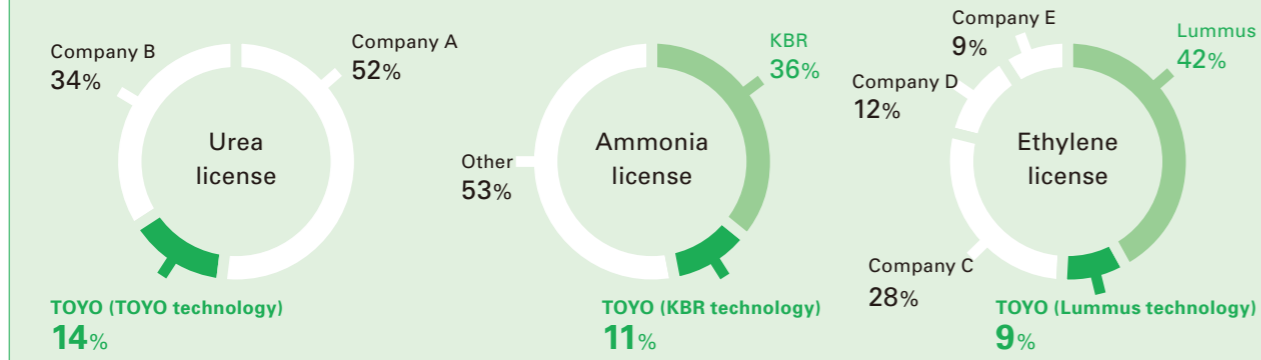
Engineering Technology

The History of Our Research & Development

TOYO's history has been accompanied by changes in technological development, especially regarding proprietary technologies and technologies offered in partnership with licensors. We have always strived to expand our product fields and business areas by improving our energy-saving and environmental technologies. Now, in an effort to contribute to the societal need to realize carbon neutrality, we will leverage the high-tech application capabilities, expertise, experience, and partnerships that we have cultivated thus far to make a circular society a reality.



EPC* by license global share (from 2001 onwards)



*Engineering, Procurement, Construction

Global Operations

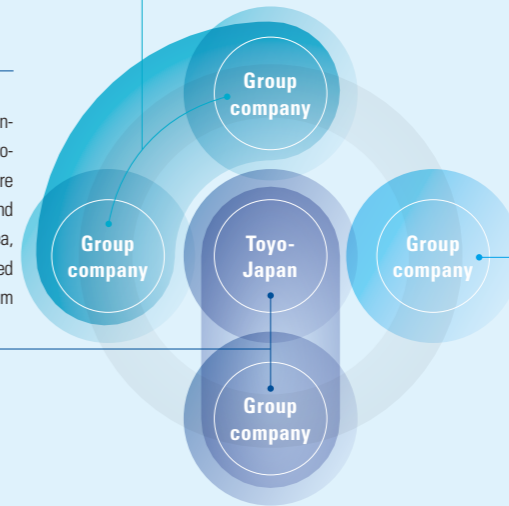
Best formation

Customer needs vary widely by country and region. We use the unique perspective and mobility of TOYO group companies rooted in local societies to identify needs and support our customers using our best formation across our whole group.



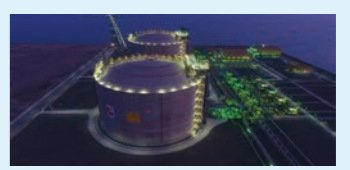
Cooperation between multiple group companies

Ethylene complex (Malaysia)
This project, the largest in TOYO's history was conducted with a truly "All TOYO" team—with Toyo-Japan taking the lead, detailed engineering were made by Toyo-India, IKPT, and Toyo-Malaysia, and group companies such as Toyo-India, Toyo-Korea, Toyo-China, Toyo-Europe, and Toyo-USA supported the procurement of equipment and materials from suppliers in their areas of jurisdiction.



Cooperation between group companies

Butadiene facility (Indonesia)
Toyo-Korea and IKPT worked together to execute the EPC for a butadiene capacity expansion project.



Single group company

LNG regasification facilities (India)
Toyo-India single-handedly executed everything from engineering to procurement, construction, and commissioning of the GSPC project, completing it ahead of the contracted due date in 2017. Toyo-India is a major player that has worked on four regasification facilities in India.

Areas of expertise of TOYO group companies

By bringing together engineering technology specialisms in each group company, Toyo-Japan has refined TOYO's global operations. It has set the TOYO standard supporting our quality since the 1990s, and ensured compliance among all group companies. Currently, the engineering functions of the group company is our biggest source of competitive power.

Toyo-India
Urea, ammonia, ethylene, FPSO*, LNG regasification facilities, refineries

Toyo-Korea
Polymers (polyethylene, polypropylene, etc.)

IKPT (Indonesia)
Renewable energy power generation, Transportation

Toyo-China
Chinese investment projects from Japan, Europe and the USA

Tech project services
Pharmaceuticals, fine chemicals, environment, petrochemicals

TSPI (Brazil)
FPSO

*FPSO: Floating Production, Storage and Offloading

Management Vision Medium-term Management Plan Sustainability Initiatives Data Section



To pioneer the future for a sustainable global community 50 and 100 years from now through Engineering

—Engineering for Sustainable Growth of the Global Community—

Bringing together technology and knowledge to solve social issues

Welcoming its 60th anniversary this year, TOYO was founded in 1961 as a spin-off of Toyo Koatsu Industries Inc.'s Engineering Department (now Mitsui Chemicals, Inc.), incorporating the word "engineering" into its company name, which was rare at the time. Considering the true mission of an engineering company to work on solving social issues by bringing together technology and knowledge, we started in the EPC business of fertilizer production facilities including ammonia and urea. I am very proud of how we have contributed to the economic growth of various countries while expanding our business fields. Going forward, I would like us not only to offer EPC businesses to solve our customers needs, but also to continue to provide engineering services based on the high-tech application capabilities and expertise we have accumulated throughout the years, such as identifying problem areas, early-stage commercialization, and post-EPC maintenance.

Now is the time for engineering companies to fulfill our mission

Social issues continually change with the times. Currently, fires are occurring that are thought to be caused by abnormal weather due to greenhouse gas emissions. Against this backdrop, the world has set the achievement of a carbon-neutral society an urgent goal, and the Japanese government has declared its intent to realize a carbon-neutral society by fiscal 2050. Leaving this planet in a sustainable form for future generations is an extremely important challenge that all humans should bring together their wisdom to tackle.

We have been long in the age of fossil fuel usage, ever since the Industrial Revolution beginning in the mid 18th century. Engineering companies have played a major role in the construction of large-scale industrial plants. And as we now in 2021 once again rapidly undergo a massive shift into a new age, this time toward a decarbonized society, many companies around the world are rushing to address this change. But this challenge is not simple enough that it can be solved by individual initiatives by individual companies. In addition to technological innovation, the establishment of a new value chain is necessary. It is crucial for public and private bodies to come together and bring a variety of players on board; also, the task is a challenging one that involves reshaping global energy structures. This is precisely why it is essential to have a function to combine and integrate the strengths of companies with technological expertise and know-how to appropriately manage large-scale projects. Presenting solutions to these difficult challenges is the mission of an engineering company, and I strongly feel that now is the time for us to fulfill this mission.

Using the power of engineering to contribute to a sustainable global community

In order to achieve common global goals, TOYO launched "Medium-term Management Plan (FY2021-2025) - Realization of **Your Success, Our Pride.**" By implementing this medium-term management plan with a double spiral strategy of "Advanced EPC Operation" and "Sustainable Technology and Business Development," we hope to balance the goals of "aim to realize an environmentally friendly society" and "enrich people's lives," which we have identified as materiality.

When formulating this medium-term management plan, I did everything I could to unify the thoughts and feelings of employees of the TOYO Group. To that end, I received the support of a wide variety of team members—not only top executives, but also older and younger employees. Of course, it goes without saying that the trust of our stakeholders is vital to TOYO's growth. I believe that when employees feel dynamic and motivated at work and show their family how proud they are to work at the company, that is what enables us to demonstrate our full potential and continue to provide high value to our customers.

I believe that after passing down our strategy to the next generation and continuing to provide solutions to new challenges, there awaits a carbon-neutral world and a bright future for TOYO.

TOYO will contribute to the sustainability of the planet and society 50 and 100 years from now through engineering. I extend my heartfelt gratitude to all of our stakeholders for your continued support of TOYO.

Haruo Nagamatsu, President & CEO

Striving to Be a Conductor that Pioneers a New Energy Society with Carbon-Free Ammonia



Haruo Nagamatsu

President & CEO



Bunro Shiozawa

Former Deputy Program Director of Japan's SIP "Energy Carriers" initiative
 Chief Researcher, International Environment and Economy Institute (NPO)

Nagamatsu TOYO welcomed its 60th anniversary in 2021. Ahead of this milestone year, we announced "Medium-term Management Plan (FY2021-2025) - Realization of **Your Success, Our Pride.**" In particular, we have defined the key areas that contribute to our materiality of "aim to realize an environmentally friendly society" as: 1) sustainable aviation fuel (SAF*); 2) the carbon dioxide (CO₂) value chain; and 3) the fuel ammonia value chain. We have drawn up a road map for each of these areas.

Mr. Shiozawa was Deputy Program Director of Cross-ministerial Strategic Innovation Promotion Program (SIP) "Energy Carriers" initiative, which is a project to carry out research related to hydrogen energy in order to carve out a path for Japan to realize a decarbonized society. In this role, you were able to make huge progress in the practical use of ammonia as a fuel. I have been looking forward to our discussion. Thank you for joining us today.

Shiozawa It just so happens that I went to the same university as you, where I majored in chemical engineering. I then joined the Ministry of Economy, Trade and Industry, which was known as the Ministry of International Trade and Industry at the time. In the course of my work on industrial technology policy and science technology policy, I became deeply involved in the energy issues facing Japan. I was later blessed with the opportunity of working on the SIP "Energy Carriers"

initiative. I spent the five years from FY2014 to FY2018 working on CO₂-free ammonia manufacturing technology development, then surveying the technological and economic feasibility of establishing a supply chain for it, and exploring its potential as a hydrogen energy carrier. In particular, I was able to achieve major results concerning the possibility of directly using ammonia as a CO₂-free fuel.

Over the past two to three years, ammonia has garnered attention as a fuel that does not emit CO₂. As I'm sure you are aware, over a century ago, German scientists Fritz Haber and Carl Bosch discovered a process for synthesizing ammonia (NH₃) from nitrogen (N₂) in the air as a nitrogen source and hydrogen (H₂). These results led to the creation of nitrogen fertilizers that contributed to increased food production. Additionally, when there was a shortage of fossil fuels in wartime, busses in Belgium ran on ammonia fuel. What's more, apparently research on using ammonia as fuel for tanks was carried out in the United States in the 1950s, because ammonia was less likely to catch fire and could be carried safely as a supply line. This means that ammonia was also used and studied as a fuel in the past.

Nagamatsu We are an engineering company that was formed as the spin-off of the Engineering Department at Toyo Koatsu Industries Inc. (now Mitsui Chemicals, Inc.). We have our beginnings in the construction of fertilizer production

facilities such as urea for which we have licensed technologies and one of its raw ingredients, ammonia. In 1963, we received our first overseas order for fertilizer production facilities from the Fertilizer Corporation of India. We have since been building up a track record in fertilizer production facilities around the world, primarily in Russia and eastern Europe. In addition to the chemical fertilizer field, we have expanded our business into a wide range of business fields such as oil and gas chemistry, resource development, power generation, transportation, and other infrastructure.

*SAF: Sustainable aviation fuel (aviation fuel that is produced from sustainable supply sources with low CO₂ emissions in the process from producing and collecting raw materials to burning)

The 2050 Carbon Neutrality Declaration Changed the Tide

Nagamatsu First of all, would you be able to give us your thoughts on the direction Japan should take toward a decarbonized society from your position as someone with many years of experience working on Japanese energy policy?

Shiozawa During Prime Minister Suga's October 2020 general policy speech, he made the strong declaration that "Japan will aim to realize a decarbonized society with virtually zero greenhouse gas emissions by 2050." It is the so-called "2050 carbon neutrality declaration." Ever since the

1977	: Graduated with an M.Eng in Chemical Engineering from the Faculty of Engineering, Yokohama National University
1984	: Graduated with an M.A. from the Department of Communication, Stanford University
1977	: Entered the Ministry of International Trade and Industry
1993-1996	: Seconded to the Technical Secretariat of the Organisation for the Prohibition of Chemical Weapons (in The Hague, the Netherlands)
2003	: Deputy Director General to the Minister of International Trade and Industry (in charge of industrial technology)
2004	: Deputy Director General to the Cabinet Office Minister (in charge of science and technology policy)
2006	: Left his position
2006-2008	: Director of Japanese Standards Association, Head of International Standardization Center
2008	: Joined Sumitomo Chemical Co., Ltd.
2009	: Became Sumitomo Chemical Director (in charge of climate change issues)
2015	: Became Senior Associate of Sumitomo Chemical
2021	: Left Sumitomo Chemical
2014-2018	: Became Deputy Program Director of Cross-ministerial Strategic Innovation Promotion Program (SIP) "Energy Carriers" initiative
2018-present	: Innovation Strategy Coordinator for SIP "Energy Systems of an IoE Society" (energy management)

Paris Agreement was adopted in 2015, the global attitude has changed from "there's no way we can shift to a decarbonized society" to "let's give it a try." Against this backdrop, the fact that the Japanese government has started on its path towards virtually zero emissions with a clear deadline has been received as an appropriate signal from the government to Japanese citizens and industry for Japanese companies to come together and shift gears towards making that a reality.

Dialogue: Challenges and Expectations for the Energy Transition Needed to Realize a Carbon-Neutral Society by 2050

Ammonia Is a Form of CO₂-Free Hydrogen Energy

Nagamatsu At the same time, it's simply a fact that it's still very difficult from a technological perspective.

Shiozawa That is certainly the case. Japan currently relies on fossil fuels for over 80% of its primary energy supply. And all of those fossil fuels generate CO₂. So carbon neutrality means bringing that close to zero. In Japan's case in particular, we are not in a situation where we can rely on nuclear energy, so we need to introduce a substantial supply of renewable energy. However, unfortunately it is extremely hard in Japan to build a renewable energy power generation system that can stably supply the necessary energy while ensuring a certain level of profitability, even when taking into account the expectations for offshore wind power. It is therefore considered necessary to have a way of mass importing cheap renewable energy from overseas regions that are abundant in renewable energy.

This is where hydrogen comes into the spotlight. Hydrogen can be made from hydrides which exist in abundance on our planet, especially water. What's more, when you burn it, it creates only water and doesn't emit CO₂. This makes hydrogen the "fuel of dreams" for a decarbonized society. The main substance of hydrogen energy is hydrogen (H₂), but the Agency for Natural Resources and Energy defines hydrogen energy as "energy that does not emit CO₂ when used." This means that the hydride ammonia (NH₃) is also a form of hydrogen energy. On the other hand, natural gas, which is primarily comprised of the fossil fuel methane (CH₄), is a hydride but contains carbon (C) molecules, meaning that CO₂ is produced when it is used. For this reason, it is not considered to be a form of hydrogen energy.

Nagamatsu Hydrogen can be made with water and electricity, which exist in abundance on this planet. However, it is now mainstream to produce "gray hydrogen" from fossil fuels such as natural gas and coal, which causes CO₂ emissions during the production process. This means that it is necessary to combine with CCS (Carbon Capture and Storage), the process of capturing and using that CO₂ or storing and stabilizing it underground, or CO₂-EOR (Enhanced Oil Recovery), injecting CO₂ into the ground to collect more oil. This processing is the same as when producing ammonia from natural gas. Using these methods to eliminate CO₂ emissions is called "blue ammonia." And ammonia made from "green hydrogen," which is made by electrolyzing water with renewable energy, is known as "green ammonia."

In the Green Growth Strategy announced by the Ministry of Economy, Trade and Industry in December 2020, one target

is building an international supply chain for this fuel ammonia. TOYO is aiming to commercialize blue ammonia plant facilities, which combine CCS/CO₂-EOR, and is currently conducting a feasibility study in east Siberia, Russia.

The Superiority of Ammonia as an Energy Carrier

Shiozawa A key point in the hydrogen energy value chain is where to produce hydrogen and how to transport it. Take Europe for example, where the situation differs to Japan. In Europe, there is abundant wind energy and hydropower in the vicinity of areas of demand, and excess renewable energy is used to make hydrogen, which can then be transported for use as a gas in pipelines and tank trucks. Japan, however, needs to bring in hydrogen from production areas in other countries via long-distance sea transport.

Hydrogen itself, in its usual state, is a gas with an extremely low energy density. The amount of hydrogen that has an equivalent amount of energy to one liter of gasoline is approximately 3,000 liters at 0°C and 1 atm. Furthermore, it requires the extremely low temperature of -253°C to form a liquid, which makes it very difficult to transport and store in large quantities. The solution to this issue is transporting and storing it as ammonia and cracking it into hydrogen at the location where it will be used. Furthermore, the results of SIP "Energy Carriers" research demonstrated that ammonia itself can be used as a fuel without converting it to hydrogen. What this means is that ammonia is both an outstanding carrier for hydrogen and a form of CO₂-free fuel. This is a huge advantage. This is because it eliminates the need to produce hydrogen from ammonia, and leads to huge cost reductions.

Compared to hydrogen, ammonia forms a liquid at mild conditions, -33°C under normal pressure or 8.5 atm at normal temperature. If ammonia is liquified by cooling, a volume of the substance is 1/1,350 of the same weight of hydrogen gas and its volumetric hydrogen density is 121 (kg-H₂/m³), with a higher energy density per volume than liquified hydrogen at 70.8 (kg-H₂/m³).

Nagamatsu What's more, the amount of ammonia in circulation is one of the highest of any chemical. One benefit is that there is already an international commercial supply chain, and it is supplied for practical use. In addition, ammonia's liquefaction conditions are almost the same as liquified petroleum gas (LPG), so we can use its infrastructure. Ammonia has a high energy density and over 20 million tons of the product are imported and exported globally per year, so we think that it is more feasible to use blue ammonia rather than liquified hydrogen.

Shiozawa Exactly. Even when considering the use of hydrogen, in order for a country like Japan to mass import hydrogen energy from far away regions that are blessed with an abundance of relevant resources, we think that the most effective method at our disposal right now is to import and use ammonia, which is easy to transport and store. Ammonia is designated as a deleterious substance, and needs to be handled by specialists who have the appropriate knowledge. At the same time, fire is slow to spread when it burns and it has a narrower explosion limit, so it is not classified as a flammable or explosive substance in the United States. Measures are needed to address the strong smell, but it would be easy to detect a leak.

Nagamatsu Hopes are currently high for use of ammonia as a CO₂-free fuel in a variety of applications such as thermal power generation, shipbuilding, and industrial furnaces. If ammonia replaces coal, city gas, and heavy oil as a power generation fuel, the amount used will multiply by an order of magnitude compared to previous levels. From the perspective of its use both as a fuel and a hydrogen energy carrier, ammonia has the potential to become the "next LNG" that will support carbon neutrality and energy security in Japan.

Against this backdrop, in the government's Green Growth Strategy, a roadmap was presented to swiftly establish an international supply chain for fuel ammonia and take initiative in the global ammonia supply and use industry. In 2030, domestic demand for fuel ammonia is predicted to be 3 million tons a year, and 30 million tons a year is predicted by 2050. The overall global demand is also predicted to grow to the scale of 100 million tons a year.

Shiozawa In Japan, hydrogen energy is expected to play a big role mainly in the power generation field and also the industrial field. These fields currently account for 45% and 25% respectively of consumption of fossil fuels in Japan, so the effect of introducing CO₂-free fuels would be large. For



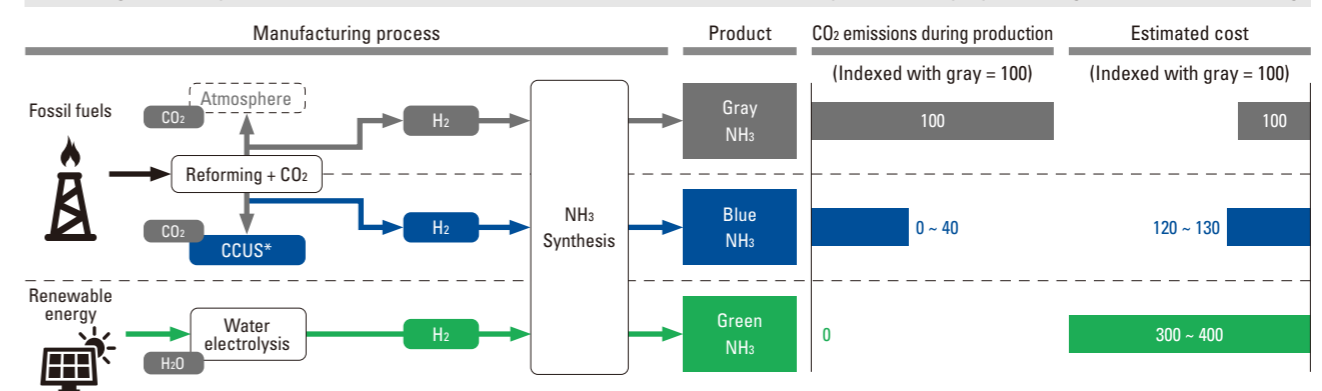
example, if you look at the effect of introducing CO₂-free ammonia in coal-fired power generation boilers, which emit a lot of CO₂, 600MW coal-fired power plants emit just less than 4 million tons of CO₂ a year. Mixed-fuel combustion with 20% CO₂-free ammonia (on a heat quantity basis) would reduce around 800,000 tons of CO₂ emissions at a power generation plant of this scale. The government is aiming for a target of 20% mixed-fuel combustion by 2030. However, 20% is not a technological limit and technology to raise the mixed-fuel ratio continues to be developed, so it is likely that the effect will get even larger. Additionally, coal-fired thermal power accounts for approximately 40% of overall global power generation (approximately 70% in India and China), making the potential of coal/ammonia mixed-fuel technology to reduce CO₂ emissions even greater.

The Star of the Show for Now Is Blue Ammonia

Nagamatsu In these circumstances, what is expected of the private sector now?

Shiozawa It has to be the establishment of a CO₂-free ammonia value chain. In terms of current hydrogen production methods, the cheapest generally tends to be producing it by reforming natural gas. However, in future, the cost of producing hydrogen via electricity generated from renewable

Achieving CO₂-free production is also essential. "Blue" ammonia, which is cost-competitive, will play a leading role for the time being



*CCUS: Carbon Capture, Utilization and Storage

Dialogue: Challenges and Expectations for the Energy Transition Needed to Realize a Carbon-Neutral Society by 2050



sources will become cheaper due to lower costs of electrolysis and renewable electricity. This means a transition to producing green ammonia from renewable-energy hydrogen is likely.

Nagamatsu From a long term perspective, TOYO plans to work on the development of manufacturing technology for green ammonia derived from renewable energy. If the CO₂ emitted from the process of producing ammonia (gray ammonia) from hydrogen derived from natural gas is taken to be 100, the cost of blue ammonia, which lowers CO₂ emissions to 0-40 by capturing and storing CO₂, is estimated to be 20 to 30% higher than gray ammonia. On the other hand, zero CO₂ is emitted in the production process of green ammonia, which is made from hydrogen derived from renewable energy and nitrogen in the air, with absolutely no natural gas used. However, given current technology levels, the production cost is calculated to be 300 to 400%, or perhaps even higher. While technology is being developed around the world to reduce costs, we are aiming to realize carbon neutrality first with blue ammonia, and then make a full-fledged shift to green ammonia with the next technological innovation.

Shiozawa I definitely agree that it is a priority for business firms to first create a solid value chain for blue ammonia.

Nagamatsu TOYO is conducting a project in line with the fuel ammonia policy roadmap outlined in the government's Green Growth Strategy. What's important here is the price of unloading ammonia in Japan. The roadmap sets a target of reducing the cost, which is currently in the lower 20 yen range per Nm³ (hydrogen conversion in calorific equivalent) to the higher 10 yen range by 2030 (premised on the current price of natural gas, etc.). We are aiming to reach this level by leveraging the manufacturing technology and expertise that we have accumulated.

For over 50 years, TOYO has rolled out plant construction projects combining the U.S. KBR ammonia process and our original technology for synthesizing urea, ACES21®, around the world. We also have a track record of building 85 ammonia plants. Based on the design technologies, etc., that we have accumulated through this track record, we will strive to further scale up past conventional ammonia plants for fertilizer, and reduce costs through increased productivity. This is the first point where we will leverage our strengths.

Concerning the second point, capturing and storing CO₂, we have been working on CO₂-EOR since the 1980s and possess abundant experience and expertise in the area. In partnership with U.S. Baker Hughes, we can integrate above ground and subsurface to formulate development plans, which require high-tech application capabilities, in a short timeframe. Currently, we receive a variety of inquiries outside of Russia, from the Middle East, North America, and South America. By mobilizing all of these strengths, we hope to create a blue ammonia value chain by around 2026.

Shiozawa Your initiatives in Russia are very interesting.

Nagamatsu In December 2020, we announced that we would be partnering with ITOCHU Corporation to work on a joint feasibility study entrusted by Japan Oil, Gas and Metals National Corporation (JOGMEC). In July 2021, it was decided

to proceed to the next stage. Specifically, we will be starting a study of the feasibility of the value chain of producing hydrogen from gas made by the Russian Irkutsk Oil Company (IOC), converting it to ammonia, and transporting it from east Siberia to Japan. If this can be achieved, there will be a stable supply of mass-produced blue ammonia to Japan, which can be used primarily as fuel for thermal power generation plants.

Shiozawa Russia is close to Japan and has ports, so this is a very exciting project. At the same time, one company can't just build a new value chain even if it wants to, so it is key to bring together the collective strength of the private sector. In that sense, I think it will be even more important for TOYO to refine its project management skills.

The International Energy Agency (IEA) recently released a sensational report entitled "Net Zero by 2050: A Roadmap for the Global Energy Sector." According to the report's analysis, investment in energy to achieve net zero CO₂ emissions by 2030 will skyrocket to \$5 trillion a year, boosting global GDP growth by 0.4 points, and increased spending from the public and private sectors will lead to an extremely large number of employment opportunities created in the clean energy industry, including engineering companies. So the report sees the role of engineering companies in carbon neutrality becoming very large.

Expectations as a Conductor, Shifting Business Model to B2B2X

Nagamatsu As I said before, TOYO started off in fertilizer production facilities for urea and ammonia. We then expanded our market to petrochemicals and infrastructure. Now, sixty years later when we consider TOYO's future as we move toward carbon neutrality by 2050, you could say that it is only natural that we work with ammonia as a fuel again. The fact that the potential of the ammonia market, where we can leverage our accumulated technology and expertise, has grown to an unprecedented level is a blessing that we didn't even wish for.

However, the current Russian project does not aim to build a blue ammonia value chain as an extension of the conventional business model of EPC. To TOYO, this project is also an initiative to shift to the new business model of B2B2X, which creates a market by involving all players in the new market. Up until now, we have built a value chain between our customers and TOYO, which you could call B2B. In particular, one of the themes of our previous medium-term management plan was "More Toward Upstream," which saw us strengthen our involvement right from the customer's planning stage. We achieved a certain amount of results in this regard. However, the fact that we are accumulating one-off EPC-centric jobs

remains a challenge. When we analyzed what we should do, we came up with the answer of shifting to this B2B2X business model. The concept is based on the idea of co-creating with our customer's customers, or perhaps the government or foreign nationally-owned resource companies to lead the process up to creating innovative business mechanisms. At a time when a huge paradigm shift is expected, we do not want to enter the business ecosystem after the fact, but rather create a win-win framework with all stakeholders right from the get-go. We will use our high-tech application capabilities to attract partner companies. We want to then make sure market share and profit will follow later. To this end, we have brought together a variety of employees—from seasoned veterans to those with experience working at trading houses, to those who have worked on developer projects—to create a department dedicated to promoting the B2B2X model. In this day and age, we can't survive unless we keep our eyes open for new ideas and take up challenges. We are planning to appoint people with this kind of mindset, even younger staff, to important positions. I believe that engineering companies have even more potential than in the past as we launch new markets and businesses, such as fuel ammonia.

Shiozawa The B2B2X concept by TOYO can be understood as bringing together a variety of companies to create a blue ammonia value chain. In fact, it is not only necessary to first possess natural gas interests and the technology to reduce the CO₂ emitted when using it, such as EOR technology. The ammonia produced will also need to be brought to Japan, received at bases, and successfully transported to the power company to be provided to end users. Even if the government gives out a command, it will not be realized unless it is a win-win for a variety of companies. For the future of Japan, there are high hopes for the construction of a new value chain through even more co-creation by the private sector.

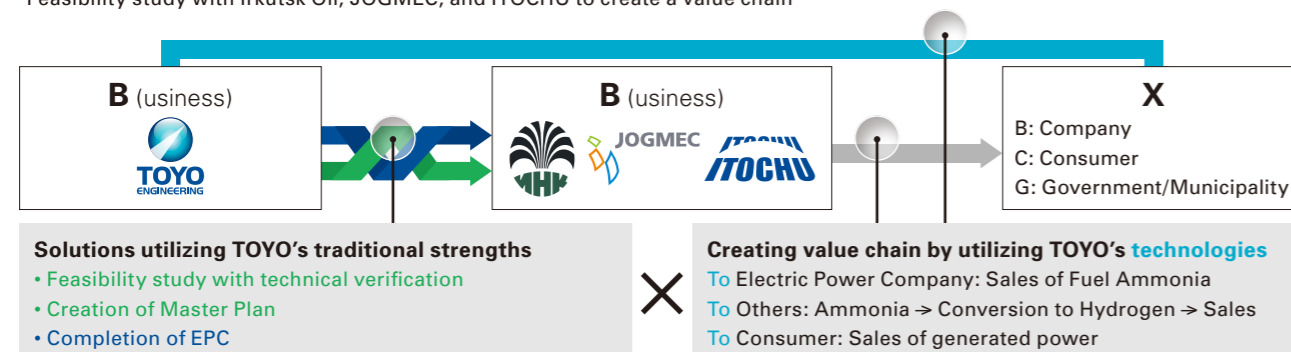
Nagamatsu As a key pillar of our business vision for the next five to ten years, TOYO wants to also shift to the B2B2X model in the value chain for sustainable aviation fuel (SAF), which has a high market potential alongside fuel ammonia.

Shiozawa To be honest, Japanese companies are tiny when compared to their European and American counterparts. In order for Japan to regain its strength as a leading country in carbon neutrality, I hope that TOYO pioneers a new energy society—like the conductor of an orchestra, leading the relevant parties on a spirit of "we" not "I."

Nagamatsu I thank you from the bottom of my heart for your encouraging words. I will do everything in my power to transform TOYO into the kind of company that meets your expectations.

Example of B2B2X Model: East Siberia fuel ammonia project

Feasibility study with Irkutsk Oil, JOGMEC, and ITOCHU to create a value chain



Message from the CFO



To achieve sustainable growth of TOYO, we will work relentlessly to ensure sound and appropriate decision-making and transparency from a financial perspective.

Kensuke Waki
Director, Senior Executive Officer
Chief Financial Officer (CFO)

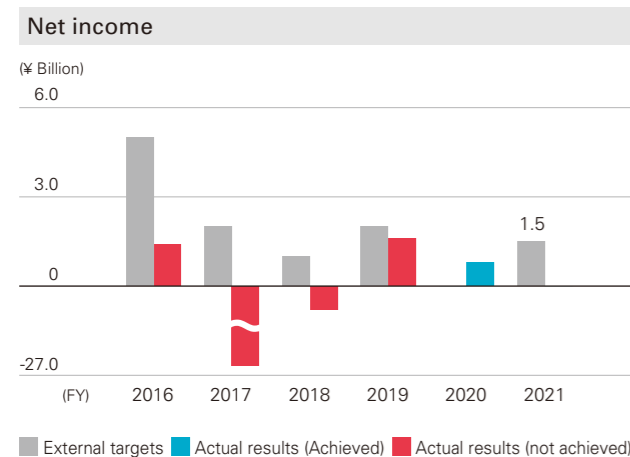
Current Status and Fiscal 2021 Outlook of TOYO

In fiscal 2019, we completed the US ethylene project which had been our biggest concern in recent years. We are therefore no longer engaged in unprofitable projects. Despite the gradual spread of COVID-19 from the fourth quarter of fiscal 2019, we posted net profit attributable to owners of the parent of ¥0.8 billion in fiscal 2020, thanks to groupwide efforts to improve project outcomes and rigorously control expenses.

Through various measures taken under our Revival Plan, we have built a solid infrastructure business and improved our business portfolio, which previously was heavily weighted toward the plant EPC business. In addition, we made good progress in optimizing our overseas EPC group companies, which have grown to account for around half of our consolidated gross profit in fiscal 2020. With respect to further strengthening risk management, we have seen visible results in the form of higher gross profit margin in the plant EPC business, for which we have received orders since fiscal 2015.

Under these circumstances, the most important task at hand is to attract new orders and accelerate business structural reforms to strengthen our financial base.

We believe that the economic situation will be gradually normalized in the second half of fiscal 2021 due to ongoing vaccinations against COVID-19 and economic support measures by governments, and we are already receiving many inquiries for petrochemical projects. Inquiries for infrastructure projects, especially related to renewable energy, are also increasing, and we have set a target of ¥280 billion in orders for such projects.



Medium-term Management Plan (FY2021–FY2025): Double Spiral Growth Strategy

(1) Invest to create a cycle of growth

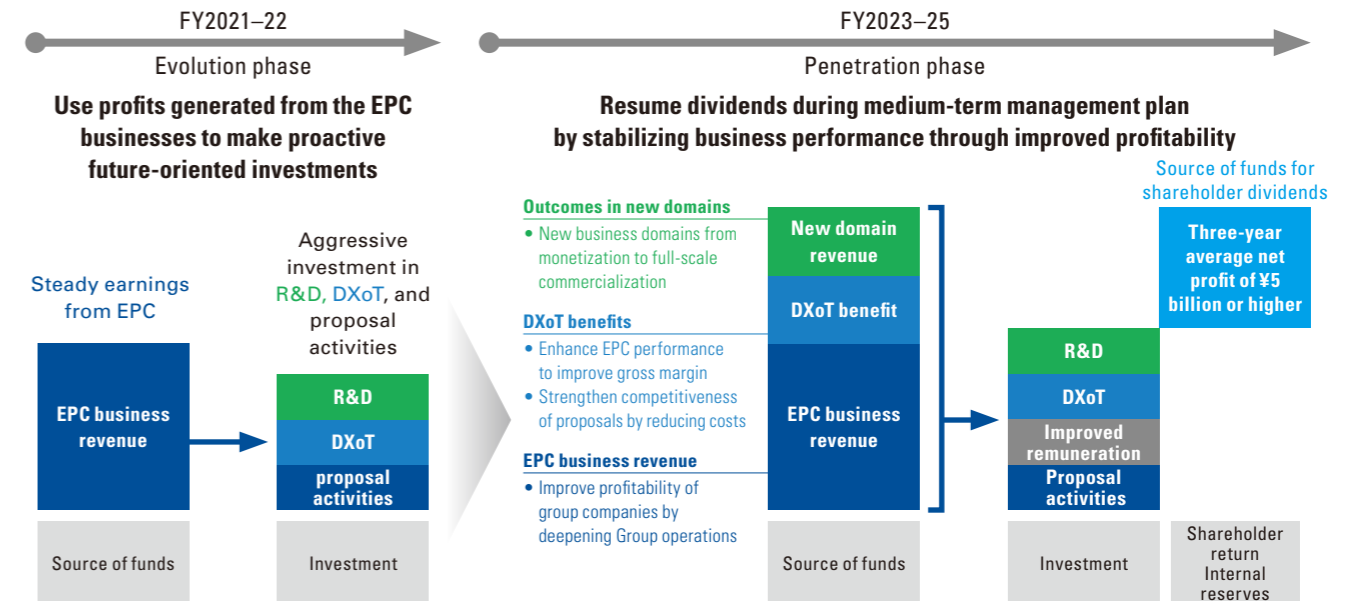
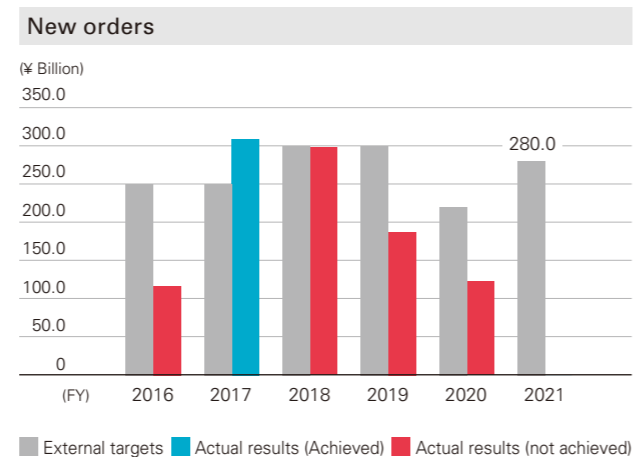
Our medium-term management plan (FY2021–FY2025) is based on two strategies: “Advanced EPC Operation” and “Sustainable Technology and Business Development.”

The key to implementing “Advanced EPC Operation” will be concentrated investments in DXoT (Digital Transformation of TOYO), while the key to advancing “Sustainable Technology and Business Development” will be sustained investments in R&D. We have positioned fiscal 2021–2022 as the “evolution phase,” during which we will use cash flows generated by the EPC businesses to make proactive future-oriented investments. The subsequent period, fiscal 2023–2025, will be the “penetration phase.” During this time, we plan to improve the profitability of existing EPC businesses while exploiting the benefits of R&D to make some new businesses profitable. Our policy is to reinvest the profits earned here in DXoT, R&D, and business development to accelerate expansion in new areas and the evolution of our business model, with the aim of establishing new business pillars.

Through these processes, we hope to accumulate resources for future dividends, while at the same time returning part of the improvement in labor productivity, gained through DXoT, to employees in the form of an increase in labor’s share of earnings.

(2) Set KGIs in Medium-term Management Plan

As quantitative key goal indicators (KGIs), we aim to achieve a stable net profit attributable to owners of the parent of at least



¥5 billion per year on average in fiscal 2023–2025, the penetration phase of the plan, increasing to ¥10 billion by fiscal 2030. We also aim to achieve an ROE of 10% or more in fiscal 2025. (See page 19 for an overall view of our KGIs and KPIs.)

Financial Policies: Underlying Assumptions for Medium-term Management Plan

(1) Capital adequacy and capital efficiency

Our pressing financial task is to restore our equity capital to an appropriate level. Comprehensive engineering companies need to have a financial base that can withstand the risks of the EPC business, and the average equity ratio of EPC companies around the world is 25–30%. TOYO intends to raise its consolidated equity ratio, which was 18.3% in fiscal 2020, to at least the 25% level. Although the size of our assets will vary depending on the volume of projects in progress, our immediate goal is to increase equity capital to the ¥60–75 billion range or higher. We will first recover to this level by earning steady profits through meticulous risk management activities.

We estimate the current cost of shareholders’ equity to be around 8%. Considering the expected equity spread (ROE minus cost of shareholders’ equity) over the medium to long term, we have set a target in our medium-term management plan to increase ROE to 10% or higher for fiscal 2025 and thereafter.

(2) Shareholder return policy

The Company has not paid dividends for four consecutive fiscal years since fiscal 2017, and we sincerely apologize for the inconvenience this has caused to shareholders. We will aim to increase the consolidated earnings of the entire TOYO group in a stable manner and resume dividend payments at an early stage within the period of the medium-term management plan.

(3) Ensuring a sound financial position

In fiscal 2020, we generated positive net cash flows for the first time in four years. However, we believe we need to further increase liquidity on hand in order to improve our fi-

ancial soundness. To this end, we are taking measures to attract a steady volume of orders while removing contractual conditions that may cause negative cash flows. For ongoing projects, we will prevent construction losses, avoid upfront cost outlays and emphasize the collection of delinquent receivables. In principle, we will maintain financial discipline by mandating that investments in DXoT, R&D, and business development for future growth will be made within the scope of operating revenue and free cash flow.

Through the above-mentioned cash management policies, together with annual revenue growth, we aim to keep our debt-equity ratio below 1.0 times and secure stable credit lines.

(4) Normalization of tax expenses

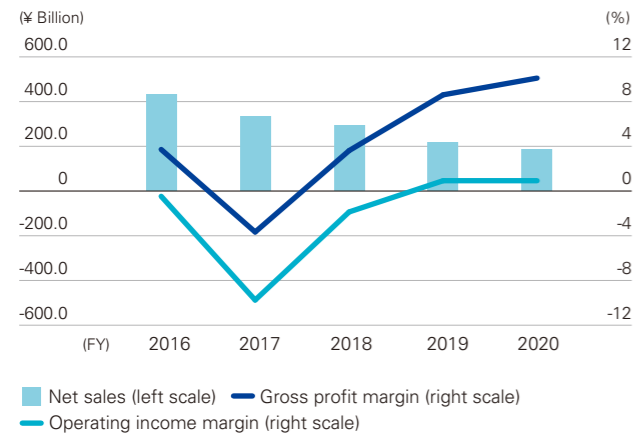
Until fiscal 2020, the effective tax rate for consolidated accounting purposes has been extremely high, and we recognize this as a problem. On a non-consolidated basis, the Company has accumulated a considerable amount of tax loss carried forward due to construction losses from previous pending projects. However, we have been unable to record tax effect from these carry-forwards due to uncertainty about profitability in subsequent fiscal years. As the Company’s future non-consolidated profitability recovers, the effective tax rate should be normalized over the medium and long terms, allowing us to record tax effect from the loss carried forward.

Responsibilities of CFO

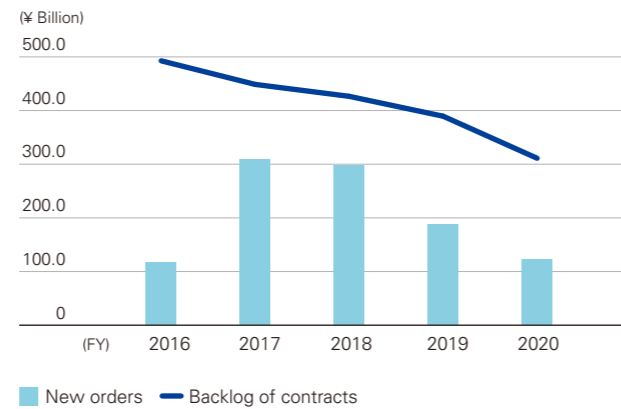
We are in a drastically changing business environment characterized by increasing sophistication and localization of existing EPC businesses and a movement toward carbon neutrality. As CFO in this context, I will work to create an environment that allows us to embrace the challenge toward Sustainable Technology and Business Development strategy. At the same time, I will rigorously manage risk and work relentlessly to ensure sound and appropriate decision-making and transparency from a financial perspective, with the aim of maximizing long-term profits while optimizing short-term profits.

Financial Highlights

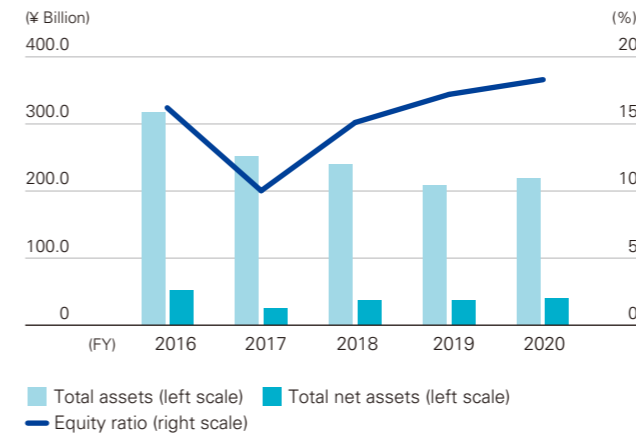
Net Sales, Gross Profit Margin, and Operating Income Margin



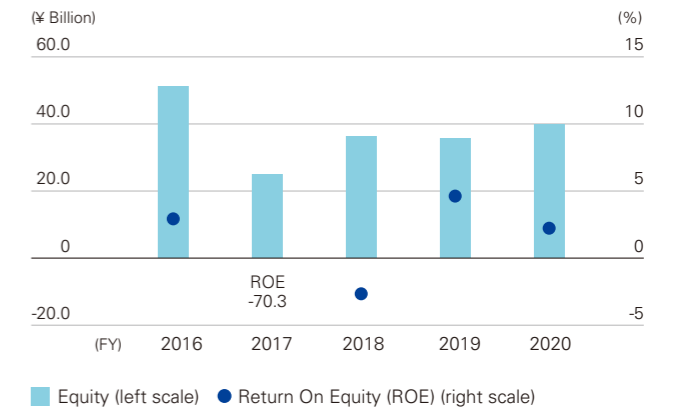
New Orders, Backlog of Contracts



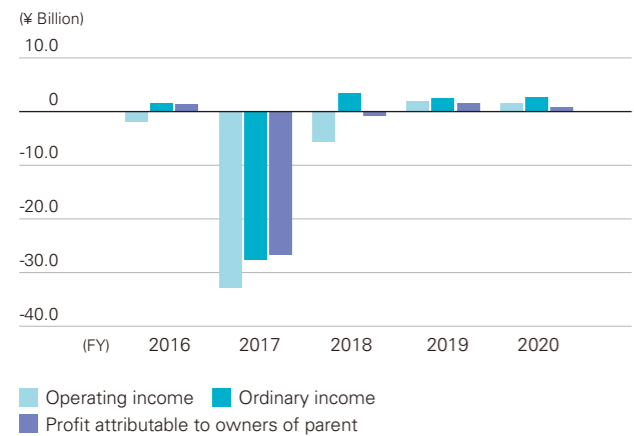
Total Assets, Total net Assets, and Equity Ratio



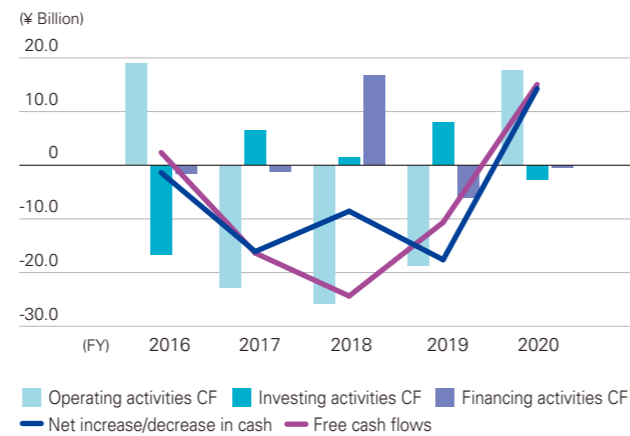
Equity, Return On Equity (ROE)



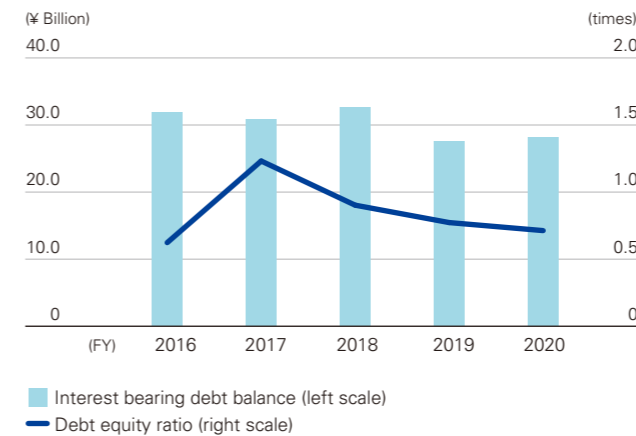
Operating Income, Ordinary Income, and Profit Attributable to Owners of Parent



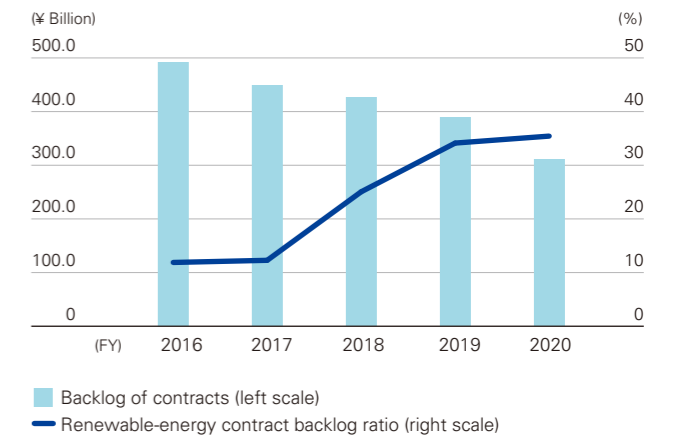
Cash Flows



Interest Bearing Debt, Debt Equity Ratio

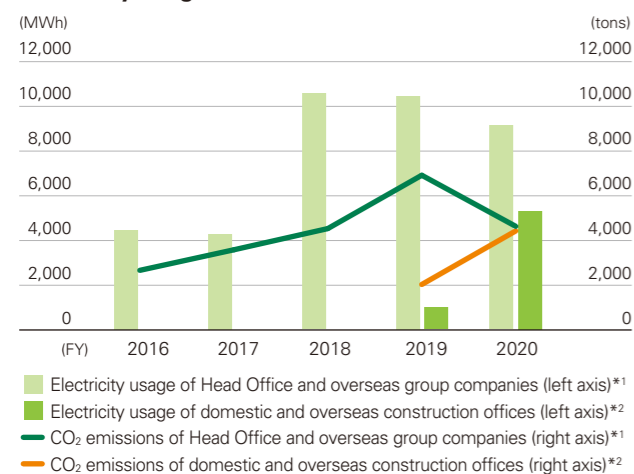


Backlog of Contracts, Renewable-Energy Contract Backlog Ratio



Non-Financial Highlights

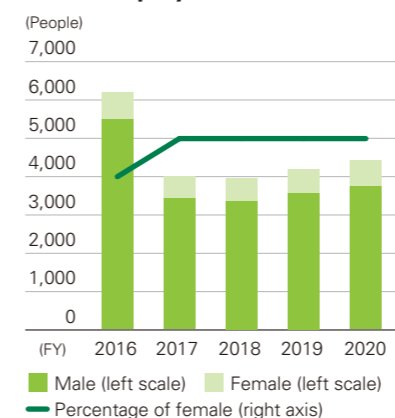
Electricity usage and CO₂ emissions of Head office and construction offices



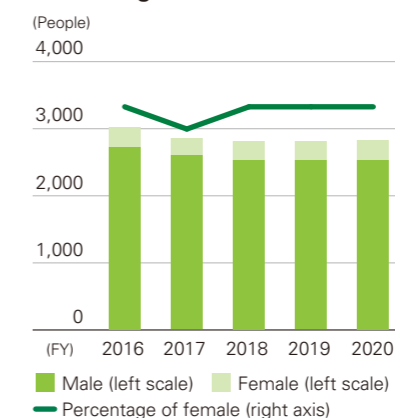
- In FY2020, Head Office and overseas group companies emitted 4,619 tons of CO₂ a year, while domestic and overseas construction offices emitted 4,413 tons of CO₂ a year.
- CO₂ emissions are calculated based on the amount of electricity, gas, light oil, kerosene, and heavy oil used.

*1 Includes overseas group companies FY2018
*2 Measurement began in FY2019

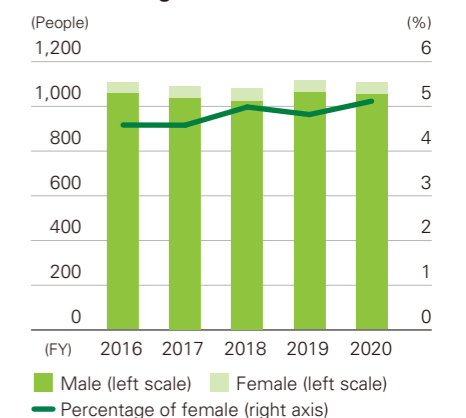
No. of employees (consolidated)



No. of engineers (consolidated)



No. in managerial roles (consolidated)



Note: Total of major EPC companies including equity method companies. Excludes temporary employees.

Making progress through double spiral strategies of “Sustainable Technology and Business Development” and “Advanced EPC Operation”



“Sustainable Technology and Business Development” strategy (green strategy)

With a focus on the environmental and energy fields set as priority areas, we aim to create businesses together with customers and business partners from the conceptual stage. In particular, we will leverage our Carbon dioxide Capture, Utilization, and Storage (CCUS) and synthesis gas technologies, which are key TOYO strengths, to increase our emphasis on technological and business development to provide solutions for carbon neutrality.

“Advanced EPC Operation” strategy (blue strategy)

The EPC execution capability of each Group company, nurtured since the 1970s, is one of TOYO’s strengths and cannot be built over night. Moreover, our extensive track record in India, Russia, Asia, and Brazil, where demand for plants will continue growing, is a major asset of the TOYO Group. We will aggressively promote Digital Transformation of TOYO (DXoT) and strengthen our EPC execution capabilities in order to pursue high quality and secure profits.

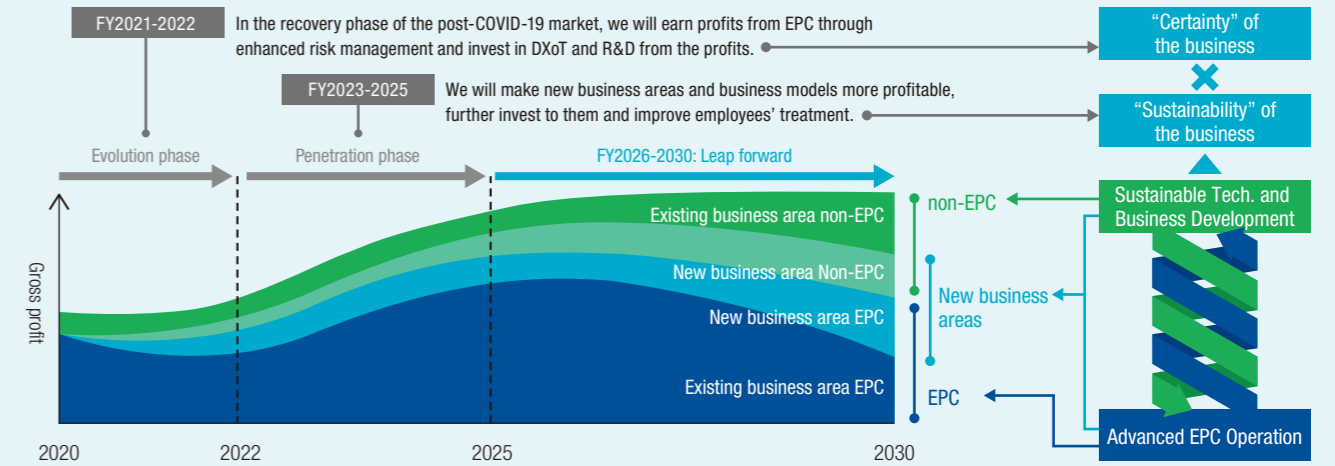
The two strategies, green and blue, are closely intertwined. We will connect the knowledge, experience, and profits we have obtained in EPC to the development of new technologies and businesses, and in the process we will seize new EPC business opportunities. With this double spiral approach, TOYO will continue contributing to the sustainability of the earth and society.

Relationship between Materiality and Medium-term Management Plan

1 Among TOYO’s materiality, providing workplaces where “people of diverse backgrounds engage in active, meaningful work” and “establishing an organization with integrity and discipline” are cornerstones of our corporate activities. The excellent human resources and creditworthiness that result from these efforts are the driving force behind the Medium-term Management Plan.



Targets: Average net income of ¥5 billion or higher (FY2023–2025) and ROE of 10% or higher (FY2025)



We will position fiscal 2021–2022 as the “evolution phase” of the plan. During this post-COVID market recovery period, we will steadily increase profits mainly from conventional businesses through enhanced risk management, and use these profits to invest in DXoT and R&D aimed at increasing the certainty and potential of our business. During the “penetration phase” (fiscal 2023–2025), we will improve the sustainability of our operations by monetizing new business models in new business areas, making further investments with profits generated, and improving employee remuneration.

The graph showing changes in our profit structure indicates that in 10 years’ time (fiscal 2030), the gross profits composition of EPC and non-EPC businesses will be 50:50. We will achieve this by advancing “Sustainable Technology and Business Development” and implementing “Advanced EPC Operation.” We will also maintain a 50:50 gross profit composition between existing business areas and new business areas generated in the process of implementing the two strategies, thus building a robust revenue base that is resilient to the volatile plant market.

The table on the left shows key goal indicators (KGIs) of the medium-term management plan, as well as of fiscal 2030 when we achieve the aforementioned profit structure and gross profit composition. Our targets are: average consolidated net income attributable to owners of the parent of ¥5 billion or higher in fiscal 2023–2025, increasing to ¥10 billion in fiscal 2030, and ROE of 10% or higher in fiscal 2025. To achieve and maintain these, we have set the key performance indicators (KPIs) shown in the right table.

KGIs (Key Goal Indicators)	KPIs (Key Performance Indicators)
Consolidated net income attributable to owners of the parent <ul style="list-style-type: none"> FY2023–2025 average: ¥5 billion or higher FY2030: ¥10 billion 	Gross profit composition (non-EPC* businesses) <ul style="list-style-type: none"> FY2025: 25% or higher FY2030: 50%
Consolidated net sales <ul style="list-style-type: none"> Emphasis on profit over net sales Net sales target: ¥300 billion 	Gross profit composition (new business areas) <ul style="list-style-type: none"> FY2025: 25% or higher FY2030: 50%
ROE <ul style="list-style-type: none"> FY2025: 10% or higher Thereafter: Stably 10% or higher 	Gross profit composition (6 main Group companies) <ul style="list-style-type: none"> FY2025: 45% or higher FY2030: 50%
Dividends <ul style="list-style-type: none"> Aim to resume dividend payments during period of plan 	Employee’s satisfaction level <ul style="list-style-type: none"> Improved from the previous year
	No. of employees <ul style="list-style-type: none"> Japan: Double number engaged in sustainable technology and business development Other Group companies: Increase/decrease according to demand

*Non-EPC: Businesses other than EPC/EP lump-sum projects

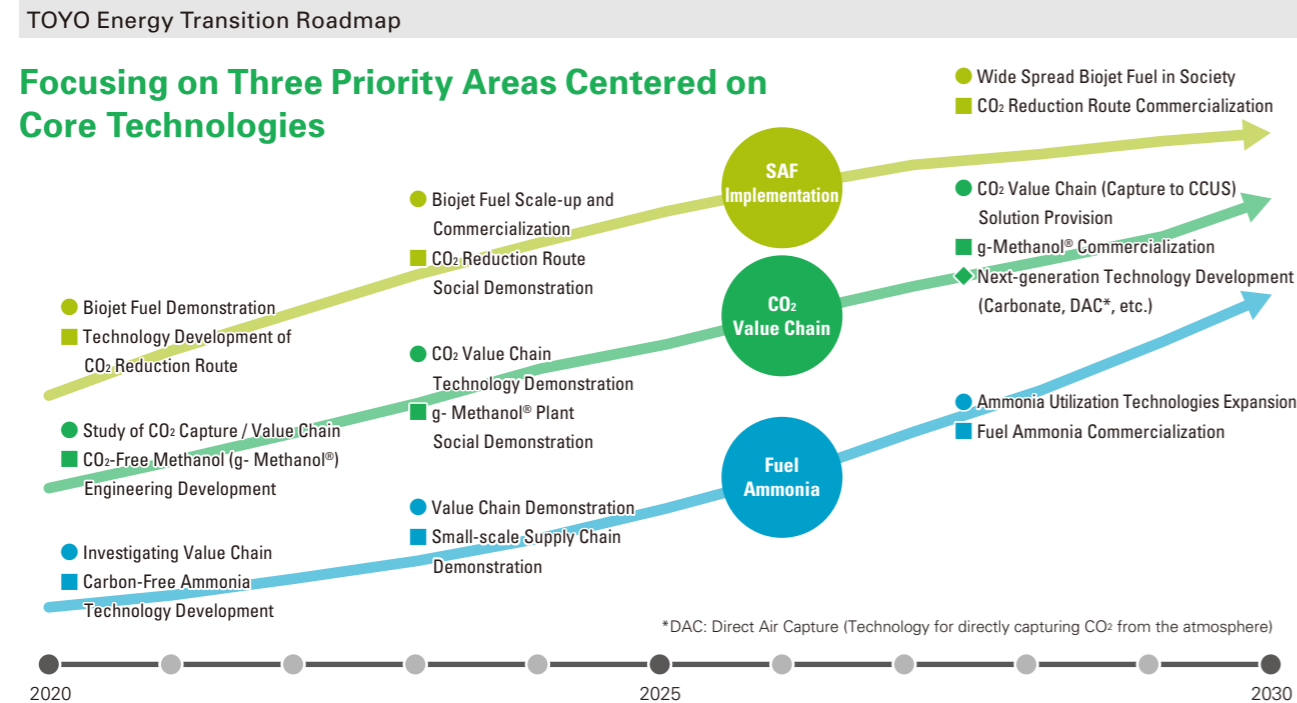
2 We will acquire new business opportunities driven policies aimed at achieving carbon neutrality by 2050 through “Sustainable Technology and Business Development” strategy of the Medium-term Management Plan. At the same time, we will leverage our strategy of “Advanced EPC Operation” to secure excellent quality and high profitability.

3 The synergistic benefit of these two strategies mentioned in **2** will create a positive spiral that balances the two materialities of “aiming to realize an environmentally-friendly society” and “enriching people’s lives.”

4 We will produce outcomes that make our customers feel “TOYO is the best partner” and benefit society. This will lead to increases in business sustainability and employee job satisfaction, resulting in a virtuous cycle that epitomizes our slogan, “Your Success, Our Pride.”

Double spiral growth strategy —Sustainable Technology and Business Development

Development of new business fields through strategic co-creation



Seeking to swiftly deploy new solutions in society together with customers and partners

Fukuta The starting gun in the race to carbon neutrality was sounded in 2020. It is much more than a competition between countries or companies—it is a race against time through to the year 2050. With such limited time available, we must consolidate and optimize our existing technologies to create new value and also spawn technological innovation.

Koga Our understanding is that with carbon neutrality we are creating the future. All of us are still at the blueprint drawing stage and the environment is open for joint participation in business projects. Instead of confining ourselves to the framework of TOYO's core competencies, such as technological know-how and EPC businesses, we are comprehensively examining new business domains and projects, the building of business models and value chains for individual projects, investments in technology and businesses, and even the financing they require.

Nonaka TOYO's focus areas at present are SAF development, the CO₂ value chain, and fuel ammonia. In each of these areas we possess core technology honed over our history of 60 years, centering on which we hope to propose a vision for the future.

Fukuta I have thus far been involved in services that support the development of oil and gas resources. In this field,

a lot of projects often get started without technical specifications and project guidelines being finalized beforehand, so I have gained a lot of experience in the business of providing customers with solutions that nail down the requirements of a project. There are similarities in the carbon neutrality movement, which is only just dawning, owing to the uncertain nature of roadmaps for deploying carbon-neutral technology in society, project feasibility, and the economic potential of businesses. At TOYO, we believe we must adopt a solutions-oriented business approach if we are to deliver optimum solutions from a technological point of view. In addition to our own proprietary technology, engaging in co-creation activities with customers, technology holders, and business partners is probably the most effective way to gain the upper hand in the battle against time and hit on optimum solutions.

TOYO's priority areas and core technologies

Priority area	Core technology
SAF development	<ul style="list-style-type: none"> Methane gas synthesis technology FT synthesis (Velocys FT reactor)
CO ₂ value chain	<ul style="list-style-type: none"> g-Methanol®/MRF-Z® reactor CO₂ separation, recovery, and transport technology
Fuel ammonia	<ul style="list-style-type: none"> Ammonia synthesis (KBR license) CO₂-EOR/CCS know-how and track record



Taisuke Nonaka
General Manager of Sales and Marketing Division and Principal of Sustainable Business Strategy Team
Plant Solution Business Unit

Tetsufumi Fukuta
General Manager of Solution Marketing Department and Principal of Sustainable Business Strategy Team
Plant Solution Business Unit

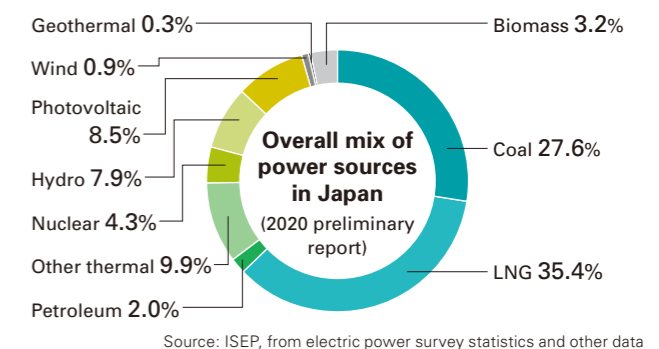
Toshiyuki Koga
Managing Director of Sustainable Business Strategy Team
Plant Solution Business Unit

Drawing on TOYO's collective strengths of technology, experience, network, and footwork

Koga The rising tide of carbon neutrality continues to break down the barriers between traditional industries and bring forth new business domains. For example, fuel ammonia is an area that requires the integration of multiple elements: resources, chemicals, electric power, and supply chains.

Nonaka There is a pressing need for Japan to shift away from fossil fuel-based thermal power generation, which currently accounts for more than 70% of the country's power sources. Accordingly, ammonia is quickly attracting attention as an alternative fuel. The world is aiming to replace the main sources of electricity with renewable energy and hydrogen is seen as the main fuel source. However, the reality is that in terms of the timeline, there are many steps that need to be taken before that can be achieved. Ammonia (NH₃), on the other hand, is a fuel source that emits no CO₂ during combustion and is regarded as the closest to practical implementation for co-firing in electric power plants or as a fuel for ships. The social infrastructure and safety management standards are already in place because ammonia is widely used as a fertilizer and as a chemical raw material. In addition, there is potential for ammonia to play a role as a hydrogen carrier in the future.

Koga To make carbon-free blue ammonia, injection of CO₂ emitted during production into the oilfield is required, where we can leverage our resources development technology. Plus, developing the ammonia production technology itself is a field of chemical engineering. Improving yields and economic efficiency of ammonia had been a major issue up until now, but the latest challenge, from an environmental perspective,



is to improve the rate of recovery of CO₂ emitted during the production process. And then there is the power generation field in which ammonia can be used for co-firing. These are all business fields in which TOYO can harness its technology, know-how, knowledge, experience, and network. The same can be said of SAF development and the CO₂ value chain.

Nonaka We should particularly emphasize involvement in the creation of significant business opportunities for Japan. By having a deep involvement in the creation of rules in a game that continues to change due to the transformation of energy sources leading up to 2050, as well as CO₂ recycling, we can secure a business share in any of the new markets that emerge.

Fukuta Changes in the tide of carbon neutrality are also evident in the day-to-day enquiries we receive for new projects, new technology, and collaborations. Without being tripped up by the intensity of changes in society, we will continuously update own areas of focus as we work towards dynamically and energetically creating various business opportunities with customers and partners.

The frontier of resources development



Yoichi Komatsu
SB Development Team Manager
Solution Business Division
Plant Solution Business Unit

Deep-sea rare-earth muds recovery system

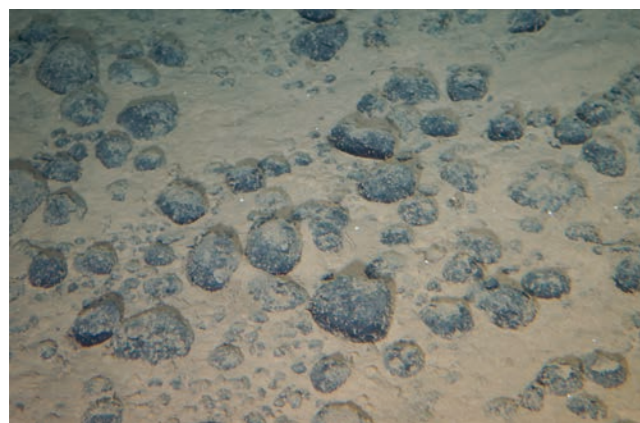
Targeting domestic production of clean rare-earth metals

Rare-earth elements are materials essential to small motor magnets used in electric vehicles, as well as solid-state electrolytes for fuel cells. They are an important resource to progress carbon neutrality. They are often contained in pelagic sludge (rare-earth muds) accumulated from the remains of plankton and other sources. A trove of such rare-earth muds were discovered in 2010 in the seabed 6,000m deep in the vicinity of Minami-Torishima Islands, Japan's easternmost territory. Japan currently relies on imports for almost all of its rare-earths, so domestic development is vital in terms of Japan's resource security. Also, rare-earths from the sea floor differ from mine-derived sources as they have the benefit of being a cleaner resource containing no radioactive substances. Under the Cross-ministerial Strategic Innovation Promotion Program (SIP), a Japanese team led by the Japan Agency for Marine-Earth Science and Technology (JAMSTEC) is currently developing world-first technology to recover rare-earth muds from the deep sea at a depth of 6,000m—an

unprecedented project even in the field of deep-sea oil and gas resources development. As part of this project, TOYO is handling concept design and basic engineering for the rare-earth muds recovery system ahead of sea-based performance testing slated for fiscal 2022.

Developing new resources by combining our resources development technology with plant construction know-how

Many experts are involved in the execution of this project, ranging from plant and resources development engineers, engineers with experience in oil drilling, offshore oilfield operations, and equipment development, and engineers in the field of metal mining resources development. Numerous discussions between customers and partners have also taken place as part of the planning and engineering process. For TOYO, we will be able to fully demonstrate our technological know-how from multiple angles. Personally, I find it rewarding to work on the development of new resources to enrich the future of Japan, the country I was born and raised in.



Rare-earth muds at the bottom of the deep sea; the black clumps are manganese nodules



Chikyuu, JAMSTEC's deep-sea exploration vessel



Kyojiro Kawaguchi
Project Manager
Solutions Service Department
Solution Business Division
Plant Solution Business Unit



Yoki Kitayama
Project Engineer
Solutions Service Department
Solution Business Division
Plant Solution Business Unit

Methane hydrate production trials aim to produce stable gas from "burning ice"

Putting domestic energy resources to practical use

Kawaguchi Methane hydrate, also called "burning ice," is an ice-like clathrate compound in which methane gas is trapped within a crystal structure of water in a low-temperature, high-pressure environment. It has potential as a next-generation energy source.

Kitayama Its presence throughout Japanese territorial waters has been confirmed and given its importance from an energy security point of view, establishing the production technology to harness it is one challenge going forward.

Kawaguchi In 2016 TOYO was commissioned by the Japan Oil, Gas and Metals National Corporation (JOGMEC) to come up with a concept design for methane hydrate trial production in Alaska. I have been involved in this project from the outset and now as project manager I am overseeing the final stages of test facility engineering and equipment procurement support, and making preparations for on-site work.

Kitayama I was assigned to the Alaska project immediately after I joined TOYO in 2018. Since then I have been tasked with managing the design and development of a production site data acquisition system and a cloud services-based remote data delivery system.

Amassing technical expertise to overcome numerous technological hurdles

Kawaguchi One characteristic of methane hydrate is that stable supplies of it are located underground in crystalline form. To recover methane hydrate in the form of methane gas above ground, a decompression method must be used to instigate a phase change below ground so that the gas

can be separated from the water. However, there are numerous technological hurdles that must be overcome before this process reaches the stage of practical application. Countries around the world are currently pursuing R&D activities with the aim of establishing the technology to stably produce methane, understanding the production behavior of methane hydrate, developing production systems, assessing reserves, and confirming environmental impacts.

Kitayama To further understand the production behavior of methane hydrate, which is one of the development challenges we face, we need to collect and analyze a lot of data. My job is to safely deliver data acquired on-site to the customer and to develop a system with which we can monitor sites from a remote location. I faced quite a few challenges in the early days of this project because I had no knowledge of ICT, including sensing technology and telecommunications. However, in order to perform my duties for this next-generation energy resources development project, which even from a global perspective is a brand-new challenge, I am endeavoring to expand my knowledge through self-study efforts mainly by acquiring accreditation for ICT and digital tools.

Kawaguchi As a Japanese engineering company, TOYO has a long history of deep involvement in oil and gas field developments. At the same time, as a urea licensor, we also have a history of outpacing our rivals to provide remote location-based plant information management support, operational support, maintenance support, and business support services with our DX-PLANT@ system, for example. By combining our wide array of technological knowledge, we will do our utmost to ensure that gas can be stably produced from the new energy resource of methane hydrate and that we can fulfill our duty as an engineering company to realize new commercial processes.

Recycling-oriented society supported by technological development



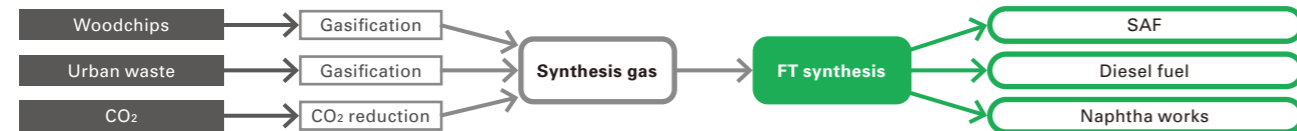
Masashi Higo
Research Engineer
Next-G Technology &
Application Division
Engineering and
Technology Unit

FT synthesis technology

Stepping up adoption of SAF by lowering production costs

We are pushing ahead with initiatives targeting the commercialization of plants that produce SAF*1 and other fuels from sustainable feedstock such as woody biomass, municipal solid waste, and the CO2 emitted from industrial facilities. SAF that we produced on a demonstration basis together with partners for a contracted project for the New Energy and Industrial Technology Development Organization (NEDO) fueled a commercial flight (Japan Airlines flight JL515 from Haneda to New Chitose Airport) on June 17, 2021. It was the first time to establish an integrated production system from gasification of woody biomass and FT synthesis technology*2 to SAF in world history.

Leveraging our knowledge of synthesis gas technology, an area in which we have ample experience, TOYO has concluded a comprehensive business collaboration agreement on



Hao Zuo
Research Engineer
Next-G Technology &
Application Division
Engineering and
Technology Unit

TarT™ sour gas sweetening technology

Technology for both gas field development and CO2 storage/utilization

In February 2021 we signed a comprehensive collaboration agreement to promote commercialization project with 8 Rivers, which has licensed TarT™ process for sour gas sweetening as a natural gas processing technology. This technology uses an innovative distillation technology that can reduce equipment cost and operating cost by approximately 20% and 50%,

FT synthesis technology in the field of renewable fuel with US-based Velocys, a company possessing technological expertise in the area of microchannel reactors for FT synthesis. Going forward, to drive the uptake of SAF, which can drastically reduce CO2 emissions in the aviation sector, we will take steps to reduce production costs mainly by diversifying feedstocks and scaling up production plants. We will also aim to keep initial investments to a minimum by making use of existing refinery plants and contribute to its adoption in society by implementing technological improvement measures.

Focusing my efforts on realizing a commercial plant as soon as possible

After starting out as a process engineer and then being seconded to a general trading company, my current role is to contribute to the energy transition field from a technical perspective. The adoption of SAF for the purpose of reducing CO2 emissions from aviation fuel is absolutely essential, so as an assigned member to this development project I will devote myself entirely to the construction of a commercial plant at the earliest possible time.

*1 SAF is an acronym for sustainable aviation fuel. It refers to aviation fuel manufactured from sustainable feedstocks characterized by low CO2 emissions, from production and procurement through to combustion.
*2 Fischer-Tropsch synthesis is a technology that synthesizes liquid hydrocarbon from synthesis gas (gas mixture of CO and H2) with the use of catalysts.

respectively, compared with conventional chemical absorption process. Furthermore, CO2 can be recovered as liquid that contributes to CO2-EOR and CCS/CCU. The technology can be applied to natural gas fields containing a lot of hydrogen sulfide that have not been fully developed because of high technical difficulties of gas production.

Desire to see new technologies implemented in society

I find it very rewarding to contribute to the Company's mission of helping to solve global environmental issues by combining TOYO's technical know-how with the superior technology of startup firms. TOYO's experiences in the EPC of natural gas processing plants and track record of projects for storing captured CO2 underground or injecting it into oil and gas reservoirs to boost production are solutions that hold the key to carbon neutrality by 2050. I certainly would like to see the new technologies that I have personally been involved in from the development stage be successfully deployed in society.



Azusa Okazaki
Research Engineer
Next-G Technology &
Application Division
Engineering and
Technology Unit

g-Methanol®

Environmentally-friendly recycled methanol using proprietary technology

g-Methanol® is an environmentally-friendly recycling technology for methanol synthesis using CO2 captured from various emission sources and hydrogen derived from renewable energy as feedstocks. TOYO has its own process for synthesizing methanol from fossil resources such as natural gas, and with our proprietary developed MRF-Z® reactor, we offer an energy-efficient reactor that performs methanol synthesis whilst simultaneously recovering energy from reaction heat.



Takato Nakao
Manager
Advanced Technology
Business Department
Plant Solution Business Unit

Technological development of redox flow batteries

Targeting stable supply of renewable energy-based power with large-scale stored energy technology

I learned about flow batteries roughly four years ago when I was conducting research into mainly energy storage technologies. A flow battery is a type of industrial storage battery (secondary cell) that can be charged and used repeatedly. This technology is mainly being developed for application in relatively large stationary storage batteries. The principle itself of turning electricity into chemical energy for storage is the same as that for other storage batteries, but in addition to the cells that charge and discharge electricity, a flow battery system configuration also has tanks, pumps, and pipes that are similar to the equipment used in plant engineering. Owing

We apply the engineering knowledge which we have honed from fossil resource-derived methanol synthesis to the configuration of operating conditions and reactor design so that it suits methanol synthesis with CO2 as a feedstock. Methanol has many uses, including as a raw material for chemicals and in gasoline blending, and we expect demand for methanol recycled from the environment to only grow stronger in the years ahead. TOYO is currently undertaking initiatives with the aim of taking part in, or considering the commercialization of, projects planned in other countries.

A sentimental process that we hope will benefit society

It is really satisfying to be able to propose this methanol process—something I have been emotionally involved in as process engineer—as one unique technological solution for utilizing CO2. Our aim is social implementation so that it can contribute to a sustainable global environment.

to these characteristics, flow batteries are expected to be adopted as large-scale stored energy systems with the capacity to generate anywhere between 30 MWh and a few hundred MWh. They have the potential to play a key role in moderating power supply and demand in large-capacity renewable energy installations. By improving the value provided with flow battery systems through technological development and delivering optimal solutions to meet various requirements by combining them with other forms of stored energy technology, we hope to boost the presence of TOYO as we go about building a renewable energy-powered society.

Towards development of redox flow batteries

The development of flow batteries is more than 30 years old. They are already being used to moderate fluctuations in photovoltaic and wind power generation systems and their basic structure is more or less established. But significant cost reductions are needed to be used widely in the market. I believe an effective way to go about this is to review and rebuild the system, starting with the fundamentals. I personally intend to address this leading technology with humility, but also continue to develop it through a process of trial and error by going back to its rules and principles and always being prepared to think outside the box.

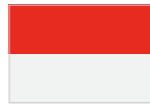
Building sustainable infrastructure



I.E. Bimo Harikristanto Wahono

General Manager
Business Development Unit
IKPT

Enabling the future green energy with geothermal power



The Government of Indonesia (GOI) continues to maximize the use of clean energy through geothermal development to meet national energy supply needs which is in accordance with the National Energy General Plan. IKPT has taken up the opportunities towards the program by being involved in several Geothermal Projects. According to the National Geological Agency, the geothermal potential in Indonesia is 23.9GW but it has installed only 8.9% out of the target at present. The GOI strive to increase the new development of geothermal power plant to become 7,200MW with 46 geothermal areas that spread across the islands.

In May 2017, IKPT was involved in the Steam Field Above Ground System in Lumut Balai Unit 1 Geothermal Power Plant 55MW. As an EPC Contractor, IKPT has successfully



Unit 1 of the Lumut Balai Geothermal Power Plant (55MW) FCRS was completed



Dieng Small-Scale Geothermal Power Plant (1x10MW) was completed

completed the project in March 2020.

Then in August 2019 we awarded an order from the Dieng Small-Scale Geothermal Power Plant (10MW). A steam blow ceremony was held in April 2021 and Taking Over Certificate (TOC) has been received on July 23rd, 2021.

Geothermal business has been growing rapidly in Indonesia. We would try to take more chances to enter into several geothermal power projects coming up next. With our long relationship in the local market and project experience & know-how, IKPT shall continue to contribute to the project execution of geothermal plants which is expected not only as a renewable energy power plant but also as stable power supply generators.



JinSu Park

Deputy General Manager
Environment Division
Toyo-Korea



MyungJong Eom

General Manager
Environment Division
Toyo-Korea

Development of high-performance organic sludge drying system



Park Sludge generated from sewage treatment contains perishable and harmful substances, where the treatment technology is very important to environment conservation. Major disposal methods were landfill and ocean dumping, however, it is no longer acceptable. The government of Korea had adopted sludge drying facilities by enormous spending out of tax. But it requires a large consumption of fossil fuel and these facilities were unwelcomed by the communities due to foul odor. Toyo-Korea set up Environment Division to start developing our own sludge drying facility by taking this opportunity to solve social problems. Based on the Multi-stage Sludge Drying System, which was patented on April 14, 2014, Toyo-Korea improved some parts of the dryer such as the driving system, paddle & screws and furthermore to enable an application to the pilot plant 5t per day in 2018. As a result, the Improvement Patent for Organic Sludge Drying System was registered in April 2020.

Eom Toyo-Korea's sludge drying facility has the following characteristics: (1) no wastewater is produced because direct drying with superheated steam is used to completely evaporate the sludge moisture content; (2) foul odors are extinguished with a built-in 850-degree deodorizing furnace; and (3) the system is 20%–30% more fuel efficient than conventional models. We are currently fielding many enquiries for this system and we are aiming to launch commercial plant operations within the next year or two.

We currently work on development to produce pellet products made of dried sludge and sawdust for power plants as well as to develop some systems that can treat food waste and livestock waste. In 2020, we established a dedicated task team handling Waste Plastic Recycling. In order to explore more business opportunities, we would like to enter into the Eastern Asian market in addition to Korea.

Building sustainable infrastructure

After taking its first order for a biomass power plant in June 2018, TOYO has continued to receive totally eight orders in the roughly three-year period. Currently, all of these projects are in progress. Here is more information from a couple of our project managers.



Makoto Koga

Project Manager
Environment and Infrastructure
Project Division
Environment and Infrastructure
Business Unit



Masanori Komatsu

Project Manager
Environment and Infrastructure
Project Division
Environment and Infrastructure
Business Unit

Obayashi Kamisu biomass power plant project

Even though TOYO was a late entrant in the field of biomass power plant construction, since the time I took charge of the Kamisu project, we have successively taken on eight projects in total. The key to success owes to our capacity to provide power plants with the highest level of efficiency thanks to the close partnerships with Andritz, one of the world's leading biomass boiler makers, and Siemens, a manufacturer of steam turbine generators. Since the 1980s TOYO has undertaken thermal power plant projects. And ever since feed-in tariff legislation was enacted in Japan in 2012, we have worked on 10 large-scale photovoltaic power plant projects. Our standing today is the direct result of this track record, and every time I recall this I feel deeply moved by the fact that it owes to the trust our customers have placed in us, as well as the fruits of our partnerships.

The Kamisu project was the first of TOYO's biomass power plant projects and it proved to be a significant challenge for me as project manager because of the many "firsts" it happened to spawn. For example, the experience of dealing with domestic laws and regulations, our first collaboration with Andritz, and countermeasures against the COVID-19 pandemic. Still, we were able to finally complete construction in May 2021 by solving all of these issues one by one together with the customer and our partners. We are steadily executing the plant's commissioning and I am confident of being able to complete the project.

Omaezakikou biomass power plant project

Construction of the Omaezakikou biomass power plant is a joint venture project implemented through collaboration with Nippon Steel Engineering Co., Ltd. (NSE). Two of professionals from NSE have joined our team as project engineers at TOYO's office and NSE's chief engineer will also be assigned to the construction site. TOYO and NSE have set up a JV works committee and JV steering committee and both companies regularly monitor the project's progress and cooperate on identifying and rectifying issues. The project commenced with piling work in April 2021.

Due to pandemic of COVID-19, it was appeared inconvenient situation that no direct meetings were allowed with equipment fabricators in Japan and overseas from March 2020. Usually we would pay visits to fabricators' shop to check on production and conduct tests and also ask the supervisors to come to the construction site, but at present almost all of these dealings have to be carried out online. Sometimes communicating with foreign supplier is challenging because of time differences, but we make up for those minor mishaps by consciously sharing in-depth information. We are employing unprecedented methods by exchanging knowledge with equipment fabricators, mainly by meeting online to monitor production progress. As project manager, I am glad to embrace the challenge of adopting a new project management style with the aim of improving the cohesiveness between the customer, partner companies, and JV partners.



Photos of the Obayashi Kamisu biomass power plant

Double spiral growth strategy —Advanced EPC Operation

Group company top executives message



Suresh B. Shelke
Executive Director
(Commercial & Sales, DXoT)
Toyo Engineering India Private Limited



Beyond the top experienced engineering firm

Toyo-India has been developing its competitive skills by playing important role in the scope of Ethylene plant projects & Fertilizer plant projects awarded to TOYO group. We are proud that, Toyo-India has experienced core engineering scope for 5 of ethylene projects and 4 fertilizer (Ammonia & Urea) projects (including 2 EPC projects in India) in last 10 years. With this and with other domestic projects in Indian market, Toyo-India is now the top experienced Engineering firm in India. We now prepare for the next stage to step up our business.

In 2025 to become a Construction Planning Center in TOYO group

To be in line with the “Advanced EPC Operation” of the medium-term management plan, our aim is, also to develop Toyo-India into a full-fledged Construction Planning Center, which will provide management procedures and undertake support services like FEED for international projects awarded to TOYO group companies. Owing to experience of multiple international Engineering and domestic FEED/EPC projects we think that Toyo-India can be entrusted to become a leading part for evolving Group Operation, rather than only depend on Toyo-J’s High Value and cost competitive Engineering Center. We are now striving for enhancing competitiveness of TOYO group through Blue strategy which will reinforce TOYO’s earning power in EPC business.

Incorporation of clean projects demand in India & Expansion of Toyo-India’s geographical reach

Presently, there are many clean projects being thought of in India. Toyo-India would like to have a balanced business portfolio by incorporating clean projects such as Carbon capture, Flue Gas Desulphurization, 1G/2G/3G Bio-Ethanol, Compressed Biogas, Plastic recycle, etc. together with conventional core sector Hydrocarbon projects. Additionally, we would also like to

be seen in early engagements with Clients, taking up conceptualization assignments, such as Cost Estimation and Detailed Feasibility Reports. The keyword is “more toward upstream” for the clients in private sectors. This strategy is to avoid an exhaustive price in tenders of public sector clients. Our special competitiveness and high-end project management skills, can allow us to expand our geographical reach to outside of India, like Middle East, USA and Africa, for soft jobs and neighboring countries for EPC projects.

DXoT as the most crucial project in TOYO

Toyo-India has established DXoT team in January 2020, soon after establishment of DXoT Planning & Promotion Center in Toyo-Japan. Our objectives are to synchronize various DXoT related tasks simultaneously to accelerate accomplishing 6 times productivity in EPC operation, by business flow improvement and activation of solution developed to real projects. I am responsible for DXoT in Toyo-India because I believe that it must make good influence on mindset change from the Management Committee members in line with DXoT.

We understand that the goal of DXoT is not only on EPC project procedure improvement but also to transform Corporate Management methods and Business models. It is what we call the biggest challenge like a mega project in TOYO group.

Additionally, Toyo-India DXoT Team is also working on our Internal tasks for Manhour reduction and Quality Improvement.

Ongoing DXoT task status

1. **Project Twin:** Being implemented in various ongoing projects
2. **Construction Site DX:** Development in progress
3. **Just in Time:** Being implemented in some domestic projects
4. **Digital Procurement:** Initiated with Toyo-India’s own ERP
5. **Engineering Digital Twin (EDT):** Being implemented on 4 projects
6. **Smart Module Engineering Task:** Trial on executed proposal ongoing

Aiming for collaboration excellence in TOYO global operation

After successfully achieving medium-term management plan by FY2025, it is expected that TOYO will be looking for step jump in terms of the collaboration excellence in global operation. Every group company shall be responsible for their domain market and also unite as cohesive TOYO group globally. In order to be compatible and achieve self-sufficiency in local operation & with TOYO group global collaboration, we believe in all affiliates to do the right things as routine.

To ensure above following practices can be considered:

1. Close interactions to understand each Group Company’s functioning and territory of business domain
2. Frequent meetings to exchange views on engineering global best practices, centralized procurement, project planning and global construction
3. Use of single platform for communication with required transparency and hierarchy



Dong Benli
Director & President
Toyo Engineering Corporation (China)



A reliable engineering partner in China

Ever since diplomatic ties were restored between Japan and China in 1972, TOYO has constructed a variety of fertilizer, ethylene plants, and other plants in China. Toyo-China was launched in 2001 for the purpose of supporting Toyo-Japan’s Chinese plant construction projects. It now implements EPC projects on a standalone basis and receives high praise from its customers. As the President of Toyo-China, I would like to further enhance our strength in EPC operation and improve productivity by leveraging decades of TOYO EPC experience and advanced engineering skills as well as DXoT, and set ourselves apart from Chinese design institutes and other foreign-owned engineering companies.

Restrictions imposed by the COVID-19 pandemic since last year have meant that it has become more difficult to send staff abroad and carry out face-to-face communication in the projects that we carry out in collaboration with TOYO group companies. Collaborative projects are large in scale and complex, making risk management an important point for success. To address this issue, we have introduced the appropriate systems, such as latest meeting tools like Teams and Webex as well as Power BI and Project Twin that allow us to visualize project status. In order to adapt to the results of Toyo-Japan’s DXoT development in a timely manner, Toyo-China established a DXoT Promotion Team in 2020. In EPC projects that are currently underway, Project Twin is used to monitor the status of projects, enabling the real-time visualization of the latest project status, which makes it easier to produce status reports. By integrating data on engineering, procurement, and construction for large-scale projects, we would like to further develop data-driven cutting-edge project management methods. Through these initiatives, we will aim to strengthen our competitive foundations and boost gross profit by approximately 1.5 times by FY2025 and achieve further growth toward FY2030.

The chinese market outlook and Toyo-China’s superiority

The Chinese market continues to be robust with a positive growth outlook. Our focus regions for the next five years are the Yangtze River Delta area, the Pearl River Delta area, and the Guangdong-Hong Kong-Macao Greater Bay Area. The Yangtze River Protection Law was enacted in March 1, 2021 in order to protect and restore the environment and ensure sustainable development in the Yangtze River basin. Plant upgrading and transfer projects are expected to adapt to this law. In addition, China launched a development plan for the Guangdong-Hong Kong-Macao Greater Bay Area in the first quarter of FY2019. As region is one of the most open and economically vibrant area in China, it will attract high-tech companies and global giants. We believe that we can play a key role in these regions where economic development is expected, as an engineering company rooted in the region and strong in foreign capital who has a full backing of extensive track record of projects and have a deep understanding of customer needs and expectations.

In terms of product fields, Toyo-China’s targets continue to be hydrocarbon, specialty chemicals, advanced materials, and fine chemicals.

Realizing TOYO’s mission “Engineering for Sustainable Growth of the Global Community” in China

In 2021, Chinese government announced goals to pass the peak of its CO₂ emissions by 2030 and achieve carbon neutrality by 2060. Alongside these societal changes, Toyo-China is working to achieve carbon neutrality by having our customers use renewable energy, improving processes, converting raw materials for petrochemical, and conducting carbon offset trading. We are proud to be able to contribute to the sustainable growth of the global community by leveraging the process technologies and engineering expertise cultivated by the TOYO Group and realizing these initiatives alongside our customers.

Double spiral growth strategy —Advanced EPC Operation

Deepening group operations



Ir. Azhan Salleh

Executive Director
Toyo-Malaysia



Daniela Guariglia

Chief Operating Officer
EBR*

Toyo-Malaysia's sustainability challenge 35 years in the community

Toyo Engineering & Construction Sdn Bhd (Toyo-Malaysia) was set up in 1986. Over the years Toyo-Malaysia (Toyo-M) has gained a firm foothold in the local market. Today we have more than 300 direct hired staff and can handle small to medium sized EPC projects of up to USD 120 million. Our target is to serve Malaysia National Oil Company (PETRONAS), International Oil and Chemical Companies and Japanese companies to invest in Malaysia. In addition, our business activity is diversifying into several new fields such as ESG related projects, Bio-Chemical Engineering and Specialty Chemical.

Excellent Rating awarded by the CLIENT

Recently Toyo-M received "Excellent Rating" for the year 2020 by PETRONAS vendor evaluation program. To add the icing on the cake, Toyo-M also has been awarded by PETRONAS the best Safety and Health Manager and Best Contractor Cabin compliance to COVID-19 requirements award in our ongoing project in June 2021. Even though under extraordinary circumstances, we are so proud that we can build up good relations with clients through close communication.



Challenge for DXoT and next-generation business

Toyo-M is playing a significant role in initiatives of DXoT. The DXoT evaluation process together with gap analysis is going on. This process is required to well harmonize the new platform and our existing system & business flows. More high-intensity collaboration among TOYO is expected for accelerating the global implementation of DXoT.

Toyo-M will lead TOYO group's carbon neutral business promotion in Malaysia. For most of our major clients, Toyo-M will become the decarbonizing project partner.

EBR contribution through FPSO business to Brazil

The production of oil and natural gas in Brazil is in a prominent position in the world's reserves, driven mainly by the development of the Pre-Salt fields. The government authority for Pre-Salt production management has just informed that 28 new FPSO are forecasted to increase the production to 3.8 million barrels per day up to 2032. International Oil Companies such as Shell, Exxon-Mobil, BP, Equinor and others acquired several pre-salt fields in Brazil in the past years that will booster the demand for new Floating Production Units. There is an estimation that Brazil leads the new FPSOs investments with 28% of the total demand in the world.



As a selective FPSO contractor

Although Brazil has high competition in the topside construction market, EBR had a relevant position fabricating topside modules for four FPSOs units out of the six units with local content requirements contracted in the Brazilian market in the past three years. We believe that being in a key position because of the proven capacity to deliver the projects on time with high quality and high safety standards.

EBR recently modernized its pipe shop with semi-automatic equipment for cutting and welding and improved layout. A new painting and blasting cabin was also installed.

Our track records and capabilities allowed EBR to be recognized and qualified by Petrobras as one of the 13 FPSO EPC's contractors in the world.

*EBR: Estaleiros do Brasil Ltda. The group company under TS Participações e Investimentos S.A. (TSPI) which is TOYO's equity method affiliate. Undertakes EPC projects for mainly FPSOs and other offshore facilities.

Total EPC optimization



Naoyuki Sawada

Executive Officer
General Manager,
EPC Integration Division
Deputy Unit Director,
Engineering and Technology Unit



Ryoji Nakamura

General Manager
Procurement Division

The EPC Integration Division to deliver total EPC optimization

In fiscal 2018 we established the EPC Integration Division as a command-and-control unit tasked with carrying out constructability study, overall schedules for projects, and proposal strategies from a total optimization standpoint and then steadily executing them for engineering, procurement, and construction stages, as well as across all divisions, after incorporating them as tactics for each division. For plant construction projects that are intricately entangled with interests and alliances between companies and organizations, we aim to always acquire a total optimization solution for the TOYO Group by binding together the divisions that are prone to running their own optimization programs.

Coordinating engineering and procurement with construction planning

Prior to contract award, it is crucial that we deliver the most beneficial proposal to the customer to differentiate ourselves from the competitors. After winning an order, we consider it important to share an image of the completed plant with the customer at the earliest possible time during the project. On top of this, during the construction process, we enhance our ability to foresee risks as much as possible by visualizing changes over time at the construction site, for example, in the transportation and installation of equipment & materials and the operation of heavy machinery. Sharing a sense of togetherness with our customers is a major role we are expected to play as a prime contractor. We have hitherto executed projects in which we coordinate the engineering and procurement based on in-depth construction planning, but going forward, DXoT will likely play a key role in how those functions go hand-in-hand with construction plans.

Respecting the will of customers to provide services of value

We believe our social mission as an engineering company is to create new value by combining different types of technology. In plant construction, there is a tendency for the thinking of engineers to remain unchanged from a safety and quality point of view, but at this turning point in history, we are particularly mindful of adopting a flexible mindset and dispelling preconceived ideas. We aim to raise the value of TOYO's services by taking the expectations and concerns of our customers into consideration and fully enjoying the process of creating something together.

Advanced EPC Operation by enhancing procurement value

Nearly 70% of our procurement sources for equipment and materials is from non-Japanese suppliers on a monetary basis. Even though Japan domestic projects account for close to 50% of sales amount, the outcome of our projects still hinges on overseas procurement capabilities. Furthermore the procurement sources are still expanding and supply chains are getting more complex as well. In addition, overseas procurement is becoming more challenging mainly because of COVID-19 restrictions and volatile commodity market. We will aim to be even more risk-sensitive going forward and support TOYO's EPC competitive edge from a procurement standpoint by making preparations so that we can respond flexibly under such circumstances.

Improving the Group's procurement risk management capabilities

Despite the fact that each TOYO Group company undertakes its own EPC business operations, we aim to mitigate procurement troubles by having the entire Group utilize the same supplier information. To that end, we are employing the following three approaches: (1) sharing trouble records; (2) sharing information on competitive manufacturers regarding quality and prices; and (3) standardizing order qualification screening and supplier performance assessment methods. We will raise our level of risk management by making global use of local information from each group company to ascertain the competence of suppliers under common criteria. We will also seek to improve the Group's competitive strengths in procurement.

Further leverage with DXoT

Digital tools have opened up the possibilities of remote work in the area of procurement. For example, inspections at a manufacturing shop can be performed remotely via a video feed. Moreover, precise and swift receipt of data on production progress can help minimize delivery delays. Also, digital tools can be used to improve the accuracy of financial planning for payments if they are linked to delivery forecasts. Given the benefits of DXoT, I intend to work with passion to enhance the value of TOYO's global procurement operations.

Double spiral growth strategy —Advanced EPC Operation

Technological innovation in cutting-edge pharmaceutical plants



Masatoshi Ikeya
Deputy General Manager,
Pharmaceuticals and Fine
Chemicals Project Division
Project Construction Unit
TEC Project Services



Yoshitaka Yamaguchi
Group Leader, Equipment Group
Plant Systems Engineering Division
Engineering Unit
TEC Project Services

Spotlight on the cutting-edge pharmaceutical manufacturing technology of TPS' pharmaceutical and fine chemical businesses

TEC Project Services (TPS), which operates the domestic plant business in the TOYO Group, has built a solid EPC track record for pharmaceutical plants based on its plant engineering technology. Read on below to find out what the future might hold in store for TPS based on its knowledge and proprietary technology concerning pharmaceutical manufacturing plants.

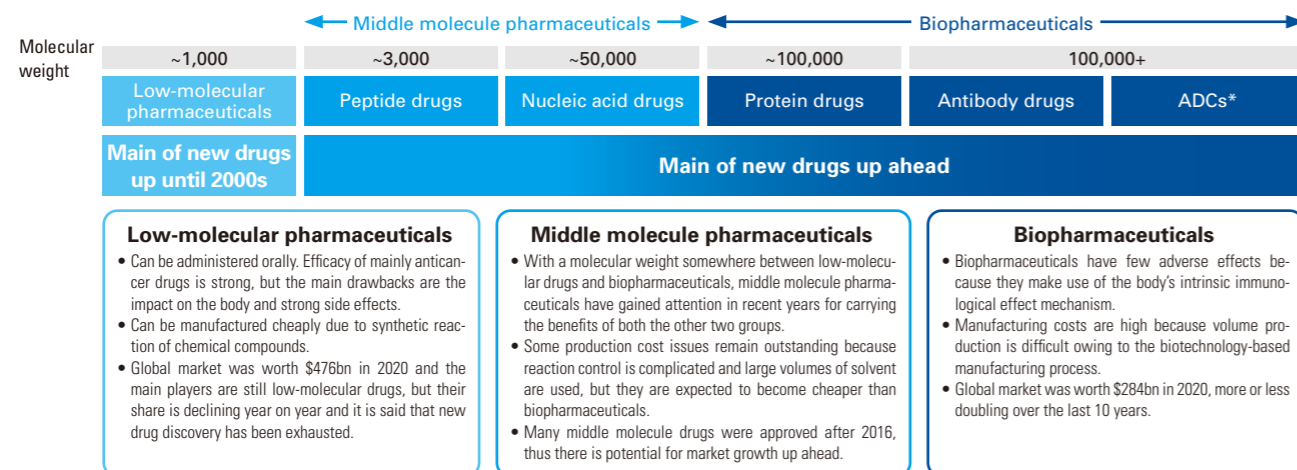
History of pharmaceutical and fine chemicals businesses and outlook

Ikeya In 2016, TPS became the sole entity behind the Group's domestic business after the domestic plant and pharmaceutical plant businesses were transferred from Toyo-Japan. TOYO has a history of more than 30 years in the pharmaceutical and fine chemicals businesses after making its first foray into these fields in around 1990. Although we were somewhat late to these fields, we have amassed our own technological expertise mainly by developing production plant facilities to meet the requests of clients. And as a result, we have continued to execute difficult projects one after the other. In the last 10 years or so these businesses are stabilized at long last. Going forward, not only we continue to focus on low-molecular synthetic active pharmaceutical ingre-

redients (APIs), but we intend to expand our operations mainly in areas where there is heightened market demand—namely, plant facilities for middle molecule pharmaceuticals (nucleic acids and peptides) and biopharmaceuticals. We will look to develop these businesses into an earnings pillar for TPS by expanding sales from ¥4 billion at present to more than ¥10 billion by around 2025.

Biopharmaceuticals*1 x single use*2

Yamaguchi Pharmaceutical plants are broadly classified as either APIs/intermediate plants or drug formulation factories. When TOYO made its initial entry into the pharmaceutical plant business, we employed a strategy of focusing on contract manufacturers for APIs/intermediates that require expertise in production plant facilities because it was hard for us to break into the drug formulation factory field dominated by the major general contractors and leading engineering companies. In anticipation of a shift in mainstream from low-molecular pharmaceuticals to biopharmaceuticals, we determined that the market would continue to grow up ahead and we therefore heavily injected a lot of our business resources into it. We dispatched engineers to a company with a track record in Europe and North America to learn about design con-



*Antibody-drug conjugates

Biopharmaceutical track record

Year	Facility	Country	Type	Scope	Characteristic
2020	Biological API manufacturing plant	Japan	Antibody drugs	Basic engineering	Single-use equipment installation
2020	Vaccine production facility	Japan	Vaccines	EPCV*	Single-use equipment installation
2020	Biological API manufacturing plant rebuild	Japan	Biopharmaceuticals	Basic engineering	
2020	Biopharmaceutical plant	Japan	ADCs	EPCV	Single-use equipment installation
2019	Biopharmaceutical purification process automation	Japan	Antibody drugs	EPCV	Single-use equipment automation
2019	Biopharmaceutical plant	Japan	Antibody drugs	EPC	Single-use equipment installation
2019	Biological API manufacturing plant rebuild	Japan	Biopharmaceuticals	Basic planning	
2018	Biopharmaceutical purification process automation	Japan	Antibody drugs	EPCV	Single-use equipment automation
2018	Biopharmaceutical plant	Japan	Biopharmaceuticals	EPC	Single-use equipment installation
2017	Vaccine production facility	Japan	Vaccines	EPCV	All single-use equipment construction
2016	Biological API manufacturing plant modification	Japan	Biopharmaceuticals	Basic planning	
2015	Biopharmaceutical purification process automation	Japan	Antibody drugs	EPCV	Single-use equipment automation
2014	Biopharmaceutical purification process automation	Japan	Antibody drugs	EPCV	Single-use equipment automation

*Engineering, Procurement, Construction, Validation

Middle molecule pharmaceutical track record

Nucleic acid drugs track record

Year	Facility	Country	Scope
2021	API manufacturing commercial plant for nucleic acid drugs	Japan	Basic planning
2020	API manufacturing commercial plant for nucleic acid drugs	Japan	EPCV
2018	API manufacturing plant for nucleic acid clinical testing	Japan	EV
2015	API manufacturing plant for nucleic acid clinical testing	Japan	EPCV

Peptide drugs track record

Year	Facility	Country	Scope
2019	Modification of small-batch, high-activity plant facilities	Japan	EPCV
2018	Modification of small-batch, high-activity plant facilities	Japan	EPCV
2017	Modification and basic engineering of small-batch, high-activity plant facilities	Japan	Basic engineering
2015	Modification of high-activity peptide API manufacturing plant facilities	Japan	EPCV

cepts and single-use tools for biopharmaceutical plants, and we also delved into research on new technologies and the development of equipment—areas in which TPS has its own expertise. Fortunately for us, the industry is seeing a major transformation in manufacturing equipment, with large culturing vessels being replaced by smaller single-use systems for biopharmaceuticals. This has become an area of strength for TPS in the field of biopharmaceuticals. Starting with an order for a biopharmaceutical (vaccine) manufacturing plant facility from a major domestic pharmaceutical company in 2017, we have steadily received more project enquiries and we are seeing more opportunities for us to propose solutions that cater to customer needs. More than anything, it is key that we think deeply about what it is that TPS can do without losing sight of the common needs of our customers. Our virus inactivation device is one such product that we independently developed as a single-use system to solve such common customer needs.



Virus inactivation automation system (patented)

*1 Biopharmaceuticals are drugs produced with the use of biotechnology. They continue to be developed as therapeutic drugs for various illnesses that pharmaceuticals made with conventional chemical synthesis have failed to treat. The cells of plants, animals, and microorganisms are cultured to produce special proteins for use as a drug.

*2 Instead of conventional stainless steel culturing vessels and pipes, single-use, disposal bags and tubes are used as manufacturing equipment. Conventional hard equipment required a lot of time, manpower, and energy to be cleaned and disinfected, but disposal equipment eliminates or greatly minimizes these tasks.

Order for middle molecule pharmaceutical API plant and business alliance with Taisei Corporation

Yamaguchi Along with biopharmaceuticals, another field in which we have pioneered industry trends is middle molecule

pharmaceuticals, particularly nucleic acids and peptides. We started undertaking small projects at a time when there were very few contractors handling peptides in Japan. We took advantage of that experience to seize on opportunities in the middle molecule pharmaceutical manufacturing industry in recent years. No matter what size of project we undertook, building a track record helped deepen our technical knowledge. Because of this track record, we secured an order for a middle molecule pharmaceutical API factory from Ajinomoto Co., inc.

Also, with the objective of bolstering our sales capabilities, in December 2020 we signed a business alliance agreement in the field of pharmaceuticals and fine chemicals with Taisei Corporation, which commands the largest share of the pharmaceutical plant construction industry. This tie-up completed the platform with which we could demonstrate our competitiveness by specializing in manufacturing processes, an area of expertise for TPS.

Shifting to continuous production to create new business opportunities

Ikeya Many pharmaceutical factories need to produce multiple products in small batches and manufacturing lots must be tightly managed because of the rigorous legal requirements surrounding quality control. And conventional manufacturing is limited to batch processing, especially if raw materials need to be left in equipment for a certain period of time to create a chemical reaction. In contrast, demand is growing for less manpower and more automation to deliver high-quality, high-efficiency production. In responding to these needs, in April 2019 TPS invested in iFactory with the goal of realizing continuous manufacturing for items hitherto manufactured at batch plants. Three years of a five-year plan have now passed and the engineering work is mostly completed. Over the next two years we plan to construct a demonstration plant and conduct trials. At TPS we will look to grasp the issues and needs of customers and undertake R&D to develop and provide new solutions going forward.

Double spiral growth strategy —Advanced EPC Operation

Advancements in EPC work innovation with DXoT: 1

Becoming a company that can continue to innovate through DXoT

Blue strategy and DXoT vision

As part of our DXoT strategy, we have established a unit to execute more than 20 tasks as we work towards overhauling our work processes company-wide with the aim of realizing a six-fold improvement in productivity.

We will extend our digital twin concept—a platform that uses a digital environment to manage real world data from plant construction sites—and broaden the scope of DX to encompass “Project Twin” and “Corporate Twin”. The former enables real-time monitoring of the status with detail information for every ongoing project around the world, while the latter detects signs of risk from a corporate point of view and facilitates swift decision-making and actioning. We will also endeavor to strengthen management by making full use of high value-added data to improve visualization and shore up our earnings base by minimizing the risk of earnings fluctuation caused by instability in project management.

We will strive to thoroughly utilize and genuinely leverage data in a bid to become even more data driven in our mainstay EPC operations, project and accounts management, quality control, and even in the indicators used for management decision-making. As part of DXoT, we are making steady progress on the building of the TOYO digital twin in the following three areas of focus.

CC Driven Engineering

In the conventional work process, the FEED*1/proposal stage had to be planned despite its many uncertainties, which ultimately led to idle time and reworks during each EPC phase of a project. The CC Driven Engineering concept revolutionizes the work process with the application of AWP*2.

Proactive Corporate Management

As a proactive corporate management measure, we are taking steps to visualize management with Corporate Twin in order to facilitate accurate and swift management decisions based on real-time, accurate data obtained from a CC Driven Engineering management approach.

For example, for “Talent Management” and “Digital First”, two tasks in Corporate Twin, we are pushing ahead with initiatives geared towards realizing an aptitude-oriented HR development policy. By visualizing human resources and other resources information pertaining to our competitiveness as an engineering company, we will aim to invest in sustainable technologies and business development fields and securely reap the benefits of those investments to achieve positive spiral management.

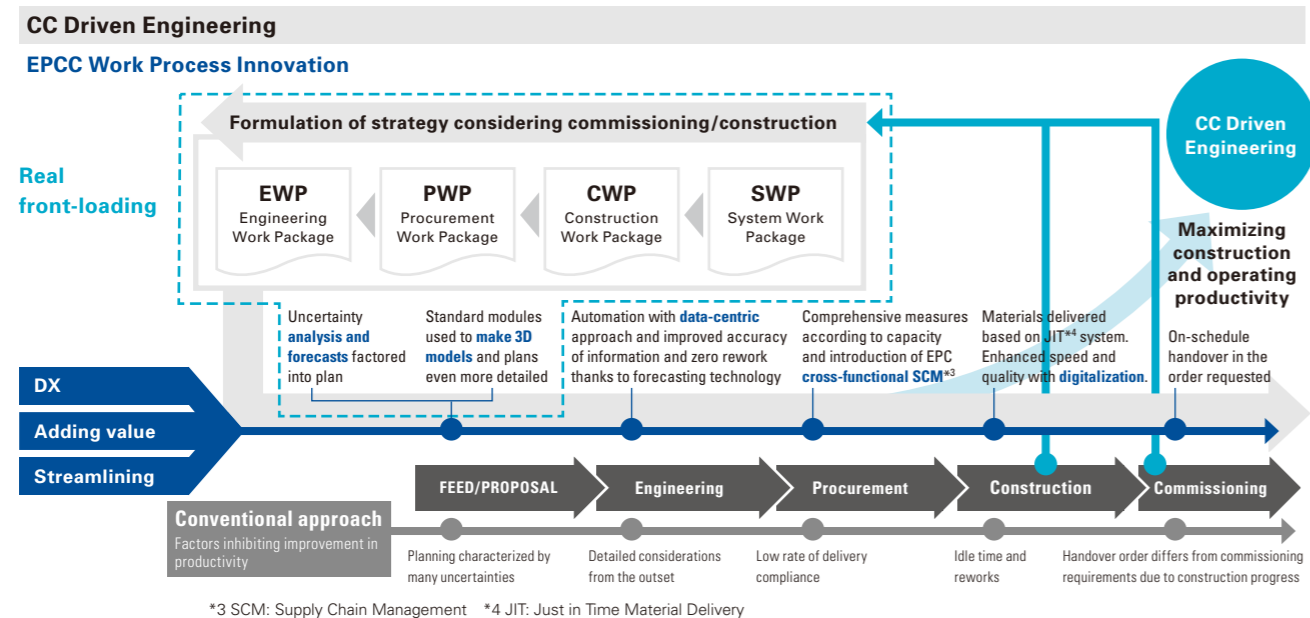
Data Leveraging

Our data leveraging measure aims to help generate sustained growth by implementing the PDCA cycle so that we can make thoroughgoing use of managed data and enhance the accuracy of our plans.

Previously, accumulated past data was difficult to access and not readily available for use, but we are now building a digital platform that can automatically retrieve and analyze data from workflow processes. We are structuring our data and creating a database that enables seamless collaboration between business divisions and group companies. In the near future we are targeting the roll out of a data analysis function.

*1 FEED: Front-end engineering design

*2 AWP: Advanced work packaging



*3 SCM: Supply Chain Management *4 JIT: Just in Time Material Delivery



Takayuki Nakayama

Construction Engineer
Construction Technology Department
Construction Division



Hiroyuki Matsumaru

Task Organizer
DXoT Planning & Promotion Center

Improving productivity by applying AWP

Aiming to shorten EPCC project period by 10%

Nakayama The plant construction plan typically is undertaken in the order of engineering, procurement, construction, and then commissioning in a sequential order, we are now turning this process around by having engineering design as per construction plan that prioritizes maximum productivity in the commissioning and construction stages and employs a backcasting approach from there to build the overall process. At TOYO we call this approach “CC Driven Engineering” and ensure that it functions efficiently we divide all of the EPCC elements into segments called work packages and employ a method called AWP to manage engineering, procurement, and construction along with the delivery of materials.

Matsumaru With AWP, we aim to achieve five objectives: (1) consideration of EPC project period to be shortened at the construction planning stage; (2) deeper constructability specialized for critical path methods; (3) progress visualization of each work package and proactive actions; (4) Just-in-time material delivery on an AWP basis; and (5) maximization of productivity owing to a reduction in idle time at worksites. As a result, we aim to shorten EPC project period by 10%.

Advancing project implementation together with overseas group companies

Nakayama Each company executes AWP differently, but one point worth noting about TOYO’s approach is how we integrate it with SCM (Supply Chain Management) which is cross organizational function. Realizing overall optimization of materials management without regard to functional divisions and group companies is key to the success of AWP. The common goal is to break away from the hitherto optimization in each EPC division and instead command a broader view of engineering information, production management information from vendors, and site construction circumstances so that the most suitable actions can be taken.

Matsumaru Having already reflected initial construction plan-

ning including schedule optimization based on AWP philosophy into project master schedule, we are now starting the use of AWP systems. Furthermore, the RFID materials management system for steel structures and piping spools that was already developed together with IKPT is now fully compatible with AWP. We are also developing the systems which can materialize work automation that are not susceptible to the volume of materials or the knowledge of certain individuals.

Potential for unlimited scalability by combining DXoT and AWP

Nakayama Plant constructions sites are often located in extremely harsh environments, such as deserts or bitterly cold regions. Elaborate planning and preparation are very important in order to boost productivity without being swayed by external conditions. It is imperative that a construction site has everything it needs to get the job done, including drawings, materials, workers, and construction machineries. We must also meet safety, quality, and scheduling requirements. A lot of down time and significant costs will be incurred if we discover there are no drawings at a site where a few thousand workers have gathered. We must take meticulous care in planning and double checking to always prepare for unexpected contingencies.

Matsumaru TOYO’s CC Driven Engineering approach gives us a framework with which to reflect work order/flow and construction requirements from the initial planning stage. It also alleviates the burden of making preparations and checking at the construction site, thereby avoiding unforeseen situations. As a result, it enhances the effectiveness and feasibility of construction planning, raises the quality of advance preparations, facilitates efficient project execution, and shortens project period. By making further use of DXoT in the future, we will consider expanding this approach to overseas sites and group companies in an online environment, as well as for the construction of a collaborative framework between customers and partner firms.

Double spiral growth strategy —Advanced EPC Operation

Advancements in EPC work innovation with DXoT: 2



Hideki Hashino
Business Leader
Proposal Division
Plant Solution Business Unit



Tadashi Miyazawa
Task Organizer
DXoT Planning &
Promotion Center

Project Twin delivers project status updates in real time

Visualizing up-to-date information at any time and anywhere

Miyazawa An EPC project is basically a service that undertakes the construction of a plant whilst taking receipt of, and managing, a huge amount of engineering drawings, materials, and equipment, controlling a great number of construction site workers, and guaranteeing safety, quality, cost control, and on-time delivery. It was an epoch-making challenge for the people in charge to separately collect large volumes of data and take the reports that had been physically counted and integrate them into a shared platform through which the most up-to-date data could be accessed at any time and from anywhere.

Hashino Understanding a project's status and circumstances is essential to speedy decision-making by management. Project Twin was designed so that we could visually perceive problems as they appeared in the engineering drawings by quantitatively comparing progress, budget use, and other key elements of project management from the viewpoint of variances with plans, bottlenecks, and the degree of impact on successors. In developing Project Twin, we conceived, launched, and steered operations by incorporating program

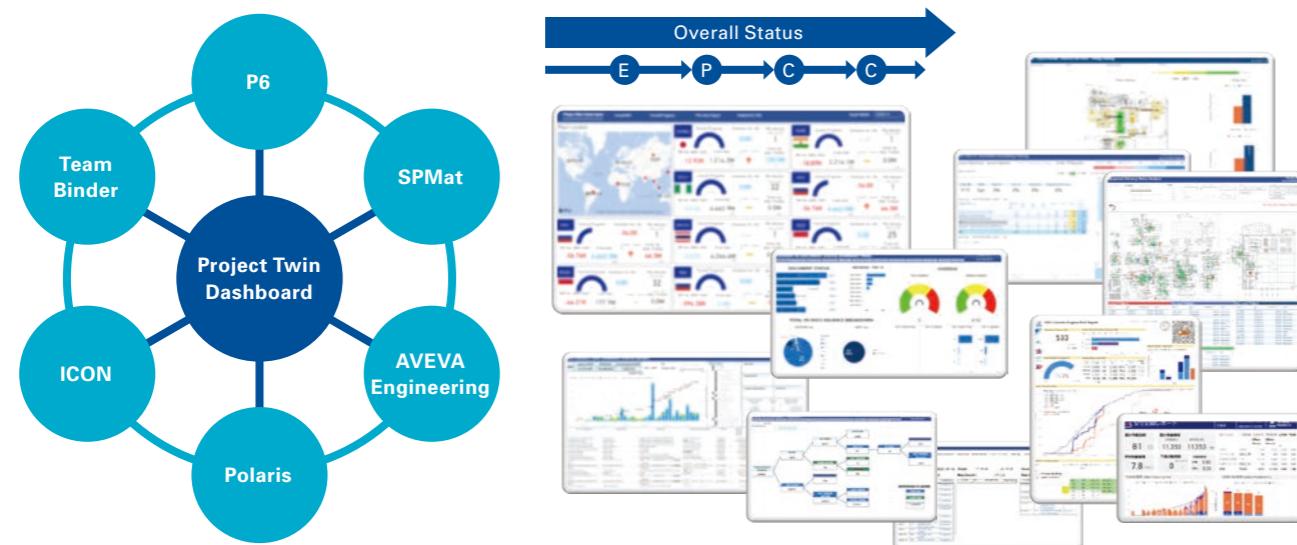
and project management methods. We have thus far led the way as EPC practitioners to familiarize ourselves with digital tools, thereby putting agile development into practice so as to continually drive a series of processes in a short period of time.

As a platform appreciated by both customers and partner firms

Miyazawa Project Twin delivers more than just benefits for TOYO—it has the potential to be a useful tool for all stakeholders involved in a project. That is because it can clearly answer the question of when the project will be completed, a topic of interest for all concerned, including customers and partner companies.

Hashino By sharing accurate information in a timely manner about when the plans and materials will be delivered, and in what quantities, we can work together with partners to formulate and monitor the execution of efficient working schedules and mobilization plans. This in turn means that operations can be carried out with a sense of unity with TOYO. And we continue to improve Project Twin by collecting real feedback from our subcontractors and overseas group companies.

Project Twin concept



Masanori Takizawa
EDT Task Leader &
Petrochemicals Team Manager
Process Engineering Division
Engineering and Technology Unit



Katsunobu Mori
EDT Task Leader & Piping Engineer
Layout and Piping Engineering
Division
Engineering and Technology Unit

Reducing manhours with Engineering Digital Twin (EDT)

Realizing EPC quality improvements with Data-Centric Engineering

Takizawa Up until now each engineering division was required to separately prepare drawings and specifications and share pertinent information with other divisions. If changes arose, the corresponding number of drawings had to be amended. EDT-driven data-centric engineering revolutionizes this whole process—centrally managed engineering information eliminates the need for copying content, consistency is checked for automatically, and data is amended in one fell swoop. Up-to-date information is shared at all times, thereby enabling the seamless performance of engineering work.

Mori As a result, we can significantly reduce manhours and shorten construction period. Engineering know-how across divisions can be accumulated exhaustively, and by analyzing accumulated data from multiple angles, it can be utilized in the next project, thereby enabling us to deliver more competitive quality, schedules, and costs to our customers.

Involving overseas group companies in the active adoption of the latest digital technology

Takizawa A system we developed in fiscal 2020 is already up and running for an actual project, and a new structure that we are jointly developing with overseas group companies is also being gradually rolled out starting with Toyo-India's projects. We aim to complete the realization of the Engineering Digital Twin concept by utilizing data-centric engineering more often and expanding its scope to all of our engineering work.

Mori With the objective of transforming our business processes, we undertook a cautious review by revisiting the basics of our engineering work process. The evolution of digital technology has released our engineers from irksome duties that were reliant on manpower and has allowed them to focus on more important work requiring human judgment. The number of man-hours reduced can be appropriated to further enhancing technological capabilities and analyzing data, which can feed the cycle that creates new value.



Atsushi Kotoya
Task Organizer
DXoT Planning &
Promotion Center



Toshiro Nemoto
General Manager
Quality Management Department
Safety, Quality and Environment
Management Division

Reducing quality-related losses with Knowledge Navigator

Circulation of knowledge is the key to lowering quality-related losses

Kotoya By digesting the issues of past projects into our organizational knowledge and utilizing that knowledge in the procurement of materials and equipment and construction planning and execution, we can minimize quality-related losses. As part of DXoT, we are pushing ahead with knowledge management reforms in both our operations and systems so that (1) information from projects currently being fulfilled can accumulate naturally, (2) we can aggregate knowledge of value, and (3) the entire TOYO Group can draw on such knowledge readily and in a timely fashion.

Nemoto At present, I see often the case that action is delayed even if feedback has been compiled, which is why, the Quality Management Department, intend to collaborate for creating a feedback system that is easy to use without both-er-ing busy project members with additional tasks.

Considering work innovation and data governance as a whole

Nemoto At TOYO we have made every effort to prevent the recurrence of loss costs attributable to engineering quality by analyzing with categorized risk factors, but identifying the root cause has not been easy.

Kotoya We intend to improve the accuracy of our analyses in order to prevent higher costs by reviewing our classifications and definitions of factors behind quality-related cost increases and appropriately linking higher costs to factor categories when they arise. We can also expect to further curb costs by strengthening data governance as our Data-Centric Engineering approach continues to evolve.

Nemoto We continue to streamline our data governance from both a "hard" (organizations and systems) and "soft" (rules) perspective and while we are endeavoring to speed works up with the automation of engineering and checking functions, we stay careful not to allow its content to turn into a black box.

Double spiral growth strategy —Advanced EPC Operation

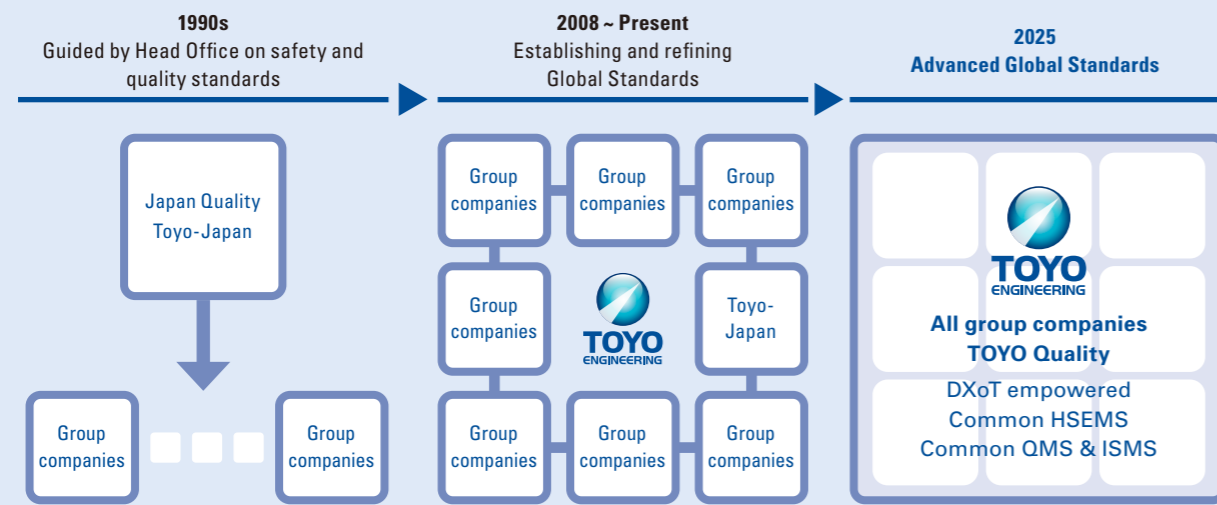
Safety and quality initiatives

Evolution to Advanced Global Standards through collaboration with group companies

While conducting plant construction projects all over the world, we have accumulated experience and developed our unique Safety and Quality Global Standards that are common to all TOYO group companies. In the 1990s, we began to promote activities with the goal of bringing Japan quality to group companies around the world. Thirty years have passed, and today, in 2021, we have evolved a system in which TOYO standards are based on the autonomy of each group company.

In our medium-term management plan (FY2021-FY2025), we have set the goal of “Advanced Global

Operations” and plan to establish a structure in which group companies will play a central role in the execution of EPC projects. Together with the fundamental transformation of the workflow through DXoT, we aim to establish an organization that ensures unchanged safety and quality at all group companies. Safety, Quality and Environment Management Division will play a leading role in the evolution of the Advanced Global Standards, which is essential for the realization of operations for EPC execution.



HSEMS : Health Safety Environment Management System
QMS : Quality Management System
ISMS : Information Security Management System

Basic policy on HSE, quality, and information security

TOYO and its group companies have established the basic policy based on the recognition that compliance with laws and regulations related to HSE (Health, Safety, Environmental Preservation), quality, and information security, as well as meeting the requirements of customers and society, is an indispensable prerequisite for operating business and fulfilling our social responsibilities as a company. <https://www.toyo-eng.com/jp/en/company/policy/safety/index.php>

FKMS (Feedback Knowledge Management System)

The TOYO Group has been accumulating feedback case studies of projects for more than 30 years, which are used for reference in the execution of each project and for preventing recurrence of problems.

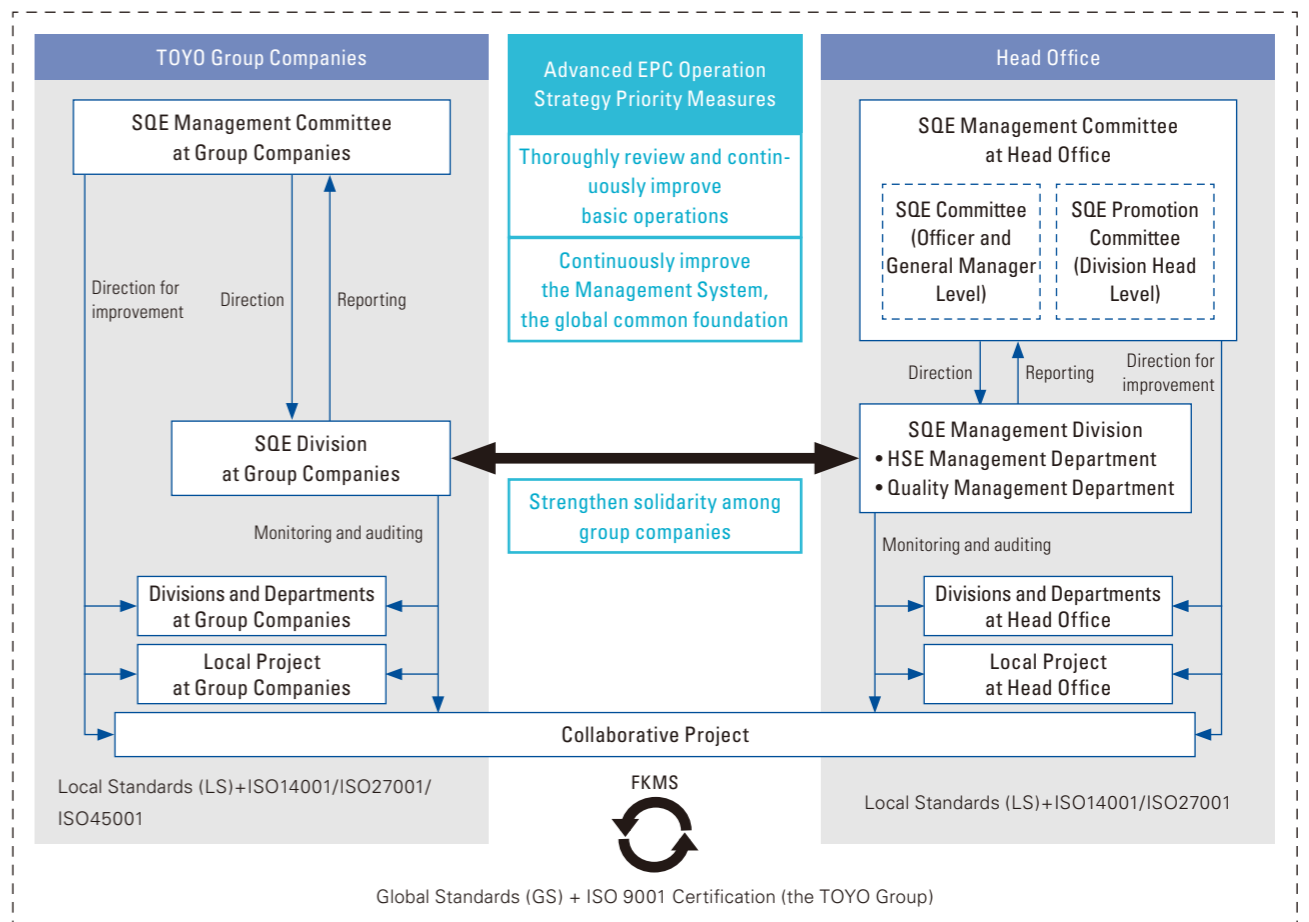
Unification of management criteria (TOYO Standards)

Standards commonly used by the entire TOYO Group were unified as Global Standards in 2008, and all group companies are operating under the same management criteria. The standards are updated as needed to incorporate feedback from operations. Since 2013, the ISO certification body has certified the TOYO Group's unified operations as an ISO 9001 group certification.

Group quality and safety meeting

Quality and safety managers from overseas group companies meet to build a consensus and promote improvements through active communication. Group companies are also actively making proposals, leading to better management.

Safety, Quality, and Environment (SQE) Management Structure



ISO 9001: Quality Management System, ISO 14001: Environmental Management System, ISO 27001: Information Security Management System, ISO 45001: Occupational Health and Safety Management System



Ayaka Urashima
HSE Management Department
Safety, Quality and Environment Management Division

True Globalization Must Begin with Safety and Quality Management

Our EPC business (Engineering, Procurement, Construction) involves the construction of magnificent systems that are the culmination of human knowledge, but they are all created by human hands. Because the construction is complex and large-scale, risk management for prevention of any trouble must be important for safety and quality control. Therefore, it is essential for each employee to have a high level of knowledge, awareness, and even experience.

HSE Management Department conducts regular safety training for all employees. In this way, we aim to improve the knowledge and awareness of occupational safety and our safety culture by sharing our safety policy, risk assessment, safety records, and accident cases.

Similar efforts are also carried out at group companies, and we have shared information of each company through regular “Group Quality and Safety Meeting.” There is unanimous agreement that it is possible to dramatically reduce risk by developing knowledge and changing consciousness to prevent accidents and to ensure quality. We will continue these activities and ensure that each and every employee of our group companies are able to manage risks appropriately under the slogan “Start with Safety, Start with Quality.” We believe that this will enable TOYO, who has been successfully instilled inside group companies, to make further evolution.

Double spiral growth strategy —Advanced EPC Operation

Safety and quality initiatives

Updating quality management methods in response to work process innovation

TOYO is pushing ahead with numerous DX-driven initiatives with the aim of boosting productivity six fold. As these activities go hand and hand with work process innovation, our quality management system will also have to change accordingly. We will endeavor to instill new ways of working throughout the entire TOYO Group so that we can continue to provide the same quality of output that our customers have come to know and trust.

Initiatives with DXoT

- (1) Quantifying the cost of quality-related losses**
Visualize the status of projects in order to steadily implement improvement measures
- (2) Updating project management methods**
Update project management methods to address changes in EPC and PM methodologies brought about by radical workflow reforms

Safety is fundamental to our corporate activities

To address the challenges listed below is indispensable to safety management, we diligently implement various safety-first initiatives.

- Strengthening of safety management leadership
- Fostering a safety culture
- Establishing and complying with safety standards



Safety Character, TOYO-kun



Ajitkumar V. Patil
Head of Department
Health, Safety & Environment
Department
Toyo-India

Fostering a culture of active efforts for addressing HSE (Health, Safety, & Environment) to achieve zero occupational accidents!



HSE is a key element that we cannot do without when assuming the responsibility of numerous plant construction projects. I would call a successful project one that is not only completed on time and to a certain level of quality, but also fulfills all of our HSE standards. TOYO has a plethora of systems and processes in place for maintaining HSE standards. The development of a positive culture towards HSE in the TOYO Group is the result of a raft of safety campaigns spearheaded by the management team. We continue to foster a culture that always addresses HSE with the use of such slogans as "HSE starts with me" and "I am responsible for HSE" so that we can further improve our performance and raise awareness among employees. In this way, every individual can be habitually aware of health, safety, and the importance of protecting the natural environment in which we live.

Safety record

TOYO Group's safety record over the last 10 years is as follows. In aiming to achieve zero occupational injury, we continue to step up our efforts on improving safety. We have therefore adopted the management indicators of lost-time injury rate (LTIR) and total recordable injury rate (TRIR). Over this period, our LTIR and TRIR have been among the lowest in our industry.

TOYO Group's safety record over the last 10 years

(ILO basis: Incidence rate per million hours worked)

Year	Man-hours (A)	Number of occupational accidents			Total fatalities and lost-time injuries (B)	Total recordable injuries (B + Medical treatment) (C)	LTIR*1	TRIR*2
		Fatalities	Lost-time injuries (LTI)	Medical treatment (no lost time)				
2011	80,782,919	1	6	12	7	19	0.09	0.24
2012	120,760,052	3	8	16	11	27	0.09	0.22
2013	105,164,018	0	7	16	7	23	0.07	0.22
2014	89,777,237	1	6	13	7	20	0.08	0.22
2015	67,308,769	1	4	9	5	14	0.07	0.21
2016	52,540,748	0	3	23	3	26	0.06	0.49
2017	76,493,784	2	2	31	4	35	0.05	0.46
2018	102,817,669	1	10	28	11	39	0.11	0.38
2019	46,642,608	0	3	11	3	14	0.06	0.30
2020	44,895,756	0	3	20	3	23	0.07	0.51

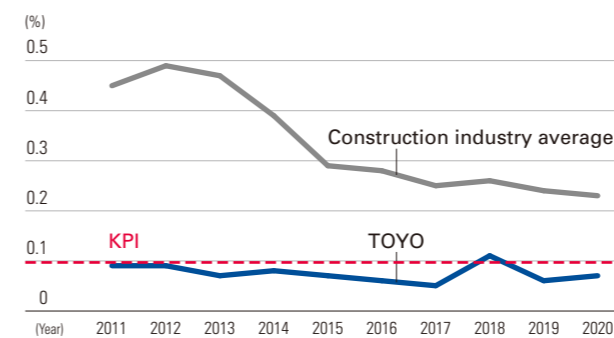
*1 Lost-time injury rate (LTIR) = (B) x 1,000,000 / (A)

(B) = Fatalities + Lost-time injuries

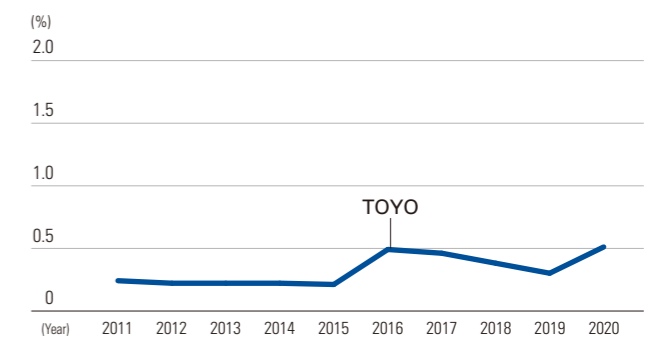
*2 Total recordable injury rate (TRIR) = (C) x 1,000,000 / (A)

(C) = (B) + Medical treatment

LTIR



TRIR



Note) Source of reference for construction industry average:
IOGP safety performance indicators - 2020 data "Contractor"

Activities to achieve zero occupational accidents

We are promoting a variety of activities to foster a safety culture and to ensure that all workers have a high level of safety awareness.



New Year's Greeting with TOYO safety character (Malaysia)



Morning meeting at construction site for COVID-19 measures (India)



Engineering for Sustainable Growth of the Global Community

Materiality and Our Commitment

Aim to realize an environmentally-friendly society



Enrich people's lives



People of diverse backgrounds engage in active, meaningful work



Establish an organization with integrity and discipline

Environment



Risks	Opportunities
<ul style="list-style-type: none"> Any delay in developing technologies that achieve low environmental impact and a recycling-oriented society could result in missed business opportunities or a decrease in corporate value. Climate change is resulting in natural disasters becoming more frequent and severe, which is hindering the execution of plant EPC business. 	<ul style="list-style-type: none"> Innovations in environmentally friendly technologies related to the prevention of global warming and waste management could lead to new business opportunities. Due to increasing needs for a low-carbon/decarbonized society, there are more business opportunities related to renewable energy and resource recycling.

Our Commitment

Pursuing low-environmental-impact plants
By promoting energy saving and the use of renewable energy, we are contributing to reducing the environmental impact of industrial fields.

Contributing to the achievement of a recycling-oriented society
To reduce the environmental impact by reusing waste, we are promoting initiatives aimed at the development and social implementation of the relevant technologies.

Waste control and treatment
Through our overall business activities—which include plant construction—we are striving to minimize waste discharge and to achieve suitable treatment and reuse.

Created Value

- ▶ Reducing the emission of greenhouse gases
- ▶ Preventing environmental pollution

Social



Risks	Opportunities
<ul style="list-style-type: none"> Increased regionalism is resulting in more limited market access, and the lack of technological innovation is causing low-price competition. There is little demand to construct new plants due to political instability and insufficient funds resulting from weak industrial infrastructure in emerging countries. 	<ul style="list-style-type: none"> Harmony with the community would enable us to secure outstanding local human capital and more smoothly execute local business. Plant construction could promote job creation and the transfer of technology, thus creating new business opportunities.

Our Commitment

Contributing to the development of industrial infrastructure
We are utilizing TOYO's global network to provide plants equipped with state-of-the-art technology, thereby contributing to the development of industrial infrastructure in countries around the world.

Contributing to the resolution of food problems
By constructing fertilizer plants, we are contributing to improved agricultural productivity in countries around the world.

Transferring technology through EPC implementation
We are creating jobs and transferring technology in various regions at each stage of the plant construction process.

Created Value

- ▶ Contributing to economic and industrial development in emerging countries
- ▶ Contributing to improved agricultural productivity
- ▶ Creating jobs and transferring technology at plant construction sites and in various economic zones

Governance



Risks	Opportunities
<ul style="list-style-type: none"> If we do not take suitable action, TOYO's technical capabilities and competitiveness will decrease, leading to the outflow of outstanding human capital from the company, lost business opportunities, decreased labor productivity, and decreased motivation. Occupational accidents could result in a loss of trust from clients and business continuity risks. 	<ul style="list-style-type: none"> Taking suitable action could increase technological innovation and business creation opportunities, help us secure outstanding human capital, improve labor productivity, and increase motivation.

Our Commitment

Training and developing human resources
We are striving to train and develop the abilities of diverse human capital who can contribute to the achievement of a sustainable society by providing engineering at the global level.

Promoting inclusion
We are doing everything in our power to respect diverse people and personalities as well as the cultures and customs of various countries and regions while striving to eliminate discriminatory practices.

Improving the work-life balance
We are striving to build a workplace environment that provides job satisfaction and aims at a balance between the work and private lives of employees.

Promoting health management and improving occupational safety and health
In addition to promoting the health management of our employees, we strive to maximize safety and health during our business activities, including plant construction.

Created Value

- ▶ Creating human capital that contributes to the achievement of a sustainable society
- ▶ Providing a workplace that offers job satisfaction

Risks	Opportunities
<ul style="list-style-type: none"> Hindering compliance could result in business continuity risks. Hindering corporate governance could result in major loss risks and business continuity risks. 	<ul style="list-style-type: none"> Through a solid governance system, we could build a stable, strong business-execution foundation based on highly transparent, prompt decision-making.

Our Commitment

Compliance
By fleshing out our education and training, internal reporting system, etc., we are implementing compliance throughout the TOYO Group.

Corporate governance
We are working on building and running suitable systems based on Japan's Corporate Governance Code while comprehensively achieving effective risk management.

Created Value

- ▶ Securing a foundation for business continuity



Recognizing the preservation of the global environment and preventing global warming as issues facing all of humankind, TOYO has established “aim to realize an environmentally friendly society” as a materiality, and carries out its business based on the following basic philosophies.

- We will contribute to the achievement of a sustainable community and society enabling both the development of humanity and environmental protection.
- As an international company, we will strive to provide engineering services in harmony with the global environment.

To achieve this philosophy, we will continue actively striving to resolve the environmental issues of customers.

Pursuing low-environmental-impact plants

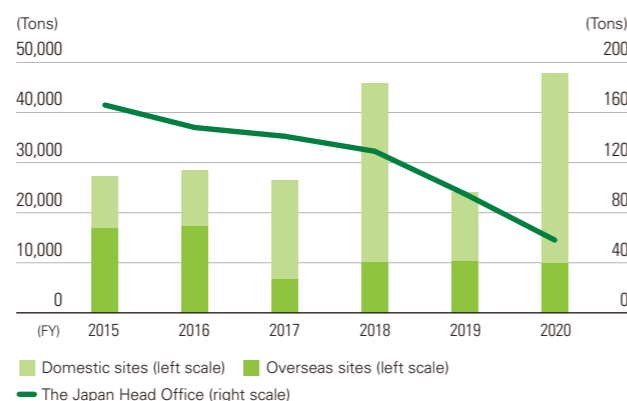
TOYO designs and constructs a wide variety of plants with a low environmental impact, with efforts centered around energy savings at plants. As a licensor, we have made a series of improvements to the urea process, which has been one of our core products since the very beginning, providing the energy-saving urea synthesis method ACES21® and spout-fluid bed type granulation process. In addition, for a variety of oil refinery and petrochemicals plants, we have developed and provide the distillation system SUPERHIDIC® as a technology to promote HERO energy saving as well as energy saving consulting services for entire plants.

Additionally, in the social infrastructure field, we have constructed numerous large-scale photovoltaic power generation plants and biomass-fired power plants, which are promising as forms of clean energy.

Reducing the environmental burden at construction sites and at the Japan Head Office

In both Japan and overseas markets, we thoroughly separate construction waste from our construction sites and make sure to dispose of hazardous substances and manage contaminants. Ever since acquiring ISO14001 certification in 2004, we have maintained zero environmental disasters. We have worked to curb the amount of waste produced at domestic sites and have continually recycled 90% or more of our waste.

Waste Generation Amount at Domestic and Overseas Construction Sites and the Japan Head Office from 2015 to 2020 (Six Years)



Examples of resource reuse activities promoted by the TOYO future architect department

At Toyo-Japan, the TOYO Future Architect Department promotes bottom-up activities under the direct jurisdiction of the President. The department’s resource reuse working group plays a central role in the “reuse, reduce, recycle” activity that has been conducted on an ongoing basis since FY2017. Here is an overview of this initiative.

Donating reusable office supplies and equipment to local communities



We are promoting reuse activities to centrally manage and reuse second-hand office supplies and equipment from construction sites and Head Office. The quantity and number of types of items brought in has been gradually increasing. Initiatives to go paperless in particular have led to exceed the demand of reuse files and color indexes in the company. Consequently, we have to date donated a total of over 6,800 files in good condition to nearby municipal authorities and local communities. Going forward, we will continue to contribute to a society with a lower environmental burden through co-existence with local communities.

Main donation recipients
Chiba City Board of Education, facilities related to Social Welfare Service Corporation Chiba City Council of Social Welfare, nurseries operated by public interest incorporated foundations and NPOs, Chiba City International Association, Narashino Chamber of Commerce and Industry, Chiba City centers that provide employment and lifestyle support to persons with disabilities, Keisei Bus Chiba Office, Chiba Nairiku Bus, nearby universities and elementary schools, nurseries, kindergartens (through the Children’s Department of Narashino City Hall), etc.

Participating in activities to recycle empty cases for disposable contact lenses



We empathize with and approve of HOYA Corporation’s recycling initiative “Eyecity Eco Project”—an activity aimed at recycling empty cases for disposable contact lenses—and, in February of 2019, we started up our own in-house collection activities. An estimated 13 million people use disposable contact lenses throughout Japan, and only about 1% of the cases are collected. The remaining 99% of cases are incinerated as garbage. Empty cases for disposable contact lenses are made of polypropylene, regardless of manufacturer, which is ideal for recycling. The proceeds from these recycling activities

are being donated to the Japan Eye Bank Association.* During the 27 months since we started these activities, we have collected a total of 66 kilograms of cases, and our employees and their families are becoming more aware of the need to recycle. We are very grateful to be able to participate in this wonderful activity, where one small contact lens case sparks increased awareness of other types of recycling.

*Japan Eye Bank Association: a non-profit public interest corporation established to provide education on and raise awareness of corneal transplants—which can be performed to restore the eyesight of certain people—and eye banks

We pushed ahead with health management and occupational health and safety activities so that employees could work safely even in the midst of the COVID-19 pandemic. We also carried out activities around the topic of inclusion—namely, respecting all types of individuals and personalities within the organization. You can read about some of our activities below.

Toyo-Japan: Ensuring employee safety and business continuity during the COVID-19 pandemic

Naoyoshi Yamaguchi

General Manager
Security Management Department



Initial COVID-19 outbreak: Seizing the initiative to guarantee employee safety with a Crisis Management Team

Considering that we have multiple plant construction sites overseas, we permanently established the Security Management Department because we need to get any information constantly from local sources about political instabilities or risks in order to swiftly and accurately respond to emergency situations. Risk management tasked with preventing and avoiding danger that threatens the execution of business operations should be the focal point of any company’s safety measures. However, we continue to face the pressure of making extremely tough decisions on how to grapple with the explosive growth in COVID-19 infections because we have to not only adopt temporary infection prevention measures but also fulfill our contract obligation to complete plant construction. Immediately after it was reported in January 2020 that COVID-19 infections had reached Japan’s shores, on January 30 we set up a Crisis Management Team spearheaded by the vice president and comprising the heads of main divisions as team members. The team wasted no time in rolling out infection prevention and BCP measures in rapid succession before the government declared a state of emergency (April 7–May 31). For example, in addition to installing hand sanitizer stations, distributing masks and sending boxes of them to overseas group companies, banning (in principle) overseas travel, urging employees and their families stationed abroad to return to Japan, and recommending employees to work from home, the team also orchestrated a one-week company-wide teleworking trial starting on March 27.

Spread of infections: Ensuring business continuity with the smooth transition to remote work

Led by Toyo-Japan, we made progress on instilling a work-from-home approach at overseas group companies by quickly coming out with a company-wide policy to encourage employees to always work from home as much as possible. We also stepped up efforts to make sure that employees could participate in online meetings from home primarily by improving communications infrastructure and supplying devices. Since then, meetings of the Board of Directors, management meetings, and meetings with external and overseas parties have been held online wherever

possible. There have also been cases in which we have demonstrated a level of adaptability unimaginable in the past. For example, the process of approving design drawings and specifications for one of our plant construction projects in Russia—a task that would usually take a few weeks with all of the engineers physically meeting in the same room—was accomplished entirely online thanks to web conferencing connecting Japan, India, South Korea, and Russia. In contrast, we were also confronted by the unexpected situation of a delay in the closing of full-fiscal 2019 consolidated accounts because the accounting auditors at Toyo-India, which has its head office in Mumbai, were unable to audit due to a strict lockdown enforced in that city.

Prolonged state of emergency: Doubling down on infection prevention measures

While the vaccination rollout is in full swing worldwide, there is no guarantee that our employees are completely safe when travelling or working at plant construction sites overseas. During this prolonged state of emergency, there have been a number of times where we have had no other option but to send our engineers to sites overseas for business purposes. We are carefully examining the need for business travel at the management level and allowing some trips only after sufficiently confirming beforehand the number of local infections, healthcare infrastructure, and international medical services systems. For those that do travel, we are taking all possible measures by sending them information from Japan and offering them the opportunity to make use of the online support services of our occupational physician at the Tsudanuma Central General Hospital.

Ensuring the safety of employees and contractors is our number one priority and the TOYO Group will work together to make doubly sure of adapting to crisis management during these times of emergency.



Workplace vaccinations at Toyo-Japan for employees and their families

Toyo-India: Social contribution activities in India

Toyo-India believes that ‘Society must profit from profit itself’ and we continue to live by this commitment. These values are embodied in our business philosophy and is the foundation of our CSR activities which concentrate on giving back to the society.

Even in India, there is no exception to the threat of COVID-19 infections that started spreading there in 2020. In particular, the country has been greatly affected by sluggish economic activity owing to lockdowns in mainly the larger cities. With the aim of assisting relief efforts, Toyo-India is undertaking the following community contribution activities and sparing no efforts to adopt measures for preventing infection among its employees and their families.

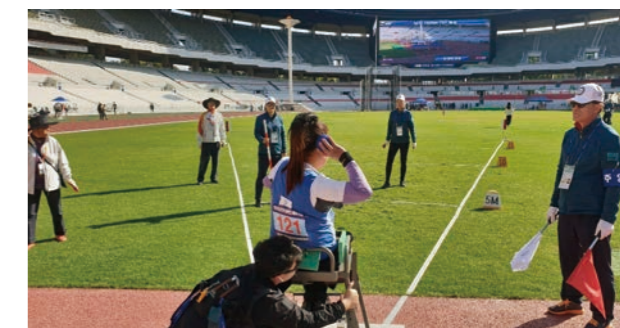
- Provision of various medical equipment and supplies to hospitals in Mumbai, including masks, pulse oximeters, and stethoscopes
- Provision of masks, and sanitizers to the Mumbai Police
- Provision of personal protective equipment, masks, and disinfectant to public health centers
- Distribution of meals to mainly migrant workers and day laborers
- Donation of 17.2 million rupees (roughly ¥25.0 million) to the PM CARES Fund, which is aimed at strengthening the fight against COVID-19
- Provision of food to police personnel and people kept in quarantine centers in the state of Uttar Pradesh where a project site is located

In addition, Toyo-India has donated funds to schools for the repair or expansion of school buildings and facilities. And Toyo-India also has provided school uniforms, materials and equipment needed to fight the pandemic, and constructed Rural Child Care Centre, classrooms, toilets, and bath rooms for schools.



Toyo-Korea: Hiring of disabled athletes

Toyo-Korea hires 2 cyclists, 1 track-and-field athlete, 1 ping-pong player, and 1 boccia player, in total 5 disabled athletes through a contract for “Training and coaching disabled athletes” with the largest sports marketing agency in Korea. They are playing actively as top athletes, with guidance on injury prevention, rehabilitation care, and counseling for grievances through the sports marketing agency’s “Training for disabled athletes” program. Toyo-Korea is pleased to be able to pay its social dues of hiring the disabled and at the same time contribute to the development of sports for the disabled. We will provide them with active support so that the players can continue a stable career in the future and it makes a sense of unity within the company.



Expand human capital to advance the Medium-term Management Plan by reforming our human capital system and strengthening human capital development

A new human capital system was introduced in April 2021 to realize the Blue Strategy (Advanced EPC Operation) and Green Strategy (Sustainable Technology and Business Development) of the medium-term management plan. We have established the following human capital development policy, based on rotation, to hone a variety of skills, including professional skills, interpersonal skills, and problem-solving skills.



Hiromi Nakajima
Assistant Team Leader
Human Capital Development Team
Human Capital Development
Department



Junichi Mizuno
Recruitment Team
Human Capital Development
Department

Development of blue human capital (Advanced EPC Operation)

Conventional EPC business will be shifted from Toyo-Japan to our group companies more than ever before to strengthen EPC through the advance group operations and DXoT. Accordingly, Toyo-Japan employees will be involved in more challenging projects to ensure competitiveness. Specifically, we must develop human capital with advanced skills, such as technical supervisors who can provide technical guidance and project managers who can organize teams consisting of diverse members. Younger employees are first given on-the-job training and then assigned to small and medium-sized projects. We provide on-the-job training opportunities because it allows them to gain a wide range of practical experience in a relatively short period of time. In addition, we will provide mid-level employees with opportunities for growth by providing them with management experience through participation in TOYO Group companies stand-alone projects.

As for DXoT, the key is to actually experience the workflow of conventional EPC services. We are working to raise awareness among all employees to increase their digital literacy and

proactively change their work flow. We plan to prepare training opportunities for all employees, from senior to younger, according to their skill sets. Aiming to raise the level of skills in digital tools (Business chat, BI tools, Low-code development tools, etc.) this year, we will hold lectures on the use of AI and provide on-the-job training using opportunities to introduce AWP (Advanced Work Packaging) to actual projects.

Also, TOYO has been conducting in-house training courses “TOYO Academy” to acquire commercial and technical expertise and business know-how mainly related to EPC. Until now, many of the basic courses were for younger employees, but today we have added courses that can be taken by all generations, using feedback from past projects as educational materials, and have created opportunities for hundreds of employees to participate online trainings. There are also plans to expand the number of fields and themes, such as ICT literacy and recurrent education to support the relearning of seniors, leveraging the program as a place to pass on knowledge and skills to younger employees in off-the-job training.

Development of green human capital (Sustainable Technology and Business Development)

Sustainable technology and business development areas require different kinds of human capital compared to EPC implementation. In particular, essential requirements include, among other things, the ability to think quickly and flexibly, and the trait of being able to act without fear of failure. We also need human capital who are passionate about success and have the vitality to turn even failures into positive energy. We will cultivate a variety of skills, including the power to explore and implement new business models, the ability of judgment of technologies, and the quality to build external networks to enable open innovation. Recruit human capital with potential to perform in new business areas, give them

opportunities to take on challenges, and have them gain experience in real business environment. We are convinced that this will enhance the quality of human capital over the medium to long term.

What is most important in developing new technologies and businesses is to utilize the initiative and new ideas of the persons in charge, to give them time to work hard, and to allow them to make mistakes until success. We will also work on fostering an organizational culture that allows employees to complete their tasks until the end result is achieved, and on developing solid rules.

Promoting the development of human capital by type through rotation

Under the new human capital system, rotation has been added to the promotion requirements for younger and mid-level employees to provide them with multiple perspectives and

experience in a wide range of fields. For each of the following types, we clearly state the transfer purpose and promote proactive career development.

Type	Purposes
Digitally focused	Base in any field. As the need grows, gain digital insights, strengthen professionalism, and explore careers.
Specialized	Acquire different perspectives and relevant knowledge to strengthen their own targeted expertise.
Career grasping	Gain the knowledge and viewpoints necessary to become the ideal image of human capital in the future.
Project manager	Have a specialty through experience in engineering and construction. Learn skills to cover a wide range of areas after transferring to the project department.
New business	Experienced in EPC business, then transferred to a trading company or a venture company to acquire knowledge and know-how that was not available within the TOYO Group, so that employees can develop the skills to promote new businesses.
Career seeking	Experience different areas of the business to determine their own aptitudes and specialization.

To date, we have utilized the outside transfer of employees as a way to strengthen business relationships and gain a wide range of experience unavailable within TOYO. Going forward, we plan to further expand the number of companies to which

our human capital will be seconded, such as venture companies and specialized agencies, to create an environment where diverse experiences are possible.

Creating a rewarding place where diverse human capital work energetically

As an engineering company, TOYO’s only assets are its “human capital.” Regardless of nationality, we respect diverse people, customs, and gender while fostering a corporate culture and environment that allows diverse human capital to flourish. In addition, we have established a remote work

system and are working to create a rewarding workplace that respects work-life balance. The results of our efforts are shown by the numbers below. In addition, in June of 2019, we obtained the Eruboshi certification (two stars).

Consolidated*1	(People)				
(FY)	2016	2017	2018	2019	2020
No. of employees*2	6,223	4,015	3,950	4,204	4,425
Male	5,497	3,432	3,370	3,566	3,749
Female	726	583	580	638	676
Percentage of female	12%	15%	15%	15%	15%
No. of engineers	3,021	2,866	2,811	2,815	2,824
Male	2,733	2,601	2,533	2,529	2,537
Female	288	265	278	286	287
Percentage of female	10%	9%	10%	10%	10%
No. of managers*3	1,111	1,090	1,081	1,119	1,112
Male	1,060	1,040	1,027	1,065	1,055
Female	51	50	54	54	57
Percentage of female	5%	5%	5%	5%	5%

Non-consolidated	(People)				
(FY)	2016	2017	2018	2019	2020
No. of employees*2	1,035	1,030	973	998	968
Male	871	863	804	817	790
Female	164	167	169	181	178
Percentage of female	16%	16%	17%	18%	18%
No. of engineers	791	790	735	757	738
Male	755	748	693	709	687
Female	36	42	42	48	51
Percentage of female	5%	5%	6%	6%	7%
No. of managers*3	579	578	558	583	569
Male	565	561	539	561	543
Female	14	17	19	22	26
Percentage of female	2%	3%	3%	4%	5%
No. of disabled persons hired*4	24	22	18	21	21
No. of foreign employees	54	56	47	48	50
No. of male employees taking childcare leave	0	1	4	4	5
No. of female employees taking childcare leave	4	4	9	3	7
No. of persons taking paternity leave	18	14	39	21	25
No. of persons working shorter hours for childcare reasons	17	21	14	14	15
No. of persons working shorter hours for nursing care reasons	1	1	2	1	1
No. of persons taking family care leave*5	75	94	102	96	81
No. of persons taking nursing care leave	0	0	0	0	0
Percentage of annual leave used*6	55.1%	58.3%	62.0%	61.9%	57.6%
No. of persons working from home*7	—	71	184	207	960

*1 Total of major EPC companies, including equity method companies

*2 Excludes temporary employees.

*3 Equivalent to Team Manager or General Manager.

*4 Includes subsidiaries in Japan.

*5 Scope of family in TOYO’s internal rules includes children, spouses, parents, parents-in-law, grandparents, siblings, and grandchildren.

*6 Excludes employees on long-term assignments overseas, employees on temporary assignment, mid-year recruits, employees on long-term sick leave, and employees on extended leave.

*7 In July 2020, the remote work system was revised, and the limit on the number of days was abolished.

Project Risk Management

Strengthening Pre-Order Risk Management

TOYO had launched measures to strengthen project risk management in FY2015, and has since carried out a series of improvements. In particular, based on a common understanding that pre-order risk screening is a decisive factor in the success or failure of the project from our past experience, we repeatedly carry out thorough considerations and discussion with regard to large, important, or novel projects. In addition to establishing the optimal project execution system through multifaceted risk identification and countermeasures, we have procedures in place to ensure that orders are received under appropriate contract conditions.

We also have a system that emphasizes pre-order risk

screening with regard to TOYO's characteristic standalone EPC projects by overseas group companies in their respective markets. When entering EPC contracts, risk screening is carried out in all group companies with the same framework as Toyo-Japan. In addition, depending on project scale, Toyo-Japan reviews the screening report that summarizes risk consideration and countermeasures. Through the goals of "advanced group operations" and "DXoT (digitalization without sanctuary)" outlined in our medium-term management plan, we position pre-order risk management as a means of further strengthening our EPC business.



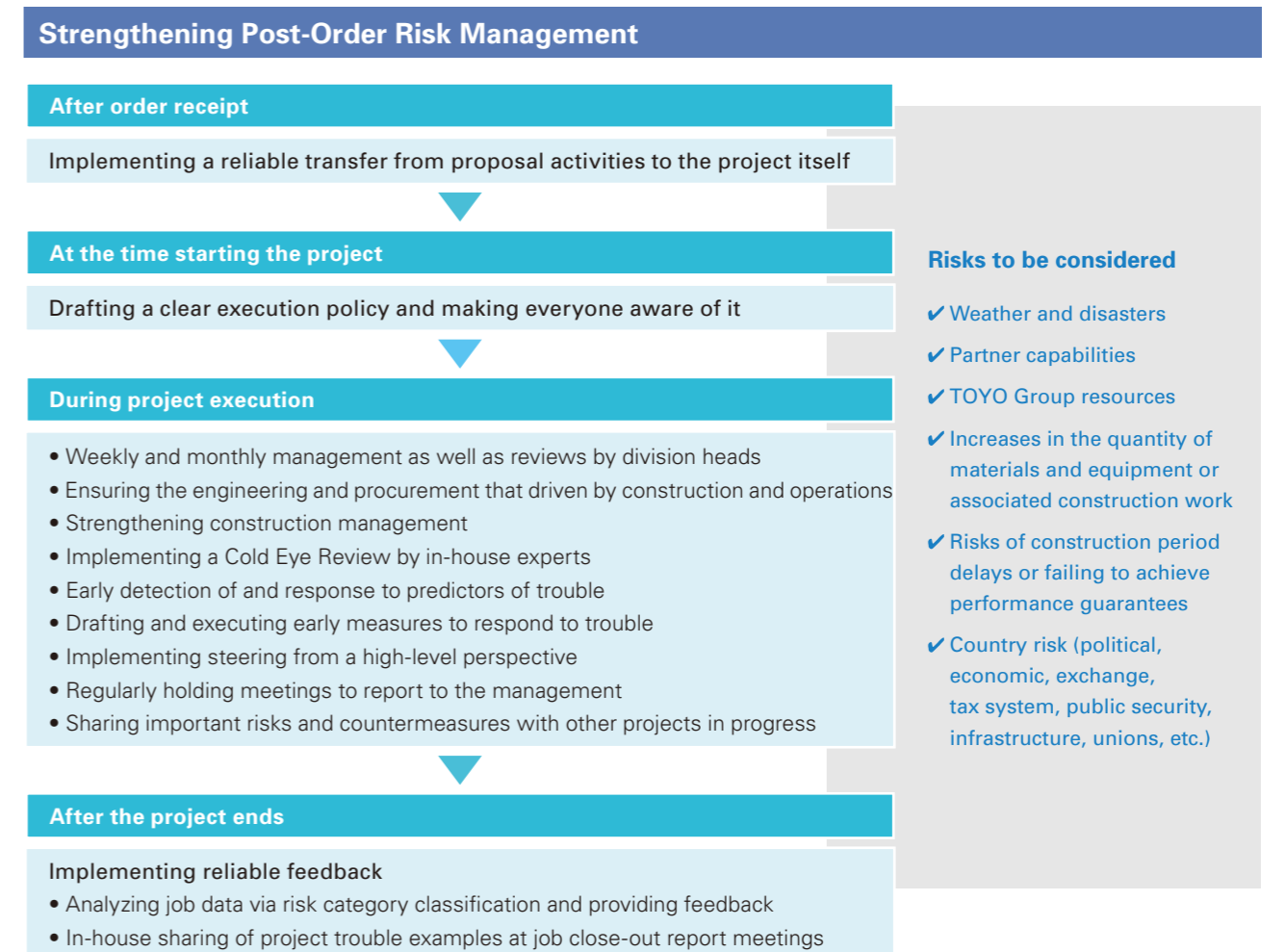
Strengthening Post-Order Risk Management

Recently, projects become more complex due to scaling up of plants and multi-base execution, leading to an increase in difficulty. When constructing plants, it is essential to procure an enormous amount of materials and equipment from around the world and mobilize a large number of site workers in line with the process with the cooperation of subcontractors. For this reason, a single delay in responding to a problem or a change in process due to a delay in the delivery of equipment can have a negative impact, causing delays or reworking of subsequent processes and make costs snowball. In other words, in plant construction projects, there is a risk that scale will increase costs with a multiplier effect. It is now necessary to not to use the method of managing the project based on the experience and expertise of experienced project managers, but leverage the power of IT to advance project management. Current TOYO initiatives can be broadly categorized into the following two points.

The first is DXoT. Projects are visualized by implementing

Project Twin using cutting-edge digital solutions. Even skilled workers with project experience cannot keep a hold on the entirety of the enormous amount of information at hand. To this end, we are working to build a system that can collect project information and display them on a dashboard and detect risk signs. It enables project managers to accurately understand the situation by using the data displayed on the dashboard and make decisions to proceed with countermeasures without delay. Currently, we have partially implemented this system on some projects, and we are working to strengthen our project risk management methods on a daily basis.

The second point is steadfastly implementing risk management of projects after receiving orders on a day-to-day basis. Projects are constantly changing, just like living beings. When managing projects, it is important to be thorough in exhaustively managing risks and taking action swiftly before the problem becomes large. This is the core of TOYO's project risk management.



Corporate Governance

Basic Approach

Toyo Engineering's mission is to contribute to the sustainability of the world and society through engineering, and we aim to achieve both sustainability as a company and improved corporate and shareholder value in the medium- to long-term. We are also working on fleshing out our corporate governance, which we consider the foundation for achieving the above.

More specifically, we are doing everything in our power to establish and run a corporate governance system, implement suitable risk-taking management, ensure thorough compliance, actively disclose information, and maintain a dialogue with our stakeholders.

Corporate Governance Structure and Initiatives to Strengthen Governance

Our Corporate Governance Structure is as follows.

We appoint Outside Directors who have high-level expertise and extensive experience in fields such as global corporate management, accounting/finance, HR/workforce, and legal/regulatory, and are able to take a birds-eye view of our entire management and provide objective and practical opinions and advice from the perspective of diverse stakeholders. In line with standards for independence of outside officers as prescribed by the Tokyo Stock Exchange, three of our four Outside Directors are Independent Officers. In FY2020, we newly appointed one female Director. Going forward, we will advance efforts to ensure the diversity of the Board of Directors, including aspects such as gender, internationali-

ty, career history, and age. Additionally, we appoint Outside Auditors who have high-level expertise and extensive experience in a variety of fields, and are able to take a birds-eye view of our entire management and appropriately audit the adequacy of Director's work and execution of operation.

TOYO considers the opinion of Outside Officers from the perspective of external stakeholders to be useful in ensuring the accountability of our corporate executives and securing transparency in management. We believe that the current system and its operation are effective in ensuring the effective functioning of corporate governance in light of the business content and structure of our company.

Corporate Governance Structure (as of July 1, 2021)

Form of organization	Company with an Audit & Supervisory Board
Adoption of an executive officer system	Yes
Number of Directors	9
Of which, Outside Directors:4 (Independent Officers: 3, Female: 1)	
Term of Directors	1 year
Number of Audit & Supervisory Board Members	4
Of which, Outside Audit & Supervisory Board Members:2 (Independent Officers:2)	

Number of Board of Directors meetings*	19
Number of Audit & Supervisory Board meetings*	20 (Outside Audit & Supervisory Board Members 100%)
Voluntary committee of the Board of Directors	Nomination and Remuneration Advisory Committee
Remuneration for Directors and Audit & Supervisory Board Members	Directors (excl. Outside Directors): fixed remuneration and performance-linked remuneration Outside Directors and Audit & Supervisory Board Members: fixed remuneration
Initiatives in Recent Years to Strengthen Governance	2015: Appointed Chief Compliance Officer (CCO) 2017: Established Nomination and Remuneration Advisory Committee 2018: Established Compliance Department
Audit firm	Ernst & Young ShinNihon LLC

*FY2020

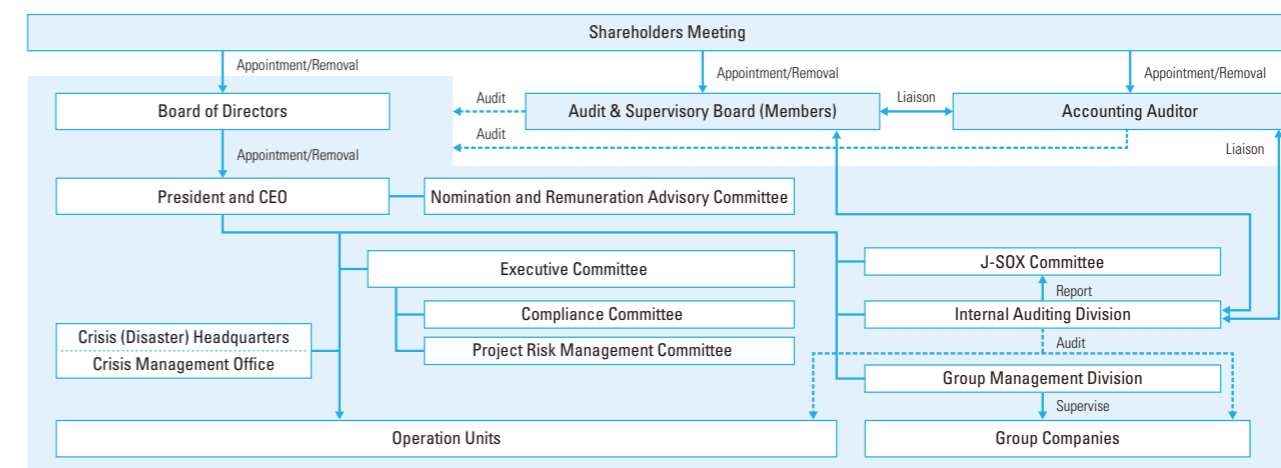
Corporate Governance System

TOYO recognizes the importance of ensuring transparency and fairness in management decision making in gaining the trust of its stakeholders, including shareholders and customers, and fulfilling our corporate social responsibilities. We have established the following corporate governance system and are working to further expand its operation.

The Board of Directors comprises eight Directors, including three Outside Directors, who deliberate and determine all important matters related to management and execution of operation, and also monitor and supervise one another with respect to the execution of duties. We also employ an executive officer system for the purpose of guaranteeing a swift and efficient business execution system. Executive Officers are appointed by the Board of Directors and, under the CEO's directions, execute the duties they have been delegated. The Executive

Committee serves as an advisory body to the President & CEO and consists of Executive Officers with specific roles (Senior Executive Officers or above) and the heads of key divisions. The Executive Committee reports on and deliberates important matters related to the execution of operation. The Nomination and Remuneration Advisory Committee also serves as an advisory body to the President & CEO—its members comprising the President & CEO and Outside Officers. The Committee serves to ensure fair and transparent officer appointments and remuneration by providing opinions to the President & CEO.

The Audit & Supervisory Board consists of four members, two of which are Outside Auditors. They report and deliberate on the execution of duties by Directors, the establishment and implementation of internal controls, internal audit guidelines for quarterly and year-end results, and the details and results of audits.



Auditing by Internal Auditing Division and Audit & Supervisory Board Members

TOYO has established an Internal Auditing Division that is directly controlled by the President. Internal Auditing Division assesses the legality and rationality of Company operations, and provides advice and counsel regarding the operational effectiveness and efficiency of the Company. Additionally, it independently assesses the maintenance and operation of internal controls related to financial reports, and these results are reported to the J-SOX Committee, the organization immediately under the President.

Audit & Supervisory Board Members audit Directors' execution of duties through attending important meetings, including those of the Board of Directors, interviewing Directors, Executive

Officers, and employees on the status of operations and the execution of duties, and investigating the progress of the Company's operations and finances.

The Audit & Supervisory Board, Accounting Auditors, and the Internal Auditing Division conduct their auditing in cooperation, while giving full consideration to the independence of one another. Auditing is implemented through close communication such as explaining the observations related to the Company's operations, and exchanging opinions on various topics including their respective yearly auditing plans and critical audit items, auditing methods, inspection and quality control systems, and audit results.

Internal Controls

Based on the recognition that internal controls serve as the foundation of corporate governance, the Directors establish, maintain, and evaluate an appropriate internal control system. They conduct ongoing inspections and make improvements to the system and periodically review their basic policy for internal controls. Given that internal controls ensure the reliability of

compliance, risk management, and financial reports, we also pay sufficient attention to the effectiveness and efficiency of operations. The establishment of this system enables the Board of Directors to make decisions based on appropriate information and subsequently, the execution of business.

Corporate Governance

Evaluation of Effectiveness of the Board of Directors

In order to improve the efficacy of the Board of Directors, TOYO regularly evaluates and analyses the Board of Directors and discloses a summary of the procedures and results thereof.

In December 2020, we conducted a survey of all of the Directors and Audit & Supervisory Board Members that make up the Board of Directors. The Board of Directors received a report of the results from the Director in charge of evaluating the efficacy of the Board of Directors. Analysis, discussion, and evaluation based on these results were conducted in the January 2021 regular Board of Directors meeting. Below are the main points of those results.

1. Points that received positive feedback to a certain extent

• The size, composition, and operational status of the Board of Directors

Evaluation was generally positive. It was confirmed that the Board of Directors is fulfilling its decision-making and supervisory functions for the execution of operation, and it was evaluated that the effectiveness of the Board of Directors as a whole is adequately secured.

• Operation to curb the impact of COVID-19

A certain amount of positive feedback was received for appropriate operation to minimize the effects of the COVID-19 pandemic thanks to efforts that had been promoted since

last year to distribute electronic copies of documents in advance and use online conference systems when necessary.

2. Points identified as areas for improvement

• Communication among directors, information sharing

Some said that opportunities for face-to-face meetings had fallen due to the pandemic, and mutual communication among directors was less frequent than before. In order to dynamize the discussion at the Board of Directors, efforts will be made to improve the operation, such as by providing documents at a more appropriate time and offering more platforms for active exchange of opinion.

• Debate about developing successors and further utilization of the Nomination and Remuneration Advisory Committee

Some said that there was room for continued improvement from the perspective of strengthening the supervisory function of the Board of Directors.

Going forward, initiatives will be conducted on an ongoing basis to adequately consider individual challenges, swiftly take action, and improve the function of the Board of Directors based on this evaluation of the efficacy of the Board of Directors.

Policies on Remuneration Amounts and Determining Calculation Methods for Directors and Audit & Supervisory Board Members

Remuneration for TOYO's Directors (excluding Outside Directors) is intended to be suitable, fair, and balanced and to increase their motivation to maximize the Company's corporate value while ensuring medium- to long-term profit for shareholders. More specifically, this remuneration consists of a fixed portion—determined according to each Director's position—and a performance-linked portion. The performance-linked remuneration is calculated based on the current net profit attributable to owners of the parent—which is considered the most suitable indicator that reflects the Group's business performance—and is determined by the President & CEO according to the level of contribution of each Director.

Furthermore, in order to set appropriate remuneration levels for Directors and Audit & Supervisory Board Members and strengthen accountability, the ratios for both fixed and performance-linked remuneration as well as the calculation formula for performance-linked remuneration shall be decided by the Board of Directors based on the findings of the Nomination and Remuneration Advisory Committee—which consists of the President & CEO and Outside Officers—after discussing any revisions deemed necessary by the President & CEO.

Remuneration for Outside Directors and Audit & Supervisory Board Members is fixed and not linked to business performance in light of their roles and independence.

(FY2020)

Officer Classification	Total Remuneration (¥ million)	Total Remuneration by Type (¥ million)		Number of Eligible Officers
		Fixed Remuneration	Performance-Linked Remuneration	
Directors (excluding Outside Directors)	89	89	—	6
Audit & Supervisory Board Members (excluding Outside Audit & Supervisory Board Members)	24	24	—	2
Outside Officers	36	36	—	8

Risk Management Initiatives

Corporate Ethics and Compliance Risk Management

TOYO has established a Code of Conduct, compliance manuals, and other related rules in order to abide by laws and regulations at the root of our corporate activities, as well as social justice and ethics. We have also established a Compliance Committee chaired by the Chief Compliance Officer (CCO), and we established a Compliance Department in April of 2018. In addition, we boost awareness, conduct promotional

activities, and strengthen the management and oversight of our compliance system through regular compliance-related audits performed by the internal auditing division and Audit & Supervisory Board Members. To facilitate the proper and serious handling of reporting on compliance matters, we have also established an internal reporting system as well as both internal and external hotlines for consultation and reporting.

Fiscal 2020 Compliance Risk Management Report	
Number of compliance e-Learning participants (for new recruits and employees yet to complete the program)	66
Total number of mini compliance test participants	2,298
Internal reporting/consultations	4 (power harassment: 2, labor/employment/moral-related: 2, legal violations/corruption: 0)

Bribery Risk Management

We are also working to enhance and expand our program for preventing the bribery of foreign public officials. In addition—to enable unified compliance activities throughout the TOYO Group—we are setting up a Compliance Committee at and

assigning a manager to each overseas group company, and we are building a system that enables them to regularly exchange opinions with Toyo-Japan's Compliance Department.

Information Security Risk Management

We regularly implement the initiatives below based on the ISO 27001 information security management standards. Our goal for our information security recognition test is a response rate of 100%, and we are strengthening our educational and awareness boosting activities.

- (1) Monitoring the operational status of information security management measures
- (2) Assessing and handling information security risks
- (3) Handling information security incidents
- (4) Information security education

Fiscal 2020 Information Security Management Report	
Number of serious information incidents	0

Investment Risks

We strive to mitigate the above risks with respect to the business operations of TOYO group companies we invest in by establishing a collaborative system whereby our group management division accurately understands and manages the situations of each group company. Regarding business operations conducted through our Brazilian equity method affiliate,

situations in which we are unable to guarantee corresponding returns on investment or where additional funding is needed due to changes in the political and economic climate of Brazil or credit problems with our business partners might negatively impact the earnings of the Group.

Three-way conversation: Sustainability and Governance



Tomohisa Abe

Chairman
(Chairman of the Board of Directors)



Noriyoshi Torigoe

Director, Senior Executive Officer
Chief Compliance Officer (CCO)



Yoshiyuki Funakoshi

Outside Auditor

Mr. Abe, Chairman (Chairman of the Board of Directors), Mr. Torigoe, CCO, and Mr. Funakoshi, Outside Auditor, talked about Sustainability and Governance, which will be important for TOYO's medium-term management plan.

The Board of Directors Holds High-level Discussions

Abe Currently, the Board of Directors consists of nine Directors (four Outside Directors, including three Independent Officers), and the overall balance of knowledge, experience, and capabilities is well balanced. In addition to active discussions based on the expertise of each Director and the check function exercised by the Outside Directors, in-depth discussions are held on sustainable growth and the improvement of corporate value over the medium- to long-term. Four Audit & Supervisory Board Members (including two Independent Officers) also attend the Board of Directors to monitor and confirm the appropriateness of the decision-making process for the execution of operation by the Board of Directors.

Funakoshi As you know, I am from the petrochemicals industry. So, naturally, I am expected to speak from a position with a background in the plant order side. I try to support the understanding and situational judgment of Outside Directors from different industries by asking questions on a case-by-case basis about unusual practices or generally unknown backgrounds and providing explanations. As a result, discussions with Outside Directors become more active, and we are working to ensure that the check function works more appropriately. In addition, I have also expressed my own frank opinions about what risks are hidden in the business characteristics of engineering companies and where I feel uncomfortable.

Torigoe The Board of Directors had active discussions on sustainable growth and medium- to long-term corporate value improvement in preparation for the formulation of our medium-term management plan. To create a company-wide vision of TOYO's future, we had heated discussions that drew on the expertise of Outside Directors in a wide range of fields such as global situation, policies aimed at by the Japanese government, intentions of the financial market, expectations

of other industries toward the plant engineering industry, issues for advanced technologies and social implementation, organizational theory, and human capital development.

Abe The assessment on the effectiveness of the Board of Directors is also conducted every year. Issues pointed out in the FY2020 report were to ensure high-quality proceedings even during the pandemic and to provide sufficient opportunities for in-depth discussions of management strategies, while limiting the length of proceedings. Measures are being taken to deal with each of these issues, for instance, the active discussion on the formulation of the medium-term management plan is the good example. From now on, we need to respond to the higher level of governance required of listed companies by the TSE Prime Market, including the revised Corporate Governance Code and Guidelines for Investors and Corporate Communications. To achieve this, we believe it is essential to provide explanations with visible stories of TOYO while specifically relating it to the business environment, management strategies, and management issues, rather than just formulating initiatives.

Torigoe Therefore, we need to increase the frequency of communication and opportunities for dialogue with our stakeholders so that they can gain a deeper understanding of our initiatives to achieve sustainable growth and improve our corporate value over the medium term. In addition to the financial results briefing, last year, the briefing on the medium-term management plan announced at the end of the fiscal year was also held online due to the COVID-19 pandemic. Therefore, archived videos of the briefings are available on our website.

The Key to Adapting to Change is Aggressive Governance

Funakoshi TOYO's risk management system and management cohesion have steadily improved after the bitter experience of the recent plant construction project. The territory of technical knowledge within the industry has changed drastically, as is pretty obvious when comparing the rise and growth period to now, wherein the plant engineering industry was the star business of the oil and gas era. Licensors own the key technology of the plant, while the basic equipment manufac-

turers possess the equipment technology. However, now that engineering methods and tools have become commonplace, there is little room for Japanese engineering companies to show their superiority in terms of cost and delivery, and we see the current situation as one in which the second mover contractors from emerging countries are catching up fast.

Abe I understand what Mr. Funakoshi has pointed out about the change in market structure. Global business competition continues to intensify, and the area that is becoming a red ocean is widening. This is why disciplined management, defined as governance and compliance, is getting more and more important. In fact, the major failure of the US ethylene project has strengthened our Defensive Governance and this has gradually been reflected in our business performance. The Board of Directors has been discussing new projects and projects over a certain size when making decisions, which has had a positive effect.

Torigoe With regard to Defensive Governance, we have positioned compliance as an important foundation for corporate internal controls, company-wide risk management, and governance, and have established a code of conduct, related regulations, and business manuals to ensure that compliance does not violate soft law or ethics. Furthermore, TOYO's mission is "Engineering for Sustainable Growth of the Global Community." Therefore, one of our materiality (Governance G) is "establish an organization with integrity and discipline," and we are working to spread this throughout the TOYO Group. However, I think we must consider there is no goal on governance. In terms of the further advanced group operations, which is the implementation policy for Strengthening EPC as set forth in the medium-term management plan, we will ensure the effectiveness of our global governance system, including local risk management, and improve the compliance system on a daily basis.

Funakoshi Nothing will come of it unless we act first. As Bismarck said, "A fool learns from his own experience, The wise man learns from history." However, we must not act without any vision. It is important to learn from the past, and furthermore, it is very important to "change history by accumulating experience in the organization, not in individuals." In addition, risk management tends to be emphasized as "minimizing losses," but only a defensive image is left in the mind. However, we are now faced with an opportunity to "change with the times." TOYO needs to change its way of thinking to Aggressive Risk Management to achieve medium- to long-term goals such as new businesses and business structure reform.

Torigoe As Mr. Funakoshi said, the risk is "the presence of uncertainty," so it can be a positive thing depending on strategy and management. We must take advantage of the changes in the external environment and the major trend shift toward carbon neutrality to improve our corporate value by taking action ourselves.

Abe Exactly as you mentioned, I believe that the key to adapting to change is Aggressive Governance, especially in green strategy. Outside Officer comprises a diverse human capital from industry, finance, government, academia, and the

legal profession. As such, the Board of Directors will support the execution of our strategy with Aggressive Governance by mobilizing all of its members' knowledge.

Sustainability Management at TOYO

Torigoe Starting in Europe, financial and capital markets have become widely sensitive to sustainability, and timely and appropriate information disclosure and dialogue with stakeholders are becoming more important not only for improving the quality of corporate governance but also for the relationship with financial and capital markets. On the other hand, the market approach is not always the same in response to common global issues such as carbon neutrality and energy shift, so the current situation and time frame in emerging countries are different from those in developed countries. We aim to become a vibrant TOYO by steadily implementing our medium-term management plan to meet the diverse needs of our customers, and earn the trust of our stakeholders to satisfy their expectations.

Funakoshi One definition of engineering is that I see it as a scientific and technological activity that brings together and integrates human wisdom across different knowledge to accomplish a certain task. Specifically, what is being mentioned is the efficient materialization of the infrastructure necessary for human social life, including energy and plant facilities, thereby creating a sustainable society. That is, I believe that the essence of engineering is Integration and then Materialization. Simply integrating is not enough. Integration that improves value and the ability to provide something extra to the customer's requirements is also required. Moreover, the entities are involved in multiple industries. Since there are multiple companies, including manufacturers, trading companies, and infrastructures, we believe that it is essential to know the roles and contents of each of entities to achieve valuable integration.

Needless to say, most of the value of an engineering company comes from its human capital. Thus I would like to keep saying that the driving force behind TOYO's sustainable growth is human capital, no matter how much the business environment changes. Based on this, we believe that the value of TOYO is to develop human capital with deep knowledge and understanding, along with a broad perspective, through appropriate education and practical experience, and to motivate them.

Abe My responsibility as Chairman of the Board of Directors is to contribute to TOYO's sustainable growth and the improvement of corporate value over the medium- to long-term. As you both pointed out, we will focus on adapting to changes in the external environment, monitoring the progress of the plan, and providing information disclosure and dialoguing with stakeholders, revising our plans as appropriate. And we will strive to support the strong implementation of TOYO's medium-term management plan by making full use of the knowledge of our members to realize "Aggressive Governance." Of course, the securing and development of human capital, TOYO's only asset and the future leaders, will be addressed as a top priority management issue.

Directors and Audit & Supervisory Board Members (As of July 1, 2021)



Tomohisa Abe
Chairman

Term of office for Directors	5 years
Attendance at Board of Directors meeting	19/19 (100%)

Reasons for appointment
Mr. Tomohisa Abe, having been engaged in the plant sales and marketing divisions of the Company for many years, possesses ample experience and deep insights related to planning sales and marketing strategies. Having served the Company as Representative Director, Senior Executive Director, and Unit Director of the Plant Business Unit, he had been engaged in supervising the overall sales activities of the Group. In addition, he assumed office as Chairman in April of 2020.

Message
Active discussions will ensure that the Board of Directors fulfills its function, which will strengthen the TOYO Group's effective governance system. Amid the changes in the socio-economic structures, the Board of Directors will strive to find solutions to social issues and improve TOYO's corporate value.



Haruo Nagamatsu
Representative Director,
President & Chief Executive Officer

Term of office for Directors	4 years
Attendance at Board of Directors meeting	19/19 (100%)

Reasons for appointment
Mr. Haruo Nagamatsu, having served the Company as Unit Director of the Infrastructure Business Unit, a representative of the Company's overseas subsidiaries, and as a project manager, possesses ample experience and deep insights related to project and corporate management. In addition, he assumed office as Representative Director and President & Chief Executive Officer in April of 2018.

Message
Based on our mission of "Engineering for Sustainable Growth of the Global Community," we will pursue transparent management and implement our medium-term management plan to both realize "an environmentally-friendly society" and "enrich people's lives."



Masayuki Yoshizawa
Representative Director,
Executive Vice President

Term of office for Directors	6 years
Attendance at Board of Directors meeting	19/19 (100%)

Reasons for appointment
Mr. Masayuki Yoshizawa, having served a general trading company for many years, possesses ample experience and deep insights related to the business of the Company, including investments and EPC businesses in energy and infrastructure fields and the management of overseas corporations. He assumed office as Executive Vice President in April of 2019, and engages in promoting business reform, procurement and crisis management divisions.

Message
We will achieve TOYO's Materiality, "People of diverse backgrounds engage in active, meaningful work" and "Establish an organization with integrity and discipline," to earn the trust of our stakeholders and realize our corporate slogan, "Your Success, Our Pride."



Masami Tashiro
Outside Director

Term of office for Directors	6 years
Attendance at Board of Directors meeting	18/19 (94.7%)

Reasons for appointment
Mr. Masami Tashiro has many years of international experience working at financial institutions and possesses ample experience and deep insights as a corporate manager.

Message
I will contribute to ensuring effective corporate governance by providing alternative perspectives from my outside director's point of view, and pursue flexible yet robust risk management required for an engineering company.



Reijiro Yamamoto
Outside Director

Term of office for Directors	2 years and 4 months
Attendance at Board of Directors meeting	19/19 (100%)

Reasons for appointment
Mr. Reijiro Yamamoto, who serves as the corporate manager of an investment fund management company and has served as the corporate manager of various business companies, possesses ample experience and deep insights related to finance and corporate management.

Message
It is important to develop a bold strategy and be detail-oriented in its implementation. TOYO has leaders who can implement a strategy on the front lines. I will call for measures that allow TOYO's leaders to fully demonstrate their leadership and deliver excellent results as a team.



Tatsuya Terazawa
Outside Director

Term of office for Directors	11 months
Attendance at Board of Directors meeting	12/12 (100%)

Reasons for appointment
Mr. Tatsuya Terazawa, having served in the Ministry of Economy, Trade and Industry (METI) for many years, possesses ample experience and deep insights related to public policies, mainly in terms of trade policy and trade promotion.

Message
Amidst the major global developments toward carbon neutrality, we will aim to contribute to a low-carbon society by transforming TOYO's business portfolio. Alongside this goal, the Board of Directors will engage in extensive discussions to realize appropriate risk management and strengthen DX.



Sayoko Miyairi
Outside Director

Term of office for Directors	11 months
Attendance at Board of Directors meeting	12/12 (100%)

Reasons for appointment
Ms. Sayoko Miyairi possesses ample business and management experience related to her consulting company work as well as professional knowledge and broad insight as a university professor.

Message
My expertise is transformation of corporate and organizational culture. Drawing on my knowledge, I will contribute to fostering a corporate culture that tackles challenges, improving teamwork and raising employee motivation, and realizing management that drives further growth.



Execution abilities of Directors and Audit & Supervisory Board Members

- 1 Global corporate management
- 2 Accounting / finance
- 3 HR / labor
- 4 Legal and regulatory
- 5 Technology / R&D
- 6 Project management
- 7 Sales marketing
- 8 Industry knowledge
- 9 Knowledge of other industries

Note) Numbers above mean specialized knowledge and experience held by Directors and Audit & Supervisory Board Members.



Noriyoshi Torigoe
Director, Senior Executive Officer,
Chief Compliance officer

Term of office for Directors	11 months
Attendance at Board of Directors meeting	12/12 (100%)

Reasons for appointment
Mr. Noriyoshi Torigoe has many years of experience working at a quasi-public lending institution, and he possesses ample experience and deep insights related to environment, energy, and infrastructure businesses. He assumed office as a Chief Compliance Officer in April of 2021, and engages in Internal Auditing Division and Safety, Quality and Environment Management Division.

Message
Through our constant efforts to address Materiality, we will build a relationship of trust with our stakeholders, bring dynamism to TOYO, and contribute to realizing a sustainable society and improving TOYO's corporate value.



Kensuke Waki
Director, Senior Executive Officer,
Chief Financial Officer

Term of office for Directors	3 years
Attendance at Board of Directors meeting	19/19 (100%)

Reasons for appointment
Mr. Kensuke Waki, having served the Company as the head of the finance and accounting divisions, possesses ample experience and deep insights related to finance and accounting. He assumed office as a Chief Financial Officer in April of 2017, and engages in managing projects and the management of the Company's finance and accounting divisions.

Message
We will create an environment that allows us to embrace the challenge toward Sustainable Technology and Business Development strategy. At the same time, we must thoroughly manage risk and maximize long-term profits while optimizing short-term profits. To this end, I will make every effort so that sound and appropriate decisions are made from a financial perspective.



Masayuki Uchida
Senior Audit & Supervisory Board Member

Term of office for Audit & Supervisory Board Member	5 years
Attendance at Board of Directors meeting	19/19 (100%)
Attendance at Audit & Supervisory Board meeting	20/20 (100%)

Reasons for appointment
Mr. Masayuki Uchida has been engaged in the Company's technology development and new technology-related business development for many years and assumed office as the head of the administration division. He possesses ample experience and deep insights related to technology, quality management, corporate management, and internal audits.

Message
Corporate governance will be at the heart of my activities. I will pay close attention to all internal conduct, including that of management, and contribute to the creation of an organization in which every employee works with pride and enthusiasm to achieve their mission.



Chihiro Ubukata
Audit & Supervisory Board Member

Term of office for Audit & Supervisory Board Member	2 years
Attendance at Board of Directors meeting	19/19 (100%)
Attendance at Audit & Supervisory Board meeting	20/20 (100%)

Reasons for appointment
Having spent many years working as the head of the Company's finance division, Mr. Chihiro Ubukata possesses ample experience and deep insights related to finance and accounting.

Message
I will make efforts so that TOYO's executives and employees can work toward realizing the goals of the medium-term management plan with a sense of fulfillment, while complying with laws, regulations, and company rules. Namely, we will create arrangements that enable this and ensure the effectiveness of operations at each TOYO Group company.



Yoshiyuki Funakoshi
Outside Audit & Supervisory Board Member

Term of office for Audit & Supervisory Board Member	6 years
Attendance at Board of Directors meeting	19/19 (100%)
Attendance at Audit & Supervisory Board meeting	20/20 (100%)

Reasons for appointment
Having spent many years in corporate management in the chemicals industry, which is closely related to our business, Mr. Yoshiyuki Funakoshi has wide-ranging experience and deep insights related to management.

Message
The discussions of the executives tend to become subjected to their logic. As someone from a different industry, I will keep in mind to point out any flaws and shortcomings during the discussions. I will support management in finding a proper balance between the brake and accelerator, which is essential for risk-taking, in order to move in the right direction.



Kiyohito Uchida
Outside Audit & Supervisory Board Member

Term of office for Audit & Supervisory Board Member	6 years
Attendance at Board of Directors meeting	19/19 (100%)
Attendance at Audit & Supervisory Board meeting	20/20 (100%)

Reasons for appointment
Mr. Kiyohito Uchida possesses ample experience and extensive knowledge gained as a lawyer.

Message
I will conduct audits to ensure that correct management decisions are made and that they are executed properly in compliance with the processes of investigation, examination, judgment, implementation, and check. Based on my experience as a legal professional, I will also make recommendations regarding risk management aspects and the creation of risk management systems.



Ten-Year Financial and Non-Financial Highlights

Toyo Engineering Corporation and Consolidated Subsidiaries
Years ended March 31

	2012/3	2013/3	2014/3	2015/3	2016/3	2017/3	2018/3*3	2019/3	2020/3	2021/3
Millions of yen										
Financial Highlights										
Net sales	157,881	228,723	230,124	311,454	299,813	431,917	335,697	294,993	219,094	184,000
Gross profit (loss)	24,918	24,200	25,155	17,214	30,513	15,971	(12,521)	10,636	18,765	18,557
Gross profit margin (%)	15.8	10.6	10.9	5.5	10.2	3.7	(3.7)	3.6	8.6	10.1
SG&A expenses	19,577	22,606	24,699	24,570	19,426	17,980	20,429	16,250	16,875	16,941
Operating income (loss)	5,341	1,593	455	(7,356)	11,087	(2,009)	(32,951)	(5,613)	1,890	1,615
Ordinary income (loss)	5,102	4,032	4,942	(25,280)	3,873	1,603	(27,821)	3,426	2,467	2,781
Profit (loss) attributable to owners of parent	3,728	1,457	967	(20,965)	3,038	1,472	(26,846)	(818)	1,664	814
Comprehensive income	2,597	3,178	4,088	(25,534)	8,492	1,066	(25,758)	(3,818)	(376)	4,097
New orders	269,188	290,444	365,137	470,369	443,537	116,790	309,325	298,052	187,054	122,895
Backlog of contracts	359,120	410,492	538,023	659,005	823,066	492,682	448,629	426,373	389,236	310,691
Total assets	222,415	240,694	257,480	261,609	321,836	317,089	251,861	239,694	208,719	218,255
Total net assets	69,265	71,091	74,831	44,979	51,036	51,331	25,176	36,357	35,980	40,077
Interest bearing debt ratio (%)	38,840	40,087	44,797	31,918	32,645	31,844	30,841	32,710	27,629	28,167
Net debt	(53,195)	(31,588)	(52,137)	(58,543)	(91,480)	(90,858)	(75,694)	(65,197)	(52,584)	(66,316)
Equity ratio (%)	30.1	28.9	28.5	17.2	15.8	16.2	10.0	15.1	17.2	18.3
Operating activities cash flows	5,710	(18,986)	21,244	(4,192)	46,376	18,984	(22,824)	(25,828)	(18,696)	17,753
Investing activities cash flows	(2,417)	(1,587)	(1,638)	9,587	(11,776)	(16,650)	6,386	1,354	7,980	(2,712)
Financing activities cash flows	102	(532)	3,167	(14,341)	1,099	(1,548)	(1,174)	16,768	(6,159)	(451)
Dividends per share (annual) (yen)	6.0	5.0	3.0	4.0	4.0	2.0	0.0	0.0	0.0	0.0
Earnings per share (EPS)*1 (yen)	97.15	37.99	25.23	(546.72)	79.24	38.42	(700.30)	(20.51)	28.40	13.91
Book value per share (BPS)*1 *2 (yen)	1,747.08	1,815.75	1,913.07	1,170.99	1,329.60	1,337.40	654.91	554.11	544.16	650.52
Price earnings ratio (PER)	20.3	53.8	93.9	—	18.5	36.3	—	—	11.4	56.2
Return on equity (ROE)	5.6	2.1	1.4	(35.9)	6.3	2.9	(70.3)	(2.7)	4.6	2.2
Non-Financial Highlights										
Number of employees*4	4,494	4,548	4,747	4,463	4,397	4,287	4,085	3,997	3,991	3,943
(Number of employees in Toyo-Japan)	1,055	1,026	1,037	1,084	1,092	1,035	1,030	973	998	968
Industrial waste recycling rate (Domestic construction sites)	93	71	95	99	96	96	96	91	91	90
Industrial waste volumes at the Head Office in Japan	149	155	160	138	166	148	141	129	95	58
Number of harmful substance leak accidents (Domestic/overseas construction sites)	0	0	0	0	0	0	0	0	0	0
Lost Time Incident Rate (LTIR)*5	0.09	0.09	0.07	0.08	0.07	0.06	0.05	0.11	0.06	0.07
Total Recordable Incident Rate (TRIR)*6	0.24	0.22	0.22	0.22	0.21	0.49	0.46	0.37	0.30	0.51

*1 The company conducted a one-for-five reserve stock split of common shares effective October 1, 2017. The figures for "Book value per share (BPS)" and "Earnings per share (EPS)" have been calculated on the assumption that the stock split had been conducted at the beginning of the fiscal year ended March 31, 2012.

*2 Upon calculation of "Book value per share (BPS)", Residual assets attributable to class A preferred stocks is deducted from total net assets.

*3 The company applied "Partial Amendments to Accounting Standard for Tax Effect Accounting" (The Accounting Standards Board of Japan ("ASBJ") Statement No. 28, February 16, 2018), etc. from the beginning of the fiscal year ended March 31, 2019. The figures for the fiscal year ended March 31, 2018 is based on retrospective application.

*4 Excluding temporary employees

*5 Lost Time Incident Rate (LTIR) = Total Lost Time Incidents × 1,000,000 / Employee-Worked Man-Hours

*6 Total Recordable Incident Rate (TRIR) = Number of Recordable Incidents × 1,000,000 / Employee-Worked Man-Hours

Financial Section Consolidated Financial Statements

Consolidated Balance Sheets

Toyo Engineering Corporation and Consolidated Subsidiaries As of March 31, 2021 and 2020

Assets	Millions of yen		Thousands of U.S. dollars (Note 1)
	2021	2020	2021
Current assets:			
Cash and deposits (Note 14)	¥ 97,609	¥ 81,989	\$ 881,663
Notes receivable, accounts receivable from completed construction contracts and other	51,069	55,130	461,286
Costs on uncompleted construction contracts (Note 7)	18,475	19,391	166,877
Accounts receivable-other	4,218	7,138	38,099
Deposits paid	5,005	6,236	45,208
Forward exchange contracts	2,393	422	21,615
Other	16,715	18,188	150,980
Allowance for doubtful accounts	(1,114)	(692)	(10,062)
Total current assets	194,373	187,804	1,755,695
Property, plant and equipment:			
Buildings and structures (Note 4)	14,428	14,510	130,322
Machinery, vehicles, tools, furniture and fixtures	5,190	5,031	46,879
Land (Note 4)	6,209	6,264	56,083
Leased assets	1,913	1,120	17,279
Construction in progress	27	19	243
Accumulated depreciation and impairment loss	(16,131)	(15,429)	(145,704)
Total property, plant and equipment	11,638	11,517	105,121
Intangible assets:			
Other	1,792	1,338	16,186
Total intangible assets	1,792	1,338	16,186
Investments and other assets:			
Investments in securities (Notes 3, 17)	2,658	2,842	24,008
Long-term loans receivable	4,602	4,598	41,568
Net defined benefit asset (Note 19)	3,391	—	30,629
Deferred income taxes (Note 20)	526	480	4,751
Other (Notes 3, 4)	3,829	4,701	34,585
Allowance for doubtful accounts	(4,557)	(4,563)	(41,161)
Total investments and other assets	10,450	8,059	94,390
Total non-current assets	23,881	20,914	215,707
Total assets	¥ 218,255	¥ 208,719	\$ 1,971,411

See notes to consolidated financial statements.

Liabilities and Net Assets:	Millions of yen		Thousands of U.S. dollars (Note 1)
	2021	2020	2021
Current liabilities:			
Notes payable, accounts payable for construction contracts and other	¥ 72,555	¥ 64,053	\$ 655,360
Short-term loans payable (Notes 4, 8)	10,613	17,008	95,863
Income taxes payable	693	554	6,259
Advances received on uncompleted construction contracts	61,138	64,193	552,235
Provision for bonuses	533	459	4,814
Provision for warranties for completed construction	18	158	162
Provision for loss on construction contracts (Note 11)	359	349	3,242
Provision for loss on guarantees	45	—	406
Forward exchange contracts	156	1,027	1,409
Other	7,078	7,866	63,932
Total current liabilities	153,193	155,672	1,383,732
Non-current liabilities:			
Long-term loans payable (Notes 4, 8)	16,419	9,964	148,306
Lease obligations	718	388	6,485
Deferred income taxes (Note 20)	4,309	2,408	38,921
Net defined benefit liability (Note 19)	1,213	1,950	10,956
Provision for losses on business of subsidiaries and affiliates	389	390	3,513
Other	1,934	1,964	17,469
Total non-current liabilities	24,984	17,066	225,670
Total liabilities	178,177	172,739	1,609,402
Contingent liabilities (Note 5)			
Net assets:			
Shareholders' equity:			
Capital stock (Note 13)	18,198	18,198	164,375
Capital surplus	4,567	4,567	41,251
Retained earnings	14,677	13,862	132,571
Treasury stock, at cost	(446)	(445)	(4,028)
Total shareholders' equity	36,997	36,182	334,179
Accumulated other comprehensive income:			
Valuation difference on available-for-sale securities	(128)	(425)	(1,156)
Deferred gains (losses) on hedges	1,495	(764)	13,503
Foreign currency translation adjustments	(525)	1,687	(4,742)
Remeasurements of defined benefit plans	2,096	(820)	18,932
Total accumulated other comprehensive income	2,938	(323)	26,537
Non-controlling interests	142	121	1,282
Total net assets	40,077	35,980	361,999
Total liabilities and net assets	¥ 218,255	¥ 208,719	\$ 1,971,411

Consolidated Statements of Income

Toyo Engineering Corporation and Consolidated Subsidiaries Years ended March 31, 2021 and 2020

	Millions of yen		Thousands of U.S. dollars (Note 1)
	2021	2020	2021
Net sales	¥ 184,000	¥ 219,094	\$ 1,661,999
Cost of sales (Note 11)	165,443	200,328	1,494,381
Gross profit	18,557	18,765	167,618
Selling, general and administrative expenses (Notes 9, 10)	16,941	16,875	153,021
Operating income	1,615	1,890	14,587
Non-operating income:			
Interest income	613	1,012	5,536
Dividends income	221	53	1,996
Foreign exchange gains, net	285	—	2,574
Equity in earnings of affiliates	632	1,451	5,708
Miscellaneous income	386	632	3,486
Total non-operating income	2,140	3,149	19,329
Non-operating expenses:			
Interest expenses	421	422	3,802
Foreign exchange losses, net	—	1,908	—
Loss on valuation of investments in securities	155	—	1,400
Miscellaneous expenses	396	241	3,576
Total non-operating expenses	973	2,572	8,788
Ordinary income	2,781	2,467	25,119
Extraordinary income:			
Gain on sales of investments in capital	—	1,857	—
Gain on sales of shares of an affiliate	—	116	—
Total extraordinary income	—	1,973	—
Profit before income taxes	2,781	4,441	25,119
Income taxes (Note 20):			
Income taxes	1,686	2,036	15,228
Income taxes-deferred	265	724	2,393
Total income taxes	1,952	2,760	17,631
Net income	829	1,681	7,488
Net income attributable to:			
Non-controlling interests	14	16	126
Owners of parent	¥ 814	¥ 1,664	\$ 7,352

See notes to consolidated financial statements.

Consolidated Statements of Comprehensive Income (Loss)

Toyo Engineering Corporation and Consolidated Subsidiaries Years ended March 31, 2021 and 2020

	Millions of yen		Thousands of U.S. dollars (Note 1)
	2021	2020	2021
Net income	¥ 829	¥ 1,681	\$ 7,488
Other comprehensive income (loss) (Note 12)			
Valuation difference on available-for-sale securities	297	(302)	2,682
Deferred gains on hedges	2,260	698	20,413
Foreign currency translation adjustments	(462)	(788)	(4,173)
Remeasurements of defined benefit plans	2,917	(1,221)	26,348
Share of other comprehensive loss of affiliates accounted for by the equity method	(1,744)	(444)	(15,752)
Total other comprehensive income (loss)	3,268	(2,057)	29,518
Comprehensive income (loss)	¥ 4,097	¥ (376)	\$ 37,006
Comprehensive income (loss) attributable to:			
Owners of parent	4,076	(381)	36,816
Non-controlling interests	20	4	180

See notes to consolidated financial statements.

Consolidated Statements of Changes in Net Assets

Toyo Engineering Corporation and Consolidated Subsidiaries Years ended March 31, 2021 and 2020

	Millions of yen											
	Capital stock	Capital surplus	Retained (deficit) earnings	Treasury stock, at cost	Total shareholders' equity	Valuation difference on available-for-sale securities	Deferred losses on hedges	Foreign currency translation adjustments	Remeasurements of defined benefit plans	Total accumulated other comprehensive income	Non-controlling interests	Total net assets
Balance as of April 1, 2019	¥ 18,198	¥ 25,749	¥ (8,984)	¥ (445)	¥ 34,519	¥ (123)	¥ (1,463)	¥ 2,908	¥ 400	¥ 1,722	¥ 116	¥ 36,357
Transfer to retained earnings from capital surplus		(21,182)	21,182		—							—
Net income attributable to owners of parent			1,664		1,664							1,664
Purchase of treasury stock				(0)	(0)							(0)
Net changes of items other than shareholders' equity					—	(302)	698	(1,220)	(1,221)	(2,045)	4	(2,040)
Balance as of March 31, 2020	¥ 18,198	¥ 4,567	¥ 13,862	¥ (445)	¥ 36,182	¥ (425)	¥ (764)	¥ 1,687	¥ (820)	¥ (323)	¥ 121	¥ 35,980

	Millions of yen											
	Capital stock	Capital surplus	Retained earnings	Treasury stock, at cost	Total shareholders' equity	Valuation difference on available-for-sale securities	Deferred (losses) gains on hedges	Foreign currency translation adjustments	Remeasurements of defined benefit plans	Total accumulated other comprehensive income	Non-controlling interests	Total net assets
Balance as of April 1, 2020	¥ 18,198	¥ 4,567	¥ 13,862	¥ (445)	¥ 36,182	¥ (425)	¥ (764)	¥ 1,687	¥ (820)	¥ (323)	¥ 121	¥ 35,980
Net income attributable to owners of parent			814		814							814
Purchase of treasury stock				(0)	(0)							(0)
Net changes of items other than shareholders' equity					—	297	2,260	(2,212)	2,917	3,262	20	3,283
Balance as of March 31, 2021	¥ 18,198	¥ 4,567	¥ 14,677	¥ (446)	¥ 36,997	¥ (128)	¥ 1,495	¥ (525)	¥ 2,096	¥ 2,938	¥ 142	¥ 40,077

	Thousands of U.S. dollars (Note 1)											
	Capital stock	Capital surplus	Retained earnings	Treasury stock, at cost	Total shareholders' equity	Valuation difference on available-for-sale securities	Deferred (losses) gains on hedges	Foreign currency translation adjustments	Remeasurements of defined benefit plans	Total accumulated other comprehensive income	Non-controlling interests	Total net assets
Balance as of April 1, 2020	\$ 164,375	\$ 41,251	\$ 125,210	\$ (4,019)	\$ 326,817	\$ (3,838)	\$ (6,900)	\$ 15,238	\$ (7,406)	\$ (2,917)	\$ 1,092	\$ 324,993
Net income attributable to owners of parent			7,352		7,352							7,352
Purchase of treasury stock				(0)	(0)							(0)
Net changes of items other than shareholders' equity					—	2,682	20,413	(19,980)	26,348	29,464	180	29,654
Balance as of March 31, 2021	\$ 164,375	\$ 41,251	\$ 132,571	\$ (4,028)	\$ 334,179	\$ (1,156)	\$ 13,503	\$ (4,742)	\$ 18,932	\$ 26,537	\$ 1,282	\$ 361,999

See notes to consolidated financial statements.

Consolidated Statements of Cash Flows

Toyo Engineering Corporation and Consolidated Subsidiaries Years ended March 31, 2021 and 2020

	Millions of yen		Thousands of U.S. dollars (Note 1)
	2021	2020	2021
Cash flows from operating activities:			
Profit before income taxes	¥ 2,781	¥ 4,441	\$ 25,119
Depreciation and amortization	1,508	1,442	13,621
Amortization of goodwill	(10)	(10)	(90)
Increase in allowance for doubtful accounts	416	14	3,757
Decrease in net defined benefit liability	(292)	(6)	(2,637)
Increase (decrease) in provision for loss on construction contracts	14	(1,793)	126
Interest and dividends income	(834)	(1,065)	(7,533)
Interest expenses	421	422	3,802
Foreign exchange (gains) losses	(609)	373	(5,500)
(Gain) loss on sales of property, plant and equipment	(16)	0	(144)
Equity in earnings of affiliates	(632)	(1,451)	(5,708)
Loss on valuation of investments in securities	155	—	1,400
Gain on sales of shares of an affiliate	—	(116)	—
Gain on sales of investment in capital	—	(1,857)	—
Decrease in notes receivable, accounts receivable from completed construction contracts	4,329	11,380	39,102
Decrease in costs on uncompleted construction contracts	1,022	6,561	9,231
Decrease (increase) in accounts receivable-other	2,270	(806)	20,504
Increase (decrease) in notes and accounts payable-trade	8,549	(17,470)	77,219
Decrease in advances received on uncompleted construction contracts	(3,048)	(4,158)	(27,531)
Decrease (increase) in deposits paid	1,231	(5,395)	11,119
Other, net	681	(6,883)	6,151
Subtotal	17,937	(16,380)	162,017
Interest and dividends income received	1,195	1,079	10,793
Interest expenses paid	(356)	(349)	(3,215)
Income taxes paid	(1,022)	(3,045)	(9,231)
Net cash provided by (used in) operating activities	17,753	(18,696)	160,355
Cash flows from investing activities:			
Net (increase) decrease in time deposits	(1,340)	1,721	(12,103)
Purchase of property, plant and equipment	(388)	(464)	(3,504)
Proceeds from sales of property, plant and equipment	59	18	532
Purchase of intangible assets	(890)	(660)	(8,039)
Proceeds from sales of shares of an affiliate	—	3,081	—
Proceeds from sales of investments in capital	—	4,255	—
Net decrease (increase) in short-term loans receivable	2	(3)	18
Other, net	(155)	32	(1,400)
Net cash (used in) provided by investing activities	(2,712)	7,980	(24,496)
Cash flows from financing activities:			
Net decrease in short-term loans payable	(4,401)	(1,088)	(39,752)
Proceeds from long-term loans payable	14,682	900	132,616
Repayment of long-term loans payable	(10,236)	(5,459)	(92,457)
Repayment of finance lease obligations	(495)	(511)	(4,471)
Other, net	(0)	(0)	(0)
Net cash used in financing activities	(451)	(6,159)	(4,073)
Effect of exchange rate change on cash and cash equivalents	(318)	(818)	(2,872)
Net increase (decrease) in cash and cash equivalents	14,270	(17,694)	128,895
Cash and cash equivalents at beginning of period	80,213	97,907	724,532
Cash and cash equivalents at end of period (Note 14)	¥ 94,483	¥ 80,213	\$ 853,427

See notes to consolidated financial statements.

Notes to Consolidated Financial Statements

Toyo Engineering Corporation and Consolidated Subsidiaries

1. BASIS OF PREPARATION

Toyo Engineering Corporation (the "Company") and its domestic consolidated subsidiaries maintain their accounting records and prepare their financial statements in accordance with accounting principles generally accepted in Japan, and its foreign consolidated subsidiaries maintain their books of account in conformity with those of their respective countries of domicile. The accompanying consolidated financial statements have been compiled from the accounts prepared by the Company in accordance with the provisions set forth in the Financial Instruments and Exchange Law of Japan and with accounting principles generally accepted in Japan, which are different in certain respects as to the application and disclosure requirements of International Financial Reporting Standards.

For the convenience of readers, the accompanying consolidated financial statements and the relevant notes have also been presented in U.S. dollars by translating all Japanese yen amounts at the exchange rate of ¥110.71 to U.S.\$1.00 prevailing on March 31, 2021.

As permitted, amounts of less than one million yen have been omitted. As a result, the totals shown in the accompanying consolidated financial statements (both yen and in U.S. dollars) do not necessarily agree with the sum of the individual amounts.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

(a) Principles of Consolidation

The accompanying consolidated financial statements include the accounts of the Company and its significant subsidiaries. Investments in significant affiliates are accounted for by the equity method. As of March 31, 2021, the numbers of consolidated subsidiaries and affiliates accounted for by the equity method were 13 and 4, respectively.

Toyo Engineering Korea Limited, Toyo Engineering Corporation (China) and 5 other subsidiaries are consolidated using their financial statements as of their respective fiscal year end, which falls on December 31, and necessary adjustments are made to their financial statements to reflect any significant transactions from January 1 to March 31. Intercompany accounts and transactions are eliminated in consolidation. The difference between the acquisition cost and the equity in the net assets at the time of acquisition is amortized in principle within 20 years on a straight-line basis.

(b) Securities

All debt and equity securities other than equity securities issued by subsidiaries and affiliates are classified into one of three categories: trading, held-to-maturity or available-for-sale securities. Trading securities are bought and held principally for the purpose of selling them in the near term. Held-to-maturity securities are those securities which the Company and its consolidated subsidiaries have the ability and intent to hold until maturity. All securities not included in trading or held-to-maturity are classified as available-for-sale securities.

Trading securities are recorded at fair value. Held-to-maturity securities are recorded at amortized cost, adjusted for the amortization or accumulation of premiums or discounts. Unrealized gains or losses on trading securities are included in earnings. Other securities classified as available-for-sale securities are recorded at fair value with changes in unrealized holding gain or loss, net of the applicable income taxes, included directly in net assets. Non-marketable securities classified as available-for-sale securities are recorded at cost.

Cost of securities sold is determined by the moving-average method.

(c) Derivative Financial Instruments

The Company and certain consolidated subsidiaries enter into various derivative transactions in order to manage certain risk arising from adverse fluctuations in foreign currency exchange rates and interest rates. Derivative financial instruments are carried at fair value with changes in unrealized gain or loss charged or credited to operations, except for those which meet the criteria for deferral hedge accounting under which unrealized gain or loss is deferred as a component of net assets.

Deferral hedge accounting is adopted for derivatives which qualify for hedge accounting, under which unrealized gain or loss is deferred. Hedging instruments are derivative transactions such as foreign exchange forward contract, currency option, currency swap and interest rate swap, and hedged items are primarily forecast sales and costs denominated in foreign currencies, and receivables and payables denominated in foreign currencies. Hedge effectiveness is not assessed if the substantial terms and conditions of the hedging instruments and the hedged forecasted transactions are the same. The Company and its consolidated subsidiaries manage derivative transactions in accordance with their internal "Policies and Procedures for Risk Management".

(d) Costs on Uncompleted Construction Contracts

Costs on uncompleted construction contracts are stated at cost, determined by the identified-cost method.

(e) Depreciation and Amortization

Depreciation of property, plant and equipment is principally computed by the declining-balance method based on the estimated useful lives of the assets. However, buildings acquired on or after April 1, 1998, and facilities attached to buildings and structures acquired on or after April 1, 2016 are depreciated on a straight-line method.

The useful lives of property, plant and equipment are as follows:

Buildings and structures	: 3 to 50 years
Machinery, vehicles, tools, furniture and fixtures	: 2 to 20 years

Amortization of intangible assets of the Company and its consolidated subsidiaries is calculated principally by the straight-line method. Software for internal use is amortized on a straight-line method 5 years of the estimated available period.

(f) Leases

Depreciation of assets under finance leases which do not transfer ownership of the leased assets to the lessee is calculated by the straight-line method over the lease period with the residual value estimated at zero.

In addition, foreign consolidated subsidiaries adopted International Financial Reporting Standard ("IFRS") 16 "Leases". Accordingly, the subsidiaries, as lessees, account for all leases on the balance sheet, in principle, and depreciation of leased assets is calculated based on the straight-line method.

(g) Allowance for Doubtful Accounts

The Company and its consolidated subsidiaries have provided an allowance for doubtful accounts at an estimated amount of probable and reasonably possible bad debts and an estimated amount computed on the actual percentage of credit losses.

(h) Provision for Bonuses

Provision for bonuses to employees is provided at the expected payment amount for the fiscal year.

(i) Provision for Warranties for Completed Construction

Provision for warranties for completed construction is provided based on past experience.

(j) Provision for Loss on Construction Contracts

Provision for loss on construction contracts is provided in case the material loss is expected for a certain large-scale contract work.

(k) Provision for Loss on Guarantees

Provision for loss on guarantees is provided based on the financial position of the guaranteed entity.

(l) Provision for Losses on Business of Subsidiaries and Affiliates

Provision for losses on business of subsidiaries and affiliates is provided based on the financial position of the subsidiaries and affiliates.

(m) Retirement Benefits

Net defined benefit liability at year-end is stated based on the fair value of plan assets and the projected benefit obligation.

As to calculation of the projected benefit obligation, the expected benefit payments at the year-end have been recorded mainly at the amount calculated based on benefit formula.

Actuarial gain or loss is amortized by the straight-line method within the average of the estimated remaining service years of the employees (over 9 years) in the year following the year of recognition.

Unamortized actuarial gain or loss is provided with tax effect as a component of remeasurements of defined benefit plans under accumulated other comprehensive income of net assets.

(n) Foreign Currency Translation

Both short-term and long-term receivables and payables in foreign currencies are translated at the rates of exchange in effect at the balance sheet date and differences arising from the translation of these accounts are credited or charged to profit or loss.

The balance sheet accounts of the consolidated foreign subsidiaries are translated at the rates of exchange in effect at the balance sheet date, except for capital stock and capital surplus, which are translated at their historical exchange rates. Revenues, expenses and net income for the year are translated at the rates of exchange in effect at the balance sheet date. Differences arising from translation of the accounts of foreign subsidiaries and affiliates are presented as "Foreign currency translation adjustments" and "Non-controlling interests" in the accompanying consolidated balance sheets.

(o) Recognition of Revenues

Revenues and costs of construction contracts of which the percentage of completion can be reliably estimated, are recognized by the percentage-of-completion method. The percentage of completion is calculated at the cost incurred as a percentage of the estimated total cost. The completed-contract method continues to be applied for contracts for which the percentage of completion cannot be reliably estimated.

(p) Cash and Cash Equivalents

For the purposes of the consolidated statements of cash flows, the Company and its consolidated subsidiaries consider all highly liquid investments with insignificant risk of changes in value purchased with an original maturity of 3 months or less to be cash equivalents.

(q) Consumption Taxes

Transactions subject to consumption taxes are recorded at amounts exclusive of consumption taxes.

(r) Consolidated Tax Return System

The Company files a consolidated tax return with domestic its fully-owned subsidiaries.

(Adoption of Tax Effect Accounting for the Transition from Consolidated Taxation System to the Group Tax Sharing System)

With respect to items subject to the review of the Non-Consolidated Taxation System conducted to coincide with transition from the Consolidated Taxation System to the Group Tax Sharing System, established under the Act on Partial Revision of the Income Tax Act, etc. (Act No.8 of 2020), the Company and its certain domestic consolidated subsidiaries have not applied the provision of Paragraph 44 of "Implementation Guidance on Tax Effect Accounting" (Accounting Standards Board of Japan ("ASBJ") Guidance No.28, February 16, 2018) in accordance with the treatment set out in Paragraph 3 of "Practical Solution on the Treatment of Tax Effect Accounting for the Transition from the Consolidated Taxation System to the Group Tax Sharing System" (ASBJ Practical Issues Task Force No.39, March 31, 2020) and the amounts of deferred tax assets and deferred tax liabilities are based on the provisions of tax laws in effect before the revision.

(s) Advances Received on Uncompleted Construction Contracts

Advances received on uncompleted construction contracts from customers are shown as a liability, not as a deduction from the amount of costs on uncompleted construction contracts.

(t) Income Taxes

Deferred tax assets and liabilities are determined based on the differences between carrying amounts of existing assets and liabilities in the financial statements and their respective tax bases. Deferred tax assets and liabilities are measured using the enacted tax rates and laws which will be in effect when the differences are expected to be reversed.

(u) Research and Development Costs

Research and development costs are charged to income when incurred.

(v) Additional Information

(Significant Accounting Estimates)

1. Revenue recognition based on the percentage-of-completion method

1) The amount of revenue recognized by the percentage-of-completion method in the consolidated statement of income for the fiscal year ended March 31, 2021.

	Millions of yen	Thousands of U.S. dollars
Year ended March 31,	2021	2021
Net sales	¥ 167,021	\$ 1,508,635

2) Information of significant accounting estimates related to identified items

The Company and its consolidated subsidiaries recognize revenue using the percentage-of-completion method when revenue and costs of construction contracts of which the percentage of completion can be reliably estimated.

Total cost of contracts is estimated based on key assumptions and the progress till the fiscal year end. Those assumptions include estimated unit price, quantity, process, man-hours, etc. based on quotations from suppliers and sub-contractors and involve past experience. In addition, the Company and its consolidated subsidiaries set the assumptions based on the contract details.

The Company and its consolidated subsidiaries recognized additional costs based on the assumptions that the impact of spread of COVID-19 will not deteriorate significantly in the future, and the business environment surrounding the Company and its group companies will improve gradually from the fiscal year ending March 31, 2022.

Accordingly, changes in the estimated total cost by the occurrence of unexpected risk events and changes in estimates may affect business results for the fiscal year ending March 31, 2022.

2. Valuation of deferred tax assets

1) The amount of deferred tax assets

See "20. INCOME TAXES."

2) Information on significant accounting estimates related to identified items

The Company and its consolidated subsidiaries recorded a valuation allowance of ¥24,053 million (\$217,261 thousand) for deferred tax assets as of March 31, 2021 mainly for deferred tax assets attributable to the Company and certain of its domestic consolidated subsidiaries that apply the Group Tax Sharing System.

The Company and its certain domestic consolidated subsidiaries make accounting estimates to determine the recoverability of deferred tax assets. This estimate is based on the expected taxable income for the year ending March 31, 2022, which incorporates downside risks such as the occurrence of risk events in ongoing projects and delays in awards of future expected projects.

Accordingly, the reversal of the valuation allowance as a result of increase in future profitability and considering relevant qualitative factors and uncertainties may affect consolidated business results of the fiscal year ending March 31, 2022.

(Accounting Standards Issued But Not Yet Effective)

Accounting Standard for Revenue Recognition (ASBJ Statement No. 29, March 31, 2020)

Implementation Guidance on Accounting Standard for Revenue Recognition (ASBJ Guidance No. 30, March 26, 2021)

(1) Overview

The accounting standard and implementation guidance mainly focus on the recognition of revenue and cash flows arising from contracts with customers. Revenue is recognized by applying the following five-step model.

Step 1: Identify the contract

Step 2: Identify performance obligations

Step 3: Determine the transaction price

Step 4: Allocate the transaction price to performance obligations

Step 5: Recognize revenue based on progress of performance obligations

(2) Planned date of application

The above accounting standard and implementation guidance are scheduled to be applied from the beginning of the fiscal year ending March 31, 2022.

(3) Effects of application of the accounting standard and the implementation guidance

At present, the Company is in the process of evaluating the impact on the consolidated financial statements from the adoption of the accounting standard and implementation guidance.

Accounting Standard for Fair Value Measurement (ASBJ Statement No. 30, July 4, 2019)

Implementation Guidance on Accounting Standard for Fair Value Measurement (ASBJ Guidance No. 31, July 4, 2019)

Accounting Standard for Measurement of Inventories (ASBJ Statement No. 9, July 4, 2019)

Accounting Standard for Financial Instruments (ASBJ Statement No. 10, July 4, 2019)

Implementation Guidance on Disclosures about Fair Value of Financial Instruments (ASBJ Guidance No. 19, March 31, 2020)

(1) Overview

ASBJ developed "Accounting Standard for Fair Value Measurement" and "Implementation Guidance on Accounting Standard for Fair Value Measurement" and established the guidance defines the fair value measurement method, to improve the international comparability of accounting standards. These accounting standards and implementation guidance will be adopted for the fair values of the following items.

—Financial instruments defined in "Accounting Standard for Financial Instruments"

—Inventories held for trading purposes defined in "Accounting Standard for Measurement of Inventories"

In addition, revised "Implementation Guidance on Disclosures about Fair Value of Financial Instruments" requires to disclose the breakdown of financial instruments by level of their fair values.

(2) Planned date of application

The above accounting standards and implementation guidance are scheduled to be applied from the beginning of the fiscal year ending March 31, 2022.

(3) Effects of application of the accounting standards and implementation guidance

At present, the Company is in the process of evaluating the impact on the consolidated financial statements from the adoption of the accounting standards and implementation guidance.

(Changes in Presentation)

(Adoption of Accounting Standard for Disclosure of Accounting Estimates)

Effective from the end of the fiscal year ended March 31, 2021, the Company adopted Accounting Standard for Disclosure of Accounting Estimates (ASBJ Statement No. 31, March 31, 2020). Therefore, the Company presented information related to significant accounting estimates in the notes to the consolidated financial statements.

However, comparative information for the fiscal year ended March 31, 2020 has not been disclosed in "Note 2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES, (v) Additional Information" in accordance with the transitional provisions set forth in Article 11 of Accounting Standard for Disclosure of Accounting Estimates.

(Impact of Global Spread of COVID-19 on Accounting Estimates)

As for impairment test of non-current assets, the Company estimated the future cash flows based on the assumption that the impact of spread of COVID-19 will not deteriorate significantly in the future, and the business environment surrounding the Company and its group companies will improve gradually from the fiscal year ending March 31, 2022.

3. INVESTMENTS IN UNCONSOLIDATED SUBSIDIARIES AND AFFILIATES

Investments in and advances to unconsolidated subsidiaries and affiliates included in investments in securities and other in the consolidated balance sheets as of March 31, 2021 and 2020 are as follows:

As of March 31,	Millions of yen		Thousands of U.S. dollars
	2021	2020	2021
Investments in unconsolidated subsidiaries and affiliates	¥ 504	¥ 995	\$ 4,552
Other	480	518	4,335

4. PLEDGED ASSETS

The following assets as of March 31, 2021 and 2020 were pledged as collateral:

As of March 31,	Millions of yen		Thousands of U.S. dollars
	2021	2020	2021
Collateral			
Buildings	¥ 633	¥ 731	\$ 5,717
Land	903	956	8,156
Other	137	146	1,237
Total	¥ 1,674	¥ 1,834	\$ 15,120

These assets above were mainly pledged for issuing the performance bonds.

5. CONTINGENT LIABILITIES

Contingent liabilities as of March 31, 2021 are as follows:

Guaranteed parties	Millions of yen	Thousands of U.S. dollars	Details
Other	¥ 26	\$ 234	Performance bond etc.
Total	¥ 26	\$ 234	

6. COMMITMENT LINE CONTRACTS

In order to maintain access to a stable and effective sources of operating capital, the Company has entered into commitment line contracts with 10 trading banks. The status of these commitment line contracts as of March 31, 2021 and 2020 is as follows:

As of March 31,	Millions of yen		Thousands of U.S. dollars
	2021	2020	2021
Total amount of commitment line contracts	¥ 9,000	¥ 8,000	\$ 81,293
Used amount	—	—	—
Available amount of commitment line contracts	¥ 9,000	¥ 8,000	\$ 81,293

7. COSTS ON UNCOMPLETED CONSTRUCTION CONTRACTS

Costs on uncompleted construction contracts and provision for loss on construction contracts related to the construction contracts with substantial anticipated losses are not offset. Costs on uncompleted construction contracts corresponding to provision for loss on construction contracts as of March 31, 2021 and 2020 are as follows:

As of March 31,	Millions of yen		Thousands of U.S. dollars
	2021	2020	2021
Costs on uncompleted construction contracts	¥ 93	¥ 237	\$ 840

8. SHORT-TERM AND LONG-TERM DEBT

The average interest rates on the short-term loans payable outstanding as of March 31, 2021 and 2020 are 3.06% and 1.39%, respectively.

The average interest rates on the current portion of long-term loans payable outstanding as of March 31, 2021 and 2020 are 1.16% and 0.14%, respectively.

The average interest rates on the long-term loans payable outstanding as of March 31, 2021 and 2020 are 1.11% and 1.09%, respectively.

The following schedule shows the maturities of long-term loans payable subsequent to March 31, 2021:

Years ended March 31,	Millions of yen	Thousands of U.S. dollars
2022	¥ 8,209	\$ 74,148
2023	7,354	66,425
2024	8,815	79,622
2025	220	1,987
2026	30	270
2027 and thereafter	—	—

The following schedule shows the maturities of lease obligations subsequent to March 31, 2021:

Years ended March 31,	Millions of yen	Thousands of U.S. dollars
2022	¥ 416	\$ 3,757
2023	322	2,908
2024	76	686
2025	76	686
2026	48	433
2027 and thereafter	195	1,761

As of March 31, 2021 and 2020, short-term loans payable and long-term loans payable with financial covenants concerning the financial condition or business results of the Company and its consolidated subsidiaries and affiliates amounted to ¥8,720 million (\$78,764 thousand) and ¥8,480 million, respectively.

9. SELLING, GENERAL AND ADMINISTRATIVE EXPENSES

The main components of selling, general and administrative expenses for the years ended March 31, 2021 and 2020 are as follows:

Years ended March 31,	Millions of yen		Thousands of U.S. dollars
	2021	2020	2021
Salaries	¥ 7,079	¥ 7,155	\$ 63,941
Provision for bonuses	373	367	3,369
Retirement benefit expenses	745	1,137	6,729
Depreciation	803	752	7,253
Research and development costs	2,346	1,925	21,190

10. RESEARCH AND DEVELOPMENT COSTS

Research and development costs included in cost of sales and selling, general and administrative expenses for the years ended March 31, 2021 and 2020 amounted to ¥2,346 million (\$21,190 thousand) and ¥1,925 million, respectively.

11. PROVISION FOR LOSS ON CONSTRUCTION CONTRACTS

The amount of gross increase in provision for loss on construction contracts included in cost of sales in the consolidated statements of income for the years ended March 31, 2021 and 2020 are as follows:

Years ended March 31,	Millions of yen		Thousands of U.S. dollars
	2021	2020	2021
Amount of provision for loss on construction contracts	¥ 359	¥ 349	\$ 3,242

12. OTHER COMPREHENSIVE INCOME

Years ended March 31,	Millions of yen		Thousands of U.S. dollars
	2021	2020	2021
Valuation difference on available-for-sale securities:			
Amount arising during the year	¥ 364	¥ (382)	\$ 3,287
Reclassification adjustments for gains and losses realized in profit or loss	21	—	189
Valuation difference on available-for-sale securities before tax effect	385	(382)	3,477
Tax effect	(88)	80	(794)
Valuation difference on available-for-sale securities	297	(302)	2,682
Deferred gains on hedges:			
Amount arising during the year	2,247	82	20,296
Reclassification adjustments for gains and losses realized in profit or loss	643	615	5,807
Deferred gains on hedges before tax effect	2,891	698	26,113
Tax effect	(631)	(0)	(5,699)
Deferred gains on hedges	2,260	698	20,413
Foreign currency translation adjustments:			
Amount arising during the year	(462)	(788)	(4,173)
Foreign currency translation adjustments before tax effect	(462)	(788)	(4,173)
Foreign currency translation adjustments	(462)	(788)	(4,173)
Remeasurements of defined benefit plans:			
Amount arising during the year	3,884	(1,221)	35,082
Reclassification adjustments for gains and losses realized in profit or loss	(49)	(170)	(442)
Remeasurements of defined benefit plans before tax effect	3,835	(1,391)	34,640
Tax effect	(917)	170	(8,282)
Remeasurements of defined benefit plans	2,917	(1,221)	26,348
Share of other comprehensive loss of affiliates accounted for by the equity method:			
Amount arising during the year	(1,744)	(444)	(15,752)
Total other comprehensive income (loss)	¥ 3,268	¥ (2,057)	\$ 29,518

13. SUPPLEMENTARY INFORMATION FOR CONSOLIDATED STATEMENTS OF CHANGES IN NET ASSETS

For the year ended March 31, 2021

(a) Type and number of outstanding shares

Type of shares	Number of shares			Balance as of end of year
	Balance as of beginning of year	Increase in shares during the year	Decrease in shares during the year	
Issued stock:				
Common stock	38,558,507	—	—	38,558,507
Class A preferred stock	20,270,300	—	—	20,270,300
Total	58,828,807	—	—	58,828,807
Treasury stock:				
Common stock	225,464	697	—	226,161
Total	225,464	697	—	226,161

Note: Treasury stock increased by 697 shares due to the purchase of shares less than one unit.

For the year ended March 31, 2020

(a) Type and number of outstanding shares

Type of shares	Number of shares			Balance as of end of year
	Balance as of beginning of year	Increase in shares during the year	Decrease in shares during the year	
Issued stock:				
Common stock	38,558,507	—	—	38,558,507
Class A preferred stock	20,270,300	—	—	20,270,300
Total	58,828,807	—	—	58,828,807
Treasury stock:				
Common stock	224,680	784	—	225,464
Total	224,680	784	—	225,464

Note: Treasury stock increased by 784 shares due to the purchase of shares less than one unit.

14. CONSOLIDATED STATEMENTS OF CASH FLOWS

A reconciliation between the balance of cash and deposits reflected in the accompanying consolidated balance sheets and that of cash and cash equivalents in the accompanying consolidated statements of cash flows as of March 31, 2021 and 2020 are summarized as follows:

As of March 31,	Millions of yen		Thousands of U.S. dollars
	2021	2020	2021
Cash and deposits	¥ 97,609	¥ 81,989	\$ 881,663
Time deposits with maturities over 3 months	(3,125)	(1,776)	(28,226)
Cash and cash equivalents	¥ 94,483	¥ 80,213	\$ 853,427

15. LEASES

(a) Finance Leases

(a-1) Finance leases which do not transfer ownership of the leased assets to the lessee

The main component of the leased assets is the rental offices of the foreign subsidiaries.

Depreciation methods

See "2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES, (f) Leases "

(b) Operating Leases

Operating Leases (as Lessee)

Future minimum lease payments subsequent to March 31, 2021 for noncancelable operating leases are summarized as follows:

As of March 31,	Millions of yen		Thousands of U.S. dollars
	2021	2021	2021
Within 1 year	¥ 143		\$ 1,291
Over 1 year	24		216
Total	¥ 168		\$ 1,517

16. FINANCIAL INSTRUMENTS

1. Condition of Financial Instruments

The Company and its consolidated subsidiaries hold their temporary cash surplus through low-risk financial assets and raise funds through borrowings from banks.

Derivative financial instruments are utilized for reducing the risk of exchange rate fluctuations, interest rate fluctuations, and credit. Therefore, there are no derivatives for speculative purposes.

Notes receivable, accounts receivable from completed construction contracts are exposed to credit risks of customers and risks of exchange rate fluctuations. The Company deals with these risks by organizing careful reviews on awarded contracts, letters of credit, and export credit insurance. The Company minimizes exchange fluctuation risks by entering into corresponding forward-exchange contracts, in principle.

Investments in securities are exposed to volatility risks of market price. The Company manages these risks by periodic monitoring, as they mainly consist of stocks of business partners.

Notes payable, accounts payable for construction contracts and other are mostly due within 1 year.

Borrowings from banks are raised mainly for capital investment or working capital. For some long-term loans payable, the Company entered into interest swap agreements to minimize risks of interest rate fluctuations.

Regarding derivatives, forward-exchange contracts are used to minimize exchange fluctuation in foreign-currency operations, and interest-swap contracts are used to minimize interest rate fluctuations.

The fair value of financial instruments is based on their quoted market prices, if available, or reasonably estimated amounts if there is no market price. Since various assumptions and factors are reflected in estimating the fair value, different assumptions and factors could result in different fair value. In addition, the notional amounts below are not necessarily indicative of the actual market risk involved in derivative transactions.

2. Fair Value of Financial Instruments

Book value, fair value, and net unrealized gain or loss of financial instruments consist of the following:

The following does not include items for which it is extremely difficult to determine the fair value.

As of March 31, 2021	Millions of yen		
	Book Value	Fair Value	Unrealized gain / (loss)
(1) Cash and deposits	¥ 97,609	¥ 97,609	¥ —
(2) Notes receivable, accounts receivable from completed construction contracts	51,069		
Less: Allowance for doubtful accounts (*1)	(1,069)		
Notes receivable, accounts receivable from completed construction contracts, net	50,000	50,001	1
(3) Accounts receivables-other	4,218		
Less: Allowance for doubtful accounts (*1)	(1)		
Accounts receivable-other, net	4,216	4,218	1
(4) Investments in securities			
Available-for-sale securities	930	930	—
Total of assets	152,756	152,759	2
(1) Notes and accounts payable for construction contracts and other	72,555	72,555	—
(2) Short-term loans payable	2,404	2,404	—
(3) Long-term loans payable (including current portion)	24,628	24,643	14
Total of liabilities	99,587	99,602	14
Derivatives (*2)			
not designated as hedging instruments	110	110	—
designated as hedging instruments (*3)	2,127	2,127	—
Total derivatives	¥ 2,237	¥ 2,237	¥ —

As of March 31, 2021	Thousands of U.S. dollars		
	Book Value	Fair Value	Unrealized gain / (loss)
(1) Cash and deposits	\$ 881,663	\$ 881,663	\$ —
(2) Notes receivable, accounts receivable from completed construction contracts	461,286		
Less: Allowance for doubtful accounts (*1)	(9,655)		
Notes receivable, accounts receivable from completed construction contracts, net	451,630	451,639	9
(3) Accounts receivables-other	38,099		
Less: Allowance for doubtful accounts (*1)	(9)		
Accounts receivable-other, net	38,081	38,099	9
(4) Investments in securities			
Available-for-sale securities	8,400	8,400	—
Total of assets	1,379,785	1,379,812	18
(1) Notes and accounts payable for construction contracts and other	655,360	655,360	—
(2) Short-term loans payable	21,714	21,714	—
(3) Long-term loans payable (including current portion)	222,455	222,590	126
Total of liabilities	899,530	899,665	126
Derivatives (*2)			
not designated as hedging instruments	993	993	—
designated as hedging instruments (*3)	19,212	19,212	—
Total derivatives	\$ 20,205	\$ 20,205	\$ —

(*1) Notes receivable, accounts receivable from completed construction contracts and accounts receivable—other listed above are offset by the corresponding figures of allowance for doubtful accounts listed above.

(*2) Net receivables and payables derived as a result of derivative transactions are presented. Values in parentheses show contra-asset account, net liabilities and unrealized loss.

(*3) The fair values of foreign exchange forward contracts other than the deferral hedge accounting is applied are charged or credited to the fair values of the hedged items.

As of March 31, 2020	Millions of yen		
	Book Value	Fair Value	Unrealized gain / (loss)
(1) Cash and deposits	¥ 81,989	¥ 81,989	¥ —
(2) Notes receivable, accounts receivable from completed construction contracts	55,130		
Less: Allowance for doubtful accounts (*1)	(658)		
Notes receivable, accounts receivable from completed construction contracts, net	54,472	54,473	1
(3) Accounts receivables-other	7,138		
Less: Allowance for doubtful accounts (*1)	(30)		
Accounts receivable-other, net	7,108	7,109	1
(4) Investments in securities			
Available-for-sale securities	637	637	—
Total of assets	144,207	144,209	2
(1) Notes and accounts payable for construction contracts and other	64,053	64,054	0
(2) Short-term loans payable	6,811	6,811	—
(3) Long-term loans payable (including current portion)	20,161	20,192	31
Total of liabilities	91,026	91,058	32
Derivatives (*2)			
not designated as hedging instruments	158	158	—
designated as hedging instruments (*3)	(764)	(764)	—
Total derivatives	¥ (605)	¥ (605)	¥ —

(*1) Notes receivable, accounts receivable from completed construction contracts and accounts receivable—other listed above are offset by the corresponding figures of allowance for doubtful accounts listed above.

(*2) Net receivables and payables derived as a result of derivative transactions are presented. Values in parentheses show contra-asset account, net liabilities and unrealized loss.

(*3) The fair values of foreign exchange forward contracts and interest rate swaps other than the deferral hedge accounting is applied are charged or credited to the fair values of the hedged items.

(Note 1) Computational method and related issues**Assets****(1) Cash and deposits**

Book values are used as fair values because they are nearly equal to such book values.

(2) (3) Notes receivable, accounts receivable from completed construction contracts and accounts receivable—other

Book values for items which are settled in a short-term are used as fair values of these items because they are nearly equal to such book values. Fair values of other items are based on the present value discounted by an appropriate discount rate coupled with the remaining maturity and credit risks.

(4) Investments in securities

Fair value of stock items are based on the market prices and bond items are based on the market prices or their price provided by financial institutions.

Liabilities**(1) Notes payable, accounts payable for construction contracts and other**

Book values for items which are settled in a short-term are used as fair values of these items because they are nearly equal to such book values. Fair values of other items are based on the present value discounted by an appropriate discount rate coupled with the remaining maturity and credit risks.

(2) Short-term loans payable

Book values are used as fair values because they are nearly equal to such book values.

(3) Long-term loans payable (including current portion)

The present values of the principal and total interest, discounted by the rate assumed to be applied to the new borrowings under the same conditions, are used as the fair values.

Derivative Transactions

See "18. DERIVATIVE TRANSACTIONS".

(Note 2) Financial instruments of which it is extremely difficult to determine the fair value

Unlisted securities that amounted to ¥1,586 million (\$14,325 thousand) as of March 31, 2021 and ¥1,572 million as of March 31, 2020 are excluded from the above table because they are deemed extremely difficult to determine the fair values; they do not have market prices and it is not possible to conduct alternative methods such as the estimation of their future cash flows.

(Note 3) Redemption schedule for monetary assets, and investments in securities with maturities

As of March 31, 2021	Millions of yen			
	Within 1 year	After 1 year through 5 years	After 5 years through 10 years	After 10 years
Cash and deposits	¥ 97,609	¥ —	¥ —	¥ —
Notes and accounts receivable from completed construction contracts	49,615	1,454	—	—
Accounts receivable-other	3,763	455	—	—
Total	¥ 150,988	¥ 1,909	¥ —	¥ —

As of March 31, 2021	Thousands of U.S. dollars			
	Within 1 year	After 1 year through 5 years	After 5 years through 10 years	After 10 years
Cash and deposits	\$ 881,663	\$ —	\$ —	\$ —
Notes and accounts receivable from completed construction contracts	448,152	13,133	—	—
Accounts receivable-other	33,989	4,109	—	—
Total	\$ 1,363,815	\$ 17,243	\$ —	\$ —

As of March 31, 2020	Millions of yen			
	Within 1 year	After 1 year through 5 years	After 5 years through 10 years	After 10 years
Cash and deposits	¥ 81,989	¥ —	¥ —	¥ —
Notes and accounts receivable from completed construction contracts	54,296	834	—	—
Accounts receivable-other	6,647	491	—	—
Total	¥ 142,933	¥ 1,325	¥ —	¥ —

(Note 4) Schedule for repayment of bonds and long-term loans payable

See "8. SHORT-TERM AND LONG-TERM DEBT".

17. INVESTMENTS IN SECURITIES

The acquisition cost, unrealized gain and loss and the related book value of available-for-sale securities with available fair values as of March 31, 2021 are summarized as follows:

As of March 31, 2021	Millions of yen		
	Book value	Acquisition cost	Unrealized gain
Securities whose carrying value exceeds their acquisition costs:			
Equity securities	¥ 930	¥ 526	¥ 403
Total	¥ 930	¥ 526	¥ 403

As of March 31, 2021	Thousands of U.S. dollars		
	Book value	Acquisition cost	Unrealized gain
Securities whose carrying value exceeds their acquisition costs:			
Equity securities	\$ 8,400	\$ 4,751	\$ 3,640
Total	\$ 8,400	\$ 4,751	\$ 3,640

Proceeds from and gain on sales of securities for the year ended March 31, 2021 are as follows:

Year ended March 31, 2021	Millions of yen		
	Proceeds	Gain on sales	Loss on sales
Equity securities	¥ 39	¥ 36	¥ —

Year ended March 31, 2021	Thousands of U.S. dollars		
	Proceeds	Gain on sales	Loss on sales
Equity securities	\$ 352	\$ 325	\$ —

Impairment of investments in securities

For the year ended March 31, 2021, the Company recognized ¥155 million (\$1,400 thousand) of impairment loss on unlisted securities.

The acquisition cost, unrealized gain and loss and the related book value of available-for-sale securities with available fair values as of March 31, 2020 are summarized as follows:

As of March 31, 2020	Millions of yen		
	Book value	Acquisition cost	Unrealized gain
Securities whose carrying value exceeds their acquisition costs:			
Equity securities	¥ 506	¥ 390	¥ 115
Subtotal	¥ 506	¥ 390	¥ 115
Securities whose carrying value does not exceed their acquisition costs:			
Equity securities	¥ 130	¥ 138	¥ (7)
Subtotal	¥ 130	¥ 138	¥ (7)
Total	¥ 637	¥ 529	¥ 107

18. DERIVATIVE TRANSACTIONS

For the year ended March 31, 2021

1. Derivatives not designated as hedging instruments

(1) Currency-related

	Millions of yen			
	All notional amounts	Notional amounts due over 1 year	Fair value	Unrealized gain / (loss)
Non-market transaction:				
Foreign exchange forward contracts				
Selling				
USD	¥ 1,670	¥ —	¥ (20)	¥ (20)
EUR	1,060	—	53	53
JPY	5,252	1,368	28	28
Buying				
USD	1,343	57	46	46
EUR	176	32	1	1
Total	¥ 9,503	¥ 1,458	¥ 110	¥ 110

	Thousands of U.S. dollars			
	All notional amounts	Notional amounts due over 1 year	Fair value	Unrealized gain / (loss)
Non-market transaction:				
Foreign exchange forward contracts				
Selling				
USD	\$ 15,084	\$ —	\$ (180)	\$ (180)
EUR	9,574	—	478	478
JPY	47,439	12,356	252	252
Buying				
USD	12,130	514	415	415
EUR	1,589	289	9	9
Total	\$ 85,836	\$ 13,169	\$ 993	\$ 993

The fair value is based on forward exchange contract prices.

2. Derivatives designated as hedging instruments

(1) Currency-related

	Main hedged items	Millions of yen			Computational method of fair value
		All notional amounts	Notional amounts due over 1 year	Fair value	
Deferral hedge accounting method:					
Foreign exchange forward contracts					
Selling					
USD	Accounts receivable	¥ 1,901	¥ —	¥ (120)	Based on prices offered by financial institutions
EUR	and accounts payable	2,681	—	(38)	
Buying					
USD	accounts payable	26,492	329	1,308	
EUR		19,746	6,456	977	
Alternative method:					
Foreign exchange forward contracts					
Selling					
USD	Accounts receivable	9,901	—		Based on forward exchange contract prices
EUR	and accounts payable	1,156	—	N/A	
Buying					
USD	accounts payable	1,247	—		
EUR		1,981	—		
Total		¥ 65,110	¥ 6,786		

	Main hedged items	Thousands of U.S. dollars			Computational method of fair value
		All notional amounts	Notional amounts due over 1 year	Fair value	
Deferral hedge accounting method:					
Foreign exchange forward contracts					
Selling					
USD	Accounts receivable	\$ 17,170	\$ —	\$ (1,083)	Based on prices offered by financial institutions
EUR	and accounts payable	24,216	—	(343)	
Buying					
USD	accounts payable	239,291	2,971	11,814	
EUR		178,357	58,314	8,824	
Alternative method:					
Foreign exchange forward contracts					
Selling					
USD	Accounts receivable	89,431	—		Based on forward exchange contract prices
EUR	and accounts payable	10,441	—	N/A	
Buying					
USD	accounts payable	11,263	—		
EUR		17,893	—		
Total		\$ 588,113	\$ 61,295		

The fair value of the foreign exchange forward contracts which alternative method is applied, is charged or credited to that of accounts receivable and accounts payable, since such foreign exchange forward contracts are accounted together with accounts receivable and accounts payable.

For the year ended March 31, 2020

1. Derivatives not designated as hedging instruments

(1) Currency-related

	Millions of yen			
	All notional amounts	Notional amounts due over 1 year	Fair value	Unrealized gain / (loss)
Non-market transaction:				
Foreign exchange forward contracts				
Selling				
USD	¥ 649	¥ 23	¥ (29)	¥ (29)
JPY	11,313	2,858	121	121
Buying				
USD	6,219	28	68	68
EUR	79	—	(2)	(2)
Total	¥ 18,260	¥ 2,911	¥ 158	¥ 158

The fair value is based on forward exchange contract prices.

2. Derivatives designated as hedging instruments

(1) Currency-related

	Main hedged items	Millions of yen			Computational method of fair value		
		All notional amounts	Notional amounts due over 1 year	Fair value			
Deferral hedge accounting method:							
Foreign exchange forward contracts							
Selling							
USD	Accounts receivable and accounts payable	¥ 2,026	¥ 861	¥ (131)	Based on prices offered by financial institutions		
EUR		923	—	39			
Buying							
USD	accounts payable	32,305	2,718	480			
EUR		24,935	9,819	(1,152)			
Alternative method:							
Foreign exchange forward contracts							
Selling							
USD	Accounts receivable and accounts payable	6,005	337	N/A	Based on forward exchange contract prices		
EUR		2,364	282				
Buying							
USD	accounts payable	1,819	194				
EUR		958	—				
SGD		35	—				
Total		¥ 71,373	¥ 14,214				

The fair value of the foreign exchange forward contracts which alternative method is applied, is charged or credited to that of accounts receivable and accounts payable, since such foreign exchange forward contracts are accounted together with accounts receivable and accounts payable.

(2) Interest-related

	Transaction type	Main hedged items	Millions of yen			Computational method of fair value
			All notional amounts	Notional amounts due over 1 year	Fair value	
Accounting method:						
Special method for interest rate swap	Interest swap contracts floating for fixed rate swap	Long-term loans payable	¥ 7,300	¥ —	N/A	Based on prices offered by financial institutions
Total			¥ 7,300	¥ —		

The fair value of the interest rate swaps which special method is applied, is charged or credited to that of long-term loans payable, since such interest rate swaps are accounted together with long-term loans payable.

19. RETIREMENT BENEFITS

The Company and certain consolidated subsidiaries have either funded or unfunded defined benefit plans and lump-sum payment plans and the defined contribution plans.

The Company and certain consolidated subsidiaries provide lump-sum or pension which is based on salary and service time in the defined benefit plans and introduce cash balance-style pension plans in a part of defined benefit plans. In this institution, hypothetical individual employee accounts which are equal to the source of deposit and pension by each buyer are established. In these accounts, the interest credit which is based on the movement of market interest rate and the contribution credit which is based on the salary level, etc. are accumulated. In a part of defined benefit plans, etc., retirement benefit trust is established.

In lump-sum payments plans (part of which becomes funded as a result of benefit trust although the system is unfunded), the lump-sum based on the salary and service time as retirement benefits is provided.

Defined contribution plans and lump-sum payments for certain consolidated subsidiaries are accounted for using the simplified method in which calculates retirement benefit liabilities and retirement benefit expenses.

(1) Changes in defined benefit obligations

	Millions of yen		Thousands of U.S. dollars
	2021	2020	2021
Beginning of year	¥ 18,613	¥ 18,764	\$ 168,123
Service cost	886	900	8,002
Interest cost	222	228	2,005
Actuarial gains and losses	(666)	155	(6,015)
Benefit paid	(1,319)	(1,387)	(11,914)
Other	3	(46)	27
End of year	¥ 17,739	¥ 18,613	\$ 160,229

(2) Changes in plan assets

	Millions of yen		Thousands of U.S. dollars
	2021	2020	2021
Beginning of year	¥ 16,663	¥ 18,198	\$ 150,510
Expected return on plan assets	467	507	4,218
Actuarial gains and losses	3,278	(1,271)	29,608
Contributions by the employer	500	559	4,516
Benefit paid	(1,044)	(1,137)	(9,430)
Other	53	(194)	478
End of year	¥ 19,917	¥ 16,663	\$ 179,902

(3) Reconciliation of defined benefit obligations and plan assets to net benefit liability and asset

The reconciliation of the defined benefit obligations and plan assets to net defined benefit liability and asset recognized in the consolidated balance sheets as of March 31, 2021 and 2020 are as follows:

	Millions of yen		Thousands of U.S. dollars
	2021	2020	2021
Funded defined benefit obligations	¥ 16,616	¥ 17,367	\$ 150,085
Plan assets	(19,917)	(16,663)	(179,902)
Subtotal	(3,300)	704	(29,807)
Unfunded defined benefit obligations	1,122	1,246	10,134
Net amount of liability and asset recognized in consolidated balance sheets	(2,177)	1,950	(19,663)
Liabilities (net defined benefit liability)	1,213	1,950	10,956
Assets (net defined benefit asset)	(3,391)	—	(30,629)
Net amount of liability and asset recognized in consolidated balance sheets	¥ (2,177)	¥ 1,950	\$ (19,663)

(4) Retirement benefit expenses

	Millions of yen		Thousands of U.S. dollars
	2021	2020	2021
Service cost	¥ 886	¥ 900	\$ 8,002
Interest cost	222	228	2,005
Expected return on plan assets	(467)	(507)	(4,218)
Amortization of actuarial gains and losses	(109)	34	(984)
Other	9	163	81
Total	¥ 541	¥ 819	\$ 4,886

(5) Remeasurements of defined benefit plans

	Millions of yen		Thousands of U.S. dollars
	2021	2020	2021
Actuarial gains and losses	¥ 3,835	¥ (1,391)	\$ 34,640
Total	¥ 3,835	¥ (1,391)	\$ 34,640

(6) Accumulated remeasurements of defined benefit plans

The unrecognized actuarial gains and losses recognized in accumulated other comprehensive income (amount before income tax effect) as of March 31, 2021 and 2020 are as follows:

	Millions of yen		Thousands of U.S. dollars
	2021	2020	2021
Unrecognized actuarial gains and losses	¥ 3,014	¥ (820)	\$ 27,224
Total	¥ 3,014	¥ (820)	\$ 27,224

(7) Major breakdown of plan assets

	2021	2020
Components of plan assets		
Securities	18%	27%
Stocks	53%	41%
Cash and deposits	12%	13%
Other	17%	19%
Total	100%	100%

25% and 18% of total plan assets as of March 31, 2021 and 2020, respectively, are included in the retirement benefit trust.

(8) Basis of actuarial calculation

Basis of calculation of projected benefit obligation for the years ended March 31, 2021 and 2020 are as follows:

	2021	2020
Discount rate	Mainly 0.185%	Mainly 0.08%
Expected rate of return on plan assets	Mainly 2.5%	Mainly 2.5%
Expected salary increase rate	Mainly 3.1%	Mainly 3.1%

Defined contribution plans

The contributions by the Company and subsidiaries to the defined contribution plans were ¥311 million (\$2,809 thousand) and ¥306 million for the years ended March 31, 2021 and 2020, respectively.

20. INCOME TAXES

The statutory tax rate applicable to the Company and its domestic subsidiaries for the years ended March 31, 2021 and 2020 was approximately 30.5%. Income taxes of the foreign subsidiaries are based generally on the tax rates applicable in their countries of incorporation.

(1) Significant components of the deferred income tax assets and liabilities

As of March 31,	Millions of yen		Thousands of U.S. dollars
	2021	2020	2021
Deferred tax assets (gross):			
Net operating loss carry forwards (*2)	¥ 13,135	¥ 13,429	\$ 118,643
Accounts payable for construction contracts	5,290	4,475	47,782
Provision of allowance for doubtful accounts	2,316	2,198	20,919
Net defined benefit liability	1,106	1,414	9,990
Interest income receivable	1,040	845	9,393
Provision for loss on construction contracts	93	89	840
Deferred losses on hedges	—	225	—
Other	1,920	1,859	17,342
Total deferred tax assets (gross)	24,903	24,538	224,939
Valuation allowance for net operating loss carry forwards (*2)	(13,133)	(13,426)	(118,625)
Valuation allowance for deductible temporary differences	(10,919)	(10,312)	(98,627)
Total valuation allowance (*1)	(24,053)	(23,738)	(217,261)
Total deferred tax assets (gross)	849	799	7,668
Deferred tax assets-Deferred tax liabilities	(323)	(319)	(2,917)
Total deferred tax assets	526	480	4,751
Deferred tax liabilities (gross):			
Undistributed earnings of subsidiaries and affiliates	(1,719)	(1,522)	(15,527)
Valuation difference on available-for-sale securities	(123)	(35)	(1,111)
Gain on securities contribution to retirement benefits trust	(656)	(652)	(5,925)
Deferred gains on hedges	(631)	(0)	(5,699)
Remeasurements of defined benefit plans	(917)	—	(8,282)
Other	(316)	(303)	(2,854)
Total deferred tax liabilities (gross)	(4,365)	(2,515)	(39,427)
Deferred tax assets-Deferred tax liabilities	56	106	505
Deferred tax liabilities	(4,309)	(2,408)	(38,921)
Net deferred tax liabilities	¥ (3,782)	¥ (1,928)	\$ (34,161)

(Changes in Presentation)

Deferred gains on hedges, which had been included in "Other" under Deferred tax liabilities (gross) for the year ended March 31, 2020, is presented separately for the year ended March 31, 2021 because its materiality has increased.

To reflect this change in presentation, ¥(0) million of deferred gains on hedges which had been previously included in "Other" under Deferred tax liabilities (gross), was reclassified and presented separately.

(*1) Future deductible temporary differences arising from accounts payable for construction contracts and other have increased, while net operating loss carry forwards has decreased. As a result of a study of the recoverability of these, total valuation allowance has increased by ¥315 million (\$2,845 thousand) from the end of previous fiscal year.

(*2) A breakdown of net operating loss carry forwards and valuation allowance by expiry date as of March 31, 2021 and 2020 are as follows:

As of March 31, 2021 Years ended March 31,	Millions of yen		
	Net operating loss carry forwards	Valuation allowance	Deferred tax assets
2022	¥ —	¥ —	¥ —
2023	—	—	—
2024	14	(14)	—
2025	—	—	—
2026	—	—	—
2027 and thereafter	13,121	(13,119)	1
Total	¥ 13,135	¥ (13,133)	¥ 1

Years ended March 31,	Millions of U.S. dollars		
	Net operating loss carry forwards	Valuation allowance	Deferred tax assets
2022	\$ —	\$ —	\$ —
2023	—	—	—
2024	126	(126)	—
2025	—	—	—
2026	—	—	—
2027 and thereafter	118,516	(118,498)	9
Total	\$ 118,643	\$ (118,625)	\$ 9

As of March 31, 2020 Years ended March 31,	Millions of yen		
	Net operating loss carry forwards	Valuation allowance	Deferred tax assets
2021	¥ 14	¥ (12)	¥ 2
2022	—	—	—
2023	—	—	—
2024	445	(445)	—
2025	—	—	—
2026 and thereafter	12,969	(12,969)	—
Total	¥ 13,429	¥ (13,426)	¥ 2

(2) The effective tax rate on income before income taxes in the accompanying consolidated statements of income were not equal to the above-mentioned statutory tax rate for the following reasons for the years ended March 31, 2021 and 2020.

Years ended March 31,	2021	2020
Statutory tax rate in Japan	30.5%	30.5%
Adjustments:		
Permanently nondeductible expenses	2.7%	5.3%
Permanently nontaxable income	(0.3%)	(9.7%)
Per capita levy on corporate inhabitant tax	0.7%	0.5%
Temporary differences excluded from calculation of deferred tax assets	43.4%	3.0%
Difference in tax rates for foreign subsidiaries	(4.7%)	(0.9%)
Difference in tax base between corporate income tax and enterprise tax	(5.9%)	(6.5%)
Net operating loss carry forwards etc.	(7.1%)	49.9%
Equity in earnings of affiliates	(6.9%)	(10.0%)
Adjustment of tax in prior years	2.2%	(0.2%)
Non-income based tax in foreign countries	8.8%	7.9%
Undistributed earnings of subsidiaries and affiliates	7.1%	(15.3%)
Changes in tax rate of foreign subsidiaries	—	2.4%
Adjustment for consolidation of gain on sales of shares of an affiliate	—	6.6%
Other	(0.3%)	(1.3%)
Effective tax rate	70.2%	62.2%

21. SEGMENT INFORMATION

(1) Information by geographical segment based on the locations of projects

Year ended March 31, 2021	Millions of yen				
	Japan	India	Russia	Other	Total
Net Sales	¥ 85,305	¥ 28,959	¥ 20,001	¥ 49,733	¥ 184,000

Year ended March 31, 2021	Thousands of U.S. dollars				
	Japan	India	Russia	Other	Total
Net Sales	\$ 770,526	\$ 261,575	\$ 180,661	\$ 449,218	\$ 1,661,999

Year ended March 31, 2021	Millions of yen				
	Japan	Indonesia	India	Other	Total
Property, plant and equipment	¥ 7,710	¥ 1,821	¥ 1,305	¥ 801	¥ 11,638

Year ended March 31, 2021	Thousands of U.S. dollars				
	Japan	Indonesia	India	Other	Total
Property, plant and equipment	\$ 69,641	\$ 16,448	\$ 11,787	\$ 7,235	\$ 105,121

Year ended March 31, 2020	Millions of yen				
	Japan	India	Russia	Other	Total
Net Sales	¥ 65,060	¥ 39,964	¥ 17,923	¥ 96,146	¥ 219,094

Year ended March 31, 2020	Millions of yen				
	Japan	Indonesia	India	Other	Total
Property, plant and equipment	¥ 7,869	¥ 2,012	¥ 871	¥ 763	¥ 11,517

(Changes in presentation)

Russia, which had been included in "Other" for the year ended March 31, 2020, is presented separately for the year ended March 31, 2021 because the corresponding amount exceeded 10% of net sales on the consolidated statement of income for the year ended March 31, 2021.

Nigeria, Indonesia and Thailand which had been presented separately for the year ended March 31, 2020, are included in "Other" for the year ended March 31, 2021 because the corresponding amounts are below 10% of net sales on the consolidated statement of income for the year ended March 31, 2021.

To reflect these changes in presentation, ¥17,923 million attributable to Russia for the year ended March 31, 2020, which had been previously included in "Other," was reclassified and presented separately, while ¥28,512 million attributable to Nigeria, ¥26,841 million attributable to Indonesia, and ¥22,767 million attributable to Thailand for the year ended March 31, 2020, which had been previously presented separately, are reclassified as "Other" as of March 2020.

India, which had been included in "Other" for the year ended March 31, 2020, is presented separately for the year ended March 31, 2021 because the corresponding amount exceeded 10% of property, plant and equipment on the consolidated balance sheets as of March 31, 2021.

To reflect this change in presentation, ¥871 million attributable to India as of March 31, 2020, which had been previously included in "Other," was reclassified and presented separately.

(2) Information by major clients

Year ended March 31, 2021	Millions of yen	
	Net Sales	Segment
LLC Irkutsk Polymer Plant	¥ 19,337	EPC

Year ended March 31, 2021	Thousands of U.S. dollars	
	Net Sales	Segment
LLC Irkutsk Polymer Plant	\$ 174,663	EPC

Year ended March 31, 2020	Millions of yen	
	Net Sales	Segment
Hindustan Urvarak & Rasayan Limited	¥ 32,855	EPC
Indorama Eleme Fertilizer & Chemicals Limited	¥ 28,512	EPC

22. RELATED PARTY INFORMATION

1. Related Party Transactions

For the year ended March 31, 2021

Name: NEDL-CONSTRUÇOES DE DUTOS DO NORDESTE LTDA.	Summary of transactions	Millions of yen			Thousands of U.S. dollars		
		Transaction amount	Title of account	Account balance	Transaction amount	Title of account	Account balance
Category: Affiliate							
Address: Brazil							
Capital and investments: 18,270 thousands BRL	Loan for operating fund	¥ —	Long-term loans receivable	¥ 3,707	\$ —	Long-term loans receivable	\$ 33,483
Business: Construction							
Equity ownership percentage: 42.5% directly							
Relation with related party: Loan for operating fund							

For the year ended March 31, 2020

Name: NEDL-CONSTRUÇOES DE DUTOS DO NORDESTE LTDA.	Summary of transactions	Millions of yen		
		Transaction amount	Title of account	Account balance
Category: Affiliate				
Address: Brazil				
Capital and investments: 17,141 thousands BRL	Loan for operating fund	¥ —	Long-term loans receivable	¥ 3,707
Business: Construction				
Equity ownership percentage: 42.5% directly				
Relation with related party: Loan for operating fund				

Notes: 1. Interest rate on loan is determined by considering effective market rates.

- The Company reserved ¥3,707 million (\$33,483 thousand) of allowance for doubtful accounts as of March 31, 2021, against the loan above.
- The Company reserved ¥3,707 million of allowance for doubtful accounts as of March 31, 2020, against the loan above.

For the year ended March 31, 2021

Name: Estaleiros do Brasil Ltda.	Summary of transactions	Millions of yen			Thousands of U.S. dollars		
		Transaction amount	Title of account	Account balance	Transaction amount	Title of account	Account balance
Category: Affiliate							
Address: Brazil							
Capital and investments: 58,828 thousands BRL	Loan for operating fund	¥ —	Short-term loans receivable	¥ 4,034	\$ —	Short-term loans receivable	\$ 36,437
Business: Construction							
Equity ownership percentage: 50% indirectly	Repayment of loan for operating fund	185	—	—	1,671	—	—
Relation with related party: Loan for operating fund							

For the year ended March 31, 2020

Name: Estaleiros do Brasil Ltda.	Summary of transactions	Millions of yen		
		Transaction amount	Title of account	Account balance
Category: Affiliate				
Address: Brazil				
Capital and investments: 57,749 thousands BRL	Loan for operating fund	¥ —	Short-term loans receivable	¥ 5,389
Business: Construction				
Equity ownership percentage: 50% indirectly	Repayment of loan for operating fund	884	—	—
Relation with related party: Loan for operating fund				
	Accrued interest income	5		

Note: 1. Interest rate on loan is determined by considering effective market rates.

2. Summary of Financial Statements of Significant Affiliates

For the year ended March 31, 2021, the significant affiliate was TS Participações e Investimentos S.A. Its condensed financial information is as follows:

As of and for the year ended March 31,	Millions of yen	Thousands of U.S. dollars
	2021	2021
Total current assets	¥ 10,833	\$ 97,850
Total non-current assets	3,236	29,229
Total current liabilities	9,030	81,564
Total non-current liabilities	17,493	158,007
Total net asset deficiencies	¥ (12,404)	\$ (112,040)
Net sales	¥ 7,697	\$ 69,523
Profit before income tax	762	6,882
Profit	¥ 581	\$ 5,247

For the year ended March 31, 2020, the significant affiliates were MODEC and Toyo Offshore Production Systems Pte.Ltd. and TS Participações e Investimentos S.A.

Their condensed financial information is as follows:

As of and for the year ended March 31,	Millions of yen
	2020
Total current assets	¥ 13,627
Total non-current assets	3,483
Total current liabilities	31,266
Total non-current liabilities	1,864
Total net asset deficiencies	¥ (16,020)
Net sales	¥ 5,270
Profit before income tax	1,749
Profit	¥ 1,656

23. AMOUNTS PER SHARE

As of and for the years ended March 31,	Yen		U.S. dollars
	2021	2020	2021
Net assets per share	¥ 650.52	¥ 544.16	\$ 5.87
Income attributable to owners of parent per share	13.91	28.40	0.12

Income attributable to owners of parent per share is computed based on the Income available for distribution to shareholders of common stock and the weighted average number of shares of common stock outstanding during each year.

For the calculation of income attributable to owners of parent per share, the number of Class A preferred stock was included.

Net assets per share are computed based on the number of common stock outstanding and the net assets excluding non-controlling interests and residual assets attributable to Class A preferred stock at the year end.



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Independent Auditor's Report

The Board of Directors
Toyo Engineering Corporation

Opinion

We have audited the accompanying consolidated financial statements of Toyo Engineering Corporation and its consolidated subsidiaries (the Group), which comprise the consolidated balance sheet as at March 31, 2021, and the consolidated statements of income, comprehensive income, changes in net assets, and cash flows for the year then ended, and notes to the consolidated financial statements.

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Group as at March 31, 2021, and its consolidated financial performance and its consolidated cash flows for the year then ended in accordance with accounting principles generally accepted in Japan.

Basis for Opinion

We conducted our audit in accordance with auditing standards generally accepted in Japan. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Consolidated Financial Statements section of our report. We are independent of the Group in accordance with the ethical requirements that are relevant to our audit of the consolidated financial statements in Japan, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Key Audit Matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements of the current period. These matters were addressed in the context of the audit of the consolidated financial statements as a whole, and in forming the auditor's opinion thereon, and we do not provide a separate opinion on these matters.

Estimate of total construction cost using the percentage-of-completion method	
Description of Key Audit Matter	Auditor's Response
<p>As described in Note 2 (o) to Consolidated Financial Statements, the Company recognizes revenues based on the percentage-of-completion-method for construction contracts when the outcome of the construction is deemed certain at the end of the fiscal year. The percentage of completion is calculated based on the proportion of construction cost incurred to date compared with the estimated total cost of the construction. The completed-contract method continues to be applied for contracts for which the percentage of completion cannot be reliably estimated.</p> <p>Of the net sales of ¥184,000 million for the fiscal year, as described in Note 2 (v) to the consolidated financial statements, the amount of revenue recognized using the percentage-of-completion-method was ¥167,021 million, accounting for 91% of net sales.</p> <p>The total construction cost, which is the basis for the determination of revenue recognized under the percentage of completion, is estimated based on key assumptions and the progress of the construction by the end of the fiscal year. These assumptions incorporate certain specifications such as estimated unit price, quantity, process, man-hours, etc. that are determined based on specific quotations from suppliers and sub-contractors and also involve past experience. In addition, the Company examines the contracts periodically to confirm the assumptions.</p> <p>The Company is engaged in the EPC business (Engineering, Procurement and Construction) based on contracts with customers worldwide. The estimation of the total construction cost is therefore complex in nature due to significance of the amount calculated using the percentage-of-completion method. In addition, the construction period often extends over several years and the nature of the work is complex and technically difficult.</p>	<p>In considering the adequacy of the estimate of the total construction cost using the percentage-of-completion method, we conducted the following audit procedures, among others:</p> <p>(1) Evaluation of internal controls</p> <p>We evaluated the design and operating effectiveness of the following internal control of the Company concerning the estimation of the total construction cost.</p> <ul style="list-style-type: none"> Control to ensure reliability through necessary approvals, in which the budget for construction contract, which is the basis of estimation of total construction cost, is prepared by the person in charge of the construction who has expertise and is responsible for compiling and preparing the budget for construction in accordance with the contract. Control to confirm that each element of the total construction cost is calculated by formulating in detail the objective price such as the standard unit price approved internally or an estimate obtained externally. Control to revise the estimation of the total construction cost in a timely manner in accordance with the progress of the construction, the actual cost incurred or the modifications in the specifications from the customer. <p>(2) Evaluation of estimate of total construction cost</p> <p>In light of various factors such as construction contract amount, construction profit or loss, construction contents, progress of the construction, etc., we identified the construction for which uncertainty of the estimation of the total construction cost is relatively high and performed the following procedures.</p>

<p>Given that the above, we determined estimate of total construction cost using percentage-of-completion method to be a key audit matter due to significance in calculating the amount of revenue recognized using the percentage-of-completion method and the progress of the construction.</p>	<ul style="list-style-type: none"> In order to evaluate the initial estimation of the total construction cost, we understood the key assumptions and evaluated the consistency with the budgeted cost of the construction by inspecting the relevant documentation related to the construction and the budgeted cost of the construction. <p>In addition, regarding the key assumptions, we evaluated the consistency with quotations from suppliers and sub-contractors and the source data such as number of man-hours, etc.</p> <ul style="list-style-type: none"> In order to evaluate management's estimation as to whether the total cost of construction should be revised, we made inquiries with the person in charge of the business division and the person in charge of the construction, etc. and evaluated their responses. In addition, we inspected the reports on the progress of the construction. Changes in the total construction cost were reviewed and when significant changes were detected, we made inquiries with the person in charge of the business division and the person in charge of the construction, etc. about the reason and evaluated their responses. <p>In addition, regarding the key assumptions, we evaluated the consistency with quotations from suppliers and sub-contractors and the source data such as number of man-hours, etc.</p> <ul style="list-style-type: none"> We evaluated the estimation process of the total construction cost by comparing the Company's prior estimates of the total construction cost with actual results or re-estimated amounts.
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Responsibilities of Management, the Corporate Auditor and the Board of Corporate Auditors for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with accounting principles generally accepted in Japan, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management is responsible for assessing the Group's ability to continue as a going concern and disclosing, as required by accounting principles generally accepted in Japan, matters related to going concern.

The Corporate Auditor and the Board of Corporate Auditors are responsible for overseeing the Group's financial reporting process.

Auditor's Responsibilities for the Audit of the Consolidated Financial Statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

As part of an audit in accordance with auditing standards generally accepted in Japan, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion.
- Consider internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances for our risk assessments, while the purpose of the audit of the consolidated financial statements is not expressing an opinion on the effectiveness of the Group's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation in accordance with accounting principles generally accepted in Japan.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with the Corporate Auditor and the Board of Corporate Auditors regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide the Corporate Auditor and the Board of Corporate Auditors with a statement that we have complied with the ethical requirements regarding independence that are relevant to our audit of the financial statements in Japan, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

From the matters communicated with the Corporate Auditor and the Board of Corporate Auditors, we determine those matters that were of most significance in the audit of the consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

Interest Required to Be Disclosed by the Certified Public Accountants Act of Japan


Our firm and its designated engagement partners do not have any interest in the Group which is required to be disclosed pursuant to the provisions of the Certified Public Accountants Act of Japan.

Convenience Translation

The U.S. dollar amounts in the accompanying consolidated financial statements with respect to the year ended March 31, 2021 are presented solely for convenience. Our audit also included the translation of Japanese yen amounts into U.S. dollar amounts and, in our opinion, such translation has been made on the basis described in Note 1 to the consolidated financial statements.

Ernst & Young ShinNihon LLC
Tokyo, Japan

June 28, 2021

遠藤 正人 

Masato Endo
Designated Engagement Partner
Certified Public Accountant

井上 裕人 

Hiroto Inoue
Designated Engagement Partner
Certified Public Accountant

Stock Information (As of March 31, 2021)

Capital Stock	¥18,198 million	Capital Stock Issued	Common Shares	38,558,507	
Stock Exchange Listing	Tokyo Stock Exchange		Class A Preferred Shares	20,270,300	
Authorized Shares	Common Shares	100,000,000	Number of Shareholders	Common Shares	17,125
	Class A Preferred Shares	25,000,000		Class A Preferred Shares	2

Major Shareholders

1. Common Shares

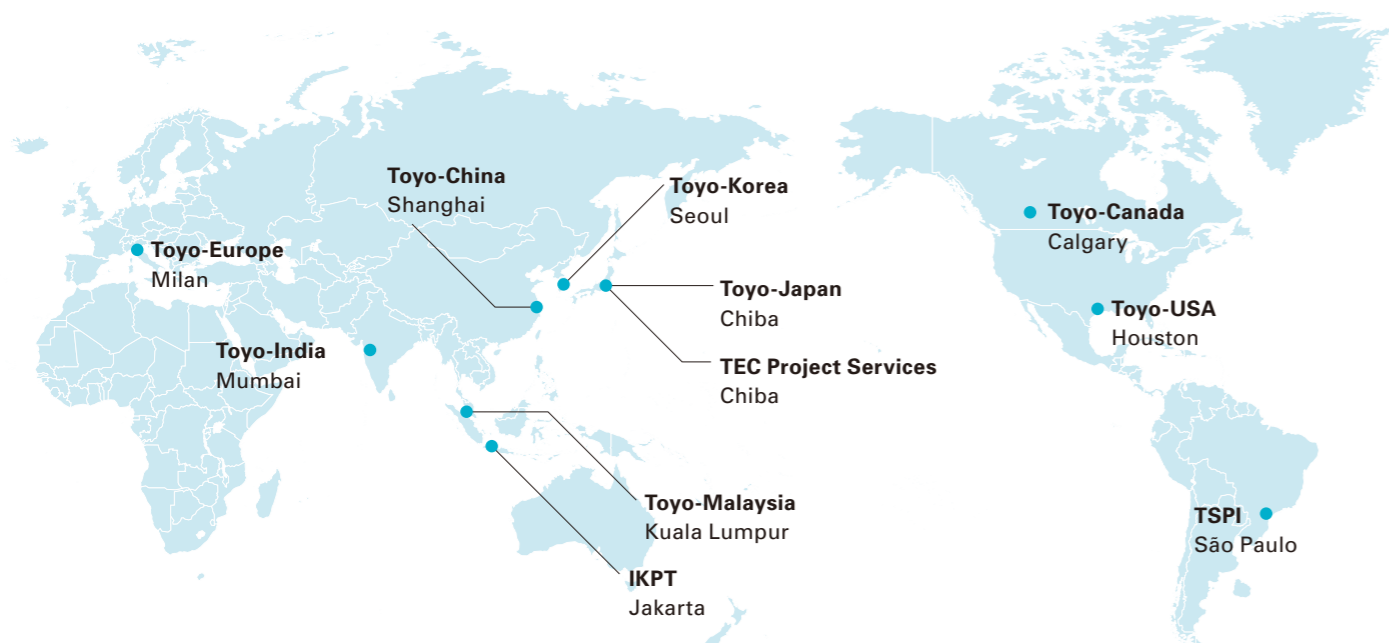
	Number of shares (thousands)	Voting rights ratio (%)	Percentage of total (%)
Mitsui & Co., Ltd.	8,754	22.89	14.93
Custody Bank of Japan, Ltd. (Sumitomo Mitsui Trust Bank, Limited Re-trust Account, Mitsui Chemicals, Inc. Pension Trust Account)	5,140	13.44	8.77
The Master Trust Bank of Japan, Ltd. Trust Account	1,299	3.39	2.21
Taisei Corporation	1,000	2.61	1.70
SSBTC CLIENT OMNIBUS ACCOUNT	511	1.33	0.87
Sumitomo Mitsui Banking Corporation	470	1.22	0.80
Custody Bank of Japan, Ltd. Trust Account 5	402	1.05	0.68
Custody Bank of Japan, Ltd. Trust Account 6	358	0.93	0.61

2. Class A Preferred Shares

	Number of shares (thousands)	Voting rights ratio (%)	Percentage of total (%)
Integral Team Limited Partnership	17,576	—	29.99
Innovation Alpha Team L. P.	2,693	—	4.59

Notes) 1. The shareholding ratio was calculated based on the exclusion of the 226,161 shares of treasury stock.
2. Class A preferred stock do not have any voting rights.

Global Network



Editor's Note

Thank you very much for paying interest on TOYO's 2021 Integrated Report. We placed the utmost importance on expressing the enthusiasm of our employees who are fully committed to the business strategies outlined in the medium-term management plan at the time we started making the concept of the report.

By letting people know that our medium-term management plan is not only a managerial goal but also a challenge to the future with the dreams and aspirations of all employees working at the TOYO Group. We wish if the report will help as many of our stakeholders as possible to have expectation and a sense of familiarity with TOYO.



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Photography by Yasuo Mikome, ASAHIDO

Editing Policy

The 2021 Integrated Report was prepared to provide stakeholders with a better understanding of TOYO's financial information (such as our management policies and financial results) and non-financial information (such as business environment and its connections to society). These are based on the Guidance for Collaborative Value Creation by the METI and the International Integrated Reporting Framework of IIRC (International Integrated Reporting Council).

Caution Concerning Forward-Looking Statements

This integrated report includes certain "forward-looking statements." These statements are based on management's current expectations and are subject to uncertainty and changes in circumstances. Actual results may differ due to changes in economic, business, competitive, technological, regulatory, and other factors.



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