

CHIYODA GROUP
Sustainability Report **2018**

Chiyoda Corporation
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The Chiyoda Group's Backgrounds as a Social Entity

Ever since the Chiyoda Group was founded in 1948, we have been contributing to society with engineering that makes use of technology we have kept refining. From then up to today, when we celebrate the 70th anniversary of our founding, we have been making contributions to the growth of Japan's energy and chemical industries by means of plant construction. We have also taken measures for the global environment by developing and commercializing technology for plants to prevent air pollution, treat wastewater, and so on. We have made every effort to provide the optimal infrastructure to meet the requirements of every era and region, and to contribute to the growth of society with our technology and human capital*1.

President & CEO

The Chiyoda Group's Corporate Social Responsibility (CSR)

Arising from the backgrounds, the Chiyoda Group is pursuing business under the declared Corporate Philosophy of 'harmony between energy and the environment.'

We have made a commitment to the 10 principles of the UN Global Compact*2 that we joined in 2012, and complied with the imperatives to assure safety, protect the environment, correct disparities, respect human rights, prevent corruption, as well as contribute to local communities, and so on in our business activities. In the course of our business, we have devoted ourselves to grasping just what is required by the times and our stakeholders, and using engineering as our tool to create value, we have worked toward the sustainable development of society.

The Sustainable Development Goals (SDGs*3) adopted by the United Nations in 2015 and the Paris Agreement represent shared global goals, and corporations are also being strongly called on to take measures through their business to resolve global issues. In addition to taking initiatives that form the foundation for CSR, the Chiyoda Group will work toward realization of a carbon-free society that achieves a balance between climate change countermeasures and economic growth, fulfilling the mission of an engineering company to bring about the resolution of social issues by means of technology and human capital, and continue aiming to improve corporate value.

To Achieve Our Ultimate Goal, 'a Reliable Company'

As our corporate activities have been increasingly global, we are dedicated to developing the circumstance in which not only employees but also all the other stakeholders such as customers, business partners and local communities can participate and play an active role, regardless of their gender, nationality, age or religion in a spirit of respecting human rights, above all.

The Group has also introduced the Chief Officer System starting in FY2018, and has appointed a Chief Human Resources Officer (CHRO), a Chief Compliance Officer (CCO), and a Chief Sustainability Officer (CSO). With the above activities further integrated into our business management, and with the medium-term management plan we announced in FY2017 in the name of 'Mirai Engineering – A Grand Opportunity for the Future,' the entire Group will act together for responding to diversifying energy demand together with sustainable global environment and society. As a global leading company, we will contribute to the achievement of a sustainable society by means of engineering.



*1: In the Chiyoda Group, human resources are a valuable asset and are referred to by the term 'human capital'.
 *2: UN Global Compact was announced by then UN Secretary-General Kofi Annan in an address to the World Economic Forum held in 1999. It is a principle-based framework for businesses, stating ten principles in the areas of human rights, labor, the environment and anti-corruption. Chiyoda has signed up in UN Global Compact in 2012.
 *3: SDGs are a set of global goals to be achieved by 2030, adopted at the UN Sustainable Development Summit in September 2015. They are common goals for the international community, consisting of 17 goals and 169 targets, for both developed and developing countries to tackle to eradicate poverty and realize a sustainable world.

The Chiyoda Group: 70 Years of History

We were founded in 1948, during the period when Japan was starting to make powerful moves toward its postwar recovery. With 'serving society through technology' as its founding motto, the company has kept moving forward in accordance with the Corporate Philosophy of 'harmony between energy and the environment' and in unswerving awareness of the requirements of the global community. Having entered the 70th year since our founding, we are aiming to become the new leading engineering company that works with technology and passion to create the future of energy and the global environment.

The Chiyoda Group History

Major Projects and Technology Development

Projects that Served as a Foundation for Development 01

'The project was to excavate the broad expanse of reclaimed land, down to the grass roots, and build a modern petroleum refinery, the construction of a grass-roots refinery was starting to get underway in October 1960.'

Project to build new Mizushima grass-roots refinery for Mitsubishi Oil Co., Ltd.

Our company started out in 1948, during the postwar period in Japan, proclaiming our commitment to making contributions to the postwar reconstruction of Japanese industry by means of technology. Since executing the contract for construction to rebuild the Kawasaki refinery of Mitsubishi Oil Co., Ltd., we have been implementing projects for domestic oil and chemical companies.

The Mizushima grass-roots refinery contract we were awarded in 1960 involved construction in a single phase of a 22,500 BPSD atmospheric distillation unit and a 20,000 BPSD vacuum distillation unit as well as the complete range of ancillary facilities, including oil storage tanks, utility facilities, and product shipping facilities. For that period, this was a

noteworthy construction project for a major refinery of a new type. Our work at the phase 1 construction was led by the Mizushima site office with 90 personnel, and as a result of the uninterrupted efforts of the entire company, the project was completed in October 1961. An opening ceremony was held with the Director of the Mining Division of the Ministry of International Trade and Industry now and many other guests in attendance.

We were then employed to continue as the contractor to phase 3 of construction, building up our reputation as an engineering, procurement, construction (EPC) contractor. This provided the foundation for subsequent expansion of our operation as we entered a period of internationalization centered mainly on oil producing countries.



Mizushima grass-roots refinery. Courtesy of Mitsubishi Oil Co., Ltd.

- 1948 Founding of Chiyoda Corporation
- Contributions to the postwar reconstruction of Japan's domestic industry
- Participation by means of engineering in oil and petrochemical industries
- Start establishing footholds for overseas expansion 1948

1948

- Construction to rebuild the Kawasaki petroleum refinery of Mitsubishi Oil Co., Ltd. (present JXTG Energy)
- New petroleum refinery for Mitsubishi Oil Co., Ltd.
- Ammonia and urea plant for India

1960

- Jeddah and Riyadh petroleum refineries, Saudi Arabia
- Petroleum refineries for Nigeria
- Tsukuba Research Institute Upjohn Pharmaceuticals Limited

Growth

- Start environmental initiatives in conjunction with domestic economic growth
- Respond to the diversification of plant demands led by oil producing countries
- Overseas expansion shifts into high gear in line with promotion of Group-wide internationalization
- Start initiatives for laboratory facilities projects
- Construct desulfurization units for the petroleum refinery
- Receive consecutive domestic orders for flue gas desulfurization units

- Accelerate overseas expansion and move to global operations
- Expand into fields of general industrial facilities and non-ferrous metals
- Accelerate pursuing LNG projects
- Participate in national oil stockpiling projects

1980

- Copper smelter for P.T. Smelting Co.
- Arun natural gas liquefaction plant for Pertamina (Indonesia)
- Fukui national petroleum stockpile base

Projects that Served as a Foundation for Development 02

'We build on distant desert lands. The completion of construction on Trains 1 and 2 represented a first step in the industrial development of the State of Qatar.'

Qatar LNG Project

In 1993, we were awarded a project for a liquefied natural gas (LNG) plant by Qatargas. This was a large-scale project in the Ras Laffan district of northern Qatar for two LNG lines and one optional line with annual production of two million tons, at that time among the largest in the world, for a total of \$2.3 billion. For our company, this was the first full-fledged grass-roots LNG plant construction project. Construction began with the building of a 30-km access road to the site, and it required the construction and operation of a camp that at its peak housed 10,000 construction personnel from 20 countries. The camp included a full range of facilities, such as power generation, desalinization, and other such utility facilities, as well as sports facilities, an outdoor movie theater, clinic, mosque, bank, fire department, and so on. The project ended up on a large scale that exceeded ¥10.0 billion in value. Construction involving the installation of as much as 25,000 tons of piping, a 55-m long cryogenic heat exchanger forming the main part of the plant, and so on was executed safely and efficiently, achieving no accident and no disaster record of 9 million continuous hours. As the result of the combined efforts of the whole company, two lines of the plant were completed in January 1997, ahead of the construction schedule, and a ceremony marking completion of construction was held locally on February 24, with Sheikh Hamad, Emir of Qatar, and several hundred concerned parties from both countries in attendance. The third line was completed in 1998, and in 1999 the project was chosen by the American Project Management Institute to be the first project of the year outside of North America.

- CT-121 Bowen 3 SGR JBR
- Photovoltaic power generation facility for Mitsui & Co., Ltd.
- Qatar Gas Operating Co., Ltd.
- Mizushima LNG receiving terminal for Mizushima LNG Co., Ltd.
- Sakhalin Energy Investment Co., Ltd.

2000



Qatargas (Qatar) LNG Plant (Trains 1 and 2)

In 1992, the Chubu Electric Power Co., Inc. of Japan concluded a long-term contract for the annual purchase of 4 million tons of LNG over a 25-year period, the first such contract in Japan. This triggered the participation of many other Japanese corporations, and the project was realized as a result. As a symbol of the friendship between Qatar and Japan, various dignitaries made visits to the site while construction was in progress, including the Crown Prince and Princess of Japan, who were on a tour of the Middle East, the Crown Prince of Qatar, the Minister of Energy & Industry of Qatar, and so on. Qatar places great importance on the relationship with Japan, and when the Great East Japan Earthquake struck in 2011, Qatar donated \$100 million, established the Friendship Fund, and provided assistance to affected areas. Chiyoda's performance on this project was valued highly, and the company was retained as the EPC contractor on LNG projects for Qatar. We have completed all seven trains for Qatargas and five trains for the RasGas Company totalling 70 million tons of capacity, and Qatar has become one of the world's greatest LNG exporting countries with an annual production of 77 million tons that contributes to its prosperity.

At present in Qatar we are constructing a further three trains of LNG production facilities with 7.8 million tons of capacity that are to be finished by the end of 2024. The plan is to expand production volume to 100 million tons. In March 2018, we were awarded the contract for the front-end engineering design (FEED) work on this expansion plan. We will continue making contributions to the development of Qatar and to the stable supply of LNG with a low environmental impact.

- Execution of LNG mega projects
- Execution of projects in the gas value chain
- Development and demonstration operation of environmental conservation technology
- Development of renewable energy-related business
- Participation in photovoltaic and solar thermal power generation projects
- Development of SPERA Hydrogen® System technology for large-scale transportation of hydrogen
- Expansion of overseas licensing of flue gas desulfurization technology

Further Development

Toward Further Value Creation

The Value Creation Story by the Chiyoda Group

The Chiyoda Group pledges to continue as an enterprise that optimizes the use of the cutting-edge technology and human resources to create value for society.

Our Corporate Philosophy proclaims 'harmony between energy and the environment,' and we are pursuing business with our CSR Values as shared values.

In order to respond to the requirements of global markets and communities, we aim to be a global top-tier provider of comprehensive engineering services in both energy and environmental fields by implementing our Medium-Term Management Plan 'Mirai Engineering - A Grand Opportunity for the Future'.

2017-2020 Medium-Term Management Plan

'Mirai Engineering'
- A Grand Opportunity for the Future



Initiatives in 2017-2018

- Appointed Chief Sustainability Officer (CSO)
- Established the Decarbonization Advancement Office

Global Standards

- ISO26000
- United Nations Global Compact
- SDGs
- Paris Climate Agreement
- United Nations Convention on Biological Diversity

The Chiyoda Group's CSR Values

1. A Reliable Company
2. Environmental Initiatives
3. Social Contributions
4. Respect for Human Rights
5. Commitment to Fairness

Social Issues

- Human Rights
- Anti-Corruption
- Global Warming
- Economic Disparity
- Appropriate Employment
- Individual Issues in Local Communities
- Securing Energy Resources

Realization of the Corporate Philosophy

- The Mission for us to Accomplish -

Enhance our business in aiming for harmony between energy and the environment and contribute to the sustainable development of a society as an integrated engineering company through the use of our collective wisdom and painstakingly developed technology.



- Achievement of SDGs
- Enhancement of Corporate Value

What are the SDGs (Sustainable Development Goals)?

These are goals that need to be realized by the year 2030 in order to achieve a sustainable development of society. They consist of 17 major goals and 169 targets that were adopted by the United Nations General Assembly in September 2015 to provide a basic framework for action in the international community of both developing and developed countries.

In this report, we are reconfirming our own corporate activities and displaying icons for the relevant goals side by side with such activities.



The Chiyoda Group Supports the SDGs.

01 Energy Project Operations Division

Our Mission

Support the revenue base of the Chiyoda Group, respond to diverse energy demand, and aim for a sustainable society

The Business Environment

- Natural gas demand centered in Asia is increasing. New large-scale LNG*1 project FIDs**2 are anticipated.
- Crude oil supply-demand balance has improved as an effect of cooperative production cuts and growth in demand from developing countries.
- There is continuing investment and development in petroleum and petrochemical projects derived from an oil or gas shale in the US.

*1 LNG: Liquefied natural gas *2 FID: Final investment decision

We will continue providing value to society and building a stable revenue base by engaging in LNG plant construction and developing the energy value chain.

LNG has CO₂ (carbon dioxide) emissions approximately 25% less than oil for energy with a lower environmental impact.

LNG is expected to realize both climate change measures and economic growth while it finds expanding use as a fuel for the transition toward future achievement of a carbon-free society.

Since Chiyoda started working on its first LNG plant in the Middle East in the 1970s, we have built the equivalent of about 40%*1 of the LNG plants in countries around the world. We have established our firm position as an EPC*2 contractor and also contributed to 'harmony between energy and the environment.'

By means of plant construction, we have also contributed to stabilizing the economic base of Qatar and other gas producing countries, and recently won the

contract for front-end engineering design of a large new LNG plant in Qatar. Based on this record of performance and our relationship of trust with gas producing countries, we will continue building our foundation for stable revenue as a top contractor in the LNG field and aiming for a sustainable society while addressing diverse energy demands.

Going forward, we will work to expand the LNG value chain through such projects as small-mid scale LNG, floating LNG power vessels, and so on. We will play a key role in providing a stable supply of energy with a low environmental impact to continue promoting global environmental protection.

As for the overseas petrochemical field, the infrastructure field, and the metals field, where Chiyoda also has a record of achievement, we will take steps to steadily expand our business by ascertaining the markets in these fields. Meanwhile, working in collaboration with other divisions, we will further take steps for technological innovation and cost reduction through the use of the IoT and AI in the energy field, and in addition we will create value in environmentally friendly areas of business. This will involve participation in various areas of technology, including lithium ion batteries, which are items related to renewable energy, storage batteries, and electric vehicles (EVs), high-performance magnets, and so on.

In support of the Chiyoda Group's revenue base, we will promote energy solutions under the 'Mirai Engineering' medium-term management plan and, as one of the world's leading engineering companies, we will aim to increase our corporate value and work toward a sustainable society.

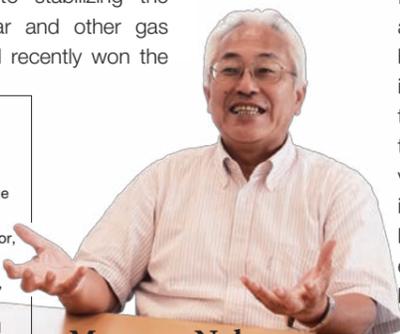
*1 Our estimate *2 Engineering, procurement, construction

Career Summary

Joined Chiyoda in 1977. Qalhat LNG Project Director, 1999. Concurrent Director of Gas Value Chain Project Division, 2006. Qatargas 3 and 4 Project Director, 2007. Concurrent Director of Overseas No. 3 Project Division, 2009. Senior Vice President and Director, Overseas Gas and LNG Operations Division, 2013. Director, 2017. Current position since April 2018.

Mamoru Nakano

Executive Vice President, Operations Director Energy Project Operations Division and General Manager, Gas and LNG Project Department



Business Development

1 Large EPC projects on going



Ichthys LNG Project onshore processing facilities at Bladin Point, Darwin. Photo courtesy of INPEX

Large Liquefaction Project Located in Louisiana USA

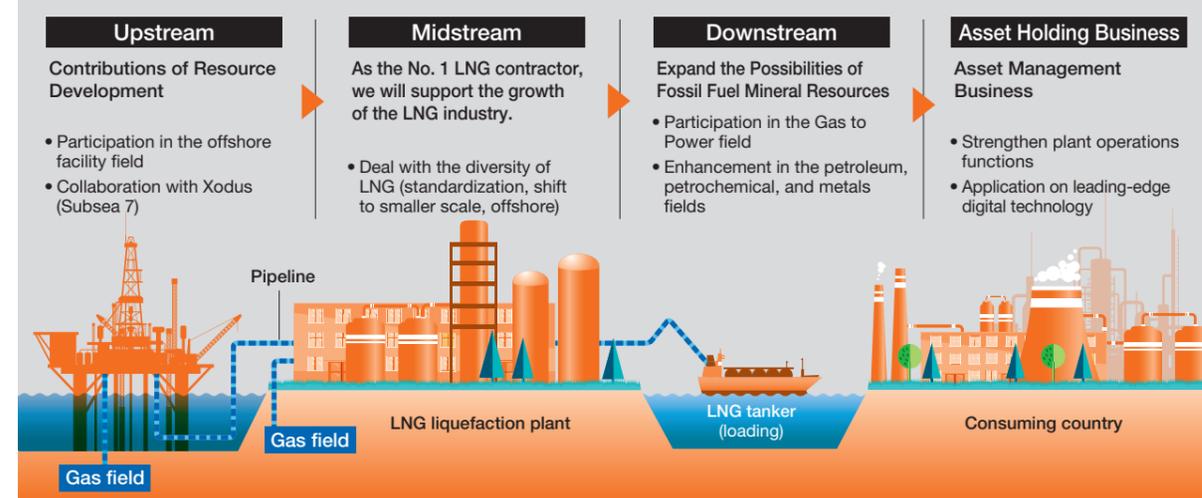
2 Promoting creation of energy value chain business

In the LNG field, which is fundamental for us, we will further expand our position as a top LNG contractor by strengthening our capabilities thoroughly and expanding our lineup in order to respond to diversifying needs. In addition, we will realign our business in upstream areas and aim to assure stable revenue in the area of offshore facilities.

We will take steps for differentiation in the petroleum, petrochemical, and metals fields to ensure our contract awards.

At the same time, we will promote our asset holding type business as a new business sector, and in the asset management business we will strengthen our plant operations functions by application on and promoting leading-edge digital technology.

Building our base for providing value in the energy value chain



Contribution to SDGs



The stable supply of energy brings value that is universal for humankind. We consider the increased value that 'Mirai Engineering' aims for to be the source for a sustainable society.

By means of plant construction, we assure access to energy for all people around the world. By channeling it into infrastructure improvement, we realize growth for developing countries and improvement in standards of living. In addition, our use of technology and equipment with a lower environmental impact even while making energy widely available is a contribution toward curbing global warming and addressing the issue of climate change by means of Chiyoda's technological capabilities.

02 Global Environment and Green Energy Project Operations Division

Our Mission

We are aiming to become a leading engineering company that contributes to the future of the global environment and the sustainable development of society.

The Business Environment

- Expanding investments in the renewable energy field that are aware of the forthcoming carbon-free society
- Progressing technology for electric power storage and energy storage
- Robust interest to invest in medium molecular weight drugs, biotechnology, and antibody drugs



Implement projects across a wide range of fields and realize a sustainable society

Achieving a balance between industrial development and the global environment has been a crucial mission for Chiyoda since the time of our founding. The international community's concern with the global environment is accelerating with growing rapidity, as can be seen from the global attention being paid recently to the issue of a carbon-free society.

The Chiyoda Corporate Philosophy proclaims 'harmony between energy and the environment,' and we have been actively participating in projects not only in natural gas,

Career Summary
 Joined Chiyoda in 1984. APM of TPS-4 Project, 2001. General Manager, Refinery Project Division 2, 2006. General Manager, Domestic Petrochemical Project Unit, 2012. Vice President and Deputy Operations Director, Downstream and Non-Hydrocarbon Project Operations, 2014. In current position since April 2018.



Terunobu Iio
 Senior Vice President
 Operations Director,
 Global Environment and
 Green Energy Project
 Operations Division

petroleum, and other core businesses we have long pursued, but also in renewable energy. In addition, we are taking active part in multiple photovoltaic power generation facility construction projects as well as in biomass power generation demonstration projects and construction projects for electric storage facilities that work in combination with diversifying power sources.

We have also engaged in construction of a hydrogen supply chain intended to realize widespread adoption of hydrogen energy, which is being promoted by the Japanese government. As part of this effort, we will implement a demonstration of technology to store and transport hydrogen from the Nation of Brunei, starting in January 2020. This hydrogen will be primarily for use as a fuel for power plants.

At Chiyoda, we also understand global environmental measures as something to undertake across a wide range of fields, including pharmaceuticals, medicine, and life sciences. We are not limiting ourselves to the engineering and construction of conventional facilities for low molecular weight drugs (pharmaceutical manufacturing and pharmaceutical ingredients), but are broadening our expertise of biotechnology and cell technology and building up our record of performance in facilities for such new fields as macromolecular drugs, therapeutic middle molecules, regenerative medicine, and so on.

In addition to our continuing work on petroleum, chemical, gas, and industrial facilities for customers in Japan, we are pursuing new business developments in new energy, environmental, electric power, pharmaceuticals, and other such fields. We will contribute to the sustainable development of society through our active initiatives in these wide-ranging areas of technology.

Business Development

Enhancement of business in new energy, environment and energy saving, new materials, and life sciences

We will expand our initiatives in environment-related business, including life sciences, in view of heightening awareness of the global environment. We will respond to the diversification of electric power source equipment and facilities by pursuing still further advances in technology for combining renewable energy and electric power storage, for distributed power generation, and

so on. We will pursue business with a focus on the global issues of increasingly scarce food and water resources and the development of a health-oriented society while at the same time we deploy the engineering knowhow we have cultivated toward the realm of space. With the knowhow we acquire from this, we will promote further business expansion.

New Energy

- Respond to expanding market needs in renewable energy

- Initiatives in photovoltaic power generation, electric power storage, and biomass power generation fields
- Establish a hydrogen supply chain business
- Develop business through partnering



Photo courtesy of Nagasaki Solar Energy Godo Kaisha



GMP Vector Manufacturing Plant for Tissue Engineering, Courtesy of I'FROM Group Co., Ltd./ID Pharma Co., Ltd.

Environment and Energy Saving, New Materials

- Expand environment-related business
- Differentiate by means of technology

- Deploy low environmental impact and energy-saving technology to industrial facilities
- Incorporate next-generation leading-edge materials
- Progress in decarbonization technology development

Life Sciences

- Develop new technology in pharmaceutical and life sciences fields and deploy in EPC projects

- Pursue business model for regenerative medicine field
- Business development through partnering
- Expand areas of business and start operating overseas

Contribution to SDGs



To realize 'harmony between energy and the environment,' we will aim for sustainable development of the global environment and human society as we create corporate value together with value for society through engineering that has its sources in technology and passion. As a leading engineering company, we will engage in wide-ranging fields of business and contribute to the sustainable development of society by addressing and resolving global issues.

03 ChAS and Digital Technology Project Operations Division

Our Mission

We will grasp the innovations made in digital technology and contribute to a sustainable society by developing next-generation business models that are rooted in technology.

The Business Environment

- Boundaries between manufacturing and service industries are being erased
- Roles performed by people are changing
- Needs for heightened business value are increasing throughout the life cycle

Making effective use of innovative digital technology to realize 'Mirai Engineering'

Digital technology innovations have recently been transforming society and people's lives. Digital technologies such as the internet of things (IoT), artificial intelligence (AI), big data, and so on are being employed in business, as well, and new value is being created. The ChAS and Digital Technology Project Operations Division was started up in April 2018 for the purpose of creating next-generation business models while also grasping trends in these areas, applying innovative digital

technology to Chiyoda business, contributing to the safe and stable operation of customer facilities, and contributing to the strengthening of our competitiveness relative to other corporations.

Up to now, Chiyoda has used advanced analysis and diagnostic technology to assist in raising production efficiency, heightening safety, and so on. In addition to dealing with issues of productivity and maintenance, including energy saving in customer facilities that help maintain the supply of sustainable energy, we have also taken on support for improvement of operational processes, data management, training for customer personnel in other countries, and other such activities to support customer operations. We are also making advantageous use of plant seismic diagnostics and countermeasures knowhow to take part in resilient infrastructure improvements that address the promotion of national resilience.

In future, we will fuse innovative digital technology with our business and apply it to matters we could not have anticipated before in order to provide further support to the safe and stable operation of our customers' facilities. At the same time, we will realize reforms in EPC execution and take steps to strengthen our competitiveness, thereby providing continuing support to Chiyoda's 'Mirai Engineering.'



Toshiaki Furugori

Vice President
Chief Digital Officer (CDO) and Operations Director,
ChAS and Digital Technology Project Operations Division

Business Development

1 Accelerating Adoption of Digital Technology, Including AI

Companywide Digitization

Accelerate the adoption of digital technology in the whole Group and realize reforms in EPC execution

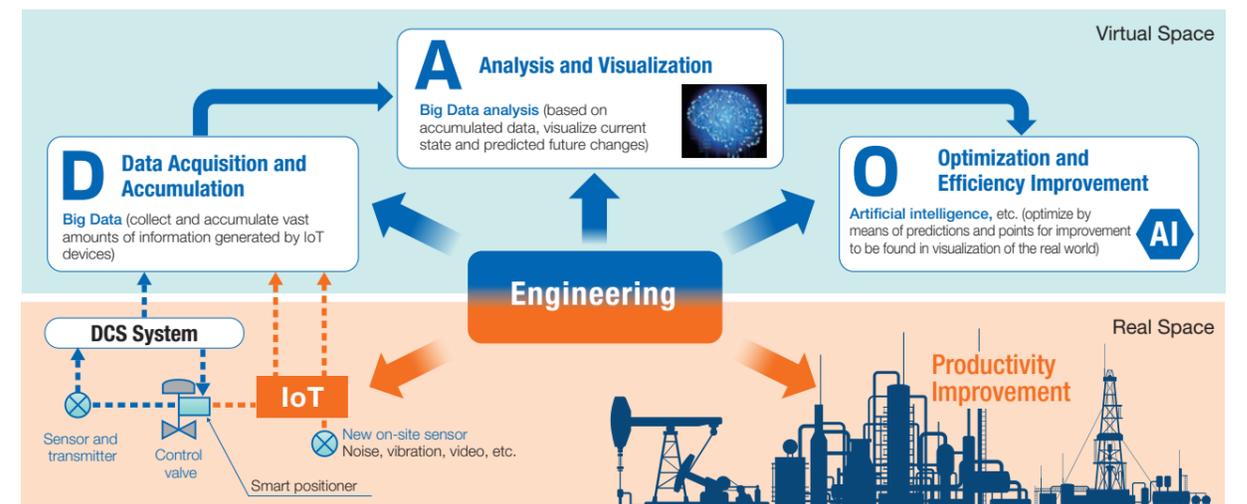
Develop new business models

Combine advanced analysis and other types of plant engineering technology with innovative digital technology

Expand partnering

- Develop and provide Plant Smart IoT Service
Advanced safety and security operations realized using a virtual plant
- Develop and provide services that are combined with AI technology
Support maximization of plant productivity by business alliance with GRID Inc.
- Digital Twin Platform
Collaboration of 3D facility diagrams with all types of facility information

2 AI Solutions



3 Chiyoda is Achievement Using Digital Technology

Memorandum of Understanding on AI and Big Data Concluded with ADNOC LNG

Chiyoda has concluded a Memorandum of Understanding with the Abu Dhabi Gas Liquefaction Co. Ltd. (ADNOC LNG) in the United Arab Emirates regarding the provision of the latest digital technology for AI and Big Data analysis and other such purposes at that company's LNG plant. The provision of new leading-edge digital technology services that combine advanced plant engineering technology with cutting-edge AI technology from GRID will raise the level of the plant's optimal operation and maintenance as well as its production efficiency. In this way, we will contribute to raising the value of the

customer's assets. We will take steps to expand technological innovation and contribute to society by assuring access to energy that is sustainable and modern.



Photo courtesy of Japan External Trade Organization

Contribution to SDGs



With the knowhow we have cultivated to date as a base, we implement facility management that makes thoroughgoing use of innovative digital technology, and in this way we support improvements to energy efficiency in our customers' facilities as well as achievement of safe and stable operation. By heightening the value of what our customers provide to society, we contribute to strengthening competitiveness, and this forms a foundation for creating the value for society found in industrial development and beyond that in infrastructure improvement. In addition, we will contribute to the sustainable development of society by means of technological innovation that is friendly to the global environment.

CSR Management

As circumstances in the world community grow more complex, we are being called on to grasp changes in business environments as soon as they occur, and to respond appropriately to the demands of the times. In order to achieve further growth of the global environment and human society in a sustainable community, Chiyoda appointed a Chief Sustainability Officer (CSO) starting in April 2018 to ensure grasping issues correctly and proceed to resolve them.



Responding to the changing business environment, we contribute to realization of a sustainable society

Ryosuke Shimizu

Director and Executive Vice President
(CSO and Division Director, Corporate Planning Division)

Message from the CSO

I am Ryosuke Shimizu, the newly appointed CSO and Director of the Corporate Planning Division. As the Corporate Planning Division Director, I promote short and medium-term management strategy in accordance with the current medium-term management plan, 'Mirai Engineering' – A Grand Opportunity for the Future. In addition, I will formulate long-term strategy and take active measures toward the sustainable development of society.

For that purpose, it is important to declare and commit to objectives and cite specific cases that will contribute to resolving issues with our technology and human capital that are this company's strengths. In this, we will also focus on SDGs, which are common world goals, with a view to the year 2030. Having linked the activities we are currently undertaking to the SDGs, we will uncover the key issues and from them obtain particular themes that are to be integrated with management as priority issues. As I see it, it is the mission of the CSO to be responsible for these innovations of the integration, and to link them to long-term strategies that are in line with our CSR.

We think that the global movement toward realization of a carbon-free society by climate change initiatives adopted in SDGs and declared in the Paris Agreement also represents a major opportunity for Chiyoda. First of all, one of the key issues we have identified for Chiyoda to address is the realization of a carbon-free society, which we envision for the year 2030 or a bit more. In order to study measures aimed at achieving this, and to formulate a strategy for it, we established the Decarbonization Advancement Office in the Corporate Planning Division as of June 1, 2018.

There is also the matter of the CSR based management awareness, which our Corporate Philosophy describes as our aim to contribute to the sustainable development of society. We intend to strengthen our resolve on this still further, and therefore we announced a new Business Vision in May of this year that integrates our former Business Vision and CSR Vision, which used to be separate. The five themes of our former CSR Vision are now positioned as CSR Values that continue to be shared by Group employees in support of the new Business Vision. By means of engineering, we will keep on contributing to the effort toward a sustainable global environment and human society.



Corporate philosophy : Our Mission to Fulfill

Enhance our business in aiming for harmony between energy and the environment and contribute to the sustainable development of a society as an integrated engineering company through the use of our collective wisdom and painstakingly developed technology.

Business vision : The Aim of Chiyoda

(Integration of the former Business Vision and CSR Vision, as of May 9, 2018)

A Grand Opportunity for the Future

The Chiyoda Group is committed to being an 'Innovative' Engineering Company, shaping the future of energy and the global environment with passion and cutting-edge technology.

CSR Values : Our Shared Values

CSR Values : Our Shared Values		ISO 26000 Core Subjects	UN Global Compact
1 	A Reliable Company We strive to be a reliable company to our customers and all our stakeholders by providing world-class technologies and knowledge.	Consumer (customer) issues	—
2 	Environmental Initiatives We will work to remain an invaluable company to society by utilizing refined technologies to promote harmony between the global environment and economic and social activities.	The environment	Principle 7: Businesses should support a precautionary approach to environmental challenges; Principle 8: undertake initiatives to promote greater environmental responsibility; and Principle 9: encourage the development and diffusion of environmentally friendly technologies.
3 	Social Contributions Through our engineering business in Japan and overseas, we contribute to local communities and address global issues in ways including human resources development, technology transfer and environmental protection.	Community involvement and development	—
4 	Respect for Human Rights We are dedicated to respecting the human rights of all people. We will create a corporate culture where the diversity, individuality and character of employees are respected, where people are motivated to do their best, and of which employees and their families are proud.	Human rights Labor practices	Principle 1: Businesses should support and respect the protection of internationally proclaimed human rights; and Principle 2: make sure that they are not complicit in human rights abuses. Principle 3: Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining; Principle 4: the elimination of all forms of forced and compulsory labor; Principle 5: the effective abolition of child labor; and Principle 6: the elimination of discrimination in respect of employment and occupation.
5 	Commitment to Fairness We are dedicated to achieving even greater transparency and stability by conducting our operations fairly in accordance with the highest ethical standards.	Organizational governance Fair operating practices	Principle 10: Businesses should work against corruption in all its forms, including extortion and bribery.



A Reliable Company

Why

For a corporation, the trust of its stakeholders provides the foundation for management. Through our business, the Chiyoda Group will contribute to the resolution of global issues and the sustainable development of society so as to continue earning the trust of our stakeholders.

How

- Provide safe, reliable plants
- Execute high quality engineering
- Provide engineering solutions for the sustainable development of society
- Share our CSR philosophy with business partners through the supply chain
- Perform facility renovations in line with the demands of the times

Development on the Northernmost Energy Frontier for a Stable Energy Supply

Yamal LNG Project Achieves Its First LNG Cargo Shipment in 44 Months



Chiyoda has been participating in the construction of Yamal LNG Plant project in Russia, as a member of the joint venture (JV) led by TechnipFMC and with JGC and Chiyoda.

This is the world's first LNG plant in the Arctic Region comprising three (3) LNG trains that will produce 5.5 million tons per each train annually.

Through this project, the robust teamwork has been required to cope with various challenges specific to the severe construction site conditions in the freezing cold. Under such circumstances, JV has achieved the 1st-Drop product of Train-1 in November 2017 and the 1st-LNG Cargo in December 2017 respectively in 43 and 44 months from the start of this project.

Despite the harsh on-site duty rotation, JV has been able to prevent troubles as much as possible by proceeding with works in a flexible manner without any sectionalism and building up a close communication network. In addition to the above site work, a great deal of support from the client, all the seamless efforts of members at the headquarters, JV partners, and suppliers as well as subcontractors that well responded to our

various requirements, have combined and led the utility area Chiyoda undertook to successfully start its operation in 41 months. Together with the client, this early completion of the world's first LNG plant on the northern most Arctic Region has made a great contribution to the stable energy supply. Now, Chiyoda is continuously aiming at completing the whole trains in 2019.



Courtesy of JSC Yamal LNG

Quality Improvements Implemented with Suppliers

18th Valve Summit Held



Large amounts of equipment and materials are procured when building a plant. When problems in quality occur, they affect the safety of residents living near the construction site and the global environment.

Defects have various different causes, so it is crucial to recognize and avoid problems in advance, and to assure quality. We implement such measures with our suppliers on a regular basis.

Valve summits have been held three times a year since 2013, and there were suppliers from approximately 40 companies taking part in February 2017. The summits include technical discussions about valves, which are critical materials for a plant, participants share cases of defects and methods for

avoiding them, and so on. We cooperate with suppliers in the effort to improve quality and technological capabilities.



Scene of a Valve Summit

Effective Use of Energy by Facility Renovation Work in Line with the Demands of the Times for Sustainability

RFCC* Unit Regenerator Cyclone System Renovation Work



Chiyoda conducted renovation in conjunction with scheduled maintenance at the Yokkaichi refinery of Showa Yokkaichi Sekiyu Co., Ltd., in 2017. The work was done on the regenerator cyclone system (for centrifugal separation of catalyst), which was integrated with the column top portion of the RFCC unit we had built in 1996.

This was a partial renovation of a regenerator that is 16 m in diameter, the largest such FCC unit-related regenerator in Japan, and we had been conducting a study of the job since 2012 in order to realize safe and efficient work under demanding conditions.

In addition to resolving problems on the technical side, we took steps to shorten the construction period and reduce costs. Working in cooperation with Group companies, we also collaborated very closely with the customer and successfully completed this highly difficult cyclone system renovation work without any accident or disaster.

Going forward, the Chiyoda Group will work together as one and join with our customers in contributing to the effective utilization of resources and aiming to develop sustainably dwellable communities.

* Residue fluid catalytic cracking unit



Column top portion of 16-m diameter regenerator that is largest in Japan

Comments from the Customer

I think that a major factor in the successful execution of this project under very demanding conditions was that we were fortunate in our members. Thanks to the fact that appropriate specialists were assigned to us from the preparatory stage, the people in charge on the Chiyoda side and on our side got together face to face to examine the various challenging issues that came up and deal with them. Therefore we were able to take steps for a speedy and appropriate resolution of the issues. It was also good that we had built up an excellent relationship with Chiyoda through other projects in the past, so we were able to move ahead smoothly with the examination of matters. Our company's mission is the stable supply of petroleum products. The FCC is an extremely critical unit, in making gasoline or chemical products. It was a great boost to the confidence of our company's employees to see how this renovation work was carried out to completion, without any disaster and any quality defects, during scheduled maintenance in a very complicated location. What we expect Chiyoda to do is to carry out advanced plant engineering. I hope that in the future as well Chiyoda will continue handling this difficult work with that high level of safety management, quality management, and progress management. I also hope that Chiyoda will pass on the experience and knowledge from this job to younger engineers, as well, and also bring us new suggestions.

Mr. Norio Ochi

Manager
Electric Instrumentation and
Machinery Section Engineering Department
Yokkaichi Refinery
Showa Yokkaichi Sekiyu Co., Ltd.



Developing Industrial Infrastructure by Providing High Performance Products

Completed Construction of Specialty Chemicals Manufacturing Facility at Mizushima Plant of Mitsubishi Gas Chemical Co., Inc.



Chiyoda Kosho Co., Ltd., was awarded the contract for construction of a specialty chemicals manufacturing facility at the Mizushima plant of Mitsubishi Gas Chemical Co., Inc., and completed the construction in October 2017.

Construction methods to enable smooth onsite operation in the cramped site area were proposed and a HAZOP* study was conducted. Results were incorporated in the detailed design and thoroughgoing measures were taken for safety. Process meetings were also held at which finely tailored process and construction adjustments were made with the customer, and construction was successfully completed without any disaster and accident. The specialty chemicals to be produced at this facility will be used in coatings and plastics, with the feature of performance dramatically enhanced by comparison with conventional products. Sales of these products will be expanded on a global scale, leading to development of industrial infrastructure.

* Hazard and operability study: A method that was developed to identify process risks. Its purpose is to identify potential risks, evaluate their impact and results, and devise necessary safety measures.

Comments from the Customer

In addition to their record of performance in our plant site, Chiyoda also has a record of performance with maintenance at facilities adjoining to the site, and their thorough familiarity with the area environment led to their being awarded the contract. The present construction took place under harsh conditions, and we are grateful that Chiyoda addressed our requests to the utmost, gave us suggestions, and completed the construction on schedule without accident or disaster. The Mitsubishi Gas Chemical Group vision calls for the 'creation of value that can be shared with society.' To realize this, it is essential that we make our contribution by providing chemical products with the functionality demanded by society, in a timely manner. Going forward, we hope that Chiyoda Kosho Co., Ltd., will continue making use of their safe management capabilities, technological capabilities, and onsite capabilities so that together we can go on contributing to the sustainable development of society.

Mr. Akira Katsume

Senior Project Leader
Mizushima Plant Research and
Technology Division
Mitsubishi Gas Chemical Co., Inc.



A Reliable Company



Environmental Initiatives



Social Contributions through Business Activities



Respect for Human Rights



Commitment to Fairness



Environmental Initiatives

Why

Ever since the Chiyoda Group was founded, we have engaged with the contradictory themes expressed as 'harmony between energy and the environment.' In order for the global environment and human society to be sustainable, we will aim to use engineering to realize climate change countermeasures and a carbon-free society. As we contribute to solutions for new issues as they arise, we will continue to be a leading company.

How

- Implement measures to protect the environment through project execution
- Implement measures to use water effectively
- Suggest technology that addresses climate change
- Develop and provide technology to protect the environment
- Use energy effectively by improving energy efficiency

CO₂ Reduction Through Engineering

Mega Solar Plant Construction Effectuates CO₂ Reduction



In December 2017, Chiyoda completed construction of the Shima City Ago Tategami Mega Solar Plant (12.8 MW) for Sanco Real Estate Co., Ltd. The plant is located in Agocho Tategami, Shima-shi, Mie Prefecture. The Japanese government's Basic Energy Plan positions photovoltaic power generation as a key energy source that is supposed to make up 22-24% of renewable energy by 2030. Chiyoda has been involved in the design and construction of approximately 29 mega solar plants to date, and when the power plants currently under construction have all been completed, they will generate a total of 460 MW. It is estimated that the greenhouse gas emissions reduction effect will be equivalent to approximately 4.5 million tons* by 2040.

We will continue in the future as contractors providing

design and construction services to meet the needs of our customers that promote carbon-free projects.

* Value estimated in accordance with Japan Photovoltaic Energy Association Display Guidelines (FY2018)



Shima City Ago Tategami Mega Solar Plant

Contribution to Reduction of Environmental Impact by Technology Development

Received FY2017 Technology Award from the Catalyst Manufacturers Association Japan



Chiyoda won the FY2017 Catalyst Manufacturers Association Japan Technology Award for the development and practical application of CT-HBT*, a catalyst for the hydrodesulfurization of kerosene and diesel oil.

CT-HBT® is a catalyst that uses an alumina substrate with a titanium coating as a support. This catalyst exhibits high hydrodesulfurization activity with refractory feedstock and is therefore able to improve the conversion rate to diesel oil of catalytic cracked gas oil (light cycle oil, LCO) produced in a fluid catalytic cracker (FCC). Improving the rate of conversion from LCO to diesel oil contributes to the effective use of feedstock as well as to the reduction of air pollutant emissions.

With the momentum provided by this award, we will actively engage in further development of this catalyst in order to reduce the impact of harmful emissions.



Commemorative photograph of Catalyst Manufacturers Association Japan members with award recipients (the two people at the left end of the front row are recipients from Chiyoda)

* Chiyoda Thoroughbred Hybrid Titania

Initiatives to Industrial Wastewater Reclamation in Water Stress Area

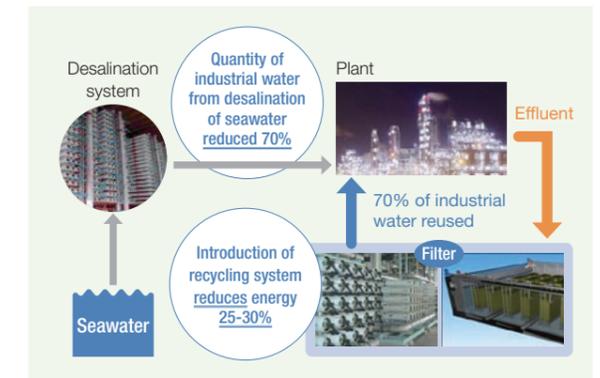
MODON Wastewater Reclamation System Demonstration Project



The Chiyoda Group implemented a demonstration project entrusted from NEDO (the New Energy and Industrial Technology Development Organization) for wastewater reclamation system at the Dammam First Industrial City established by MODON (the Saudi Industrial Property Authority) in Saudi Arabia, which has a high level of water stress¹, after carrying out a risk assessment and feasibility study. As an initiative in the water recycling field, we implemented a demonstration project for wastewater recycling system technology at the Dammam First Industrial City, which is operated by MODON.

The project demonstrates a system that achieves an energy saving of approximately 30% over conventional methods of seawater desalination. The project treats approximately 5,000 tons of wastewater per day using membrane technology (MBR² and RO³ membranes), and reuses 3,500 tons of industrial wastewater.

The project country has limited water resources, so promoting the recycling and reuse of industrial wastewater contributes to the effective use of water resources. Implementation in other water stress areas is anticipated.



System Diagram

¹: Water stress is an indicator for evaluating the extent of strain relating to water supply and demand, and is expressed as the usable quantity of water resources per capita of population.

²: Membrane bio reactor

³: Reverse osmosis

Initiative Undertaken with Kawasaki City to Contribute to Achieving a Carbon-Free Society

Constructing a Hydrogen Supply Network



Chiyoda is working with Kawasaki City to realize the Hydrogen Energy Utilization Promotion Project proposed in the Coastal Area Vision that the city announced in March 2018. Gaseous hydrogen is difficult to handle, and transportation of hydrogen has been a challenge. Chiyoda has established a proprietary 'SPERA Hydrogen®' technology for safely transporting large volume of hydrogen in a liquid state at ambient temperature and pressure.

As a step toward realization of a zero emission society, Advanced Hydrogen Energy Chain Association for Technology Development, AHEAD, has been established by Chiyoda, and Mitsubishi Corporation, Mitsui & Co., Ltd. and Nippon Yusen K.K. With subsidies from the New Energy and Industrial Technology Development Organization, NEDO, Chiyoda will lead the world by implementing 'The Demonstration of the Hydrogen Supply Chain by Organic Chemical Hydride Method Utilizing Unused Energy', which is scheduled to transport SPERA Hydrogen® in ISO tank containers by container ship from Negara Brunei Darussalam to the Kawasaki coastal area from January to December in 2020. SPERA Hydrogen® unloaded at Kawasaki Port will have its gaseous hydrogen extracted at oil refineries of TOA OIL CO., LTD. in the coastal district, and that hydrogen will be used as gas turbine fuel to generate electric power by co-combustion. Based on this demonstration, the hydrogen supply from overseas will put into full-scale operation and a wide-area hydrogen network will be constructed by around 2030, so that it is anticipated that hydrogen fueled electric power generation and fuel cell vehicles (FCV) as well as FC buses and FC forklift that use hydrogen energy will be in widespread use. This will contribute to the reduction of carbon emissions.

Comments from Partners

The Hydrogen Energy Utilization Promotion Project leads toward a sustainable society and the Coastal Area Vision makes it a priority project. Developing the town of Kawasaki is not just a matter of improving citizen services. We are taking the lead to solve the social issues of an industrial city. This makes Kawasaki a model city for Japan domestically but we think the city will also contribute to the world. The coastal area is home to numerous petrochemical industrial complexes and energy facilities, which make up the key industries. Therefore collaboration on the coastal with Chiyoda, which possesses expertise about such plants, is very effective not only for coping with aging plant facilities, which is an issues throughout the industry, but also for enhancing facility performance and realizing the watching with new industrial infrastructure. The establishment of supply chains with a view to extending them overseas also necessitates resolving issues with many related organizations, and we have high expectations of the Chiyoda Group's international network. Partnering with Chiyoda in ways that also make good use of Kawasaki City's regional network, we will lead the way toward sustainable community development.

Associate Manager **Mr. Tetsuya Majima**
 Assistant Manager **Mr. Akikazu Kobayashi**
Ms. Rika Hasegawa
 Kawasaki City Coastal Area Projects Promotion Department



Kawasaki City Coastal Area Vision (adopted March 27, 2018): <http://www.city.kawasaki.jp/590/page/0000096607.html>



A Reliable Company



Environmental Initiatives



Social Contributions through Business Activities



Respect for Human Rights



Commitment to Fairness



Social Contributions

Why

Working to resolve the issues of society is the engineering company's mission in society. It is not just about providing plants. The areas of social issues addressed by the engineering business are growing larger and larger, and include improvement of social infrastructure, the food problem, and so on.

How

- Establishing industrial infrastructure
- Providing added value by integrating with cutting-edge technologies
- Transferring technology, creating jobs, and developing human resources in countries where we execute projects
- Resilient infrastructure improvement

Building Industrial Infrastructure by Promoting Stable Self-Sufficiency in Food

Construction of Demonstration Vegetable Factory in Dubai



We have been working on the development of vegetable factories for overseas countries collaborating with Marubeni Corporation and Showa Denko K.K. since 2016. In December 2017, we completed a demonstration plant of a vegetable factory in Dubai for a local conglomerate. We are now supporting the customer's stable vegetable cultivation in this plant.

As the Vegetable factory ensures the suitable cultivation conditions constantly, regardless of the climate conditions outside the factory building, its major feature is that our customer can produce safe vegetables stably even in areas that are unsuitable for vegetable cultivation.

This work on construction of a food factory adds the element of life sciences to the existing repertoire of Chiyoda strengths.

Therefore this project has also enabled us to present solutions to social issues in the area of food. We are aiming to make further contributions to society by developing the demonstration facility to large cultivation facilities.



Demonstration factory interior

Contributing to a Sustainable Society Using the Acoustic Emission (AE) Technique

Science and Technology Award Conferred for Development of Global Diagnostic Technology



In May 2018, an article written at Chiyoda, 'Development of a Global Diagnostic Technology for Corrosion Damage on the Bottom of Above-ground Storage Tanks Using the AE Technique', was received the Science and Technology Award from the High Pressure Institute of Japan.

There are many above-ground storage tanks placed at plants in Japan, and designated above-ground storage tanks holding 1,000 kl or more are required to undergo periodic overhaul inspections. For particularly large tanks, the mandatory inspection period is almost one year, and the inspection cost can range from several tens to several hundreds of millions of yen, so this places a great burden on the companies concerned. The acoustic emission (AE) technique* is already being used in Europe and America for inspections that do not require opening up the tank interior. The various institutions concerned therefore carried out development of advanced non-destructive inspection technology (hereafter tank AE) for use in Japan, as

well, to evaluate the corrosion of bottom plate of the tanks. Chiyoda took the lead in developing that technology.

At present, we are deploying a service using tank AE to help storage tank operators plan the management of above-ground storage tanks in a safe, rational, and systematic manner. Going forward, we intend to continue making effective use of our expertise as an engineering company as well as of digital technology, and contribute to society through further technological innovation.

* A technique that measures the sounds (elastic waves from 30 kHz to 1 MHz) generated when material undergoes damage, cracking, and so on, and diagnoses and evaluates the state of that material.



Group photograph of award winners at the presentation ceremony

Global Operation System and Technology Transfer

Paku Gajah Gas Development Project Completed



A consortium we formed with two of our Group companies in Indonesia, PT. Suluh Ardhi Engineering (SAE) and PT. Chiyoda International Indonesia (CII), was awarded a gas processing project contract for the Indonesian state-operated PT. Pertamina EP. The project was brought to completion on a local production for local consumption basis in FY2017.

This is an important domestic project for Indonesia that involves construction of gas processing facilities in the two districts of Paku Gajah and Kuang in southern Sumatra, together with a pipeline connecting them.

SAE acted as the leader and built a system of operation that was under the control of local engineers and also engaged a female engineer from Chiyoda Global Headquarters (CGH). The various types of project methods being used by CGH as well as material procurement, advanced pulsation analysis, and so on were implemented with local operators. In addition, SAE brought in design management and coordination methods using 3D models, which SAE had no experience with, and this enabled it to shorten the construction period.

This project was also very effective in transferring technology to local users, and it made a contribution to



Scene of coordination meeting in Indonesia

building the group companies' technological base. In addition, a joint team was formed with local members to take part in the Jakarta 'Kizuna' (Bond) Ekiden road relay that is held to foster friendship between Japan and Indonesia. This kind of team building activity was one major reason why we were able to implement Group operations, in all their diversity, so smoothly.

We will join as one with our group companies in the future and work together again on supplying energy to Indonesia.

Voices of Employees

For this project I served concurrently as Deputy Project Manager and Deputy Engineering Manager, so I was in charge of things from design to onsite construction. This was my first time to participate in a project as the PKP*, and I was able to acquire a great deal of valuable experience from being assigned to positions of responsibility.

My work on this project renewed my sense that men and women have the strengths of their respective individual characteristics, and that using those to an advantage contributed to the success of this project, which drew heightened awareness of local initiative.

There still are not very many female engineers, but I will be happy if this project helps to increase appointments of women as PKP.

Shoko Shimotori
On secondment to SAE



* Abbreviation for project key person, the main position on a project team

Resilient Infrastructure Improvement for a Sustainable Society

Construction of New Ulaanbaatar International Airport



Chiyoda was awarded a contract in 2013 for a national project in Mongolia to build the New Ulaanbaatar International Airport. A joint venture was formed with Mitsubishi Corporation, subcontractors from South Korea and materials manufacturers from Japan were organized, and construction on our area of responsibility was completed in January 2017.

The development of Mongolia's manufacturing industries, industrial sector, and so on is expected to continue increasing the demand for international line service in particular. The construction of this new airport will make it possible to receive more travelers and, will further contribute greatly to the economic growth of Mongolia. The Mongolian government therefore considers this a major project and has allocated an amount corresponding to 10% of the national budget to it.

This project includes construction of a passenger terminal building and virtually all of the other specialized facilities required by an international airport. The construction period was 43 months (approximately three-and-a-half years), but taking into account that any outdoor construction was impossible during

the winter when temperatures dropped as low as -40°C, the actual construction period was 28 months (approximately two-and-a-half years), making this an extremely challenging project. We used our project execution knowhow to advantage in organizing contractors brought together from various countries until construction was completed. Going forward as an integrated engineering company, we will continue engaging in airport and other transportation-related infrastructure projects, making our contribution to the construction of industrial infrastructure.



Artist's rendering of completed airport



Respect for Human Rights

Why

Human resources are valuable assets for an engineering company. In order to maintain a corporate climate that our employees and their families can take pride in, we are faced with a growing necessity to carry out work style reforms, develop global human resources, and respect the diversity of personnel.

How

- Create a lively and vital working environment
- Undertake work style reform initiatives
- Share the consciousness of 'safety as a core value'
- Strengthen emergency management systems
- Reinforce corporate strengths by development of global human capital

Developing the Next Generation of Human Capital

Providing Internships and Lecturing at Universities



In the engineering industry, people are the most valuable capital. If we are to heighten our international competitiveness and realize innovations in technology in order to resolve issues, it is essential to find and foster younger engineers. It is our mission to convey the appeal of engineering to the younger generation that will be leaders in the industry of the future.

The Chiyoda Group has mainly tried to reach university and graduate school students of science and technology in Japan and overseas. We have collaborated with universities to offer a variety of programs, and we have taken active steps to promote exchanges between students and the engineering industry as well as to foster the development of human capital from an early stage.

At the Chiyoda Group, we intend to continue establishing collaborative programs of various kinds with universities to

communicate the appeal of engineering and contribute to raising the industry's level of recognition as well as to developing the next generation of human capital.



Chiyoda & Public Works Co., Ltd., Interns

Example of FY2017 Initiative

Chiyoda Corporation	<ul style="list-style-type: none"> • 'Lectures on Project Management' held annually at Yokohama National University and Kyushu University • 52 people accepted to internship program
Chiyoda System Technologies Corporation	<ul style="list-style-type: none"> • Six people accepted to the internship program • One-day internships held
Chiyoda Philippines Corporation	<ul style="list-style-type: none"> • On-the-job training held for 22 engineering students at 19 local universities • Lectures held for chemical engineering students at Adamson University and University of the Philippines
Chiyoda & Public Works Co., Ltd.	<ul style="list-style-type: none"> • Five students attending universities of technology in Yangon accepted as interns

Memorandum of Understanding Concluded with National Enterprise of Hydrocarbons (ENH) in the Republic of Mozambique

Making effective use of an abundant record of achievements on LNG and other types of plant construction, Chiyoda has been providing technical training to engineers from around the world now numbering in the hundreds. As part of this program, we concluded a Memorandum of Understanding with the Mozambique National Enterprise of Hydrocarbons (ENH) for the purpose of supporting human capital development in the Republic of Mozambique. We will vitalize our global partnerships and contribute to the further sustainable development of other countries in order to bring about a sustainable society.



Senior Executive Vice President Sahara exchanging the Memorandum of Understanding

Initiatives to Promote Safety Culture

Using Virtual Reality for Experiential Knowledge of Risks and Danger

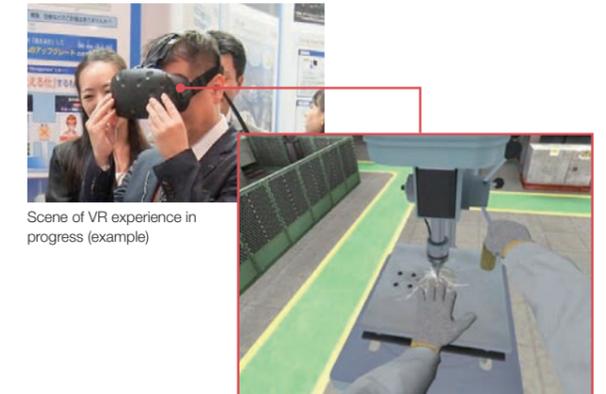


Safety is a core value for Chiyoda. We act safely not only for our own good, but also because it leads to safety for our colleagues who work with us and further for all the members of our families, as well. Chiyoda has sought to reduce the unsafe actions and unsafe situations that can cause accidents, and in FY2017 we introduced experiential risk training that uses virtual reality (VR) to heighten employee awareness of safety.

This experiential training is being conducted for all our employees so that they can be safety conscious not only on the worksite and in the office, but in various situations of everyday work and living. In FY2017, we had approximately 260 participants including members of corporate management. For FY2018, we are also considering dispatching personnel with the equipment to worksites in Japan and overseas to conduct the training there.

We intend to reach out to further expanded audiences in future. We will be working with Chiyoda Group employees, customers, and business partners so that people on worksites

and in offices can join in measures to promote safety culture and contribute to achieving no accident and no disaster.



Scene of VR experience in progress (example)

The image actually seen during VR experience (example)

Initiatives Toward Utilization of Diverse Human Capital

Participation in Yokohama Women's Leadership Program



Since FY2016, we have been sending two women employees every year to participate in the Yokohama Women's Leadership Program, a six-month program organized by the Yokohama Association for Promotion of Gender Equality. In FY2016, a group that a Chiyoda employee belonged to proposed productivity increases by the adoption of a point system, and their proposal won an award for excellence in a competition. The group won the right to attend one of Mayor Fumiko Hayashi's 'tea meetings' where the mayor told them about her own career and her ideas about work and exchanged views with them.

The Chiyoda employee who took part in that program subsequently participated as a guest speaker in the 'Chat Salon' at the Support Desk for Women in the Work Force, organized by the Gender Equality Center Yokohama North.

She spoke about what she felt when she returned to work after taking child-rearing leave, adding in things she learned from the leadership program, and imparting a variety of things to participants who were scheduled to return to their jobs in

the near future.

At Chiyoda, employees who took child-rearing leave in FY2017 had a 100% rate of return to their work. There is also a growing number of women engineers working actively on our construction sites, which used to be a man's world. We will continue our initiatives to have a diverse human capital play an active part by sharing our own experiences locally and by working closely with local communities so that we not only achieve growth for the corporation but also development of the community as a place where people feel fulfilled in their work.



Center of front row: Yokohama Mayor Fumiko Hayashi; left of front row: Ms. Takaoka
<http://www.city.yokohama.lg.jp/shimin/kochosodan/kocho/tea/29/270419.html>

Voices of Employees

When I took part in the program, I was very encouraged through my encounters with people who engaged in their work with great motivation and high objectives. In the meeting with Mayor Hayashi, I was given suggestions regarding work based on the course followed to this point by a woman leader who is currently in an active position as well as in light of her various experiences. This gave me a feeling for Mayor Hayashi's strength and her kindness.

I am also grateful to be given the opportunity to communicate to people who feel uneasy about returning to the workplace regarding my own experiences and the experiences of employees who are working in the company while engaged in child-rearing. I will be very happy if in the future I can be of use not just to people in the company, but beyond that to people in the community who are working while rearing their children.

Yukiyo Takaoka
 Human Resources Development Department



A Reliable Company



Environmental Initiatives



Social Contributions through Business Activities



Respect for Human Rights



Commitment to Fairness



Commitment to Fairness

Why

Commitment to fairness is the foundation for a corporation's continuing existence. The Chiyoda Group has also been pursuing stronger governance and a more thoroughgoing compliance. Meanwhile, transparency, fairness, and openness in management have been increasingly called for because of requirements in Japan and overseas.

How

- Expand corporate management frameworks that are transparent and sound
- Implement initiatives to prevent misconduct
- Implement thoroughgoing risk management
- Implementation of thoroughgoing compliance education and export control education
- Global development of Compliance Consultation and Reporting System

About the Corporate Governance System

Making the Corporate Governance System Stronger



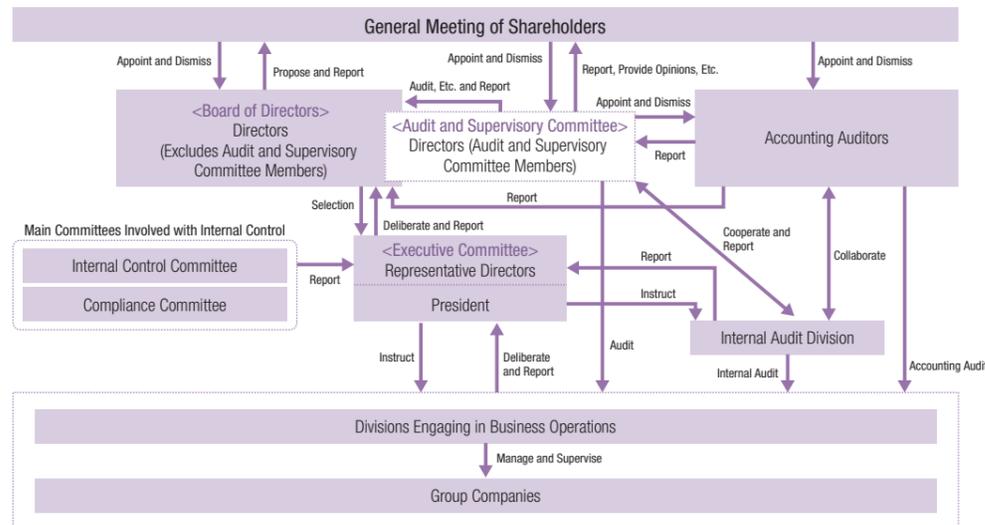
The Chiyoda Group has formulated and implemented the Chiyoda Corporation Corporate Governance Policy for the purpose of sustaining the Group's growth and enhancing our corporate value in the medium to long term. We are taking active measures to maintain and enhance the transparency and soundness of management.

In 2016, Chiyoda made the transition to a 'Company with Audit and Supervisory Committee' in order to strengthen the corporate governance system. In order to better respond to the expectations of all our stakeholders, and to strengthen our legal compliance and risk management functions, we also established the Legal and Compliance Department, the SQEI and Corporate Risk Management Department (Safety, Quality, Environmental and Facility Law, and Information Security), the Crisis Management Department, and the Internal Audit Department as of April 1, 2018. In order to strengthen our

internal control, we further established an Internal Control Committee and a Compliance Committee, we have reinforced our systems for responding promptly to rapidly changing social and economic circumstances, and we are engaging in decision-making accordingly.

For the purpose of enhancing the soundness and transparency of our management base, in June 2018 we took the additional step of further strengthening the corporate governance system by increasing the membership of our Audit and Supervisory Committee from three to five members. As a result, the number of independent outside directors at Chiyoda increased from one in the previous fiscal year to the present four. From now on, we will continue to maintain and increase the transparency and soundness of our management, we will engage in swift and certain decision-making, and we will aim to realize further enhancement of our corporate value.

Diagram of Relationship Between Corporate Governance and Internal Control



Measures for Thoroughgoing Compliance Awareness and System Reinforcement

Appointment of CCO, Implementation of Thorough Education, Enhancement of Compliance Consultation and Reporting System (Whistleblowing System)



The Chiyoda Group is working to enhance and deepen compliance awareness by continuously implementing education on corruption prevention and other subjects related to compliance.

In FY2017, we conducted education by e-learning for all employees in Group companies in Japan and overseas. In order to heighten awareness and knowledge of compliance throughout the Group as a whole regarding the Chiyoda Group Code of Conduct and other rules and the serious risks involved in bribery, corruption, and other corrupt practices, including cartel behavior and so on, the training was designed to convey cautions relevant to scenarios that employees might encounter in the course of their work.

Continuing from FY2016, we also conducted Harassment Prevention Training with instructors invited from outside. In addition to the above, our compliance education also covered such matters as cautions regarding the compliance consultation and reporting system (whistleblowing system) and economic sanctions, respect for human rights, the Construction Industry Law, dealing with anti-social organizations, the Subcontracting Act, export controls, insider trading, intellectual property, information security, working hour management, and so on.

Starting in April 2018, Chiyoda established a Chief Compliance Officer (CCO) to take steps toward even more thoroughgoing compliance. A compliance officer has been assigned at each division and group company, forming a compliance system with a hierarchical structure that has the CCO at the apex, thereby further clarifying where the responsibility for compliance is placed.

In addition, the Chiyoda Group has introduced a compliance consultation and reporting system (whistleblowing system) for the purpose of prevention, early detection, and correction of illegal or unethical acts, including those that deviate from the Chiyoda Group Code of Conduct. In accordance with the Whistle-Blower Protection Act, this system assures whistleblowers thoroughgoing protection and anonymity. The inside and outside (legal offices) contact points have been augmented since January 2018 by a new contact point established at an outside company specializing in providing the contact and consultation services.

The Chiyoda Group will continue working together as a whole to enhance compliance education as well as to reinforce our systems for ensuring early detection and prompt response to cases regarding the compliance.

FY2017 Compliance Education and Export Control Education Performance

Title	Category	Item	Content (Numbers of Times, People, Etc.)	
Compliance	Hierarchical training	• Training for new hires	Held 1 time	93
		• Training for mid-career hires	Held 2 times	3
		• Training for new managerial personnel	Held 2 times	54
	Functional training	• Training prior to overseas assignment (for all assignees) • Training prior to on-site supervisory assignment (for all assignees)	Held as needed	145
Seminars	• Seminar with outside instructor (Harassment: for managerial staff)	Held 2 times	261	
	• Seminar with outside instructor (Harassment: for general employees)	Held 2 times	401	
e-Learning	• For the Company and Group companies in Japan and overseas		5,213	
In Export Control	Hierarchical training	• Training for new hires	Held 1 time	93
		• Training for mid-career hires	Held 2 times	3
Functional training	• Export control: General training	Held 3 times	80	
	• Special Training Course: Determination of the classification for goods & technologies	Held 3 times	52	

FY2017 Whistleblowing and Consultation Record (Cases Reported to Chiyoda Only)



Harassment prevention training

In FY2017, there were no cases of bribery, corruption, or other corrupt practices.



The Chiyoda Group's Social Contribution Activities

Why

The Chiyoda Group is actively seeking solutions to global issues in order to help create a better society. This is not just a matter of social contributions through business. We will also continue working closely with local communities to contribute to the sustainable development of society.

How

Taking 'CSR promotion by all members together' as our motto, and with collaboration and coexistence with local communities as our objective, we will continue our corporate existence as a contributor to the sustainable development of society. By having our employees participate in these activities, we are also heightening their motivation to contribute to society and developing human capital that will be capable of contributing not just to business performance but to society as a whole.

Interns accepted to program and University lecturers



Students received on company visits and CGH outreach lecturers dispatched



Students received by company 3 times and outreach lecturers dispatched 2 times as career development support for students.

School Drive Campaign (CPh, CPW, and L&TC)



We donated school supplies to local primary schools.

Book Magic (CGH)



Sale of used books and DVDs donated by employees yielded ¥12,577 that was put to use for school construction and other purposes in developing countries.

Yubeshi no Kai (CGH and Koyasu office & research park)



In-house sales of products from earthquake-affected areas are held every month.

Donations for hurricane victim relief sent to U.S. state of Texas (CIC, Chiyoda Group within Japan)



Assistance to Areas Hit by the Great East Japan Earthquake Employees Serve as Volunteer Relief Workers (Chiyoda Group within Japan)



Kamaishi City and Otsuchi Town, Iwate Prefecture, were visited 6 times and a total of 54 people dispatched for relief activities.

- Purchase of CO₂ sequestration credit (19.00 t-CO₂)
- Registration for Green Wave program*1



Assistance to areas hit by disasters

*1: An initiative to spread a 'Green Wave' of growing things across the Earth by tree-planting and other such activities on the UN-designated International Day for Biological Diversity. <http://greenwave.undb.jp/index.html/>

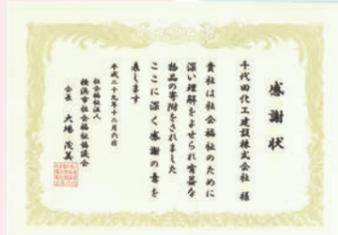
Donation of unused pamphlets (AIC)



to the JATA Environment Fund Donated 12 cartons of unused pamphlets and the proceeds were used for protection and preservation of natural and cultural heritage sites.

Please see page 23 for details.

Japan Philharmonic Orchestra of Beethoven's Ninth Symphony (CGH)

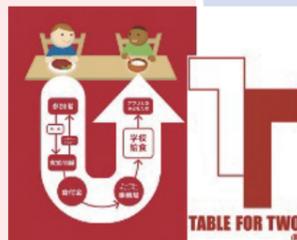


Chiyoda has been supporting Japan Philharmonic Orchestra of Beethoven's Ninth Symphony since 2011, and every year we give invitations with 25 pairs of tickets to people with visual impairments.

Educational Support & Human Resource Development

Support for people with special needs

Table For Two*2 (Koyasu office & research park)



1,581 meals provided

Widen the Circle of with Local Communities the Sustainable

ECOCAP Program *3 (Chiyoda Group within Japan)



198,660 caps recycled (Vaccine doses for 231 people)

Exchange and Collaboration and Aim to Further Realize Development of Society

Contributions to Health & Welfare

Blood donation (Implemented at CPh and L&TC)



*2: The TFT menu provided at employee dining halls includes a 20-yen donation, and each 20 yen can provide one school meal in a developing country.

*3: Caps for PET bottles are collected at the office and the proceeds (approximately 860 caps provides a polio vaccine for one person) are sent to developing countries.

Environmental Conservation

Community clean-up activities (CGH and Koyasu office & research park)

In cooperation with community clean-up activities, a total of 157 personnel participated in the Minatomirai and Koyasu districts.



Tree planting activities (CPh)

In cooperation with the City Environment and Waste Management Office, 99 trees were planted.



Messages from Stakeholders



Mr. Kenichi Takayasu

Professor
Department of Economics
Dokkyo University

The Chiyoda Group, which declares 'harmony between energy and the environment' as its Corporate Philosophy, has publicly announced, a stance of sincere engagement by achieving the SDGs in the 'Chiyoda Group Sustainability Reports' for 2017 and 2018. Having mapped (related) its core business with the 17 SDG goals, it went on to establish the position of CSO in the Corporate Planning Division in April 2018. A series of these convey the extent to which the management team commits to achieving the goals.

The More Value the Chiyoda Group Creates, the Easier the World Will Become to Live in

The Chiyoda Group has a threefold structure of Corporate Philosophy, Business Vision, and CSR Values as its foundation, upon which it is accelerating the movement of its value creation toward the resolution of societal issues. Furthermore, the company has fixed its focus for a decade from now on three new growth areas. These are the construction of an energy value chain business, the expansion of global environment initiatives and the engineering business, and the development of new business models compatible with a digital society. The company has stated distinctly that it is going to significantly increase the proportion of its earnings portfolio involved in the environment in the medium-term management plan (2017-2020).

What I myself find most appealing in the message communicated by the Chiyoda Group is that it will concentrate its intelligence as an integrated engineering company and make good use of the technology it has acquired. I think this must be the origin of the innovation that has been there since the company's founding achieved a balance between the contradictory themes of 'harmony between energy and the environment.' That being the case, the company personnel who engage faithfully in solving issues are themselves the wellspring for the Chiyoda Group's value creation. I feel this very strongly.

I will state two hopes I have regarding the Chiyoda Group. One is that the company will periodically announce its projected image of the future, and stimulate public opinion on the matter. For example, say that the realization of a carbon-free society will remain an important topic even beyond the year 2030, which is the deadline for achieving the SDGs. Someone has to present a projected image of the future that has engineering corroboration

and that is ultra-long-term in nature. The Chiyoda Group is engaging with Kawasaki City on a Hydrogen Energy Utilization Promotion Project in an industrial zone, and meanwhile it also launched a Decarbonization Advancement Office in 2018. I wish the company would widely broadcast the impact of this not just on industry, but also on the local community and on people's lives. Doing so would frame the company's own value creation in a broader perspective, and no doubt it would also be able to draw in people who want to act with the Chiyoda Group to resolve issues.

One other hope I have is that an arrangement will be created that achieves a balance between financial returns and social returns. In the context of worldwide expansion of ESG investment and the widespread adoption of the SDGs, investors have become aware of both financial returns and social returns. However, it is difficult to accept that obtaining social returns from resolving issues faced by the world means sacrificing financial returns. This is a new set of contradictory themes, and to resolve them, it will be essential to have youthful human resources with the ability to come up with fresh new ideas, further innovation to resolve issues, and steady implementation of productivity improvements.

The SDGs have taken root as common goals for the world. The hope for realization of a carbon-free society and other expectations placed on private enterprise have grown higher than ever before. The creation of value by the Chiyoda Group will be communicated in Japan and overseas through Group networks, supply chains, value chains, and so on, and spread to the company's business partners and localities around the world. The more value the Chiyoda Group creates, the easier the world will become to live in.



Mr. Masao Seki

Adjunct Professor,
School of Business
Administration,
Meiji University

This year's Sustainability Report from the Chiyoda Group shows some clear advances in comparison with the report last year. Management's intentions have also been clarified by having the business strategy include SDGs that place greater expectations on the corporate role, and Chiyoda has built a new system for their specific promotion within the company.

I consider the Chiyoda Group to have very great potential, using the strengths they have cultivated in the engineering field, to successfully achieve the realization of a sustainable society and at the same time create corporate value. This fiscal year's report has laid out a direction for SDG management that is clearly stated, and I hope that they will continue moving steadily forward in that direction in the future.

Points Deserving Recognition

1. The fact that the company established a Chief Sustainability Officer (CSO) position in order to clarify the structure of management responsibility regarding sustainability. I think it is of major significance that the company recognizes sustainability as a management issue and has elevated the matter to a crucial issue to be addressed in-house across organizational lines.
2. The fact that the company established a Decarbonization Advancement Office is also noteworthy. Chiyoda has explicitly declared that it will employ its own strengths as an engineering company to contribute to realizing not just a low-carbon society but beyond that a carbon-free society, and this is very convincing evidence of the company's recognition of materiality. As I see it, making the management commitment to a carbon-free society explicit also embodies an important social message that will influence other corporations.
3. The case of the demonstration plant factory in Dubai that will contribute to a stable food supply is a possible solution that should be given attention as a way of meeting societal needs that will be growing more intense on a global scale in the future. I think that the company should position its work in this field as a project that contributes to the SDGs, and I hope they will develop this as an initiative in the manner that the Chiyoda Group is uniquely capable of.

Points that Require Reinforcement in Future

1. In order to make the value creation story more persuasive, it will be necessary to show in more circumstantial detail how the conceptual diagram on pages 7 & 8 of the Sustainability Report is related to the disclosure information presented later. The story needs to be built up in that way so that people will be convinced of the correlation between the diagram and the information presented on the following pages. In order to show that management is incorporating this into actual practice, it would be good for the company to state its long-term objectives, set up the key performance indexes (KPI), and disclose the state of their progress to the KPI as they go.
2. The intention to incorporate respect for human rights into management can be felt, but compared to what is called for in international standards of conduct, I think there is still a large gap in the scope and depth of the company's measures. I recommend that the company take steps first to analyze that gap, and that they refer to the Nippon Keidanren (Japan Business Federation) Charter of Corporate Behavior, which has newly incorporated respect for human rights, together with that organization's Implementation Guidance.
3. I think that in strengthening the initiatives above, Chiyoda should definitely implement dialogue and engagement with their stakeholders, who will be key actors in these initiatives. It is also hoped that the company will heighten its transparency and disclose in specific detail that process and any opinions that are voiced in the course of such dialog and engagement.

In Response to the Messages from Stakeholders

We are truly grateful that you expressed your views, which are of great value to us, in this report again in FY2018 as you did in FY2017. The Chiyoda Group has responded to global requirements by establishing a new "Basic Policy on Human Rights" and "Tax Policy." We are making a detailed study of the views expressed regarding issues identified and measures that should be taken toward achieving a sustainable society. Great anticipation was expressed regarding our establishment of a CSO and a Decarbonization Promotion Office to advance our measures toward a carbon-free society. We will therefore make it our aim to do what we are uniquely equipped to do as an engineering company that creates value for society through technology and wisdom. That is, to create a projected image of the future that is corroborated by engineering, and to integrate that image with a management strategy for its realization. We hope we will continue to receive the unstinting expressions of your views from your professional perspectives.



Kaoru Nakamura
General Manager
IR, PR, and CSR Department