INTEGRATED SOLUTIONS FOR A BETTER LIFE
ABOUT THIS REPORT

FEATURES OF THE REPORT
This is the Integrated Report of Doosan Heavy Industries & Construction (DHIC) introducing the various systems, activities and accomplishments pursued by the company for the purpose of enhancing its social and financial sustainability. The report includes not only a detailed description of DHIC’s business strategies and the new businesses regarded as future growth drivers, but also the activities and performance results related to the company’s sustainability efforts in the areas of environment and society. DHIC has published the said report annually as a way to continuously communicate with our stakeholders.

CRITERIA OF REPORT
This report has been prepared based on the Core Options in GRI (Global Reporting Initiative) Standards which is the global standard for report preparation. Through the verification by a third party, it has been confirmed that the report has met the corresponding requirements. The details of how the GRI standards were met can be checked through the GRI Index in Appendix. In addition, the industry standard data that is required by the Sustainability Accounting Standards Board (SASB) has been adequately reflected in the report, while the principles of the UNGC (United Nations Global Compact) have also been adhered to.

PERIOD AND SCOPE OF THE REPORT
The report was prepared on the basis of financial and non-financial performances from January 1, 2019 to December 31, 2019. The significant matters that could affect the decision-making of stakeholders were covered for the period up to the first half of 2020. Some quantitative performance data show the data for three years so that the recurring trend may be observed. The financial performance data has been prepared using consolidated financial statements based on the K-IFRS (Korean International Financial Reporting Standards). In addition, if the information presented in the previous report is either corrected or rewritten, its contents are explained with footnotes. The scope of the report includes all projects of DHIC, and domestic and overseas projects. If necessary, it includes the activity and performance of overseas subsidiary companies.

REPORT VERIFICATION
To ensure the reliability and quality of the contents of this report, the non-financial information has been verified by an external auditor. The financial information has been reviewed by an external auditor, with the audit results being correspondingly reflected. The non-financial information was verified by KMR (Korea Management Registrar). Each verification opinion can be checked from page 94 to page 99.

ADDITIONAL INFORMATION
The report will be published and distributed in Korean and English languages. It is available for downloading in PDF format from the website of DHIC. Any opinions or comments can be conveyed through the contact number listed below.

www.doosanheavy.com
Address: 665, Gangnam-daero, Seocho-gu, Seoul
Phone: 82-2-513-6365
Department in Charge: Credo/HRD Team
Overview of Doosan Group Companies

1. Infrastructure Support Business
   - Doosan Corporation
   - Doosan Digital Innovation
   - Doosan Industrial Vehicle
   - Doosan Electro-Materials
   - Doosan Fuel Cell Power
   - Doosan Corp. Retail
   - Doosan Mottrol

2. Consumer & Service Business
   - Doosan Heavy Industries & Construction
   - Doosan Infracore
   - Doosan Fuel Cell
   - Construction
   - Doosan E&C

Doosan has been active in 14 countries around the world, particularly in the regions of Europe, Asia, and America. We do not intend to rest on our laurels, but seek to continuously pursue continuous change and growth for one century.

As Korea’s first modern conglomerate, Doosan has undergone numerous changes for 100 years. In 1906, the company were established in Jongno, Seoul, and the company was established in late 1890s. Under the leadership of Doosan Chairman Seung, the company expanded its business areas and diversified, such as shipbuilding, technology, and steel industries. The company’s corporate philosophy focuses on people, society, technology, and global competitiveness.

Global ISB Leader

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Doosan’s ultimate goal is to become a “Proud Global Doosan.” “Proud Global Doosan” refers to the aspiration of having a shared value, including the employment, local job in being associated with Doosan. For employees, this means finding pride in being a member of the Doosan organization, and for customers, it means knowing proud consumptions of Doosan’s quality products and services. For shareholders, it means being a proud shareholder of a company that provides fairly generated, high profits.

The Doosan group includes the management philosophy and business method that have been upheld by Doosan for the last 100 years.

Group Vision

Doosan aims to provide differentiated products and services, which instill pride and trust in our customers. Our goal is to become a global company that is always there for our customers.

As Korea’s first modern conglomerate, Doosan has undergone numerous changes over the last 100 years. Since then, Doosan has gone through changes of size and format in one century.

Doosan Mecatec

Neoplux

Doosan Solus

Doosan Mobility Innovation

Doosan Credo

The Doosan Credo embodies the management philosophy and business method that have been upheld by Doosan for the last 100 years.

Doosan Credo consists of 9 core values: People, Cultivating People, Integrity and Transparency, Inhwa, Customers, Technology and Innovation, Profit, Social Responsibility, Safety and Environment.

Global CSR Initiative

Doosan Heavy Industries & Construction

2019 Integrated Report of Doosan Heavy Industries & Construction

Dear Esteemed Stakeholders,

I sincerely appreciate the steady support you have provided to Doosan Heavy Industries & Construction(DHIC) throughout these difficult times, thereby helping us to overcome operational challenges and prepare a foundation for new growth. Through this Integrated Report, we would like to update you on our current status and plans, as well as demonstrate our resolve to taking a new leap forward toward future growth.

DHIC has taken decisive, yet painstaking measures to overcome the current day difficulties and establish a foundation for new growth.

Last year the world economy continued to experience low growth, while the power generation industry also suffered from a continuous slump. This has resulted in an increasingly fierce market competition, while factors like the U.S.-China trade dispute, geopolitical risks and coronavirus outbreak have caused the world economy to become more plagued by rising uncertainties.

At this critical juncture, DHIC has also been undergoing its own share of challenges. Sales has dropped from 7.7 trillion won in 2012 to 7.2 trillion won in 2019. In order to bolster our weakened financials, we have been going through the painstaking process of implementing aggressive measures aimed at recovery. Even under such difficult circumstances, we were able to lay the foundation for future growth through the cultivation of innovative new projects. We have completed the first assembly of a gas turbine for power plants, which is being developed as a government-backed project. We have also acquired international certification for a 5.5MW wind turbine. Projects have already been successfully secured for commercialization of these products. Doosan Babcock has the significant accomplishment of having been awarded a contract to participate in the decommissioning of a nuclear power plant.

We will step up our efforts to restructure our business portfolio around environment-friendly technology, through which we expect to drive strong financial results.

DHIC is pursuing the mid-to-long term strategy of expanding our business portfolio by winning increasingly more new projects leading up to the year 2024. To this end, DHIC has been actively pursuing not only environment-friendly energy projects involving gas turbines and renewable energy, but also new businesses, such as power plant services, hydrogen and 3D printing related projects.

The company is scheduled to deliver Korea’s first locally-manufactured gas turbine to the Gimpan Combined Heat & Power(CHP) Plant of Korea Western Power Co. Moreover, DHIC is also a member of the "Task Force for Development of Korean Standard Gas-fired Combined Cycle Power Plant," a task force that was launched last February by the Ministry of Trade, Industry and Energy (MOTIE), along with fellow members that include five other power generation companies and the Korea Institute of Energy Technology Evaluation and Planning, are taking part in the development of a Korean standard gas-fired combined cycle power plant model and the execution of several demonstration projects. Having also won several contracts for the maintenance of domestic gas turbines, such as the Hallim Combined Cycle Power Plant and Ulsan Combined Cycle Power Plant, DHIC is also expanding its services business.

DHIC has been selected as the preferred bidder for the 100MW Hallim Offshore Wind Farm Project on Jeju Island and expects to soon sign the contract to supply our 5.5MW wind turbine for the project. We have also been developing a 8MW model as a national project, which will enable us to expand our product lineup. We expect to see significant growth in the gas turbine and wind-power markets once the 9th Basic Plan for Electricity Supply & Demand is released by the Korean government this year.

DHIC is also participating in a demonstration project for Korea’s first hydrogen liquefying plant. We will build a plant to produce and liquefy hydrogen at our Changwon headquarters in cooperation with Gyeongnam Province, City of Changwon and the Korea Industrial Complex Corporation; and by doing so, we seek to actively contribute to the government’s plans to UNH to a hydrogen economy.

We aim to apply our self-developed digital solutions, such as the power plant optimization solution and early warning system for power plants, to a wider range of projects that include wind power and water projects, and leverage this to win a larger number of new projects. As for the 3D printing business, we plan to foster growth of this area by developing new lightweight materials applicable to the aviation and national defense industries.

We will do our utmost to expedite our business development efforts to ensure that these new businesses can emerge as new growth engines for DHIC and ultimately produce financial results in the near future.

We will diligently and steadfastly fulfill our social responsibilities as a corporate citizen.

As a member of society, we will faithfully carry out our responsibilities to contribute to a better world. To achieve this goal, DHIC has established strategies and policies based on the ESG(Environmental, Social and Governance) criteria and applied this across our entire business. Owing to such efforts, as of 2019, we were included in the list of DSIDow Jones Sustainability Indices (Korea) companies for six consecutive years. We also received an "A-rating" for eight consecutive years in the ESG assessment by the Korea Corporate Governance Service. DHIC is also actively contributing to the fulfillment of the United Nations’ 2030 SDGs(Sustainable Development Goals) through our core projects related to sustainable energy and clean water.

Though it has not always been smooth sailing, DHIC has been able to overcome many hardships and build a solid market presence as a competitive enterprise in the global power industry. While we may still face numerous challenges, I am confident that with the combined efforts of all our DHIC people, we will be able to successfully stabilize the business. We will seize this opportunity to re-emerge as a sustainable company that is equipped with sufficient capabilities to persevere even in the face of rapid environmental changes and multiple crises.

I trust that we can look forward to your continued interest and support.

Thank you.

Chairman & CEO
Geewon Park

Doosan Heavy Industries & Construction

APPENDIX

CSR FOUNDATION

CSR FOCUS AREAS

COMPANY OVERVIEW
GLOBAL LEADER IN POWER & WATER

Doosan Heavy Industries & Construction’s business vision, “Global Leader in Power & Water,” expresses the company’s willpower to become an enterprise that leads the global power generation and water markets. In order to become an innovative global leader that offers services that improve the customers’ quality of life, we strive to meet the highest standards in all aspects, such as cutting edge technology, competitive costs, quality, sales and profitability, cultivation of global talents and corporate culture, all the while putting the Doosan Credo into practice. In addition, as a global leader, we strive to effectively respond to the rapidly changing global technology trends and lead the market changes.

Company Established: September 20, 1962
Representative Directors: Geewon Park, Yeonin Jung, Hyounghee Choi
Business Type: Manufacturer of Machinery and Equipment
Location: Headquarters: 22 Doosan Volvoro, Seongsan-gu, Changwon City, Gyeongnam Province
Seoul Office: 465 Gangnamdaero, Seocho-gu, Seoul
Number of Employees: 6,721
Revenue: KRW 15.6 trillion
Total Assets: KRW 24.8 trillion
Operating Profit: KRW 1.07 trillion

* Consolidated Accounting as of the end of 2019
* As of the end of 2019

GLOBAL Network

Overseas Subsidiaries/Branches/R&D Center

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The Beginning & Challenges 1962~1980

1962: Foundation of Company
1982: Completed construction of 600kW Steam Turbine Machinery Plant.

Growing & Developing 1981~2000

1986: Acquired AE&E Lentjes and secured CFB technology.
1990: Acquired the water treatment solution provider Enpure Limited.
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Growth into a Global Enterprise 2001~2011

2001: Became privatized and name changed to Doosan Heavy Industries & Construction
2006: Acquired Mitsui Babcock and secured boiler technology.
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Reinforcement of Eco-Friendly Portfolio 2012~

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BUSINESS STRATEGY

With the shift to green energy, such as gas-fired power and renewable energy, picking up speed at both home and abroad, DHIC has been continuously focusing its efforts on the R&D and commercialization of related technologies.
Market Changes & Response

ENVIRONMENTAL CHANGES IN GLOBAL ENERGY INDUSTRY

The international community is increasingly focused on preventing the hazards of global warming and climate change through measures that include reduction of greenhouse gas emissions. Based on the 2015 Paris Agreement, renewable energy shall lead the global power generation market, conforming to the new climate regime which will start from the year 2021. In addition, it is forecasted that the demand for gas will rise, given that it is regarded as an alternative fuel to substitute coal and will be a complementary energy source for renewable energy. Korea has made an international commitment to reduce greenhouse gases by 37% from BAU levels by 2030; and is preparing to submit the 2050 Long Term Low Carbon Power Generation Strategy by the end of 2020. Accordingly, the government announced the energy transition policy in October 2017 and relevant supporting policies aimed at gradually transitioning to clean and safe energy. As such, the country will phase-out coal and nuclear power and dramatically increase the share of renewable energy. Hydrogen is also being considered as a next generation energy source.

GLOBAL TRENDS
- Continuation of low growth
- Reinforcement of environmental restrictions & increased awareness of eco-friendly products
- Rising water-related risks, such as water shortage

INDUSTRY TRENDS
- Continuation of low oil prices
- Increase in private funding
- Accelerated introduction of Industry 4.0
- Expansion of distributed energy generation
- Increase in software/ICT applied services

Enhancement of Project Delivery Capabilities

DHIC has been restructuring its business in line with the trends of the global power industry and the energy transition policy of the government. From the casting and forging of basic industrial materials to the manufacturing and supply of power generation facilities and seawater desalination plants, DHIC has taken proactive efforts to strengthen its competitiveness in its existing business areas as well, such as construction, EPC and Water. In particular, existing DHIC technology is being leveraged and applied to new businesses to differentiate the DHIC business from that of others. DHIC has also continuously built up its competitiveness in winning new orders through the diversification of the global market, improvement of operations, and increased efficiency of the organization.

Reinforcement of New Growth Portfolio

DHIC has made continuous efforts to convert our business portfolio in response to the climate change and greenhouse gas reduction agenda of the international community and the shifting energy policies of the government. To preemptively respond to the environmental changes in the energy sector, DHIC has expanded R&D efforts and investments in new projects that support the energy transition policy of the government, closed M&A deals and business agreements, and performed organizational restructuring. As a result, DHIC is about to become the fifth company in the world to have accomplished developing a gas turbine model and has already signed a contract for a demonstration project. DHIC is aiming at dramatically increasing its new project wins by 2024, particularly centering around gas turbines and new renewable energy (i.e. wind and solar power).

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MAJOR ACCOMPLISHMENTS CONCERNING GAS TURBINE

After the design and manufacturing of the 270MW Gas Turbine, the final assembly was completed on November 2019. The next step will be a testing of the performance and reliability at the company Test Shop. After the testing, it is scheduled to be installed at the Gimpo Combined Heat & Power (CHP) Plant of the Korea Western Power Company, where a demonstration run will take place. In addition, DHIC is now capable of supplying locally-manufactured large-size gas turbines and performing maintenance and the replacement of parts. DHIC has received orders for the fuel conversion project of the Hallim Combined Cycle Power Plant and the maintenance of Ulsan Combined Cycle Power Plant.

The maintenance of the exhaust cylinder of three gas turbines installed at Ulsan Combined Cycle Power Plant Units No. 4 to 6, another project won by DHIC, was the first case in which a local Korean company had emerged victorious over global competitors in winning a maintenance service contract. In addition, in May 2019, through the signing of an MOU with an independent power producer (IPP) named Midland Cogen Venture (MCV) in the U.S., DHIC began cooperating with MCV on various areas, such as on the operating time improvement/maintenance of MCV operated gas turbines, as well as in the area of hybrid power generation, which involves combining renewable energy (wind power and ESS) with gas-fired power generation, and also in the area of repowering services, where new gas turbines developed by DHIC are installed at existing power plants.

FUTURE PROSPECTS FOR GAS TURBINE BUSINESS

DHIC is in the process of developing a gas turbine model which has been upgraded from the initial model currently being tested. The upgraded model will be a 380MW gas turbine model boasting of a world-class performance. In the future, DHIC is scheduled to conduct several demonstrations and pilot projects on the latest gas turbine and the Power Package Solution developed for combined cycle power plants. As part of the government-led project of promoting the domestic production of materials, parts and equipment, DHIC will be working on the development of technology related to high temperature parts and steam turbine parts used in combined cycle power plants and continuously seek to enhance the performance. Additionally, DHIC aims to increase its share in the services market through the expansion of the services and performance upgrades offered on gas turbine products manufactured by other global OEM companies.

KOREA’S FIRST DOMESTICALLY MANUFACTURED GAS TURBINE MODEL FOR POWER PLANTS

DHIC has accomplished the feat of developing Korea’s first independently-manufactured gas turbine model. This means that Korea will become the fifth country in the world, following after the U.S, Germany, Japan and Italy, to own technology for manufacturing large-size gas turbines for power plants. All the gas turbines currently being operated in the existing domestic power plants were procured from overseas. As such, when problems arise, it is difficult to obtain a quick response and service. Moreover, in consideration of the future market for gas turbines and the cost of procuring equipment and materials from overseas and their service costs (reached 3.6 trillion won as of 2018), securing domestic technology for gas turbines has long been an important national priority. In 2005, DHIC successfully completed the government-led project of developing a 5MW high-efficiency gas turbine for power plants, which it had designated as a new future business. In 2013, DHIC embarked on the development of a large-capacity, high-efficiency gas turbine, and thus, equipped itself with its very own design system, testing infrastructure and manufacturing process. Subsequently, DHIC has been working on the development and testing of a 270MW gas turbine in collaboration with 22 domestic colleges and research centers (with governmental support) and 250 small to medium-sized companies. DHIC completed the basic design in July 2017, the detailed design in 2018, and construction in 2019. DHIC will continue to develop gas turbine products which boast of top-tier performance and efficiency.

TOTAL SOLUTION PROVIDER FOR WIND POWER

The domestic wind power market is forecast to grow to the scale of 17.7GW(6.3GW for onshore, 11.4GW for offshore) over the next 10 years in accordance with the Korean government’s Renewable Energy 3020 Implementation Plan. The global wind power market is also expected to grow from 67GW in 2020 to 141GW by 2030, thereby recording an annual growth rate of 6.8% on average.

DHIC is a Total Solution Provider that can provide customers with the best solution based on a proven track record. As part of the 100MW Jeju Island Offshore Wind Farm project, DHIC was involved in the analysis of wind conditions, selection of site, provision of materials and equipment, the EPC and O&M (Operation & Maintenance) services, review of project feasibility and stakeholder investments for the project development.

In addition, DHIC has acquired competitiveness in offshore wind power projects, having been recognized as the sole Korean company with EPC project delivery experience for offshore wind farms (e.g., 60MW Southwest Offshore Wind Farm).

MAJOR ACCOMPLISHMENTS AND FUTURE PROSPECTS FOR WIND POWER BUSINESS

In 2018, DHIC won the contract for the 33MW Anmyeondo Island Wind Farm project using its 3.3MW wind turbine model after completing construction of the 66MW Yeongheung Wind Farm II in 2015. This brings DHIC’s total onshore wind power portfolio size to 141MW. DHIC also received an order for the 66MW Southwest Offshore Wind Farm project, which brings up total accumulated offshore wind power portfolio size to 166MW. In 2020, DHIC anticipates winning a contract for a large wind farm on Jeju Island. DHIC has acquired competitiveness in the offshore wind power sector by obtaining the DEMO-OCC (Germany) international certification for its 5.5MW offshore wind turbine model. DHIC has already developed a 3.5MW model derived from this model. DHIC is planning to introduce the 5.5MW model to the 100MW offshore wind farm project on Jeju Island. In addition, DHIC is aiming to develop a 7MW model, following the recent market trend favoring large-size wind turbine models optimized for Korea’s low wind speed environment. DHIC aims to apply its large wind farms after improving the annual power generation amount and operational efficiency to be superior over that of overseas companies.

THE NEW FUTURE OF POWER GENERATION, ESS & SOLAR POWER

DHIC has been providing a total technology solution, including platform-based control system software to EESS(Energy Storage System) and DER(Distributed energy resources), so that customers are able to convert crisis to opportunity and generate profit in the rapidly-evolving energy industry. Based on the project delivery capabilities acquired through technology development efforts and the establishment of companies, such as Doosan Grid Tech, DHIC has been handling the overall implementation of ESS projects with a combined installed capacity of 166MWh(including an interlinked 4MW PV). These projects include the systems used for the purpose of frequency control, connecting with solar power systems and peak power reduction. DHIC has been raising its competitiveness in the area of ESS through the interconnection of such technologies with large-scale solar power generation. At the “5th Global Energy Storage Conference held in June 2019, DHIC was recognized for its successful implementation of a 66MW ESS at the Beacon Solar Plant in California (the largest of its kind in the State) back in 2018 by being awarded the ‘Energy Storage Project of the Year’ award. This demonstrated the innovation, safety, and operational efficiency of DHIC’s ESS System to the world.

MAJOR ACCOMPLISHMENTS AND FUTURE PROSPECTS FOR ESS & SOLAR POWER BUSINESS

DHIC expects to win a project order to install and deliver Korea’s largest solar power plant and a connected ESS facility on Anmyeondo Island in Taean County of the Chungnam Province. With the application of DHIC’s ESS control technology, DHIC plans to establish a stable and efficient PV + ESS renewable energy complex. Using the performance of the Anmyeondo Island facility as a reference project, DHIC aims to present an ESS-linked renewable energy model to the domestic solar power businesses. In 2020, DHIC won a contract for a 7MW ESS project in Wandoan, Queensland in Australia and will be starting on the construction in the latter half of the year. DHIC also expects to implement a solar power plant-linked ESS in Florida and supply a control system software based on the contract it signed with 8 Minute Energy, the largest solar power developer in North America. DHIC aims to further expand its ESS projects both at home and abroad, taking advantage of new renewable energy trends and leveraging our innovative software and verified performance competency.
RESPONSE TO THE EMERGING HYDROGEN ECONOMY
In 2019, the government announced a roadmap for pursuing a hydrogen economy at the national level. The government suggests domestic measures such as establishing hydrogen infrastructure and recharging stations and creating a technical development roadmap. Each province is also taking steps to comply with national government directives, such as constructing recharging stations and securing funds to stimulate the supply of hydrogen in the transportation sector. Recognizing that the emerging hydrogen business is a potentially good new business opportunity, DHIC has set up a task force to review the business feasibility and technologies of the hydrogen business from various angles.

MAJOR ACCOMPLISHMENTS & FUTURE PROSPECTS FOR HYDROGEN BUSINESS
DHIC has developed the capacity and competitiveness on a wide range of energy projects, including nuclear power, thermal power, desalination, wind power and ESS. This accumulated experience and related networks are a great advantage for the company as it enters the hydrogen market. As the leading company of the Changwon Industrial Complex, DHIC is participating in a project to construct and operate a 5-ton liquefied hydrogen production facility in cooperation with the Industrial Complex Corporation and the City of Changwon (total project worth 30 billion won). As part of this project, DHIC is scheduled to build stable infrastructure to enable the supply of hydrogen sufficient to operate approximately 13,000 hydrogen vehicles. Through the successful implementation of the Changwon Hydrogen Liquefaction Project, DHIC will be able to emerge as the market leader that has established Korea's first hydrogen liquefaction facility. DHIC aims to supply both liquefied hydrogen for the transport sector and industrial hydrogen. DHIC plans to continue expanding into this project area in line with the national hydrogen roadmap.

HYDROELECTRIC POWER
In 2019, Korea Hydro & Nuclear Power Co. held the ‘Hydroelectric Industry Vision Proclamation’ ceremony at which it announced a large-scale investment plan of about 7 trillion won. Investments over the next 10 years include projects to modernize aged hydroelectric power plants (5 trillion won), the construction of new pumped hydroelectric power plants (3 trillion won), and overseas hydroelectric power plants (5 trillion won). Korea Hydro & Nuclear Power Co. also announced their plan to collaborate with local companies. For example, they will seek to promote domestic manufacturing of hydroelectric power plant components, build demonstration power plants in Korea and construct the bidding processes for the supply of hydroelectric power plant components to a competition among local vendors, all for the purpose of promoting mutual growth with the local Korean companies and gain global competitiveness together with the local hydroelectric power industry. DHIC is the sole company in Korea that has proven competency and technology to manufacture and supply major components for large hydroelectric plants and pumped storage hydroelectric power plants (e.g., pump turbine, generator), as well as instrumentation & control systems for hydroelectric power plants. Thus, DHIC expects to participate actively in the expansion of the hydroelectric power market.

MAJOR ACCOMPLISHMENTS AND FUTURE PROSPECTS FOR HYDROELECTRIC POWER BUSINESS
Since supplying the main components for the Gangneung Hydroelectric Power Plant (41 MW x 2 Units), DHIC has successfully participated in the modernization projects and new construction projects of all the domestic hydroelectric and pumped storage hydroelectric power plants, including the one at Mujoo (300 MW x 2 Units), Samyangjung (300 MW x 2 Units), Sanchung (350 MW x 2 Units), Yangyang (250 MW x 4 Units), and Yecheon (400 MW x 2 Units). In addition to the domestic modernization and construction projects, DHIC is now focusing on advancing into the overseas hydroelectric power plant markets in Southeast Asia and Europe. Furthermore, to enhance its competitiveness, DHIC has a business & technology cooperation agreement with ANDRITZ HYDRO GmbH, which retains world-class technology and project experience in the area of hydroelectric power generation. The Cooperation Agreement includes collaborating on modernization of aged hydroelectric power plants and construction of new pumped storage hydroelectric power plants, working together on Korea Hydro & Nuclear Corporation’s overseas hydroelectric power projects, supporting the development of technical competency to enable the independent design of hydroelectric power systems, and training to improve competency in hydroelectric power engineering. Through this agreement, DHIC will procure independent hydroelectric power system design technology, whereas it has had to rely on overseas technology before. DHIC expects to actively participate in the modernization of domestic hydroelectric power plants and in supplying (independently) major components for the construction of new pumped storage hydroelectric power plants.
NEW OPPORTUNITIES FOR NUCLEAR POWER PLANTS, SMR(SMALL MODULAR NUCLEAR REACTOR)

As SMR is gaining worldwide attention, many countries and utilities are actively showing their interest in it. It is because SMR nuclear power plants generate clean energy without emission of carbon, contributing to preventing global climate change. In addition, with drastically improved safety and economic advantages, they take up less site area, and can replace existing coal and gas power plants as well as large-scale nuclear power plants. As load follow is available, they can be operated in harmony with new renewable energy plants. Another advantage is that they can also be utilized in various areas, such as desalination and hydrogen production.

MAJOR PERFORMANCE AND FUTURE PROSPECTS FOR SMR BUSINESS

DHIC has rich experiences and technology in the area of nuclear power including the supply of 32 nuclear reactors and 116 steam generators domestically and overseas (China, UAE, etc.), and Hingol nuclear power unit 3 and unit 4 which are currently being constructed in the U.S. by NuScale Power. Highly evaluating DHIC’s manufacturing competency and technology, NuScale Power engaged DHIC to supply core equipment to the first-ever SMR nuclear power plant in the U.S. To strengthen this strategic cooperative relationship, DHIC participated in the investment in NuScale Power together with domestic investment companies; and completed the first equity investment tranche on July 2019 and the third equity investment tranche on December 2019. This business cooperation will allow DHIC to supply equipment worth a minimum of 1.3 billion dollars, starting with modules and other equipment for the SWR project and further expanding to other follow-up projects to happen in the U.S and the world’s nuclear power market. In addition, DHIC participated in the development of SMART, the next generation domestic SMR technology, leading the design and manufacturing of major SMR equipment. It is currently discussing the possibilities of exporting SMR technologies to Saudi Arabia in cooperation with the Korea Hydro & Nuclear Power; and pursuing business expansion into the next generation nuclear power market with high growth potential, through joint efforts with other SMR developers.

DECOMMISSIONING NUCLEAR POWER PLANT AND NUCLEAR FUEL AFTER USE

DHIC has been developing nuclear power plant decommissioning technology since 2015 in order to respond to the need for transportation and storage of nuclear fuel after its use. Demand for such technology is expected to expand due to the increased global aging of nuclear power plants. DHIC has been striving to become the global leader of the market for decommissioned nuclear power plant waste management. In 2017, DHIC developed a cask design technology to transport and store nuclear fuel after its use.
Reinforcement of Service Business Competitiveness

DHIC COMPETENCY-BASED SERVICE BUSINESS

DHIC has been pursuing service projects drawing on its competencies as an OEM provider of main equipment for power plants, such as sales & marketing/design (procurement/fabrication) project management/quality-related technologies, as well as plant engineering (PE) and construction competencies. DHIC competencies enable it to specialize in providing the following services: Diagnosis and Evaluation of Power Plants, Reverse Engineering of other OEM-supplied major components, Field Engineering, Local Operation, and R&M (Remote Monitoring Service). DHIC has been successful in winning service orders for the upgrading of Eraring Power Station in Australia, Renovation & Modernization (R&M) of Bandel Power Plant Unit 5 in India and retooling of the Maris H Power Plant in Botswana, which was won through the project of Subarmal in India, the fuel conversion of Yeongdong Power Plant Unit 1 and Bath Project in India. Based on these successive project wins, DHIC effectively established itself as a R&M service provider. DHIC has continuously won orders such as the performance improvement of Bandel Power Plant Unit 5 and the fuel conversion of Yeongdong Power Plant Unit 2. Through these domestic and overseas project experience, DHIC has been able to gain a competitive edge over other OEM companies. In addition, DHIC will likely be able to establish a stable portfolio of service and maintenance projects by targeting power plants for which it delivered main components, by offering its routine/scheduled maintenance services and expanding its supply of spare parts.

DIGITAL SOLUTION

DHIC has been developing digital solutions for the various business areas in order to maximize the operational performance of power plants. A demonstration project was completed at the Sasan Coal-Fired Thermal Power Plant #1 in India for our combustion optimization system. The early warning solution has been recognized for its commercial value as made evident when we successfully sold our shares for the license to Korea East West Power. DHIC won orders from Indonesia and Chile for combustion tuning projects. Such projects will help DHIC to successfully enter a wider services market.

EXPANSION OF SERVICE MARKET

DHIC won a maintenance contract for UAE BNP Nuclear Power Plant through collaboration with Doosan Babcock (which has long experience and know-how in the area of servicing power plants); and thereby, establishing the basis for advancement and expansion of service projects for nuclear power plants. After confirming the needs for the fuel conversion (Coal/Petroleum → Gas) at thermal power plants in the Middle East and South America, DHIC is actively leveraging its fuel conversion technology and advanced into relevant markets.
Technology Development and Demonstrations for Business Diversification

EXPEDITING INNOVATION OF R&D PORTFOLIO

DHIC has been continuously seeking to innovate its R&D portfolio in order to develop competitive, cutting-edge technologies which align with the rising global trend for eco-friendly and new renewable energy. As part of these efforts, DHIC has been reinforcing its project competitiveness for large-size gas turbines and securing technology in the area of new renewable energy. DHIC has been accelerating the development and commercialization of environmental solution technologies such as EME and CDI, as well as the discovery of new projects to foster next generation business competitiveness.

01 THROUGH 3D PRINTING

DHIC has successfully established a mass production line in the area of 3D printing for metal powders. In 2020, DHIC is scheduled to carry out a demonstration on the 3D-printed gas turbine parts. Moreover, DHIC has been making an effort to strengthen the future competitiveness of 3D-printed gas turbine parts by also applying the technology to its services business. In addition, based on its excellent technical competitiveness in 3D printing, DHIC has been exploring expansion into 3D printing of parts for the aviation and national defense industries. DHIC has acquired the international certification(OS/111) to enter the areas of national defense and aviation through participation in national projects carried out in cooperation between the military and private sector. DHIC is scheduled to establish a mass production line in 2020 together with the introduction of the world’s largest 3D printer.

02 DEVELOPMENT OF MATERIALS FOR NEW BUSINESSES

DHIC has developed a real-life size Pilot EME at its Changwon Plant and successfully completed the pilot run of the EME, which was developed to be applicable at any domestic standard coal-fired thermal power plant. DHIC has completed the design for a 500MW EME and planned for a demonstration project at a standard coal-fired thermal power plant to be jointly carried out with a major power generation company. In 2020, DHIC is scheduled to complete the demonstration run of a 10,000CMH Pilot EME installed at the Hadong Coal-Fired Power Plant Unit 3 of the Korea Southern Power Co.

Environmental Solution – ECO-FRIENDLY WATER TREATMENT TECHNOLOGY

DHIC has developed a new CDI(Capacitive De-Ionization) technology for water treatment which is more eco-friendly than the conventional reverse osmosis membrane-based method. CDI reduces the use of chemicals and increases the efficiency of the coolant and circulating water treatment processes, which has the effect of reducing negative environmental impacts. DHIC has completed the design for a CDI demonstration plant with a 500 tons per day capacity at the Hwaseong branch of KDHC. DHIC has developed a new CDI technology to be able to reduce not only the processing costs, but also the facility space by 60%, and the cost of chemicals for water treatment by more than 90%. It has been proven to reduce operating costs by more than 50% as compared to previous ionization exchange facilities (within 2,000 tons per day capacity). Based on the results of the demonstration project at the Hwaseong branch of KDHC, DHIC plans to develop CDI water treatment methods for various power generation facilities. The CDI technology is eco-friendly and meets government standards set forth in the Chemical Control Act and PSM(Process Safety Management), which is to be reinforced in the future. Thus, DHIC expects CDI to become a viable water treatment alternative.

FINE DUST REDUCTION TECHNOLOGY

The problem of fine dust has recently emerged as a societal challenge. The government has enacted a comprehensive measure for fine dust control with the goal of reducing domestic emission of fine dust by 50% by 2020 (compared to the emission level in 2014). DHIC has made continuous R&D investment efforts to develop technology to reduce emissions. Recently, DHIC developed the world’s best high efficiency EME(Electromotive Force Eliminator) which removes both fine dust and white smoke from thermal power plant emissions.

EME is one of the treatment systems for emissions by thermal power plants. It is an eco-friendly process applied at the stage where emissions are discharged through the chimney. The recently developed EME shall be installed above the FGDs(Flue Gas Desulfurizer) of the power plant. The EME is able to reduce fine dust and super fine dust below 20μg/Nm3, which is 4% of the standard limit(50μg/Nm3) and 10% of the emission standard in the Seoul Metropolitan area(5mg/Nm3). By just installing an EME at an existing facility, this will have the effect of reducing white smoke discharge by 50%. DHIC has installed a real-life size Pilot EME at its Changwon Plant and successfully completed the pilot run of the EME, which was developed to be applicable at any domestic standard coal-fired thermal power plant. DHIC has completed the design for a 500MW EME and planned for a demonstration project at a standard coal-fired thermal power plant to be jointly carried out with a major power generation company. In 2020, DHIC is scheduled to complete the demonstration run of a 10,000CMH Pilot EME installed at the Hadong Coal-Fired Power Plant Unit 3 of the Korea Southern Power Co.
**Digital Transformation**

DHC will be commercializing the output of its Digital Transformation efforts, and will be focusing on developing digital solutions to secure competitiveness in future businesses.

**Vision**

For Doosan
Enhancement of Product Competitiveness and Increase in Sales by Utilizing Digital Technology

For Customer
Increased Efficiency, Reliability and Availability in Power Generation & Industrial Sectors
Contribution to Environmental Protection

Industries: Power Generation, Steelmaking, Chemicals, etc.

Customers: Government, Private Sector, etc.

**Technology**

Digital Solutions/C.

- Prediction & Diagnosis
- Optimization
- Digital Twin

Insight/1

- Data Analysis

Cloud, Big Data). Digital Solutions can largely be divided into the following: 1) Prediction & Diagnosis, 2) Optimization, 3) Digital Twin, and 4) Data Analysis Solution.

**Commercialization of Digital Solution**

The digital solution is not a data-based solution that can only be applied to specific equipment in power plants. As it has an advantage of universal usage, once it has been established that it can be widely applied to various plants and equipment, the utilization rate will likely rise even further. Based on the commercialization results secured at the end of last year, DHC has been promoting its application to various plants and equipment within independent power plants/IPPs, manufacturing plants and the Doosan Group.

**Optimization Solution**

Three types of solutions - combustion optimization, optimized soil blower and coal blending advisor - have been combined into one solution, which DHC has been largely promoting to domestic and overseas power generation companies. The combustion optimization solution was proven to minimize the emission of NOx and other pollutants as shown in a demonstration on the Saswan Power Plant in India in 2019. This solution not only minimizes simple pollutants, but also presents various operation methods, such as a fuel reduction mode. For water projects, DHC has developed an optimized Energy Management Solution that minimizes the electric consumption in desalination plants. DHC is scheduled to apply this solution to the Doha desalination plant in Kuwait.

**Digital Transformation in Operation**

- **Prediction & Diagnosis**
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**Digital Twin & Data Analysis Solution**

The Digital Twin is a solution to monitor and predict the performance of equipment and to detect and diagnose equipment anomalies by utilizing IoT and AI. DHC has completed the compatibility test for wind turbines. This solution can be applied to analyze RT (Radiographic Test) images, and then to eliminate defective products based on the analysis. DHC expects to commercialize the Digital Twin for various suitable purposes when DHC expands its sales of wind turbines and gas turbines.

**Development of Digital Solution for Various Future Businesses**

- **Gas Turbine**
  - DHC plans to enhance the competitiveness and differentiate DHC’s gas turbines by increasing efficiency and improving reliability through the development of a digital solution. The digital solution package will optimize and monitor the performance of DHC’s gas turbine. It consists of combustion automatic tuning (CAT), performance diagnosis, and prediction diagnosis.

- **Wind Power**
  - In order to generate additional profit and enhance the competitiveness of the service business, DHC has been developing digital solutions for power-up, smart maintenance, and future prediction and diagnosis. DHC is also exploring a digital solution to strengthen competitiveness in solar power and ESS businesses.

**Work Efficiency Through Digitalization**

DHC has been exploring digital solutions to improve work efficiency, the corporate culture, and work methods. The company has been pursuing a Digital Transformation initiative and applying this across all the stages of the value chain.

**Sales & Marketing**

DHC has developed the MI (Market Intelligence) Navigator tool which analyzes market trends and develops strategies based on the acquired data. Drawing on internal and external market data that DHC has collected and digitized, W Navigator can identify project trends of local competitor companies. In addition, W Navigator can analyze the order intake and market share for each region and competitor.

**New Orders**

The 'ITB & Contract Review System enables DHC to review bid documents (RTB) and contracts for unfavorable clauses and issues that require mutual consultation between the related parties. After winning an order, DHC utilizes a drone to assess the required civil engineering work. Drone assessments were conducted for the Suncheon Thermal Power Plant project in 2019. DHC plans to utilize the drone to assess the civil engineering work needed for the Van Phong Project in Vietnam. In addition, since the end of 2018, DHC has been using an e-Logistics system during project implementation to organize and arrange various logistics documents. Finally, DHC plans to expand the use of smart solutions to include not only the EHS (Environment, Health & Safety) sector, which already utilizes digital technology to ensure workers’ health and safety on construction projects, but to other sectors as well.

**Design**

DHC is utilizing AI analysis of data and past company experience to upgrade its competency in designing and developing alloy materials.

**Production**

Through the Smart Factory Initiative that has been pursued by DHC over the past few years, DHC has reinforced interconnectivity with automated design data and promoted the digitalization of manufacturing data. Representative cases are the automation of the welding process for boiler headers and smoothing of turbine blades, and the PDM/WES adoption for the turbine/generators and castings & forgings. In addition, through the virtual plant modeling analysis, DHC has been troubleshooting using the prediction feature and maintaining an optimal plant operation.

**R&D**

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**Application of Robotic Process Automation to Simple Repetitive Works**

To increase work efficiency, SW Robots are used to execute simple repetitive tasks, allowing the employees to focus on higher value added work, thus helping them achieve a better work-life balance. DHC is planning to apply the RPA and AI technologies to expand into more areas for possible collaboration between employees and robots.
Power Generation EPC

DHIC has experience implementing various international projects and has demonstrated its EPC competency across the entire value chain – from the design of power plants to the supply of materials and equipment, as well as construction and commissioning. Based on its EPC competency, DHIC has been diversifying its business portfolio. Leveraging proven competencies in civil engineering, architecture/environmental certification, and public SOE projects, DHIC has expanded its architecture and civil engineering services beyond power plants. Domestic private sector projects include Sooncheon City development project; Anyang Knowledge Industry Center; and Deungchun-dong multipurpose building. Domestic public sector projects include the Sejong-Ansong Highway; Pyeongtaek-Godeok Group Energy project; and Wanjoo-Sambong Project.

In the overseas market, DHIC successfully completed construction of the Vinh Tan 4 Thermal Power plant in Vietnam, thereby helping to relieve the power shortage in southern Vietnam. Now, DHIC plans to reduce its involvement in coal-fired power plant projects and instead increase its share of sustainable energy projects in line with the shifting global power market trends.

Effort to Strengthen Competitiveness

In the design sector, digital design technology has been actively adopted, design errors minimized and optimal delivery date pursued for the designs. On the procurement side, we adopted the global sourcing method to ensure we can supply our clients with the appropriate products. In the construction sector, we ensure our projects are executed by skilled, experienced personnel, while also running various career development programs aimed at discovering and cultivating talents in the field of construction and commissioning. Being a specialist in overseas construction projects as well, DHIC also offers a wide range of training programs aimed at helping the overseas site workers build up their capabilities.

DHIC continuously manages risks that may occur during the operation of projects, through measures such as prior review of potential risks in the project cycle and preparation of countermeasures for identified risks. Based on a systematic EHS system, DHIC implements autonomous safety activities with partner companies. DHIC has accomplished zero-accident performance on many overseas projects. In the Saudi Arabia Fadhili project, DHIC achieved 15 million hours of accident-free operation. By implementing early risk management measures and adopting various processes aimed at strengthening on-site safety, DHIC has been able to effectively build up its competitiveness in project delivery.

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Shin Boryeong Power Plant
DHIC World-Class Products

DHIC has been recognized by MOTIE for product manufacturing technology and export competitiveness and retained a total of eight world-class product qualifications, as set forth below.

<table>
<thead>
<tr>
<th>World-Class Products</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. C/S (Crankshaft for Large Engine)</td>
<td>2003</td>
</tr>
<tr>
<td>2. W/R (Work Roll for Cold Rolling)</td>
<td>2004</td>
</tr>
<tr>
<td>3. MOLD STEEL (Die Steel)</td>
<td>2004</td>
</tr>
<tr>
<td>4. Cast Steel for Ship’s Stem</td>
<td>2007</td>
</tr>
<tr>
<td>5. Cast Steel for Runner in Hydroelectric Power (Turbine)</td>
<td>2007</td>
</tr>
<tr>
<td>6. LP Rotor (Thermal Power Low-Pressure Turbine, Rotor Shaft)</td>
<td>2010</td>
</tr>
<tr>
<td>8. Built-in End Plate (Major component in nuclear power plant)</td>
<td>2013</td>
</tr>
</tbody>
</table>

Forging PBR Product at Forging Factory

Shinhanwul #1 & #2 Unit Nuclear Power Plant
Shinkori #5 Nuclear Reactor Shipping

For the past 30 years, DHIC has been the world’s top supplier of major components for nuclear power plants. The company is recognized for its world-class expertise in designing and manufacturing nuclear power plant components.

In particular, DHIC has the track record of having supplied the main components of the first commercially operated 3rd generation nuclear power plant (AP1000). DHIC is also the sole company that has the record of manufacturing major components for AP1000 of the U.S.

DHIC has manufactured major components for domestic nuclear power plants and received recognition for safety through U.S. and European design certifications. DHIC has demonstrated competitiveness in cost, delivery period, and quality through the successful implementation of the UAE Barakah Nuclear Power Plant. And through the supply of a man-machine interface system (M/MIS) and a reactor coolant pump (RCP) to Shin Hanul Power Plant Unit 1 and Unit 2, DHIC has successfully accomplished 100% domestic manufacturing of core components.

DHIC has been pro-actively seeking new orders targeting large nuclear power plants in India, Saudi Arabia, Poland, the Czech Republic, and the U.K. DHIC competes based on its ability to supply major components for nuclear power plants, as well as through collaboration with the Ministry of Trade, Industry and Energy (MOTIE), Korea Hydro & Nuclear Power Co. (KHNP) and Korea Electric Power Corporation (KEPCO) (“Team Korea”). DHIC continues to try to diversify its target markets by expanding from the traditional U.S. and China markets to the European market.

In order to strengthen competitiveness in this era of industrial advancement, DHIC has endeavored to create added value for customers. Its investment in optimum infrastructure, e.g., the remelting system, enables DHIC to produce high clean steel and highly-functional metal materials. Moreover, DHIC has discovered new products to add to its project portfolio which will contribute to external growth and profitability. Based on such competency, DHIC has been exporting products to China, Southeast Asia, Japan, Europe, and the U.S. as well as supplying to the domestic market. DHIC has been recognized by MOTIE for its product manufacturing technology and export competitiveness; and has acquired a total of eight world-class product qualifications, including for a crankshaft for vessels, a work roll, and a low-pressure turbine rotor shaft.

DHIC World-Class Products

DHIC has been recognized by MOTIE for product manufacturing technology and export competitiveness and retained a total of eight world-class product qualifications, as set forth below.

PCHE (Printed Circuit Heat Exchanger) is a new project being promoted by DHIC. PCHE is a high efficiency heat exchanger that is reduced to one-tenth of its previous size. As this enables the heat exchange effect to be maximized even in limited spaces, PCHE has been widely applied to hydrogen recharging stations, carrier vessels for LNG, and parts for power generation. In addition, DHIC is scheduled to complete the installation of Hot Press (High Temperature Diffused junction Reactor) — the necessary facility for PCHE — by the end of October 2020. As DHIC has obtained the core technology of flow path Design Capability, it expects growth in orders for hydrogen recharging stations, ship building, offshore plants, and power generation.

Casting & Forging

DHIC began its casting and forging business in 1973. Based on accumulated technology know-how and production experience, DHIC has been manufacturing and supplying cast and forged products of the highest quality to customers. DHIC is proud of its large-scale steelmaking plant, casting shop, forging shop and processing plant for their latest automated system, optimized digital convergence process system, and strict quality assurance system which is backed by various quality certifications. The steelmaking plant utilizes a 100-ton electric furnace; and its annual production capacity is 250 thousand tons and maximum 650 tons of ingot. The forging shop utilizes a 70,000-ton press; and its annual production capacity is 160 thousand tons and maximum 290 tons of large forged product.

Nuclear Power

For the past 30 years, DHIC has been the world’s top supplier of major components for nuclear power plants. The company is recognized for its world-class expertise in designing and manufacturing nuclear power plant components.

In particular, DHIC has the track record of having supplied the main components of the first commercially operated 3rd generation nuclear power plant (AP1000). DHIC is also the sole company that has the record of manufacturing major components for AP1000 of the U.S.

DHIC has manufactured major components for domestic nuclear power plants and received recognition for safety through U.S. and European design certifications. DHIC has demonstrated competitiveness in cost, delivery period, and quality through the successful implementation of the UAE Barakah Nuclear Power Plant. And through the supply of a man-machine interface system (M/MIS) and a reactor coolant pump (RCP) to Shin Hanul Power Plant Unit 1 and Unit 2, DHIC has successfully accomplished 100% domestic manufacturing of core components.

DHIC has been pro-actively seeking new orders targeting large nuclear power plants in India, Saudi Arabia, Poland, the Czech Republic, and the U.K. DHIC competes based on its ability to supply major components for nuclear power plants, as well as through collaboration with the Ministry of Trade, Industry and Energy (MOTIE), Korea Hydro & Nuclear Power Co. (KHNP) and Korea Electric Power Corporation (KEPCO) (“Team Korea”). DHIC continues to try to diversify its target markets by expanding from the traditional U.S. and China markets to the European market.
CSR FOCUS AREAS

DHIC conducts sustainable business activities based on stakeholder priorities. Stakeholder priorities have led DHIC to focus on enhancing environmental sustainability and social values for customers, employees, and local community.
Environmental issues have become increasingly global due to continuous expansion of enterprises’ business activities. Globally, factories’ release of hazardous substances and greenhouse gases is leading to air pollution and climate change. Countries with advanced CSR regimes, including EU countries, have been gradually expanding the scope of environmental restrictions. Environmental information disclosure requirements, such as TCFD, have been increasing continuously. In order to manage environmental risk, DHIC expanded its EHS investment and selected core KPIs to be addressed systematically. Also, through activities such as the evaluation of environmental effect on the surrounding area and protection of biodiversity, DHIC endeavors to minimize environmental impacts on local communities.

Expansion of Environmental Investment & Setting of Core KPIs

In order to achieve the Global Top-Tier of ‘Energy & Environment’, DHIC has established an EHS unit under the chief operating officer (COO), and has implemented various activities to reduce the environmental impact of business activities. In particular, DHIC has introduced eco-friendly facilities which continuously invest in ways to reduce environmental pollution. Moreover, in 2019, DHIC adopted the following core KPIs: reduce air pollutants, water pollutants, waste, and chemicals. These KPIs have been adopted by 4 territorles, which have conducted various activities to accomplish the KPIs.

2019 KPI and Performance in Environmental Area

<table>
<thead>
<tr>
<th>Investment in EHS Area</th>
<th>Performance in EHS Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>KRW 5 Billion</td>
<td>KRW 6.63 Billion</td>
</tr>
</tbody>
</table>

Performance in Environmental Area

- **Air**
  - Goal: Implement self-inspection of air quality system for discharge and prevention of air pollutants, and conduct regular and environmental management inspections.
  - Performance: Complied 100% of all inspections after the implementation of self-inspection per month with the standards of the Environment Climate Protection Law, 2019.
  - Goal: Achieve less than 50% of the standard discharge limit for particulates.
  - Performance: Achieved more than 50% of the standard discharge limit for particulates.
- **Water Quality**
  - Performance: Conducted self-inspection of water quality system for discharge and prevention of water pollutants.
  - Goal: Achieve less than 50% of the standard discharge limit for suspended solids.
  - Performance: Achieved more than 50% of the standard discharge limit for suspended solids.
- **Waste**
  - Goal: Achieve 90% of recycling rate for waste at Changwon Plant.
  - Performance: Complied 91.4% of recycling rate for waste at Changwon Plant.
- **Chemicals**
  - Goal: Use less than the permitted amount (440.6 tons) of hazardous chemicals.
  - Performance: Complied 91.6% of the permitted amount of hazardous chemicals.

Effort to Reduce Environmental Impact on Local Community and Ecosystem

DHIC has been primarily assessing environmental impact in order to minimize the environmental impact of business activities on local communities and the local ecosystem. DHIC is implementing a project to assess compliance with environment-related laws and restrictions in business activity areas. DHIC will then conduct continuous management activity in areas where improvement is needed.

Assessment of Compliance with Environmental Regulations at Business Sites

In order to minimize environmental impacts of business activities on local communities and ecosystems, DHIC has assessed compliance with environmental regulations by all domestic and overseas business sites. Through this assessment, DHIC has also observed the environmental impact on local society, such as air, water quality, waste, and hazardous materials. Based on assessment results, DHIC has conducted continuous improvement activities to minimize environmental impacts of business activities. DHIC has created a conducive environment to minimize environmental impact by appointing a main person-in-charge to undertake improvement activities for each business site.

Biodiversity Management

DHIC has reviewed the situation of and conducted protection activities to effectively preserve biodiversity. Before full scale launching of a project in biodiversity areas, DHIC identifies plants and animals to be preserved as part of the local ecosystem and implements relevant protection activities. In particular, in order to fulfill local ecosystem protection obligations, DHIC prepares environmental impact assessment reports before the project and notifies details about the species to be protected. In 2019, a total of 175 species of organisms were identified for protection in areas of DHIC business activity. DHIC has conducted monitoring and environmental improvement to protect the diversity of these identified organisms.
Maximization of Customer Satisfaction through Upgraded Quality Control

DHIC provides an integrated system of technology and relevant services throughout its business activities – from basic casting and forging to gas turbine and ocean desalination. Quality control is classified as a very important management task. To deliver the best quality and guarantee customer satisfaction, DHIC continuously improves the systems of zero-defect quality innovation and quality assurance. DHIC has been upgrading competency in quality control by adopting an international standard quality certification system and by procuring excellent manpower. These quality control measures have maximized customer satisfaction with regard to quality.

Leveraging experienced technicians of the highest level in their industrial fields, DHIC provides the best products and service in areas of business activity. Through continuous preventive quality control and quality innovation, DHIC maintains world-class competency in engineering and product manufacturing.

Reinforcement of Competency in Quality Based on Quality Meister

The Human Resources Development Services of KATS and the Korean Standards Association have designated Meister technicians who retain the highest-level techniques in various industrial fields. As of 2020, DHIC has 28 national quality meisters and 14 Korean meisters.

With access to meisters in the areas of welding, processing, non-destructive testing, casting & molding, DHIC provides the highest-level products and services in these areas. DHIC has composed the Meister Consultation Group to transfer skills from meisters to general technicians, with a particular focus on training talented core personnel. Through technical support for partner companies, DHIC fosters mutual growth to strengthen the competitiveness of the value chain.

Preventive Quality Control

DHIC has implemented preventive quality control throughout the industrial process – from the inventories of necessary materials for product manufacturing through to after-production shipping. Shipped-in materials are tested and analyzed by DHIC laboratories before they are sent for use in production. Only strictly-verified and approved materials are sent to the production field. DHIC carries out joint inspection of entire production and quality before shipping, such as preventive quality monitoring for the production process. DHIC has made an effort to establish a preventive quality management culture centered on the field.

Recently, DHIC launched the Doosan Quality Control System to manage digital quality information and documents; and established a system for preventive quality management. Based on this, DHIC has digitized quality control information throughout the industrial process, from inspection plan to inspection results.

Acquisition of International Standard Certification for Quality

With constant quality innovation, DHIC has secured world-class competency in engineering and manufacturing. Based on the Supply Chain with refined quality competency, DHIC implements a complete quality assurance system from material ship-in to product ship-out. To upgrade quality control, DHIC has adopted a quality assurance system and an environment & safety management system that conform to global standards. DHIC has acquired and maintained 50 relevant certificates from officially approved international agencies, such as ASME(The American Society of Mechanical Engineers, KEPIK(Korea Electric Power Industry Code), ISO 9001/14001, and OSHAS 18001.

DHIC provides an integrated system of technology and relevant services throughout its business activity. Through continuous preventive quality control and quality innovation, DHIC maintains world-class competency in engineering and product manufacturing.

Maximization of Customer Satisfaction through Upgraded Quality Control

The excellence of DHIC quality control competency has been recognized by external stakeholders. On the basis of the Supply Chain with refined quality competency, DHIC conducts quality control that meets international standards from material ship-in to product ship-out.

Acquisition Status of Quality Certificates

<table>
<thead>
<tr>
<th>Area of Certification</th>
<th>Type of Certificate</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASME(Nuclear Power)(Non-Nuclear Power)</td>
<td>N, NPT, U, L, etc.</td>
<td>17 types</td>
</tr>
<tr>
<td>KEPIK(Nuclear Power)</td>
<td>W, SN, etc.</td>
<td>3 types</td>
</tr>
<tr>
<td>LSO</td>
<td>5005, 1600, etc.</td>
<td>3 types</td>
</tr>
<tr>
<td>Others</td>
<td>PED II, Shipping Register, etc.</td>
<td>37 types</td>
</tr>
</tbody>
</table>

DHIC has the distinction of winning the Presidential Golden Award for 10 consecutive years, most recently in the 45th 2019 National Quality Management Convention held by the WHITE and the KATS.

The Production Equipment Engineering Team of DHIC selected the activity theme as ‘The Reduction of Cost and Standby Time through the Improvement of the Steam Generator Manufacturing Process’; and established its measure to conduct the activity of standardization. The team showed the performance of successful post-management. Most importantly, the team has improved the quality of and increased customers’ trust in the steam generator manufacturing process.

Winner of National Quality Management Convention

DHIC has the distinction of winning the Presidential Golden Award for 10 consecutive years, most recently in the 45th 2019 National Quality Management Convention held by the WHITE and the KATS.

DHIC has secured world-class competency in engineering and manufacturing. Based on the Supply Chain with refined quality competency, DHIC has implemented a complete quality assurance system from material ship-in to product ship-out.

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Leveraging experienced technicians of the highest level in their industrial fields, DHIC provides the best products and service in areas of business activity. Through continuous preventive quality control and quality innovation, DHIC maintains world-class competency in engineering and product manufacturing.
Recognizing that the employees embody the heart of an enterprise, DHIC has been making efforts to foster an in-house culture where all the employees are happy. In particular, DHIC conducts various activities to internalize the Doosan Credo which sets forth the goal and core values of Doosan. DHIC has introduced a Smart Office in order to improve the work environment for the employees. DHIC also aims to enhance the satisfaction of employees through increased and improved communication. In 2019, DHIC collected opinions from 2,521 employees via an ‘Open Communication Survey’ and used the results to improve various in-house systems.

The Doosan Credo is the managerial philosophy which has guided Doosan’s successful business activity over the past 100 years. DHIC conducts various activities to disseminate and internalize the Doosan Credo. DHIC has introduced a Smart Office in order to improve the work environment for the employees. DHIC also aims to enhance the satisfaction of employees through increased and improved communication. In 2019, DHIC collected opinions from 2,521 employees via an ‘Open Communication Survey’ and used the results to improve various in-house systems.

CA Meeting

CA Operation
DHIC’s CA (Change Agent) is a team composed of outstanding, talented personnel who have been recommended by executives. Equipped with a deep understanding of the Doosan Credo, CA carries out the core role of establishing an organizational culture based on the Doosan Credo. CA keeps an eye on every corner of the organization and listens to the needs of employees. They contribute to fostering a healthier organization by serving as a regular channel for communication between the management and employees. Moreover, the CA directly participates in the resolution process of diverse issues in the organization and carries out a core role of establishing the organization culture based on Doosan Credo.

Improvement of Working Environment
DHIC has been making efforts to create an environment that enables employees to demonstrate their capabilities freely, and to achieve Work & Life Balance. DHIC operates various systems to increase work efficiency, including ‘PC Off System’ which establishes a 52-hour work week. DHIC also has in place a code of conduct on ‘Desirable Report Culture by Doosan People’ which aims to establish a reporting culture which is fit-for-purpose and free from formalities. For example, the system limits the use of PowerPoint presentations to prevent unnecessary and burdensome use.

Operation of Open Communication Survey
The ‘Open Communication Survey’ was launched in April 2018. Through this survey, the executive group listens to and directly responds to the questions and suggestions of employees. The survey began in April 2018 and has been conducted every two months. Survey is conducted every two months. To date, 3,600 questions and suggestions have been received and the survey has been established as the key communication channel between employees and company executives. The survey has become a method to address issues of concern and interest raised by employees. In addition, it has been utilized to actively share the business status and company strategies. Constructive suggestions and ideas raised by employees are actively reflected to refine systems. Through the ‘Open Communication Survey’ DHIC has improved the work environment and maintained the Work & Life Balance of employees.

Fostering Healthy Corporate Culture and Talented Personnel

Fostering Healthy Organizational Culture

DHC implements several educational courses to foster talented personnel. For example, there is an Academy for each job to strengthen job competency; the WIN Academy to strengthen negotiation competency for successful project order intake and implementation and the Technology Management School to strengthen technical competency.

Operation of WIN Academy

Team-up Program

DHIC has a goal of creating ‘Proud Doosan’ in the world. ‘Proud Doosan’ means that all stakeholders, including employees, feel proud of Doosan and have self-respect for themselves as Doosan stakeholders. DHIC has conducted various activities to understand the needs of employees and foster a healthy organizational culture.

Table: Implementation of ‘Open Communication Survey’

<table>
<thead>
<tr>
<th>Total Participants</th>
<th>Questions</th>
<th>Suggestions</th>
<th>Systems Introduced by Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,521 Employees</td>
<td>1,770 cases</td>
<td>1,865 cases</td>
<td>‘Casual Days’ introduced</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>‘Half Day Off’ System’ introduced</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>‘Improve Domestic &amp; Overseas Field Workers’ conditions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Improvement of Congratulation &amp; Condolence Support System</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>‘Mobility Working Your System’ introduced to take care of families</td>
</tr>
</tbody>
</table>

*Accumulated Performance from April 2018 to the end of 2019

DHIC prioritizes implementation of this program for new teams, merged teams, or teams that need to enhance collaboration. DHIC scheduled to expand this program gradually.

Team-up Program

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Operation of Team-up Program
To foster performance enhancement, mutual understanding, and improved communication by each team unit, DHIC has been operating a ‘Team-up Program.’ The aim is to align common team goals and individual/team member goals to reinforce collaboration. Birkman Diagnosis tools are applied so that individuals can understand his/her own characteristics and team dynamics. Ultimately, the aim is to reach consensus on the team goal, strengthen teamwork through mutual understanding, and change ways of working based on the strengths of teams and individual employees.

DHIC prioritizes implementation of this program for new teams, merged teams, or teams that need to enhance collaboration. DHIC scheduled to expand this program gradually.

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Upgraded Safety Management for Employees and Partners

The reinforcement of field safety management is an area of business management which requires special management as it is directly connected to the life and safety of employees. DHIC has taken steps to systematically manage and reinforce field safety management. DHIC eliminates field safety risks through the MLST (Management Safety Leadership Tour) led by executives and managers and the 9-Theme Inspection. DHIC has been making an effort to internalize safety management culture through the expansion of IoT-based education on safety & health and EHS. In addition to the safety & health management for employees, DHIC endeavors to assure safety management by partner companies. DHIC plans to strengthen the safety & health management system continuously through upgraded systematic management in corresponding areas.

To prevent the occurrence of severe disaster and major accident, DHIC reinforces safety management around major risk processes. To enhance safety management culture, executives and managers have been voluntarily conducting management activities for severe risk elements on the basis of MLST (Management Safety Leadership Tour). In addition, DHIC has been taking steps to prevent safety accidents in the field, including the introduction of various systems to eliminate the causes of safety accident in the field.

**Management of Safety Accident Risk Factors Based on MLST**

To manage risk at worksites of manufacturing, construction, and service, executives and field managers have been operating MLST (Management Safety Leadership Tour) to enhance safety. In 2019, targeting high-risk construction sites, a total of 1,156 MLSTs were implemented. The corresponding activity consists of various programs for the safety management. Through MLST, DHIC executives are able to identify field safety challenges and risk factors and then use that information to enhance the effectiveness of safety management activities.

**Major Programs in MLST**

<table>
<thead>
<tr>
<th>Executives</th>
<th>Field Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention &amp; Risk of Voluntary EHS by Employees</td>
<td>Check the fulfilled condition of SWI (Check Safety Work Binder)</td>
</tr>
<tr>
<td>Discovery &amp; Elimination of EHS Risk in Business Sites</td>
<td>Check the compliance of Golden Time &amp; 9 Theme Inspection</td>
</tr>
<tr>
<td>Inspection &amp; Confirmation of Site Rules in Field</td>
<td>Check the fulfillment of Daily Site Cleaning Day</td>
</tr>
</tbody>
</table>

**Prevention of Safety Accidents Based on Advanced Technology**

The safe work instruction is a document which provides instructions on how to carry out safe works for utilization on construction sites. Previous safe work instructions were disseminated via printed copies or document files. DHIC has developed and applied a mobile safe work instruction which can be shared directly with construction sites. Workers and managers in the field are able to receive the mobile safe work instructions regardless of where they are located. Thus, workers can always be informed and keep in mind how to carry out their work safely. In 2019, a total of 6,375 cases of safe work instructions were written and utilized effectively. DHIC has plans to increase its utilization.

**Establishment of System to Enhance the Safety of Employees in Partner Companies**

DHIC reinforces the management of safety and health for partner companies as well as its own employees. In particular, to improve the level of safety and health management in partner companies, DHIC implements a Win-Win Cooperation Program which evaluates risk levels and provides technology and education. In 2019, DHIC conducted discovery and improvement activities for safety and health risk causes in worksites targeting 53 partner companies through the Win-Win Cooperation Program. In addition, targeting 21 partner companies, DHIC selected process risks and provided field feedback on observed risky behavior (of workers) and risk elements. DHIC conducted other activities to support partner companies to establish systems for autonomous safety management. For example, DHIC assisted 24 partner companies to maintain KOSHA 18001 and OSHAS 18001 certifications to establish the independent management system for safety and health. DHIC has also conducted training to strengthen the safety and health management competencies of presidents and managing supervisors of partner companies.
The volunteer group service for technology consists of professionals in electricity, system operation, and maintenance of the company. It is the first professional volunteer service group organized voluntarily to share the talents of employees. In 2007, it repaired the town hall and houses of underprivileged elderly people in Buk-myeon village of Changwon City. This DHIC volunteer service group has expanded their contributions to target the alienated social classes, farming villages, and a children welfare centers. DHIC regularly implements a clean house program specialized in house repair and environmental improvement, such as inspection and repair of electrical facilities, papering walls, replacement of flooring, and painting.

One thousand and eleven (1,011) volunteers have participated over the last 13 years in over 200 activities benefiting 46 children welfare centers, 15 social welfare centers, 108 houses in farming villages, and 33 vulnerable households. DHIC has been recognized for its consistent contributions to local society.

This group is a representative talent sharing volunteer service group that utilizes human resources and material resources such as EHS professional manpower and fire fighters to bolster national safety awareness and prevent disasters and accidents, something that is being pursued in parallel with the government’s campaigns to promote safety.

This volunteer service group has conducted training on the theory of environmental safety targeting children’s welfare centers since 2011. It has now been recognized as the safety promoting volunteer group and has expanded training to participants and children in social welfare centers and the underprivileged. This service group provides training that is professional and practical, focusing education mainly on disaster response, fire drill, and CPR.

Since 2017, through 8 sessions, 615 people have completed the course, including 437 in children’s welfare centers, 126 in social welfare centers, and 52 multicultural households. Participants have commented favorably on their training experiences.

The volunteer group for career education is a professional volunteer group which consists of the job training consortium project group, the Meister Consultation Committee, and employees from relevant departments which operate the “My Dream Career & Engineering Experience Class.” “My Dream Career & Engineering Experience Class” targets youth who lack the opportunity to explore and experience in accordance with the policy of free semester sharing in middle school implemented by the Ministry of Education.

My Dream Youth’s Career Experience Class
This program encourages youth to consider and plan for their own careers earlier in life. In accordance with the enactment of the free semester system in middle school, DHIC has been implementing this program for middle school students in Changwon City (under a MOU with the Changwon Office of Education). The program is comprised of 5-stages: (1) explore; (2) experience; (3) design; Since its launch in 2015 through 2019, 346 students from 17 middle schools have completed the course. In 2019, targeting 80 students in 6 middle schools, DHIC provided more than 20 experience activities to introduce students to prospective occupations such as drone operator, coding professional, Youtuber, and psychological counselor.

My Dream Youth’s Engineering Experience Class
This experiential education program utilizes DHIC core business (engineering) characteristics and competency to foster talented youth in Natural Science and Engineering. The program consists of a special career lecture by a Meister (who represents the talented personnel of DHIC); a field trip to a factory where actual products are manufactured; and experience of working with an engineer. Through this program, youth are able to experience the actual duties of engineers, such as engineering design, processing, and assembly.

The program launched in 2017, the number of participating schools has increased annually. In 2019, 936 students in 16 middle schools of Changwon City visited the company and participated in the program. As of 2019, a total of 1,753 have participated in the program.

Youths Hazardous Environment Surveillance Group
The Youth Hazardous Environment Surveillance Group was launched in 2000 as part of the efforts to create a safe and healthy society and provide protection to young people. The group has focused on the following issues: safe transportation to school for children; campaign for the medication of drinking and driving together with Changwon City, Changwon Local Prosecutor’s Office, and Changwon police department; and various campaigns for youth protection, e.g., prohibition of employment of youth in entertainment outlets, prohibition of sale of liquor to youth jointly with Changwon Public Health Center and Changwon YMCA. Over the past 20 years, the group has implemented a total of 501 activities with a total of 4,308 participants.
Creation of Social Value by DHIC

Preparation of Governance to Create Social Value

Based on the commitment of the executive group to create social value, DHIC has established a CSR Committee under the Board of Directors. DHIC CEO serves as the chairman of the CSR Committee. The CSR Committee consists of three divisions: (i) environment; (ii) society; (iii) and governance. and the CSR Committee has conducted in-depth discussions regarding social responsibility and management.

Realization of Social Value Based on New Growth Project Portfolio

DHIC is scheduled to recognize the core business structure drastically as a professional energy company. With a project portfolio focusing on gas and new renewable energy, DHIC will be reinvigorated as a leading enterprise that creates social value through its core business. DHIC's core business – technologies that maximize energy efficiency and reduce greenhouse gas – will contribute to making a clean earth.

Realization of Social Value through Upgrading CSR Management

For effective management of social responsibility, DHIC has been upgrading the CSR management system. In particular, DHIC has identified and systematically addressed the following major CSR priorities: reduction of environmental impact through business activities; enhancement of employees' safety and health through the reinforcement of field safety management; and contribution to local society.

Measurement Result of Social Value

DHIC calculates that it created social value of 659.1 billion won in total in 2019. The social value is measured by the sum of values with positive impact from business activities and the sum of values of negative impact from business activities. DHIC tried to reflect comprehensive social and environmental causes, but due to the limitation of survey on some data, this is a limited measure of social value.

While defined as the social value created by DHIC, measurements of social value shall be utilized as a reference to business activities of DHIC. DHIC will expand those business activities with positive effect continuously and seek to reduce the negative effect caused by other business activities.

Items to Measure Social Value

<table>
<thead>
<tr>
<th>Classification</th>
<th>Major Items of Social Value</th>
</tr>
</thead>
</table>
| Positive Effect | - Contribute to economy through employment  
                  - Support mutual growth with partnership companies  
                  - Support local society  
                  - Amount paid for social contribution & social value created through social contribution |
| Negative Effect | - Environmental effect  
                  - Safety accident  
                  - Social cost through the occurrence of safety accidents |

<table>
<thead>
<tr>
<th>Items to Measure Social Value</th>
<th>Main Items</th>
<th>Value (won)</th>
</tr>
</thead>
</table>
| Environment Value            | Effects of Industrial water  
                                | GreenTech  
                                | Social Contribution  
                                | Mutal Growth  
                                | Purchase |
| Economic Value               |_effects of greenhouse gas  
                                | Profit  
                                | Employment provided to employees  
                                | Amount to purchase and amount to support mutual growth of partnership companies  
                                | Amount paid for social contribution & social value created through social contribution |
| Social Value                  | Effects of Air Quality  
                                | Safety accident  
                                | Resources used through business activities & emission of greenhouse gas  
                                | Social cost through the occurrence of safety accidents |
| Total Social Value           | 659.1 billion |

DHIC aims to understand its contribution to social value not only in terms of the financial value of projects but also with regard to social and environmental impacts of business activities. For this purpose, DHIC has been upgrading the system to convert social and environmental impacts to financial value. The resulting value computed through the measurement of social value is defined as the social value created by DHIC. Measurements of social value shall be utilized as a reference to business activities of DHIC. DHIC will expand those business activities with positive effect continuously and seek to reduce the negative effect caused by other business activities.
CSR Aligned with UN SDGs

Among the 17 UN SDGs, DHIC has decided to focus on five core areas (water, energy, response to climate change, health, and education) in order to fulfill the company’s CSR obligations as envisioned by the SDGs. DHIC’s core business is directly relevant to the SDG goals on water and energy. DHIC’s social contribution is to expand the reserved quantity of water resources for regions with severely depleted water resources and to raise the accessibility of reliable and sustainable energy. In addition, DHIC makes social contributions in the areas of health (improvement of medical conditions), education (training of talented personnel based on the characteristics of each country and the demand of local society), and climate change (voluntary reduction of greenhouse gas in line with national reduction goals).

### Commitment 1
**SDG 6. Clean Water & Sanitation**
Guarantee the access to reliable, sustainable and modern energy with optimum price to all people

<table>
<thead>
<tr>
<th>Link to SDGs</th>
<th>Commitments</th>
<th>Promotion Performance</th>
<th>Social Effect</th>
<th>Social Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>By 2030, increase the reserved quantity of water resources in the region of Arabian Peninsula by more than 10%, from BAU level (42.7 billion tons), and expand the supply of water resources continuously to regions of the world’s shortest shortage of water.</td>
<td>Based on the technology of ocean desalination, the supply water resources to Arabian Peninsula 1,275,204,431 tons</td>
<td>- Increased reserved quantity of water resources to Arabian Peninsula</td>
<td>Annual Water Supply by Ocean Desalination Plant under Construction of DHIC’s Social Value for each Ton of Water (Average fee: drinking water per 1 person in 370 cities in the world)</td>
<td>$1,566.9 billion won</td>
</tr>
</tbody>
</table>

### Commitment 2
**SDG 7. Sustainable Energy**
Guarantee high-quality education with equal opportunity and enhance welfare for all ages

<table>
<thead>
<tr>
<th>Link to SDGs</th>
<th>Commitments</th>
<th>Promotion Performance</th>
<th>Social Effect</th>
<th>Social Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>By 2030, increase the supply of power generation to new markets throughout the world with high-efficient eco-friendly power generation technology comprising more than 10%(496GW) of BAU level, and contribute to the decarbonization of energy mix through the advancement of energy technology such as high-efficient gas turbine, wind, power generation, and so on.</td>
<td>Energy supply based on the technology of power generation of sustainable energy, 5.9GW</td>
<td>- Increased energy-access to society through power generation using sustainable energy</td>
<td>Electric Power Supply by Energy Power Plant of DHIC’s Social Value of 1MW Electricity (Average fee of electricity for household in major 26 countries in OECD)</td>
<td>$1.3 billion won</td>
</tr>
</tbody>
</table>

### Commitment 3
**SDG 13. Climate Change & Action**
Guarantee healthy life and enhance welfare for all ages

<table>
<thead>
<tr>
<th>Link to SDGs</th>
<th>Commitments</th>
<th>Promotion Performance</th>
<th>Social Effect</th>
<th>Social Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>By 2030, reduce the emission of greenhouse gas generated during the process of businesses in Oman by 2030 (70 thousand tons) from BAU level, and develop greenhouse gas reduction technology to respond to climate change continuously.</td>
<td>In 2019, reduction of greenhouse gas from BAU level 48,358 tons</td>
<td>- Reduced environmental effect through the reduction in the emission of greenhouse gas</td>
<td>Reduction Amount of Greenhouse Gas from BAU Level’s Social Value for each Ton of Greenhouse Gas (Reference Energy Institute study estimate of social cost of carbon)</td>
<td>$3.9 billion won</td>
</tr>
</tbody>
</table>

### Commitment 4
**SDG 3. Health & Welfare**
Guarantee the access to reliable, sustainable and modern energy with optimum price to all people

<table>
<thead>
<tr>
<th>Link to SDGs</th>
<th>Commitments</th>
<th>Promotion Performance</th>
<th>Social Effect</th>
<th>Social Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>By 2030, supply basic medicines to 80 thousand residents of alienated social class in Vietnam and India, and support local medical services to contribute to improvement of the world’s health level.</td>
<td>Medical support 9,368 people</td>
<td>- Improved the level of health in underdeveloped areas and developing countries</td>
<td>Number of Beneficiaries of DHIC’s Social Value of Create the Supported Medicines (Cost to purchase essential medicines in OECD)</td>
<td>$6.5 billion won</td>
</tr>
</tbody>
</table>

### Commitment 5
**SDG 4. High-Quality Education**
Guarantee the access to reliable, sustainable and modern energy with optimum price to all people

<table>
<thead>
<tr>
<th>Link to SDGs</th>
<th>Commitments</th>
<th>Promotion Performance</th>
<th>Social Effect</th>
<th>Social Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>By 2030, provide for each growth stage an opportunity of continued education and career experience for 50 thousand children and youths in alienated social class through the representative social contribution program, “Young Adult Energy Project.”</td>
<td>Provided the opportunity for educational support &amp; career experience 9,326 people</td>
<td>- Contributed to the development of local society through high-quality education</td>
<td>Number of Beneficiaries of DHIC’s Social Value of Career Experience Education Program (Direct support of scholarship, local children center and Infants provided to create the support of reference basis, Social Value of Career Experience Education Program)</td>
<td>$300 million won</td>
</tr>
</tbody>
</table>

**Implementation of Social Value and Social Effect through SDGs**

DHIC has been implementing activities to accomplish goals since it adopted SDGs Commitment in 2017. By 2019, DHIC was scheduled to establish an activity plan to monitor and accomplish the goals, including confirmation of implementation performance and accomplishment rates for each goal. In particular, DHIC will raise the access guarantee to sustainable and modern energy through the expansion of business activities to supply sustainable energy together with the business-conversion focusing on gas turbines and new renewable energy.

**Creation of Social Value through Implementation of SDGs**

DHIC sets forth in the table below its performance towards fulfilling each target SDG commitment (Implementation performance, social effect, outcome), and social valuation. Social effect has been classified to the production of clean water, the supply of energy, the reduction of greenhouse gas, the improvement of health level through medical support, and the contribution to the development of local society through high-quality education. The social effect from the promotion performance has been computed by political numeric values to convert them to financial values. As of the 2016 General Report, the total social value created by DHIC was estimated at about 1578.9 billion won (over the past three years).
In order to raise mid- to long-term value, DHIC has making efforts to grow continuously through collaboration with stakeholders with whom DHIC has established a long-term win-win relationship, while taking on prior and post responsibilities to support major stakeholders.
GOVERNANCE OF BOARD OF DIRECTORS

The Board of Directors operates the governance based on the operation principles of responsible leadership, efficient operation, fair salary, and stakeholder-centered.

- For fairness in the operation of the Board of Directors, the voting right shall be restricted to directors with special interest regarding the vote by the Board of Directors. In principle, the vote of the Board of Directors shall be the majority of directors in presence and majority of directors in attendance.

- It is possible to hold a meeting when more than one third of regular directors jointly specify the purpose of a meeting and the desired date to convene the meeting, and request that the meeting be convened.

OPERATION OF THE BOARD OF DIRECTORS

When an important management issue arises, including economic, environmental and social issues, the Board of Directors shares the corresponding matter and seeks a solution.

- According to the Articles of Association, for fast and efficient decision-making, a committee is installed to operate inside the Board of Directors.
- To protect the right of shareholders and stakeholders, information on the composition and operation status of the Board of Directors is disclosed through the company’s website, the business report, and the governance structure report.

1. Current Composition of Board of Directors

   - COMPOSITION OF THE BOARD OF DIRECTORS
   - Senior Outside Director
   - Inside Directors
   - Outside Directors

2. CSR GOVERNANCE

   - The Board of Directors operates a separate CSR Committee to manage sustainable management and social value creation.
   - The CEO shall serve as the chairman of the CSR Committee.
   - The CSR Committee is composed of three divisions: (i) environment; (ii) society; and (iii) governance structure.
   - The company will promptly handle issues and decision-making.

3. Composition of CSR Committee

   - Chairman
   - Co-Chair
   - Members

4. REMUNERATION

   - Salaries for outside directors and inside directors are paid within the limit of directors’ remuneration approved by the general meetings of shareholders.

   - Information about individual officer salaries, including that of non-executive directors and the CEO, are disclosed through the business report.

5. RELATIONSHIP WITH SHAREHOLDERS

   - To protect the right of minority shareholders, the rights of independent and minority shareholders are recognized under the relevant laws such as Commercial Act.

   - The general meetings of shareholders is held annually to report the business management status and listen to opinions of minority shareholders.

   - An electronic voting system was introduced from 2017 to protect the voting rights of minority shareholders.

   - The electronic voting system enables shareholders to exercise their voting rights through communication channels such as the Corporate Disclosure System and the company’s website.
ETHICAL MANAGEMENT

IMPLEMENTATION PRINCIPLE

- Through compliance with laws and principles and fair business operations, DHIC conducts ethical management activities based on a vision of becoming a leading ethical enterprise with respect and pride.

IMPLEMENTATION SYSTEM

- DHIC established the basic principle of job performance through the Group-Level Code of Conduct, which was adopted in 2002 and recently revised in December 2019. Through the Code of Conduct, ethical management targets is applied to all employees who are active in domestic and overseas business sites. DHIC also recommends that the supply network of partner companies observes the Code of Conduct.

- To comply with the Code of Conduct throughout its supply network, DHIC has put in place an Oath of Compliance with the Code of Conduct for partner companies. To prevent corruption by overseas agents, DHIC manages third-party anti-corruption risks by linking ethical management to the supply chain operating system, such as strengthening Compliance Regulations under standard contract conditions.

IMPLEMENTATION STRATEGY

- Based on the commitment of executives to ethical management, DHIC has established an ethical management strategy on the basis of the Code of Conduct, the Cyber Report System, and the operation of the Research Security & Ethics Committee.

- DHIC has created a corporate culture based on ethical responsibility such as honesty, transparency, and fairness throughout management activities. Around the activity based on the principle and strategy of ethical management, DHIC has been strengthening a company-wide system to prevent the risk of ethical management throughout management activities. Around the activity based on the principle and strategy of ethical management, DHIC has been strengthening a company-wide system to prevent the risk of ethical management.

- The technical competitiveness of DHIC has increased its value, and thus the compliance with laws and principles and fair business operations have been established as the core of ethical management. A Research Security & Ethics Committee has been established – with the CTO/Chief Technology Officer serving as the chairman – to secure research ethics and workforce research security. The Research Security & Ethics Committee is fostering a transparent R&D atmosphere and seeks to prevent misconduct in research.

PREPARATION OF A PROCEDURE FOR AN OATH OF COMPLIANCE TO THE CODE OF CONDUCT BY SUPPLY NETWORK

- According to the new system of an Oath of Compliance for the Code of Conduct launched on January 2020, all DHIC partner companies have an obligation to sign an Oath of Compliance for the Code of Conduct in the bid procedure.

COMPOSITION OF RESEARCH SECURITY & ETHICS COMMITTEE

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IMPLEMENTATION STRATEGY FOR ETHICAL MANAGEMENT

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EXECUTIVE COMMITTEE

- The Research Security & Ethics Committee is fostering a transparent R&D atmosphere and seeks to prevent misconduct in research.

Status of Ethics Education

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education Target</td>
<td>6,918</td>
<td>6,611</td>
<td>5,778</td>
</tr>
<tr>
<td>Education Completed</td>
<td>6,911</td>
<td>6,563</td>
<td>5,778</td>
</tr>
<tr>
<td>Compliance Rate</td>
<td>96%</td>
<td>97%</td>
<td>95%</td>
</tr>
</tbody>
</table>

* The performance of enrolling the ethics education includes the employees of overseas subsidiary companies.

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- According to the new system of an Oath of Compliance for the Code of Conduct launched on January 2020, all DHIC partner companies have an obligation to sign an Oath of Compliance for the Code of Conduct in the bid procedure.

STATUS OF ETHICAL MANAGEMENT...

- An ethics education has been implemented for employees of partner companies to introduce the DHIC Code of Conduct and provide guidance on how to report violations.

- A new provision has been adopted to assess the risk of corruption of new DHIC partner companies.

- Support against unfair trade and ethical management in Partner Companies

REPORTING AND MONITORING

- DHIC operates a cyber report center and an internal report box to facilitate internal and external reporting about the violation of ethics.

- DHIC has introduced an internal reporting system operated by a third party for overseas subsidiaries to report violation of ethics.

- The internal report system of overseas subsidiaries has been in service with 36 languages to secure the high access by stakeholders

AUTONOMOUS EXPORT MANAGEMENT OF STRATEGIC MATERIALS

- DHIC has been recognized by MOTIE for its excellent fulfillment and observance of the autonomous export management of strategic materials, and has maintained the highest class certification of triple A since receiving it for the first time in April 2014.

- DHIC has received various benefits for special cases, such as the exemption of the assessment for export permit in those countries under the international export control system (including the U.K and the U.S.)

- The acquisition of the highest class for the Compliance Program(CP) was a company-wide accomplishment. DHIC continuously pursue systematic fulfillment and compliance of autonomous export management.

Certificate of ‘Triple A’ in Compliance Program(CP)

* Additions of an article of Code of Conduct for DHIC in April 2018 - A newly adopted article of Code of Conduct is introduced to DHIC companies.
* A newly adopted provision for the risk of corruption for DHIC partner companies.
* Additional ethics education for employees of DHIC partner companies.
* Training on fair transaction for overseas DHIC partner companies.
* Distribution of the Code of Conduct of DHIC partner companies.
IMPLEMENTATION SYSTEM
- DHIC implements green management under the COO(Schef Operation Office). Green management activities are implemented across the entire value chain, including through a separate EHS consultation group with partner companies.
- In order to accomplish the "Global Top-tier Energy & Environment," DHIC implements green management based on three strategies: (i) Preemptive Risk Management; (ii) Establishment of Integrated Energy/Emission System; (iii) Performance Creation through Distributed Distribution of Green Technology.

IMPLEMENTATION UNIT
- PLAN EPC BG EHS
- NUCLEAR POWER BG EHS
- PLANT EPC DG EHS
- Power Service BL DG

Green Management Vision House
- CEO
- COO
- EHS Division

RESPONSE SYSTEM FOR CLIMATE CHANGE
- DHIC has established a response system for climate change based on the application of new renewable energy and new technology.
- DHIC has established a goal of 20% reduction compared to BAU(Business as Usual) by the year 2030.
- DHIC has established an integrated energy system at the company-wide level to accomplish the corresponding BAU goal.

PHOTOGRAPH

Hazardous Chemical Management System
- DHIC has established a digitized management system for the entire cycle management of chemicals, from the purchase of chemicals to their use.
- DHIC has established the DECIS(Dosan Chemical Information System) based on relevant law(Chemical Substances Control Act, Occupational Safety and Health Act, Act on the Safety Control of Hazardous Substances).

Based on the material health information of chemicals in the database, DHIC enables users to access the latest information safely.

RESPONSE SYSTEM FOR CLIMATE CHANGE
- DHIC has established an advanced and scientific people-oriented and nature-oriented environmental management system without any reduction activity of greenhouse gas.
- DHIC has made an effort to minimize the environmental impact generated by business sites by drastically expanding investment in the area of environment.

POLICY & STRATEGY
- DHIC has been developing an integrated energy system for each stage based on the energy utilization efficiency and big data under factory load.

In 2019, DHIC combined ICT technology with the energy consumption structure and developed a predictive model.

- Based on the established system, DHIC expects to reduce 2.5 billion won of annual energy costs to reduce the emission of 8,950 tons of greenhouse gas.

In collaboration with South Gyeongsang Province and a relevant agency of Korea Energy Agency, DHIC transferred relevant knowhow to SMEs in the province.

- DHIC improved the operation of large-size high-pressure boilers to reduce 750 million won of fuel cost and reduce greenhouse gas emissions.

MINIMIZATION OF ENVIRONMENTAL IMPACT IN BUSINESS ACTIVITIES

Activity for Greenhouse Gas Reduction
- DHIC has implemented two types of greenhouse gas reduction activities: (i) energy efficiency; (ii) procurement of Certified Emissions Reduction(CER) through external projects.

- DHIC has improved processes to reduce greenhouse gas emissions at business sites and factories facilities.

- DHIC has analyzed the fragmented risk cause and scenario of climate change to estimate the emission of greenhouse gas and measure the level of financial burden based on the estimation.

- DHIC has considered the cost and convenience of a CER transaction, deduced the priority for each countermeasure, and reflected this in management decision-making.

- DHIC has delivered professional education on energy control and Certified Emissions Reduction targeting the person in charge of each BG Plant. By targeting management, DHIC aims to strengthen internal competency in order to achieve the goal of shared amount of carbon emission for each BG.

Management Activities for Water Pollutants
- DHIC has established a Rain Water Recycling System which can minimize water pollution from business sites and factory facilities.

- DHIC has adjusted and shortened work hours for processes where fine dust is generated; and conducts continuous real-time monitoring between the headquarters and domestic construction fields.

- DHIC has identified the need for governmental detail instruction to respond in advance. DHIC has reflected the eco-friendly condition at the time of replacing aged facilities and established the long-term countermeasure for first dust.

Management Activities on Air Pollutants
- In order to check for generation of pollutants in the manufacturing process, DHIC conducts periodic inspections on the level of pollution and monitors changes in environmental impact around business sites.

- For transparent information disclosure, DHIC discloses the measured concentration of air pollutants discharged from company facilities to the website of the Korea Environment Corporation(Limited to facilities that have installed TDS).

- Through the installation and operation of environmental facilitiessuch as air and water discharge systems, DHIC was able to acquire environmental liability insurance($10 billion won insured limit) will compensate for physical or property damages inflicted on third parties.

Management Activities in Overseas Subsidiaries with Certified Management System
- DHIC has continued to implement activities to reduce fine dust through the conclusion of an agreement on Fine Dust Reduction(from 2024) with the Office of South Gyeongsang Province.

- DHIC has adjusted and shortened work hours for processes where fine dust is generated; and conducts continuous real-time monitoring between the headquarters and domestic construction fields.

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Activities to Reduce Fine Dust of Business Sites
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MANAGEMENT ACTIVITIES
- Management Activities for Water Pollutants

- Management Activities on Air Pollutants

- Management Activities in Overseas Subsidiaries with Certified Management System
SUSTAINABLE MANAGEMENT OF ENVIRONMENTAL IMPACT ON LOCAL SOCIETY

Purification Activities for Environment of Masan Bay

For the past 15 years, on Ocean Day, DHIC has conducted environmental purification activities to improve water quality and preserve the ocean environment at Masan Bay.

In 2019, 20 company employees, 150 people from Sangan District Office of Changwon City, and various private groups worked together to collect and remove 30 tons of waste (such as waste fishnet, buoys, and waste ropes) from the ocean.

EDUCATION FOR ENVIRONMENTAL MANAGER

DHIC delivers competency education for environmental managers at construction sites. In 2019, the education was conducted for 23 persons in charge of environmental management.

DHIC has been implementing 0101 (the Job Training) for new environmental managers at construction sites. In 2019, DHIC conducted training for new environmental managers based on practical cases of field environmental management and environmental laws.

To establish the environmental management system, such as EMS (Environment Management System) and OHSAS 18001, DHIC has established an annual training for new environmental managers based on practical cases of field work. In 2019, the education was conducted for 23 persons in charge of environmental management.

Management of Biodiversity

- DHIC implements a survey to identify the diversity of organisms in the local ecosystem before the initiation of a project.
- DHIC performs the ecosystem and environmental management plan from the construction stage, DHIC conducts monitoring of atmospheres, water quality, soil, noise and vibration. DHIC shares the relevant results with the client to carry out systematic management.
- In 2019, in the areas where DHIC implemented 20 projects, DHIC identified a total of 175 species.
The area of safety management is very important to business management as it is directly connected to employees and stakeholders of DHIC. DHIC has adopted the major management goals of: preventing critical disasters; managing high-risk worksites and processes; improving safety management competency of partner companies; and implementing systematic management with a responsible attitude. In 2019, DHIC conducted a complete enumeration of safety accidents around major business sites, analyzed the cause of safety accidents, and focused on identifying ways to remove risk-factors of safety accidents.

**Vision House**

**Created No-Disaster & Eco-Friendly Business Site**

**IMPLEMENTATION STRATEGY**

- Based on the scientific safety & health management system, DHIC has continuously discovered the causes of hazardous risk in the field and focused on the prevention of critical disasters.
- DHIC strives to improve safety & health management competency, as well as disseminate a culture of safety, throughout the value chain of headquarters, business sites, and partner companies.
- DHIC has identified the safety & health risks for each business area and focused on the prevention of critical disasters.
- DHIC has implemented a Win-Win Cooperation Program for Safety & Health to prevent critical accidents.

**EXPRESSION OF COMMITMENT TO SAFETY & HEALTH OF EXECUTIVES AND MANAGERS**

- DHIC implements regular MSLTs (Management Safety Leadership Tours) for executives and managers to disseminate a culture of safety and to identify risks, dangerous processes, and difficulties in the field.
- Based on MLES, DHIC has intensively managed critical risk factors by making weekly reports to the executives regarding safety activities and high-risk work.
INTERNALIZED CULTURE OF EMPHASIS ON SAFETY & HEALTH

Evaluation on EHS Performance

- DHIC has continued the development of a safety & health culture through the implementation of zero incidents across the Changwon Plant, the in-house partnership company, the EHS Internal Audit and the evaluation and management activities by partnership companies.

- DHIC has evaluated EHS activities and implemented the EHS award for outstanding performance.

- Following the EHS assessment, all field employees, managers of partner companies and workers are now actively participating.

- While targeting domestic and overseas construction sites, DHIC has carried out a total of 65 EHS assessments which is reflected in the performance evaluation.

Reinforcement of Safety & Health Inspections During Vulnerable Periods

- DHIC has implemented safety checklists targeting new year’s day, fall harvest holiday, summer & winter vacations, peak process and high-risk worksites.

Safety & Health Special Inspectorates Implemented in Vulnerable Periods

<table>
<thead>
<tr>
<th>Period</th>
<th>Safety &amp; Health Special Inspectorates</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 Times</td>
<td>Safety &amp; Health Special Inspectorates</td>
</tr>
</tbody>
</table>

PREPARATION OF EMERGENCY RESPONSE SYSTEM & EXPANSION OF TRAINING

Implementation of Emergency Response Training

- DHIC has devised detailed response measures for a range of emergency situations.

- DHIC has produced case studies such as building evacuation tips for emergency situations, how to respond to an earthquake, firefighting facility guidance and usage. DHIC has used this video as educational material.

- The response & rescue facility has implemented more than 60 emergency drills across sites and office buildings.

Expansion of Fire Response & Rescue Facilities

- DHIC has installed rescue tools for fire escape in office building and dormitory and supported the smooth escape plan where fire breaks out.

- DHIC has upgraded automated fire detection system which detects the fire automatically and tells it to the fire prevention center in real-time targeting entire areas of Changwon Plant.

Monitoring Overseas Dispatched Employees

- DHIC has established a real-time system for centrally monitoring issues at overseas sites.

- DHIC has prepared a risk management process for evacuating overseas workers and their families during emergency situations such as war and epidemics.

- DHIC has installed satellite phones at worksites to ensure contact and coordination during emergency situations (such as recent instability in the MiddleEast region).

Status of Education for EHS Managers

- All employees including executives, team leaders and site managers have completed leadership education workshops in health & safety.

- 73 site managers of partner companies have completed the workshop.

- DHIC’s Health and Safety managers have completed the education.

- DHIC has implemented EHS 205-25 new health & safety managers.

REINFORCEMENT OF HEALTH MANAGEMENT FOR EMPLOYEES

Healthcare Program for Each Employment Period

- DHIC provides a lifetime health program according to the age from the employment to the retirement of employees.

- DHIC conducts pre-employment health checkups for new employees. General health checkups are offered to employees over the age of 70 (and their spouses) if they have worked with the company for more than five years.

- DHIC has an agreement with 5 general hospitals in Seoul and Pusan to provide medical treatment for employees and their families. The company has furthermore reached an agreement with 16 local clinics for the provision of orthopedic and dentistry services.

In order to relieve the burden of personal medical expenses DHIC will provide up to 20 million won per person to assist with costs incurred during surgery or medical procedures. This benefit is applicable to employees and their families.

Management of Patients with Musculoskeletal Disease

- DHIC has minimized the occurrence of musculoskeletal disease across the company following the implementation of a preventive program.

- In 2019 DHIC conducted an evaluation on the distribution and severity of musculoskeletal diseases within the company. DHIC subsequently implemented recommendations on the lifting and handling of heavy loads.

- Employees displaying symptoms of musculoskeletal disease are entitled to any physical therapy under the supervision of trained physicians.

- DHIC has implemented aqua aerobics classes using the in-house swimming pool. In 2019, 25 employees participated in the program.

- In departments which are particularly at risk from musculoskeletal disease, DHIC has introduced a workplace stretching program.

Medical Treatment Program through Psychology Consultation

- DHIC has established in-house annexed clinics with doctors, nurses, physical therapists and exercise trainers to provide a one-stop medical treatment facility.

- DHIC provides annual flu vaccines for employees and their families and employees of partnership companies. In 2019, DHIC provided vaccines for 25 thousand people.

- DHIC provides vaccines for preventable epidemic diseases (Malaria, Typhoid Fever, Yellow Fever) in each country in which it operates. DHIC evaluates the capabilities of in-house clinics in overseas countries and provides EHS training and medical supplies as required.

- Medical personnel conduct regular overseas visits to workplaces with poor medical infrastructure to ensure an adequate level of healthcare is available.
**IMPLEMENTATION STRATEGY**

- Employees are our most valuable assets and are essential for the growth and development of the company. DHIC has developed a well-balanced strategy to foster talented personnel on an equal opportunities basis.
- DHIC encourages professional development within the workplace.

**DOOSAN’S IMAGE OF TALENTED PERSONNEL, ‘DOOSAN MAN’**

- ‘Doosan Man’ is a person who values Doosan’s fundamental values and is a model for all employees.
- DHIC has developed an evaluation system based on the company’s Human Resources Information System (HRIS).

**PRINCIPLES TO SELECT TALENTED PERSONNEL**

- In order to employ talented personnel, DHIC conducts strict screening processes for new employees.
- DHIC is an equal opportunity employer and does not discriminate on the grounds of education, age, gender, ethnicity or nationality.

**PRINCIPLES TO EVALUATE TALENTED PERSONNEL**

- DHIC operates an evaluation system based on the long-term development of individual employees. Identifying strengths and development needs of each employee and establishing detailed human resources development plans based on them.
- DHIC has implemented quantitative management based on the company’s Human Resources Information System (HRIS).

**EXPANSION OF EDUCATION IN TECHNOLOGY**

- To assist with the teaching of negotiation principles, DHIC has designed an education program which utilizes participation and case studies.
- To provide education based on practical learning, employees actively participate in classes to expand their professional knowledge in an applicable manner.
- DHIC has implemented an education program which utilizes participation and case studies.

**ACTIVITY & PERFORMANCE**

**REINFORCEMENT OF BASIC WORK COMPETENCE**

- DHIC has been operating the Technology Management School to improve the competency of employees in technical duties.
- DHIC has developed a stable labor-management relationship due to its strong labor-management culture.
- DHIC has concluded a no-conflict group agreement for consecutive years.
- DHIC has implemented education for employees targeting employees before their retirement and supporting them in their post-retirement plans.

**CREATION OF A HAPPY WORKPLACE FOR EMPLOYEES**

**Technology Management School**

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- DHIC has concluded a no-conflict group agreement for consecutive years.
- DHIC has implemented education for employees targeting employees before their retirement and supporting them in their post-retirement plans.

**Retirement Support Program**

- DHIC has been operating a customized retirement support program targeting employees before their retirement and supporting them in their post-retirement plans.
- The program consists of basic and intensive courses.
- DHIC provides tailored information through consultation in the year of retirement.

**Club Activity Support**

- DHIC supports club activities for the work-life balance of employees and developed club activities in diverse areas such as sports, hobbies and self-development.
- 7,000 employees have joined 50 clubs in Changwon, Seoul and Yongin.

**In-House College**

- For the self-development and growth of employees in technology, DHIC has been operating an Energy Convergence Engineering College in cooperation with Changwon University.
- Employees of DHIC who wish to enroll can apply to the courses as freshmen or transferring students and use their free time to learn and acquire an undergraduate degree in Engineering.
- To date, 106 employees have graduated and 18 employees are enrolled in the freshman course.

**ESTABLISHMENT OF A SOUND LABOR-MANAGEMENT CULTURE**

- On mutual trust between labor and management, DHIC has established a stable labor-management relationship.
- DHIC has concluded a no-conflict group agreement for consecutive years.
- Through conference organizations between labor and management such as a negotiation group, a labor-management council and an institutional improvement committee, DHIC provides an opportunity for employees to participate freely in the course of decision-making.
- DHIC has provided communication opportunities for all employees to reflect the opinions of employees on the operation of the company.
Social requirements in relation to the human rights aspects of international enterprises are of increasing importance. DHIC has prepared and implemented a system of human rights risk management across the company. All members and stakeholders have the right to dignity and value and DHIC has been made the best effort to respect and protect these rights.

**IMPLEMENTATION UNIT**
- DHIC has promoted the activity of human right business management on the basis of the Human Rights Committee.
- The Human Rights Committee employs an in-house assistant to advise the human resources and business departments in the planning, operation, and guidance on activities at a company-wide level.
- The Human Rights Committee conducts prompt review and response through immediate reports of human rights issues.

**HUMAN RIGHTS POLICY**
- The human rights policy specifies basic human rights which are secured regardless of origin, religion, gender, ethnicity or other conditions.
- DHIC, as a member of the UN Global Compact, observes 10 principles of the Global Compact regarding human rights, labor, environment and anti-corruption.
- Based on the human rights principle recognized internationally such as ‘The Universal Declaration of Human Rights’ and ‘The UN Guiding Principles on Business and Human Rights’, DHIC respects the human rights of employees of DHIC and all stakeholders who have a relationship in the management activities of the company. DHIC recommends the same level of human rights management to supply network and business partners.

**ASSESSMENT OF IMPACT ON HUMAN RIGHT**
- DHIC has proceeded with the regular assessment of effect on the human right targeting employees of the headquarter.
- DHIC has implemented the assessment of effect on the human right proactively targeting the place of high human right risk among overseas businesses.
- DHIC has established a mid to long term plan to conduct the assessment of effect on the human right by expanding the evaluation range to entire overseas businesses and partnership companies.

**IMPLEMENTATION OF HUMAN RIGHTS EDUCATION**
- To prevent human rights violations, DHIC has implemented basic human rights education for all employees on domestic and overseas business sites.
- To minimize human rights risk on overseas business sites, DHIC has conducted global human rights education before dispatching employees.
- In 2020, DHIC is scheduled to promote human rights education for major partnership companies and additional education in human rights for leaders.

**EFFECT TO EXPAND CULTURE OF RESPECT FOR HUMAN RIGHTS**
- To expand the awareness of human rights in business management, DHIC has implemented rules and processes for the prevention of and action against harassment in the workplace and made a presentation for team leaders and executives.
- DHIC has newly installed and operated a process to proceed the guide for relevant institution and welfare in a package at the registration of pregnancy by packaging maternal protection system.
- DHIC strictly prohibits child labor, employment of workers younger than the age of 18 and forced labor. (Immediate action for violations)

**PROCESS TO HANDLE HUMAN RIGHTS VIOLATIONS**
- DHIC is introducing processes to deal with the prevention and relief of human rights issues.
- Issues regarding human rights received through the internal report center have been handled through the process of factual investigation, confirmation and review by the business department and the company-wide Human Rights Committee.
- In the process, DHIC strictly adheres to the principle of the confidentiality and protection for informants.

**DUE DILIGENCE OF HUMAN RIGHTS**
- DHIC continues to conduct due diligence on human rights (DPSI: Doosan Power System India) for overseas business sites by utilizing a human rights management checklist.
- DHIC surveyed and interviewed staff at two local DPSI subsidiaries in India regarding sexual harassment and violations of the Code of Conduct.

**ACTIVITY & PERFORMANCE**

**Due Diligence of Human Rights: Conducted the Due Diligence of Human rights at DPSI in 2017**

- DHIC surveyed and interviewed staff at two local DPSI subsidiaries in India regarding sexual harassment and violations of the Code of Conduct.
- Survey: 47% (117 people) answered
- Interviewed 5 employees in HR Team and 6 local human rights workers
- Number of Official Report of Handling Conflicts Regarding Human Right
  - Classification 2017 2018 2019
  - Number of Resolution 40 cases 14 cases 10 cases
  - Average Resolution Rate 90% 90% 90%
Mutual Growth

Through a virtuous circle of partnership with partner companies, DHIC is strengthening our competitiveness. DHIC fosters business competency of partner companies by supporting their overseas expansion, as well as by operating an academy and a CSR management system which evaluates partner companies on major issues such as environmental safety.

POLICY & STRATEGY

SUPPLY NETWORK MANAGEMENT SYSTEM

- DHIC has adopted the "CSR Guideline for Suppliers (CSR Guideline)" to guide our relations with suppliers and partner companies. DHIC recommends all suppliers and partner companies to apply the written guideline, which has been disclosed through various communication channels (http://www.doosanheavy.co.kr/en/guideline). This guideline has been prepared to align with the "Ten Principles of the United Nations Global Compact," which covers human rights, labor, environment, and anti-corruption.

- Major Contents of CSR Guideline for Partner Companies

  - Freedom of Association, child labor, forced labor, etc.
  - Corruption prevention, law compliance, etc.

DEFINITION AND SELECTION OF PARTNER COMPANIES

- DHIC defines a partner company as a business entity that has maintained a long-term supply relationship and has consistently delivered on price, quality, and delivery date for strategic and cooperative items.
- In compliance with selection standards set forth in the CSR Guidelines, DHIC evaluates the finance and governance structure of new partner companies, including through a credit assessment process.
- Partner companies are selected through fair and transparent procedures.
- Companies that have caused social disturbances shall be prohibited from being selected as new partner companies.

<table>
<thead>
<tr>
<th>Status of Supplier (Number of Businesses)</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Republic of Korea</td>
<td>10,179</td>
<td>16,819</td>
<td>21,044</td>
</tr>
<tr>
<td>Japan</td>
<td>10,699</td>
<td>1,176</td>
<td>654</td>
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<tr>
<td>China</td>
<td>3,291</td>
<td>310</td>
<td>274</td>
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<tr>
<td>Saudi Arabia</td>
<td>518</td>
<td>1,338</td>
<td>310</td>
</tr>
<tr>
<td>U.S.A</td>
<td>518</td>
<td>1,338</td>
<td>310</td>
</tr>
<tr>
<td>Italy</td>
<td>1,013</td>
<td>122</td>
<td>205</td>
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<tr>
<td>Czech Republic</td>
<td>366</td>
<td>1</td>
<td>93</td>
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<tr>
<td>Germany</td>
<td>596</td>
<td>171</td>
<td>413</td>
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<tr>
<td>Romania</td>
<td>263</td>
<td>160</td>
<td>258</td>
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<tr>
<td>Others</td>
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- DHIC fosters business competency of partner companies by supporting their overseas expansion, as well as by operating an academy and a CSR management system which evaluates partner companies on major issues such as environmental safety.

ACTIVITIES TO SUPPORT FOR PARTNER COMPANIES

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<td>DHIC supported the Pre-Qualification process for 76 partner companies who trade with overseas companies; and helped them to achieve export performance of 17 billion won.</td>
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<td>DHIC supported in full the expenses of 4 partner companies to participate in the PowerGen International Exhibition in the U.S., through which they secured export orders of 1.5 billion won to 17 overseas companies.</td>
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<td>DHIC has an established quality assurance system and which enables it to inspect and evaluate partner companies according to the items in transaction. DHIC has acquired certificates of AONE, KEIPC and ISO from the relevant official international agencies.</td>
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<tr>
<td>Since 2019, DHIC expended about 660 million won to support partner company production facilities. Fourteen (14) quality matters supported 2 partner companies to improve the quality of their production.</td>
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</table>

New Hire and On-the-Job Training

- DHIC implemented education for workers scheduled for hire through a national consortium for the development of human resources.
- DHIC supported on-the-job training for partner company employees, including all education expenses and training allowances/benefits.
- In 2019, DHIC implemented the job training for professional staff of partner companies (306 people in 26 companies), and new hire education and training for 31 people in 16 companies.

Operation of Academy for Partnership Companies

- A total of 663 people attended the academy in 2018, 125 of whom were female. By company, 74 partnership companies throughout the year.

Reinforcement of Communication

- DHIC has an established quality assurance system whereby all partner companies can benefit from DHIC technology and business systems to improve their management technical competence.

DHIC’s Virtuous Circle Partnership System for Mutual Growth

- Through a virtuous circle of partnership with partner companies, DHIC aims to contribute to the mutual growth of DHIC and partner companies, as well as to growth of the local and national economy.

DHIC's Virtuous Circle Partnership System for Mutual Growth

Major Promotional Activities in the Area of Mutual Growth

- DHIC has established a virtuous circle partnership system whereby all partner companies can benefit from DHIC technology and business systems to improve their management technical competence.

POLICY & STRATEGY

FAIR TRADE SELF-COMPLIANCE PROGRAM

- DHIC has established an exclusive unit to manage the fair trade self-compliance program, including a manager for self-compliance, a person in charge of self-compliance for each BG, and a department for fair trade self-compliance.

- DHIC improved to the process for preemptively preventing violations of laws and supplemented the process.

- DHIC focuses on delivering Mindset Education to employees that manage relationships with partner companies in order to foster mutual growth and ensure fair trade. DHIC also trains employees who have experienced or are expected to experience a related business environment.

- DHIC regularly inspects all company subcontractors in order to identify violations of subcontract law; and implements self-correction measures. To prevent recurrence, DHIC disciplines and educates employees who have violated fair trade principles.

RISK MANAGEMENT OF SUPPLIERS

- Based on annual trade performance, DHIC regularly assesses the general competence of suppliers, including: Cost, Delivery, Quality, Collaboration, CSR, and Environmental Safety, and Corporate Financial Statements. Based on evaluation results, high-risk enterprises are excluded from being designated as partner companies for mutual growth.

- DHIC employees and appointed auditors and auditors visit partner company business sites to conduct these assessments.

- By assigning points for compliance with the CSR Guideline and making this a major element of evaluations, DHIC has cultivated awareness and voluntary implementation of CSR by suppliers.

UPGRADED CSR MANAGEMENT FOR SUPPLY NETWORK

- DHIC has implemented a DHIC Cooperation Body for mutual growth and mutual cooperation.

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DHC prioritizes customer satisfaction and strives to create value for customers through high-quality, competitive power generation and water projects. We have acquired world-class engineering competency and manufacturing capability through constant quality and supply chain innovation. DHC has achieved maximum customer satisfaction through a quality assurance system which ensures the best quality from inventory of materials to product shipping.

**POLICY**

DHC has realized a quality management system based on a foundation of Global Standards, as well as the commitment of DHC’s CEO to quality management.

**IMPLEMENTATION SYSTEM**

DHC’s quality management system covers the entire project process – from the review of project contract to project warranty based on a quality assurance manual which reflects international best practice and Global Standards. This ensures that DHC can provide quality products and services without defect – the quality that customers desire and deserve. All DHC units and employees of the company adhere to the principles of the Quality Policy.

**ACQUISITION OF QUALITY CERTIFICATES**

DHC has established the DQMS(Doosan Quality Management System) which digitally manages quality information and documents, as well as risk prevention. DHC has digitized all quality information – from inspection plan to assessment results. DQMS has raised the visibility of and fulfillment capability of the quality management process.

**QUALITY INNOVATION ACTIVITIES**

DHC has introduced the work strategy of “First Time Right,” which establishes a virtuous circle of work methods and tasks.

- DHC applies RCA* to identify and proactively prevent potential quality failures in manufacturing. This system shows on past experiences and weak points to deduce potential critical quality failures.

*RCA: Root Cause Analysis

- DHIC's Meister Consultation Group, which is composed of masters, has fostered talented personnel through technique transfer and strengthened the competitiveness of partner companies.

- DHIC has produced 28 national quality masters and 16 Korean masters, and retains the highest-level technicians, in the areas of cast welding, processing, non-destructive process, and steel-making and casting.

- DHC’s Meister Consultation Group, which is composed of masters, has fostered talented personnel through technique transfer and strengthened the competitiveness of partner companies.

**QUALITY PREVENTION MANAGEMENT**

DHC implements the ‘Quality Visualization’ system, which enables both workers and managers to determine at a glance whether work processes meet CTQ(Critical to Quality) standards.

- DHIC has discovered and applied 11 cases, such as refraining from welding dissimilar materials and ensuring uniform welding quality.

- DHIC encourages partner companies to apply these Best Practices in order to improve the competitiveness of partner companies.

**QUALITY IMPROVEMENT**

- DHIC has established and is applying on a trial basis a UT cooperative robotic system for rotors to certify safety. DHIC has also developed software for automatic evaluation of small caliber Tube Weld UT Film, which is now being applied on a trial basis.

**CULTIVATION OF QUALITY MEISTERS**

- DHIC received the Presidential Golden Award for “Reduction of Cost and Standby Time through the Improvement of the Steam Generator Manufacturing Process”.

- DHIC has realized quality improvements and secured customer trust in the manufacturing process of steam generators. Process duration has been shortened by 33.6% through strengthening welding materials through heat treatment, all-in-one block manufacturing for hole cleaning, and the development of a stop-over program.
Customer Satisfaction

DHC ensures customer satisfaction not just by responding to complaints, but through proactive efforts to respect and listen to the opinions of customers, meet customers' expectations, and provide exceptional value to customers. To continuously improve products, DHC has expanded communication with customers based on the "CRM (Customer Response Management)" system, as well as through VOC response.

POLICY & STRATEGY

IMPLEMENTATION STRATEGY
- DHC management prioritizes customer service and strives to create value for customers.
- DHC’s customer service system includes activities such as regular surveys of customer satisfaction; lifetime customer support for DHC supplied facilities; materials, and equipment; and operation of a technical support center for client companies.

Customer Activities to improve customer satisfaction:

1. Customer Communication via Visits and Technology Exchange:
   - Technology exchanges, rather than convening seminar-type events.
   - DHIC also conducted an online survey and interviews to solicit customers’ satisfaction.
   - DHIC provides prompt responses and reliable data when customers request technical support via the DHIC website.
   - DHIC provides information regarding problems in advance to operate the system.
   - DHIC invites new employees and career employees of client companies to participate in field trips to visit DHIC technology development and manufacturing facilities.
   - In 2019, DHC organized 2 field trips for a combined total of 99 participants.

2. Field Trip Program for Stakeholders:
   - DHIC invites new employees and career employees of client companies to participate in field trips to visit DHIC technology development and manufacturing facilities.
   - In 2019, DHC organized 2 field trips for a combined total of 99 participants.

3. Establishment of IoT Response System:
   - DHIC provides prompt responses and reliable data when customers request technical support via the DHIC website.
   - Since 2019, in order to provide better service, DHC has improved the system for customers to select customer service agent directly via the website. Based on customer satisfaction evaluation in 2019, this service obtained 9.5 points out of a total of 10 points (10 = perfect service).
   - DHIC provides information regarding problems in advance to operate the call center for emergency request through the phone and the technical support at the field when the emergency situation occurs at client companies.

Customer Satisfaction Survey:
- In order to provide better service to customers, DHIC engaged an external professional agency to conduct a survey to assess customer satisfaction with products and services provided by DHIC.
- DHIC also conducted an on-line survey and interviews to solicit customers’ opinions.
- Since 2019, DHIC has expanded surveys of overseas customers’ satisfaction.

4. Lifetime Management of Supplied Facilities of Materials and Equipment:
   - DHIC leverages performance diagnosis technology to support national, efficient operation of aged power generation facilities.

5. Expansion of Communication with Customers:
   - DHIC visits client companies directly and provides information about new technology developments and facility improvements.
   - Additional, DHIC operates the "Technology Exchange for Communications" to solicit opinions of client companies and share data about power generation operations.
   - DHIC facilitates active participation and discussion by client companies in the technology exchanges, rather than convening seminar-type events.

CUSTOMER RELATIONSHIP MANAGEMENT(CRM)

- The customer relationship management process is classified into 6 stages: (i) business & marketing; (ii) manufacturing, installation & test drive; (iii) post management & sales; and (iv) improvement & after-marketing.
- Complaints that arise at each stage of CRM are managed systematically according to the CRM manual.
- DHC has established sub-procedures, such as the ‘Customer Inquiries & Complaints Handling Procedure’ to reflect and respond to customer requirements.
- DHC has developed and implemented the ‘Customer Management Procedure’ to support rational, efficient operation of aged power generation facilities.
- DHC has enhanced customer management and generated additional profit through ongoing technical support targeting not only DHC supplied facilities but also facilities supplied by overseas business companies after the end of warranty periods.
- DHC leverages performance diagnosis technology to support national, efficient operation of aged power generation facilities.

LIFETIME MANAGEMENT OF SUPPLIED FACILITIES

Remote Monitoring Service for Power Plant
- Based on IoT and Information Communication Technology, DHC has established a remote surveillance system which can monitor the operation data of power plants in real-time.
- DHC opens a Remote Monitoring Service Center (RMSC) to monitor operation information in real-time and monitor for abnormalities through its regular remote support operation system. DHC also helps prevent accidents in advance by providing this information to customers.

Customer Relationship Management (CRM)

Customer Relationship Management (CRM) is the process of managing customer relationships to create value for customers. DHC’s customer relationship management system includes activities such as regular surveys of customer satisfaction, lifetime customer support for DHC supplied facilities, materials, and equipment; and operation of a technical support center for client companies.

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Customer Relationship Management (CRM) is the process of managing customer relationships to create value for customers. DHC’s customer relationship management system includes activities such as regular surveys of customer satisfaction, lifetime customer support for DHC supplied facilities, materials, and equipment; and operation of a technical support center for client companies.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Activity Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Business &amp; Marketing</td>
<td>Various customer support activities such as:</td>
</tr>
<tr>
<td></td>
<td>Customer care management, Customer satisfaction management, Customer satisfaction analysis.</td>
</tr>
<tr>
<td>2. Sales &amp; Marketing</td>
<td>Sales &amp; Marketing activities.</td>
</tr>
<tr>
<td>3. Post Management &amp; Support</td>
<td>Various customer satisfaction activities such as:</td>
</tr>
<tr>
<td></td>
<td>Customer feedback and complaints management, Customer satisfaction analysis, Customer satisfaction improvement.</td>
</tr>
</tbody>
</table>
- To protect company assets from internal and external security threats, DHIC's Security Audit Team, supervised by the Chief Information Security Officer (CISO), implements a company-wide information security plan and an information system audit.

**INFORMATION SECURITY MANAGEMENT STRATEGY**

- DHIC has established an information security management system based on ISO 27001 international security protection standards.
- DHIC has provided information security management policy to overseas subsidiaries – to guide subsidiary companies as they establish information security management policies which conform to local conditions and concerns.
- Based on the information security management systems adopted by DHIC and Doosan Group, DHIC conducts 24-hour monitoring to detect cyber attack attempts and applies information security solutions based on incident analysis.

**ORGANIZATION**

- Information Security Management System

**PREVENTION HANDLING OF INFORMATION SECURITY INCIDENTS**

- **In order to prevent cyber attack-related damages, e.g., paralysis of work systems, leakage of confidential business information, financial losses, DHIC has introduced an upgraded, professional information security protection system which aims to both prevent and respond effectively to security incidents.**
- DHIC is increasing information security management through measures such as enhancing the security of vulnerable work systems and applying SCAM™ verification program.
- SCAM™ (System which involves listing all information at an enterprise and using it to obtain illegal transaction payments)

- **Protection of Confidential/Core Business Technology**

- **In order to protect the company’s confidential and core technology, DHIC has been reinforcing management procedures. In particular, DHIC is cooperating with the national government to protect DHIC technologies which are designated as “national core technology” and/or “national defense industry technology.”**

**INFORMATION SECURITY AUDITS & SECURITY INCIDENT INVESTIGATIONS**

- **In order to protect company assets and secure data integrity, DHIC implements information system audits.**
- DHIC has also supplemented the post-trace investigation system to block leakage of important company information. DHIC enforces a data monitoring and distribution procedure and identifies potential paths (other than the normal distribution path) which could bypass the security system.

**REINFORCEMENT OF SECURITY AWARENESS**

- **DHIC delivers online & offline security education to reinforce awareness of information security – targeting all employees at domestic and overseas business sites.**
- **DHIC provides specialized, professional security education to designated staff in charge of security for each department (e.g., human resources, finance, etc.).**

**IN-HOUSE EMPLOYEES**

- **Prevention of Imposter Scam-Related Damage for Clients**

  - DHIC positively prevents security incidents through security education on “Imposter Scams” for partner companies. DHIC targets persons and departments in charge of purchasing and encourages them to adopt tailored alert programs for impostor scam emails (small “SCAM FILTER”).

**Outcomes of Establishment of Threat Intelligence System**

- 15% reduction in the number of cases of PC virus experienced by employees.
- 48 times enhanced speed to block PC viruses.

**UPGRADED RESPONSE TO CYBERATTACKS**

- **Establishment of Information Security Management System**

  - DHIC has established and applies the Korean Threat Intelligence system (CISA Cyber Threat Analysis and Sharing) in cooperation with Doosan Group and KISA (Korea Internet Service Association).

  - Using these systems, DHIC systematically collects cyber threat information. The collected data is analyzed comprehensively; and the resulting information is shared between relevant agencies and used to prevent external invasive threats to DHIC.

**INTERNALIZATION OF INFORMATION SECURITY CULTURE**

- **To internalize the Information Security culture,** DHIC establishes an intensive education program for employees on “Information Security.”

**ACTIVITY & PERFORMANCE**

- **In-House Employees**

  - DHIC conducts annual online education for all employees, as well as specialized offline security education for persons-in-charge of security for all departments (e.g., human resources, finance, etc.). In the event of information security policy changes, or when internal or external security issues arise, DHIC provides updates via the in-house portal or e-mail.

- **Partner Companies**

  - To help partner companies guard against rapidly-increasing SCAM incidents, DHIC provides SCAM education materials to the management departments of partner companies.

**PREVENTION OF IMPOSTER SCAM-RELATED DAMAGE FOR CLIENTS**

- DHIC positively prevents security incidents through security education on “Imposter Scams” for partner companies. DHIC targets persons and departments in charge of purchasing and encourages them to adopt tailored alert programs for impostor scam emails (small “SCAM FILTER”).

- The program detects the characteristics of scam emails, i.e., emails which incorrectly partially change use email addresses and use that to send emails to send emails to email addresses previously owned by the original users. When detected, SCAM FILTER programs pop up so that the user can confirm avoiding the scam email. SCAM programs can also block emails received from spam enemies.

**Detection of Imposter Scam Email**

1. Major Function – Detection of Imposter Scam Email

2. Major Function – Analysis Report
DHC strives to uphold Doosan’s identity of a socially-responsible enterprise which contributes to the local community. DHC plans to increase efficiency and competency of the social contribution program through the reorganization of social volunteer groups and refinement of various social contribution activities. In particular, DHC’s social contribution policy aims to meet local community needs, such as career education and urban recreation, and contribute to the overall development of the local community.

**IMPLEMENTATION SYSTEM**

**Implementation Strategy**
- To achieve the goal of enhancing local community development and enterprise value, DHC adheres to three principles: Business Orientation; Community Focus; and Employee Engagement. Specifically, DHC implements three key streams of activity: fostering talented personnel; supporting vulnerable social groups; and working closely with local communities on activities to meet their social needs.

**Operation of Social Volunteer Groups**
- 4,600 employees, or 75% of all employees – have participated in DHC social volunteer groups; and through these groups, engaged with and contributed to meeting the needs of vulnerable neighbors in and around Changwon and Seoul.
- DHC’s social volunteer groups utilize the professional skills and talent of employees to contribute to the local community. There are social volunteer groups for technical, promoting safety, career education, and youth environmental hazard monitoring.

**Policy to Support Social Contribution**
- To foster social contribution by company employees, DHC has introduced policies related to matching gifts, weekly volunteer service, computer system, and recognition of excellent volunteers.
- DHC has an agreement in place with company Saemaeul Credit Cooperatives to award excellent volunteers. For example, Saemaeul Credit Cooperatives offer various gifts to volunteers based on the annual voluntary services they provide.

**Organizational Chart of Social Contribution Committee**

```
CHIEF EXECUTIVE OFFICER

CEO

CFO

LEGAL AFFAIRS OFFICER

CSR OFFICER
```

**Social Contribution Committee**
- DHC operates a Social Contribution Committee which oversees the appropriateness of social contribution programs and activities, as well as the transparency of donations.
- Staff from relevant departments serve as members of the Social Contribution Committee. Led by a Chairman, the Social Contribution Committee reviews and ensures that DHC donations are appropriate for and benefit the targeted local community.
- The Social Contribution Committee deliberates on not only the transparency and appropriateness of donations, but also ensures that the purpose and nature of donations confirm to company social contribution strategy.

**PROGRAM TO FOSTER TALENTED PERSONNEL**

- A particular focus area for DHC is to foster future talent in accordance with Doosan Group’s management philosophy for fostering talented personnel.
- As the engineering industry employs many engineering graduates, DHC focuses on fostering talented personnel in the fields of Natural Science & Engineering. Thus, this social contribution program is directly connected to DHC’s core business.

**Youth Energy Project**
- The Young Adult Energy Project is a social contribution program of DHC that supports promising young adults to become balanced, talented and independent professionals with a diverse range capabilities.
- The Youth Energy Project provides customized activities for each growth stage of talented personnel.

**Major Programs of Youth Energy Project**

**Elementary Students**
- Local Children’s Center Program
  - Offering Private Academy Expenses for Low Income Students
  - Providing Reference Books through Love Sharing Campaign

**Middle School Students**
- WM Doosan Vocational Career Education Class
  - Offering School Uniforms through Low Sharing Campaign
  - Granting Private Academy Expenses for Low Income Students
  - Providing Reference Books through Love Sharing Campaign

**High School Students**
- Operation of Doosan Volunteer (Specialized) High School: "Dream Class"
- Scholarships for college students from Children Foster Care Center

**Theme Program for Local Children Center**
- Targeting 1,243 vulnerable children through a total of 96 activities implemented by social volunteer groups.

**Operation of Dosen Class/Industry Academic Cooperation**
- DHC cultivates engineering manpower through the operation of ‘Dosen Class’ – and example of industry-academic cooperation.
- DHC has concluded industry-academy cooperation agreements with Changwon Machine Technical High School, Pusan Automotive Technical High School, Sudo Electricity Technical High School; and through these programs, provides technology education customized to DHC human resource needs.

** Provision of Reference Books to Children’s Welfare Centers**
- DHIC provides reference books to 82 children’s welfare centers for the purpose of enhancing the practical learning ability of vulnerable children.
- In 2019, DHIC provided 11,712 reference books to 2,116 beneficiary children. Since 2011, DHIC has provided a total of 80 thousand reference books.

**Youth DreamUP Project**
- For youth with talent and aptitude who are not able to pursue their dreams due to economic circumstances, DHC implements the "Youth DreamUP Project" under the supervision of Green Umbrella Children Foundation.
- Under this project, DHC support 5 students to cultivate their talent in the following sports: archery(1); shooting(2); badminton(3); and softball(1).
PROGRAM TO SUPPORT VULNERABLE GROUPS
- DHIC implements social contribution activities to improve quality of life for vulnerable people in our local community, including children, youth, elderly, and disabled.
- DHIC has broadened the range of beneficiaries in order to support a more diverse range of vulnerable people who are left behind by welfare policy.

Social Welfare Center Connection Program
- DHIC implements a social contribution program together with selected social welfare centers. These social welfare centers serve as the contact point with vulnerable groups; assess the needs of such groups; and organize social contribution activities in which employees can participate.
- DHIC has been operating a joint program together with 10 social welfare centers in Changwon and 6 in Seoul. The joint program aims to enhance the emotional well-being and sociability of vulnerable youth, elderly, and disabled.

LOCAL COMMUNITY ENGAGEMENT
- DHIC implements social contribution in close contact with local stakeholders in order to thrive together with the local community.
- DHIC has expanded its local community cooperation network to include stakeholders from local government, NGOs, social welfare agencies, and farming villages.

Program to Support Vulnerable Groups
- DHIC has been operating a joint program together with selected social welfare centers in Changwon City.
- The joint program aims to enhance the emotional well-being and sociability of vulnerable youth, elderly, disabled, and multi-cultural households.

Key Achievements in 2019 for Local Community Engagement Program
- A total of 311 people participated in 49 DHIC volunteer talent-sharing activities in Changwon City.
- DHIC has contributed to increasing incomes for 100 farming households (total increase of about total 37 million won) through farm exchange activities in 11 villages.

DAESARANG DREAM
- DHIC, together with the Korea Red Cross and the Governor of South Gyeongsang Province, has implemented the DAESARANG Dream program to support vulnerable since 2015.
- Through this program, DHIC has carried out voluntary services to purchase, pack and deliver daily necessities from social enterprises. Purchased goods have been delivered to 300 vulnerable households within the region.
- Through this program, DHIC regularly delivers snacks to company-affiliated children’s welfare centers.

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DOOSAN DAY of Community Service

‘DOOSAN DAY of Community Service’ is a hallmark social contribution program of Doosan Group. On this day, employees in various locations throughout the world (Korea, U.S., Europe, Middle East) provide community service to their nearby local communities. In 2019, DHC completed its mission to the community as a corporate citizen, with 1,694 employees from 23 workplaces in 8 countries participating in 55 activities.

Doosan Babcock, Doosan Expose in U.K.
Renovating primary schools and facilities for disabled; and providing volunteer services at a foodbank.

Doosan Lentjes in Germany
Renovating elementary schools and facilities for disabled; and providing volunteer services at a foodbank.

Doosan HF Controls, GridTech, DTS in the U.S
Environmental sanitation in various regions.

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## Communication with Stakeholders

### Classification System & Communication Channel

DHIC defines the following major stakeholder groups: shareholders; customers; employees; partner companies; local community; government; and competitor companies. DHIC actively communicates with these different stakeholder groups through various communication channels and considers stakeholder feedback to enhance company management.

### Survey Result of Customer Satisfaction

<table>
<thead>
<tr>
<th>Group</th>
<th>Definitions</th>
<th>Communication Channel</th>
<th>Time of Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shareholders</td>
<td>(a) Foreign shareholders, institutional shareholders, minority shareholders</td>
<td>Conference</td>
<td>One-time</td>
</tr>
<tr>
<td></td>
<td>(b) Domestic shareholders, minority shareholders</td>
<td>Blog</td>
<td>As necessary</td>
</tr>
<tr>
<td>Customers</td>
<td>(a) Major customers</td>
<td>Website</td>
<td>Permanent</td>
</tr>
<tr>
<td></td>
<td>(b) Minor customers</td>
<td>Technology Support Center</td>
<td>Permanent</td>
</tr>
<tr>
<td></td>
<td>(c) Special customers</td>
<td>Technology Support Center</td>
<td>Permanent</td>
</tr>
<tr>
<td>Employees</td>
<td>(a) Domestic employees</td>
<td>Customer Satisfaction Survey</td>
<td>Once a year</td>
</tr>
<tr>
<td></td>
<td>(b) Overseas employees</td>
<td>Technology Support Center</td>
<td>Permanent</td>
</tr>
<tr>
<td></td>
<td>(c) Corporation employees</td>
<td>Management Status Presentation</td>
<td>Every quarter</td>
</tr>
<tr>
<td>Local Community</td>
<td>(a) Local residents</td>
<td>Consultative groups of DHIC</td>
<td>Semi-annual</td>
</tr>
<tr>
<td></td>
<td>(b) Research organizations</td>
<td>DHIC Social Volunteer Group</td>
<td>Semi-annual</td>
</tr>
</tbody>
</table>

### Participation by Stakeholders

#### Issue Areas for Sustainable Management

- **Focus Areas**:
  - Realization of healthy organization culture
  - Advancement of quality management
  - Reduction of greenhouse gas and energy consumption
- **Issue Analysis**: For each of these established issue areas, DHIC reviewed and assessed relevant data, including business data, social data, and surveys of interest and internal stakeholders. This information was then used to identify sustainable management activities for DHIC in 2019, as well as issues of concern to stakeholders.

#### Identification of Core Issues

Based on the materiality assessment, DHIC has identified a total of 10 core issues that constitute the areas of business performance, quality and service, and established reporting protocols, including stages, leading and guiding.

### Selected Care Issues in 2019

<table>
<thead>
<tr>
<th>Major Core Issue</th>
<th>Contents in General Report</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Business Strategy</td>
</tr>
<tr>
<td></td>
<td>Strengthening new growth portfolio &amp; Strengthened business competitiveness</td>
</tr>
<tr>
<td></td>
<td>Core Issue Mapping</td>
</tr>
<tr>
<td></td>
<td>Reduction of environmental impact from business activities</td>
</tr>
<tr>
<td></td>
<td>Core Issue Mapping</td>
</tr>
<tr>
<td></td>
<td>Realization of safety management in construction and maintenance activities</td>
</tr>
<tr>
<td></td>
<td>Core Issue Mapping</td>
</tr>
<tr>
<td></td>
<td>Realization of safer workplace environment &amp; Contribution to local community and social responsibility</td>
</tr>
<tr>
<td></td>
<td>Core Issue Mapping</td>
</tr>
<tr>
<td></td>
<td>Core Issue Mapping</td>
</tr>
</tbody>
</table>

#### Core Issue Mapping

Funding: 57% - 100%
## Consolidated Statement of Financial Position

<table>
<thead>
<tr>
<th>Subject</th>
<th>End of 57th Report</th>
<th>End of 56th Report</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I. Current Assets</td>
<td>9,782,244,096,431</td>
<td>9,351,607,766,678</td>
</tr>
<tr>
<td>1. Cash &amp; Cashable Assets</td>
<td>2,075,328,693,318</td>
<td>2,215,238,476,915</td>
</tr>
<tr>
<td>2. Short-Term Finance</td>
<td>392,294,778,458</td>
<td>266,239,628,151</td>
</tr>
<tr>
<td>4. Accounts Receivable</td>
<td>2,112,062,463,001</td>
<td>2,092,822,360,607</td>
</tr>
<tr>
<td>5. Unclaimed Construction</td>
<td>1,917,549,497,427</td>
<td>1,761,026,139,486</td>
</tr>
<tr>
<td>6. Outstanding Balance</td>
<td>305,858,455,081</td>
<td>470,874,496,975</td>
</tr>
<tr>
<td>7. Prepayment</td>
<td>446,105,194,520</td>
<td>268,320,160,761</td>
</tr>
<tr>
<td>8. Prepaid Expenses</td>
<td>152,773,582,677</td>
<td>121,764,332,600</td>
</tr>
<tr>
<td>9. Short-Term Loan</td>
<td>115,051,807,262</td>
<td>85,498,883,370</td>
</tr>
<tr>
<td>10. Derivatives Evaluation Assets</td>
<td>21,477,357,030</td>
<td>35,066,050,494</td>
</tr>
<tr>
<td>12. Inventory Assets</td>
<td>1,891,576,145,991</td>
<td>2,201,708,429,106</td>
</tr>
<tr>
<td>13. Other Current Assets</td>
<td>307,469,689,616</td>
<td>301,607,276,508</td>
</tr>
<tr>
<td>II. Non-Current Assets</td>
<td>15,032,667,467,135</td>
<td>15,457,641,444,550</td>
</tr>
<tr>
<td>1. Long-Term Finance</td>
<td>5,201,067,000</td>
<td>2,548,786,446</td>
</tr>
<tr>
<td>2. Long-Term Investment Security</td>
<td>197,745,438,521</td>
<td>201,487,575,568</td>
</tr>
<tr>
<td>3. Investments by Related Enterprises and Joint Enterprises</td>
<td>100,927,082,338</td>
<td>155,757,265,633</td>
</tr>
<tr>
<td>4. Unclaimed Construction</td>
<td>-</td>
<td>102,739,503,644</td>
</tr>
<tr>
<td>5. Long-Term Loan</td>
<td>717,958,268,334</td>
<td>706,816,256,036</td>
</tr>
<tr>
<td>6. Tangible Assets</td>
<td>6,414,487,023,034</td>
<td>5,921,531,734,148</td>
</tr>
<tr>
<td>7. Intangible Assets</td>
<td>6,683,116,364,942</td>
<td>7,031,885,767,946</td>
</tr>
<tr>
<td>8. Real Estate Investments</td>
<td>26,484,941,678</td>
<td>498,211,016,067</td>
</tr>
<tr>
<td>11. Security Deposit</td>
<td>326,955,808,824</td>
<td>348,345,632,651</td>
</tr>
<tr>
<td>13. Other Non-Current Assets</td>
<td>63,815,653,357</td>
<td>51,872,353,221</td>
</tr>
<tr>
<td><strong>Total Assets</strong></td>
<td>24,814,911,563,566</td>
<td>24,809,249,181,179</td>
</tr>
<tr>
<td><strong>Liabilities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I. Current Liabilities</td>
<td>11,504,611,441,750</td>
<td>13,773,221,961,020</td>
</tr>
<tr>
<td>1. Purchase Liability</td>
<td>3,082,932,725,599</td>
<td>2,532,417,863,903</td>
</tr>
<tr>
<td>2. Accounts Receivable</td>
<td>539,550,236,467</td>
<td>537,794,374,950</td>
</tr>
<tr>
<td>4. Secured Term Loan</td>
<td>491,513,403,296</td>
<td>881,571,986,607</td>
</tr>
<tr>
<td>5. Unsecured Term Loan</td>
<td>2,072,796,574,308</td>
<td>2,072,796,574,308</td>
</tr>
<tr>
<td><strong>Total Liabilities</strong></td>
<td>18,596,482,003,126</td>
<td>18,607,256,196,356</td>
</tr>
<tr>
<td><strong>Capital</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Controlling Company Proprietor’s Equity</td>
<td>2,804,847,577,636</td>
<td>2,562,136,568,811</td>
</tr>
<tr>
<td>1. Capital</td>
<td>650,255,065,000</td>
<td>1,075,255,425,000</td>
</tr>
<tr>
<td>2. Capital Surplus</td>
<td>1,678,913,750,186</td>
<td>1,762,628,456,797</td>
</tr>
<tr>
<td>3. Other Capital</td>
<td>22,221,330,722</td>
<td>13,228,719,317</td>
</tr>
<tr>
<td>4. Accumulated Other Comprehensive Income</td>
<td>373,209,052,064</td>
<td>331,502,786,410</td>
</tr>
<tr>
<td>5. Shareholders’ Equity</td>
<td>6,218,429,560,440</td>
<td>6,201,992,984,823</td>
</tr>
<tr>
<td><strong>Total Capital</strong></td>
<td>6,218,429,560,440</td>
<td>6,218,429,560,440</td>
</tr>
<tr>
<td><strong>Total Liability &amp; Capital</strong></td>
<td>24,814,911,563,566</td>
<td>24,809,249,181,179</td>
</tr>
</tbody>
</table>
# Performance Summary

## ECONOMY

### R&D INVESTMENT

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>R&amp;D Investment cost</td>
<td>2,241</td>
<td>2,338</td>
<td>2,391</td>
</tr>
<tr>
<td>R&amp;D cost ratio to sales amount*</td>
<td>5.2</td>
<td>5.7</td>
<td>6.5</td>
</tr>
</tbody>
</table>

*Computed by the standard of the headquarter of DHIC.

### SALARY FOR NEW EMPLOYEE TO LEGAL MINIMUM WAGE

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>New male employee</td>
<td>205</td>
<td>205</td>
<td>205</td>
</tr>
<tr>
<td>New female employee</td>
<td>205</td>
<td>205</td>
<td>205</td>
</tr>
</tbody>
</table>

*Computed by the standard of the headquarter of DHIC.

### BASE SALARY FOR FEMALE TO MALE & COMPENSATION RATIO

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base salary for female to male &amp; compensation ratio</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

### STATUS OF EXPENSES BY INDUSTRIAL ASSOCIATIONS

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donator Large &amp; SMEs</td>
<td>8,699</td>
<td>652</td>
<td>512</td>
</tr>
<tr>
<td>GyeongNam Social Economic Support Center</td>
<td>10,368</td>
<td>790</td>
<td>627</td>
</tr>
</tbody>
</table>

### SUPPLY NETWORK STATUS & PURCHASED AMOUNT

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Partnership Companies</td>
<td>12,834</td>
<td>13,255</td>
<td>13,603</td>
</tr>
<tr>
<td>Purchased Amount by Partnership Companies</td>
<td>25,582</td>
<td>22,592</td>
<td>23,459</td>
</tr>
</tbody>
</table>

### STATUS OF EMPLOYEES

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of employees*</td>
<td>7,610</td>
<td>7,294</td>
<td>6,721</td>
</tr>
<tr>
<td>Number of employees by gender according to the employment contract</td>
<td>3,626</td>
<td>2,100</td>
<td>617</td>
</tr>
<tr>
<td>By country</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Domestic</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

*Computed by the standard of the headquarter of DHIC.

### New Hiring & Transferring

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Newly Hired Manpower</td>
<td>435</td>
<td>364</td>
<td>350</td>
</tr>
<tr>
<td>By Gender</td>
<td>390</td>
<td>330</td>
<td>278</td>
</tr>
<tr>
<td>By Age</td>
<td>113</td>
<td>304</td>
<td>350</td>
</tr>
</tbody>
</table>

### Status of Workers Applied by Collective Agreement

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratio of Workers</td>
<td>8.1</td>
<td>15.9</td>
<td>12.5</td>
</tr>
</tbody>
</table>

1. In reference to the end of year, the contract worker includes BG contract worker and field worker. Supervisor, advisor, outside directors and CEO and dispatching position are excluded. (In reference to employees under the business report)

2. The number of newly hired manpower in 2018 was partly corrected (Correction due to simple wrong typing)

3. Due to changed computation standard for the number of transferred manpower (including retired, voluntary transfer, and transfer to subsidiary company), the data for three years has been corrected and disclosed.

4. In reference to the end of year, the contract worker includes BG contract worker and field worker. Supervisor, advisor, outside directors and CEO and dispatching position are excluded. (In reference to employees under the business report)

5. The number of employees has increased due to the transfer of affiliates (About 250 people) in 2018.

*The number of new employees in 2019 was partly corrected (Correction due to simple wrong typing)

6. Due to changed computation standard for the number of transferred manpower (including retired, voluntary transfer, and transfer to subsidiary company), the data for three years has been corrected and disclosed.

7. In reference to the end of year, the contract worker includes BG contract worker and field worker. Supervisor, advisor, outside directors and CEO and dispatching position are excluded. (In reference to employees under the business report)
**EDUCATION FOR EMPLOYEES**

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>15.0</td>
<td>11.7</td>
<td>11.4</td>
</tr>
<tr>
<td>Female</td>
<td>15.0</td>
<td>21.7</td>
<td>11.7</td>
</tr>
<tr>
<td>Office Work</td>
<td>-</td>
<td>-</td>
<td>6.5</td>
</tr>
<tr>
<td>Technical Work</td>
<td>-</td>
<td>-</td>
<td>5.5</td>
</tr>
</tbody>
</table>

* Separate management of education hour per person by job group since 2018.

**STATUS OF MATERNITY LEAVE**

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>1,755</td>
<td>1,799</td>
<td>1,837</td>
</tr>
<tr>
<td>Female</td>
<td>49</td>
<td>57</td>
<td>69</td>
</tr>
</tbody>
</table>

**LEGAL ACTIONS FOR UNFAIR TRANSACTION**

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of legal actions</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*Neither fine nor penalty for three years.

**CORRECTIVE ACTIONS FOR DISCRIMINATION**

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of reports of discrimination</td>
<td>12</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Number of confirmed facts and actions</td>
<td>12</td>
<td>7</td>
<td>5</td>
</tr>
</tbody>
</table>

*The company retains the system to report discrimination and strictly observes the protection of informants.

**EDUCATION FOR EMPLOYEES**

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>58.0</td>
<td>11.7</td>
<td>11.4</td>
</tr>
<tr>
<td>Female</td>
<td>128.0</td>
<td>22.7</td>
<td>4.3</td>
</tr>
<tr>
<td>Office Work</td>
<td>15.5</td>
<td>11.7</td>
<td>6.5</td>
</tr>
<tr>
<td>Technical Work</td>
<td>5.4</td>
<td>7.6</td>
<td>0.0</td>
</tr>
</tbody>
</table>

* Separate management of education hour per person by job group since 2018.
SAFETY & HEALTH OF EMPLOYEES

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>LTIR</td>
<td>0.18</td>
<td>0.15</td>
<td>0.16</td>
</tr>
<tr>
<td>ODR</td>
<td>0.04</td>
<td>0.25</td>
<td>0.20</td>
</tr>
<tr>
<td>LWSR</td>
<td>3.22</td>
<td>7.36</td>
<td>24.77</td>
</tr>
</tbody>
</table>

Notes:
1. LTIR (Lost Time Incident Rate), U.S. OSHA (Work loss rate by the standard of Occupational Safety & Health Administration) = (Total number of suspended works/Total work hours) x 200,000
2. ODR (Occupational Disease Rate) = (Number of Occupational disease and Patients related with occupation/Total work hours) x 200,000
3. LWSR (Lost Workday Severity Rate) = (Total loss of workdays/Total work hours) x 200,000

PRODUCT SAFETY

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of occurred issues of safety-related recall</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total number of products returned due to the occurred issues of safety-related recall</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Amount of financial sanctions in relation to product safety (Profit, Fine, etc.)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

EXPENSES FOR SOCIAL CONTRIBUTION

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>86.8</td>
<td>6.6</td>
<td>6.6</td>
</tr>
<tr>
<td>Goods</td>
<td>0.8</td>
<td>0.8</td>
<td>0.4</td>
</tr>
<tr>
<td>Operation cost</td>
<td>1.2</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Total</td>
<td>99.8</td>
<td>8.7</td>
<td>7.5</td>
</tr>
</tbody>
</table>

Notes:
1. Domestic 0.18 0.15 0.16
2. Overseas 0 0 0
3. Total 0.12 0.10 0.10

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>0.06</td>
<td>0.25</td>
<td>0.20</td>
</tr>
<tr>
<td>Overseas</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>0.06</td>
<td>0.25</td>
<td>0.20</td>
</tr>
</tbody>
</table>

Notes:
1. Domestic 0.04 0.17 0.13
2. Overseas 0 0 0
3. Total 0.04 0.17 0.13

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>32.66</td>
<td>43.24</td>
<td>25.10</td>
</tr>
<tr>
<td>Overseas</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>32.66</td>
<td>43.24</td>
<td>25.10</td>
</tr>
</tbody>
</table>

Notes:
1. Domestic 13 10 10
2. Overseas 0 0 0
3. Total 13 10 10

SAFETY & HEALTH OF PARTNERSHIP COMPANIES

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>0.09</td>
<td>0.19</td>
<td>0.26</td>
</tr>
<tr>
<td>Overseas</td>
<td>0.01</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Total</td>
<td>0.09</td>
<td>0.19</td>
<td>0.26</td>
</tr>
</tbody>
</table>

Notes:
1. Domestic 0.04 0.17 0.13
2. Overseas 0 0 0
3. Total 0.04 0.17 0.13

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>16.2</td>
<td>7.1</td>
<td>4.2</td>
</tr>
<tr>
<td>Overseas</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>16.2</td>
<td>7.1</td>
<td>4.2</td>
</tr>
</tbody>
</table>

Notes:
1. Domestic 10 10 10
2. Overseas 0 0 0
3. Total 10 10 10

WEAKENING SOCIAL EFFECT IN SUPPLY NETWORK AND ITS CORRECTIVE ACTIONS

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Overseas</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Notes:
1. Domestic 0 0 0
2. Overseas 0 0 0
3. Total 0 0 0

PRODUCT SAFETY

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>3.22</td>
<td>7.36</td>
<td>24.77</td>
</tr>
<tr>
<td>Overseas</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>3.22</td>
<td>7.36</td>
<td>24.77</td>
</tr>
</tbody>
</table>

Notes:
1. Domestic 5 11 24
2. Overseas 1 1 0
3. Total 6 12 24

NUMBER OF COMPLAINTS OF WHICH THE VIOLATION OF CUSTOMER'S PRIVACY AND THE LOSS OF CUSTOMER'S INFORMATION HAS BEEN PROVED

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Overseas</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Notes:
1. Domestic 0 0 0
2. Overseas 0 0 0
3. Total 0 0 0

MAJOR NEGATIVE SOCIAL EFFECT IN SUPPLY NETWORK AND ITS CORRECTIVE ACTIONS

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Overseas</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Notes:
1. Domestic 0 0 0
2. Overseas 0 0 0
3. Total 0 0 0

WEAKENING SOCIAL EFFECT IN SUPPLY NETWORK AND ITS CORRECTIVE ACTIONS

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Overseas</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Notes:
1. Domestic 0 0 0
2. Overseas 0 0 0
3. Total 0 0 0

PRODUCT SAFETY

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Overseas</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Notes:
1. Domestic 0 0 0
2. Overseas 0 0 0
3. Total 0 0 0
Performance Summary

ENVIRONMENT

*Environmental data have been collected by the standard of the Headquarters of DHIC

REDUCTION OF ENERGY CONSUMPTION

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fossil fuel</td>
<td>505,841</td>
<td>457,897</td>
<td>469,466</td>
</tr>
<tr>
<td>Electricity</td>
<td>297,688</td>
<td>304,583</td>
<td>299,913</td>
</tr>
<tr>
<td>Total</td>
<td>803,529</td>
<td>762,480</td>
<td>769,379</td>
</tr>
</tbody>
</table>

*Due to the change in Environmental Data Computation Standard (Standard of DHIC’s Headquarter, Data from construction field excluded), the data for three years have been corrected and disclosed

TOTAL EXPENDITURES FOR ENVIRONMENT

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount of environmental investment</td>
<td>1,560</td>
<td>2,000</td>
<td>2,000</td>
</tr>
<tr>
<td>Expense of treatment waste disposal*</td>
<td>5,092</td>
<td>5,092</td>
<td>1,750</td>
</tr>
<tr>
<td>Profit from waste disposal</td>
<td>619</td>
<td>811</td>
<td>38</td>
</tr>
<tr>
<td>Profit from export sale</td>
<td>6,039</td>
<td>6,039</td>
<td>37</td>
</tr>
<tr>
<td>Water quality management</td>
<td>297</td>
<td>297</td>
<td>297</td>
</tr>
<tr>
<td>Other expenses</td>
<td>21</td>
<td>21</td>
<td>21</td>
</tr>
</tbody>
</table>

*Due to the change in Environmental Data Computation Standard (Standard of DHIC’s Headquarter, Data from construction field excluded), the data for three years have been corrected and disclosed

RECYCLING OF RAW MATERIALS

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonrenewable raw materials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scrap iron</td>
<td>114,308</td>
<td>110,574</td>
<td>120,300</td>
</tr>
<tr>
<td>Recovered iron</td>
<td>70,527</td>
<td>59,418</td>
<td>64,462</td>
</tr>
<tr>
<td>Chip</td>
<td>11,471</td>
<td>10,226</td>
<td>11,478</td>
</tr>
<tr>
<td>Alloy steel</td>
<td>6,369</td>
<td>5,952</td>
<td>6,256</td>
</tr>
<tr>
<td>Quicklime</td>
<td>7,412</td>
<td>6,997</td>
<td>7,742</td>
</tr>
<tr>
<td>Fluorspar</td>
<td>949</td>
<td>404</td>
<td>874</td>
</tr>
<tr>
<td>Lump coal</td>
<td>4,601</td>
<td>4,370</td>
<td>4,697</td>
</tr>
<tr>
<td>Renewable raw materials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rebar</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Concrete</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>215,637</td>
<td>197,941</td>
<td>215,809</td>
</tr>
</tbody>
</table>

*Due to the change in Environmental Data Computation Standard (Standard of DHIC’s Headquarter, Data from construction field excluded), the data for three years have been corrected and disclosed

RECYCLING AND REUSE OF WATER

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity of recycled water</td>
<td>25,900</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

EMISSION OF GREENHOUSE GAS

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Emission of Greenhouse Gas (scope 1)</td>
<td>117.8</td>
<td>105.5</td>
<td>108.7</td>
</tr>
<tr>
<td>Indirect Emission of Greenhouse Gas (scope 2)</td>
<td>139.4</td>
<td>138.1</td>
<td>142.9</td>
</tr>
<tr>
<td>Total</td>
<td>257.2</td>
<td>243.6</td>
<td>251.6</td>
</tr>
</tbody>
</table>

*Some data of the emission amount of greenhouse gas were corrected in 2017 and 2018 (Corrected due to simple wrong typing)
### Discharged Substances to Atmosphere

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx Emission Amount</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>SO2 Emission Amount</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>VOC (Total Organic Compound) Discharge Amount</td>
<td>8.4</td>
<td>23.8</td>
<td>32.4</td>
</tr>
<tr>
<td>HAP (Hazardous Air Pollutants) Discharge Amount</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PM10 (Particulate Matter) Discharge Amount</td>
<td>10.1</td>
<td>10.6</td>
<td>13.0</td>
</tr>
</tbody>
</table>

### Wastewater & Rainwater Discharge

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Quality of Discharged Wastewater</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COD</td>
<td>12.4</td>
<td>9.6</td>
<td>9.9</td>
</tr>
<tr>
<td>SS</td>
<td>5.7</td>
<td>3.1</td>
<td>3.8</td>
</tr>
<tr>
<td>N-H</td>
<td>1.2</td>
<td>1.1</td>
<td>1.0</td>
</tr>
<tr>
<td>Fe</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>T-N</td>
<td>3.9</td>
<td>2.7</td>
<td>1.6</td>
</tr>
<tr>
<td>T-P</td>
<td>0.2</td>
<td>0.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Water Quality of Discharged Rainwater</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COD</td>
<td>3.4</td>
<td>3.1</td>
<td>3.1</td>
</tr>
<tr>
<td>SS</td>
<td>1.3</td>
<td>1.7</td>
<td>1.9</td>
</tr>
<tr>
<td>T-N</td>
<td>2.2</td>
<td>0.3</td>
<td>0.9</td>
</tr>
<tr>
<td>T-P</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
</tr>
</tbody>
</table>

### Hazardous Substances Discharged

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazardous Wastes (Designated)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recycling</td>
<td>12,840</td>
<td>13,060</td>
<td>12,730</td>
</tr>
<tr>
<td>Incineration</td>
<td>973</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Landfill</td>
<td>2,094</td>
<td>4,849</td>
<td>2,833</td>
</tr>
<tr>
<td>Others</td>
<td>9</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>13,530</td>
<td>8,671</td>
<td>6,553</td>
</tr>
</tbody>
</table>

### Hazardous Chemicals Discharge

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Substances</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Total Amount of Hazardous Substances</td>
<td>55.0</td>
<td>100.1</td>
<td>230.1</td>
</tr>
</tbody>
</table>

### Purchasing Eco-Friendly Products

<table>
<thead>
<tr>
<th>Classification</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchased Amount</td>
<td>9,756</td>
<td>8,843</td>
<td>22,757</td>
</tr>
</tbody>
</table>
Risk Management

There is a growing uncertainty in the global society, with the volatility of the global economy intensifying. To address this, DHIC has established an integrated risk management system that analyzes risk factors which may arise during business operation. DHIC classifies risks into Financial Risk, Business Risk, and Compliance & CSR Risk. Each risk is managed by a dedicated department.

Integrated Risk Management System

DHIC has classified risks into Financial Risk, Business Risk, and Compliance and CSR Risk. DHIC has appointed a unit and executives dedicated to monitoring potential causes for each category of risk. These units regularly report any issues directly to the CEO. For risks that significantly affect the company, the Board of Directors makes final decisions. Four outside directors are appointed as risk professionals for each risk area. These risk directors deliver relevant education to support risk-related decision-making by the Board of Directors — in consideration of and accordance with relevant economic, business, and environmental, other laws.

Compliance & CSR Risks

DHIC categorizes various legal and non-financial risks related to the environment, safety, human rights, and local community as Compliance & CSR risks. Around the department in charge of each risk, DHIC has established a management system for immediate response while concurrently operating the CSR Committee for decision-making after sufficient discussion.

Risk Analysis

DHIC conducts simulation of operation profit and loss for each stage of project implementation to analyze business opportunity and risk. Through a standardized checklist, DHIC analyzes business impacts and response measures. Analysis results are reported to the CEO every month.

Financial Risk

DHIC is committed to minimizing financial risks associated with factors such as accounting, finance, finance, intellectual property, and disclosure. As a global enterprise, DHIC has established “Foreign Exchange Management Instruction” to eliminate the risk of foreign exchange rate fluctuation. DHIC analyzes financial risks as predicted by business operations; and actively manages financial risk according to a response strategy. Such contents are transparently reported to stakeholders to enhance the credit rating of the company.

Business Risk

DHIC recognizes risks related to new markets, projects and R&D as business risks. DHIC seeks business stability by establishing a proactive response system encompassing risk factors at all stages of the project, from raw material procurement to product and service provision to follow-up management. DHIC recognizes business risks for domestic and overseas market environments in advance and manages risks based on clear response criteria and procedures.

Human Rights Policy

DHIC respects the human rights of employees, as well as all DHIC stakeholders (as previously defined). DHIC recommends partner companies to manage human right management at the same level – targeting third parties of partner companies. DHIC demands adherence to human rights standards by partner companies and major business partners; and monitors their compliance.

DHIC, as a member of the UN Global Compact, complies with the “Ten Principles of the United Nations Global Compact,” covering human rights, labor, environment, and anti-corruption. DHIC has proclaimed official support for and makes best efforts to observe other internationally-recognized human right principles, including “The Universal Declaration of Human Rights,” “The UN Guiding Principles on Business and Human Rights,” and the “Ruggie Framework.”

DHIC has established and implements a human right management system(s outlined below) to prevent the violation of human rights which may occur during business operations. DHIC makes best efforts to prevent violations of human rights. DHIC strives to become an enterprise that grows mutually with society.

Non-Discrimination of Employment and Guarantee of Freedom of Association and Negotiation

DHIC does not discriminate based on gender, religion, disability, age, social position, and/or region of origin. DHIC also acknowledges the freedom of association and negotiation of workers; and does not prevent or otherwise discourage the activities of labor unions.

Prohibition of Forced Labor and Child Labor

DHIC prohibits any type of forced labor in its business activities. DHIC observes the minimum age of employment designated by the country in which business activities are taking place. When DHIC discovers cases of employment of underage persons (non-compliance with the minimum age of employment designated by the law of the host country), DHIC takes immediate remedial action to put an end to all illegal labor practices that cause damage to human dignity.

Guarantee of Industrial Safety and Responsible Management of Supply Network

DHIC maintains a safe work environment and observes all laws and regulations related to environment, health and safety applicable to business sites. DHIC implements separate safety and health measures for pregnant women, disabled persons, and other vulnerable workers. DHIC has established a policy and guideline of CSR Risk Management for Suppliers; and conducts regular inspections to monitor compliance by all business partners. In addition, DHIC helps supply network transactions that violate human rights.

Protection of Human Rights and Environmental Right of Local Residents

In conducting business operations, DHIC respects the right to life, the freedom of movement, the right to safety, and property ownership rights of local residents. In addition, DHIC maintains the principle of preventive action regarding environmental issues, and thus aims to prevent or relieve serious environmental damages and disasters. DHIC will establish and fulfill a plan to control such actions.

Protection of Customers’ Human Rights

DHIC complies with legal standards regarding design, manufacturing, and marking of products in order to protect the life and health of customers from any harm due to defective products. If any damage occurs due to a DHIC product, DHIC will notify customers of the risk and promptly accept returns of the corresponding product. In addition, DHIC respects the private life of customers; and thus takes necessary actions to ensure the security of personal information collected by the company.

DHIC has opened a Cyber Report Center (https://ethicsdhline.dossan.com/) on its website. Human rights issues related to DHIC business activities can be reported confidentially via this prompt and fair system. DHIC strives to lead and the industry with regard to observation of human rights principles as part of its vision of “Proud Dossan in the World.”
To the Shareholders and Board of Directors of
Doosan Heavy Industries & Construction Co., Ltd.

Opinion
We have audited the consolidated financial statements of Doosan Heavy Industries & Construction Co., Ltd. and its subsidiaries (the “Group”), which comprise the consolidated statements of financial position as of December 31, 2019 and 2018, the consolidated statements of comprehensive loss, changes in equity and cash flows for the years then ended, and notes, comprising significant accounting policies and other explanatory information.

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Group as of December 31, 2019 and 2018, and its consolidated financial performance and its consolidated cash flows for the years then ended in accordance with Korean International Financial Reporting Standards (“KIFRS”).

Basis for Opinion
We conducted our audits in accordance with Korean Standards on Auditing (“KSAs”). Our responsibilities under those standards are further described in the Auditors’ Responsibilities for the Audit of the Consolidated Financial Statements section of our report. We are independent of the Group in accordance with the ethical requirements that are relevant to our audit of the consolidated financial statements in Republic of Korea, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Material Uncertainty on the Ability to Continue as a Going Concern
We draw attention to Note 38 of the consolidated financial statements. As discussed in Note 38 to the consolidated financial statements, the Group has incurred a net loss of W704,367 million for the year ended December 31, 2019, and as of that date, the Group’s total current borrowings were W74,145,329 million and total current liabilities exceeded its total current assets by W4,421,614 million. These conditions, along with other matters as set forth in Note 38 to the consolidated financial statements indicate the existence of a material uncertainty which may cast significant doubt on the Group’s ability to continue as a going concern. Our opinion is not modified in respect of this matter.

Key Audit Matters
Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements as of and for the year ended December 31, 2019. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

1. Recognition of revenue including the input method
As described in the Note 2 to the separate financial statements, the Group recognizes its revenue when the control of products and services is transferred to the customers. Therefore, the Group estimates percentage of completion of performance obligation satisfied over time by using the input method and recognizes revenue over time depending on progress. For performance obligations satisfied at a point of time, the Group recognizes revenue when the product is delivered to and accepted by the customer. As the amount of revenue recognized over time using the input method depends on the measured percentage of completion, management’s judgment is involved in determining the method of measuring progress, estimating total contract cost and changes in construction. In addition, there is an inherent risk in revenue such as overstatement of unit sales price and manipulation of revenue through fictitious customers as revenue is one of the major performance indicators of the Group. Therefore, as there is a risk of overstatement of revenue due to an error in judgment or intent, we have identified the recognition of revenue as a key audit matter.

The following audit procedures were performed regarding the revenue recognized using the input method:

- Evaluation and tests of internal controls related to the determination and modification of estimated total contract cost, changes in contract terms
- For major projects completed during the current year, retrospective review by comparing the actual cost incurred during the current year and construction cost estimated at the end of the prior year
- Inquiries and inspection of documents for projects with significant changes in estimated total contract cost
- Comparison between estimated total contract cost used in revenue recognition and that of site department for major projects
- Comparison of estimated total contract cost with those of other similar projects
- Inquiries and analytical review of changes in the percentage-of-completion for each reporting period
- For major projects, inquiries and inspection of documents if there were significant differences between the progress rate in the respective monthly progress reports received from customers and the percentage-of-completion calculated based on cost
- For selected samples, inspection of documents to test the existence of cost of goods manufactured(including material costs, outsourced construction costs and other expenses) incurred during the current year

For selected samples, inspecting related documents whether cost of goods manufactured(including material costs, outsourced construction costs and other expenses) are attributed to appropriate project

2. Recoverability of due from customers for contract work
As described in the Note 2 to the separate financial statements, the Group calculates expected credit losses (“ECL”) based on the expected life of the ECLs and evaluates the recoverability of due from customers for contract work.

In calculating ECLs, management’s judgment is involved due to uncertainty over the collection of due from customers for contract work from delayed payment of the owner, changes in conditions or claims incurred. Therefore, we identified the assessment of the recoverability of due from customers for contract work as a key audit matter, given there are risks of overstatement of due from customers for contract work due to error or bias in judgment.

The following audit procedures were performed regarding assessment of the recoverability of due from customers for contract work:

- Evaluation and testing of internal controls related to the assessment of recoverability of due from customers for contract work
- Inquiries and inspection of documents to assess payment terms, penalty for delay, delivery time, and other obligations of contracts for the due from customer for contract work increased significantly
- Inquiries of long-term due from customers for contract work and inspection of documents to evaluate the reasonableness of the cause
- Considering current status of billing and collection of due from customers for contract work for each major projects
- For the projects with bad debt allowance reserved over trade receivables assessed whether an allowance is reserved for unlisted accounts receivable and inspected documents
- Retrieving external confirmation letters from major customers and reviewing legal opinion provided by external counsel

3. Impairment of goodwill
As described in the Note 2 to the consolidated financial statements, the Group conducts an annual impairment test for goodwill and compares the carrying amount of each cash-generating unit containing goodwill with the recoverable amount calculated as the value-in-use which is the present value of estimated future cash flows, to determine whether it is impaired or not.

In estimating the discounted cash flows, significant judgment of management is involved including long-term growth rate and discount rates applied to cash flow projections. Therefore, we identified the impairment for goodwill as a key audit matter as certain key assumptions on which management has based cash flow projections such as growth rate and discount rates are included, are subject to management bias.

The following audit procedures were performed regarding impairment of goodwill:

- Evaluating and testing of internal controls related to impairment test for goodwill
- Inquiries and assessment of valuation model used by the Group
- Understanding future cash flows and testing whether the estimated future cash flows corresponds to business plan approved by the Group’s management
- Testing the appropriateness of major assumptions (discount rate, growth rate and others) of the valuation model by comparing to benchmark of peer industry and past financial information of cash generating unit by using our internal valuation specialists
- Evaluation of the sensitivity analysis results of the discount rate and permanent growth rate presented by the Group to assess the impact of changes in major assumptions on the impairment assessment by using our internal valuation specialists
4. Assessment of provision for warranty
As described in the Note 2 to the consolidated financial statements, Doosan Engineering & Construction and its subsidiaries("DEC") segment of the Group provides customers with free warranty for a certain period of time after the sale of the product, and reserves a provision for warranty by estimating the expected warranty expenses. The performance obligation of the warranty is determined by the nature and scope of the free warranty provided by DEC and various assumptions, including the warranty period and estimated warranty expense to incur in the future. Therefore, we identified the assessment of provision for warranty as a key audit matter as certain key assumptions on which management has based on involves significant judgment of management. The following audit procedures were performed regarding assessment of provision for warranty.

5. Assessment of realization of the deferred tax assets
As described in the Note 2 to the consolidated financial statements, Doosan Engineering & Construction and its subsidiaries("DEC") segment of the Group reviews the carrying amount of deferred tax assets at the end of each reporting period. The carrying amount of deferred tax assets is reduced if it is no longer probable that sufficient taxable income will be generated to allow the recovery of all or part of the deferred tax assets. Realization of deferred tax assets implies complexity as it requires management’s judgment on the estimation of expected taxable income. Therefore, we identified the realization of deferred tax assets for DEC as a key audit matter given that the estimation of expected taxable income includes inherent uncertainty and involvement of significant judgment of key variables such as sales and operating profit.

The following audit procedures were performed regarding assessment of realization of the deferred tax assets.

Other Matter
The procedures and practices utilized in the Republic of Korea to audit such consolidated financial statements may differ from those generally accepted and applied in other countries.

Responsibilities of Management and Those Charged with Governance for the Consolidated Financial Statements
Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with K-IFRS, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error. In preparing the consolidated financial statements, management is responsible for assessing the Group’s ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management otherwise decides. If management decides not to use the going concern basis of accounting, the Group is required to disclose that such a decision was made and the basis of accounting used.

We have also:
• Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, including the assessment of the need for audit adjustments to reflect the impact of such risks.
• Obtain sufficient appropriate audit evidence regarding the financial statements.
• Conclude on the appropriateness of management’s use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group’s ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor’s report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor’s report. However, future events or conditions may cause the Group to cease to continue as a going concern.
• Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
• Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the Group audit. We remain solely responsible for our audit opinion.

As part of an audit in accordance with ISAs, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:
• Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
• Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Group’s internal control.
• Evaluate the appropriateness of accounting policies used in the preparation of the consolidated financial statements and the reasonableness of accounting estimates and related disclosures made by management.
• Conclude on the appropriateness of management’s use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group’s ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor’s report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor’s report. However, future events or conditions may cause the Group to cease to continue as a going concern.
• Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
• Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the Group audit. We remain solely responsible for our audit opinion.

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

We also provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence, and communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

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

The engagement partner on the audit resulting in this independent auditors’ report is Se Bong Hui.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

March, 20th, 2020

Kyo Tai Kim
March, 20th, 2020

This report is a letter to the Board of Directors of South Korea, and it is not intended to be distributed to any other third party except for the parties involved in the audit process. The report is intended to convey the results of our audit to the Board of Directors and is not intended to be used by any other party. The report is not intended to be relied upon by any third party for any purpose other than as a basis for the audit report. If you have any questions regarding the contents of this report, please contact us. We are available to answer any questions you may have.
Third Party’s Assurance Statement

To the Readers of 2019 Integrated Report of Doosan Heavy Industries & Construction:

FOREWORD
Korea Management Registrar Inc. (hereinafter “KMR”) has been requested by Doosan Heavy Industries & Construction to verify the contents of its 2019 Integrated Report of Doosan Heavy Industries & Construction (hereinafter referred to as “the Report”). Doosan Heavy Industries & Construction is responsible for the collection and presentation of information included in the Report. KMR’s responsibility is to carry out assurance engagement on specific data and information in the assurance scope stipulated below.

SCOPE AND STANDARD
Doosan Heavy Industries & Construction describes its efforts and achievements of the corporate social responsibility activities in the Report. KMR performed a type 2, moderate level of assurance using AA1000AS(2008) and SRV1000 from KMR Global Sustainability Committee as assurance standards. KMR’s assurance team (hereinafter “the team”) evaluated the adherence to Principles of Inclusivity, Materiality and Responsiveness, and the reliability of the selected GRI Standards indices as below, where professional judgment of the team was exercised as materiality criteria.

The team checked whether the Report has been prepared in accordance with the “Core Option” of GRI Standards which covers the followings.

- GRI Standards Reporting Principles
  - Universal Standards
  - Topic Specific Standards
  - Management approach of Topic Specific Standards
  - Economic Performance : 201-1, 201-3
  - Indirect Economic Impacts : 303-1
  - Anti-Competition : 205-5, 205-3
  - Energy : 302-1, 302-2, 302-3
  - Water : 301-1
  - Emissions : 305-1, 305-2, 305-3
  - Environmental Compliance : 307-1
  - Employment : 401-1, 401-3
  - Labor/Management Relations : 402-1, 402-2
  - Occupational Health and Safety : 403-1
  - Training and Education : 404-1
  - Customer Health and Safety : 416-1, 416-2
  - Human Rights Assessment : 412-1, 412-2
  - Anti-Corruption : 205-1, 205-3
  - Child Labor : 408-1
  - Forced or Compulsory Labor : 409-1
  - Diversity and Equal Opportunity : 405-1
  - Performance – and covered the business status, performance, and directions with consistency. We recommend that to improve sustainability,
  - Materiality
  - Inclusivity
  - Responsiveness

This Report excludes data and information of joint corporate, contractor etc. which is outside of the organization, i.e. Doosan Heavy Industries & Construction, among report boundaries.

OUR APPROACH
In order to verify the contents of the Report within an agreed scope of assurance in accordance with the assurance standard, the team has carried out an assurance engagement as follows:

- Reviewed overall report
- Reviewed materiality test process and methodology
- Reviewed sustainability management strategies and targets
- Reviewed stakeholder engagement activities
- Interviewed people in charge of preparing the Report

Our CONCLUSION
Based on the results we have obtained from material reviews and interviews, we had several discussions with Doosan Heavy Industries & Construction on the revision of the Report. We reviewed the Report’s final version in order to confirm that our recommendations for improvement and our revisions have been reflected. When reviewing the results of the assurance, the assurance team could not find any inappropriate contents in the Report to the compliance with the principles stipulated below. Nothing has come to our attention that causes us to believe that the data included in the verification scope are not presented appropriately.

- Inclusivity
- Materiality
- Responsiveness

We hope the Report is actively used as a communication tool with stakeholders and we recommend the following for continuous improvements.

ReCOMMENDATION FOR IMPROVEMENT
We hope the Report is actively used as a communication tool with stakeholders and we recommend the following for continuous improvements.

- Doosan Heavy Industries & Construction is developing and maintaining stakeholder communication channels in various forms and levels in order to make a commitment to be responsible for the stakeholders. The assurance team could not find any critical stakeholder Doosan Heavy Industries & Construction left out during this procedure.

We could not find any evidence the Report was not prepared in accordance with the ‘Core Option’ of GRI standards.

Our INDEPENDENCE
With the exception of providing third party assurance services, KMR is not involved in any other Doosan Heavy Industries & Construction’s business operations that are aimed at making profit in order to avoid any conflicts of interest and to maintain independence.

E. J. Han
Doc. 11th, 2020

Korea Management Registrar Inc.
**Environmental Guideline**

Based on the human-oriented management philosophy and leveraging technology, DHIC aims to protect the earth and the environment. In this regard, DHIC has established an environment guideline on the basis of_GREEN_Credo_. This contains the company’s regulations related to environmental management and protection; and internal instructions for how DHIC can protect the environment together with employees, partner companies, customers, and local communities. Based on this guideline, DHIC has implemented the below activities to reduce the environmental impact of business activities.

### Environmental Management of Production and Business Sites

For effective environmental management of production and business facilities, DHIC has established 14 procedures of goal management, education & training, documents & records, and internal evaluation, etc., as well as 10 instructions related to environmental impact assessment, atmospheric environment management, and waste management, etc.

### Selection and Continuous Evaluation of Suppliers/Subcontractors/Service Providers

DHIC conducts regular (once-year) evaluation of EHS management of partner companies. Evaluation results are utilized to provide incentives to and impose penalties on partner companies. In addition, DHIC delivers regular education to partner companies regarding EHS and particularly environmental standards and laws. Through such education—which is delivered through the consultation committee comprised of partner company chairs—DHIC reduces EHS(particularly environmental) risk throughout its entire supply network.

### Development of Products and Services

DHIC acknowledges both the crisis and opportunity presented by climate change and other diverse related environmental issues. Accordingly, DHIC actively pursues R&D to develop products and services which can minimize environmental impacts of DHIC business activities.

### Logistics

DHIC provides instructions to minimize environmental pollution which may occur during transportation. DHIC has established and implements best practice work standards for each stage—quotation, preliminary survey for transportation, selection of transportation company for contract and monitoring. Guidelines are also provided regarding waste recycling.

### Engineering and Maintenance

DHIC has established an environmental manual in order to minimize the occurrence of environmental pollution when operating, maintaining, and repairing power plants installed by DHIC. The aim is to fundamentally prevent environmental pollution due to abnormal operation. This manual—which is adapted to the characteristics of each power plant—helps DHIC minimize environmental impacts related to operation of power plants.

### New Project

DHIC develops a Project Environment Plan which sets forth detailed methods of environmental management before launching a new project. The Project Environment Plan covers project policies related to water supply and waste discharge requirements, hazard substance management, and air pollution control.

### Preliminary Due Diligence at Acquisition to Merger

DHIC identifies environmental risk by conducting preliminary due diligence on companies before acquisition and merger. Major evaluation items include: pollution of soil and underground water, asbestos, hazardous chemicals, environmental pollution prevention facility, and greenhouse gas management. The evaluation results are considered as an important factor at the time of acquisition and merger.

### Waste Management

DHIC has established and implements a waste management instruction covering the entire waste management process from generation to final disposal. Through this instruction, DHIC defines application range, terminologies, and responsibilities and authorities for the generation, collection, disposal, and inspection of waste, as well as consigned contract and monitoring. Guidelines are also provided regarding waste recycling.

### Product Safety

DHIC actively pursues R&D to develop products and services which can minimize environmental impacts of DHIC business activities.

### Activity Metrics

<table>
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<td>BA-EE-000.A</td>
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<td>BA-EE-000.C</td>
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GRI Content Index

UNIVERSAL STANDARDS (GRI 100)

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<td>Reporting baseline products &amp; services</td>
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<td>List of subsidiaries</td>
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<td>Locations of business sites</td>
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<td>Characteristics of ownership structure &amp; legal type</td>
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<td>Information about employees and workers</td>
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<td>101-9</td>
<td>Explanation of group's supply network</td>
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<td>Name of organization or supply network, critical change in ownership structure</td>
<td>No sign Board's change</td>
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<td>101-11</td>
<td>Explanation of prior prevention principle &amp; access method</td>
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<td>Financial data for the last three years</td>
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<td>Consumption of energy outside of the organization</td>
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<td>302-5</td>
<td>Consumption of energy outside of the organization</td>
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</tr>
</tbody>
</table>

The content extracted from the image is a table summarizing the GRI Content Index. The table includes the following columns: Topic, No., Standard, Item, Page, and Remarks. The topics covered are universal standards (GRI 100), economic standards (GRI 200), and environmental standards (GRI 300). Each topic is divided into different standards and items, with specific pages and remarks for each entry. The table provides a structured overview of the GRI Content Index, facilitating easy reference and access to the relevant standards and information.
## UN Global Compact

As a member of the UN Global Compact since 2014, DHIC complies with the 'Ten Principles of the United Nations Global Compact,' which covers human rights, labor, environment and anti-corruption. DHIC has adopted international standards on socially- responsible management and confirms its commitment to becoming a leading global enterprise – as well as a model enterprise for the Republic Korea – for sustainable socially-responsible business operations.

<table>
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<tr>
<th><strong>Principle</strong></th>
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<td>Principle 3</td>
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<td>Principle 4</td>
<td>the elimination of all forms of forced and compulsory labour; 62-64</td>
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<tr>
<td>Principle 10</td>
<td>Businesses should work against corruption in all its forms, including extortion and bribery. 50-51</td>
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### Membership Status

**Standard**

- Korea Foundation for Cooperation of Large & Small Business
- RLG Affairs
- Korea Technology Finance Corporation
- Korea Credit Guarantee Fund
- Gyeongnam Center for Social Economy and Entrepreneurs
- Korea Institute of Energy and the Environment
- Nuclear Energy Industry Association
- Korea Nuclear Society
- Korean Society of Combustion
- Machinery Financial Cooperative
- Korea Enterprises Federation
- Korea Standards Association
- Korea Foundation of Quality

**Power Generation**

- Korea Institute of Electrical Engineers
- Korean Society of Mechanical Engineers
- Korea Nuclear Equipment Advancement Association
- Korea Association of Machinery Industry
- Korea Nuclear Association
- International Cooperation
- Women in Nuclear

**Welding**

- Korean Welding & Joining Society

**Construction**

- Construction Association of Korea
- Korea Housing Builders Association
- Korea Federation of Construction Contractors
- Korea Electrical Contractors Association
- Korea Information & Communication Contractors Association
- International Contractors Association of Korea
- Korea Mechanical Contractors Association
- Railroad Engineering Association

**Quality**

- Korea Standards Association
- Korea Foundation of Quality

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