


DOWA
DOWA HOLDINGS CO.,LTD.
<http://www.dowa.co.jp>

Towards the Realization of a Resource-Recycling Society

CSR REPORT 2017

DOWA



* This report uses forest-certified paper and eco-friendly soy ink. 

Contents

- 1 | DOWA's CSR
- 3 | Special Feature: The Advancement of DOWA
- 9 | Top Message
- 11 | About the DOWA Group
- 15 | CSR Policy and Plan
- 17 | CSR Initiatives by Sector
- Governance
- 23 | Safety
- 27 | Environment
- 35 | Society
- 45 | Editorial Policy and Target Organizations of the Report
- 46 | Opinion of a Third Party

Proper treatment and prevention of pollution
Reduction of waste volume
Heat recovery and power generation

Market research and analysis
Stable recovery
Research and new technology development
Raw material analysis and evaluation
Environmental conservation measures

External partners
Joint research and
technical cooperation
Supply chain management

DOWA's CSR

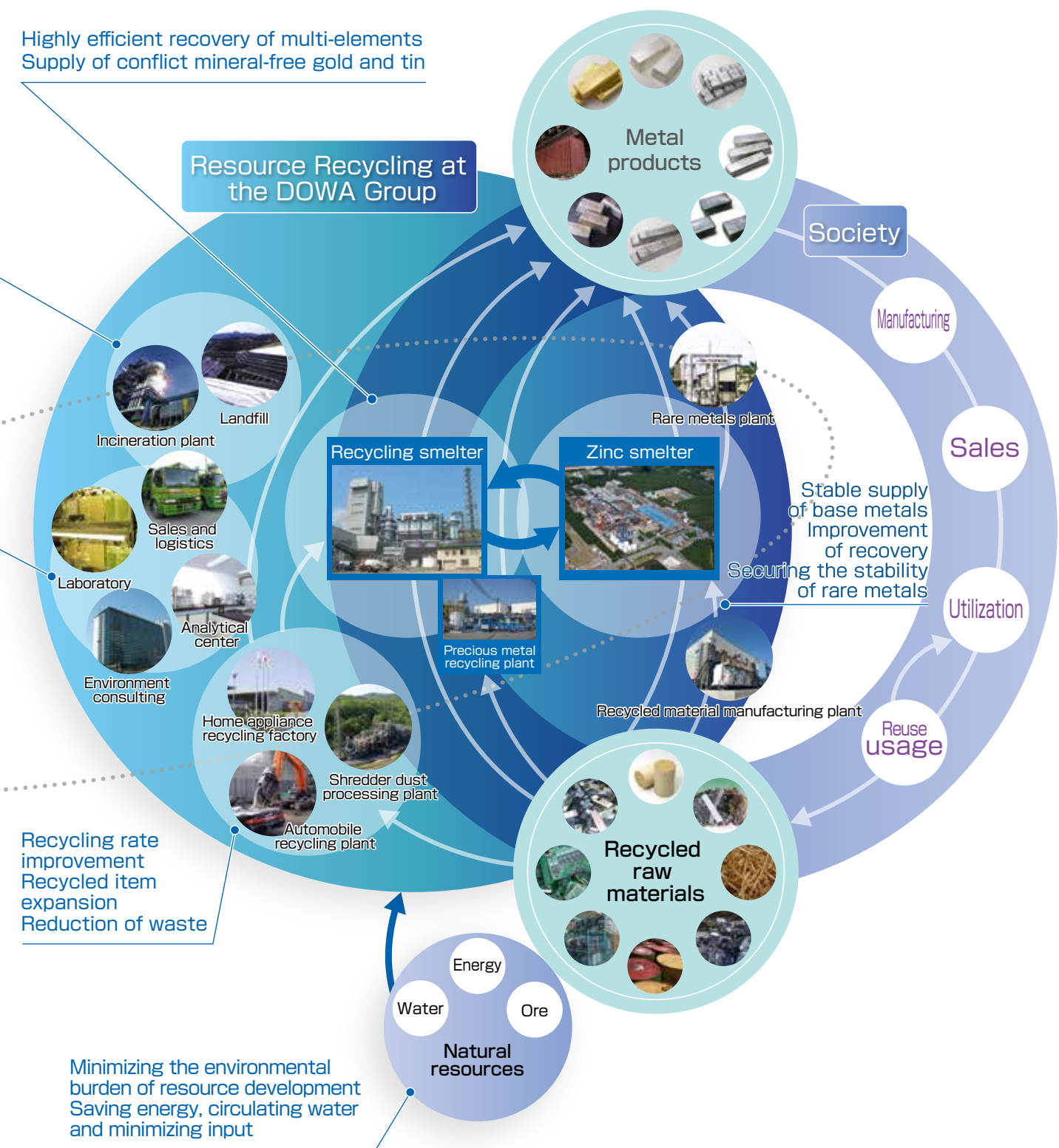
Corporate Philosophy

Through its business operations on the world stage, Dowa seeks to contribute to the creation of prosperous communities and the emergence of a resource recycling society.

Based on this corporate philosophy, we work on solving various social issues through our business activities, together with seriously meeting the expectation of all our stakeholders, including customers, shareholders, investors, business partners, local people and employees.

Highly efficient recovery of multi-elements
Supply of conflict mineral-free gold and tin

Resource Recycling at
the DOWA Group



DOWA's Business and SDGs



In 2015, the Sustainable Development Goals (SDGs) were adopted at the Sustainable Development Summit held by the United Nations. These SDGs state 17 goals and 169 targets that should be resolved on a global scale by 2030. In order to achieve these SDGs by 2030, every sector, including companies, around the world is required to make action. For DOWA, which uses metal resources, goal number 12 of the SDGs, "Ensure sustainable consumption and production patterns", is the field that is closest to us, and we are working on the "efficient use of natural resources" as an important social issue.

Special Feature

The Advancement of DOWA

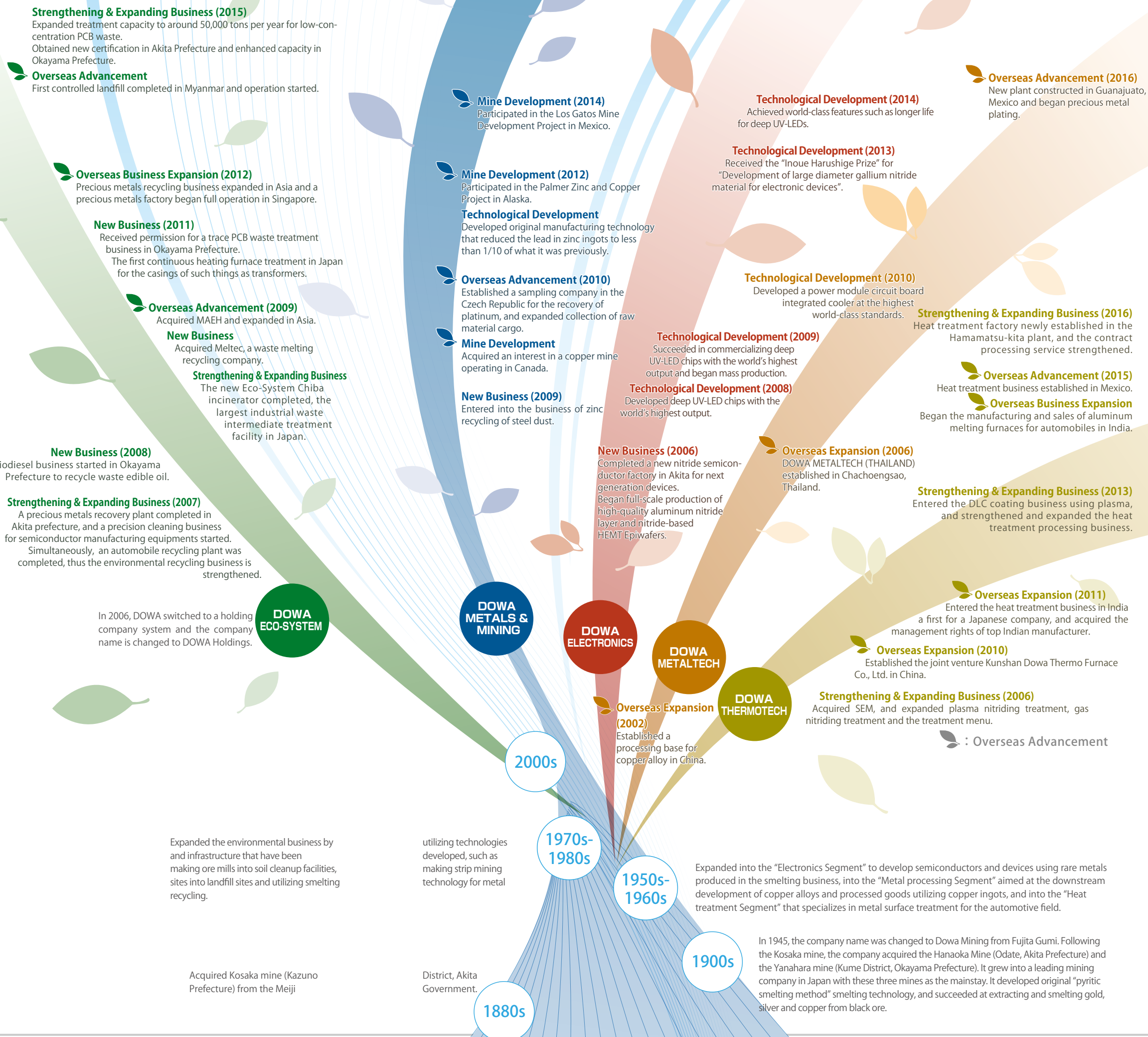
The DOWA Group is now deploying in five business fields, which originates from the mining and smelting of metals, such as copper, zinc, gold and silver.

History

1884 - the start of DOWA

Meiji Era

As trees start their life from a small sapling, the DOWA Group began as a mine in Akita in 1884. The company grew its trunk as a nonferrous metal business based on the technology and experience we have cultivated through mining and smelting. Various branches were spread out as we expanded our business fields to the manufacturing of high value-added products from metal production, and waste treatment and recycling. As time went by, as the trends and needs change, we have sprouted new leaves, such as the new businesses for deep ultraviolet LEDs and polychlorinated biphenyl (PCB) treatment, as well as expansion in overseas development. DOWA currently has five main branches, namely, "Environmental management & recycling", "Smelting", "Electronic materials", "Metal processing" and "Heat treatment". So that each of these segments can grow significantly by providing valuable products and services, such corporate social responsibility (CSR) activities as governance, environmental consideration and human resource development are indispensable, and it could be said that they are the roots of the tree. While it might be difficult to see the growth of the roots in the soil, not only are we growing upward, but the roots continue to stretch firmly under the ground in order to support the branches and leaves. In addition, like a healthy tree that can withstand severe storms and drought, we would like our whole group to keep growing as a single big tree.



Special Feature

The Advancement of DOWA

Creation and Challenges Inheritance of the original standpoint

Black ore (complex sulfide ore)

An important metal resource in Japan, it contains useful metals such as gold, silver, copper, lead, zinc and other rare metals.

History

1890 -
Depletion of ore

1902 -
Developed the pyritic smelting method

1907 - Recorded the largest
amount of production in Japan

1952 - Established wet
smelting technology

1990 -
Mining ended at the Kosaka mine (Uchinotai)

2008 - Full-scale operation of a new type of smelting facility
that can handle recycled raw materials

Meiji Era

Taisho Era

Showa Era

Heisei Era

DOWA and Black Ore

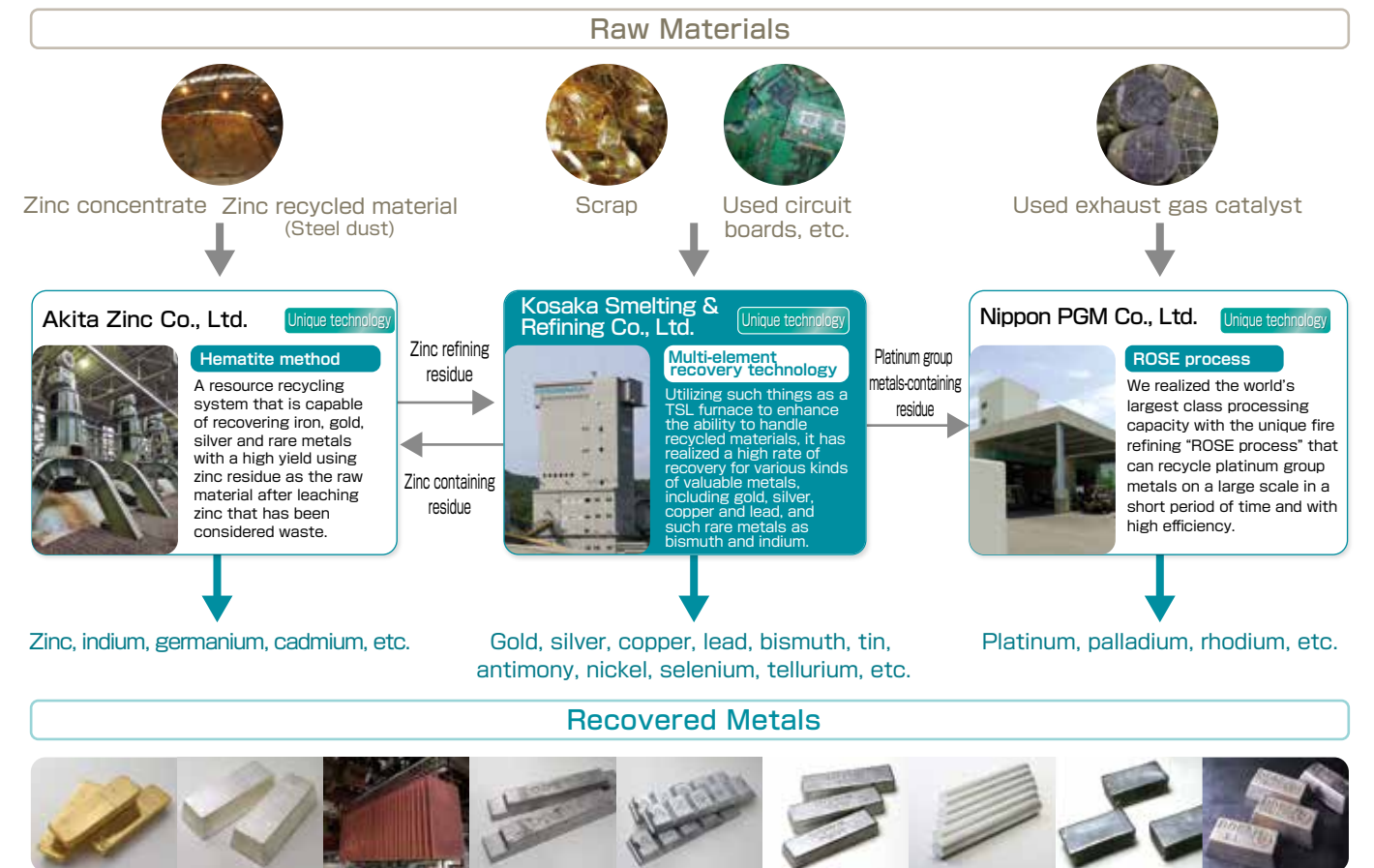
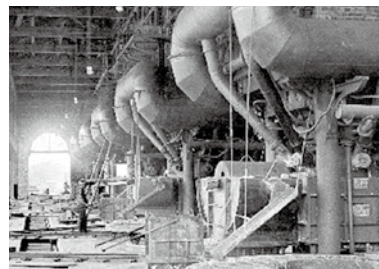
The Kosaka mine in Akita, the place where we started, produced ore called “earthy ore” which contained a lot of silver. After 1890, the depletion of the ore began, and also the adaptation of the gold standard made the price of silver plummet. As a result, the mine was in danger of being closed. As a consequence, we switched our mining and smelting target ore to the abundant “black-ore”, found in the deeper area than that of the “earthy ore”.

While black ore is rich in useful metals including gold, silver, copper, lead, zinc and rare metals, it is difficult to separate them because the many impurities the ore contains. Even now, it is said that this ore is difficult to smelt. With the underdeveloped technical abilities at that time, only a small part of the ore could be used, and it was thought to be impossible to commercialize it.

In 1902, amid calls for the Kosaka mine to be closed, DOWA’s engineers succeeded in developing a unique and innovative smelting method that was called the “pyritic smelting method”. It is said that the success of the pyritic smelting method opened up a way after that for the continued development in Japan of the copper blast furnace smelting method.

Due to the development of this technology, the scale of production was gradually expanded with such things as the construction of a large blast furnace by Kosaka Smelting & Refining, establishing it as one of the leading copper smelters in Japan. Furthermore, while expanding the smelting business to such things as gold and silver, this greatly contributed to the economic development of Japan, and in 1907 we recorded the country’s largest amount of production. After that, with further research of smelting methods and improvements, in 1952 we established a wet smelting technology that included sulfatizing roasting, leaching and the electrolysis method to efficiently extract copper and zinc from black ore, with the aim of making full use of black ore.

With the changing times, in 1990 mining at the Kosaka mine (Uchinotai) came to an end, but the smelting technology that started with black ore has been inherited by the current metal recycling of DOWA.



From Mining to Recycling

With the change from the Showa era to the Heisei era against a background of more and diversified waste, and the depletion of resources for various reasons, society started to change to one that was recycling oriented in order to effectively use resources as long as possible.

Across the four eras from Meiji to Heisei, Kosaka Smelting & Refining advanced together with the development of Japanese industry, and it has greatly transformed itself to meet the changing needs, from ore-based smelting to a “recycling smelter” that again removes metals from used electrical and electronic products.

Since the quality of the recycled raw material is not uniform, this transformation has not been easy, but just like we faced the challenge of black ore smelting amid the danger of the mine closing, we have overcome various problems with the power of technology, transforming one smelter into one of the few recycling smelters in the world that has the technology to recover many kinds of metals.

From April 2008, with full-scale operation of a new type of smelting facility that can handle recycled raw materials, we have made it possible to recover more than 20 kinds of elements, such as precious metals like gold or silver, and rare metals such as selenium, antimony and bismuth, by using raw materials like printed circuit boards from mobile phones and used home appliances, and residue from the DOWA Group’s zinc smelting process.

In addition to the recovery of diverse metals, it can be said that a major feature of DOWA’s recycling is the stabilization of harmful substances. As we cultivated our mining business over many years, we established unique processing methods to handle the black ore with its many impurities. By striving to avoid both atmospheric and water pollution, and building technology to reduce the impact on the environment, in addition to recycling, we began new environmental business field such as soil remediation and safe treatment/disposal of waste.

Currently, the DOWA Group’s recycling-related companies in Akita Prefecture form a cooperative environmental complex. Kosaka Smelting & Refining in the Kosaka district is the core of this complex, with Eco-Recycle Co., Ltd. in the Hanaoka district of Odate doing household appliance recycling, and recycled raw materials accepted from Akita Zinc that is located in the city of Akita on the coast.

At the same time, we are minimizing the impact on the environment by completing within the area detoxification treatment and landfill. Just as we in the DOWA Group have created new value until now by responding to crisis and change, we would like to continue to respond to the various expectations and requests of society with the power of technology.





DOWA's technology adding the value of metals

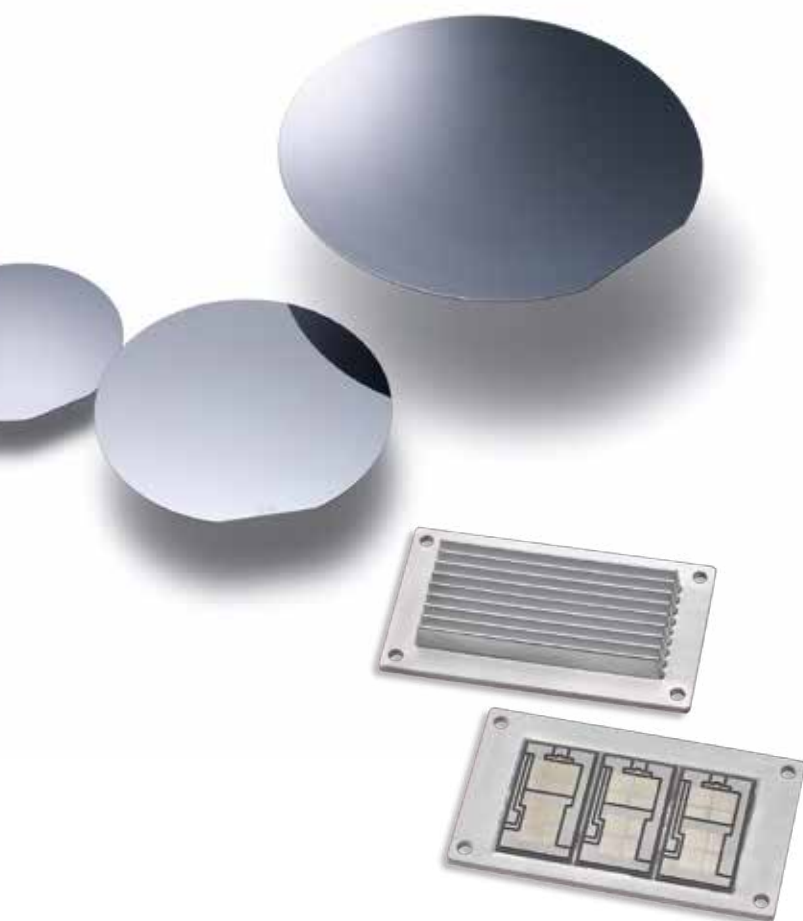
Functional material technology

Metal processing technology

Heat treatment technology

From Resource to Raw Material and Material

As a mining and smelting company, for a long time the DOWA Group extracted metal resources from ore and provided as "raw material", but gradually we came to process the raw material and produce "metal material" such as metal strips and rods. We further evolved to "functional material" by adding new functions such as electrical properties or magnetism by applying plating and processing to metal materials. In addition, we have built various technologies that adds value by extracting the potential of metal, such as heat treatment processing that improves hardness, toughness and corrosion resistance.



Metal powder, which is a functional material product of DOWA, is used for high density and large capacity magnetic recording media, such as videotapes for broadcasting stations and data storage tapes. DOWA's metal powder, which is utilized in magnetic material technology, has top global market share, and is playing a part in the advancement of the information society. The strength of DOWA's technology in this field began with the production of iron oxide from iron sulfide ore, produced at the company's Yanahara mine (Okayama Prefecture). From the ferrite magnetic powder of these raw materials, we have accumulated various technologies as we advance production of finer metal powder. While metal powder is produced from iron hydroxide as it is made into iron oxide and then reduced, it is required that the crystals are small and that the individual sizes and shapes are uniform. DOWA's magnetic material technology clears at a high level such stringent requirements as crystal control, high purification, thin film and surface interface. In addition to metal powder, DOWA's control technology is utilized to meet a wide range of needs, such as ferrite powder for bonded magnets used for the magnetic rolls and motors of printers and copying machines, carrier powders which play the role of carrying toner inside of copying machines, and with electrical properties (resistance), magnetic properties (magnetizing force) and physical properties (specific weight and particle size distribution).

Main initiatives for the future

In order to realize a low-carbon society, we are expanding sample work of electrode materials for fuel cells that are expected to see further growth in demand.



Electrode materials for fuel cells

At DOWA, we manufacture high-performance copper alloy for connectors and lead frames used in automobiles and electronic devices, and DOWA's copper alloys are also used for information and communication equipment such as smartphones. For example, copper alloys used for the small parts embedded into smartphones are required to have bending workability and high strength so they can be processed into complex shapes. We are developing and manufacturing such things as copper-titanium alloys that have both of these characteristics. Together with developing high-performance copper alloy through alloy design and microstructure control according to the application and purpose, the strength of DOWA's technology in this field is enhancing the process technology such as melting and casting, high precision rolling, heat treatment, cutting, pressing and metal plating, and producing high functioning and high value-added metal processed products. In addition to our connector material showing a high level of material properties such as strength, electrical and thermal conductivity, heat resistance and reliability, we have earned a high degree of trust for process technology that enhances the processing accuracy for users.

Main initiatives for the future

We are working to newly develop copper alloys and expand sales by enhancing such things as conductivity and strength.



Copper alloy strip

By applying heat treatment and surface treatment to metal parts placed in harsh operating environments, such as engines or the rotating parts of gearboxes so that automobiles and construction machinery can be used for a long time, this increases durability and contributes to miniaturization and weight reduction. As a leading company in the field of heat treatment and surface treatment, DOWA can provide 20 kinds of surface treatment processes, including carburizing treatment to improve wear resistance of the metal surface, gas nitriding treatment to improve fatigue resistance ("Tough-nite Process"), thermal diffusion (TD) treatment which particularly improves wear resistance for metal molds, and the Corbett process that improves seize resistance. Together with providing customers heat treatment and surface treatment equipment designed and manufactured by our company, the strength of DOWA's technology in this field is that by using our own heat treatment plants we can build treatment technology and know-how in-house. We can provide comprehensive engineering of both hardware and software from development phase to maintenance phase. Our technology, in terms of hardware, is adopted around the world, mainly atmosphere heat treatment equipment, and in terms of software, our high-quality heat treatment and surface treatment, based on our unique technological knowledge, mainly for carburizing and quenching, cultivated through development of various processes and equipment, is now provided worldwide.

Main initiatives for the future

We will continue to expand our business in regions overseas where the automobile industry is growing, and have launched new factories in Mexico and India.



Heat treatment processed items

Through our core businesses of providing environmentally oriented products, waste treatment and recycling, we at the DOWA Group will contribute to solving such global social issues as environmental and energy problems.

DOWA HOLDINGS CO., LTD. President and Representative Director Masao Yamada

山田 政雄

The Roots of CSR at DOWA

The year of our foundation is recognized as 1884, when the Meiji government sold the Kosaka mine to us. At the time, mining companies not only provided social capital directly connected with their business activities, such as establishing water supply facilities and power plants, and developing railroads and roads, but they were also responsible for community development needed by the residents, including erecting housing, hospitals, entertainment facilities such as theaters and mountain shrines that became a foundation for the region. On the other hand, if mining development and smelting businesses proceed randomly, it always causes environmental pollution of air and water, and the destruction of nature such as deforestation. While we at the DOWA Group have built technologies and management know-how to reduce the impact on the environment, and have worked on conservation, with that alone we would not have been able to continue our business activities for over 130 years rooted in the community. In any era it is important to have discussions with the local people, work to disclose information and build trust.

It goes without saying that mining contributes to the development of the region while at the same time working to solve the problems of the local community. We believe that these kinds of things are the starting point for our CSR activities.

While in recent years CSR has been actively booming, instead of being a boom or something new, for us it could be said that CSR is management itself both today and in the past.

We Will Continue to Address Social Issues Based on the New International Framework

Looking back on the past year, there was big movement towards resolving common problems in the international community, with the Paris Agreement, which established the international framework for climate change, coming into effect, and the goals for achieving a sustainable world shifting from the Millennium Development Goals (MDGs) to the Sustainable Development Goals (SDGs). It can be said that the role played by companies for these issues is very large.

With regards to climate change measures, we will not only limit our CO₂ emissions, but we will also fulfill our responsibilities through providing materials and parts to enhance the effects of energy savings, and developing destruction processing technology for Freon in Asia. In 2016, we realized such things as the development of metal-ceramic circuit boards with enhanced conductivity and strength properties that are used for copper alloys and automotive inverters, and the improvement of properties for electrode material used in fuel cells. In addition, with the aim of reducing carbon in the Asian region, we are conducting test treatment for the destruction of Freon at our waste treatment subsidiary in Thailand, and we are promoting commercialization of the proper recovery and destruction of Freon.

As for the SDGs, with our corporate philosophy of “building a resource recycling society” deeply connected to goal number 12 of the SDGs, “Ensure Sustainable consumption and production”, we believe that through

our main business this is the goal that we can contribute to the most. We are positioning goal number 12, which is closely related to other goals, as our company’s entry point to promote the SDGs. We will continue to focus on demonstrating that the efforts of each and every employee will lead to the realization of a sustainable society.

In addition, while supporting the new international framework of the Paris Agreement and the SDGs, we again declare that we will continue to support the UN Global Compact that we signed in 2009 with its 10 principles in the four fields of human rights, labor, environment and anti-corruption. And, as a matter of course, we will comply with all laws and regulations, and will thoroughly ensure compliance while observing social ethics.

Making the Changing Times Our Own Opportunity

The DOWA Group, which originates from the mining and smelting industry, sometimes has had to make hard decisions like closing a mine in response to various changes in the business environment, such as environmental, economic and societal issues. At the same time we have changed our structure to the shape of the current five core businesses that we have grown into. While on the one hand we have grasped new business opportunities as a part of that process, we have also

learned “how to change” through several mistakes after moving into areas where the strengths of our company could not be utilized. By actively changing ourselves and seizing opportunities without fearing change in the business environment, we believe that we have created a corporate culture that builds on our strengths without being tossed about by the changing times.

Last year there were trends that went against globalization, such as the problem of the U.K. withdrawing from the European Union, the political situation in Europe and uncertainty created by policies of the new U.S. administration. Putting in our mind these events which show that the main stream flow is accelerating at any time, and that we would be left behind as soon as we are in a slack attitude, we will never hesitate to change and we will be working steadily to do each of our measures more swiftly than before. Together with broadly notifying all of the stakeholders outside of the company about the initiatives of the DOWA Group, this CSR Report aims to become an opportunity for each employee to review their own activities and to create new value. In order to face various social issues, and to continue to make progress as a company that contributes to problem solving, we would like to hear your candid feedback.

About the DOWA Group

DOWA has developed five business segments originated from the mining and smelting of copper, zinc, gold and silver.

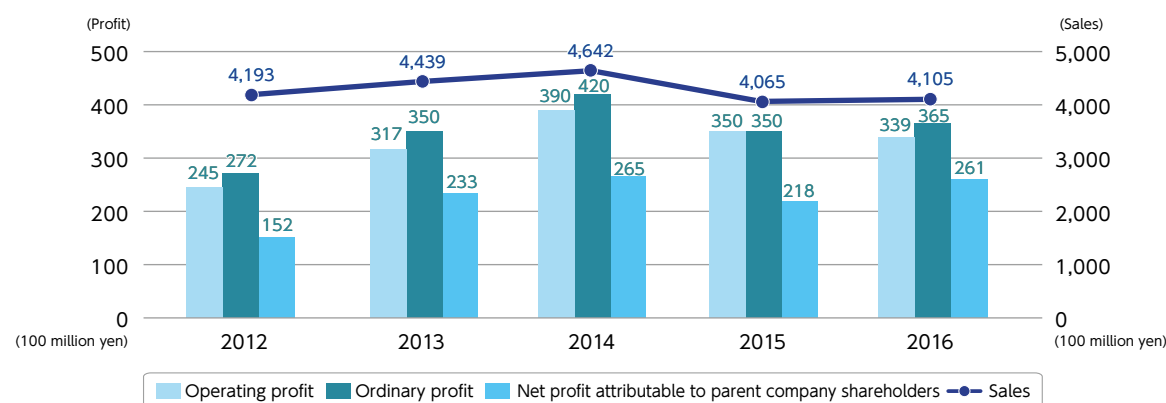
FY 2016 Financial Highlights

In the FY 2016 financial results, consolidated sales rose 1% year on year to 410.5 billion yen, consolidated operating profit fell 3% to 33.9 billion yen, ordinary profit rose 4% to 36.5 billion yen and consolidated net profit attributable to parent company shareholders rose 20% to 26.1 billion yen. With regards to the business environment for the group, demand for automobile-related products remained comparatively steady both in Japan and overseas, and demand for electronic components and new energy-related products grew mainly in East Asia. As for the market environment, metal prices rose for precious metals and zinc.

(100 million yen)

Business Results	2012	2013	2014	2015	2016
Sales	4,193	4,439	4,642	4,065	4,105
Operating profit	245	317	390	350	339
Recurring profit	272	350	420	350	365
Net profit attributable to parent company shareholders	152	233	265	218	261

Each mentioned year represents the fiscal period from April 1 to March 31 of the next year.



FY 2016 Status



Growth of the global business

- Expansion of the overseas collection network for recycled materials by acquiring a North American collection company.
- Continued overseas exploration: Los Gatos Project in Mexico Feasibility Study completed.
- Expansion of high-strength products for smartphones in East Asia.
- Increase in orders for heat treatment processing in India, Thailand and China.
- Promotion of the construction plans for landfill facilities in Indonesia and Thailand.



Strengthening the base of the smelting complex

- Operation of the new platinum group metals recycling furnace to increase capacity.
- Establishment of a new roasting furnace in Japan's largest zinc smelter to expand production volume.



Development of the environmental business

- Growth of the silver powder demand for renewable energy.
- Increased processing of low concentration PCB waste.

Status of Each Business Segment

The DOWA Group has developed a global recycling business consisting of five core business segments.

In the "Smelting business", in addition to natural resources, we extract useful metals from various recycled materials. The extracted metals go through various processes and are given enhanced functionality in the "Electronic materials business", the "Metal processing business" and the "Heat treatment business", after which they are included in final products such as automobiles and electronic devices. The "Environmental management and recycling business" detoxifies waste and separates and recovers metals from used products. The recovered metal is used again as raw material for smelting. Through the development of such a business cycle, in addition to providing high-quality products and services, we are working to resolve social issues such as environmental conservation and resource problems.

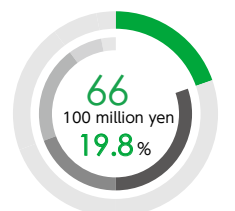
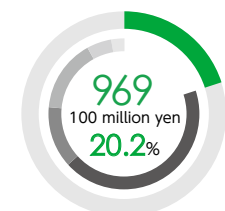
Business-wise business overview and the business situation of 2016 are as follows.

Sales composition ratio*
(2016)

Operating profit composition ratio*
(2016)

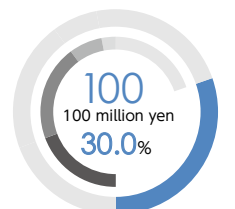
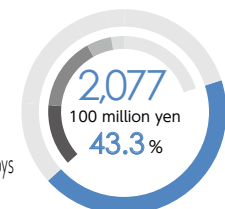
DOWA ECO-SYSTEM CO., LTD.

- Waste treatment business** Processing in an integrated system from collection and transportation of general and industrial waste to intermediate treatment and landfill
- Soil remediation business** Provide total support from survey of soil contamination to purification work and monitoring
- Recycling business** Collection of valuable metal from used products such as scrap generated production processes in factories, electrical appliances and automobiles



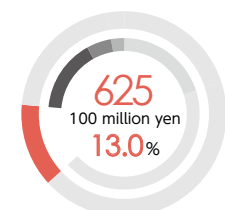
DOWA METALS & MINING CO., LTD.

- Precious metals and copper business** World's leading recycling and smelting that can collect a variety of metals such as gold, silver, and copper
- Rare metals business** Recycle of platinum group metals such as platinum from used automobile exhaust gas purification catalysts
- Zinc business** Akita smelting boasts to be the largest zinc smelter in Japan, having an annual output of 200,000 tons, and deploys consistent business development from resource development to metal production and sales of processed items



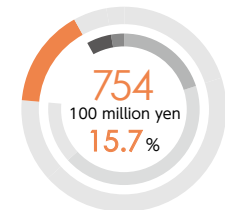
DOWA ELECTRONICS MATERIALS CO., LTD.

- Semiconductor business** Top manufacturer of high-purity gallium indium semiconductor materials, compound semiconductor wafers, and high luminance and high output LED
- Electronic materials business** Manufactures silver powder used in new energy applications, copper powder used in electronic components, zinc powder and silver oxide used in batteries etc.
- Functional materials business** Manufacturer boasting of world's dominant market share of ferrite powder used in metal powder for archive data-tapes, carrier powder for copiers, printers etc.



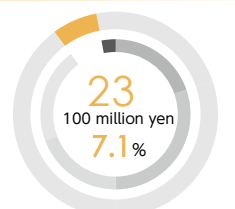
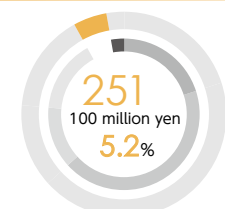
DOWA METALTECH CO., LTD.

- Metal processing business** Manufacturing copper, brass, and copper alloys used in terminals and connectors for automobile and semiconductor, and brass bars and forgings
- Plating business** Precious metal plating processing of components such as connectors and switches of automobiles
- Circuit board business** Manufacturer of metal-ceramic substrates used in power control equipment such as industrial machinery, railway, wind-power generation, and solar power



DOWA THERMOTEC CO., LTD.

- Industrial furnace business** Provides total service from design and erection of furnaces to maintenance, leveraging the know-how of heat treatment processing
- Heat treatment processing business** Surface processing operation to increase the abrasion resistance, fatigue resistance and heat resistance of a metal in vehicle engine and gearhead

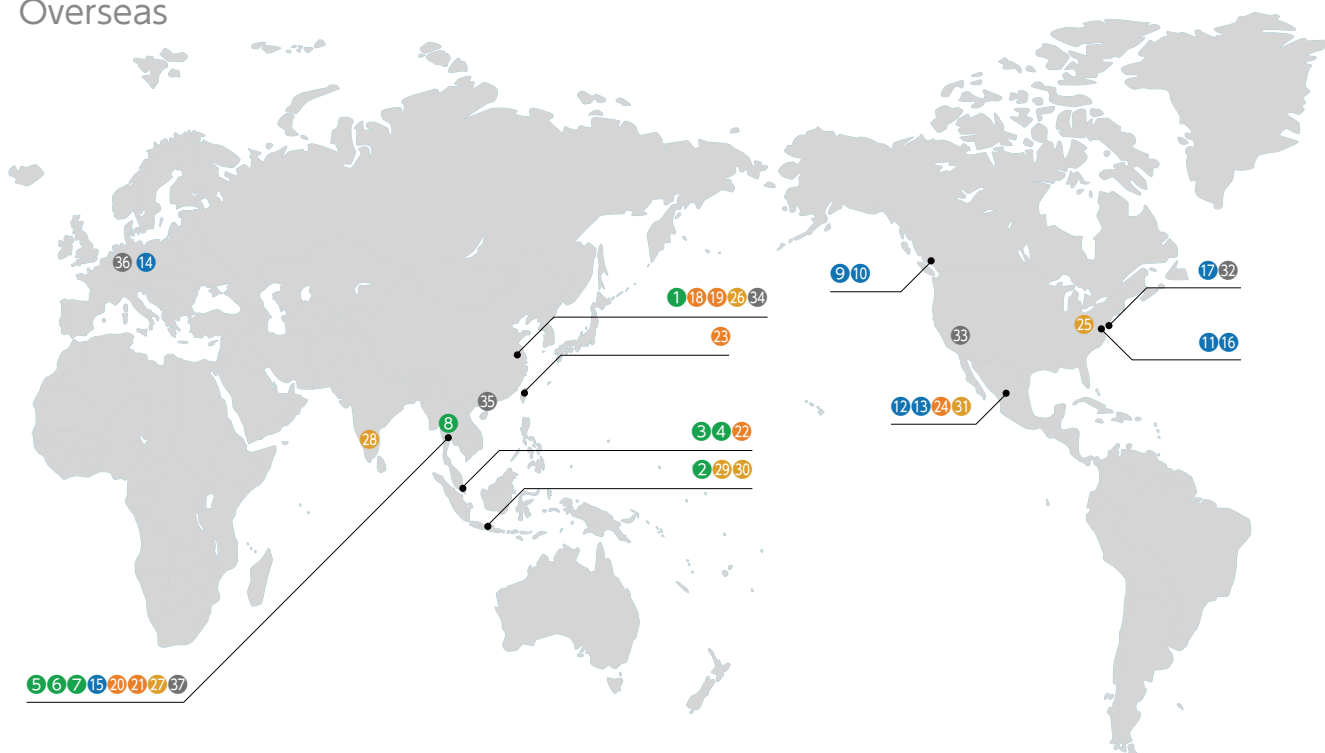


*Component ratios exclude adjustments

Corporate profile, offices and group of companies

Name	DOWA Holdings Co., Ltd.
Date of incorporation	March 11, 1937
Head Office	22nd Floor, Akihabara UDX, 4-14-1 Sotokanda, Chiyoda-ku, Tokyo 101-0021 JAPAN
President and Representative Director	Masao Yamada
Capital	36,437 million yen
Number of Employees	Approximately 9,100 persons (Consolidated figure, by end of March 2017)

Overseas



DOWA ECO-SYSTEM Co., Ltd.

- 1 DOWA ENVIRONMENTAL MANAGEMENT CO., LTD. (Suzhou, China)
- 2 PT. PRASADHA PAMUNAH LIMBAH INDUSTRI (Indonesia)
- 3 TECHNOCHEM ENVIRONMENTAL COMPLEX PTE. LTD. (Singapore)
- 4 DOWA ECO-SYSTEM SINGAPORE PTE. LTD. (Singapore)
- 5 WASTE MANAGEMENT SIAM LTD. (Thailand)
- 6 BANGPOO ENVIRONMENTAL COMPLEX LTD. (Thailand)
- 7 EASTERN SEABOARD ENVIRONMENTAL COMPLEX CO., LTD. (Thailand)
- 8 GOLDEN DOWA ECO-SYSTEM MYANMAR COMPANY LIMITED (Myanmar)

DOWA METALS & MINING Co., Ltd.

- 9 Vancouver Office (Canada)
- 10 Cariboo Copper Corporation (Canada)
- 11 NIPPON PGM AMERICA, INC. (USA)
- 12 Mexico office
- 13 MINERA TIZAPA, S.A. DE C.V. (Mexico)
- 14 Nippon PGM Europe s.r.o. (Czech Republic)
- 15 DOWA METALS & MINING (THAILAND) CO., LTD. (Thailand)
- 16 KEY METAL REFINING, LLC (USA)
- 17 DOWA METALS & MINING AMERICA INC. (USA)

DOWA METALTECH CO., LTD.

- 18 DOWA ADVANCED MATERIALS (SHANGHAI) CO., LTD. (China)
- 19 Dowa New Material (Shanghai) CO., LTD. (China)
- 20 DOWA METALTECH (THAILAND) CO., LTD. (Thailand)
- 21 Dowa Precision (Thailand) Co., Ltd. (Thailand)
- 22 Singapore branch
- 23 DOWALI PRECISION CO., LTD. (Taiwan)
- 24 DOWA METALTECH MEXICO, S.A. DE C.V. (Mexico)

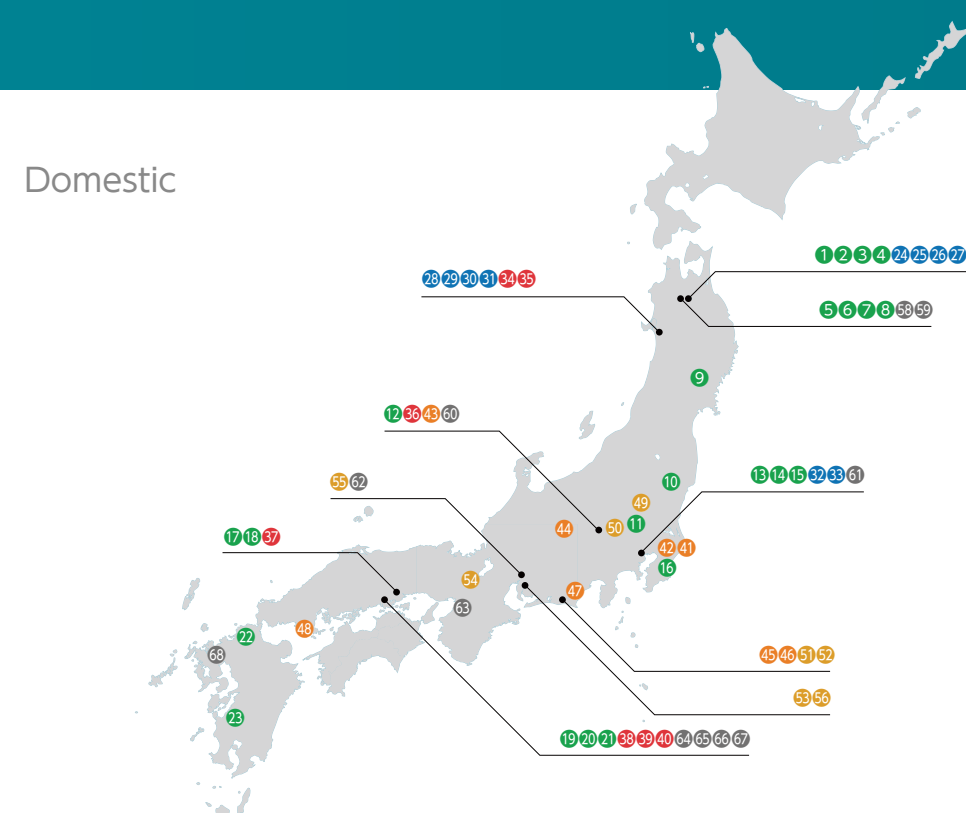
DOWA THERMOTEC CO., LTD.

- 25 DOWA THT AMERICA, INC. (United States of America)
- 26 KUNSHAN DOWA THERMO FURNACE CO., LTD. (China)
- 27 DOWA Thermotech (Thailand) Co., Ltd. (Thailand)
- 28 HIGHTEMP FURNACES LTD. (India)
- 29 PT. DOWA THERMOTEC INDONESIA (Indonesia)
- 30 PT. DOWA THERMOTEC FURNACES (Indonesia)
- 31 DOWA THERMOTEC MEXICO, S.A. DE C.V. (Mexico)

Headquarters and others

- 32 DOWA INTERNATIONAL CORPORATION (USA)
- 33 DOWA INTERNATIONAL CORPORATION San Jose Office (USA)
- 34 DOWA HOLDINGS (SHANGHAI) CO., LTD. (China)
- 35 DOWA HOLDINGS (SHANGHAI) CO., LTD. Shenzhen branch (China)
- 36 DOWA HD Europe GmbH (Germany)
- 37 DOWA HOLDINGS (THAILAND) CO., LTD. (Thailand)

Domestic



DOWA ECO-SYSTEM CO., LTD.

- 1 GREEN FILL KOSAKA CO., LTD.
- 2 ECO-SYSTEM RECYCLING CO., LTD., North Japan Plant
- 3 ECO-SYSTEMS KOSAKA CO., LTD.
- 4 AUTO RECYCLE AKITA CO., LTD.
- 5 Environmental Technology R & D Center
- 6 ECO-SYSTEM AKITA CO., LTD.
- 7 ECO-SYSTEM HANAOKA CO., LTD.
- 8 ECO-RECYCLE CO., LTD.
- 9 DOWA TSUUN CO., LTD.
- 10 MELTEC IWAKI CO., LTD.
- 11 MELTEC Ltd.
- 12 ECO-SYSTEM RECYCLING CO., LTD., East Japan Plant
- 13 ECO-SYSTEM JAPAN CO., LTD.
- 14 GEOTECHNOS CO., LTD.
- 15 E&E Solutions Inc.
- 16 ECO-SYSTEM CHIBA CO., LTD.
- 17 ECO-SYSTEM SANYO CO., LTD.
- 18 OKAYAMA KOYU CO., LTD.
- 19 ECO-SYSTEM RECYCLING CO., LTD., West Japan Plant
- 20 ECO-SYSTEM OKAYAMA CO., LTD.
- 21 BIODIESEL OKAYAMA CO., LTD.
- 22 KOWA SEIKO CO., LTD.
- 23 Act-B Recycling Co., Ltd.

DOWA METALS & MINING CO., LTD.

- 24 Metallurgical Laboratory
- 25 KOSAKA SMELTING & REFINING CO., LTD.
- 26 NIPPON PGM CO., LTD.

DOWA ELECTRONICS MATERIALS OKAYAMA CO., LTD.

- 27 AKITA RECYCLE & FINEPACK CO., LTD.
- 28 AKITA ZINC CO., LTD.
- 29 AKITA ZINC SOLUTIONS CO., LTD.
- 30 AKITA RARE METALS CO., LTD.
- 31 AKITA ZINC RECYCLING CO., LTD.
- 32 Acids Co., Ltd.
- 33 ZINC EXCEL CO., LTD.
- 34 Semiconductor Materials Laboratory
- 35 DOWA SEMICONDUCTOR AKITA CO., LTD.
- 36 Electronics Materials Laboratory
- 37 DOWA F-TEC CO., LTD.
- 38 Advanced Fine Materials Laboratory
- 39 DOWA ELECTRONICS MATERIALS OKAYAMA CO., LTD.
- 40 DOWA IP CREATION CO., LTD.

DOWA METALTECH CO., LTD.

- 41 NEW NIPPON BRASS CO., LTD.
- 42 HOEI SHOJI CO., LTD.
- 43 DOWA HIGHTECH CO., LTD.
- 44 DOWA POWER DEVICE CO., LTD.
- 45 Technology center
- 46 DOWA METAL CO., LTD.
- 47 DOWA METANIX CO., LTD.
- 48 TOKUYAMA-DOWA POWER MATERIALS CO., LTD.

DOWA THERMOTEC CO., LTD.

- 49 DOWA THERMOENGINEERING CO., LTD. Moka plant
- 50 DOWA THERMOENGINEERING CO., LTD. Ohta plant

Headquarters and others

- 51 DOWA THERMOENGINEERING CO., LTD. Hamamatsu plant
- 52 DOWA THERMOENGINEERING CO., LTD. Hamamatsu-kita plant
- 53 DOWA THERMOENGINEERING CO., LTD. Chukyo-Handa plant
- 54 DOWA THERMOENGINEERING CO., LTD. Shiga plant
- 55 CEMM CO., LTD.
- 56 TONETSU KOHSAN CO., LTD.
- 57 DOWA TECHNO RESEARCH CO., LTD.
- 58 UNEKURA MINING CO., LTD.
- 59 AKITA ENGINEERING CO., LTD.
- 60 DOWA TECHNOLOGY CO., LTD. Kanto Techno Center
- 61 Headquarter
- 62 Dowa Group Nagoya Branch
- 63 DOWA Group Osaka Branch
- 64 Dowa Technology CO., LTD. Seibu Techno Center
- 65 DOWA TECHNO ENGINEERING CO., LTD.
- 66 YOWA ENGINEERING CO., LTD.
- 67 DOWA KOHSAN CO., LTD.
- 68 Dowa Group Kyushu Branch

As of March 31, 2017

CSR Policy and Plan

DOWA group is proceeding on basis of the CSR plan targeting year 2020.

■ CSR plan and the concept of goals

Putting “Vision for 2020” in 4 priority areas, Cooperate Governance, Safety, Environment and Society as the mid-term goal, we have set up the action plan for realizing it as a single-year initiative and goal considering it as a focus measure to be taken to achieve the goal. For details about sector-wise actual results and initiatives in FY2016, please see the field report from the next page.



Areas	CSR Policy	Mid-term Goal “Vision for 2020”	Focus Measures	Indicator	Goal for 2020	Activity Plan for FY2017	
						Initiative	Goal
Corporate governance Governance	<ul style="list-style-type: none"> ● We will aim to be an open and transparent company. ● We will endeavor in anti-corruption efforts including anti-bribery measures taking into consideration the international agreement. ● We will take CSR into consideration in our procurement. 	<ul style="list-style-type: none"> ● Healthy business management is promoted by ensuring sufficient functions, appropriate information disclosure and transparency in the internal control system ● Business management which does not give rise to fraud and corruption of any kind is promoted, by individual employees carrying out appropriate activities based on the “DOWA Group’s Values and Standards of Conduct” ● CSR is promoted throughout the supply chain by building partnerships with business connections 	Strengthening of internal control and governance	No. of important deficiencies to be disclosed	0	Conducting briefing sessions for internal control	Briefing sessions to senior executives and representatives Number of participants: 140 or more
			Strengthening of compliance and risk management	Implementation rate of internal education and briefings	100%	Supporting internal control activities of domestic and overseas companies	10 companies domestic and overseas
			CSR procurement promotion	Supplier survey coverage rate *Excludes contractors	Transaction amount base 80%	Preparation of easy-to-answer questionnaire Expansion of research scope	Review of question items Development towards important suppliers in industries other than manufacturing
Safety Safety	<ul style="list-style-type: none"> ● All employees will take part spontaneously in safety activities to improve the level of health and safety in the workplace, based on our basic philosophy of “Safety is the top priority.” ● We are committed to preventing accidents at work and supporting health of our employees. 	<ul style="list-style-type: none"> ● The occupational safety risks of the workplace are managed and minimized appropriately, and a comfortable and safe working environment is realized 	Raising the company-wide safety level	Frequency rate Severity rate	0.1 or less 0.01 or less	Enhancement of cross-sectoral efforts based on area	Frequency rate 0.9 or less Severity rate 0.02 or less
			Strengthening of safety education in subsidiaries outside Japan	No. of times education is implemented No. of persons educated	Total 20 times Total 200 persons	Continuous implementation and follow-up confirmation through visit-to Japan education and on-site education.	Frequency: 7 times
Environment Environment	<ul style="list-style-type: none"> ● We will provide customers with products and services that contribute to building a resource recycling society. ● We will reduce environmental burdens and risks in our business activities. ● The management and employees together take part in environmental conservation activities. ● We will promote business activities considering biodiversity. 	<ul style="list-style-type: none"> ● Responsible for the core of the international resources recycling network in Asia and the Pacific rim area ● Effective reduction of CO₂ emissions per unit has been achieved by various energy saving measures and active use of renewable energy ● The environmental risks of the workplace are managed properly, and environmental accident-generation risks are minimized ● Biodiversity conservation activities are promoted in collaboration with the upstream and downstream of the supply chain 	Strengthening of recycle business: Collection volume / Recycling volume / Increase in no. of elements etc.	Collection volume of materials for recycling	Increase from the preceding fiscal year	Strengthening of collection of materials for recycling outside Japan	Increase from the preceding fiscal year
			Improving the utilization rate of renewable energy Strengthening energy saving initiatives	Emission amount of CO ₂ emissions per unit	15% reduction as compared to FY1990	Promotion of renewal of energy-saving equipment at large-scale disposal sites	Total greenhouse gas emission 1% reduction from the preceding fiscal year
			Minimization of environmental accidents risk and strengthening of response capabilities <small>*Environmental accidents: Incidents whose impact is felt outside the company, and reported to the competent administration</small>	No. of environmental accident occurrences	0	Hosting a seminar for environmental conservation for outside partners	3 times
			Understanding of biodiversity risks of suppliers Status confirmation of biodiversity consideration in mines	Suppliers and mines survey rate	100%	Strengthening of disaster prevention measures against abnormal weather and natural disasters at mine drainage treatment facility	Formulation of countermeasure plan
Society Society	<ul style="list-style-type: none"> ● We will aim to create a workplace where diversity and human rights of employees are respected, and each person can demonstrate maximum capacity with satisfaction and pride. 	<ul style="list-style-type: none"> ● While diverse human resources mutually respect each other, employees themselves select the diverse work styles commensurate with their respective life stages and styles, and the company and teams support each other ● A culture of fair evaluation & treatment, and fostering is established, and employees experience growth, results and satisfaction. And, an organization in which employees compete with each other and support each other is created by the employees themselves ● We will promote social contributions, reflecting unique characteristics of each local community. 	Promoting diversity	Employment rate of people with disabilities Attendance rate of education and promotion of participation by women	2.0% 100%	Expansion of a global human resources Strengthening and training of employees hired overseas and locally Aggressive development of career and employment Implementation of training for female employees and managers	— — 20 persons Twice
			Promoting work-life balance	Annual paid leave acquisition rate	70%	Thorough knowledge within the company of the various systems Encouragement of annual leave Promotion of measures to reduce working hours	Updating and making publicity of handbooks to explain a system Acquisition rate 60% Group company working time management policy, standard formulation and execution
			Training of both appraisers and persons being appraised Strengthening in-house education of human resources Voluntary career development support for employees	Employee satisfaction - Business planning system - Educational system and details	90% 70%	Implementing training of appraisers and persons being appraised Conducting system surveys New employee education (Until 3 years after joining the company)	Participants 300 persons Practitioner 1100 persons Students 140 persons
			Promoting social contribution	—	—	Development activities for children who will be responsible for next generation Awareness activities aiming at community contribution	3 times 3 times

Corporate
Governance

Governance

To continue to be a company that is trusted by the society, the DOWA group has positioned strengthening of corporate governance as a key management issue, and is working on it based on “DOWA Group’s Values and Standards of Conduct”

CSR Policy

- We will aim to be an open and transparent company.
- We will endeavor in anti-corruption efforts including anti-bribery measures taking into consideration international agreements.
- We will take CSR into consideration in our procurement.

Priority
Measure

Promoting CSR Procurement

Q · C · D+Sustainability

As for the characteristics of the DOWA Group’s CSR procurement, to the existing quality (Q), cost (C) and delivery (D), we have added sustainability (S). This “S” means that we make an effort for social responsibility such as considering human rights and environmental conservation.

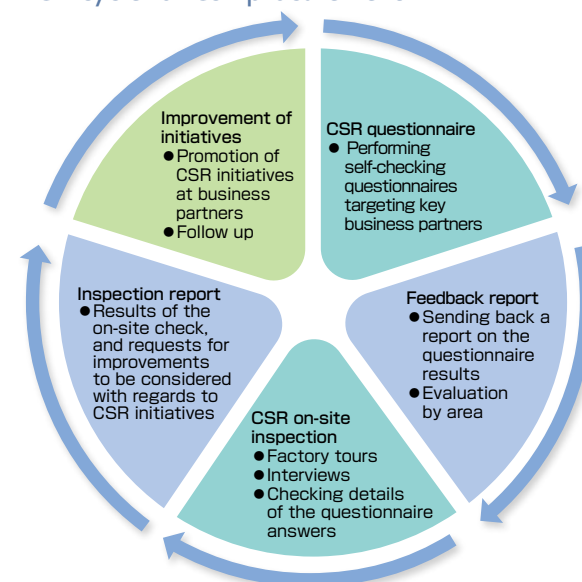
Collaboration with Business Partners

At the DOWA Group, we do a questionnaire through a self-checklist in order to continuously grasp and evaluate efforts by business partners with regards to CSR activities. The self-checklist is a self-assessment by the partners themselves about how they promote the company’s CSR and their understanding of the actual situation. We send a feedback report about the results, and for partners who are thought to have made insufficient CSR efforts on certain items, we urge them to work more proactively. In addition, for partners who are particularly important for our business, or for partners whose self-assessment results have not met the standards, we do confirmation visits. Based on the results of the self-checking, we confirm things by doing interviews, checking documents and touring plants. If we see instances where the guidelines are not being met, we will point out the three stages of improvement, requesting and

 [CSR procurement policy](http://www.dowa-csr.jp/en/csr/csr_procurement.html)
http://www.dowa-csr.jp/en/csr/csr_procurement.html

consideration. At the post inspection meeting, we aim to agree on the results of the inspection by explaining the results and doing question and answer, but in addition to requesting improvements for issues that we have pointed out, we also praise appropriate arrangements and outstanding initiatives. In these visits, a team made up of people from the environmental safety and procurement departments do the inspections, but since personnel at our factories that use the material in question are also members of the team, we aim to strengthen the relationship of trust with the business partner and to further spread CSR procurement activities within the company.

PDCA cycle for CSR procurement



The six areas of self-checking

- | | |
|--|---|
| 1 Legal compliance and fair trade | 1) Human rights and labor
2) Safety and health
3) Environmental conservation
4) Society and community contribution |
| 2 Optimum quality and reasonable pricing | |
| 3 Construction of a stable supply system | |
| 4 Sustainability | |
| 5 Protection of information | |
| 6 Management system | |

On-site Visit to Check a Lime Mine

“Slaked lime”, which is procured by many of our factories, is an important material used for such environmental conservation measures as water treatment and exhaust gas treatment. Limestone, which is the raw material for slaked lime, is one of the few resources that Japan is self-sufficient in, and it is possible to procure it from domestic mines.

In November 2016, we visited a lime mine of our business partner Miyagi Lime Industry Co., Ltd. to an on-site check based on the CSR procurement guidelines. Conservation of the surrounding environment and securing the safety of workers are important in the operation of the mine. For this reason, we did the inspection with an emphasis on the environment and safety, and their management systems for these.

With regards to business continuity in the event of a disaster, in addition to emergency measures such as establishing a communication network and setting up satellite phones, we found that they are working on a stable and reliable supply by promoting partnerships with the mines of other companies located in remote areas.



Limestone is mined and produced through the bench-cut mining method at an open-pit mine



The opening meeting

In the interviews and document confirmation, we checked the safety plan and the situation for formulating safety policy. We confirmed that appropriate measures were taken at the site with regards to wastewater treatment, measures to deal with dust and management of dangerous substances. Particularly in the measures to deal with flying dust, we learned that in cooperation with local companies, they carried out cleaning activities in the surrounding area using road cleaning trucks, and were making efforts rooted in the local community.

By confirming the implementation status of CSR activities that cannot be grasped from the questionnaire results, we believe that it is important not only from the aspect of risk management, but also to increase the reliability of the supply chain. In addition, there are many things that we can learn through the CSR procurement practices, and there are also many new things that we can come to realize from the on-site inspections. It is vital to have the understanding and cooperation of business partners for the inspections. In order to share the direction that we are aiming for, and to deepen understanding about the necessity of CSR procurement, we have also begun to explain the trends and social issues in the international community, in addition to explaining our procurement policies and guidelines from the audit of the previous fiscal year. While cooperating with our business partners, in future we will keep learning together and work with the aim of building a better supply chain.

Progress of Activities

Following is the status of activities for FY2016 and the plan for FY2017 in the field of Corporate Governance.

FY2016 Results

Corporate Governance Focus Measures	Tasks	Indicator	Evaluation	Main Results
Strengthening of internal control and governance	Distribution of internal control handbook	Briefing sessions to senior executives and representatives	A	160 persons
		Number of participants: 140 or more	A	Distribution in English language
Strengthening of compliance and risk management	Supporting internal control activities of domestic and overseas companies	Domestic and overseas 10 companies	A	11 companies
Promotion of CSR procurement	Supplier CSR audit	6 companies or more	A	Audit implementation: 9 companies
	Preparation of CSR audit procedure	—	A	Creation of CSR audit procedure

FY2017 Initiatives and Goals

Strengthening of internal control and governance	Implementation of briefing session related to internal control	➔	Briefing sessions to senior executives and representatives	Number of participants: 140 or more
Strengthening of compliance and risk management	Supporting internal control activities of domestic and overseas companies	➔	Domestic and overseas 10 companies	
Promotion of CSR procurement	Preparation of easy-to-answer questionnaire	➔	Review of question items	Development towards important suppliers in industries other than manufacturing

TOPICS

The Securities Analysts Association of Japan “Excellence in Corporate Disclosure”

The DOWA Group was selected by the Securities Analysts Association of Japan as a “company that continues to maintain a high-level of disclosure” (steel and nonferrous metal department) as part of the association’s “FY 2016 Award for Excellence in Corporate Disclosure”. This award has been given annually since 1995 for the purpose of improving the disclosure of corporate information. It evaluates the quality, quantity, timing and disclosure stance for information disclosed by companies, such as financial results. We received this award for having stably maintained a high level of disclosure for several years. We will continue to work on improving the quality of our disclosures to deepen understanding about the DOWA Group through the fair, timely and appropriate disclosure of information.

 DOWA Group IR information
<http://www.dowa.co.jp/en/ir/index.html>



01

Corporate Governance

In accordance with the "DOWA Group's Values and Code of Conduct", the DOWA Group is working to realize highly transparent and open management, together with guaranteeing sound corporate management, and increasing the quality and efficiency of management.

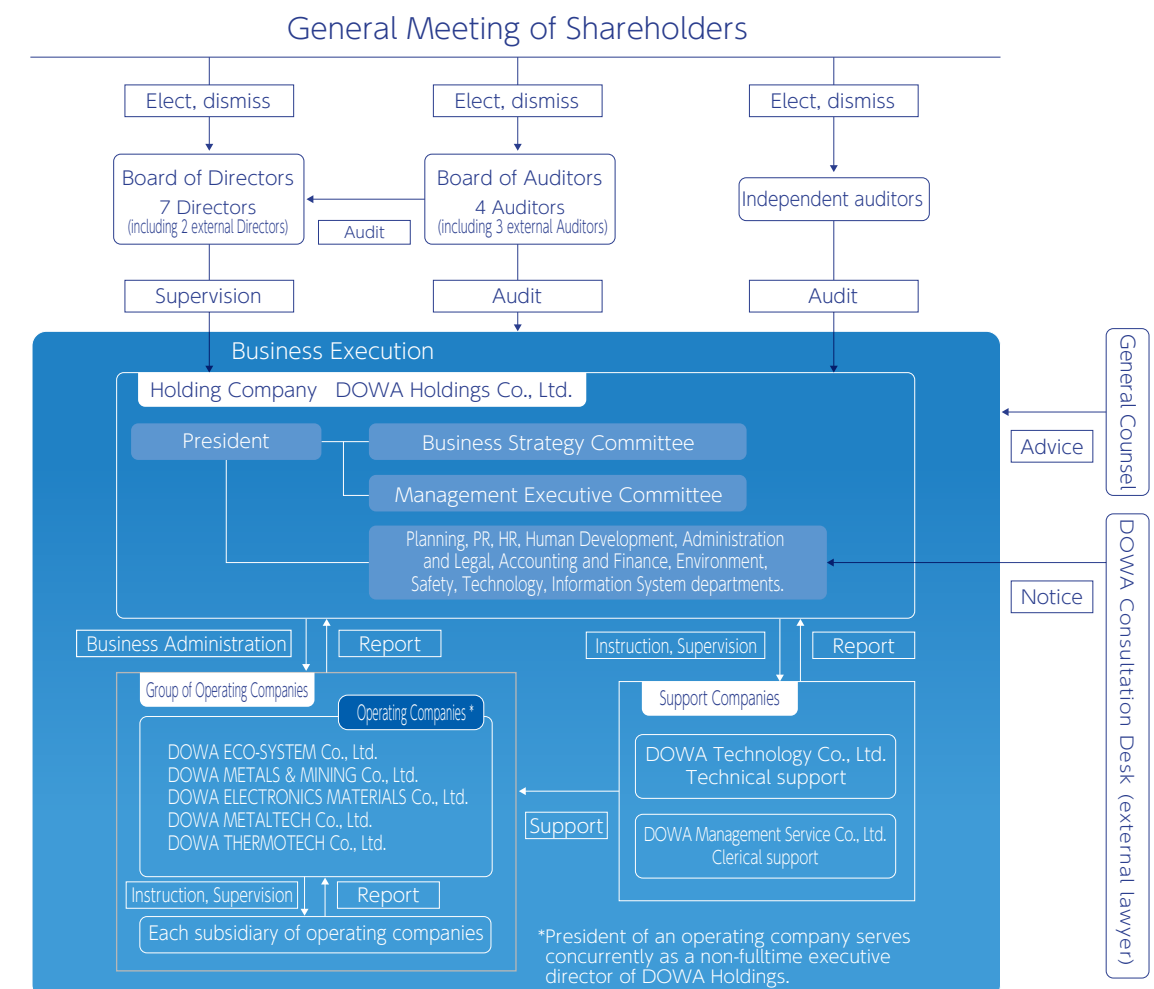
Corporate Governance System

 For details, please refer to the report on our corporate governance.
http://www.dowa.co.jp/en/about_dowa/governance.html

The DOWA Group adopted the executive officer system to soundly and effectively manage the organization, to speed up decision-making and for effective management. It also adopted the holding company system to separate business

units as subsidiaries.

In addition, by (1) establishing a Board of Auditors, and (2) appointing outside directors, we aim to ensure the soundness of management.



02

Internal Control Activities

To strengthen corporate governance, we encourage each company in the group to share the basic policy and the system of internal control with DOWA Holdings (Holdings Company) and also entrust each company to conduct their own activities which shall exploit each company's uniqueness. This ensures effective and efficient internal control based on the holding company system.

Internal Audit

The internal audit based on the internal audit rules prescribed by the DOWA group involves all corporate activities, such as accounting audit, legal audit, safety and environmental audit etc. Our CSR department and each of the related departments and group companies cooperate with each other and conduct the internal audit, and report its results to the directors,

auditors and relevant departments.

In FY2016, we conducted briefings at 7 domestic bases, 1 overseas base, internal audits in 12 companies and overseas internal audits in 9 companies in Europe, South East Asia and China, as a part of strengthening the internal control.



Please refer to our annual report about the basic policy for the internal control system and its operation.
<http://www.dowa.co.jp/en/ir/library/annual.html>

03

Compliance

Within the DOWA Group we have positioned “legal compliance” as the foundation for corporate management, and based on the "DOWA Group’s Values and Code of Conduct", we are working on measures to strengthen internal control and education as core areas. In addition, each company in the DOWA Group aims to improve the awareness of compliance as they deal with the annual internal audit (legal audit).

04

Risk Management

The DOWA group addresses risk management to properly control risks that may hinder the realization of our business philosophy and achievement of our business plans, and to fulfill our social responsibilities, and contribute to the improvement of our sustainable corporate value. Among the risks that beleaguer the group, the board of directors is responsible for the “Business risks” and the CSR department is responsible for the “CSR risks” in cooperation with other departments.

Business Continuity Plan (BCP) Initiatives

The DOWA group has prepared a business continuity plan (BCP) by location and business entity to respond to natural disasters, such as large-scale earthquakes, typhoons, floods caused by torrential rains etc., and is making efforts to avoid risks so that business activities can continue when there is an emergency. BCP was reviewed on a regular basis and in FY2016, 15 business subsidiaries reviewed the supposed targets and countermeasures of BCP. In addition, we strive to maintain and improve the initial response capability by conducting emergency drills once a year, establishing initial emergency response headquarters at an enterprise level and in business companies and each division of the business unit, confirming safety of employees and reporting the damage situation between each emergency response headquarters.

Survey of BCP Formulation in Supply Chain

The DOWA group mainly deals with B to B business and a disruption of the supply chain means a strong impact on the

production and sales of customers at delivery destinations, therefore, through our CSR procurement, we are checking the formulation of BCP regarding rapid business restoration and its continuation in the event of a disaster, for the benefit of our main partners. For the business partners who are not yet decided, we explain the importance of the initiatives and request strengthening of BCP countermeasures.

DOWA Hotline Desk

With an aim of encouraging the early detection of risks associated with corporate activities and making employees find the workplace environment safer and more comfortable, we have established a "DOWA Hotline desk" that allows direct consultation with corporate lawyers. Reporting is done through intranet, poster, etc. in which the confidentiality of reporting, etc. is maintained and guaranteed that the whistleblower is not subjected to unfair treatment. To build a healthier partnership with business partners and collaborating companies, we have opened the window of the DOWA Hotline desk outside the company so that it can be availed by the employees of business partners and collaborating companies. At the desk, we maintain the confidentiality of consultations and opinions received and respond promptly and appropriately.

05

Relationship with National and Local Governments and Industries

The DOWA Group is promoting activities related to public policies such as international collaboration, participating in councils and forums at government and industrial organizations, solving social issues, establishing and reviewing legal systems.

Example of Participation

DOWA Holdings President and Representative Director, Masao Yamada	
February 2013~present	Member of the Central Environment Council, Ministry of Environment
December 2012~present	Chairman of the Waste Recycling Subcommittee, the Environmental Safety Committee, Keidanren (Japan Business Federation)

We are actively participating in international conferences hosted by Government agencies in Japan and other countries and are contributing to various policies from the industrial standpoint.

06

Participation in International Organizations and Consortiums

The DOWA group has been participating in the UN Global Compact (UN GC), which is a voluntary international corporate citizenship advocated by the UN, since 2009. The DOWA group is committed to respecting and implementing the GC’s ten principles in four areas of the Global Compact of human rights, labor, environment and anticorruption - these are geared towards sustainable development of society. Even in formulating CSR procurement policies and guidelines, we reflect the principles of global compact, such as respect for human rights and elimination of child labor.

Ten Principles of Global Compact

human rights

- 1 Businesses should support and respect the protection of internationally proclaimed human rights.
- 2 Make sure that they are not complicit in human rights abuses.

Labor

- 3 Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.
- 4 The elimination of all forms of forced and compulsory labor.
- 5 The effective abolition of child labor.
- 6 The elimination of discrimination in respect of employment and occupation.

Environment

- 7 Businesses should support a precautionary approach to environmental challenges.
- 8 Undertake initiatives to promote greater environmental responsibility.
- 9 Encourage the development and diffusion of environmentally friendly technologies.

Corruption Prevention

- 10 Businesses should work against corruption in all its forms, including extortion and bribery.

Global Compact Network, Japan
<http://www.ungcn.org/index.html>

07

Efforts for Human Rights and Corruption Prevention

Based on the 10 principles of the UN Global Compact, the DOWA Group prohibits child labor, forced labor and unfair discrimination due to nationality, race, ethnicity, religion, gender, age or disability, and works to prevent corruption. Regarding the consideration of human rights within the DOWA Group, we conduct a questionnaire annually of our business subsidiaries, including offices overseas, to try and grasp the current situation. In addition, for business subsidiaries in Japan, we are also working on human rights education for employees by holding seminars about mental health and power harassment in order to deepen understanding about human rights that will lead to good practices in the workplace.

Efforts for Human Rights Through the Supply Chain

In order to promote human rights initiatives with business partners through the supply chain, not only do we share our CSR policies and guidelines when making visits for CSR inspections, but we also explain about the human rights

situation overseas such as child labor and illegal labor. While in Japan it is hard to feel the immediacy of the human rights problem, we are working to gain understanding about the background of social issues and its relationship to companies.

Safety

Occupational health and safety is one of the most important themes in helping the DOWA group to promote CSR activities through business and with that thought we are developing various safety activities based on our basic philosophy, “Safety is the top priority”.

CSR Policy

- All employees will take part in safety activities with their own initiatives to improve the level of health and safety in the workplace, based on our basic philosophy of “Safety is the top priority.”
- We will prevent work-related accidents and support the sound health of employees.

Priority Measure Aiming to Raise the Level With the Lateral Function of Personnel and District Councils

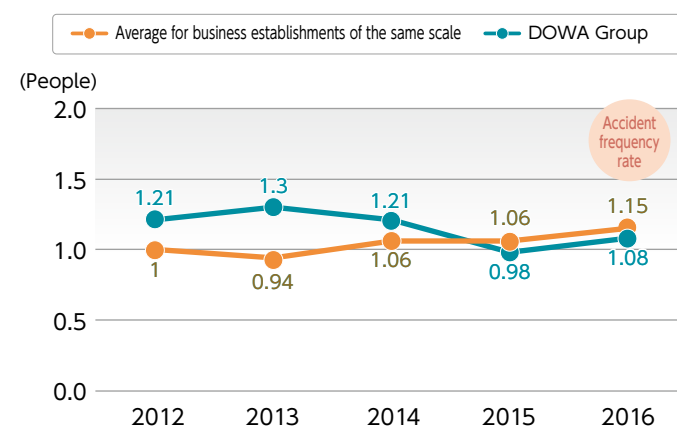
In order to prevent serious occupational accidents, it is most important to keep nipping minor accidents in the bud. At the DOWA Group we are currently promoting various initiatives throughout the whole company to prevent accidents.

Occurrence of Occupational Accidents

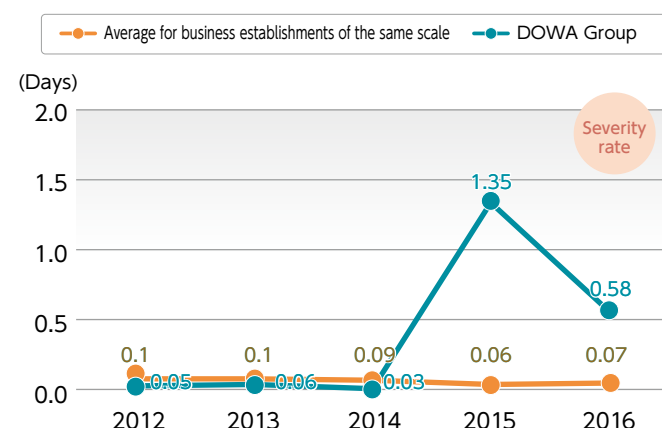
When looked at in the long term, the number of accidents at the DOWA Group as a whole is on a downward trend. Compared with the figures for business establishments of the same scale in the accident statistics of the Ministry of Health, Labor and Welfare, the accident frequency rate is 1.08 versus 1.15, but with regards to the severity rate that shows the degree of the accident, it continues to show a high value from last year. This is due to the occurrence of serious occupational accidents. In order to eliminate these, we share the situation through the whole company, and as management sends emergency safety notices to all the relevant places, we begin efforts towards intrinsic safety.

*Comparing the final FY 2015 accident statistics for 100 to 299 employees (the average number of employees at each DOWA business establishment).

Trend of the Occupational Accident Frequency Rate



Trend of the Occupational Accident Severity Rate



Frequency Rate	Represents the frequency of occupational accidents with the number of casualties caused by occupational accidents per one million working hours.
Severity Rate	Represents the severity of accidents with the number of work loss days per 1,000 working hours.

DOWA's Safety Activities

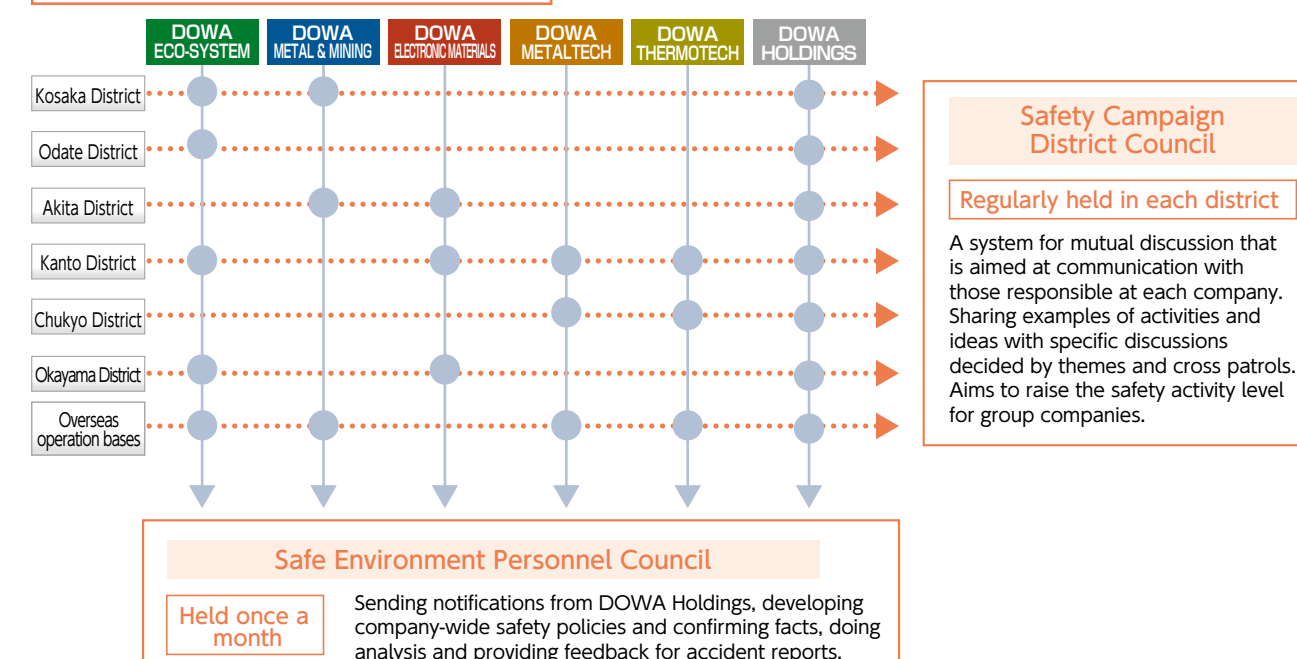
The “DOWA safety activities” that began in 2012 have been fully implemented as a company-wide initiative since 2014. It has had a certain effect with the current annual number of accidents decreasing by about half. The DOWA safety activities are something that everyone participates in from the top down to the bottom up, and we are pursuing various initiatives to make the 10 themes of the activities more effective. Among these, we are aiming to improve leadership and raise the level through sharing ideas and examples of activities by establishing places and mechanisms for exchange between the relevant personnel. This includes the “Safety Campaign District Council” where activity members of each district interact, and the “Safe Environment Personnel Council” where the safe environment personnel for the operating companies interact. With regards to incidences of accidents within the group, based on thorough introspection and analysis of the accidents, we take multifaceted countermeasures involving people,

facilities and management, and share them with the whole company. When a severe occupational accident occurs, we laterally implement measures to prevent it from happening again not only with the operating companies, but also including safety inspections by the environment and safety department of DOWA Holdings.

The 10 Safety Activity Themes

Reports on unsafe incidents	Risk assessments	Safety patrols	New employee education	Health and safety committees
Studying cases of incidents and accidents	Pointing out and calling for occupational safety methods	Risk simulation education	Inspection checklists	Workplace inspection tours of safety work

The Vertical and Horizontal Network



Risk simulation education



Workplace inspection tour of safety work

Status of Activities

Following is the status of activities in the area of occupational safety in FY 2016, and the plan for FY 2017.

FY 2016 Results

Safety Priority Measures	Tasks	Goal	Evaluation	Main Result
Raise the safety level for the whole company.	Strengthen initiatives across district units.	Accident frequency rate below 0.9	C	1.08
		Accident severity rate below 0.02	C	0.58
Strengthen safety education for subsidiaries overseas.	Increase the countries targeted for educational visits to Japan and providing education.	More than four countries	A	Four countries & regions.

FY 2017 Initiatives and Goals

Raise the safety level for the whole company.	Strengthen initiatives across district units.	➡	Accident frequency rate below 0.9 Accident severity rate below 0.02
Strengthen safety education for subsidiaries overseas.	Continue educational visits to Japan and providing education, and confirming follow-up.	➡	Number of times: Seven times

TOPICS

Safety Activities Using IT: Digitization of the Operation Procedure Manual

The operation procedure manual is a document that shows the method for performing each operation in a process safely, reliably and efficiently. The operation procedure manual is properly followed as the basis for safety.

At Act-B Recycling Co., Ltd., which does recycling of home electric appliances in Kumamoto Prefecture, in order to improve work efficiency and the level of safety activities, we digitized the operation procedure manual so that the necessary information can be called up on monitors and tablets that each line has been equipped with. This made the system easy to use from the viewpoint of managing updates and the ability to search.

In addition, it became possible to input information on unsafe incidents into the digitized operation procedure manual (incidents that are not serious accidents, but are examples that are one step short of becoming serious, and it would not be unusual if they directly led to serious accidents). Together with making it possible for employees to share safety information in real time, it aims to be a mechanism to speed up the sharing of information by automatically summarizing and listing the unsafe incidents that have been submitted, and reporting them via email to the managers in turn.

In future, we would like to be able to record the actions of managers, advance the unification and visualization of information and ensure that the operation procedure manual is correctly understood and implemented step by step.



01

Occupational Safety Initiatives

Based on the DOWA group's Safety and Health Policy that "All employees shall voluntarily work on initiatives and aim for the improvement of safety and health standards" from the standpoint of the basic policy being, "Safety is the top priority", we have organized safety and health committees at all business sites and are developing various safety activities based on the annual safety and health plan.

■ Holding Risk Assessment (RA) Presentations

In June of each year, the DOWA Group holds a risk assessment presentation with the aim of improving efforts at each company by sharing the outstanding initiatives of group companies and forming a network of personnel. At the sixth presentation that was held this year there were presentations by the six companies in Japan and talks by two companies invited from overseas. Each company elaborated what they had done, such as activities associated with improving business, and activities involving stakeholders from outside of the company.



■ DOWA Safety Award in Thailand

At a hotel in Bangkok, each office of the DOWA Group in Thailand participated in the DOWA Safety Award in Thailand where outstanding safety initiatives were announced. There were presentations on a wide range of subjects including risk assessment, risk prediction training, safety patrols, unsafe incidents and 5S activities. In some cases, the results of educational visits to Japan the previous year were included in the presentations. DOWA Thermotech Thailand won, giving a presentation about "log-out and tag-out activities" to lock with a key, raise the alarm and prevent operation of the shutdown power switch. The details of these activities were shared as good examples at safety conferences in Japan and China.



02

Promotion of Health Management

At the DOWA Group, through the health insurance association, we are developing various initiatives for promoting the health management of employees and their families, such as promoting physical check-ups and mental health measures, and supporting sports events.

■ Health Check Up

The departments and business units are taking initiatives for all employees to have their regular health checkup done every year to raise their awareness towards health, so that they can maintain their physical and mental health. In addition to this, we are also making the most of various subsidy programs such as medical checkups, gynecological examinations, influenza vaccination, etc. We have also taken various initiatives directed at improving the consultation rate of specific medical checkup intended for insured persons of age 40 or more and nonworking dependents by providing information through group newsletters, etc.

Further, provide a subsidy system for sporting events for employees through sports and exercise so that they continue to maintain and promote a healthy body.

■ Mental Health Initiatives

At the DOWA Group, we operate a mental health counseling system for the mental health management of employees, and have established a dedicated telephone number for telephone consultations with specialized counselors (clinical psychologists). We have established a strictly private point of contact outside of the company that anyone can contact with peace of mind. Moreover, from FY 2013, in order to encourage people to be aware of their own stress, and to improve the workplace environment that is the cause of stress, we have introduced a stress check tool so that people can self-diagnose their mental health, and we are working to prevent employees from having mental health problems.

Environment

The DOWA Group recognizes the impact of business activities on the environment, positions environmental and social initiatives through its core business, and works for the reduction of the environmental impact on its business as an important issue in management and is working on a group wide initiative.

CSR Policy

- We will provide customers (customers, regions, etc.) with products and services that contribute to building a resource-recycling oriented society.
- We will reduce environmental burdens and risks in our business activities.
- The management and employees will together participate in environmental conservation activities.
- We will promote business activities considering biodiversity.

Priority Measure Management of Suspended or Abandoned Mines and Conservation of the Aquatic Environment

While the DOWA Group has its roots in the mining and smelting business, we have currently stopped business operations at all the nonferrous metals mines that we own in Japan. For such mines, in order to protect the environment of the surrounding area, it is necessary to maintain and improve pollution prevention even after the operations have stopped, such as disasters happening from cave-ins or landslides, or preventing environmental pollution due to waste and wastewater.

Management of Suspended or Abandoned Mines

As for suspended or abandoned mines, while this refers to mines where operations have been suspended or the mining rights have lapsed, administrators regularly do walk-around checks of the mines and disposal facilities. It is necessary to continue managing them in order to prevent mine pollution and harm to third parties. Unekura Mining Co., Ltd., which was founded in 1956, has two offices located in Odate, Akita Prefecture and Misaki, Okayama Prefecture, and manages over 20 suspended or abandoned mines from Hokkaido to Shimane, including wastewater treatment. Their business includes a wide range of activities, such as management of the mining sites, maintaining and managing storage sites and facilities where slag is piled up, managing the water quality of mine wastewater and monitoring the water quality of the surrounding area. The company strives to protect the environment and prevent disasters on a daily basis. Particularly for mines where nonferrous metals have been mined, even after operations are suspended or stopped, such treatment is especially important because there is the possibility that the mine wastewater will continue to contain heavy metals and such.



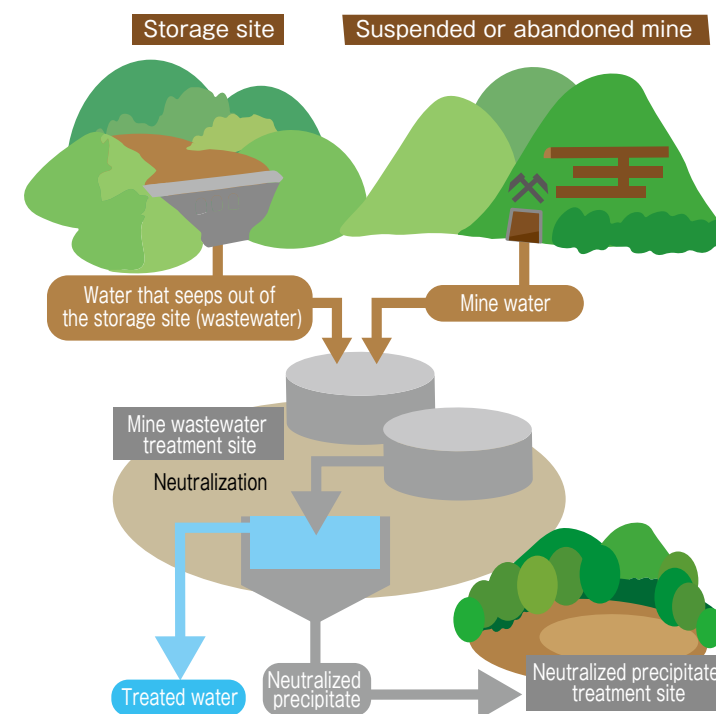
Preventing mine pollution is something that happens while dealing with nature. This maintenance requires specialized skills and knowledge as facilities at the mines can be damaged due to impact from the weather, such as rainfall and snowfall, and fluctuations in the amount of treated water and the quality of the water. In addition, during tours of inspection, sometimes there are encounters with pit vipers, Japanese serows and bears on forest trails, requiring quick judgment and reactions.



In order to reduce the burden of such maintenance, currently the major treatment facilities are remotely monitored, and we are aiming to improve the efficiency of operations with automatic recording of the monitoring status, and the incorporation of a system that automatically reports when there is abnormal turbidity or a power outage.

Initiatives to Conserve the Aquatic Environment

At nonferrous metal mines that have been closed, part of the ore remaining in the mine may come in contact with groundwater or the oxygen in the air, causing an oxidation reaction to occur, and water that contains acidic water or heavy metals could flow out. In addition, with the mined ore, there is the risk of water quality or agricultural land becoming polluted as wastewater seeps into rivers with harmful heavy metals due to rainwater or groundwater from storage sites where things with low metal content have been discarded. The treatment of mine wastewater is important and indispensable in order to maintain sound water circulation and a sustainable environment for water use.



The mine wastewater cannot be discharged into rivers unless the pH, heavy metal content and suspended solids content are below the standard for drainage water. As the main treatment method, we utilize a method of doing alkali neutralization with lime, and then releasing into rivers the water from which the heavy metals have been removed. Among the water resources used for processing in the entire DOWA Group, the largest amount is “sea water” that is used as cooling water, but the input amount for “mine wastewater” is the next largest, and we are carrying out processing 24 hours a day 365 days a year.

Unekura Mining Wastewater Treatment Technology

The treatment of mine wastewater at suspended or abandoned mines needs to be continued semi-permanently, and an efficient processing method that is low cost and has little environmental impact is required. At Unekura Mining, the company is working to improve the mine wastewater treatment process by introducing various technologies, such as passive treatment that utilizes natural purification, processing that uses thermal spring wastewater and the neutralization method with iron oxidizing bacteria.

Treatment Facilities Without Electricity

Some mining facilities do not have power transmission lines, and some treatment sites do not have electric power facilities. For this reason, we introduced self-oscillating equipment in which lime is input according to the amount of water so that treatment can be carried out without using electric power, and efficient neutralization treatment can be done. The self-oscillating equipment was developed in-house using the principle of “shishi-odoshi” (a bamboo tube that when filled with water revolves to empty). It contributes to energy savings and lower costs.



The Recycling of Neutralized Precipitate

The “neutralized precipitate” that occurs from the treatment of mine wastewater is mainly composed of gypsum and iron hydroxide. While it is waste if left as is, through processing it is used as a deodorizer. In addition, by effectively using the iron that is in the mine wastewater, we produce and recycle inorganic flocculant “polyferric sulfate” (product name: Bioferric). Bioferric is used in sewage treatment plants and helps with waste reduction and the conservation of the aquatic environment.



Status of Activities

Following is the status of activities in the area of the environment in FY 2016, and the plan for FY 2017.

FY 2016 Results

Environment Priority Measures	Tasks	Goal	Evaluation	Main Result
Promotion of resource recycling	Strengthen overseas collection of recycled materials.	Increase from the previous FY	A	Increase of 6% from the previous FY
Environmental impact & risks	Promotion of energy-saving equipment renewal at large-scale emission sites.	Reduce total greenhouse gas emissions by 1% compared to the previous FY	C	Increase of 1.1% from the previous FY
Environmental conservation activities	Mutual inspection tours of environmental management systems.	More than five districts	A	6 districts
Biodiversity	Formulation and execution of conservation action plans.	Planning and execution	C	Not Conducted

FY 2017 Initiatives and Goals

Promotion of resource recycling	Strengthen overseas collection of recycled materials.	➡ Increase from the previous FY
Environmental impact & risks	Promotion of energy-saving equipment renewal at large-scale emission sites.	➡ Reduce total greenhouse gas emissions by 1% compared to the previous FY
Environmental conservation activities	Organize external environmental conservation seminars.	➡ 3 times
Biodiversity	Strengthen disaster prevention measures at mine wastewater treatment facilities for abnormal weather and natural disasters.	➡ Formulation of a plan

TOPICS

Contribution to the Environment in Asia The Landfill Site in Myanmar

In Myanmar, where economic liberalization policies are progressing, there has been a rapid increase in companies from overseas entering the country, and it is thought that the manufacturing industry will continue to expand in the future. On the other hand, waste generated by these companies will also increase. While there is a growing need for expanded treatment abilities and proper disposal within Myanmar, previously there were no landfill sites that met international standards.* In industrial parks, factory waste was treated the same as general waste.

Utilizing their experience until now, DOWA Eco-System, which has waste treatment businesses in such Southeast Asian countries as Thailand, Indonesia and Singapore, established "Golden DOWA Eco-System Myanmar Co., Ltd." in the Tirawa Special Economic Zone in Myanmar, becoming the county's first controlled landfill site. From 2016, it began accepting mainly industrial waste. This is the first instance for a Japanese company to proceed overseas with the establishment of a full-scale commercial landfill site.

The landfill site, which has a capacity of about 90,000 m³, has advanced processing technology that is required for chemical waste and oil and natural gas drilling sludge, so that it is possible to safely treat and dispose of waste. In response to requests from various industries, it provides comprehensive waste management services, including collection and transportation, and intermediate treatment and recycling according to the properties of the waste.

The DOWA Group will raise awareness of the importance and responsibility of appropriate waste treatment in Myanmar, and would like to contribute to sustainable development that is compatible with environmental conservation.

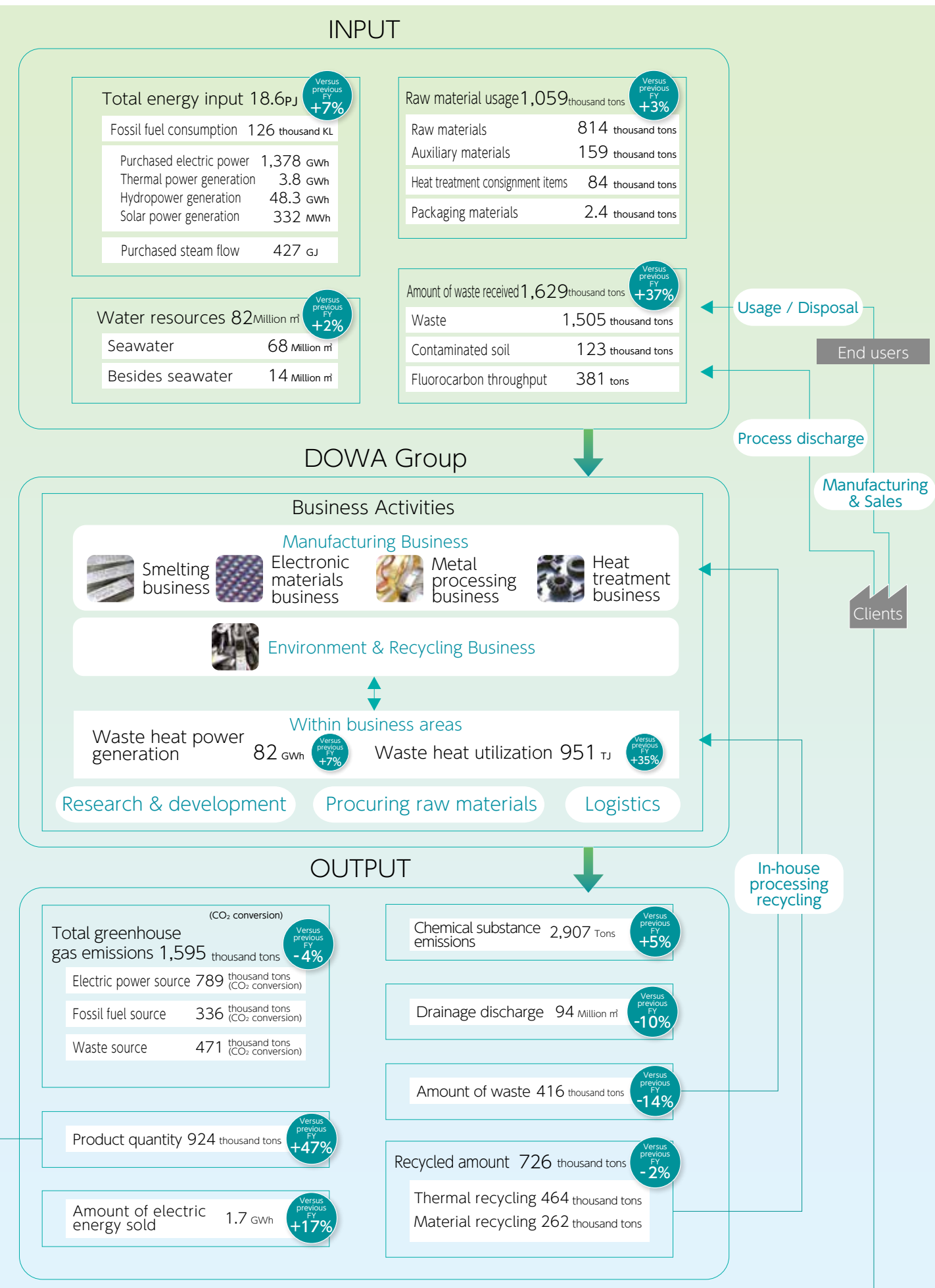


*The construction standards of the U.S. Environmental Protection Agency (EPA).

FY 2016 Material Balance

At the DOWA Group, we quantitatively understand the INPUT of the necessary resources and energy at each stage of the life cycle of the business, and the balance of

the OUTPUT of CO₂ and waste generated from activities. We advance our business activities with a consideration for material balance.



01

The DOWA Group's Basic Environmental Policy

The DOWA Group has established the "Basic Environmental Policy" to position initiatives for environmental conservation as an important issue in corporate management. In addition to conducting business activities based on environmental conservation as a basic way of thinking, the policy promotes environmental management throughout the entire group.

DOWA Group promotes the establishment of a recycle-oriented society and also aims to provide the good global environment to the next generation through business activities.

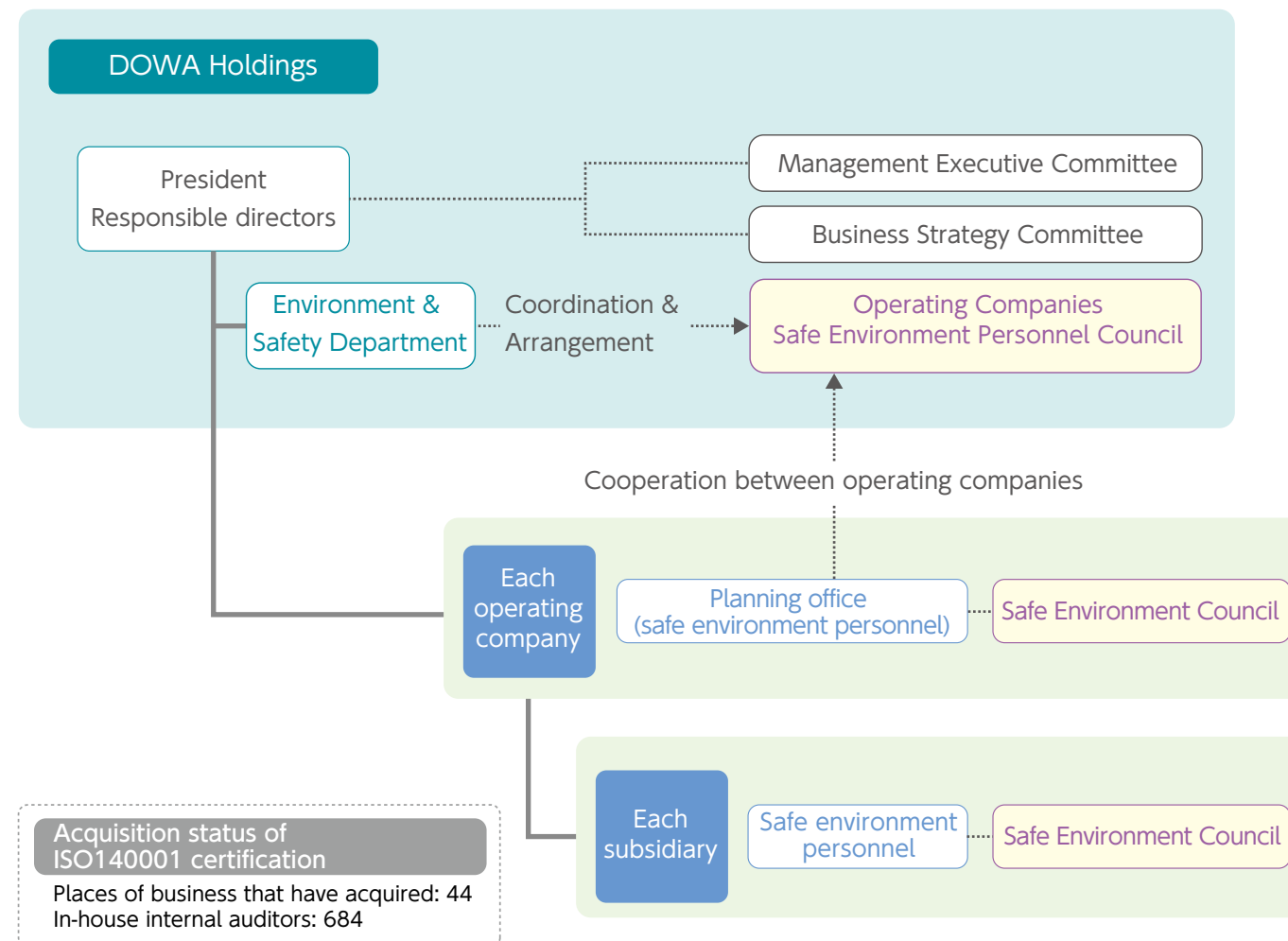
- 1 We will provide customers (customers, regions, etc.) with products and services that contribute to building a resource-recycling oriented society.
- 2 We will reduce the environmental burdens and risks in our business activities.
- 3 The management and employees will together participate in environmental conservation activities.

 Basic Environmental Policy
http://www.dowa-csr.jp/en/csr/csr_policy.html

Environment Management System

The Environment and Safety Department and the Planning Department of each business office that conducts environment conservation activities, together carry out the environment management activities of DOWA group. DOWA Holdings conducts the adjustments and compilation amongst the business offices and also carries out the environment management and compliance management of the entire

DOWA group. In addition, we have acquired ISO14001 for major domestic production sites and international offices, and for proper implementation of the environment management, we are taking efforts for development assistance of internal auditors through the implementation of periodic internal audits & external audits and auditor training courses.



02

Initiatives to Prevent Global Warming

At the DOWA Group, while we have been promoting environmental impact reduction through curtailing energy consumption and CO₂ emissions by our businesses, we are also actively working to spread new energy throughout our businesses by utilizing in-house power generation with renewable energy.

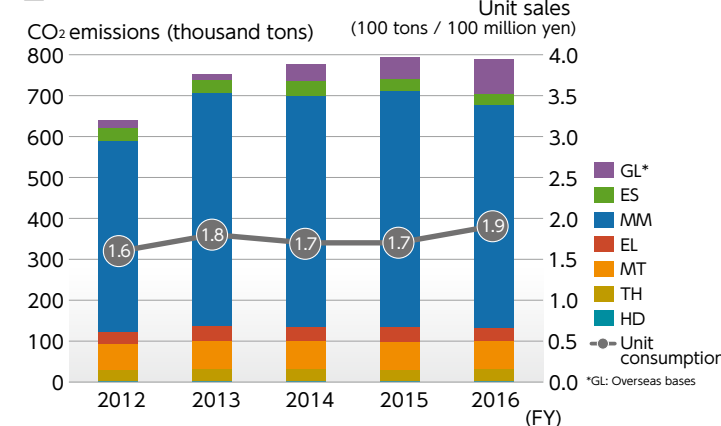
Reduction of Greenhouse Gas Emissions

At the DOWA Group, based on the Action Plan to Implement a Low Carbon Society by the Keidanren (Japan Business Federation) and the Japan Mining Industry Association (announced in January 2013), we have set a goal of "a 15% reduction in our CO₂ emission rate by FY 2020, compared to FY 1990".

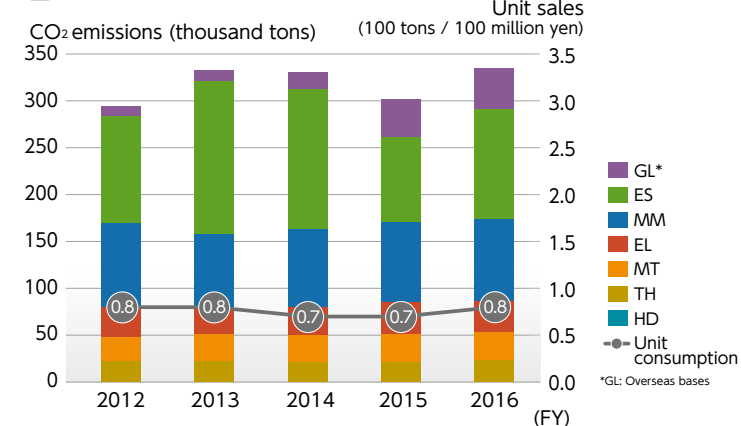
In FY 2016, the greenhouse gas emissions by the DOWA Group as a whole were about 1,595 thousand tons of CO₂ (131 thousand tons overseas and 1,464 thousand tons in Japan). While there was an increase overseas due to business expansion in India, since emissions at business sites in Japan

declined, greenhouse gas emissions for the entire group decreased by about 4%. Changes in the CO₂ emissions of the DOWA Group are largely affected by CO₂ emissions resulting from the incineration of waste received from external sources, and it varies depending on the amount and composition of the waste. Since it is difficult to control the amount and composition of externally generated waste, we are working on preventing global warming by promoting thermal recycling that uses the heat generated during incineration for power generation or steam.

Electric Power Source



Fossil Fuel Source



Initiatives for Renewable Energy

At the DOWA Group, to reduce global carbon emissions, we have introduced renewable energy at our businesses, and we are working to expand this through our businesses.

Hydroelectric Power Generation

At Kosaka Smelting & Refining, in 1897 we began operating the second hydroelectric power station in Japan (Oyukawa Choshi Power Station). After that, we continued to expand and improve facilities with the expansion of mining development and our business, and we have six hydroelectric power stations in Akita Prefecture. In FY 2016, we generated 48.3GWh of electricity, and it is an important power source to cover the energy needs of Kosaka Smelting & Refining.

Solar Power Generation

The DOWA Group has introduced solar power generation systems at the Thermo Engineering Ota Plant (Gunma Prefecture), DOWA Hightech (Saitama Prefecture), Eco-System Sanyo (Okayama Prefecture) and Active Recycling (Kumamoto Prefecture). In FY 2016, we generated a total of 332 MWh at the four companies, and it is used as part of the electric power that we need for business activities. In addition, from November 2016, DOWA Eco-System began generating electricity at a mega solar power plant in Odate, Akita Prefecture. The amount of power generated is expected to be 1,561 thousand kWh annually, and all of it will be supplied to Tohoku Electric Power.

The Manufacturing of Silver Powder for Solar Panels

DOWA Hightech is one of the world's largest manufacturers of "silver powder" used in the electrode sections of solar cells (crystal-based silicon solar cells). The silver powder for electrodes is required to have such properties as low resistance and a high-resolution wiring pattern, and it is positioned as an important material that greatly affects product performance. By developing and offering silver powder that is optimal for the needs of manufacturers in Japan and overseas, and with a stable supply, it contributes greatly to the improvement of solar cell performance.



03 Conservation of Biodiversity

Based on the Basic Policy of Biodiversity, the DOWA Group is working to minimize the impact that our business activities have on biodiversity, and we are promoting the conservation of biodiversity through social action programs.

Basic Policy of Biodiversity

The DOWA Group recognizes that our business activities get benefits from biodiverse nature, and the conservation of biodiversity is important to keep enjoying these benefits. As a member of society, we will voluntarily and continuously work on the conservation of biodiversity and sustainable usage.

■ The Conservation of Biodiversity in Mining Development

The DOWA Group is actively promoting the utilization of recycled materials, such as electronic equipment waste as raw material for smelting, but we also believe that the role of natural ore is important with its stable quality. For the long-term stable supply of zinc, a main product, in our mid-term plan we are promoting mine exploration and development projects with a goal of over 50% for the zinc ore ratio. But since mining development and operations have a great influence on the natural environment and local communities, we are implementing it based on a development plan that has considered the ecosystem and aquatic environment. At mines overseas currently under development, from the exploration stage we are conducting regular and appropriate environmental monitoring of the ecosystem and water quality. We check to make sure that our initiatives are minimizing the impact on the environment.

■ Consideration for Biodiversity in Procurement

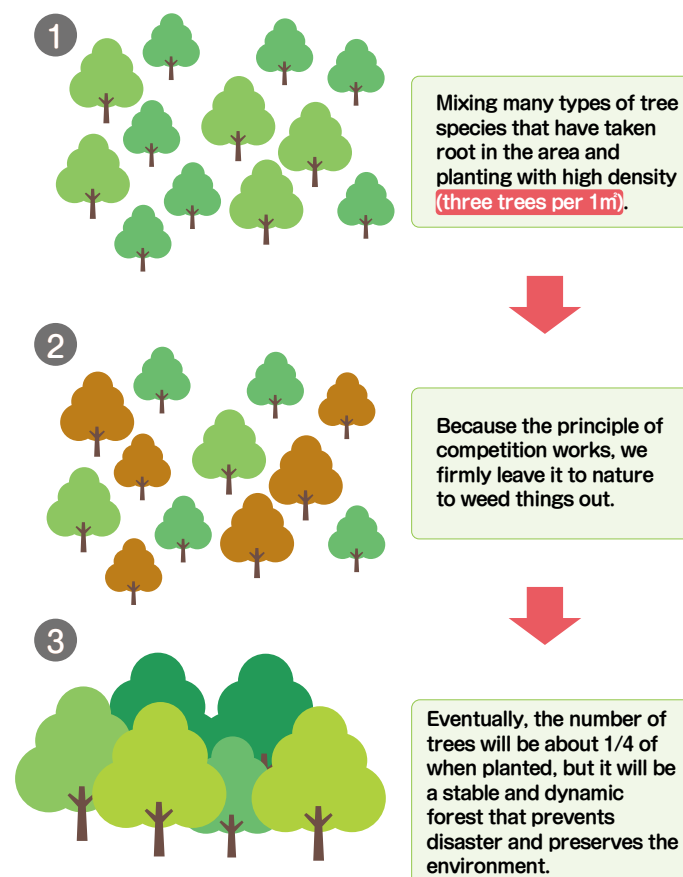
Supplying paper, a forest resource, is one of the important ecosystem services, and it is also related to climate change and waste. Because the DOWA Group's manufacturing business is mainly in the area of nonferrous metals, we do not use biological resources for our main raw materials, excluding water, but we use paper at all our business sites both in Japan and overseas, and our whole group purchases a lot of paper every year. For this reason, we use paper that is a mixture of used paper and forest certified wood pulp for copy paper and pamphlets, and we are working to use sustainable biological resources. When we put out a tender for centralized purchasing of paper, we confirm that the paper supplier is a company that "procures paper responsibly" based on our CSR procurement policy. We also ask that suppliers disclose their environmental activities, such as nature conservation or reducing environmental impact, and we check the status of their efforts through questionnaires and CSR inspections.

Points to be Checked for "Responsible Paper Procurement"

- Establish procurement policies for wood feedstock.
- Build and operate a management system to confirm the legitimacy of the wood feedstock.
- Provide information on the suppliers of raw material pulp.

■ Planting Forests in Kosaka, Akita Prefecture

In Kosaka, which lost a lot of forest due to the impact of exhaust gas and deforestation by the mining and smelting industry since the Meiji era, forestation progress has been made with the planting of black locust and Japanese cedar trees after WWII. However, while the black locust trees are highly fertile, they are a species of tree with a relatively short life span, and they are shifting to a period of decline in the growth cycle. The DOWA Group started planting trees in 2006. We aim to create a natural and stable forest so that, different from an artificial forest, it does not require maintenance by human hands. We have worked to restore the original vegetation of the area by "making a local forest with local trees". Under the guidance of the Japanese Center for International Studies in Ecology, over the past 12 years we have completed planting about 25 species and 170,000 trees. The seedlings planted in the first year have grown a lot, and now form a small forest.



04 Conservation of the Aquatic Environment

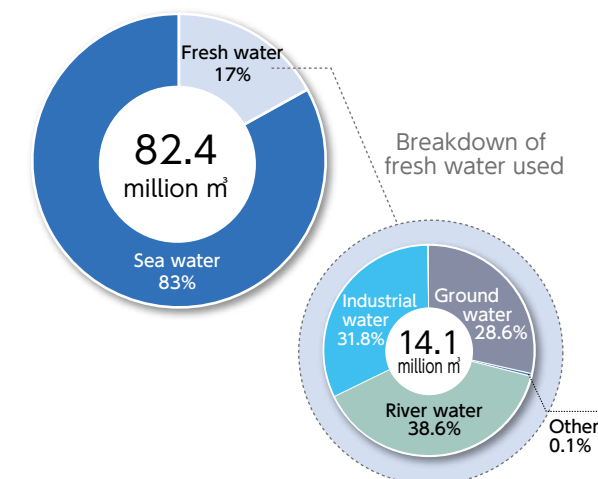
Every year at the DOWA Group, in addition to knowing the amount of water used at production bases in Japan and overseas, we understand the situation for the water intake sources and where the drainage goes. We are working to reduce the amount of water used by the entire group, and we promote efficient use within our facilities to reduce the amount of water intake.

Water Resources

In FY 2016, the water resource input was 82.4 million m³, which was down 10% from the previous year mainly due to the reduction of cooling water used in smelting plants. About 83% of the total water resource input was seawater used for cooling water in facilities, such as for smelting, and the amount of fresh water used was 14.1 million m³, around the same level as the previous year.

In FY 2016, we worked on the conservation of water resources by changing from cooling water to air-cooling for compressors, and by starting to use recycled water.

Amount of Water Resources Used



Drainage Water

In FY 2016, the amount of drainage water was 94 million m³, down 10% from the previous year. While this was due to the decrease in the amount of cooling water, the amount of drainage water is decreasing every year. With regards to drainage water, we are striving to control water quality not only by strictly complying with wastewater regulations, but also by establishing strict voluntary standards.

05 Promotion of Resource Recycling

At the DOWA Group, together with controlling the consumption of natural resources, we aim to contribute to the formation of a sustainable society by promoting the recycling of used resources.

INPUT

Raw Materials

In FY 2016, the amount of raw materials used was 1,059 thousand tons, up about 3% from the previous year.

Waste Received

In FY 2016, the amount of waste received was 1,629 thousand tons, up about 15% from the previous year. This was due to an increase in the amount of polluted soil received.

OUTPUT

Products

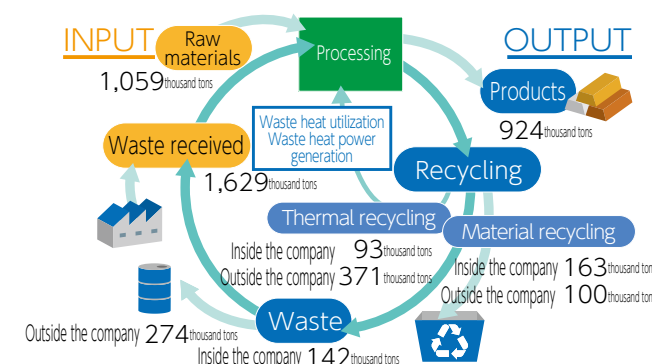
In FY 2016, product shipment volume was 924 thousand tons, up about 46% from the previous year. This is mainly due to the inclusion of sulfuric acid production in the smelting business from this fiscal year.

Discharged Waste

In FY 2016, the volume of waste treatment was 416 thousand tons, down about 3% from the previous year.

Recycling

In FY 2016, the amount of material recycled was 262 thousand tons, up about 16% from the previous year. Within this, the amount that the DOWA Group recycled in-house was 163 thousand tons, and recycling outside of the company was 100 thousand tons. In addition, for thermal recycling, which was down about 11% from the previous year, 93 thousand tons was done by the DOWA Group in-house, and 371 thousand tons was done outside the company.



Society

The DOWA Group aims to be a company trusted by all stakeholders for sustainable development and is taking initiatives to enhance the relationship with the society through its CSR activities.

CSR Policy

- We will respect the diversity and human rights of employees and aim at creating a workplace that will allow all to show their maximum capacity with challenge and pride.
- We will promote social contribution considering unique characteristic of each local community together with local people.

Priority Measure Promotion of Diversity

In order to constantly create new value, the DOWA Group believes that it is important to actively incorporate and utilize diverse personnel and values regardless of such things as nationality or age. We promote the diversification of employee characteristics, and are developing various programs in order to create an organization that accepts and utilizes differences.

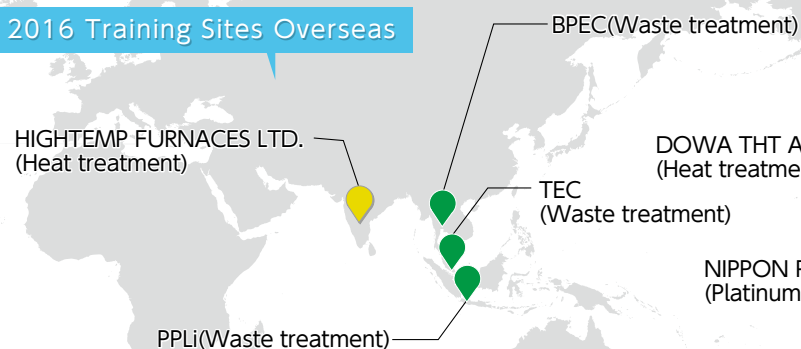
Global Challenge Program

With the rapid globalization of business, it is an urgent task to train personnel capable of carrying out the business of the DOWA Group in various environments. The purpose of the Global Challenge Program is to increase the number of personnel who can work not only in Japan but also anywhere in the world. Members from each operating company who have been with the company from four to 10 years are selected for participation.

Starting from 2015, 15 employees have taken the course. In the training, the aim is for them to get a wide range of abilities, such as language skills and cross-cultural understanding, based on improving their problem solving skills as business people through a four-month course in Japan and a three-month course overseas.

In FY 2016, in cooperation with the local staff at offices in the U.S., India, Thailand, Singapore and Indonesia, they worked to solve problems while learning about “understanding” and “communicating” as future business leaders.

FY 2016 Training Sites Overseas



Four-Month Course in Japan

- Self understanding as business people.
- Acquiring the necessary skills for an assignment overseas.
 - Learning English
 - Understanding different cultures, etc.
- Studying with the theme of practical training overseas.

Three-Month Course Overseas

- Together with local staff, working to solve problems at the training site.

Diversity Management Program

In order to form a strong organization that responds swiftly to changes in the external environment, we believe that it is necessary to create an environment that enables diverse personnel to demonstrate their full potential regardless of gender or nationality. For this reason, from FY 2016 we started a “Diversity Management Program” where people can learn management methods that are an important factor in supporting diverse personnel and ways of working. In the first year, the training focused on the management of female employees who are seeing changes in how they work as they are required to balance both work and family, such as child and nursing care. In order for employees with various lifestyles and diverse values to work together, it is important to share values and to grow while acknowledging differences. In future we plan to develop the program by expanding the content from various diverse viewpoints.



Female Staff Meeting

DOWA Management Service Co., Ltd. is a nationwide organization that provides administrative support for the DOWA Group. About half of its employees are women. In FY 2013, with the aim of creating a workplace where women can work more effectively, about 15 female employees who were responsible for materials gathered to start a “female staff meeting”.



Initially, it started with the theme of sharing, improving and solving work issues, but from FY 2014, utilizing a skill map, it determined leaders from within the group for each initiative item, such as getting knowledge about materials and improving price bargaining abilities. They then conducted practical education so that each person could get the ability suitable for their level. In future, the aim is to conduct activities that produce results, such as actions that lead to actual cost reductions.

A Training Program In Japan for Staff Visiting From Overseas

This is a training program that targets staff working in overseas offices to visit Japan, and it allows them take courses about safety and the maintenance of facilities. It is held at the Safety Training Center and the Technical Training Center in Iwata, Shizuoka Prefecture.

In FY 2016, 30 staff members from China, Thailand and Indonesia visited Japan. Over a week they received practical education. This included safety education through risk simulation such as simulation of electric shock and being trapped, and education about autonomous and planned maintenance from specialist lecturers. The education also included the safety and health policy of the DOWA Group, the system when an accident or disaster occurs and risk management.

For the staff members who visit Japan, the training program also makes them “safety evangelists” after they return to their offices in each country, and we believe that it will lead to the strengthening of safety education at subsidiaries overseas.

Status of Activities

Following is the status of activities in the social field in FY 2016, and the plan for FY 2017.

FY 2016 Results

Social Priority Measures	Tasks	Goal	Evaluation	Main Result
Promotion of diversity	Expansion of global talent.	Same as left	A	Implementation of the Global Challenge Program.
	Strengthen training for local staff hired overseas.	Same as left	A	Implementation of training in Japan for local staff hired overseas.
	Active utilization of mid-career hires.	2.0%	B	While we did not reach the hiring goal (15 people), we did have unexpected hiring of people with disabilities and global hiring.
	Conduct training for female employees and managers.	Once each	B	Implementation of the (newly established) Diversity Management Program.
Promotion of work-life balance	Thorough familiarity within the company of various systems.	Same as left	B	Establishment and promotion of a new system to support work-life balance.
	Encouragement of annual leave.	60%	A	63% of annual leave taken.
	Promotion of measures to manage and reduce working hours.	Same as left	B	Establishment of a special committee for managing working hours and the issuing of a report.
Human resource development, evaluation and treatment	Implementation of training for evaluators and those evaluated.	Number of training participants for evaluators & those evaluated 600 people	A	Training for 170 evaluators and 186 of those who get evaluations.
	Implementation of the institutional survey.			Implementation of the institutional survey. Feedback for the evaluator training.
	Expanded education for those targeted for in-house education.			Expansion of selective educational opportunities. (Thinking ability special training program and development program for front-line supervisors).
	Formulation of a training system for stratified education.			New establishment of career training for young people. (Follow IV training)
Promotion of social contributions	In-house familiarity with advanced cases. Support for office initiatives.	Information sharing via the portal site	B	Providing information by the monthly posting of CSR-related news on the portal site.

FY 2017 Initiatives and Goals

Promotion of diversity	Expansion of global talent.	—	—
	Strengthen training for local staff hired overseas.	→	—
	Active utilization of mid-career hires.	→	20 people
	Conduct training for female employees and managers.	→	2 times
Promotion of work-life balance	Thorough familiarity within the company of various systems.	→	Updating and promoting the handbook to explain the system.
	Encouragement of annual leave.	→	60% of annual leave taken.
	Promotion of measures to manage and reduce working hours.	→	Establishment and implementation of policies and standards for the management of working hours for all group companies.
Human resource development, evaluation and treatment	Implementation of training for evaluators and those evaluated.	→	300 participants
	Implementation of the institutional survey.	→	1,100 to take the survey
	New employee education (until three years after joining the company).	→	140 enrollees
Promotion of social contributions	Training activities for children who will be the next generation.	→	3 times
	Awareness-raising activities with the purpose of contributing to the community.	→	3 times

TOPICS

Awarding Scholarships at Hightemp Furnaces in India

At Hightemp Furnaces Ltd., which runs a heat treatment business at six plants in four regions in India, we award lump sum scholarships to the children of employees who have achieved excellent grades at public junior high and high schools. In FY 2016, 24 junior high school and 12 high school students were selected for the scholarships. In August, a "CSR Activity" awards ceremony was held at the headquarters in Bangalore.

In India, movement is accelerating to emphasize CSR activities such as employee education and medical care, but Hightemp has been working on CSR activities for employees, their families and the local community for many years. Based on CSR policy, the CSR team systematically promotes projects in a wide range of fields such as the environment, sanitation, community development and education.



Communication with Shareholders and Investors

In the DOWA Group, we recognize the explanation of corporate and management information to shareholders, investors and other stakeholders as one of the important issues in corporate governance, and we are striving to disclose timely and appropriate information.

IR information

We hold briefing sessions by the management when announcing the quarterly financial results. We also provide opportunities to explain management information directly to domestic and overseas investors. We also publish our reports and annual reports in Japanese, English and Chinese as management policy and management status reporting tool of the DOWA group and are striving to disclose appropriate and highly transparent information.

Dissemination of IR information through website

IR information is sent on our website to help the shareholders and investors understand the business situation and business strategy of the DOWA group. In addition to financial reporting, securities reports, etc., other materials such as annual reports and shareholder correspondence are also posted. Going forward, we shall strive to disclose information in a comprehensible and timely manner.



<http://www.dowa.co.jp/en/ir/index.html>

General Meeting of Shareholders

Every June, we hold an ordinary general meeting of shareholders at the Hotel Chinzan-so in Tokyo. After the general meeting of shareholders, we hold a social gathering aimed at promoting communication with shareholders. There we set up a forum for dialogue with executives and a product exhibition section for each business. In addition, we set up a separate presentation room at the venue where the executives can explain the topics of the DOWA Group. In FY 2016, we held a presentation on the resource development initiatives of DOWA Metals & Mining, and introduced mine development projects overseas.



Industry-Academy Collaboration Initiative

The DOWA group is actively pursuing collaborative research in collaboration with universities and research institutions for the purpose of developing new products and new technologies. In FY 2016, we conducted joint research with more than 10 universities and research institutes.

Technical Exchange Meetings

We have concluded a comprehensive agreement with Akita University, Tohoku University, Gunma University, Okayama University and Kumamoto University to promote collaborative research and to hold meetings to report results. Inviting researchers from universities who are in line with the theme, we hold technical exchange meetings to discuss technical issues and technical research. In FY 2016, the eighth year of doing this, we held technical exchange meetings at offices in four districts – Okayama, Akita, Nagano and Saitama.

At the one held in the Okayama district in July, over 40 people participated, including researchers from Tohoku University and engineers from DOWA research laboratories and offices. Collaborative initiatives were promoted with discussions and mutual presentations about development and research. We would like to broaden activities to include researchers outside of the company.



01

Together with Our Customers and Business Partners

The DOWA group strives to build long-term relationships of trust with business partners to improve customer satisfaction through the provision of better products and services. We are also promoting CSR efforts by supply chain, including environmental conservation and improvement of the working environment.

■ Supply Chain Management

The DOWA Group promotes CSR throughout the whole supply chain by distributing to business partners the “DOWA Group CSR Procurement Guidelines” that pulls together our CSR procurement policies and code of conduct, and by seeking understanding about our company’s approach to CSR. These guidelines are translated into English, Chinese and Thai and distributed to DOWA offices overseas.

In FY 2016, in order to confirm the status of CSR efforts, we distributed a self-check questionnaire to about 80 major business partners, and collected 93% of them. We sent a feedback report to business partners who responded, and reported our evaluation of the current situation. In addition, we conducted CSR inspections for nine important suppliers to confirm the actual CSR status, and checked their compatibility with our CSR procurement guidelines. We pointed out several things about “health and safety”, such as the wearing of protective equipment and the inspection of firefighting equipment, and about the “environment”, such as waste management, but overall we confirmed that the results were generally good.

Regarding the importance of CSR in the supply chain, we will work to further improve CSR while strengthening the partnership with suppliers by getting their understanding.

■ Quality Control

At the DOWA Group, we position “quality” as an important management standard for manufacturing. Major manufacturing plants have obtained international standard ISO 9001 certification for our quality control systems. We strive to improve the quality of products and services by continuously operating these quality control systems based on PDCA. In addition, as an initiative to strengthen quality control, we put effort into confirming the quality of procured items. In cooperation with suppliers, we aim to ensure the quality of procured items from the aspect of quality and technology by implementing supplier surveys and inspections at appropriate intervals.

■ Response to Comments and Opinions

We strive to supply products that are satisfactory to the customers by improving the product promptly and appropriately in response to the opinion and inquiries of the customer.

Improving the information sharing and management system, conducting evaluation by classifying and analyzing the information gathered at each business site have been leading to reform, improvement and development of products and services.

■ Response to Conflict Minerals

The DOWA Group, which deals with non-ferrous metals as its main product, recognizes as an important CSR challenge the responsibility of companies associated with conflict minerals. We are working to ensure transparency of the supply chain in our procurement activities, and to practice responsible mineral procurement. In FY 2016, in accordance with our conflict mineral management policy, we continued to survey business partners and respond to customer inquiries. Furthermore, to promote responsible mineral procurement, we have taken up a program for certifying smelters that do not handle conflict minerals (the CFS certification system). Two of our companies, Kosaka Smelting & Refining (gold and tin) and Eco-System Recycling (gold), have acquired CFS certification, and we are striving to fulfill our procurement responsibility as a material manufacturer.



The DOWA Group Conflict Mineral Management Policy
http://www.dowa-csr.jp/en/csr/procurement_policies.html



02

Together With the Regional Society

With initiatives in the social field, the DOWA Group is working on regional contributions as a priority measure. In each of our domestic and overseas bases, we are actively developing community-based CSR activities such as factory tours, accepting interns, hosting sports events and communicating with local communities in order to progress and develop together with the region.



■ Nurturing the Next Generation

Elementary School Visits

Eco-System Chiba, which does waste treatment in Sodegaura, Chiba Prefecture, visits elementary schools in the city to talk about the environment. In FY 2016, they visited fifth and sixth graders at two elementary schools in the city with the theme of “Let’s get rid of illegal dumping and aim for a clean society by obeying the rules”. They conducted classes that incorporated quizzes and games in order to teach in a fun manner about the problem of illegal dumping, and the responsibility of those who dispose of things. With a card game to understand the mechanism of illegal dumping, they positively shared opinions about how to reduce illegal dumping.

These school visits are now in their sixth year, and they started as a catalyst for children, who will lead the next generation, to learn about the environment. Every year the employees of Eco-System Chiba serve as instructors, holding quizzes and presentations about how to dispose of garbage. They will continue these school visits in the future as an opportunity to make the children feel close to the “problem of waste”.



Akita Prefecture The DOWA Cup Junior Cross-Country Ski Tournament at Lake Towada

The DOWA Cup that is held at Lake Towada in Akita Prefecture is a historic junior cross-country ski tournament that celebrated its 27th anniversary in FY 2016. Every year, many children participate from elementary and junior high schools in the three Tohoku region prefectures, and past participants have gone on to compete at international competitions, such as the Olympics. It is certified as an official event of the Ski Association of Akita.

About 130 staff, including DOWA Group employees and people from neighborhood councils and local ski clubs, cooperate on cleaning the site, developing the course, setting up the venue and the final tidying up, which can take over a month. For over a quarter of a century, this tournament has been an indispensable event for the DOWA Group to deepen ties with the local community.



■ Disaster Recovery Support

Responding to the Kumamoto Earthquake

DOWA Eco-System is a member of Japan Disaster Treatment Systems that is part of the disaster waste treatment support network of the Ministry of the Environment.

It provided local support after the Kumamoto earthquake in April 2016. Utilizing its experience and expertise, the DOWA Group, which also helped with earthquake waste treatment after the 2011 Tohoku earthquake and tsunami, dispatched personnel to the association of waste treatment-related companies from inside and outside of Kumamoto Prefecture. We provided support for the construction and operation of a secondary temporary storage site for the massive amounts of waste material and debris from the earthquake.

At Act-B Recycling Co., Ltd., where we carry out recycling of home appliances in Minamata, Kumamoto Prefecture, in response to a request for support from the Ministry of the Environment and Kumamoto Prefecture, we sorted, transported and disposed of home appliances impacted by the quake, especially in areas where there was considerable damage. For 34 days from April to May, including the Golden Week holiday period, we dispatched 10 personnel each day to the site, with a total of 200 employees taking part in the support. At the disaster waste collection facility, we sorted and organized depending on whether it was possible for the home appliance to be recycled. In the end, we were able to recycle 12,404 televisions, refrigerators, washing machines and air conditioners.



Together with Employees

The DOWA group sets forth Standards of Conduct that human resources are the basis of business activities and employees should be evaluated with their ability to conduct their jobs regardless of education, age and gender. We have taken various initiatives with the following goals so that employees can exercise their full potential.

- Go back to the origin of organizational function to create a competitive team.
- Make company a place where employees want to work, with their own initiatives.

■ Employment Status

The DOWA Group promotes the appropriate allocation of personnel according to our business plans, and we are working to employ diverse talent with the necessary skills for business development.

At the end of FY 2016 (March 31st, 2017), the number of employees in Japan was 6,072, up 194 people from the year

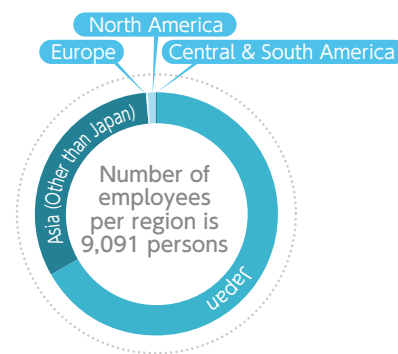
before. Of the regular employees in Japan, there were 3,787 men (92% of the total) and 321 women (8%). With globalization in recent years, the proportion of employees at offices overseas is increasing, and the number of employees overseas in FY 2016 was about 33% of the total.

■ Employment status in Japan

Classification \ FY		FY 2014		FY 2015		FY 2016	
		Male	Female	Male	Female	Male	Female
Regular employees in Japan	Directors	130	0	121	1	128	1
	Managers	735	12	799	9	758	9
	Ordinary Employees	2,786	306	2,828	302	2,901	311
Non-regular employees in Japan	Dispatched employees	479		529		633	
	Part-time	924	314	802	318	1,050	281
Total		5,686		5,709		6,072	

■ Region - wise Number of employees Region

Classification \ FY	FY 2014	FY 2015	FY 2016
Japan	5,686	5,878	6,072
Asia (Other than Japan)	2,903	2,897	2,899
Europe	16	22	23
North America	92	96	96
Central & South America	3	1	1
Total	8,700	8,894	9,091



■ Personnel Training and Utilization

DOWA group takes efforts to continuously conduct training at every workplace from the aspect of personnel training, aiming at “continuing to be a valued personnel team that works hard for global business” and is expanding its personnel training and activity policy through promoting the strengthening plan for young employees as On The Job Training (OJT), expanding practical training opportunities, promoting experience of different professional duties (planned change), planning voluntary staff assignment etc.

Main Achievements of FY 2016

In addition to stratified education and specialized training, the DOWA group as a whole conducts extensive training about technology, environment and safety at every office. In FY 2016, in addition to enhancing selective educational opportunities for nurturing the next generation of leaders at every level, we focused on efforts to establish a culture that cultivates human resources.

Plan for FY 2017

Every year we review training with the aim of achieving education that is more strategic and essential in order to nurture talent capable of adapting to the rapidly changing times and environment. In FY 2017, we are planning to introduce measures to strengthen on-the-job training (OJT) for new and young people in an effort to establish a culture that cultivates human resources. In addition, we plan to develop existing educational measures to expand their area of influence so that as much as possible we can be a human resource group that responds to changes in the external environment, such as the acceleration of diversity or global expansion.

■ Stratified Training & Selective Education

Target groups	Training details	Number of participants (People / FY 2016)	Total training time (Hours / FY 2016) *Training time only
Management staff (continuing)	Top management training	57	462
Next-term management staff (continuing)	Business leader development training	16	1,440
Administrative staff (continuing)	Management training & training to develop one's staff	67	2,275
Mid-level employees (continuing)	Global Challenge Program	9	4,185
Mid-level employees (new)	Problem solving & thinking ability special training program	16	320
Mid-level employees (continuing)	Leadership training	48	1,139
Production site supervisors (new)	Development program for front-line supervisors	20	1,650
Up to 3 years after joining the company (continuing)	New employee training, OJT and follow up training (skill improvement and self-establishment within the organization)	222	14,605

■ Just and Fair Evaluation and Treatment

In DOWA group, just and fair evaluation and treatment are practiced based on the following policy according to the idea of “valuation by the ability to take the work forward” which is present in the code of conduct. Initiatives are being taken with focus on circumstances that are utilized for training.

- The appraisers and persons being appraised must have thorough understanding of structure and standards of company system and they must continue to put in efforts for utilizing this knowledge for appraising and training.
- Sharing of organizational goals and improving of business execution ability has been planned while showing the ability and conduct required for improving personal ranking.

Training for appraisers and persons being appraised is positioned as a group-wide initiative, and by creating ongoing educational opportunities, we strive for fair evaluation, treatment and training. From FY 2015, we have been conducting briefing sessions for appraisers and trainings for persons being appraised at business establishments throughout the country, and we continue to consider training for new managers as priority.

System survey is implemented every year to evaluate the status of system and operations. The extracted tasks are newly added as explanatory items in the briefing session for appraisers and evaluator training of the following year and we are working on a promotion of employee's understanding towards system and on appropriate operation.

Career Matching System

A system that has been introduced with the aim of developing and supporting career of employees and fluidizing human resources, wherein the subject person conducts a PR (results achieved till now and desire to materialize these results) for his career and a change is made if both agree in the interview with the official of the interested company. The subject person can directly express his desire to change to the recruiting department without going through his superiors and his own department. Employees in various industries are starting a career in a new department every year by using this system.

Promoting Diversity

Amid global expansion or expansion of business areas in the group, employees with multifaceted personality showing their ability is closely linked to the growth of the company.

Expansion of Global Human Resources Pool

DOWA Group is progressing from recruiting stage to planning based on the concept of working globally without depending upon nationality as a part of promoting diversity. While recruiting new graduates, Japanese overseas students graduating from universities abroad or foreign students that graduated in Japan are recruited. Training is given for making them familiar with the concept and policy of this company with consideration of human rights at the time of recruitment that is happening rapidly with expansion of employment of personnel from various countries and regions.

Training is conducted prior to appointment even for employees that are newly appointed in foreign offices and diversity reception training such as understanding different culture is also conducted. Starting in FY 2015, we are launching a global challenge program including on-site training at overseas offices for the purpose of expanding talented personnel who can be active globally. In future too, we plan to expand our global human resources pool.

Education of Overseas Staff

The DOWA group promotes education of the entire group including employees in offices overseas. In FY 2016, staff hired in China, Thailand and Indonesia came to Japan for training about such things as safety, compliance and equipment maintenance. The training was held at our headquarters, major business offices and training centers. In addition to this, the five operating companies have invited locally hired staff to Japan for certain periods of technical training.

Promoting Participation by Women

While the number of women hired for regular positions is 10% to 20% of all those hired, which is not many, the ratio of women employees is increasing in the long term due to changes in the business and workplace environments. It could be said that the foundation for women to actively participate is in place as evaluations for recruitment; promotion and advancement are made according to abilities and without distinction for gender. In FY 2016, in order to make this foundation stronger, we implemented an

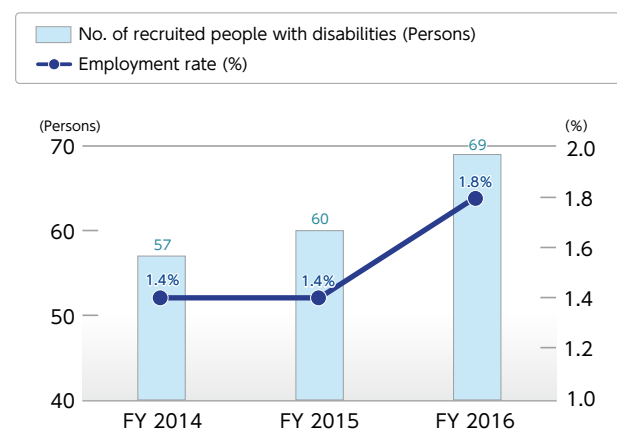
educational program for managers who have female subordinates. The company and employees are united in working to raise awareness so it is possible for each member of a diverse workforce to maximize their abilities. In FY 2017, we plan to revise the system and expand measures for changing awareness.

Utilization of Veteran Employees

We have revised the re-employment system from FY 2013 and we are setting up an environment where employees who have reached their retirement age and who wish to work in the DOWA group even after retirement can work with more motivation according to their role in the reformed system. Further, a seminar is held for employees who have reached retirement age with the goal of providing information on life plan after retirement and in FY 2016 it was attended by more than 70 employees.

Employment for Physically Challenged

In FY 2016, we were unable to achieve the employment rate across the group for the physically challenged. An easy-to-work environment cannot be materialized at our refining and metallic processing sites for the physically challenged, therefore, rather than aiming at a uniform increase at all business sites, we shall take initiatives to promote a high-quality working environment in employment offices and further workplace experience so that we can work on increasing the employment in parallel with the utilization of the recruitment company that specializes in hiring physically challenged personnel.



Work-Life Balance

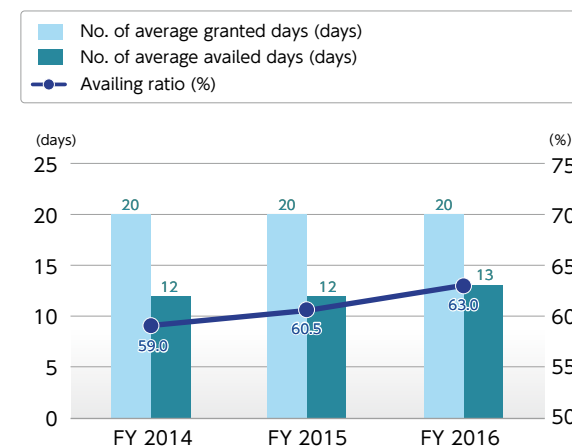
The DOWA group endeavors to improve the workplace for employees. Our work-life balance program aims at helping all employees to exercise their abilities to the fullest extent according to their lifestyle both at work and at home. We implemented a more flexible working system like flexible working hours and leave of absence system for raising children and caretaking of family members.

Supporting Diverse Ways of Working

The DOWA Group has introduced a flextime system without core time so that flexible working hours are possible. In addition to a leave system where one can get leave for volunteer activities, or special incentive leave for working a certain number of years, we have put in place support measures beyond those stipulated by the law, such as paid leave for caring for sick children (up to five days), a voluntary leave of absence program for childbirth and childcare, and a partial subsidy system for childcare expenses.

System Use Status

No. of system users is rising every year and persons taking childcare leave in FY 2016 were 28 women. There were 24 men and 24 women who availed nursing leave for children. As the situation of availing of the annual salaried leave, an average 63% of 20 average granted days were taken. We are working towards improving availing ratio through promoting planned annual holidays and asking for feedback on availing situation throughout the year according to the working situation in each of the offices.



Promotion of Measures to Reduce Working Hours

At offices in Japan, we have reached a labor-management agreement about overtime work in accordance with the laws and regulations, and have notified the governing administrative authorities. From FY 2014, we have revised the work management system, and made obligatory the submission of an improvement plan to managers when working hours have exceeded a certain amount. We have implemented labor management education targeting new managers who are the main constituents for the management of working hours. In addition, in FY 2016 we set up an advisory committee on labor and management to make recommendations about policies and standards for the management of working hours. Based on these policies and standards, in 2017 we intend to further focus on reducing working hours for all group companies.

In-house Questionnaire

The DOWA Group conducts a questionnaire on work-life balance for new employees every year. In FY 2016, there was high interest in a flexible working time system, with more than 90% wanting to utilize flextime and 75% wanting to use short working hours. Overall, there was also high interest in the system for work-life balance, and regardless of gender, the survey found an eagerness to balance work and family. Among the initiatives for work-life balance at the DOWA Group, “flextime without core time” and “the initiative to improve the rate of taking paid vacations” were both valued. We will keep working on work-life balance initiatives while referring to the results of this questionnaire.

Editorial Policy

(1)Scope of the Report

■Target Organizations

In principle, it covers the entire group including DOWA Holdings Co., Ltd. and its consolidated subsidiaries (in Japan and overseas). However, some initiatives are associated with DOWA Holdings and major group companies.

■Target Areas of the Report

This report was prepared based on the four areas of the DOWA Group's CSR policy - "Corporate Governance", "Safety", "Environment", and "Society". We report on each policy, the status of progress for important issues and initiatives of the target organizations.

■Target Audience

The target audience is all stakeholders involved with the corporate activities of the DOWA Group, including customers, shareholders & investors, business partners, local communities, researchers, employees, rating & evaluation agencies, government agencies and NGOs & NPOs.

■Target Period

We mainly report the activities of FY 2016 (April 2016 to March 2017), but in order to convey more accurate information, we also report about some of our previous initiatives or most recent activities.

■Reference Guidelines

The UN Global Compact
ISO 26000
Environmental Reporting Guidelines (2012 version) by Japan's Ministry of the Environment

(2)Publishing of the Website Version

In this report, we are editing and reporting on the main points in order to make the overall picture of the DOWA Group's CSR activities easy to understand. Detailed information and data are posted on our website (scheduled to be published in December 2017). For information with the following mark, please refer to our website.



If errors are found after publication of the CSR Report (print version), they will be reported on our website.

(3)Basic Information

■Publication Date

December 2017

■Next Scheduled Publication Date

November 2018

■Department that Prepared the Report

Environment & Safety Department, DOWA Holdings

■Website URL

[http://www.dowa.co.jp\(Japanese\)](http://www.dowa.co.jp(Japanese))

[http://www.dowa.co.jp/index_e.html\(English\)](http://www.dowa.co.jp/index_e.html(English))

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Opinion of a
Third Party
DOWA CSR Report 2017



E-Square Inc.

President

Hiro Motoki

E-Square is a consulting company aiming to realize a sustainable society through support of corporate sustainability and CSR management. Since April 2001, as manager of E-Square Consulting Business, he has been lending support to various fields such as CSR, strategies related to environment and CSV, communication, internal penetration etc. and focusing on large enterprises covering a wide range of industries. He has conducted numerous lecture activities related to CSR, ESG and environment.

This is the sixth year that I am responsible for giving the third-party opinion of the DOWA Group's CSR Report. With the theme of the special feature in this year's report being "The Advancement of DOWA", it was deeply interesting to see the roots of the DOWA Group, and to be told about the transition of the business from the time of its founding. The top page gives an overall picture of resource recycling, and you can confirm the role of the DOWA Group as a key player to create a recycling-oriented society.

Later in the report, "CSR Policy and Planning" is published in a large tabular format across two pages so that it is easy to understand, and you can see all the initiatives of the DOWA Group. Within the table, there are the details for the FY 2017 goals, which are specific compared to the year before, and you can see that they are planning for improvement. However, as milestones towards the 2020 target, there are items where you do not know how single-year goals will lead to the achievement of the 2020 target, so there is room for improvement with regards to setting the level and details of the single-year goals. In the Environment section, as always the listing of the material balance is excellent. You can get the overall picture of the change in the input and output of resources and energy from the previous year.

■Toward Further Improvement

As I have pointed out in the last few years with regards to human rights, I believe that the time might have come that, along with the company stating its thinking, it should implement specific initiatives for consideration of human rights within the business process. In addition, while it did report on-site inspections and interviews in Thailand two years ago, and in India last year, in this year's report there was no such mention of human rights. For institutional investors who put emphasis on ESG (Environment, Society and Governance), I believe that with regards to initiatives for "human rights and the community" and "occupational safety" that includes the supply chain for companies that handle resources, there is a lot of interest from the viewpoint of understanding risk, and it is necessary to disclose the details of initiatives. For example, in Myanmar where business is being expanded, it has been pointed out as a country of concern with regards to human rights by ESG evaluation agencies and international NGOs, so at the same time that business is advancing, the company's human rights stance comes into question.

Recognition is increasing that the promotion of diversity leads to corporate value over the medium to long term. By 2020, the government has set the goal for about 30% of managers to be women, and each company is systemically working on this. Looking at the actual numbers, the ratio of women has declined slightly, but by saying that they are putting effort into hiring women for regular positions, I expect to see results in the future. While the characteristics of the industry might make things difficult, they have not reached the 2% target that the government has set for hiring people with disabilities, and they should explain what kind of actions they are taking.

It is also regrettable that the explanation on "the relationship between business and social issues" that was included in the report until last year, has now been deleted. I think it was an important page that properly told readers what kind of a recognition of issues that management had as they developed business. The information about the CSR initiatives of the subsidiaries overseas has also disappeared, and it can't be denied that it has become difficult to see the initiatives of each office globally.

■Expectations for Future Initiatives

Japan's Government Pension Investment Fund (GPIF) explains the importance of ESG from the viewpoint of long-term investment. In October 2017, it revised its investment principles to include the viewpoint of ESG for all asset management, including stock investment. For companies, the relationship with investors expecting a long-term improvement in corporate value is important. It is essential for companies to put more effort into ESG information disclosure and to communicate it themselves.

In the part "Communication with Shareholders and Investors", the theme is only related to IR activities from the past, but in addition to these activities, they also need to touch upon future efforts to promote engagement with institutional investors. And as the base for this engagement, active disclosure of ESG information is required. Precisely because the DOWA Group can provide services through the value chain with regards to the increasingly serious problem of resources, I am confident that by properly communicating that ESG is integrated into the business, it will lead to a future improvement of corporate value over the medium to long term.

Target Organizations of the Report

Company			Location	Company			Location
Domestic	ES	Eco-System Akita Co., Ltd.	Akita Prefecture	MT	DOWA Power Device Co., Ltd.		Nagano Prefecture
	ES	Eco-System Chiba Co., Ltd.	Chiba Prefecture	TH	DOWA Thermoengineering Co., Ltd. Ohta plant		Gunma Prefecture
	ES	Eco-System Sanyo Co., Ltd.	Okayama Prefecture	TH	DOWA Thermoengineering Co., Ltd. Mooka plant		Tochigi Prefecture
	ES	Meltec Ltd.	Tochigi Prefecture	TH	DOWA Thermoengineering Co., Ltd. Hamamatsu plant		Shizuoka Prefecture
	ES	Eco-System Japan Co., Ltd.	Tokyo and others	TH	DOWA Thermoengineering Co., Ltd. Hamamatsu-Kita plant		Shizuoka Prefecture
	ES	Eco-System Hanaoka Co., Ltd.	Akita Prefecture	TH	DOWA Thermoengineering Co., Ltd. Chukyo Handa plant		Aichi Prefecture
	ES	Green Fill Kosaka Co., Ltd.	Akita Prefecture	TH	DOWA Thermoengineering Co., Ltd. Toyota plant		Aichi Prefecture
	ES	Geotechnos Co., Ltd.	Tokyo	TH	DOWA Thermoengineering Co., Ltd.Shiga plant		Shiga Prefecture
	ES	E&E Solutions Inc.	Tokyo	TH	CEMM Co., Ltd.		Aichi Prefecture
	ES	Eco-System., East Japan Plant	Saitama Prefecture	HD	DOWA Techno Engineering Co., Ltd.		Okayama Prefecture
	ES	Eco-System Recycling Co., Ltd., West Japan Plant	Okayama Prefecture	HD	Unekura Mining Co., Ltd. Hokubu Office		Akita Prefecture
	ES	Eco-System Recycling Co., Ltd., North Japan Plant	Akita Prefecture	HD	Unekura Mining Co., Ltd. Seibu Office		Okayama Prefecture
	ES	Eco-System Kosaka Co., Ltd.	Akita Prefecture	HD	DOWA Holdings Co., Ltd. Tokyo Headquarters		Tokyo
	ES	Eco-System Okayama Co., Ltd.	Okayama Prefecture	ES	PT.Prasadha Pamunah Limbah Industri		Indonesia
	ES	Eco-recycling Co., Ltd.	Akita Prefecture	ES	Bangpoo Environmental Complex Ltd.		Thailand
	ES	Act-B Recycling Co., Ltd.	Kumamoto Prefecture	ES	Eastern Seaboard Environmental Complex Co.,Ltd.		Thailand
	ES	Auto Recycle Akita Co., Ltd	Akita Prefecture	ES	Technochem Environmental Complex Pte.Ltd.		Singapore
	ES	DOWA TSUUN Co., Ltd.	Iwate Prefecture	ES	DOWA Environmental Management Co., Ltd.		China
	MM	Kosaka Smelting & Refining Co., Ltd.	Akita Prefecture	ES	DOWA ECO-SYSTEM SINGAPORE PTE. LTD.		Singapore
	MM	Nippon PGM Co., Ltd.	Akita Prefecture	MM	NIPPON PGM AMERICA, INC.		America
	MM	Akita Zinc Co., Ltd.	Akita Prefecture	MM	DOWA METALS & MINING(Thailand) Co.,Ltd.		Thailand
	MM	Akita Rare Metals Co., Ltd.	Akita Prefecture	MT	DOWA Advanced Materials(shanghai) Co., Ltd.		China
	MM	Akita Zinc Solutions Co., Ltd.	Akita Prefecture	MT	DOWA Metaltech(Thailand) Co., Ltd.		Thailand
	MM	Akita Zinc Recycling Co., Ltd.	Akita Prefecture	TH	DOWA THT AMERICA, INC.		America
	EL	DOWA Semiconductor Akita Co., Ltd.	Akita Prefecture	TH	Kunshan DOWA Thermo Furnace Co., Ltd.		China
	EL	DOWA Electronics Materials Okayama Co., Ltd.	Okayama Prefecture	TH	DOWA Thermotech(Thailand) Co., Ltd.		Thailand
	EL	DOWA IP Creation Co., Ltd.	Okayama Prefecture	TH	PT.DOWA THERMOTECH INDONESIA		Indonesia
	EL	DOWA F-Tec Co., Ltd.	Okayama Prefecture	TH	HIGHTEMP FURNACES LTD. Bangalore Plant		India
	MT	DOWA Metal Co., Ltd.	Shizuoka Prefecture	TH	HIGHTEMP FURNACES LTD. Nelamangara Plant		India
	MT	DOWA Metanix Co., Ltd.	Shizuoka Prefecture	TH	HIGHTEMP FURNACES LTD. Gurgaon Plant		India
	MT	Hoei Shoji Co., Ltd.	Chiba Prefecture	TH	HIGHTEMP FURNACES LTD. Chennai Plant		India
	MT	New-Nippon Brass Co., Ltd.	Chiba Prefecture	TH	HIGHTEMP FURNACES LTD. Pune Plant		India
	MT	DOWA Hightech Co., Ltd.	Saitama Prefecture				

ES DOWA Eco System MM DOWA Metal Mine EL DOWA Electronics MT DOWA Metaltech TH DOWA Thermotech HD DOWA Holdings